RELEASE NOTES
FOR ZERTO VIRTUAL REPLICATION
V6.5 UPDATE 2

Zerto Virtual Replication is an IT Resilience Platform^{TM} to provide business continuity (BC) and disaster recovery (DR) in a virtual environment, enabling the replication of mission-critical applications and data as quickly as possible and 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 using Long Term Retention.

The following topics are described in these Release Notes:

End-of-Version Support Notice

To review the Zerto end-of-version support policies for Zerto Virtual Replication, see the document Product Version Lifecycle Matrix.

Prerequisites, Requirements and Installation Instructions

- Before installing Zerto Virtual Replication, click to open and review **prerequisites** and **requirements** of the relevant platform:

VMware vSphere environments	Microsoft Hyper-V environments
Microsoft Azure environments	Amazon Web Services (AWS) environments
Cloud Service Providers (CSPs)	

- For **installation** instructions, click to open and review the installation guide:

VMware vSphere and Microsoft Hyper-V environments	
Microsoft Azure environments	Amazon Web Services (AWS) environments
Zerto Cloud Manager Installation Guide	

- For **Zerto Cloud Appliance** The following platforms are supported for the installation:
  - Windows Server 2012R2, and Windows Server 2016
  - 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

Upgrading Zerto Virtual Replication and/or Zerto Cloud Manager

To review the upgrading guidelines and instructions, see Upgrading the Zerto Virtual Replication Environment.

IMPORTANT:
Starting with Zerto Virtual Replication v5.5, Zerto changed the maximum sizing limitations when the ZVM database needs to migrate from an embedded internal database, to an external database. Before upgrading, it is important to follow the sizing guidelines. **Failure to follow the sizing guidelines can result in performance degradation and possible software errors.** For more information, click to review: ■ Scale and Benchmarking Guidelines ■ Migrating the Zerto Virtual Replication Database to Microsoft SQL Server

IMPORTANT:
Zerto has introduced Long Term Retention, see "Long Term Retention Solution", on page 9, which replaces Offsite Backup. This means that backups created with version 6.0 or earlier, will not be usable in version 6.5 and onwards. Therefore, during an upgrade from v6.0x to v6.5x, any existing configured repositories, or backup configurations are removed. In order to enable restores from Offsite Backups created with v6.0 and earlier, please refer to Upgrading To ZVR 6.5 While Retaining Backups Created In 6.0 Or Earlier.

Zerto

What's New & Resolved - Zerto Virtual Replication v6.5 Update 2

What's New - In Zerto Virtual Replication v6.5 Update 2

Zerto Virtual Replication version 6.5 Update 2 includes the following new features and functionalities:

APIs

- A new API enables users to retrieve information about all or specific datastores in a site, available under: **https://zvm_ip:port/v1/datastores**.
- A new API enables users to retrieve information about all volumes in a site, available under: **https://zvm_ip:port/v1/volumes**.
- A new API enables users to retrieve information about recovery operations such as failover, failover tests and move, available under: **https://zvm_ip:port/v1/reports/recovery**.
- A new API enables users to perform a Move operation, available under:
  - **https://zvm_ip:port/v1/vpgs/{protectionGroupIdentifier}/move**
  - **https://zvm_ip:port/v1/vpgs/{protectionGroupIdentifier}/moveRollback**
  - **https://zvm_ip:port/v1/vpgs/{protectionGroupIdentifier}/moveCommit**
- A new Resources Report API, **https://zvm_ip:port/v1/reports/resources**, is available with the following enhancements:
  - Improved JSON scheme
  - Basic and advanced filtering

  Note: The existing Resources Report API, **https://zvm_ip:port/ZvmService/ResourcesReport**, is planned to be deprecated in a future version.

The documentation can be accessed via the link: https://www.zerto.com/myzerto/technical-documentation/.

VMware vSphere

- vSphere version 6.7 U1, which includes vCenter 6.7 U1 and ESXi 6.7 U1, is now supported. See the Interoperability Matrix for specific features support.
- NSX-T network is now supported. For details, see the Interoperability Matrix.

Windows Server 2019

- Zerto Virtual Manager on Windows 2019 is supported for vSphere and Hyper-V. For details, see the Interoperability Matrix.
- Windows 2019 is supported on vSphere hosts. For details, see the Interoperability Matrix.

Zerto

Resolved Issues - Version 6.5 Update 2

Resolved Issues: vCenter

CASE NUMBER	ISSUES RESOLVED IN VERSION 6.5 UPDATE 2
00126812	The ZVM installer no longer hangs when upgrading from ZVM v6.0 Update 3 to ZVM v6.5.
114609	Fixed issues with installation/upgrade that caused the ZVM initialization to fail.
00128093, 128319, 00128116, 00128158, 00128408, 00127959, 00128553, 00128537, 00128653, 00128913, 00127886, 127886, 00129174	Resolved an issue that prevented installing VRAs on ESXi 6.7 U1 hosts.

Resolved Issues: VRA

CASE NUMBER	ISSUES RESOLVED IN VERSION 6.5 UPDATE 2
	Long Term Retention only: Fixed an issue that caused the VRA to reset before Long Term Retention operations reached their timeout.
119211	An optimization in the VRA improved the process of creating volumes in public cloud which occasionally caused the ZCA VRA service to crash.
126449, 00126449, 127658, 00127394	Fixed an issue in UNMAP operations initiated by the recovery VM. The VRA stopped handling recovery I/O operations which caused the recovery VMs to freeze.

Resolved Issues: ZCM

CASE NUMBER	ISSUES RESOLVED IN VERSION 6.5 UPDATE 2
117803	When the ZVM authentication is managed by ZCM "Roles&Permissions," logging into the ZVM with a ".local" suffix as part of the domain name no longer causes an error in login.

What's New & Resolved - Zerto Virtual Replication v6.5 Update 1

What's New - In Zerto Virtual Replication v6.5 Update 1

Zerto Virtual Replication version 6.5 Update 1 includes the following new features and functionalities:

VMware vSphere

■   VSAN version 6.7 is supported. See the Interoperability Matrix for specific features support.

AWS

■   Zerto published a set of minimal permissions required for Zerto to operate on AWS cloud. You can specify permissions for IAM roles by creating a policy in JSON format. See https://docs.aws.amazon.com/AWSEC2/latest/UserGuide/iam-roles-for-amazon-ec2.html.

Resolved Issues - Version 6.5 Update 1

Resolved Issues: vCenter

CASE NUMBER	ISSUES RESOLVED IN VERSION 6.5 UPDATE 1
116317, 121851, 122531, 123134, 123502,00122531, 124913,00119474	Failing over multiple volumes which have the same name in different letter case will no longer fail.
122503	Resolved an issue which prevented the user from selecting VMs for replication after a vCenter IP change.
117550	Failover Test/Failover button for self-replicating VPGs is no longer disabled when the protected and recovery VRAs are disconnected.
00125861	Resolved an issue which prevented the user from changing VM Recovery Host when journal default datastore is set to datastore cluster.
118235	Resolved an issue where Resources Report did not correctly report the journal's used disk space in the datastore.

Resolved Issues: Hyper-V

CASE NUMBER	ISSUES RESOLVED IN VERSION 6.5 UPDATE 1
121273	A datastore selection error is no longer caused when the datastore is a subset of other datastores.
00123223	Fixed failure issues in the VPG creation process which were caused when the VPG had several volumes for each VM.

Resolved Issues: vCD

CASE NUMBER	ISSUES RESOLVED IN VERSION 6.5 UPDATE 1
117544,00124380, 125117	Resolved a timing issue where vCD was not yet aware of all the VM's disks during Failover and Failover Test operation, causing these operations to fail.
120167, 121509,00124376	Resolved an issue which prevented a cleanup of shadow VRAs when the recovery site is vCD site, and Storage vMotion was triggered while the protected and recovery sites were disconnected.

Resolved Issues: AWS

CASE NUMBER	ISSUES RESOLVED IN VERSION 6.5 UPDATE 1
00125439	Fixed an error that occurred during Failover to AWS, while importing a volume using the zImporter which occurred when VM or volume names were too long.
123389	ZertoTools now supports 2008R2 when performing failover using the Zerto Import for *All Volumes* import method.

Resolved Issues: APIs

CASE NUMBER	ISSUES RESOLVED IN VERSION 6.5 UPDATE 1
122486	Fixed an issue that prevented adding new VMs to a VPG via Rest API when the VPG already has VMs replicating to different Journal Datastores.

Resolved Issues: General

CASE NUMBER	ISSUES RESOLVED IN VERSION 6.5 UPDATE 1
92092, 92226, 91351, 89532, 89993, 91738, 90796, 89558, 89077, 91006, 90977, 91266, 93385	Removal of a VPG during the promotion phase is no longer possible via the GUI. It is only possible to force removal of a VPG by running a Cmdlet.

Zerto

What's New & Resolved - Zerto Virtual Replication v6.5

What's New - In Zerto Virtual Replication v6.5

Zerto Virtual Replication version 6.5 includes the following new features and functionalities:

> **IMPORTANT Notification:**
>
> VSS functionality is no longer supported in Zerto Virtual Replication. If you require VSS functionality, see *Release Notes for Zerto Virtual Replication with VSS*, and *Zerto Virtual Replication - VSS Deployment and User Guide.*

API

- A new API now enables users to generate sessions to the Zerto Self-Service Portal.

  Note: The existing method for generating sessions via the CloudPortalUrlFactory is planned to be deprecated in a future version. Code changes will be required in order to utilize this API, once the existing method is deprecated.

- A new API now enables users to execute File Level Recovery operations.
- A new API now enables users to configure a VM with a preseeded volume.
- A new API now enables users to configure a VM with RDM.

Azure

- RTO: Improved the Failover time to Azure.
- VPGs can now be recovered to Premium Managed disks. A VPG can include any combination of VMs with Premium Managed disk and Standard Storage account. After live failover, the VMs that are recovered to Premium Managed disks cannot be protected. A conversion tool must be used to convert them into Standard Storage account VMs for them to be protected.
- The **Premium to Standard Conversion tool** enables replicating and failing over Premium Managed disks. The tool clones the Premium Managed disks and creates the same VM with Standard Storage disks, which the ZCA will then be able to protect.

AWS

- RTO: Improved the Failover time to AWS.
- Recovery to C5 and M5 instances is now supported. C5/M5 instances can be selected with the Zerto Import for All Volumes import method. C5/M5 instances are supported with Windows 2012R2 and Windows 2016.
- RTO was improved when performing the Move operation from AWS.

Sub VPG Operations

- Users are now able to Failover, Failover Test or Clone selected VMs in the VPG and are not required to perform the operation on all of the VMs in the VPG.
- Sub VPG Operations are supported only when the protected site is up and connected.
- Sub VPG Operations are not supported when replicating from a vCD site.

Add Volume to a Protected VM

- History is no longer deleted when users add a new volume to a protected VM.

vCloud Director

- Zerto operational interactions with vCD, such as, Create vApp, are now performed via the vCD REST APIs

Hyper-V

- Communication between the ZVM and Hyper-V agent can now use TLS version 1.2
- Resolved multiple issues with replication of volumes of arbitrary sizes.
- Environment data collection in Hyper-V is faster and more robust.
- Installing PowerShell module on Hyper-V hosts is no longer required and host operations performance is improved.

vSphere

- VMs in vSphere which have Fault Tolerance cannot be protected by Zerto. As such, starting from Zerto Virtual Replication version 6.5, Zerto does not allow protecting these VMs. This is enforced by filtering out and not including the VMs in the list of available VMs for protection.

ZCM

- Zerto now supports replication between multitenant CSP-managed sites and Public Cloud sites through Zerto Cloud Connector (ZCC). Each ZCA is expected to run in the end customer subscription and be co-managed by the CSP and the customer. Using ZCA through a ZCC enables filtering of VMs from the multitenant environment so that the ZCA operates only with VMs and other resources limited within a given ZORG.
- If there is more than one port group with the same name under the same vDS, the network resource in ZCM will include the vDS adapter name.

Long Term Retention Solution

- With Zerto's newly designed Long Term Retention Solution, customer retention processes are now able to operate at large scale. This is achieved by running the retention processes and VPG Restore processes using a component residing on the VRA, which is scaled out.
- Zerto's new Long Term Retention provides a new approach for IT Resiliency by offering a scalable solution, with no production impact, leveraging Zerto's CBT from previous restore points (incremental), which is able to keep and maintain longer term retention sets up to a year.
- Zerto's Long Term Retention is supported only in Enterprise Cloud Edition Licenses as well as "Cloud One-to-Many".
- Zerto's Long Term Retention is now performed incrementally, meaning, only data that has changed since the last retention process will be read and written.

VPG

- When choosing datastore cluster as a target datastore, ZVM now selects the most optimal datastore based on free space per volume.
- Added an alert to show a powered-off diskbox.
- As reverting a protected VM from a VMware snapshot renders it inconsistent, ZVM now automatically detects such events and automatically force-syncs the VPG.
- When changing recovery volume settings from temp to non-temp or vice versa, the VPG no longer loses its history.

Database

- Zerto now automatically installs a Microsoft SQL Server 2014 Express LocalDB for the ZVM embedded database and no longer uses SQL CE for the embedded ZVM database. With this change, Zerto is able to support more VPGs in each ZVM without the need for an external SQL database.

When upgrading ZVM, any ZVM currently using the embedded SQL based SQL CE database is automatically migrated to a Microsoft SQL Server 2014 Express LocalDB instance.

■ Zerto increased the maximum allowed protected volume size, for a single volume, to 128TB.

VRA

■ There were multiple VRA optimizations which improved performance and quality. For full details, see the Zerto Scale and Benchmarking Guidelines.

■ VRA upgrade process was improved. Now, if a failure occurs during the upgrade process, the system will rollback to the previous step in the upgrade.

General

■ ZVM initialization is faster and involves fewer platform operations.

Resolved Issues - Version 6.5

Resolved Issues: vCenter

CASE NUMBER	ISSUES RESOLVED IN VERSION 6.5
115348, 116850	Fixed an issue which caused Failover from AWS to VC to fail due to a AWS PV driver upgrade. ZertoTools now allows manual or auto downgrade of AWS PV Drivers before Failover to VC.

Resolved Issues: Hyper-V

CASE NUMBER	ISSUES RESOLVED IN VERSION 6.5
117430	Resolved an issue that prevented VRA install/upgrade when mount points are defined with a domain suffix.
121273, 122284, 122474	Fixed an issue which prevented moving VPGs between recovery hosts.
99090	Operations involving the creation of large volumes no longer times-out arbitrarily.
106076,00106076	Fixed an issue in which Failover from Hyper-V of a VPG with a dynamically sized volume and reverse protection results in un-resolvable "Needs Configuration" status.

Resolved Issues: vCD

CASE NUMBER	ISSUES RESOLVED IN VERSION 6.5
121947	Added a validation to avoid importing a VM into a vApp, before the VM is recognized by the vCD.
116271	Fixed an issue which caused target disks to move to a datastore which was not within the volume's storage policy. Prior to remove VPG task, a validation step informs the user if a datastore for preseeding should be configured within the same storage policy.
116271	Fixed an issue which prevented target disks from moving to their preseed location within the user's ZORGs resources, when unpairing sites.

Resolved Issues: Azure

CASE NUMBER	ISSUES RESOLVED IN VERSION 6.5
118738	Fixed an offset calculation in the optimization mechanism when promoting to Azure.

Resolved Issues: AWS

CASE NUMBER	ISSUES RESOLVED IN VERSION 6.5
120773, 114473	The AWS Linux re-IP script allows failing over Linux operating systems with static IP from VMware to AWS (when Zerto Import for all volumes is being used).
	Increased some configuration defaults to enable faster Failover, Failover Test and Move operations to AWS for single volumes.
	Zerto Import for All Volumes and Zerto Import for Data Volumes import methods support AWS C5/M5 instance types as zImporters VMs.
112896, 114154, 117031	Fixed an issue which caused the VRA to crash while attempting to apply unlisted objects to the mirror disks. Added a validation in the VRA during recover from restart to ensure all journal data in the cloud journal disk is listed.

Resolved Issues: ZCM

CASE NUMBER	ISSUES RESOLVED IN VERSION 6.5
116914, 116904, 117610	When pairing sites with ZCC fails, the error message is now more informative.

Resolved Issues: VPG

CASE NUMBER	ISSUES RESOLVED IN VERSION 6.5
106080, 116000	When changing the recovery volume provisioning type fails, the VPG now goes into a Need Configuration state.
21129, 115465	Fixed an issue with the Reverse Protection network settings.
	The Alert RecoveryDatastoreFull (STR0002) now also checks VPGs with thick provisioned volumes.

Resolved Issues: APIs

CASE NUMBER	ISSUES RESOLVED IN VERSION 6.5
117654	Fixed an issue where creating VPGs using REST API failed. The API script selected a host cluster that did not have a VRA.

Resolved Issues: General

CASE NUMBER	ISSUES RESOLVED IN VERSION 6.5
109216	Large scale environments: Synchronization between ZVMs was improved.
108683, 113347	The alert "Inaccessible recovery volume" no longer appears during Failover or Failover Test.
00110425	Pre-recovery and post-recovery scripts now run in parallel.
15811, 20182, 19186, 84966, 88934	An error message now appears when selecting a datastore for replication that **is not** enabled for replication in the Configure Provider vDCs window.
00120907	Fixed an issue where when opening more than one VPG tab, tooltips with results did not appear upon mouse-over of performance graphs.
119729	Fixed grid filters and column resize issue in ZVM GUI.
119272	Added Visual C++ redistributable package to ZVM installer.
00128247, 00128563	Adjusted configuration settings in the VRA to prevent performance degradation in the system, which in some cases might cause the VRA to slow down, or stop. **Note:** Fixed from version 6.5U1P1

What's New in Zerto Analytics

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- "Accessing the Zerto Analytics Portal", on page 14
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Zerto Analytics allows you to track, monitor and check the health of your data center from any device.

All your alerts, tasks, and information on Virtual Protection Groups (VPGs) can be viewed together.

This allows you to monitor your Disaster Recovery and Business Continuity status from any location that has internet connectivity. No VPN is required.

Using Zerto Analytics, you can see aggregated information from the Zerto Virtual Managers, and view the status of your environment.,

Zerto Analytics is developed with an API first approach, therefore, everything that is presented in the GUI, is also available with APIs.

Before Getting Started with Zerto Analytics

Verify the following:

- At least 1 ZVM is running ZVR v5.0 or higher.
- The **Enable Online Services and Zerto Mobile** check box is enabled (Settings > About).
- Internet access.
- A **myZerto** account using your corporate email address.

Accessing the Zerto Analytics Portal

Zerto Analytics can be accessed from https://analytics.zerto.com or through https://www.zerto.com/myzerto/ and signing in using your myZerto credentials.

> **TIP:**
>
> Use the **What's New** WHAT'S NEW and **Help** features in Zerto Analytics to learn more about each of the features available in Zerto Analytics.

Zerto Analytics APIs

Zerto Analytics is developed with an API first approach, therefore, everything that is presented in the GUI, is also available with APIs. APIs are available the same version as their GUI counterparts.

Zerto Analytics information is available in OpenAPI Specification.

The documentation can be accessed via the link: https://docs.api.zerto.com/

Zerto Analytics Dashboard

Availability:

- Available from ZVM v5.0.

From the Dashboard tab, you can view the following information:

- Aggregated information from participating sites.
- The average RPO across all VPGs.
- The sites list.
    - Click the icon next to the site name to open the ZVM site in a new tab.
    - Use the Site List menu to navigate to the list of VPGs, Alerts or Tasks for the specified site.
- The sites network topology view.
- Alerts, Tasks and Events of participating sites. **Note:** Events is available from ZVM v5.5U4.

Zerto Analytics VPGs List

Availability:

- Available from ZVM v5.0.

From the VPGs tab, you can view a list of all your VPGs.

- You can search and filter the VPGs list.
- View VPG status.
- Click a specific VPG in the list to view its details.

Zerto Analytics VPG Details

Availability:

- Available from ZVM v5.0.
- Journal Size data is available from ZVM v5.5

Clicking on a specific VPG in the VPGs list, opens the VPG details page. Here you can view the following information:

■ RPO
■ Journal History
■ VMs list
■ Active alerts
■ Running tasks

Zerto Analytics Reporting

Availability:

■ Available from ZVM v5.0.
■ Journal Size data is available from ZVM v5.5.
■ Journal Size site level history is available from ZVM v5.5.

You can view metrics in the following report formats:
■ **RPO**: displays a single VPG's RPO metrics over a 1 month period.
■ **Journal**: displays the Journal History and Journal Size metrics over a 1 month period, filtered by VPG and site.
■ **Network**: displays network performance metrics over a 1 month period for: *(Network Reports are available from ZVM v6.0)*
    ■ **Single VPG**: Network performance at the VPG level (IOPs, Throughput, WAN Traffic over time).
    ■ **Between 2 Sites**: Total network performance between two sites (IOPs, Throughput, WAN Traffic over time).
    ■ **Total Outgoing**: Total network outgoing performance from a site (IOPs, Throughput, WAN Traffic over time, Bandwidth throttling).
    NOTE: Network Reports currently do not support ZORG filtering.

Zerto Analytics Monitoring

Availability:

■ Available from ZVM v5.0.

From the Monitoring tab, you can:
■ View and search alerts. Click an alert in the list to view a detailed description.
■ View and search tasks
■ View and search events and alert history. **Note:** Events is available from ZVM v5.5U4.

ZORG Filtering

Availability:

■ Available from ZVM v5.5U4.

Customers using ZORGs can filter the entire application to specific ZORG information.

NOTE: Network Reports currently do not support ZORG filtering.

Zerto Analytics GUI

As part of an effort to align Zerto GUI, various enhancements were made to the user interface. Some of these enhancements are: 'What's New' feature that allows you to read about the latest features added to Zerto Analytics. Site List Menu allows you to easily navigate to the list of VPGs, Alerts or Tasks for a specified site.

Zerto Analytics ECE and CSP Licenses

Availability:

■ Available for Journal Reports from ZVM v5.5.

■ Available for Network Reports from ZVM v6.0

Customers with ECE and CSP licenses now have 90 days of history in reports.

Zerto Analytics Licensing Usage

Availability:

■ Available from ZVM v5.0.

You can view license availability, usage, and more.

Zerto

Known Issues

The following are known issues when using Zerto Virtual Replication.

Virtual Replication Appliance (VRA)

- You have to wait a few minutes after moving a protected virtual machine to another host before you can forcibly uninstall the VRA ghost on the original host.

- If the VRA IP is allocated via DHCP and the DHCP server at a later date allocates a different IP, the VRA does not change the IP. For this reason it is recommended during production to only use static IPs and use static IPs or DHCP during trials.

Virtual Protection Group (VPG) and Recovery

- Attempting to create a VPG when the target datastore is unavailable fails.

  Workaround: Try again after the datastore is up.

- Virtual machines with SATA controllers cannot be included in a VPG.

- When an existing VPG is attached to a ZORG, it is not possible to edit this VPG either after uninstalling the ZCM, or after removing a site from the ZCM.

VPG Management

- If a VM is removed from the hypervisor inventory, Zerto Virtual Replication stops the replication. When adding back this VM to the inventory the ZVR resumes the replication. In Hyper-V environments only, adding back the VM does not resume the replication.

Failover, Move and Test Failovers

- After stopping a failover test, the checkpoint that was used for the test has the following tag added to identify the test: **Tested at startDateAndTimeOfTest(OriginalCheckpoint_DateAndTime)**. The **Tested at startDateAndTimeOfTest** value is taken from the Zerto Virtual Manager and not from the UI.
- Recovering a VPG using one of the very earliest checkpoints available can fail when the checkpoint specified is moved out of the journal before the recovery operation can commit.
- After a recovery operation, the field **bios.bootOrder** is not passed to the recovered VM. In some cases, not passing the field **bios.bootOrder** can lead to the wrong boot order in the recovered VM.

vCenter Server

- When an ESX/ESXi host is disconnected from the vCenter Server but the network connection is still available, the status of any VPG recovering to this host and the status of the VRA on the host are displayed as OK in the Zerto user interface. However, all recovery operations will fail.
- Due to a VMware problem, configuring IPs for the recovery machines is lost when cloning virtual machines with VMXNET3 NIC on Windows 2008 R2 machines. For details and solutions, see http://kb.vmware.com/selfservice/microsites/search.do?language=en_US&cmd=displayKC&externalId=1020078.
- VMware does not identify the IP origin for Linux virtual machines and therefore Zerto Virtual Replication cannot know whether it is static or DHCP.
- The boot order defined for a vApp is not reproduced for a cloned vApp.
- Increasing the size of an RDM disk is not reflected in the VPG, nor by the recovery VMDK.

  Workaround: Follow the VMware KB: http://kb.vmware.com/selfservice/microsites/search.do?language=en_US&cmd=displayKC&externalId=1007021.
- After hibernating a laptop running vSphere Client console, you have to restart the console to reload the Zerto Virtual Replication GUI.
- Zerto Virtual Replication is not localized. VMware issues alarms where the language is not English with **XXX**.

  Workaround: Start up the vSphere Client console adding the following argument: **-locale en_US**, to display all Zerto Virtual Replication alerts in English.
- If a host is removed from a site, a ghost VRA is created which you can remove. After the host is added back to the site, a ghost virtual machine is displayed in the vCenter hierarchy.

  Workaround: Remove the ghost virtual machine from the inventory.

vCloud Director

- Zerto information retrieving tasks with vCD, such as, 'Get OrgVDCs,' are not performed via the vCD REST APIs.
- A protected VM replicated from vCD to a vCenter Server, that is connected to the **None** network, is recovered with a disconnected NIC, even if configured to connect to a network.
- Adding a new NIC to a protected virtual machine does not update the VPG settings by configuring a network for the NIC, causing an error when setting reverse protection for a Move or Failover operation.

  Workaround: Manually configure the VPG and add settings for the new NIC.
- After updating a VPG, for example by adding a new virtual machine to it, and then immediately moving it or failing it over to vCD, causes the vCD reflection to be out of date and recovery virtual machines are not powered on, resulting in the promotion hanging.

  Workaround: Wait a few minutes between changing the VPG and performing the move or failover operation. If you do not wait, manually power on all recovery virtual machines that are not powered on automatically.
- Deleting a VPG and keeping the target disks when the VPG is recovered to a vCD v5.1 with storage profiles defined, does not move the disks to a datastore that is contained in the recovery storage profile. This means that if the disks are saved to a datastore in the storage profile, these disks cannot be used fro preseeding later.
- Recovering a VPG to vCD will fail if the vApp name contains any of the following special characters: ! * ' ( ) ; : @ & = + $, / ? % # [ ].
- After importing VPG settings, a volume initial sync is performed on all VPGs replicating to vCD.

■ When both the recovery site is vCD, if NICs are added to a virtual machine that is included in a VPG and then the VPG is recovered, with reverse protection defined, the VPG for failback needs configuration, but the Zerto User Interface does not enable this configuration.

   Workaround: When adding NICs to a virtual machine that is included in a VPG, edit the VPG to add these NICs to the VPG definition, before performing a recovery operation with reverse protection.

■ Improved RTO when replicating to vCD 9 and Guest Customization is enabled, by avoiding a redundant VM power on and off, which was used by vCD to identify whether VMTools were installed on the VM.

■ Storage Policy configuration for VPGs:
   ■ Preseeding: Browsing the location of the preseeded disk will show only datastores which belong to the VM Storage Policy, and not all Storage Policies in the orgvDC.
   ■ Zerto does not maintain the Storage Policy per volume of protected VMs upon reverse protection when replicating between vCD<>vCD - the volumes will be aggregated to the VM Storage Policy.

VMware vSphere

■ vSphere Web (FLEX) Client 6.7 is not supported.
■ Datastore refreshes will occur during environment data collection. These should have no effect and can be ignored. .

Hyper-V

■ Changing the storage used by a VRA from a CSV to non-CSV storage, or from a non-CSV storage to CSV storage, fails.
■ You cannot protect virtual machines using storage that is only configured in Hyper-V and not in SCVMM.
■ Virtual machines with fixed size disks are always recovered with dynamically expanding disks.
■ SCVMM is not automatically refreshed after any recovery operations to or from the SCVMM. This can result in Integration Services not being detected by the Zerto Virtual Manager and this can lead to virtual machines failing to boot and Integration Services functions such as re-IP not working.

   Workaround: Manually refresh the virtual machine in SCVMM.

■ All management operations that can be executed from SCVMM, must be executed from SCVMM and not from the Hyper-V host. For example, removing a virtual machine must be done from the SCVMM console and not from the Hyper-V console.

■ When Hyper-V Replica is used on a virtual machine protected in a VPG, removing the virtual machine from the VPG is not reflected in the user interface.

   Workaround: Re-edit the VPG to remove the virtual machine and click **DONE**.

■ A VRA cannot be installed on a Hyper-V host when the host is attached to a LUN via iSCSI along with other Hyper-V hosts.

■ Recovery or replication of Hyper-V virtual machines with shared disks does not work.

   If you mark a disk as shared after the virtual machine to which it is attached is already in a VPG, the virtual machine must be refreshed in the SCVMM console immediately, otherwise the VPG enters an error state. Then, remove that virtual machine from the VPG since a virtual machine with a shared disk cannot be recovered or replicated by Zerto.

■ When a protected Windows VM configured for DHCP is failed over with re-IP set to DHCP, a failed SCVMM job will appear in the SCVMM console.

AWS

■ Tagged checkpoints, Force Sync, One-to-Many and Long Term Retention functionalities for VPGs with AWS as the protected site are not supported.
■ Preseed to AWS is not supported.
■ Restore from retention sets is not supported for VPGs with AWS as their recovery site.
■ When using zImport, the disk type is io1 and cannot be configured.
■ Only the ZCA's Availability Zone (AZ) can be used for faster recovery.
■ The instance zASA, and the temporary instances, zImporter and zSATs, require internet access.
■ The zImporters, zSATs and zASA are created with a public IP. However, they are connected to a newly created security group.

- When using Zerto import for all volumes, the following Operating Systems are **not** supported:
    - CentOS7
    - Ubuntu 13.10
    - SUSE 12
    - Solaris 11.2
- The default c4.8xlarge AWS EC2 maximum instance quota is 20 (default value). To ensure scalability, you must contact AWS support to increase the maximum relatively to the number of protected volumes.
- The default m4.large AWS EC2, used for zSATs and zASA, maximum instance quota is 20 (default value). To ensure scalability, you must contact AWS support to increase the maximum relatively to the number of protected volumes.
- GPT cannot be used as the boot disk.
- Recovery to AWS using "zImport for all volumes" requires installing drivers on the production VM.
- FOL to AWS fails when the VPG definition contains an invalid entity such as a security group, subnet, VPC or instance type. An invalid entity might be an entity that was removed from the AWS platform.
- Recovery of Windows VMs will freeze when using AWS import method with the PV driver installed.
- AWS rounds up all volumes to the closest 1GB. When failing over/ moving to AWS, with reverse protection, if the VM is with disks that are not a round number of 1GB, the VPG goes into a **Needs Configuration** state after being recovered to AWS. This is due to a volume size mismatch between the protected and recovered sites. After recovery, the user needs to delete this VPG and recreate it.

Azure

The following limitations apply:

- Self replication within a ZCA is not supported.
- Although two ZCAs can share storage accounts (either paired to each other, or each paired to a different site), this is not recommended as ZCAs which point to the same storage account are not aware of each other.
- Preseed is not available in Edit or Create VPG flows.
- Disks saved when deleting a VPG or un-pairing sites cannot be used for preseeding in Edit/Create a VPG.
- For Virtual Machines to be protected in Azure, the VMs' volumes must reside in the Standard Storage Account (Zerto Storage Account) that was defined during its installation.
- VMs which are not deployed via the Azure Resource Manager cannot be protected from Azure.
- You cannot protect machines that have a disk larger than 4TB.
- The protected virtual machines needs to have at least one NIC.
- The supported number of data disks 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.
- Restore from retention sets is not supported.
- Zerto Virtual Replication APIs are not supported.
- Azure temp drive is not protected by Zerto (Azure limitation).
- Use Move operation in order to failback from Azure.
- The minimum RPO from Azure is 1 minute.
- Long Term Retention is not supported for "From Azure" VPGs.
- Resizing protected disks on Azure is not supported.
- Reverse protection VM network settings in a VPG are not saved when failing over a VPG from Azure.
- Tag checkpoints, Clone: These operations are not supported for VPGs which have protected VMs in Azure with multiple disks attached.

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

For example, see the following default values:

- 20 cores per subscription
- 200 Storage accounts per subscription
- 20 VMs per region per subscription
- VM per series (Dv2, F, etc.) cores per subscription 20 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	1023 GB	1023 GB
Max 8 KB IOPS per persistent disk	300	500
Max number of disks performing max IOPS	66	50

Cross-Replication

- NIC configuration in the VPG definition is not applied.
- Recovery of a virtual machine from Hyper-V to vSphere of a generation 1 virtual machine with more than one SCSI controller, fails.
- Under certain conditions, when the declared OS definition does not match the actual installed OS, recovery operations may not work. To prevent this situation, ensure that the declared and installed OS definitions match. If the two definitions cannot match, use the hypervisor guidelines of the protected virtual machine or contact Zerto support.
- You cannot install VMTools on a Hyper-V VM. VMTools on a Hyper-V VM are needed for re-IP to work.

VMware to Hyper-V Cross-Replication

■ When protecting from VMware to Hyper-V, the protected volumes must be multiples of 1MB. If you resize a VMDK, the resize must be a multiple of 1GB.

■ In VMware, a virtual machine with a guest operating system booting from UEFI firmware can only be protected by Zerto Virtual Replication if the guest OS is supported by Hyper-V VM Generation 2.

■ SUSE and CentOS Linux machines in VMware cannot be recovered to Hyper-V.

■ Recovering a VPG to Hyper-V from vSphere will fail if the name contains any of the following special characters: ! * ' ( ) ; : @ & = + $, / ? % # [ ].

Hyper-V to VMware Cross-Replication

■ When recovering from Hyper-V to VMware, the virtual machines are recovered with the same number of sockets as CPUs and not the original number of 19035.

■ When protecting Windows 2012 R2 virtual machines from Hyper-V to VMware, after a failover test you may need to re-activate the virtual machine.

■ Windows XP virtual machines cannot be protected from Hyper-V to VMware.

Remote Upgrade for Cloud Service Providers

■ ZVM which runs under Customer Credentials configuration cannot be upgraded to ZVR v6.5 using Remote Upgrade.

■ Upgrade of cloud sites that support Intra-Cloud Disaster recovery is not supported.

■ Remote upgrade functionality assumes that both the Cloud Service Providers version and the customers Zerto Virtual Replication version is v6.0 or above, or v5.5U4.

■ VSS installers are not supported. Remote Upgrade should be used to download only non-VSS versions.

APIs

■ Support of VPG Settings APIs when Creating VPGS from vCD to vCD:
  ■ VC > vCD is not supported
  ■ vCD > VC is not supported
  ■ No validations are performed on the inputs provided.
■ Invalid Argument Validations:
  ■ Previously created REST API calls may fail if invalid arguments were used.
■ VRA Bulk Upgrade
  ■ The upgrade of VRAs provided will halt if one of the VRAs fails to upgrade.
■ ResourcePoolIdentifier parameter for create VPG capability POST request is now mandatory and should be explicitly defined. v1/vpgs POST method is planned to be deprecated in a future revision. Use v1/vpgsettings to create new VPGs or edit existing VPGs.

File Level Restore

■ If the Windows virtual machine with files to be restored uses dynamic disks, files cannot be restored from these disks.

■ You can only recover files or folders when an Long Term Retention is not running.

■ Journal File Level Restore (JFLR) is not supported with the vSphere plugin.

■ File Level Restore (JFLR) is not supported on a volume where data deduplication is enabled.

Long Term Retention

■ Repository Type:
  ■ SMB and local repositories are not supported.
  ■ Only NFS Repository is supported.

- Supported NFS protocol version 3.
  - NFS repository does not support authentication.
  - NFS repository based on PBBA (eg data domains and so on), is not supported.
- Incremental:
  - Zerto can track and maintain up to 40TB of changes between copies (incremental) for long term retention on a single VRA. In the event of exceeding 40TB at any point, the VRA will be locked for running future retention processes. To release that lock, please contact Zerto Support.
  - Performing incrementals is based on identifying the initial copy and maintaining changes which happened since. In the event where either the changes tracked between copies or the reference to the initial copy are lost, a full copy will be created.
- Retention Policy:
  - The retention policy aggregation rule is described in the Administration Guide > Using Zerto's Long Term Retention > Storing Repository Sets.
  - Deleted retention sets are removed from the repository according to the configured retention policy.
    In scenarios where the total volume consumed size (meaning, the initial copy and incrementals) exceeds 10TB, some of the unreferenced data blocks will not be removed.
- Only complete Backups and Restores of VMs is allowed. Partial Backups and Restores are not supported.
- Restoring of VPGs is allowed for VPGs which currently exist, or which were deleted.
- Reconnecting to a repository is not supported.
- Attaching an existing repository and leveraging copies for the next incremental is not supported. Therefore, any repository is considered new after defining it, and a complete reading of the volume will be performed.
- Long Term Retention requires Enterprise Cloud Edition, Cloud One2Many or NFR/Trial license.
- Certain failures when running retention sets may require Support intervention to re-enable them.
- Zerto is moving away from Offsite Backup into modern Long Term Retention. Therefore, Offsite Backup will no longer be supported. As such, repositories and backup configurations created in previous versions are deleted as part of the upgrade to v6.5.
  - Backups created in versions prior to ZVR v6.5 cannot be restored in v6.5.
  - Backup configurations in v6.0Ux are deleted upon upgrade to v6.5.
  - Configuring a backup from v6.0Ux to v6.5 is not possible.
  - Restoring of backups which were created in version 6.0 or prior, requires using ZVM version 6.0Ux.
- Performance:
  - DSS and VRA consume CPU. As such, if the CPU on the VRA reaches high consumption rates, another CPU should be added to the VRA machine. Adding additional CPUs on top of the additional one is redundant and the additional CPUs will not be utilized.
- When editing a VPG where the protected site is v6.0Ux, and the recovery site is v6.5, the user will need to ensure that Long Term Retention is disabled in order to save any changes to the VPG.
- Long Term Retention is not supported where the recovery site is a Public Cloud.
- The SETUP tab in the ZCA was removed.
- Backup Reports are no longer available.
- Repository failures such as insufficient space or unavailability are not displayed in the GUI.

Upgradeability

- **VRA upgrade:** The user is recommended to follow the VRA upgrade via the Zerto Virtual Manager GUI.
- When an update/hotfix installation occurs and the VRA auto upgrade checkbox is still enabled, there is a second event that is presented in the GUI, even though there was no VRA upgrade.

General

- The backslash character (\) is displayed as **%5c** in the GUI, for example when used in a virtual machine name.
- If the local site Zerto Virtual Replication service is down, you can still recover and clone VPGs. When cloning a VPG, the clone progress bar in the `VPG Details` screen is not updated.

- In a multi-site environment and when masking is not implemented, adding a virtual machine to a VPG by editing the VPG from the recovery site, displays all virtual machines on the protected site, including those protected to a different recovery site.
- Zerto Cloud Connector *.vswp files are not included in the DATASTORES tab, DR Usage value.
- When creating a VPG and there is no available recovery site, the GUI display is corrupted.

  Workaround: Make sure the connection to the replication site is restored and refresh the browser.

- Increasing a protected virtual machine disk size to greater than 2TB causes the VPG to enter a the state, **Needs Configuration**.
- When replication is to a VSAN, disk space used by the journal is not deallocated when the journal size decreases.
- Protecting CD/DVD drives is not supported.

Known Issues

For assistance using Zerto Virtual Replication, contact: @Zerto Support

Learn more at Zerto.com