Copyright © 2019, Zerto Ltd. All rights reserved.
Information in this document is confidential and subject to change without notice and does not represent a commitment on the part of Zerto Ltd. Zerto Ltd. does not assume responsibility for any printing errors that may appear in this document. No part of this document may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying, recording, or information storage and retrieval systems, for any purpose other than the purchaser’s personal use, without the prior written permission of Zerto Ltd.
All other marks and names mentioned herein may be trademarks of their respective companies.

The scripts are provided by example only and are not supported under any Zerto support program or service. All examples and scripts are provided “as-is” without warranty of any kind. The author and Zerto further disclaim all implied warranties including, without limitation, any implied warranties of merchantability or of fitness for a particular purpose.
In no event shall Zerto, its authors, or anyone else involved in the creation, production, or delivery of the scripts be liable for any damages whatsoever (including, without limitation, damages for loss of business profits, business interruption, loss of business information, or other pecuniary loss) arising out of the use of or inability to use the sample scripts or documentation, even if the author or Zerto has been advised of the possibility of such damages. The entire risk arising out of the use or performance of the sample scripts and documentation remains with you.

ZVR-RN-S.5U4 Rev08 Feb2019
Zerto Virtual Replication is an IT Resilience Platform™ 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 from an offsite backup.

The following topics are described in these Release Notes:

- “End-of-Version Support Notice”, on page 4
- “Installing Zerto Virtual Replication Version 5.5”, on page 4
- “Installing Zerto Cloud Manager Version 5.5”, on page 4
- “Installing Zerto Cloud Appliance Version 5.5”, on page 5
- “Upgrading Zerto Virtual Replication and/or Zerto Cloud Manager to Version 5.5”, on page 5
- “Zerto Analytics”, on page 6
- “Zerto Virtual Replication 5.5 Update 4 - New Features and Issues Resolved”, on page 9
- “Zerto Virtual Replication 5.5 Update 3 - New Features and Issues Resolved”, on page 11
- “Zerto Virtual Replication 5.5 Update 2 - New Features and Issues Resolved”, on page 14
- “Zerto Virtual Replication 5.5 Update 1 - New Features and Issues Resolved”, on page 16
- “Zerto Virtual Replication 5.5 - New Features and Issues Resolved”, on page 20
- “Known Issues”, on page 28
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.

Note: Zerto will not support customers that use outdated 3rd party software until they upgrade. Zerto will make an effort to help, but no escalations or fixes will be provided.

Installing Zerto Virtual Replication Version 5.5

The following platforms are supported for the installation:
■ Windows Server 2008 R2 SP1 with KB3033929 and KB2864202
■ Windows Server 2012 base and Windows Server 2012 R2
■ Windows Server 2016

IMPORTANT: See Known Issues, “File Level Restore”, on page 33.

The following application is required:
■ 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.

Note: When installing in a Hyper-V environment, you can ignore any warnings about Integration Services not being updated for the VRAs.

Installing Zerto Cloud Manager Version 5.5

The following platforms are supported for the installation:
■ Windows Server 2008 and higher
■ Windows 7, 8, or 10
■ Windows Server 2016

The following application is required:
■ 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.
Installing Zerto Cloud Appliance Version 5.5

The following platforms are supported for the installation:

The following applications are required:
- .NET 4.5.2. The .NET 4.5.2 installation package is included with the Zerto Virtual Replication 5.5 installation package.

Upgrading Zerto Virtual Replication and/or Zerto Cloud Manager to Version 5.5

**NOTE:**
Upgrade from Zerto Virtual Replication 5.5U4P1 to 6.0U1 is not supported (will be supported in 6.0U2).

**IMPORTANT Upgrade Notice:**
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 to v5.5, it is important to follow the sizing guidelines. **Failure to follow the sizing guideline can result in software errors, and not just performance degradation.**

For more information, click to review:
- Sizing Considerations for Zerto Virtual Replication
- Migrating the Zerto Virtual Replication Database to Microsoft SQL Server
- Upgrading the Zerto Virtual Replication Environment

Guidelines and Considerations:
If Zerto Cloud Manager is used, upgrade the Zerto Cloud Manager before upgrading the Zerto Virtual Managers.
You can use a Zerto Cloud Manager running Zerto Virtual Replication 5.5Ux with Zerto Virtual Managers running 5.0Ux.
Zerto Cloud Manager (ZCM) supports Zerto Virtual Manager (ZVM) of N and N-1 versions.
ZCM of version 5.5 supports ZVM of versions 5.5, 5.0 and their updates.
For more information, see Upgrading the Zerto Virtual Replication Environment.

General Information:
- You do not need to move workloads during an upgrade.
- When upgrading a protected vSphere environment, after the upgrade, a bitmap sync is performed for both protected and recovered VPGs.
- When upgrading a protected Hyper-V environment, after the upgrade, the following occurs:
  - If you are upgrading from 5.5 a bitmap sync is performed for both protected and recovered VPGs.
  - Otherwise, a delta sync is performed for the protected VPGs and a bitmap sync is performed for recovered VPGs.
- In a Hyper-V environment, SCVMM 2016 is supported on ZVR clean installations only.
- Zerto Cloud Appliance is supported for Azure and AWS (ZCA) on:
  - Windows 2016
  - Windows 2012R2
Zerto Analytics

- “Before Getting Started with Zerto Analytics”, on page 6
- “Accessing the Zerto Analytics Portal”, on page 6
- “Zerto Analytics APIs”, on page 6
- “Zerto Analytics Dashboard”, on page 6
- “Zerto Analytics VPGs List”, on page 7
- “Zerto Analytics VPG Details”, on page 7
- “Zerto Analytics Reporting”, on page 7
- “Zerto Analytics Monitoring”, on page 7
- “Zerto Analytics GUI”, on page 8
- “Zerto Analytics ECE and CSP Licenses”, on page 8
- “Zerto Analytics Licensing Usage”, on page 8

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 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.

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.

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.
New Features in Zerto Virtual Replication 5.5 Update 4

Zerto Virtual Replication version 5.5U4 includes the following new features:

- Remote Upgrade for Cloud Service Providers
- Tenants
- vCloud Director

Remote Upgrade for Cloud Service Providers

- Upgrade Manager: A new feature was introduced which allows Cloud Service Providers to remotely upgrade their end customer sites. This functionality is accessible from MyZerto > Cloud Control > Upgrade Manager tab.
  - Centralized monitoring: Allows Cloud Service Providers an overall view of all their end customers' ZVR versions.
- Improved service of CSP customers: Cloud Service Providers will be able to keep their customers Zerto Virtual Replication software always up to date.
- Data Protection always-on: Upgrading of Cloud environments is now facilitated by keeping the end customer up-to-date with a compatible version to the provider.
- Recommended Version: The latest version that the customer site can be upgraded to, so it will maintain compatibility with its peer cloud sites.
- Remote upgrade: The Upgrade Manager will enable remote upgrade of end customers Zerto Virtual Replication.

Remote upgrade functionality is permitted when:

- The customers ZVR instance is paired to a CSP-deployed ZCC and does not have a perpetual license applied.
- Online Services is enabled on both the CSP ZVR instance and the remote customer instance (enabled by default).
- The end customer ZVR instance should be able to transmit over port 443.

Prerequisites:

- The customer’s ZVM is v6.0 or above, or v5.5U4.

Considerations:

- Zerto Recommended Version is based only on the Zerto Virtual Manager version. It does not include VRA versions.
- Prior to the Remote Upgrade operation, the Cloud Service Provider administrator should verify that the end customer VRAs and ZVMs are the same version.
- VRAs are automatically upgraded with the Zerto Virtual Manager. Users cannot upgrade the VRAs only via the application.
- The logged-in Cloud Service Provider needs permissions to perform Remote Upgrade, otherwise the Remote Upgrade option is disabled.
- Users are unable to stop or rollback the Remote Upgrade operation once it has started; the operation begins following a user clicking Upgrade on the confirmation pop up message.
- Cloud Service Providers with Zerto Virtual Replication versions 5.0x and 5.5x will be able to benefit from the centralized monitoring view of all their end customers’ Zerto Virtual Replication versions, but Recommended Version details will not appear. In addition, they will not have the option to Remote Upgrade.
- The end customer site displayed in the new ‘Upgrade Manager’ tab is based on the pairing to the Cloud Provider site. In some cases an end customer will appear without a site. (The details are filled once a VPG is created for the end customer).
- When using One-to-Many feature: Customer sites that are paired with a site that is not a Cloud site, will not appear in the list of customer sites.
Tenants
- Tenants is now available on myZerto > Cloud Control > Tenants. This service allows Cloud Service Providers to register new and existing customers to their respective ZORG.

vCloud Director
- Zerto Virtual Replication supports vCloud Director version 9.1.

Issues Resolved in Version 5.5 Update 4
- “Resolved Issues: General”, on page 10

Resolved Issues: General

<table>
<thead>
<tr>
<th>CASE NUMBER</th>
<th>ISSUES RESOLVED IN VERSION 5.5U4</th>
</tr>
</thead>
<tbody>
<tr>
<td>104017, 105367, 110994, 111094</td>
<td>On-premise environments: Resolved an issue where a VRA on the protected VPG was not found, which in some cases led to the ZVM not being able to communicate with the hypervisor.</td>
</tr>
</tbody>
</table>
| 115938 | Resolved an issue for a vSphere environment, where in some rare cases, typically for environments running a large number of peer ZVM sites, a rise in RPO of up to several minutes may occur after upgrading to a 5.5 release.  
**Note:** Fixed from version 5.5U4P1 |
| 119384, 120117, 119722, 120101, 120137, 120149 | Resolved an issue which occurred during an upgrade/migration, or of a reinstallation of vCenter, where the vCenter database was not preserved and ZVR was not reinstalled. Customers are still highly encouraged to follow the instructions provided in this field notice and validate the safety of their environment, for cases where the Reinitializing or replacing of the vCenter database was done before upgrading to this patch.  
**Note:** Fixed from version 5.5U4P2 |
Zerto Virtual Replication 5.5 Update 3 - New Features and Issues Resolved

New Features in Zerto Virtual Replication 5.5 Update 3

Zerto Virtual Replication version 5.5U3 includes the following new features:

- “API”, on page 11
- “Azure”, on page 11
- “vCD”, on page 11

### API

It is now possible to upgrade several VRAs in parallel, by specifying a list of VRA IDs to upgrade.

### Azure

**Germany Region Support**

Failing over VMs to Azure in the Germany region is now supported.

**Ensuring Tolerant IP when Failing Over or Moving to Azure**

If any of the VPGs have at least one VM configured with a static IP, but the static IP is in use on the recovery site, the static IPs that are in use are replaced with dynamic IPs.

**Default Values of VMs When Failing Over or Moving has Changed**

The default values for a VM failing over or moving to Azure have changed as follows:

- VM Series: Dv2-series (instead of D-series)
- VM Size: Standard D1_v2 (instead of Standard D1)

### vCD

There is now improved RTO when replicating to vCD 9, and when Guest Customization is enabled.
## Resolved Issues: Hyper-V

<table>
<thead>
<tr>
<th>CASE NUMBER</th>
<th>ISSUES RESOLVED IN VERSION 5.5U3</th>
</tr>
</thead>
<tbody>
<tr>
<td>104313</td>
<td>Resolved an issue caused by the inclusion of a domain name inside the user name field (in addition to its being inserted in domain name field) which prevented the ZVM from connecting to the SCVMM.</td>
</tr>
<tr>
<td>106034, 109051</td>
<td>Resolved multiple issues of customers experiencing BSOD crashes on Hyper-V hosts.</td>
</tr>
<tr>
<td>108669, 109553</td>
<td></td>
</tr>
<tr>
<td>94091, 103026</td>
<td></td>
</tr>
<tr>
<td>107242, 108092</td>
<td></td>
</tr>
<tr>
<td>110410</td>
<td></td>
</tr>
</tbody>
</table>

## Resolved Issues: vCenter

<table>
<thead>
<tr>
<th>CASE NUMBER</th>
<th>ISSUES RESOLVED IN VERSION 5.5U3</th>
</tr>
</thead>
<tbody>
<tr>
<td>105432, 103501, 008328, 21029</td>
<td>vSphere to vSphere, multi-locale environments: Solved an issue that occurred when the user tried to perform recovery operations, which resulted in the VM not being connected to a network.</td>
</tr>
<tr>
<td>21029, 014815</td>
<td></td>
</tr>
<tr>
<td>017225, 21141</td>
<td></td>
</tr>
<tr>
<td>100252</td>
<td></td>
</tr>
</tbody>
</table>

## Resolved Issues: vCD

<table>
<thead>
<tr>
<th>CASE NUMBER</th>
<th>ISSUES RESOLVED IN VERSION 5.5U3</th>
</tr>
</thead>
<tbody>
<tr>
<td>104317</td>
<td>Environments with vCD and several OrgVDCs: Resolved an issue when creating a new VPG, whereby the vApp Network Mapping area did not appear in the Recovery tab.</td>
</tr>
<tr>
<td>107207</td>
<td>Fixed an issue that occurred when replicating to a vCD environment, using preseeding, which caused VPG creation to fail.</td>
</tr>
</tbody>
</table>
## Resolved Issues: Azure

<table>
<thead>
<tr>
<th>CASE NUMBER</th>
<th>ISSUES RESOLVED IN VERSION 5.5U3</th>
</tr>
</thead>
<tbody>
<tr>
<td>108157</td>
<td>■ Any platform to Azure: Resolved an issue caused by an Azure file naming limitation which caused the VPGs to lose connection and not sync.</td>
</tr>
</tbody>
</table>

## Resolved Issues: VRA

<table>
<thead>
<tr>
<th>CASE NUMBER</th>
<th>ISSUES RESOLVED IN VERSION 5.5U3</th>
</tr>
</thead>
<tbody>
<tr>
<td>105429, 106501</td>
<td>■ Resolved an issue which occurred after the recovery host VRA was changed, where duplicate cached information caused issues such as; unable to complete a failover to the renamed host, failure in the Alert notifications of the replicated disks, the VPG stuck in state Needs Configuration, and unable to create a VPG.</td>
</tr>
<tr>
<td>106533, 106722</td>
<td>■ Note: Fixed from version 5.5U3P1</td>
</tr>
<tr>
<td>106930, 106977</td>
<td>■ 107003, 90093</td>
</tr>
<tr>
<td>104457, 106501</td>
<td>■ Resolved an issue which caused the ZVM to crash when a protected VM on a host without a VRA is moved to a host with a VRA.</td>
</tr>
<tr>
<td>106977, 107100</td>
<td>■ Resolved an issue that prevented ZVM from generating any checkpoints when running localized ZVM in the languages Finnish, Norwegian and Serbian.</td>
</tr>
<tr>
<td>107207, 107342</td>
<td>■ Upgrading ZCM: Resolved an issue where a ZCM upgrade resulted in an empty ‘Sites’ tab.</td>
</tr>
<tr>
<td>107380, 107395</td>
<td>■ vCenter and Hyper-V environments: Upgrading the VRA no longer resets the VRA VM to 1 CPU.</td>
</tr>
<tr>
<td>107649, 107775</td>
<td>■ DraaS, and vCD &lt;-&gt; VC environments: Resolved an issue which prevented the user from exporting the VPG’s CSV file.</td>
</tr>
</tbody>
</table>

## Resolved Issues: ZCM

<table>
<thead>
<tr>
<th>CASE NUMBER</th>
<th>ISSUES RESOLVED IN VERSION 5.5U3</th>
</tr>
</thead>
<tbody>
<tr>
<td>100613</td>
<td>■ Upgrading ZCM environments: Resolved an issue caused by a ZCM upgrade directly from v4.0 to v5.0, without first installing v4.5. This caused the ZCM service to crash, and the VPGs to be indicated as invalid resource pools. From this version, users can no longer omit a version when upgrading.</td>
</tr>
</tbody>
</table>

## Resolved Issues: General

<table>
<thead>
<tr>
<th>CASE NUMBER</th>
<th>ISSUES RESOLVED IN VERSION 5.5U3</th>
</tr>
</thead>
<tbody>
<tr>
<td>104357</td>
<td>■ Environments with SCVMM and vCenter: Resolved an issue which caused the ZVM to crash when a protected VM on a host without a VRA is moved to a host with a VRA.</td>
</tr>
<tr>
<td>107452</td>
<td>■ Resolved an issue that prevented ZVM from generating any checkpoints when running localized ZVM in the languages Finnish, Norwegian and Serbian.</td>
</tr>
<tr>
<td>104573, 107938</td>
<td>■ Upgrading ZCM: Resolved an issue where a ZCM upgrade resulted in an empty ‘Sites’ tab.</td>
</tr>
<tr>
<td>107953, 107764</td>
<td>■ vCenter and Hyper-V environments: Upgrading the VRA no longer resets the VRA VM to 1 CPU.</td>
</tr>
<tr>
<td>108295, 108375</td>
<td>■ DraaS, and vCD &lt;-&gt; VC environments: Resolved an issue which prevented the user from exporting the VPG’s CSV file.</td>
</tr>
</tbody>
</table>
Zerto Virtual Replication 5.5 Update 2 - New Features and Issues Resolved

New Features in Zerto Virtual Replication 5.5 Update 2

Zerto Virtual Replication version 5.5U2 includes the following new features:
- “Azure”, on page 14
- “VCloud Director”, on page 14

Azure

New Microsoft Azure Region
- Azure Government region is now supported.

VCloud Director
- vCloud Director 9.0 is now supported. See the Interoperability Matrix for more information.

Issues Resolved in Version 5.5 Update 2

- “Resolved Issues: vCenter Server”, on page 14
- “Resolved Issues: Hyper-V”, on page 15
- “Resolved Issues: Microsoft Azure”, on page 15
- “Resolved Issues: VRA”, on page 15
- “Resolved Issues: General”, on page 15

Resolved Issues: vCenter Server

<table>
<thead>
<tr>
<th>CASE NUMBER</th>
<th>ISSUES RESOLVED IN VERSION 5.5U2</th>
</tr>
</thead>
<tbody>
<tr>
<td>104559, 104322</td>
<td>vCenter keeps its names with case sensitivity. As Zerto did not use case sensitivity, this sometimes caused site synchronization issues. Starting from this version, Zerto uses case sensitivity for names.</td>
</tr>
<tr>
<td>105749, 106038</td>
<td></td>
</tr>
<tr>
<td>106361</td>
<td></td>
</tr>
<tr>
<td>85699</td>
<td>Resolved an issue that rarely occurred when performing failover live with reverse configuration, and which caused the failover live to fail. In this fix we allow the ZVM to be more tolerant to slow vCenter operations.</td>
</tr>
<tr>
<td>107775</td>
<td>For VMware customers: Resolved an issue that occurred after installing or upgrading to ZVR versions 5.0, 5.0U1, 5.0U2 or 5.5, 5.5U1, 5.5U2, and when the MSI application file was left open. Any existing issues that might have occurred are now resolved with this fix. Prior to installing, close any instance of ZVR 5.0 or ZVR 5.5 MSI installers if any are listed in Windows Task Manager.</td>
</tr>
</tbody>
</table>

Note: Relevant from version 5.5U2P2
## Resolved Issues: Hyper-V

<table>
<thead>
<tr>
<th>CASE NUMBER</th>
<th>ISSUES RESOLVED IN VERSION 5.5U2</th>
</tr>
</thead>
<tbody>
<tr>
<td>20009, 90592 98242, 59466</td>
<td>Fixed an issue that occurred when performing Failover from any platform to Hyper-V, when the protected NIC was configured with a static IP, and which caused the user to redefine re-IP.</td>
</tr>
<tr>
<td>00094091, 103026</td>
<td>Resolved an issue caused by access to an already freed IO after the IO operation completed synchronously with an error on the protected VM, and which caused the Hyper-V host to crash.</td>
</tr>
</tbody>
</table>

## Resolved Issues: Microsoft Azure

<table>
<thead>
<tr>
<th>CASE NUMBER</th>
<th>ISSUES RESOLVED IN VERSION 5.5U2</th>
</tr>
</thead>
<tbody>
<tr>
<td>105180</td>
<td>Made Azure ZCA environment data collection more resilient to inconsistencies of case sensitive instance size names which might be returned from the Azure API.</td>
</tr>
</tbody>
</table>

## Resolved Issues: VRA

<table>
<thead>
<tr>
<th>CASE NUMBER</th>
<th>ISSUES RESOLVED IN VERSION 5.5U2</th>
</tr>
</thead>
<tbody>
<tr>
<td>105082</td>
<td>After upgrading recovery VRAs in a heavily utilized VM environment, VPGs no longer go into a ‘Recovery Storage Error’ state.</td>
</tr>
</tbody>
</table>

## Resolved Issues: General

<table>
<thead>
<tr>
<th>CASE NUMBER</th>
<th>ISSUES RESOLVED IN VERSION 5.5U2</th>
</tr>
</thead>
<tbody>
<tr>
<td>00102449</td>
<td>The Resources Report was fixed, and no longer contains empty Bandwidth and Throughput information, when such information exists.</td>
</tr>
<tr>
<td>103490</td>
<td>RPO is no longer affected when checkpoint dilution takes longer than expected.</td>
</tr>
<tr>
<td>103490</td>
<td>A time difference between the recovery ZVM and protected ZVM clocks will no longer affect the RPO calculation.</td>
</tr>
<tr>
<td>105147</td>
<td>Fixed an issue which caused all Events to appear, instead of only the Events for Today’s date.</td>
</tr>
<tr>
<td>105147</td>
<td>Fixed the GUI so that in the VPG View screen, all the relevant columns now appear for all platforms.</td>
</tr>
</tbody>
</table>
Zerto Virtual Replication 5.5 Update 1 - New Features and Issues Resolved

■ “New Features in Zerto Virtual Replication 5.5 Update 1”, on page 16
■ “Issues Resolved in Version 5.5 Update 1”, on page 17

New Features in Zerto Virtual Replication 5.5 Update 1

Zerto Virtual Replication version 5.5U1 includes new features which you can view, according to the following sub sections:
■ “Azure”, on page 16
■ “AWS”, on page 16
■ “Hyper-V”, on page 16
■ “APIs”, on page 16

Azure

New Microsoft Azure Regions
China region is now supported.

Storage Account Selection in the ZCA Installation
When installing the ZCA, you can now select a pre-existing standard storage account for replication.

Increased Max Volume Disk Size
Zerto now supports replication of VM’s with disk sizes of up to 4TiB. This is following Microsoft’s announcement of extending the maximum disk size from 1TiB to 4TiB.

AWS

AWS Low RTO
When failing over and reaching the maximum provisioned IOPS using io1 disks, Zerto automatically switches to using gp2 disks. This is to prevent the failover from aborting.

Hyper-V

Volume resizing best practice is to perform resizing at the SCVMM level, rather than at the Hyper-V level. However, in some cases, administrators perform volume re-sizing at the Hyper-V level. This causes various system issues, such as a Windows Stop Error, or BSoD. From v5.5U1, ZVR will propagate volume resizing which is performed at the Hyper-V level, to the SCVMM level. This is to avoid the system errors, which can potentially cause impact on continuous protection.

Note: This change will only affect resize to expand. Shrinking is not supported from the Hyper-V level.

APIs

Datastore Cluster Support in API
The VPG Settings REST API now supports the use of datastore clusters for recovery volumes.
### Resolved Issues: vCenter Server

<table>
<thead>
<tr>
<th>CASE NUMBER</th>
<th>ISSUES RESOLVED IN VERSION 5.5U1</th>
</tr>
</thead>
</table>
| 100252, 21141  
21029,  
00017225,  
00014815 | vSphere to vSphere, multi-locale environments: Solved an issue that occurred when the user tried to perform recovery operations, which resulted in the VM not being connected to a network. |
| 22125, 89642 | VMware environments: Re-IP now works when protecting certain Linux virtual machines, RHEL and Centos, when their networks config files use the parameter HWAddr. |
| 91988, 97481,  
100648 | vSphere and vCD environments: Improved the ZVM/vCenter initialization process which caused VPG creation to fail in some scenarios. |
| 88624, 94739,  
99085 | vSphere clustered environments: There is no longer a risk of failure in the change recovery host when there are a few host clusters in the recovery vSphere. |
| 101952F | vSphere environments: The ZVM no longer fails in recovery operations, if the vSphere Client plugin is not installed. |
| 103042, 103582,  
104109, 104319,  
103988, 104104,  
103631 | Environments with Custom or Cloud License: Fixed an issued that occurred when using a Cloud or Custom license with any of the following features activated, ZCM, or vCD, or cross replication License Features flags, and which caused failure of adding sites to ZCM, and failure to pair sites. |
| 104285 | vSphere environments, with ZVR versions lower than v5.5U1: Fixed an issue where in some cases, previous ZVR versions had created multiple mapping records in their Database. This issue could have caused initialization problems when upgrading, and in addition, it could have caused unprotected VMs, or VPGs to be paused and in the state of needs configuration, or ghost VRAs. |

### Resolved Issues: Cross-Replication

<table>
<thead>
<tr>
<th>CASE NUMBER</th>
<th>ISSUES RESOLVED IN VERSION 5.5U1</th>
</tr>
</thead>
</table>
| 99429, 101215,  
101541, 99096,  
102162, 101927 | Environments replicating to Cloud (Microsoft Azure or AWS): Concurrency of the operations to the Cloud was enhanced, in order to significantly reduce the time it takes to complete processes such as FOT. |
| 100146, 100283, 99807,  
100627, 101248, 101245,  
101387, 99751 | A non-responsive host, with a VRA installed, at a protected site no longer prevents the creation of a VPG with VMs residing on other hosts. A host can be non-responsive due to a non-responsive VRA, or the host itself being in maintenance mode. |
### Resolved Issues: Hyper-V

<table>
<thead>
<tr>
<th>CASE NUMBER</th>
<th>ISSUES RESOLVED IN VERSION 5.5U1</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Clustered Hyper-V environments: The availability state of clustered environments was changed from the ZVM installation defaults, to avoid a reappearing SCVMM refresh task.</td>
</tr>
<tr>
<td>100916, 103123</td>
<td>Hyper-V environments: ZVM was made more robust to failures while retrieving data of individual VMs in SCVMM. These failures sometimes caused the ZVM GUI to be grayed out (empty of data).</td>
</tr>
<tr>
<td>111290</td>
<td>Changing the recovery Datastore of the Journal, while editing a VPG, no longer fails.</td>
</tr>
</tbody>
</table>

### Resolved Issues: Microsoft Azure

<table>
<thead>
<tr>
<th>CASE NUMBER</th>
<th>ISSUES RESOLVED IN VERSION 5.5U1</th>
</tr>
</thead>
<tbody>
<tr>
<td>91786</td>
<td>Microsoft Azure environments: Resolved a Microsoft Azure issue where the registration of the client’s application secret was not authorized in Azure. When the secret was not authorized, the user could not sync to the Azure peer site, create VPGs, move a VM, or replicate to Azure.</td>
</tr>
<tr>
<td>98402</td>
<td>Microsoft Azure environments: Resolved a time-out issue during ZCA installations in Microsoft Azure environments, which caused the ZCA installation to fail.</td>
</tr>
</tbody>
</table>

### Resolved Issues: AWS

<table>
<thead>
<tr>
<th>CASE NUMBER</th>
<th>ISSUES RESOLVED IN VERSION 5.5U1</th>
</tr>
</thead>
<tbody>
<tr>
<td>95507</td>
<td>AWS environments: Updated the GUI to enable the user to select another VPG which has a subnet/security group, and not to block the VPG creation flow if the VPG does not have a subnet/security groups related to their Virtual Private Cloud (VPC).</td>
</tr>
<tr>
<td>103665</td>
<td>AWS environments: Updated the code logic so that if failover is stopped by the user (meaning, the selected importer is terminated), rollback will run immediately, and not after a timeout.</td>
</tr>
<tr>
<td>103807</td>
<td>AWS environments: Fixed an error that occurred when FO to AWS, while importing a volume using the zimporter.</td>
</tr>
</tbody>
</table>

### Resolved Issues: General

<table>
<thead>
<tr>
<th>CASE NUMBER</th>
<th>ISSUES RESOLVED IN VERSION 5.5U1</th>
</tr>
</thead>
<tbody>
<tr>
<td>121329</td>
<td>Fixed an issue which occurred during cloning of a VPG, where the Clone operation hung, when there is a disconnection of recovery/remote VRA.</td>
</tr>
<tr>
<td>20372, 22839</td>
<td>The default values of the Commit and Rollback Policy are now verified, to avoid use of values that cannot be selected by the user, which could sometimes cause the ZVM to crash.</td>
</tr>
<tr>
<td>27762, 100098, 100182, 30654, 86120, 93944, 94497, 95116, 94712, 95099, 95044, 97680</td>
<td>For upgrades from v5.5U1: To reduce failures when upgrading, a monitor was added to delete any undo steps which are older than 1 week, and which don’t belong to any VPG.</td>
</tr>
<tr>
<td>89804, 104434, 104122</td>
<td>Fixed an issue that occurred after removing a volume while it was still part of a protected VM journal definition, which caused issues with ZVM and VRA synchronization, and which subsequently caused the VRA to crash.</td>
</tr>
<tr>
<td>90558</td>
<td>Bitmap syncs, specifically in environments which experience frequently recurring bitmap syncs, are now more efficient and no longer perform costly read operations from the remote disk.</td>
</tr>
<tr>
<td>CASE NUMBER</td>
<td>ISSUES RESOLVED IN VERSION 5.5U1</td>
</tr>
<tr>
<td>-------------</td>
<td>---------------------------------</td>
</tr>
<tr>
<td>93528</td>
<td>When Upgrading: Changed the reflection loading process during upgrades to prevent ZVM from crashing.</td>
</tr>
<tr>
<td>97482</td>
<td>Fixed an issue of VRA’s reaching their memory limit due to delivering a large number of checkpoints to the ZVM. This was achieved by limiting the number of checkpoints ZVM requests from VRA, when necessary, to prevent VRA from reaching their memory limit and thereby disconnecting from ZVM.</td>
</tr>
<tr>
<td>97400</td>
<td>Eliminated a condition which caused the ZVM service to crash when collecting database in a large scale environment.</td>
</tr>
<tr>
<td>98861</td>
<td>Added verifications to the Log Archiver to avoid situations where the Log Archiver uses up all the free space in the drive, to the point of no bytes free, causing VRAs to disconnect.</td>
</tr>
<tr>
<td>98526</td>
<td>Environments with an external SQL database: Fixed an issue where the customer was unable to install ZVM with an external SQL database due to special characters used in the account password.</td>
</tr>
<tr>
<td>99848</td>
<td>Selecting new default Journal settings in the Edit VPG window now only applies to new VMs.</td>
</tr>
<tr>
<td>100463</td>
<td>RTO presented in Recovery reports table now displays the time as days/hours/minutes/seconds.</td>
</tr>
<tr>
<td>104044</td>
<td>Fixed synchronization issues which occurred after pairing ZCA and ZVM.</td>
</tr>
<tr>
<td>102399</td>
<td>Fixed incorrect retrial behavior in the RLC resiliency logic.</td>
</tr>
</tbody>
</table>
Zerto Virtual Replication 5.5 - New Features and Issues Resolved

New Features in Zerto Virtual Replication 5.5

Zerto Virtual Replication version 5.5 includes new features which you can view, according to the following sub sections:

- “Azure”, on page 20
- “AWS”, on page 21
- “Hyper-V”, on page 22
- “VMware VSphere”, on page 22
- “VPG Management”, on page 22
- “Database”, on page 22
- “APIs”, on page 22
- “Infrastructure”, on page 23
- “Upgradeability”, on page 23
- “Security”, on page 23

Azure

- “Replication Out of Azure for Failback, Protection and Recovery of Production Workloads”, on page 20
- “NICs and Cores Validations”, on page 20
- “Azure Tagging”, on page 20

Replication Out of Azure for Failback, Protection and Recovery of Production Workloads

Protection of workload in Azure for failback is now supported.

Zerto supports replication to Azure for Business Continuity/Disaster Recovery and migration purposes now with the ability to automatically failback and reverse protect your mission critical applications to on-premise hypervisor based datacenters.

Features such as Test and Live Failover, Move, Offsite Clone, Journal File level Restore, One to Many, Re-IP, Pre/post scripts, 30 days journal and many more are also supported when protecting workloads in Azure.

Always on replication when protecting Azure workload is limited to:

- Workloads that reside on a Zerto Standard Storage Account. All disks must reside on a Zerto Standard Storage account.
- Workloads on a Premium Storage Account are not supported.
- Workloads with Managed disks are not supported.
- Recovery of applications that write to multiple disks is supported with Move operation
- VSS checkpoint insertion is not supported
- Tagged checkpoint for applications that run on multiple volumes and span across multiple VMs is not supported.

NICs and Cores Validations

New validations were added to recovery operations for improved recoverability in Azure.

- The first validation checks that there are enough available Cores in the subscription at the time of the operation so that recovery will be successful.
- The second validation checks that the number of NICs attached to the protected VMs is supported by the selected instance sizes in the VPG and VM settings, in the Create Edit VPG wizard.

Azure Tagging

Unique Zerto tags for all Azure resources that are created by Zerto were added for better management and easy tracking of costs and consumption.
**AWS**

- “AWS Recovery Improvements”, on page 21
- “New AWS Regions”, on page 21

**AWS Recovery Improvements**

- Improved AWS recovery automation greatly increases the speed of recovering applications to AWS with up to 12x faster recovery times (RTO) in AWS. This makes it even easier to utilize the public cloud for Disaster Recovery, or for testing and development on a near real-time replica environment.

- The solution is based on a new proprietary import mechanism which creates a temporary Instance per Volume (zImporter), and rehydrating data from S3 to EBS disk.

- The zImporter Instance is based on official Linux AMI.

- The default ZImport instance type is c4.8xlarge and the AWS EC2 default maximum instance quota is 20. If during the creation of ZImport instances the maximum EC2 instance quota is reached, the creation of the next and subsequent ZImport instances will be queued, increasing the RTO.

- If during recovery operations, the ZVM identifies a VPG with the potential to exceed the EC2 instance quota, the user will receive an alert with advice to contact AWS support to increase the service limits in order to improve RTO.

- When using either of the ZImport methods, each volume is created with EBS disk of type io1 with 1000 EBS Provision IOPS allocated.

  EBS disk type can be changed post recovery without downtime. See the relevant AWS documentation.

  The minimum disk size for io1 is 4GB.

- The default Max EBS Provision IOPS quota in a region across all io1 disks is 40000 EBS Provision IOPS, meaning that with 1000 EBS Provision IOPS per volume, the maximum possible number of volumes is 40.

  If the Max EBS Provision IOPS quota is reached, the failover process will fail.

  To increase the Max EBS Provision IOPS quota, contact AWS support.

  Therefore, before using the new import methods, users are strongly advised to contact AWS support to increase the Max EBS Provision IOPS quota. For example, increasing the Max EBS Provision IOPS quota to 200,000.

When importing, the user has two new importing options:

- (Default option) The data volumes use the zImporter, and the Boot/OS volume use AWS APIs.
  - Or -
  
- All volumes are imported using zImporter.

  - If the selected recovery instance type supports enhanced networking, additional networking drivers need to be installed on the production VM. For example, for Windows:

  - If you have Windows OS, you will need to install additional drivers which are listed in the following link:

  The following Linux distributions are supported:

  - Red Hat Enterprise Linux 6.5
  - Ubuntu 13.04
  - Ubuntu 12.10
  - Oracle 6.6
  - Debian 7.4
  - Debian 6.0.8
  - Debian 7.2.0

**New AWS Regions**

- Support for additional AWS regions was developed in v5.0U2. See the v5.0 Interoperability Matrix for details.

- In addition, the AWS Gov Cloud (US) Region is now supported.
Hyper-V

- **Zerto Hyper-V Infrastructure**: The Zerto Hyper-V infrastructure was improved for better performance and error handling. Clearer messages are presented to the end user.
- Zerto Virtual Replication supports SCVMM 2016. Supported on ZVR **clean installations** only.

VMware vSphere

- Event VM restored from snapshot (or - VM restored to snapshot event):
  Zerto triggers a warning event every time a protected VM is restored to an older snapshot, stating that the user should force sync the VPG to resume protection. This is done in order to ensure consistency of replica data when restoring a production VM from a snapshot.
- vSphere version 6.5 is now supported. See the Interoperability Matrix for specific features support.
- ESX 6.5 Update 1 is now supported. See the Interoperability Matrix for specific features support.

VPG Management

Zerto Virtual Replication version 5.5 includes enhanced management of virtual environment changes, including robust handling of removing VMs from VPGs and from the hypervisor inventory:

- If a VM is removed from the hypervisor inventory, Zerto Virtual Replication stops the replication and all the VMs are recoverable.
- If a VM is removed from a VPG, Zerto Virtual Replication keeps the history of the VPG, but the removed VM cannot be recovered.
- If the user deletes or moves a protected VM from a vCD vApp, Zerto Virtual Replication keeps the history of the VPG, but the removed VM cannot be recovered.
- If a VM belongs to a protected vCD vApp and the user removes this VM from vCenter, the VPG goes into Pause mode. While the VPG is in Pause mode, the recovery of the VPG is possible to any point in time.
- If a VM is protected by more than one VPG, and if the user performs a FOL/Move and reverse protection, all other VPGs that protect that same VM will go into Pause mode.

Database

**SQL Server Express LocalDB**: In clean installations, when the user selects to use the embedded database, SQL Server Express LocalDB is now installed, instead of SQL Compact Edition. If the user selects to connect to an external database, there is no change in behavior. When the user performs an upgrade, the user’s database remains unchanged.

APIs

- “ZVM APIs”, on page 22
- “ZCM API”, on page 23

ZVM APIs

- **Pair/Unpair APIs**: A new API was developed in v5.0U2, allowing to pair two sites. This is available under Peer Sites API.
- **Reverse Protection Support**: From v5.0U2 it is possible to configure reverse protection when invoking a failover API request. The reverse protection settings are the default ones.
- **Datastore Selection in Clone API**: From v5.0U2 it is possible to specify a datastore when invoking the CloneStart API request. The datastore selection is not available when the recovery site is a public cloud or VCD.
- **Support of VPG Settings APIs when Creating VPGs from vCD to vCD**: A new API is now available, allowing the creation and editing of VPGs going from a vCD environment to a vCD environment. The APIs allow editing all the settings that are available in the UI. The new APIs are available under the relevant objects of the existing VPG Settings APIs. Additionally,
Zerto introduced additional Storage policies and orgVDCs networks to allow the user to specify the relevant storage profiles and network mapping.

ZCM API

- **Manage ZORGs:** From v5.0U2 it is possible to execute ZORG related operations, such as create, edit and remove, using REST APIs.
- **Manage ZCCs:** It is now possible to execute ZCC related operations, such as install, remove, re-deploy and so on, using REST APIs.
- **Service profile:** It is now possible to execute Service Profile related operations, such as create, edit and remove, using REST APIs.
- **Sites:** It is now possible to Add, Remove and Get sites, using REST APIs.
- **Resources:** It is now possible to Add, update and delete ZCM resources, to Get resource types, get ZORG resource and get available resources, using REST APIs.
- **ZORG permissions:** It is now possible to Update and Get ZORG permissions, using REST APIs.
- **ZORG ZSSP credentials:** It is now possible to Update and Get ZORG ZSSP credentials, using REST APIs.
- **Supporting APIs:** It is now possible to Get cloud sites, get static route groups, get hosts, get data stores and get networks, using REST APIs.

Infrastructure

- Checkpoints: Improvements were made to enable more efficient management and use of the checkpoints.
- ZVM now identifies every time a protected VM is restored to a snapshot, and registers an event accordingly.

Upgradeability

When upgrading, a new window appears, with the option **Auto-Upgrade VRAs** enabled by default. With this option enabled, the VRA upgrade will run automatically, thus enabling a smooth upgrade of both the ZVM and the VRAs. Zerto recommends that you track the VRA upgrade via the user interface.

Security

**ZCC Hardening:**

- In order to increase security for Cloud Service Providers offering DRaaS and to enable them to adhere to security compliance requirements, a new way of ZVM to ZCC communication is introduced. With the new method, when a new ZCC is deployed, the ZVM communicates with the ZCC using private/public key. In order to apply it to an existing ZCC, redeploy the ZCC using the "Redeploy" option.
Resolved Issues: vCenter Server

<table>
<thead>
<tr>
<th>CASE NUMBER</th>
<th>ISSUES RESOLVED IN VERSION 5.5</th>
</tr>
</thead>
<tbody>
<tr>
<td>30656</td>
<td>In VMware and Hyper-V environments, Failover Test and Failover Live operations are now tolerant of re-IP failures and will not fail in the event of a re-IP failure. An informative message is displayed when the failover operation completes.</td>
</tr>
<tr>
<td>84164, 94884</td>
<td>In case of connectivity problems between ZVMs during Failover Live or Failover Test, prior to v5.5, in some cases both sides of the VPG were considered to be the protected side.</td>
</tr>
<tr>
<td>97343</td>
<td>The Get-VmsReplicatingToHost cmdlet will not fail if there is a VM which does not have a recovery host.</td>
</tr>
<tr>
<td>83879</td>
<td>The code was fixed to address connection timeout issues, which were caused by connection leaks, when installing ZVM with an external SQL Server Database.</td>
</tr>
<tr>
<td>84630</td>
<td>The Rest API call for /v1/vra/{VraIdentifier} will not fail even if some values are missing.</td>
</tr>
<tr>
<td>86929, 94787</td>
<td>Peer sites running ZVM v5.5 or above, that regain connectivity after a network disconnection, will synchronize and be operable without needing to wait for long running operations to complete (eg. svMotion) on VPGs.</td>
</tr>
<tr>
<td>89335</td>
<td>Clarified the warning that appears when the user tries to remove the Zerto Cloud Connector for ZORG.</td>
</tr>
<tr>
<td>88885</td>
<td>When configuring VPGs, it is possible to select a datastore that has insufficient space. If this happens an error message is displayed. The error message has been improved, with the space requirement for the datastore displayed to an accuracy of 3 decimal digits. Rounding down of the amount of space required no longer occurs.</td>
</tr>
<tr>
<td>89108, 91169</td>
<td>Prior to ZVR v5.5, in Red Hat 7.x failures occurred in re-IP if the network interface name did not start with “eth”. With ZVR v5.5, in Red Hat v7.x, re-IP is supported for all network interface names.</td>
</tr>
<tr>
<td>91320</td>
<td>The code was modified so that the driver initial scan of VRA handles was increased from 1M to 10M. In the case of a host that has been running for a long time, the VRA’s handle index may be greater than 1M, which will prevent the driver from finding it during initial scan, thus rendering it unable to communicate with the VRA.</td>
</tr>
<tr>
<td>93672</td>
<td>Self-replicating VPGs can now be imported using the ImportSettings powershell cmdlet without failure.</td>
</tr>
<tr>
<td>90900, 92065</td>
<td>The user can now change the target host of the protected VM even if the host is disconnected, without causing the VRA to disconnect from the ZVM.</td>
</tr>
</tbody>
</table>
## Resolved Issues: Hyper-V

<table>
<thead>
<tr>
<th>CASE NUMBER</th>
<th>ISSUES RESOLVED IN VERSION 5.5</th>
</tr>
</thead>
<tbody>
<tr>
<td>101221</td>
<td>Fixed an issue where the Remote Log Collector collected more information than was selected by the user when initiating VRA log collection. This no longer causes the collection and parse to run longer than needed.</td>
</tr>
<tr>
<td>99544</td>
<td>Create VPG does not fail if there is a reflection inconsistency between vSphere and vCloud Director.</td>
</tr>
<tr>
<td>95945</td>
<td>VMware vSphere environments: Improved support for re-IP on Windows Server 2003 with logs.</td>
</tr>
<tr>
<td>96702, 96904</td>
<td>The Journal hard limit size was increased to 20TB.</td>
</tr>
<tr>
<td>95406</td>
<td>The VLAN drop down list in the Edit vNICs window is now more responsive to a large number of options.</td>
</tr>
<tr>
<td>98504</td>
<td>The code was fixed to ensure successful Failover Test of VMs which run on RHEL6, or other Linux versions.</td>
</tr>
<tr>
<td>66314, 81768</td>
<td>When exporting a VPG list from the ZVM GUI, the target datastores of all the VPGs, including VPGs protected by remote sites, are included, and correctly listed by name.</td>
</tr>
<tr>
<td>86867, 93359</td>
<td>The user can now change the VM Recovery VRA, through the GUI, from a site that has both incoming and outgoing VPGs where at least one of the outgoing VMs is configured for one-to-many replication.</td>
</tr>
<tr>
<td>93895</td>
<td>Warnings with respect to the currency of integration services in VRA are no longer displayed in Hyper-V host's Windows Events Viewer, as the currency of these services is correctly updated.</td>
</tr>
<tr>
<td>85702</td>
<td>In the legend of the VPG Performance Report, the colors representing the VPGs do not vary. The colors remain as originally assigned.</td>
</tr>
<tr>
<td>94677</td>
<td>Resolved the issue of reaching the Microsoft character limit during VPG creation, at the Diskbox creation stage. This was done by avoiding usage of ImportVM, and using CreateVM instead.</td>
</tr>
<tr>
<td>102332</td>
<td>Hyper-V environments: Fixed an issue which caused the VRA installation to fail in some cases, when installing VRA on a High Availability storage.</td>
</tr>
</tbody>
</table>

## Resolved Issues: Cross-replication

<table>
<thead>
<tr>
<th>CASE NUMBER</th>
<th>ISSUES RESOLVED IN VERSION 5.5</th>
</tr>
</thead>
<tbody>
<tr>
<td>00017896</td>
<td>The code was updated so that when running a Failover Live or a Failover Test, devices which are not replicated by a VM, and which appear in the BootOrder configuration, will not cause a failure.</td>
</tr>
<tr>
<td>00086367</td>
<td></td>
</tr>
<tr>
<td>93461</td>
<td>The value, Recovery Journal Used Storage, is now consistent between the Resources Report and Protection Over Time By Site Report.</td>
</tr>
<tr>
<td>00098752</td>
<td></td>
</tr>
<tr>
<td>91466</td>
<td>The cleanup code, which runs during an unsuccessful VGP creation, was modified to include the removal of inactive (stale) diskboxes.</td>
</tr>
<tr>
<td>93275</td>
<td></td>
</tr>
</tbody>
</table>
### Resolved Issues: General

<table>
<thead>
<tr>
<th>CASE NUMBER</th>
<th>ISSUES RESOLVED IN VERSION 5.5</th>
</tr>
</thead>
<tbody>
<tr>
<td>94494</td>
<td>The code of the Diagnostic Utility was modified to correctly load system configuration data from the correct source.</td>
</tr>
<tr>
<td>98900</td>
<td>The code was fixed to avoid rare cases where the Hyper-V host crashed.</td>
</tr>
<tr>
<td>85703</td>
<td>Export settings from a protected site are now preserved when replicating to a cloud site with the user being alerted that an initial sync will be performed.</td>
</tr>
<tr>
<td></td>
<td>VRA peer site routing configuration is now consistent.</td>
</tr>
<tr>
<td>100832</td>
<td>Added a validator so that a specific recovery preseed disk (VMDK disk) can only be configured once, for one of the protected volumes of a VPG, thus avoiding the loss of a recovery disk and failures in the VPG creation or edit operations.</td>
</tr>
<tr>
<td>9854, 20420</td>
<td>Changes to the ZVM VM’s IP no longer fail Offsite Backup Repository validation.</td>
</tr>
<tr>
<td></td>
<td>After a network disconnection, upon regaining connection to the peer site, offsite backup to the local repository is not terminated.</td>
</tr>
<tr>
<td>13477</td>
<td>When the user tries to edit a VPG with a resource that is not in their ZORG, a message now appears stating that the datastore is not defined as part of the user’s ZORG’s resources, and that user should select a different datastore.</td>
</tr>
<tr>
<td>13712</td>
<td>Before starting Failover, the user is now warned that failing over a VPG that is not Reverse Protected will leave the VPG unprotected.</td>
</tr>
<tr>
<td>13188, 89663</td>
<td>Setting of RDM (Raw Device Mapping) device as a swap disk is kept and correctly applied.</td>
</tr>
<tr>
<td>16005</td>
<td>In large-scale environments: The frequency with which VPGs enter the state Replication Paused, is reduced.</td>
</tr>
<tr>
<td></td>
<td>The Events tab description was improved for operations which involve the unpairing of sites. In the event the information in the fields ‘Type’ and ‘Description’ were enhanced. In addition, the Clear Site task description was clarified to clearly display which specific peer site is being cleared of VPGs.</td>
</tr>
<tr>
<td>18005</td>
<td>If an Offsite Clone fails because it cannot find a Datastore for the operation, the user is presented with an informative message as to the cause of failure.</td>
</tr>
<tr>
<td>18855</td>
<td>RPO reporting accuracy has been improved.</td>
</tr>
<tr>
<td>20476</td>
<td>When an unexpected error occurs while trying to update the ZVM database with a newer Critical checkpoint, a new mechanism is in place to ensure that ZVM does not crash. In addition, the error information is visible in the logs.</td>
</tr>
<tr>
<td>25060</td>
<td>Fixed multiple user experience issues.</td>
</tr>
<tr>
<td>88360</td>
<td>ZVM GUI menu displays were improved by adjusting the contrast between selectable and non-selectable options.</td>
</tr>
<tr>
<td>40321</td>
<td>If a ZORG name is edited and invalid characters are used, the error “The ZORG includes invalid characters.” is correctly displayed.</td>
</tr>
<tr>
<td>96859</td>
<td>The Events REST API was fixed so that the user can now get events even if there are Events that do not contain SiteName.</td>
</tr>
<tr>
<td>CASE NUMBER</td>
<td>ISSUES RESOLVED IN VERSION 5.5</td>
</tr>
<tr>
<td>-------------</td>
<td>--------------------------------</td>
</tr>
<tr>
<td>97451</td>
<td>ZVM and ZSSP environments: Removed an unused configuration file.</td>
</tr>
</tbody>
</table>
| 101954, 102951 | After upgrading to v5.5: Fixed an issue where the journal or history of a VPG was incorrectly calculated. In some cases this caused spamming with the Journal alerts.  
**Note:** Relevant from v5.5P1 |
| 102962, 102953 |
| 102958, 102954 |
| 102964, 102973 |
| 102998, 103011 |
| 103041, 103076 |
| 103093, 103173 |
| 103203, 103166 |
| 103278, 103177 |
| 103332      |
Known Issues

The following are known issues when using Zerto Virtual Replication.

- "Virtual Replication Appliance (VRA)”, on page 28
- “Virtual Protection Group (VPG) and Recovery”, on page 28
- “VPG Management”, on page 28
- “Failover, Move and Test Failovers”, on page 29
- “vCenter Server”, on page 29
- “vCloud Director”, on page 29
- “VMware VSphere”, on page 30
- “Hyper-V”, on page 30
- “AWS”, on page 31
- “Azure”, on page 31
- “Cross-replication”, on page 32
- “VMware to Hyper-V Cross-Replication”, on page 32
- “Hyper-V to VMware Cross-Replication”, on page 32
- “Remote Upgrade for Cloud Service Providers”, on page 33
- “APIs”, on page 33
- “File Level Restore”, on page 33
- “Upgradeability”, on page 33
- “General”, on page 34

Virtual Replication Appliance (VRA)
- There is a known compatibility issue for environments with Cisco UCS hosts using the Fiber Channel over Ethernet (FCoE) FNIC driver. This issue is addressed in ZVR 5.5 Update 2 Patch 1 (it is not available in other ZVR 5.5 updates), and in ZVR 6.0 and above.
  These environments should target either ZVR 5.5 Update 2 Patch 1 version, or ZVR 6.0 and above.
- 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.
Known Issues

Zerto Virtual Replication Release Notes - Version 5.5 Update 4

**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.
- 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.
- 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**

- 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 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 for 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.
Known Issues

- 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.

**VMware vSphere**

- Following a Reinitializing or restoring of a vCenter database, a mismatch between the vCenter database and Zerto Virtual Replication might occur. Customers are highly encouraged to follow the instructions provided in this field notice and validate the safety of their environment.

- If the user restores a VM from a snapshot, Zerto does not automatically synchronize the changes to the recovery site. The user needs to manually Force Sync the VPG.

- The ZVM triggers a warning event for VM restoration from snapshot only in vSphere in all versions except of VC 6.5 and 6.5a.

- vSAN 6.6: When performing Failover or Clone operations, an error appears under Tasks and Events, even though the operation completed successfully.
  
  The error message that appears is: “Partial success: For VM <vm name>, The disk located in <vmdk path> was not moved to the target location at <vmdk path>.”

**Hyper-V**

- Zerto Virtual Replication script parameters use vSphere terminology, even for scripts in a Microsoft Hyper-V environment.

- During a storage disaster, if the VRA is shutdown and restarted after the storage is recovered, the journal and recovery volumes managed by the VRA may be deleted.

- In Change VM Recovery VRA, via MORE in the VRAs tab under SETUP, the values in the column VM Size (GB) are not correct.

- 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.

- VSS checkpoints are only implemented when protecting Windows 2012 generation 2 virtual machines.

- 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.

- 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.

- If reverse protection is selected on a recovery volume that is larger than the protected volume, the protected volume cannot be used for preseeding during a move or a failover operation. A Delta Sync will also not be possible and an Initial Sync will have to be performed.
**AWS**

- Preseeding is not supported.
- Restore from backup is not supported.
- Windows 7, Windows 8.1 and Windows 10 cannot be protected to AWS.
- In order to overcome AWS ImportInstance issues and limitations, please contact Zerto Support.
- When using zImport, the disk type is always io1 and cannot be configured.
- Only the ZCA’s Availability Zone (AZ) can be used for faster recovery.
- The temporary instance (zImporter) requires internet access.
- The zImporters are created with a public IP. However, they are connected to a newly created security group blocking all incoming traffic.
- When using Zerto import for all volumes, the following Operating Systems are **not** supported:
  - Red Hat Enterprise Linux (RHEL) 7.0
  - CentOS 7
  - 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.
- GPT cannot be used as the boot disk.
- Recovery to AWS using the “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.

**Azure**

The following limitations apply:

- For Virtual Machines to be protected in Azure, the VMs' volumes must reside in the Standard Storage Account (Zerto Storage Account) in the ZCA region and subscription, that was defined during its installation.
- VMs which are not deployed via the Azure Resource Manager cannot be protected from Azure.
- Restore from backup is not supported.
- Preseeding is not supported.
- Zerto Virtual Replication APIs are not supported.
- Failback to Azure results in initial sync.
- 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.
- Azure local replication is not supported.
- Offsite Backup 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.
- Germany regions are not supported.
- Multi-tenant vCenter and vCD environments are not compatible with Azure ZCA.
- 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 subscription201 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.

### Cross-replication

- When upgrading both sites to v5.5U1 in a cross-platform environment (vSphere to Hyper-V, or Hyper-V to vSphere), the following alert might appear on the vSphere site: "At least one peer site VRA has not been upgraded to the latest version.". This alert can be ignored if the VRA on the Hyper-V site is v5.5 or higher.
- 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.
- When recovering Windows 7 and Windows 2008 virtual machines from Hyper-V to VMware, at start-up the recovered virtual machine guest operating systems request System Recovery.

**Workaround:** Before attempting recovery operations, update the guest OS registry in Windows 7 and Windows 2008 virtual machines as follows:

- **Create a blank .reg file.**
- **Copy the following text to the new .reg file:**
  ```
  Windows Registry Editor Version 5.00
  [HKEY_LOCAL_MACHINE\SYSTEM\ControlSet001\Services\LSI_SAS] "Start"=dword:00000000
  ```
- **Copy the .reg file to the protected virtual machines in Hyper-V.**
- **Double-click the file and click Yes to confirm the change.**
- **Delete the .reg file that you copied to the protected virtual machines.**

  The virtual machines will now start successfully for all recovery operations to VMware. For more details, see VMware KB #1005208.
- Windows XP virtual machines cannot be protected from Hyper-V to VMware.

---

<table>
<thead>
<tr>
<th>VM TIER</th>
<th>BASIC TIER VM</th>
<th>STANDARD TIER VM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disk size</td>
<td>1023 GB</td>
<td>1023 GB</td>
</tr>
<tr>
<td>Max 8 KB IOPS per persistent disk</td>
<td>300</td>
<td>500</td>
</tr>
<tr>
<td>Max number of disks performing max IOPS</td>
<td>66</td>
<td>50</td>
</tr>
</tbody>
</table>
Remote Upgrade for Cloud Service Providers

- Remote upgrade:
  - CSP customers will not be able to disable the Zerto SaaS feature (**Settings > About**).
  - 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.

File Level Restore

- ZVR installation on Windows 2016 Servers with secure boot enabled, will cause installation of the jFLR driver to fail, due to enforcing of driver signing.
  
  To resolve this issue, click to see the KB.

- You can only recover files or folders from Windows machines. You cannot recover files or folders from Linux machines.

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

- When the Zerto Virtual Manager is installed on a Generation 1 virtual machine, you can only mount disks for file level recovery from a generation 1 virtual machine.

- When the Zerto Virtual Manager is installed on a Generation 2 virtual machine, you can mount disks for file level recovery from a generation 1 virtual machine and from all disks except for the boot disk, normally C:, from a generation 2 virtual machine.

- When the protected virtual machine and the virtual machine of the recovery Zerto Virtual Manager are created from the same template, GPT disks do not support Journal File Level Restore (jFLR).

- When a large number of disks are mounted, when they are unmounted, some of the disks remain mounted and this is not reflected in the user interface.

- You can only recover files or folders when an offsite backup is not running.

- Journal File Level Restore (jFLR) is not supported with the vSphere plugin.

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.
- Invoking the Zerto VSS Agent can cause errors to be written to the Windows application log. These errors can be ignored.
- 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 Needs Configuration state.
- If you use Chrome to download the VSS agent installation, you are warned that the software is malicious. You can ignore this warning.
- When replication is to a VSAN, disk space used by the journal is not deallocated when the journal size decreases.
- Only one IP address is supported per NIC.
- Protecting CD/DVD drives is not supported.