

Zerto

Future of Backup: From Periodic to Continuous

March 2019

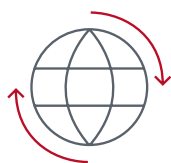
Gijsbert Janssen van Doorn



Introduction

Backup has been an essential part of IT infrastructure since its inception and it is unlikely that will ever change. But with the IT landscape rapidly changing and threats increasing, are we still able to rely on the backup technology we currently use? In this white paper, we will discuss how backup requirements are changing and whether today's backup technology can meet businesses' evolving demands to drive modernization and digital transformation. We will explain why the future of backup is continuous journal-based protection, and why it's time to move from recovery to availability and restore to resume.

Requirements are changing



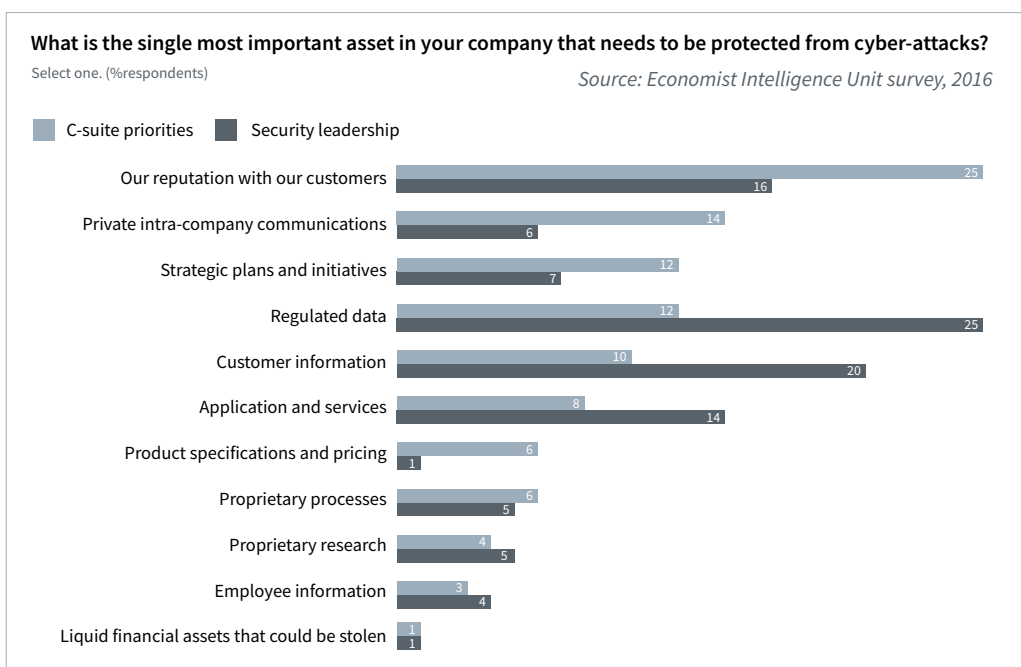
24/7—As organizations increasingly focus on digital transformation, IT has become a critical strategic partner to the business. The importance of keeping your systems up 24 hours per day, 7 days per week has never been higher, but availability means much more than just having systems “up.” Users accessing IT systems are expecting the same experience every time, requiring IT to deliver high performance and stability no matter what time of the day.



Ransomware—The threat of ransomware is increasing and the impact of such an attack is enormous. It is not a question of “if” but, it is a question of “when” you will face this challenge. Choosing between paying the ransom or suffering data loss can be both costly and risky. Recovery using traditional backup methods might cause up to 24 hours of data loss and may take days before all applications and system are up and running again.

Organizations can't afford to sustain any data loss. To avoid the impact of data, productivity, and revenue loss, companies need more granularity in recovery, while maintaining the same level of performance. IDC determined that the average cost of downtime is \$250,000 per hour across all industries and organizational sizes. For more details see: <https://www.zerto.com/the-state-of-it-resilience-2018>).

Besides data and productivity loss, damage to an organization's reputation is at stake. Customers can easily share their frustration on social media where it can then be exposed to other customers or prospects.



1. IDC The State of IT Resilience 2018, sponsored by Zerto. <https://www.zerto.com/the-state-of-it-resilience-2018>).

Shortcomings of Traditional Backup Technology

When looking at the backup technology currently protecting your data—one of a company’s most valuable assets—not much has changed over the last 35 years. The basic process remains the same: during off-peak hours, take a copy of the data that changed in your production environments and store it in another, secondary location.

Performance Impact

The reason most take backups during off-peak hours is because copying all that data takes time and impacts performance on production environments. Whether the solution is using agents in the operating system or snapshots on the virtual machines, the data is read directly from production systems and is sent across the network. At best, the VMs are sluggish; at worst, they’re temporarily unusable. Every IT support engineer knows exactly what to check for when users complain about “slow” systems on Monday morning.

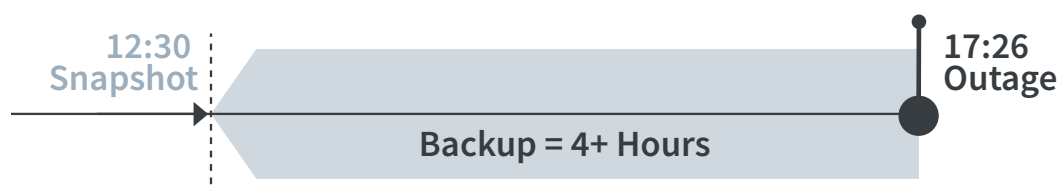
Complexity

Scheduling backups is often a resource-intensive task which requires ensuring, among other things, that backup jobs don’t interfere with each other, and that database maintenance jobs don’t impact the run-time of your backups.

In attempts to avoid the performance impact and to keep the backup windows as short as possible, traditional backup vendors introduced distributed systems to handle the data being transferred (e.g. backup proxy, media agent). The larger the environment gets, the more likely it needs more of these systems and it’s often recommended to run these services on dedicated physical systems. Managing and sizing the backup infrastructure becomes a complex process needing dedicated specialists within the IT team.

Granularity

Due to the periodic nature of backups, IT teams are unable to meet the requirements for more granularity. And because of the performance impact on your production systems, backups can’t be made multiple times a day—thus the prevalence of the daily backup. However, this means when data needs to be recovered, the last available copy could be 24+ hours old and any changes since then are entirely lost.



Inconsistent recovery

In today’s IT environment, applications do not reside on a single virtual machine (VM), but instead are spread across different VMs with different roles. Most of the time, those applications also have dependencies on other applications, creating complex application chains. Successful recovery of those entire application chains depends on how consistent you can recover the individual VMs.

For example, with traditional backup technology, the jobs start at 11pm and are finished at 4am—this means that there could be up to 5 hours of difference between individual VMs. Having inconsistencies like this makes application recovery troublesome, complex, and time-consuming; this is the reason backup recovery time objectives (RTOs)—how long it takes to get back up and running—are so lengthy

		Recovery Hypervisor	Recovery Hypervisor	Recovery Hypervisor
RPO	00:15:00	VM1 App1, VM3 App2	VM1 App3	VM10 App1, VM5 App3
RPO	01:00:00	VM2 App1	VM5 App1	VM3 App3
RPO	04:00:00	VM4 App2	VM6 App1	VM9 App1
RPO	08:00:00	VM3 App1	VM5 App, VM7 App1	VM2 App3, VM12 App1
RPO	12:00:00	VM1 App2	VM8 App1	VM11 App1
RPO	+ 24:00:00	VM2 App2, VM4 App1		VM4 App3

Replication without consistency groups

Backup Trends

As data protection is such a vital component of every datacenter, the list of products that support any datacenter strategy can be endless. Let's focus on one of the biggest trends today: hyperconverged backup.

Hyperconverged backup consolidates compute resources, storage, and backup software into a purpose-built hardware appliance that enables scale-out architecture. By combining all of these resources and features into a single solution— and adding an easy-to-use interface to manage and schedule your backups—they solve many of the complexities you experience when running more traditional build-your-own backup solutions.

But does the hyperconverged backup model address the requirement for more granular recovery? It successfully reduces complexity in the backup architecture, but still uses the same technology to protect the data; i.e. periodically copies the data from the production systems to a secondary storage target.

Continuous Backup – The Future

To ensure granularity without impacting production performance, the future of backup is moving from periodic backup to continuous backup.

Continuous Replication

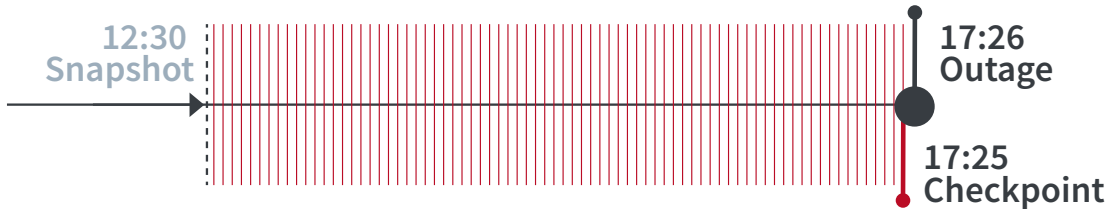
By using continuous data replication, you can deliver recovery point objectives (RPOs) of seconds by replicating every change that is generated in real-time. Backup should also rely on scale-out architecture for replication that allows you to protect environments with thousands of VMs. All operations should be performed with zero performance impact on the production environment 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 offer you granularity of seconds, so you can safely rewind back to any point in the past - even up to 30 days ago. Recover files, applications, VMs, or even entire datacenters by simply pressing a virtual “rewind” button. Most recovery use cases that require granular recovery—such as file deletions, database corruption, or ransomware—only require short-term retention.

Continuous Data Protection (CDP)

Combining always-on 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. For example, if an outage occurs at 17:26, CDP enables restoring data from 17:25 rather than a backup that is likely at least 4 hours out-of-date where all the data written since the 12:30 snapshot is now permanently lost.



Application Consistency

To avoid inconsistent recovery of multi-VM applications, they will need to be protected as a cohesive, logical entity. When creating recovery points, all the VMs should share the exact same recovery point so that when the application is recovered every VM that contains the application spins up from that same cross-application recovery point. All of this should be guaranteed no matter where the VMs are located within the infrastructure.

		Recovery Hypervisor	Recovery Hypervisor	Recovery Hypervisor
RPO	00:00:04	VM1 App1, VM2 App1, VM3 App1, VM4 App1	VM5 App1, VM6 App1, VM7 App1, VM8 App1	VM9 App1, VM10 App1, VM11 App1, VM12 App1
RPO	00:00:06			
RPO	00:00:08	VM1 App2, VM2 App2, VM3 App2, VM4 App2	VM5 App2	
RPO	00:00:10			
RPO	00:00:12			VM1 App3, VM2 App3, VM3 App3, VM4 App3, VM5 App3
RPO	00:00:14			

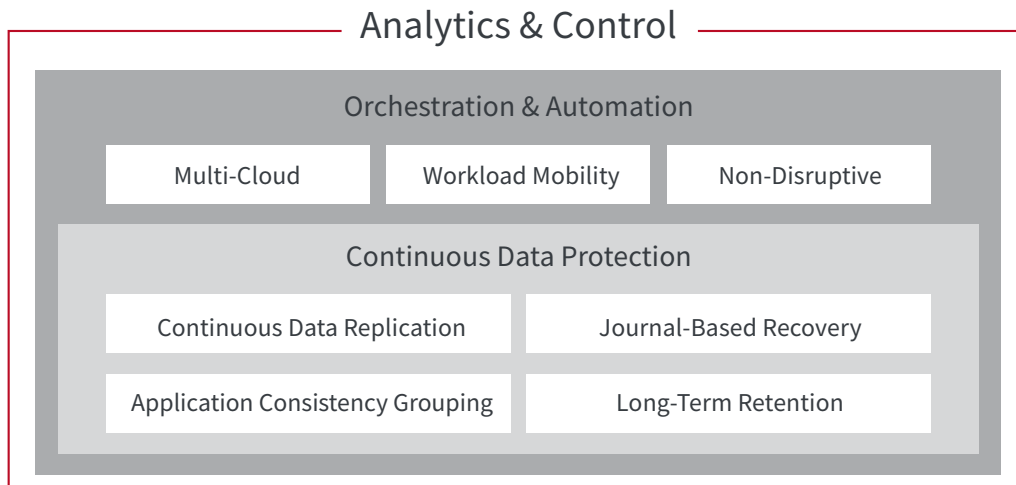
Replication with consistency groups

Long Term Retention

Besides offering flexible options for short-term (up to 30 days) recovery scenarios, you will likely also have compliance requirements to store data longer than 30 days. Long-term retention data requires different storage and recovery times, but must be an integral part of your data protection platform. As with short-term backups, copies should not come directly from production systems as this impacts performance and often disrupts user experiences. Using a technology that benefits 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.

Zerto IT Resilience Platform™

Zerto's IT Resilience Platform converges disaster recovery, backup and cloud mobility solutions into a single, simple, scalable platform.

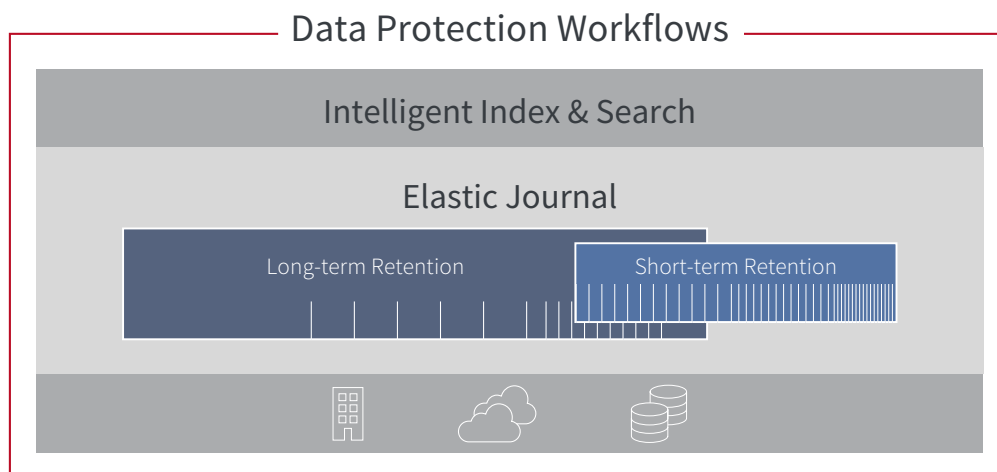


This platform offers you a replacement to traditional disaster recovery, backup and migration technologies and consists of the following key components:

Continuous Data Protection

CDP is the foundation of the platform, offering continuous data replication without impact to performance. It gives you the ability to recover applications consistently anywhere from seconds ago up to years ago by utilizing the Elastic Journal.

The **Elastic Journal** is a new concept in data protection bringing together both short-term and long-term retention. Using unified data protection workflows, powered by intelligent index and search, the elastic journal enables quick recovery of data—regardless of whether it's from a few seconds ago or a few years ago. Data gets copied from the short-term retention storage into the long-term retention repositories. As the short-term retention is stored on the target site, moving data to the long-term repository has no impact on production so copies can be taken as often as needed, eliminating the concept of “backup windows”.



Orchestration & Automation

User-friendly workflows allow you to easily recover files, VMs, applications, or entire datacenters with only a few clicks. These workflows are consistent across any platform allowing you to easily failover to a secondary VMware site, move an application to Azure, use AWS as a DR site for your IBM Cloud workloads or simply restore a file, virtual machine or entire application.

The orchestration & automation allows you to pre-define everything you need to successfully recover your workloads (e.g. boot-order, re-IP, networking).

Analytics & Control

Zerto Analytics provides one comprehensive overview of your entire multi-site, multi-cloud environment. Utilizing metrics such as average recovery point objective (RPO), network performance, and storage consumption, Zerto Analytics delivers real-time and historical analysis on the health and protection status of your applications and data. Intelligent dashboards provide you a way to spot trends, identify anomalies, and troubleshoot issues in network, RPO, and other business service levels. With these dashboards, Zerto Analytics will tell you if all the required files, applications, and data are ready and capable of instant recovery or if they are out of compliance. Leveraging these features, you can achieve greater overall efficiency, make more informed decisions and maintain an IT resilient mode of operations.

For more information, schedule a demo of the IT Resilience Platform or start a free trial.



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

Copyright 2018 Zerto. All information may be subject to change.