



► Ensure Business Continuity— with a Modern Disaster Recovery Approach

An overwhelming torrent of data has been unleashed due to Big Data, cloud computing, social media, mobility and the Internet of Things. The average enterprise struggles to provide enough storage capacity to house this data. Further, many have realized that the old patchwork of point products for data protection is no match for current data volumes.

What is needed is a modern approach to data protection, one that encompasses backup automation, disk and flash over tape, elimination of redundant data snapshotting, virtualization, software-defined storage, analytics, hybrid architectures and a common platform to unify, centralize and simplify Disaster Recovery (DR) operations.





Contents

[THE HIGH PRICE OF DOWNTIME / 3](#)

[ELEMENTS OF MODERN DR / 3](#)

Automated Backup / 4

Favor Disk and Flash over Tape / 4

Eliminate Redundant Data / 4

Institute Snapshots / 5

Virtualize and Adopt Software-Defined Storage / 6

Use Analytics to Gain Insight / 6

Self Service / 7

Adopt a Hybrid Architecture / 7

[SELECT A UNIFIED DR INFRASTRUCTURE / 8](#)

Commvault – A Modern Approach to DR / 8



► THE HIGH PRICE OF DOWNTIME

The quantity of data in the digital universe today is almost inconceivable in scope. IDC placed the amount of digital data in existence at the end of 2013 at 4.4 ZB¹. When you consider that the 20 million books of the U.S. Library of Congress only amount to 20 TB, you begin to get the idea that we are talking about a vast amount of storage. Now consider this, IDC predicts that the quantity of digital data will increase tenfold within five years, reaching 44 ZB by 2020. That is forecast to happen due to the advent of Big Data, the cloud, mobile smartphones, social media, wearable devices and the Internet of Things (IoT).

The modern enterprise represents a microcosm of the digital universe as a whole. The expansion of its IT systems, multiple burgeoning databases, millions of transactions moving at light speed, the adoption of Big Data technologies such as Hadoop, the transfer of many applications to the cloud – all of these factors and more represent seemingly insurmountable challenges.

Perhaps the biggest challenge facing organizations, however, is DR. In the event of a grid failure or natural disaster, how on earth is an IT department supposed to ensure all of these disparate systems and platforms continue to operate without interruption? Yet the price of not doing so is significant.

According to IDC, the average cost of downtime is about \$100,000 per hour, but can go as high as \$1.6 million per hour for some organizations.² Most organizations experience 10 to 20 hours of unplanned downtime per year – and that's without any disaster taking place. Now factor in a major event that has the potential to take an entire business offline for days, if not weeks. Few organizations, therefore, can afford to be without proper DR protection. But the reality is that the conventional address to backup and recovery is failing. That is the subject of this white paper. It covers the fact that only a modern approach to DR, consisting of multiple facets united on a common platform, can hope to achieve true resiliency come what may.

Don't Get Lost in the Clouds¹

Read about the key advantages the cloud can bring to your data protection processes and the barriers you need to consider to ensure that you are truly realizing the cloud's value.

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► ELEMENTS OF MODERN DR

A modern approach to DR consists of many independent elements that dovetail together into an integrated whole. These elements include:

- Automation of backups to eliminate labor-intensive tasks and avoid backup failures
- Ditching tape in favor of disk and flash in order to provide the speed of response required by demanding applications
- Elimination of redundant data via deduplication and centralized management

¹ IDC Digital Universe Study, April 2014

² IDC, "Leveraging the Public Cloud for Faster Disaster Recovery at Lower Cost," May 2015

- The correct use of snapshots to provide instantaneous recovery of key applications and systems
- The implementation of virtualization technology and software-defined storage to decouple software and applications from the underlying hardware infrastructure
- Analytics to provide insight in real-time
- Self-service capabilities to empower users
- A hybrid architecture composed of on-premise and cloud elements
- And a common platform to unify, centralize and simplify DR operations

AUTOMATED BACKUP

The automation of backups has been with us for some time. It sounds good, and certainly some of the drudgery and labor-intensive nature of backup is removed. But in nearly all cases, true automation is never achieved. While some aspects of backup are taken care of, someone in IT still has to spend far too much time managing or working with backups to take care of the many issues that inevitably crop up. This might include overlong backup windows, slow or failed backups, and sluggish application performance when backups are being executed.

When you investigate why, you typically find that someone still has to spend time verifying, managing or working with backups due to several factors. Most storage hardware, for example, lacks sufficient application awareness or is poorly integrated with other systems within the DR ecosystem. Additionally, some backup tools demand scripting to set up schedules, troubleshooting issues and automate a limited subset of overall functions. A reliable and speedy backup is a fundamental part of any DR strategy, more sophisticated steps will be ineffective unless supported by fully automated backups that eliminate labor-intensive tasks and avoid backup failures via a single and adaptable infrastructure and interface.

FAVOR DISK AND FLASH OVER TAPE

While tape continues to be used by some as a location for long-term archiving of inactive content, it has no place in a modern DR infrastructure. Compared to flash, tape is much too slow for the rapid pace of day-to-day IT. When a system goes down, the business needs to have it recovered in a matter of minutes. That can only be achieved by using flash and disk supported by the latest software defined designs as part of a modern DR architecture. Ditching tape in favor of disk and flash is a sure way to provide the speed of DR response required by demanding applications.

ELIMINATE REDUNDANT DATA

It's well known that individual computers often contain multiple copies of the same document. Traditional backup ends up storing multiple copies of the same files. Within the enterprise, the problem escalates. If the boss

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IDC

"Leveraging the Public Cloud for Faster Disaster Recovery at Lower Cost," May 2015

sent a large presentation file or video to every employee, you can end up with huge backups which include countless copies of that one big file. If the business is global in extent with multiple data centers, the issue of data redundancy rises exponentially.

Deduplication and compression technologies have been designed to prevent backup software from making endless copies of the same file. However, deduplication appliances are typically used as backup targets. They do a good job of sifting out duplicate files – but only after they have been relayed across the network. Further, such appliances are generally implemented within information siloes. Each remote office or data center may institute deduplication within the sphere of their own silo. Yet across the enterprise as a whole, backup and storage consumption is increased by around 50% due to redundancy.

Modern data protection strategies, therefore, must be global in nature, treating the information of the entire organization as one pool of information. This not only eliminates the siloes, it eradicates redundant data at the source instead of the target. That means redundant backup files are never transmitted across the network. By using software-based, source-side deduplication as part of a modern centralized approach to DR, it is possible to reduce network traffic from backups by as much as 90%. Just as importantly, restores are able to use the data wherever it came from and wherever it is efficiently stored.

INSTITUTE SNAPSHOTS

Snapshots make it possible to provide near instantaneous recovery of key applications and systems. By linking application-aware snapshot technology to backup processes, data protection becomes a much faster proposition. But the snapshot tools inside most storage arrays lack the required level of functionality and workload support. Therefore, it is advisable to utilize snapshot technology that combines deep application and hypervisor awareness with broad hardware compatibility. This should be made available within a single management console to speed recovery operations, maximize hardware investments and reduce backup windows. And by integrating snapshots with the full spectrum of DR and backup functions on a common platform, much tighter SLAs can be achieved.

Snapshots can be quickly taken and then stored near the original data of mission-critical systems for quick restoration in the event of a disaster. This eliminates the need to transmit information across the network during recovery. This also enables organizations to provide a higher tier of data protection for their most important information assets. Those systems can be back online almost immediately while lower tier DR processes bring remaining systems up only a short time later. This provides the flexibility to implement different levels of recovery within the enterprise: For example, income making or delivery systems that are deemed to have the highest priority can be afforded snapshot protection.

IDC Whitepaper: Leveraging the Public Cloud for Faster Disaster Recovery at Lower Costⁱⁱ

Read how cloud computing can be leveraged to develop DR capabilities that are both less expensive and easier to deploy than traditional methodologies.

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VIRTUALIZE AND ADOPT SOFTWARE-DEFINED STORAGE

Virtualization has moved like a tidal wave throughout the entire IT universe over the past decade. Around 70% of servers are now virtualized and the number continues to grow at a rapid pace. In recent years, the world of storage has been transitioning towards more and more virtualization. The latest wave of this – software-defined storage (SDS) – takes storage virtualization to such a deep level that it decouples the software and applications from the underlying storage infrastructure. This has tremendous advantages for those organizations seeking to establish a flexible, agile and scalable DR platform that spans global operations. Only a modern approach to DR, therefore, can support the increase in scale and resiliency of the latest virtual machine-rich and Big Data architectures. Such a strategy removes the burden of manual processes while minimizing the performance impact data protection processes often have on production hosts.

While technologies such as the Hadoop File System come equipped with mirroring and basic DR capabilities, analyst firm Enterprise Strategy Group (ESG) cautioned IT departments to supplement this with a full battery of approaches to data protection.³ Similarly, as newer platforms have arrived on the market such as Microsoft SharePoint, VMware and Salesforce.com, each has proven difficult to protect, according to ESG. Many respected backup applications, for example, struggled to back up SharePoint files in its early days. The same happened with VMware. It took a couple of years before VM backup became more dependable. However, Salesforce.com remains a challenge.

“Salesforce.com (SFDC) has not yet published APIs that allow traditional backup solutions to protect SFDC data,” said ESG.

This is gradually being addressed by newer protection methodologies, but the point is that there will be no end to the development of new technologies. Therefore, DR strategies need to be more comprehensive than ever to afford complete enterprise protection.

“Although platform technologies like Hadoop distributions often have redundancy built-in, with data mirrored to multiple nodes, there is no substitute for backup and replication capabilities,” said ESG.

USE ANALYTICS TO GAIN INSIGHT

The scale of today’s storage infrastructures is both a challenge and an opportunity. The challenges are well documented. But the opportunity often goes unrealized inside many enterprises due to lack of analytic capabilities. A modern approach to DR, therefore, must encompass comprehensive reporting and analytics to access actionable information to make informed decisions.

Rather than having to buy additional reporting or business intelligence point products to provide this functionality, next generation DR tools

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ENTERPRISE STRATEGY GROUP
*ESG Brief: Data Protection and Disaster
Recovery for Big Data, April 2014*

³ Enterprise Strategy Group, ESG Brief: Data Protection and Disaster Recovery for Big Data, April 2014

offer it already built in. This provides organizations with the chance to gain insight into utilization, success rates and data profiles in real-time in order to plan better and achieve operational excellence.

SELF SERVICE

Once upon a time, every single data loss incident required a call to IT. Even today, when the boss accidentally deletes or loses an important file, IT typically receives a call to find and recover it. Such a mode of operation is outdated and highly inefficient.

The situation is more pronounced in light of the rise of mobility, virtual workplaces and Bring Your Own Device (BYOD) policies. As this transformation of the work environment has added greater complexity and increased the strain on help desks, a more people-centric approach is called for. A modern approach to DR must empower users via self-service capabilities to resolve their own issues, recover their own lost files and perform basic troubleshooting actions. At the same time, the DR platform should allow IT to retain control, maintain security and provide an overarching layer of enterprise management.

ADOPT A HYBRID ARCHITECTURE

The move to the cloud can be tempting. Providers lure enterprises with monthly subscription plans, ease of use and the elimination of capital expenditure. But a cloud-only DR strategy may not be wise for many businesses, and in some cases it violates regulatory requirements.

In any case, most businesses already have a substantial investment tied up in internal systems for storage and DR. It rarely makes sense to abandon these assets before they achieve their full return on investment potential. A modern approach to DR combines on-premise and cloud elements each optimized to the price, performance and data recovery needs of the enterprise.

The adoption of a hybrid architecture also provides greater flexibility which enables organizations to be far more resilient in the event of a major incident. The use of a primary data center, a secondary site and the cloud means the enterprise has several options it can fall back on when systems go down. According to Gartner⁴, this helps organizations to avoid a common error: DR plans being distorted by an excessive focus on particular scenarios but leaving the organization exposed to events they failed to take into account.

Supplementing data center-based DR actions with the cloud also allows organizations to follow Gartner advice: "Prioritizing expenditures based on net reduction of business impact provides infrastructure and operations leaders with a useful weighing for allocation of resources." In other words, an imbalance in DR investments results in overprotection and under protection. When in-house or secondary DR resources prove

Infographic: Powering Disaster Recovery in the Cloudⁱⁱⁱ

This infographic shares the challenges organizations face when it comes to DR and how the cloud is coming to the rescue.

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far more expensive than the value of the data merits, the cloud can be used to reduce costs while still providing some level of protection. Additionally, it is conceivable that a secondary data center can go down at the same time as the primary site during a natural disaster. By adding cloud-based DR resources, greater resilience is added.

“While it may be tempting for organizations to jump into the cloud data protection and DR space and build backwards to the on-premise datacenter, it really makes more sense to extend the datacenter capabilities outward to include the cloud,” said IDC.⁵

► SELECT A UNIFIED DR INFRASTRUCTURE

Point tools once had their place. But as they don't integrate, IT staff has to spend long hours hopping between screens in their attempts to manage storage, protect data and troubleshoot issues. A modern approach to DR must integrate all DR functions such as replication, backup, snapshotting and recovery. Therefore, DR has to be part of part of a common platform to provide a holistic method of managing, protecting and accessing data. Only with a common platform is it possible to unify, centralize and simplify DR operations.

After all, recovery from disasters, data loss incidents and power cuts can't occur smoothly when complexity is involved. It takes a simplified approach to DR that reduces complexity by instituting a single management platform for recovery. Only in this way is it possible to achieve end-to-end automation of DR workflows.

COMMVAULT – A MODERN APPROACH TO DR

The criteria discussed above are essential for a modern and effective approach to DR. Commvault software fulfills these requirements. Deep integration with more cloud platforms than any other DR vendor such as Amazon Web Services (AWS) and Microsoft Azure are guided by Commvault's cloud orchestration and provisioning capabilities to bridge the gap between cloud and the internal data center, as well as between clouds giving organizations an end-to-end DR solution.

As the software is both cloud and hardware agnostic, it provides the data movement, orchestration and management capability to facilitate data protection and recovery both on-premise and in the cloud.

The average cost of downtime is about \$100,000 per hour, but can go as high as \$1.6 million per hour for some organizations.

IDC

“Leveraging the Public Cloud for Faster Disaster Recovery at Lower Cost,” May 2015

4 Gartner, Prioritize Disaster Recovery Investments to Maximize Business Value, December 2014

5 IDC, “Leveraging the Public Cloud for Faster Disaster Recovery at Lower Cost,” May 2015



► RESOURCES

- i commvault.com/resource-library/5522b12cea866914000001e5/dont-get-lost-in-the-clouds.pdf
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- iii commvault.com/resource-library/5522b1ce119b8d7b160003d7/disaster-recovery-in-the-cloud-infographic.pdf

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