Zerto

Hybrid Cloud Guide

Achieving IT Resilience with Zerto and Microsoft Azure

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PREFACE

A Shifting Focus

In modern, continuous business environments, downtime and data loss are getting less and less acceptable. Online shopping goes on 24/7, factories have to keep production going around the clock and global enterprises need to be connected to all time zones continuously – and all depend heavily on IT. Where businesses used to focus on getting data back and getting services back online after a disruption, nowadays the focus lies on continuous availability from an end-user perspective: keeping services online without users noticing any problems or downtime.

This implies that, after any disruption to services, systems need to be up and running again in minutes and data loss has to be limited to seconds, instead of hours or even days. In other words, instead of focusing on solutions for backup or disaster recovery, businesses are more and more in need of IT resilience: the capability to respond to a disruption so quickly that end-users and customers are not aware that a disruption occurred.

Public cloud adoption is growing year-over-year as more and more enterprises embrace a hybrid cloud strategy to leverage the cost and operational benefits. But how can a hybrid cloud strategy contribute to the requirements for IT resilience? Can the flexibility of the public cloud be used to enable fast recovery from disasters?

In this guide, we will look at the benefits of leveraging public clouds such as Microsoft Azure in a hybrid cloud strategy. One of the best primary use cases is to utilize the flexibility of the public cloud for disaster recovery – within a hybrid cloud. Combining the Zerto IT Resilience Platform™ and the Microsoft Azure public cloud helps businesses to achieve IT resilience, not only by simplifying data protection and disaster recovery, but by enabling fast and flexible workload migration to, from, and between clouds.

This guide will provide you with a detailed overview of how to enable IT resilience in a hybrid cloud infrastructure, a look at the challenges you may encounter, and the solutions to overcome them. If you have any questions about the information contained here, please contact **info@zerto.com**.

SECTION 1

IT Resilience: Disaster Recovery Evolved

The cost of downtime

" 'Major computer outage' takes 105 DMV offices offline in California" - Los Angeles Daily News, October 2016

"Amsterdam's Schiphol airport hit by major computer outage" – Reuters, February 2017

"And so we enter day seven of King's College London major IT outage" – The Register, October 2016

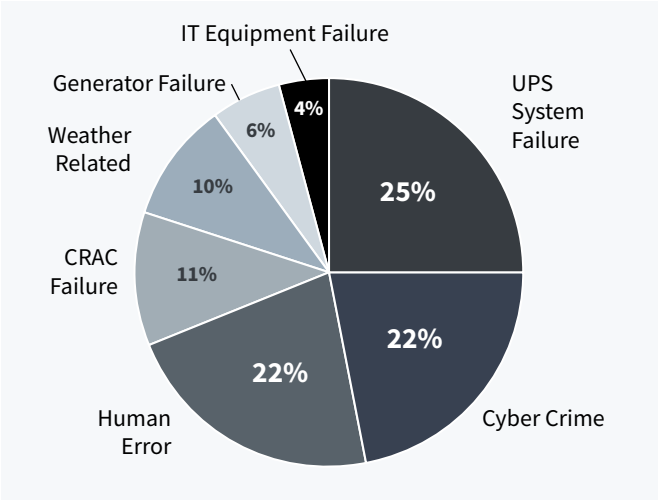
"Airline stocks fall after Delta system outage" – CNBC, January 2017

"More brokers run from SSP following outage" – Insurance Business Magazine, April 2017

"ATO 'investigating' another outage as accountants rage on social media" – Smart Company, April 2017

"WhatsApp messaging services hit by global outage" – Global Telecoms Business, May 2017

TOP CAUSES OF DATA LOSS AND DOWNTIME

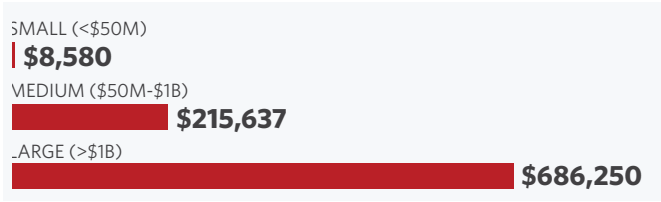


(source: 365datacenters.com)

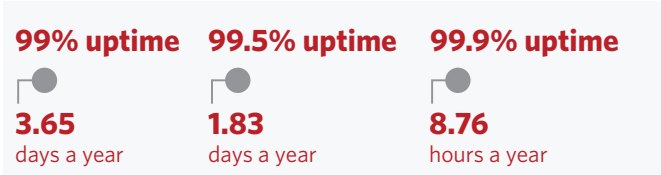
These headlines remind us how much we depend on IT. System outages can result in loss of revenue, loss of shareholder value, and customer trust. The longer an outage lasts, the bigger the damage. If a company fully relies on online services or online sales – and this is more and more common – the damage gets even bigger. A lost reputation due to failing online services or systems is hard to regain.

A large, $1 billion enterprise can lose as much as $686,000 for every hour of downtime (AppDynamics, 2017). Even with 99.9% availability 8.76 hours of downtime still occur every year. It is easy to do the math and calculate how much is lost every year in revenue, even without including the effects on customer trust. According to the IDC, Fortune 1000 companies lose between $1.25 billion and $2.5 billion every year because of application outages.

COSTS OF DOWNTIME VERSUS AVAILABILITY



Downtime costs per hour based on annual revenue



Amount of downtime based on availability

IT resilience

It is clear that modern businesses cannot afford to lose data. Whatever the cause – natural disaster, human error, or cyber attack – data loss is costly and extremely risky. The need for a disaster recovery strategy to ensure uptime, mitigate data loss, and maximize productivity in the midst of any compromising situation is a necessary digital assurance policy for any company. Users should not experience any disruption, no matter what happens.

IT resilience takes disaster recovery to a new level, enabling a proactive, rather than reactive approach so that businesses can always remain one step ahead.

Thinking beyond disaster recovery

IT resilience is a proactive approach to protecting an IT environment. It is the ability to accelerate IT transformation and innovation by seamlessly adapting to change while protecting your business and customers from disruptions and disasters. Businesses must shift their thinking beyond backups and disaster recovery and work towards a complete, yet flexible solution with no dependencies on hypervisors, hardware, or clouds. This solution must have the ability to respond quickly to planned and unplanned disruptions. Additionally, the solution must remove barriers to innovation so that new technologies, processes and procedures can easily be incorporated.

Zerto IT Resilience Platform™

Zerto delivers IT resilience with continuous availability, workload mobility and multi-cloud agility through a single IT Resilience Platform™ that's simple to use and built for scale.

Continuous Availability
Protect against any disruption to deliver an always-on customer experience

Workload Mobility
Move application and data workloads with ease, without risk and be 100% protected

Multi-Cloud Agility
Choose your cloud and be able to move freely to, from and between clouds

Organizations that embrace IT resilience proactively focus on ensuring that critical applications and workloads are able to withstand any disruption. Automation and simplification of replication and recovery are part of resilience, ensuring that companies can prove the availability of their applications and data at any time.

The next chapters will show how a hybrid cloud environment can contribute to IT resilience and how can help businesses shorten recovery times, reduce data loss, and simplify workload migration.

DISASTER RECOVERY AND IT RESILIENCE

Disaster Recovery

- Focused on downtime and mass recovery
- DR is a reactive response to disruptive event
- Investments in recovery are seen as expensive insurance policies
- Downtime is measured in hours to days
- Lack of focus on the everyday events causing business disruptions
- Poor planning, reporting, and metrics

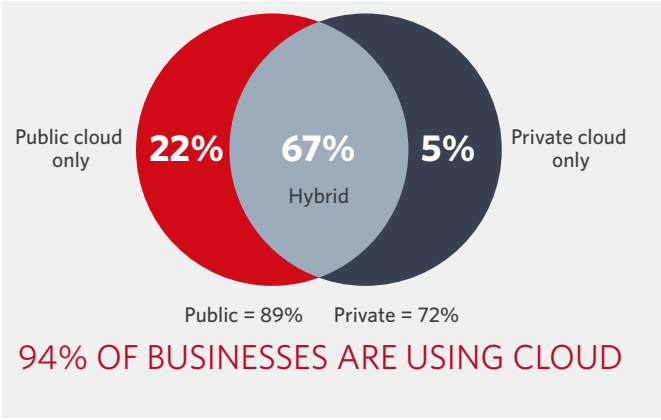
IT Resilience

- Focused on uptime and granular recovery
- Limits downtime through proactive measures and rapid response
- Protects investments and enables competitive flexibility
- Downtime is measured in minutes
- Utilizes analytics to focus on preventing likely business disruptions
- Emphasis on continuous improvement

SECTION 2

IT Resilience in the Cloud

Cloud computing is rapidly becoming the new norm in IT. For consumers the use of online services is fully accepted – think of social media, online storage services like iCloud and DropBox, online banking and online shopping. Businesses however have other priorities and are inclined to use a combination of online services and on-site systems. How can businesses use the cloud effectively and which applications are best suited? And how can the cloud contribute to IT resilience?



Source: Rightscale 2017 State Of The Cloud Report

Cloud computing

Virtualization loosened the strict relationship between computing and the underlying hardware. Using hypervisors like VMware vSphere or Microsoft Hyper-V, IT teams could create a virtualization layer where virtual machines use a pool of shared resources which paved the path to cloud computing. Network and internet speeds have become faster and companies like Amazon and Microsoft have invested in hyper-scale public datacenters, giving businesses various options:

- **Private clouds** are infrastructures operated solely for a single organization, often hosted in-house. A private cloud provides better control of resources and is therefore often used for critical applications and sensitive data
- **Public clouds** offer access to computing resources over a public network. Users don't need to purchase hardware, software, and supporting infrastructure, which are owned and managed by providers. Public clouds are flexible and cost efficient, since they are provided on a pay-per-use basis and can be scaled up and down easily
- **Hybrid clouds** use a private cloud foundation combined with public cloud services. Most companies use combinations of private and public cloud resources. This makes hybrid cloud the most common of these three options

14.1 ZB
Annual global cloud IP traffic by 2020
Cisco

92%
Cloud traffic as part of total datacenter traffic in 2020
Cisco

89%
Organizations using the public cloud in some capacity
RightScale

67%
Businesses currently using a hybrid cloud strategy
RightScale

74%
Companies who believe a hybrid cloud will grow their business
Microsoft

Benefits of the hybrid cloud

Some applications can move easily to the public cloud while others face technological and regulatory obstacles. That is why hybrid cloud is the reality for most enterprises, offering benefits from both the public and the private cloud:

- **Flexible security and governance** – Keep critical applications, sensitive data and performance-intensive workloads in the private cloud or in highly secure and compliant public clouds such as Microsoft Azure, with sophisticated security and governance designed for a company's specific requirements
- **Up-to-date software** – Public cloud offers innovative Software-as-a-Service (SaaS) business apps for CRM, analytics, transactions, etc.
- **Elastic resources** – Flexible, scalable Infrastructure-as-a-Service (IaaS) on a pay-per-use basis, for storage and compute services on-demand or to burst the private cloud when demand spikes
- **Innovation** – Use Platform-as-a-Service (PaaS) for cloud-based application development and deployment environments
- **Mobility and efficiency** – Make portability of data, apps and services easier and give businesses more choices for deployment models, leveraging the right infrastructure at the right price
- **Disaster recovery, backup, archiving** – Leverage the public cloud with on-demand, burst capacity as a DR site and cost-effective storage options for long-term retention of archived data

Moving to the cloud

What to move to the cloud

Whereas five years ago IT executives approached the cloud with skepticism, today it is accepted as a key component of both IT and business strategy. But moving everything to the public cloud is not a realistic strategy for most enterprises. It is better to focus on determining the right use of public cloud and prioritize which workloads can be moved or not.

- **Data sensitivity** – Think about prioritizing applications with less sensitive data first. Having an enterprise-wide data classification scheme with low/medium/high business impact will help you
- **Need for elasticity** – Many applications have spikes in consumption that fit well with on-demand resource allocations. Applications that are only used intensively once or twice a year are ideally suited to the dynamic scale-out nature of the cloud
- **Size and interconnections** – It is often easier to move smaller applications that are less integrated with other applications to the cloud. For example, a portal promoting a new offer will typically be more self-contained, and smaller, than that 1986 SAP ERP application

Barriers to hybrid cloud adoption

Though many businesses intend to move workloads to a hybrid cloud, there are some barriers to overcome as well:

- **Management** – In a hybrid cloud, workloads run natively with each infrastructure to achieve maximum efficiency. Managing these applications across different infrastructures and hypervisors should be consistent, simple, automated and scalable
- **Infrastructure silos** – Different hypervisors, storage requirements and APIs create infrastructure silos, making it very difficult to leverage different clouds for the same workloads
- **Workload mobility** – Applications cannot be easily replicated, managed, or used between different environments. The reconfiguration and downtime associated with transitioning into an environment or replicating to a different silo are significant
- **Workload conversion** – A workload consists of multiple VMs with interdependency rules, networking, firewalls and more. To have an effective hybrid cloud these workloads need to be converted between different infrastructures in an automated, reliable and outage-free manner
- **Exit strategy** – Moving applications and workloads to the public cloud is one thing, but is it possible to withdraw from the public cloud or move to an alternative provider as well?

In the next chapter we will show how Zerto overcomes these barriers.

IT resilience & the cloud

Combining private and public cloud resources can contribute to IT resilience. Public cloud resources can be used as a DR site that can take over if a disruption on the production site occurs. The opportunity to move workloads and data to and from the public cloud adds flexibility, while the ability to instantly extend capacity when demand spikes contributes to efficiency and reduces costs.

The speed at which your business can invoke its disaster recovery strategy or move workloads is critical for maintaining a resilient environment. Services need to be up-and-running again in minutes - businesses cannot afford to lose data, and migrating workloads should not take days to complete. In the next chapter, we will show how Zerto helps businesses achieve IT resilience by utilizing a hybrid cloud strategy.

IT RESILIENCE AND THE HYBRID CLOUD

- **Security** – Keeping sensitive workloads in the private cloud with sophisticated security and governance
- **Flexibility** – Burst computing and storage capacity into the public cloud when demand spikes
- **Disaster Recovery** – Using the public cloud for replication and recovery instead of a 2nd on-premises DR site
- **Efficiency** – Intelligent workload placement to spread workloads efficiently across the various environments
- **Effectivity** – Implementing smart workflows using public cloud resources

SECTION 3

Zerto IT Resilience Platform™

When production is virtualized, there is an obvious gap in the data protection strategy as it is usually based on older technologies that have reliance on physical asset limitations. Zerto aligns production and disaster recovery strategies with a hypervisor-based replication IT Resilience Platform™.

In this section we will explain how the Zerto technology works and the advantages it offers.

Zerto IT Resilience Platform™

The Zerto IT Resilience Platform is the industry first offering to converge backup, disaster recovery, and cloud mobility solutions into a single, simple, scalable platform. This helps companies address the following challenges:

Continuous Availability
Protect against any disruption to deliver an always-on customer experience

Workload Mobility
Move application and data workloads with ease, without risk and be 100% protected

Multi-Cloud Agility
Choose your cloud and be able to move freely to, from and between clouds

Resilience is based on a foundation of **Continuous Data Protection**.

- **VM-level replication** delivers best-of-breed replication with the tightest RTOs and RPOs to ensure that when something happens, recovery is quick or when proactive changes like migrations are done it is possible to just rewind if there is a change to the commit and this is all built for enterprise scale
- Zerto uses **journal-based recovery** that allows you to rewind to any point in time with protection against logical failures not just disasters. Recovery can be from seconds ago, not the last backup or snapshot that could be 4 hours or 1 day prior. Recovery can be a site, app, VMs or individual files
- Recovery is not just about data, this is about your key business services. The platform uses **application consistency groups** called VPGs (Virtual Protection Groups) – this enables customers to protect applications with all of their dependencies, boot order, re-IPing, etc. for fast recovery that involves no manual configuration
- The Zerto IT Resilience Platform™ also addresses your needs for long-term retention of data and applications. You might be using multiple tools to address data protection needs. Zerto combines those into one platform

Orchestration and Automation is built in. You can't modernize and innovate if it's not automated and not simple. With Zerto you can do so faster and with minimal touch, so you can shift your personnel to focus on innovation and implementing services that help the business run more efficiently.

- Supporting your **multi-cloud and hybrid cloud strategy**, the platform supports Azure, AWS, IBM Cloud and over 350 cloud service providers
- **Workload mobility** – from migrations to consolidations – have the confidence to move application and data workloads with ease, without risk and be 100% protected along the way
- **Non-disruptive everything** – like testing and compliance – is also a critical component. The platform goes "Beyond DR" so you can use the technology to speed up business. Minimize risk and gain resilience

Analytics and control – with complete visibility across multi-site, multi-cloud environments through intelligent dashboards and live reports giving confidence that business SLAs and compliance needs are met

Architecture

The heart of Zerto's replication technology is formed by two components:

- **Zerto Virtual Manager (ZVM)** – Zerto Virtual Manager manages disaster recovery, business continuity and offsite backup functionality at the site level; plugs into VMware vCenter and/or Microsoft System Center Virtual Machine Manager, and includes a browser-based option
- **Virtual Replication Appliance (VRA)** – Replicates the VMs and associated virtual disks; one VRA is installed per ESXi/Hyper-V host

How does replication work?

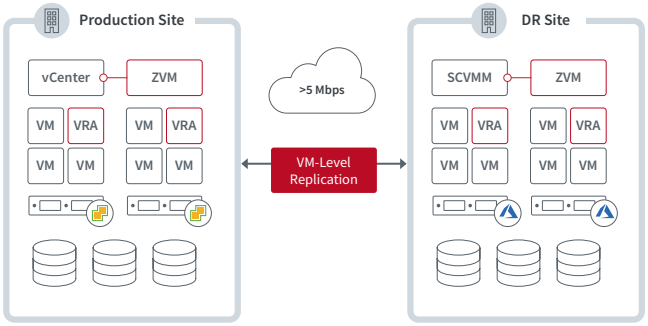
The Zerto Virtual Replication Appliances (VRA) copies I/O as it is created before it leaves the hypervisor. This continuous block-level replication delivers RPOs of seconds, minimizing data loss in the event of an outage.

Features and benefits

- **Journaling capabilities** – Provides continuous block-level replication with zero impact on application performance delivering point-in-time recovery with up to 30 days of recovery points
- **Hardware and hypervisor agnostic** – Remove barriers to innovation with a replication solution that has no dependencies on hardware or hypervisors
- **Simple and seamless installation** – Installs seamlessly into the existing infrastructure with no downtime or configuration changes required
- **Protect production workloads** – Ensure application consistency with groups of VMs which are protected, managed, replicated and recovered as one entity
- **Scalable** – As a software-based solution it grows with the infrastructure, no matter how fast the business expands
- **Simple and centralized management** – Centralized management for two sites with the Zerto Virtual Manager and for multiple sites with the Zerto Cloud Manager
- **Aggressive service levels** – Achieves a Recovery Point Objective (RPO) of seconds and a Recovery Time Objective (RTO) of minutes
- **Complete orchestration** – Automated failover, failback, reverse protection is executed in just a few clicks
- **Non-disruptive DR testing** – Test the full recovery process without impacting production environments or ongoing replication, giving the team confidence they are covered in the event of a disaster
- **Enterprise-class support** – Zerto delivers enterprise-class support services that are built into all of its products. These services include real-time alerts when RPO/RTO targets are not being met, network degradation alarms and reminders to check configurations and Virtual Protection Groups. Zerto solutions are backed by global support service centers that provide on-demand access to an expert team of support engineers

Management

The Zerto Virtual Manager (ZVM) plugs in at the virtual management console and gives a graphical overview of the sites, VMs and their performance. If any problem occurs, it is represented visually, and alerts are sent as well. In the tabs at the top, all other functionality is available for orchestration and automation of failback and recovery processes, like boot order, re-IP, scripts, test and validation options.



Application-centric protection: Virtual Protection Groups

Many enterprise applications consist of more than one virtual server – a web server, application server, database server – which are interdependent. When recovery is needed, all servers must be recovered from a single, consistent point in time. To be able to do that, Zerto developed Virtual Protection Groups (VPGs), which ensure consistency across a group of VMs. In this way the Zerto solution ensures that enterprise applications are replicated and recovered with consistency, regardless of the underlying infrastructure. Zerto recognizes and preserves these relationships while enabling critical VMware features such as DRS, vMotion and Storage vMotion.

- **Consistent** – Replicates and recovers complete multi-VM applications consistently
- **Flexible** – Enables organizations to deploy an application across different physical devices to maximize performance, capacity or to reduce the complexity of the infrastructure
- **Granular** – Delivers the right granularity to be able to recover single VMs as well as groups of VMs through many types of disasters
- **Prioritize** – Prioritize Virtual Protection Groups for replication and recovery
- **Support** – Supports virtualization features like vMotion, svMotion, HA, etc.

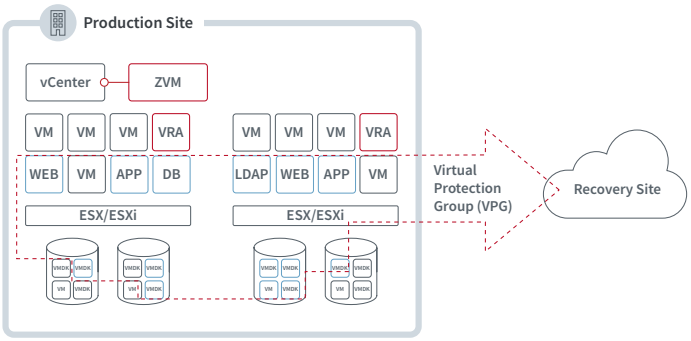
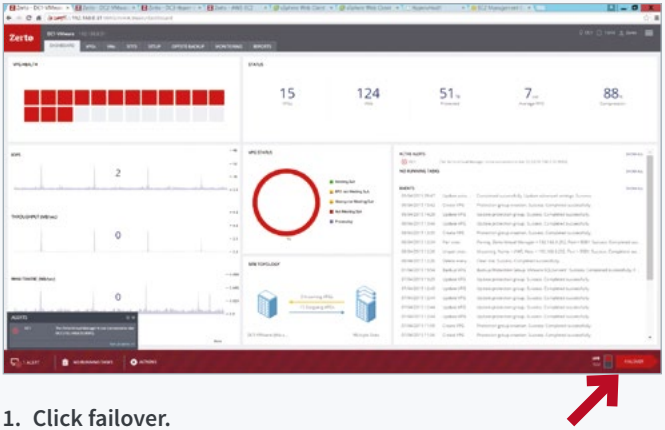


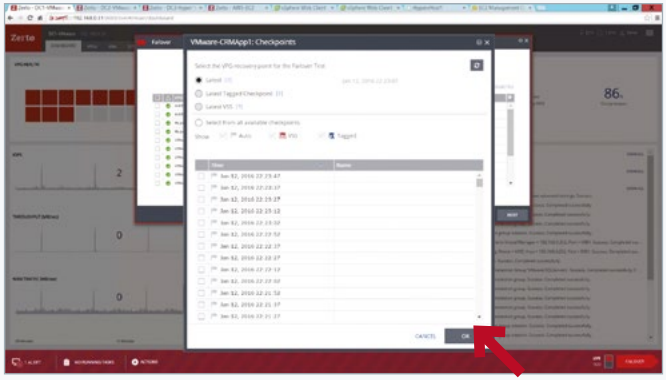
Figure 1. The various VMs comprising an application are in a Virtual Protection Group and are replicated consistently even if they are spread over various hosts and datastores.

4 Quick Steps for the Failover Process

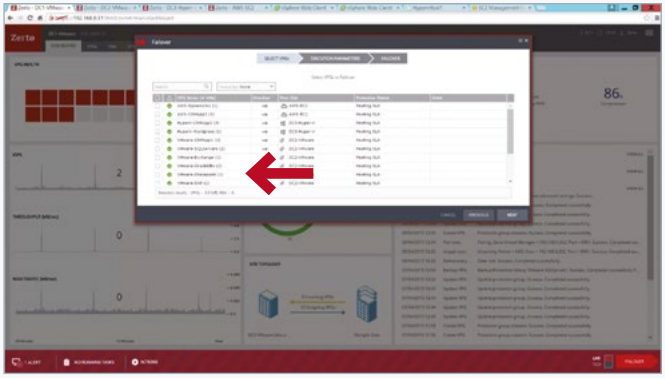
After an incident is visible in the management console, the failover process can be conducted in four quick steps.



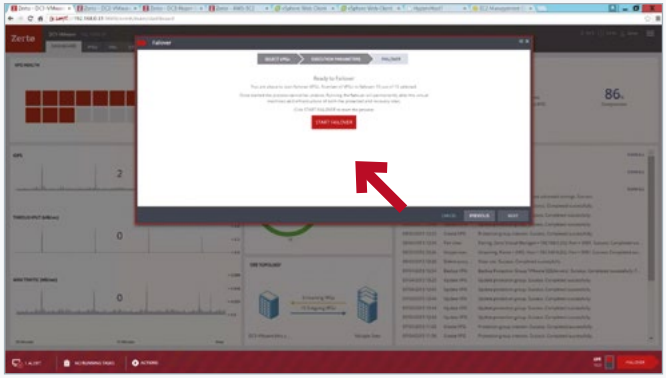
1. **Click failover.**



3. **Verify the point in time** to which the apps need to be restored. To avoid corrupted applications from being restored, it is necessary to go back to the point when they were not corrupted.



2. **Select the applications** (Virtual Protection Groups) that need recovery from the list.



4. **Start failover process.** The failover process begins and virtual machines are booted and reconfigured as needed.

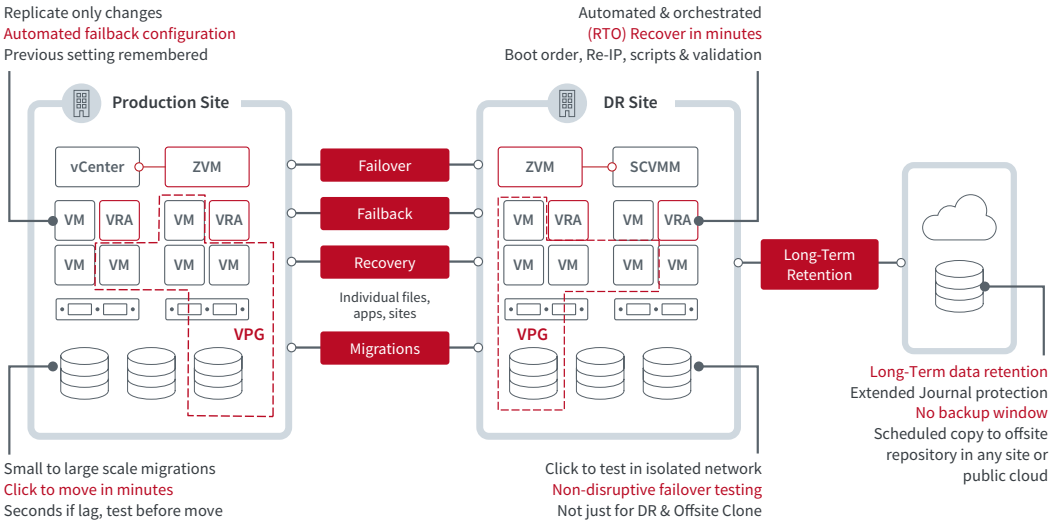


Figure 2. When it comes to failback, the Zerto Architecture delivers full automation and orchestration, and non-disruptive failover testing. The same functionality can be used for sandbox testing and data migration as well. For complete protection options, the data at the DR site can also be used to make a long-term retention copy of the data, without impacting production.

Fully Automated and Orchestrated

Replicating the data to the recovery site is only half the issue. The information that is there to protect a business in the event of a disaster needs to be easy to use. Zerto recognized this issue and built in automated and orchestrated processes that can be executed in just a few clicks when IT is in the middle of a high-pressure situation.

Fully configured failover process

Part of the VPG configuration is to set up the failover process. As part of this configuration boot order, re-IP on failover, length of Journal, and other parameters are configured. With all this up-front work done, this greatly simplifies the recovery process, reducing it to just a few clicks.

Failover as a business decision

Since every disaster is different, Zerto believes that failover needs to be a business decision and not an automated process. Because it is possible to pick a moment in time, this decision phase is essential for a correct failover. After clicking the failover button, an automated and orchestrated process will be started to bring services back online. In this way a failover can be done with the ability to choose a point in time, for example the point in time just before a database corruption occurred.

Automated failover and failback

As stated, upon configuration of the VPGs, the recovery plan is now in place. Pre- and post-recovery scripts can also be configured on a per VPG basis. Now, failover and failback is executed in just a few clicks. Even when the disaster recovery process is initiated, there is the opportunity to rollback the failover should there be issues at the recovery site unrelated to Zerto, like a network being down. Upon a successful failover, reverse protection makes the failback process even easier. Reverse protection begins synching the additional work that was done at the recovery site to the production site, when the production site is ready for use. After the applications have been updated to the original production site, failback is again just a few clicks. Many organizations will not failover because failback is so cumbersome; with Zerto, everything is easy.

Non-disruptive disaster recovery testing

Organizations need to be able to demonstrate that disaster recovery processes will work in the event of the disaster to support internal and external compliance requirements. Zerto enables non-disruptive testing in a sandbox environment, fully demonstrating the success of a failover. During the test the environment is still protected and replication is still in process. This means that DR testing and personnel resource scheduling no longer require weekend test windows, as none of the production environment needs to be taken down to fully exercise the test.

Sandbox testing

With the failover testing functionality Zerto can also create a test and development environment.

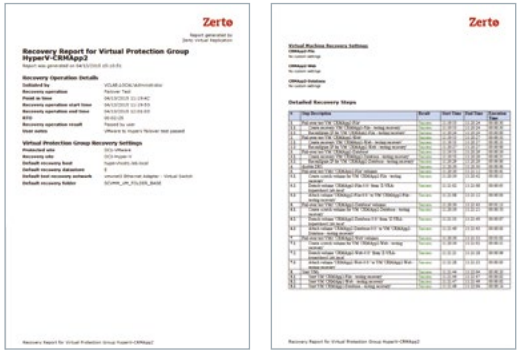


Figure 3. Non-disruptive disaster recovery testing results in audit reports that can be used for compliance

Data migration

Datacenter migrations and consolidations are massive time and resource consuming projects that must be carefully scheduled and planned to try to minimize downtime and loss of productivity. With Zerto's hypervisor-based replication technology however, migrations can be a near painless activity. Using the core attributes of Zerto, virtualized applications can be tested ahead of time, and migrated in just a few minutes with minimal downtime.

- **Simplicity** – Migrating VMs is as simple as pointing the replication to the target datastore of choice and allowing the data to be replicated to the new site in the background from other business activities
- **Granularity** – Migrations can be very granular with the ability to migrate at the VM Disk (VMDK) level, which can be pointed to different tiers of storage
- **Flexible** – Support for a heterogeneous environment allows for migrations between different types of hardware and different VMware and Hyper-V versions, from a vCenter environment to a vCloud environment, and between different versions of Zerto
- **Fully automated moves** – Leveraging the VPG configuration, moving VMs to a new location is accomplished simply and in just a few clicks. This dramatically reduces the application downtime to just a few minutes, ensuring revenue generating activities are not impacted
- **Multi-cloud agility** – Application and data workloads can be moved to, from and between clouds such as Azure, IBM Cloud, AWS or 350+ Zerto Cloud Service Providers

Long-term retention data copies

Since the data is replicated to the DR site, it is easy create an offsite copy of the data for long-term retention or for compliance. This process and its infrastructure are not a part of the production site, removing the overhead and management burden, and can be managed from the same Zerto user interface.

File and folder recovery

The most common disasters that administrators need to recover from are not natural disasters or site outages, but lost or accidently deleted files or folders. Zerto has solved this most frequent disaster problem by providing the ability to recover a single file or folder from up to 30 days in the past, using the Journal. Continuous Data Protection (CDP) delivers recovery points just a few seconds apart, enabling IT to go to the point before the file was deleted or corrupted and recover it. This is executed in just a few clicks, and all work lost is extremely minimized.

- **Risk** – Minimizes data loss across files, folders, VMs, applications, and sites with the ability to recover at any level, at any point in time
- **Simplicity** – Reduces mean time to recovery with the ability to leverage an automated workflow to recover files, applications and data
- **Protect productivity** – When a file or folder is accidentally deleted, end-users no longer need to recreate hours or a day of lost work, preserving productivity and employee morale.

Ransomware recovery

The question is no longer if a disruption occurs but when. IDC has determined that the average cost of downtime is $250,000 per hour across all industries and organizational sizes*, while more sinister threats such as ransomware will cost organizations $11.5 billion by 2019[1]. These costs cover loss of revenue and productivity, but what about reputation damage? Some costs persist even after the incident is resolved. These lasting negative effects are not as easily measured from a financial standpoint, but still have a detrimental effect on the business. With Zerto, you can avoid ransomware cost, data loss and downtime with point-in-time recovery for seamless “roll-back” to moments before attack in just four clicks.

Continuous Backup

To ensure granularity without impacting production, organizations now are required to shift from “recovery” to “availability” and take a more proactive versus reactive approach to disruption.

Continuous replication

By using Continuous Data Replication companies can deliver RPOs of seconds by replicating every change that is being generated real-time. A requirement would be a scale-out architecture for replication that allows you to protect environments that can have thousands of VMs. All operations should be performed with zero performance impact on the production environment to be able to deliver an uninterrupted user experience.

Granularity in seconds

All those replicated changes need to be stored in a journal which allows you to not only go to the latest point in time but also offers you granularity of seconds, so you can safely go to any point in time up to 30 days ago. Recover files, applications, VMs or even entire datacenters by simple pressing the “rewind” button. Most recovery use cases, such as file deletions, database corruptions or ransomware that require granular recovery only require a short-term retention.

Continuous Data Protection (CDP)

Combining continuous replication and granular recovery truly enables continuous data protection and allows you to move away from the periodic point-in-time copies used in traditional backup technology.

Long-term retention

Besides offering flexible options for short-term (up to 30 days) recovery scenarios, companies might also have a compliance requirement to store data longer than 30 days. Long-term retention data has different requirements when looking at storage and recovery times but needs to be an integral part of your data protection platform. You want to avoid taking these copies directly from the production systems as this impacts performance and removes flexibility. Using a technology that can benefit from the data already protected by CDP technology combined and stored in a journal allows you to offload point-in-time copies to secondary storage targets as often as you want.

*For more details see: https://www.zerto.com/the-state-of-it-resilience-2018

[1]CIO Insite

SECTION 4

Microsoft Azure and the Hybrid Cloud

Microsoft Azure

Microsoft Azure is a robust Platform-as-a-Service (PaaS) public cloud and the only major cloud platform that is a leader for Infrastructure-as-a-Service (IaaS), as ranked by Gartner. As the world's most compliant public cloud, Azure is growing fast, becoming the cloud infrastructure of choice for many IT professionals.

Closely integrated with other Microsoft tools

For organizations that rely on Microsoft tools like SharePoint, Office 365 and Outlook, investing in a cloud platform that seamlessly integrates with these products simplifies operations.

IaaS & PaaS

Azure combines the best of IaaS and PaaS services to simplify infrastructure and application development. IaaS enables companies to outsource their cloud computing infrastructure and pay only for what they use. PaaS allows companies to create their own apps and customize their cloud software to meet their requirements.

Reliability

Azure is backed by Microsoft's growing number of global managed datacenters. Microsoft has datacenters across 34 regions, with 99.95% availability and 24/7 tech support and health monitoring.

Strong BI & analytics support

Azure provides managed SQL and NoSQL data services and built-in support for digging deeper into data and uncovering key insights for improving business processes and decision making.

Azure and hybrid cloud

Enabling the true hybrid cloud

A standardized user experience within hybrid cloud helps customers execute on their cloud strategy faster, in a way that makes the most sense for their business. That is why Microsoft has built-in hybrid capabilities across the Microsoft portfolio, covering data, identity, management, applications, and the infrastructure platform overall. True hybrid cloud enablement goes beyond connectivity and provides consistency: user experiences that don't change based on the location of the resource.

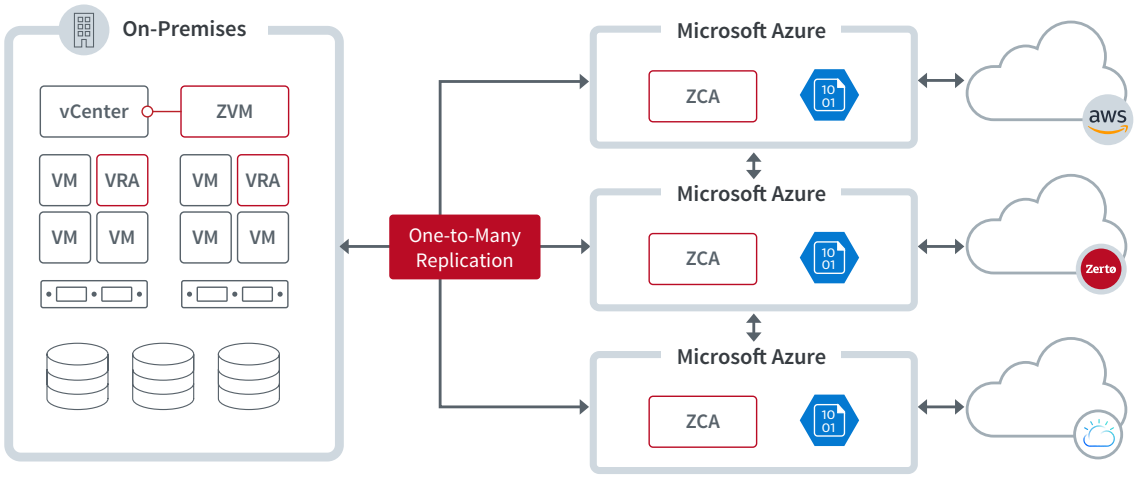
Managing the hybrid cloud

Microsoft Operations Management Suite (OMS) enables you to gain visibility and control across your hybrid cloud with comprehensive operations management and security.

- Gain immediate insights across workloads
- Enable consistent control and compliance
- Respond faster to security threats

Azure and Zerto

Combining the Zerto IT Resilience Platform and Microsoft Azure helps business achieve IT resilience not only by simplifying data protection and disaster recovery, but also by enabling fast and flexible workload migration to and from Azure and between Azure regions, accelerating cloud adoption. Remove the need to provision and manage your own datacenter by using Azure as a recovery site, which adds infrastructure flexibility, minimizes cost, and delivers on-demand limitless capacity and scale when you need it.



Zerto and Azure integration

Zerto's integration with Microsoft Azure is very straightforward. In order to begin leveraging Azure as a target site for replication, you must first install a Zerto Cloud Appliance (ZCA) in the Azure site that is to be used for recovery. The Zerto Cloud Appliance is comprised of the following:

Zerto Virtual Manager (ZVM): A Windows service that manages everything required for the replication between the protected site and Azure, except for the actual replication of data. Each Zerto Virtual Manager can manage up to 5,000 virtual machines, either being protected or recovered to that site.

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

Zerto User Interface: Recovery using Zerto Virtual Replication is managed by the Zerto User Interface in a web browser.

Replicated data is stored as Azure blobs. Journals get 16MB block blobs and replica disks are stored as single page blobs. The Azure specific requirements include a working Azure account, a connection to Azure, and a configured ZCA. Connectivity options include VPN or Azure ExpressRoute, and the ZCA should be configured as size: D3v2.

The diagram above shows how the main components of Zerto Virtual Replication are deployed across protected sites and Azure.

Summary

Zerto Features

Feature	Description
IT Resilience	Remove lock-in and evolve IT with storage and hypervisor-agnostic replication
Simplicity	Single disaster recovery solution for VMware, vSphere and Microsoft Hyper-V
Hypervisor-Based	Scale-out enterprise-class architecture, protect, recover and migrate thousands of VMs
Always-On	Data loss in seconds and continuous replication of VM block-level changes with no snapshots
Zerto Analytics	Securely monitor protection across multiple sites from anywhere anytime
One-To-Many	Simultaneously replicate VMs both locally and to multiple remote sites
Automation	Recover individual applications or entire sites in minutes with 1-click failback
Granularity	Rewind and recover VMs and applications from any point in time up to 30 days ago
File-Level	Restore files and folders from seconds before corruption, ransomware infection or deletion
Prove Compliance	No-impact failover testing and reporting to prove recovery in working hours in minutes
REST API	Fully automate deployment and VM protection with easy to use ready-made examples
Future-Proof	Utilize Zerto on-premises or for DRaaS to Azure, IBM Cloud, AWS or one of over 350 Zerto Cloud Providers

Zerto Platform

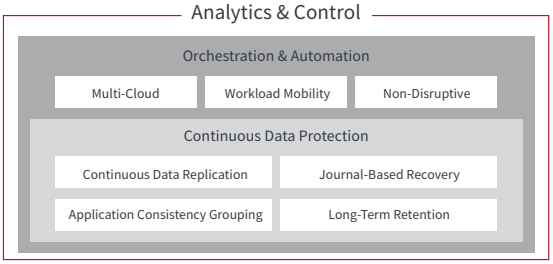


Fig 4. The Zerto IT Resilience Platform™ converges backup, disaster recovery and cloud mobility into a single, simple, scalable platform to reduce the costs and complexities of multiple solutions. The platform is based on a foundation of Continuous Data Protection, it's at the core of enabling resilience. Orchestration and Automation is built in, you can't modernize and innovate if it's not automated and simple. Analytics & Control provide complete visibility across multi-site, multi-cloud environments to ensure SLAs of the business are met.

Zerto Architecture

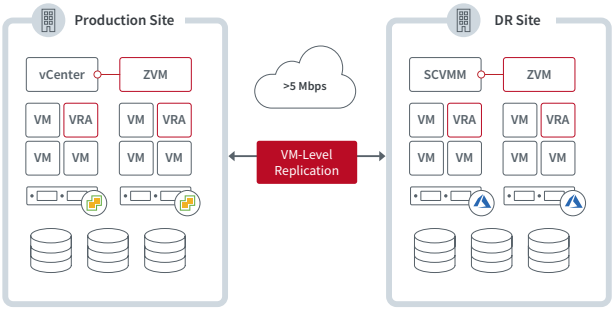


FIg 5. Graphical representation of Zerto's architecture. There are two main components to the software: The user interface virtual machine or Zerto Virtual Manager (ZVM) which installs into your existing vCenter or Systems Center Virtual Machine Manager, and the Linux-based Virtual Replication Appliance (VRA) which is the replication engine deployed on each ESXi or Hyper-V host.

About Zerto

Zerto provides an IT Resilience Platform™ that delivers enterprise-class disaster recovery, data protection and workload mobility specifically for virtualized datacenters and cloud environments.

Zerto's award winning IT Resilience Platform™ provides enterprises with continuous data replication and recovery designed specifically for virtualized infrastructure and the cloud. Zerto is the industry's first hypervisor-based replication platform for all applications, replacing traditional array-based BC/DR solutions that were not built to deal with the virtual paradigm.

Today, enterprises of all sizes are deploying applications on virtualized IT infrastructures and clouds. In order to maximize investments in these technologies it is imperative for business to have alignment across their entire IT strategy. In order to maximize the impact of the virtualization strategy for the production environment, virtualization must be incorporated into all other IT processes and procedures.

More information at www.zerto.com
Follow us on Twitter @Zerto

WANT TO TRY IT OUT?
Zerto Virtual Replication can be installed, configured and replicating VMs in under 1 hour. With simple VM-based replication enabling RPOs of seconds and RTOs of minutes, why not go to www.zerto.com/trial and click to download a free trial today?

About Microsoft Azure

Microsoft Azure is a growing collection of integrated cloud services that developers and IT professionals use to build, deploy and manage applications through our global network of datacenters. With Azure, you get the freedom to build and deploy wherever you want, using the tools, applications and frameworks of your choice.

- **Scale to the cloud cost effectively** – Seamlessly extend your datacenter to the cloud for bottomless capacity, continuous availability and lower storage costs – all without investing in or maintaining additional infrastructure
- **Control your IT resources wherever they are** – Secure and manage your data and applications with hybrid IT. Use familiar tools and a common identity on any platform and in any cloud
- **Write applications once, deploy anywhere** – Build applications in your preferred method, then deploy applications and store data in the cloud locations that best meet your business and regulatory needs

Azure

About Zerto

Zerto helps customers accelerate IT transformation by eliminating the risk and complexity of modernization and cloud adoption. By replacing multiple legacy solutions with a single IT Resilience Platform, Zerto is changing the way disaster recovery, data protection and cloud are managed. With enterprise scale, Zerto's software platform delivers continuous availability for an always-on customer experience while simplifying workload mobility to protect, recover and move applications freely across hybrid and multi-clouds. **www.zerto.com**

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