THE INS AND OUTS OF CLOUD-BASED DISASTER RECOVERY

Not all cloud solutions are created equal

INTRODUCTION

For most enterprises and healthcare organizations, disaster recovery (DR) is either not a high priority or difficult to implement due to cost and/ or complexity - until a disaster actually happens. Then, nothing is more important, and time is suddenly of the essence.

Beyond speed, an ideal DR solution should be low cost, with minimal capital expenditure and minimal maintenance during the extended periods when it's not in use. Organizations seeking such a solution can now look to the cloud. However, as this paper will explain, not all cloud solutions are created equal.

Cloud computing is having an impact on every aspect of how IT organizations achieve their goals, and DR is one of the most significant. In comparison to traditional DR solutions, cloud-based DR is dramatically more efficient and also makes better financial sense.

Most enterprise IT organizations operate a hybrid DR model. Local disc-based storage handles day-to-day problems, such as restoring files that users have inadvertently deleted; while tape storage is used for true disasters: fires, floods, earthquakes and the like. Unfortunately, tape doesn't handle these situations very well.

When disaster strikes, the backup tapes first have to be retrieved, which can involve significant delays. Then they must be shipped on an emergency basis to the remote site where backup is to take place; and depending on the site's readiness, may have to be provisioned with the appropriate hardware and properly configured.

All of these activities take place in a crisis atmosphere that can lead to costly mistakes. If there are any problems, such as incompatible tape mechanisms at the recovery site, time to recovery can be delayed by days or even weeks. This extra unnecessary delay is a mini-disaster in itself, because tape-based recovery already requires several days of lag time due to tape's inherent slow speed.

Tape-based approach to DR also has serious financial drawbacks. It requires organizations to maintain hardware that essentially sits around taking up space until a disaster occurs. Resourceful IT organizations may find some use for this equipment, but under-utilization is typical. Unfortunately, tape's inherent slow speed costs money. Every hour that backup tapes are spinning is an hour where production applications aren't running – often resulting in huge losses.

Moving forward, it is unlikely that tape-based storage will disappear entirely as it is particularly well suited for data that must be stored to ensure regulatory compliance. These compliance requirements may involve preserving some records for many years. However, it is clear that a tape-based approach to DR is unable to meet the requirements of today's enterprises' recovery point objectives (RPO) and recovery time objectives (RTO), and is not the most effective solution.

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THE CLOUD ALTERNATIVE: FASTER, CHEAPER

Cloud-based DR[1], or Disaster Recovery as a Service (DRaaS), presents an entirely different picture.

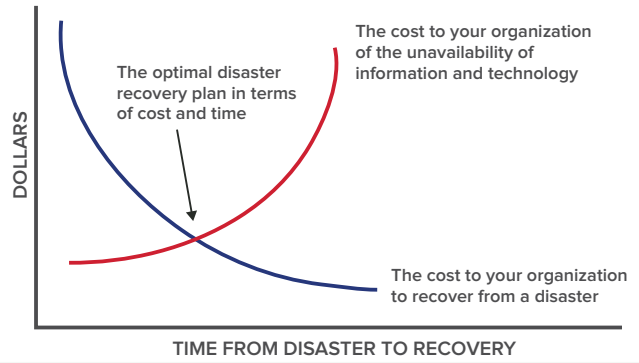
To begin with, there are no tapes to ship from point A to point B. Rather, technicians simply initiate a connection from the cloud to the recovery site and restoration begins immediately. Also, when data is stored on tapes the speed of the recovery process is constrained by the speed at which physical tapes can spin. The second advantage has to do with the recovery site. The desired recovery time objective (RTO) for data varies dramatically from industry to industry and organization to organization. So do recovery sites.

The fastest way to get back up and running involves a "hot" recovery site, one that is for all practical purposes a mirror image of the production data center. Such recovery sites are the most expensive. The slowest approach is based on a "cold" recovery site, which may be nothing more than an appropriate space in a building where equipment can be put in service once it has been procured. This approach is the cheapest. Between these two extremes is the "warm" recovery site, which typically has all the hardware necessary for recovery, but in a state that will require minimal configuration before recovery can begin. There is, in other words, a cost/speed tradeoff curve, as shown in the chart below[2].

An organization may make multiple choices to serve different business needs, but no matter what the choice on the cold-to-hot curve, cloud-based DR reduces capital expenditures, often at a scale of hundreds of thousands of dollars. This, plus the fact that cloud-based storage is also cheaper on a cost-per-gigabyte basis, has the effect of shifting the curve to the left. Now organizations can maintain their current RTO at a lower cost, or opt for a faster recover without spending more.

Cloud-based DR also offers another significant advantage related to testing. There is plenty of anecdotal evidence that backups fail – some say as high as 85 percent of the time[3]. To make sure that problems are caught, most enterprise-scale organizations try to test their DR systems at least once a year. Unfortunately, because IT resources are strained almost everywhere, testing is often limited to sample restores, rather than a full end-to-end test due to the complexity and time involved. Unfortunately, with this kind of sample-based testing, organizations can never discover if significant bits of data aren't being backed up until an actual disaster occurs (after which it's too late to do anything). In contrast, a cloud-based DR system can be fully tested quite easily, so that all the stakeholders can feel confident that if a backup is required, it will really work.

Disaster Recovery Cost Curve



1 THROUGHOUT THIS PAPER, THE TERM "CLOUD-BASED" REFERS TO THE USE OF PUBLIC CLOUDS
2 HTTP://WWW.SLIDESHARE.NET/AAMIR97/51-CHAPTER-5-IT-ARCHITECTURES

SPEED TO RECOVERY

Another major benefit for moving from conventional to cloud-based DR is speed.

And in this area there are very important issues related to the "pipes" used to execute backup and recovery. The internet connections of many organizations are already taxed. In a crisis, they may not have enough bandwidth to handle the amount of data that needs to be transferred during DR. Even under good conditions, conventional internet-based recovery can be slow.

There is an alternate approach, however, that eliminates this problem. QTS DRaaS, utilizes virtual replication technology that combines near-continuous replication with block-level, application-consistent data protection across hosts and storage. It replicates only the virtual machines (VMs) an organization chooses, not an entire disk array. This cuts down on unnecessary bandwidth transfers and frees up storage for other critical business activities. Beyond recovery speed, this approach has other significant benefits:

- **Backup windows.** While most discussions of DR focus on recovery, DR would be impossible without the regular backup of operational data, and this routine task has become problematic for many IT organizations. With the advent of 24/7 business models to serve global commerce needs, the backup windows have begun to shrink, while the amount of data continually increases. QTS DRaaS provides continuous data protection from your physical environment to your target site hosted in our Enterprise Cloud, ensuring you always have access to a current copy of data, applications and operating systems.

- **Logical Groupings.** During a disaster, you want to be able to recover as quickly as possible. Having your servers protected into logical groupings by application or service and booting in the correct order shortens the downtime greatly.

- **Continuous Data Protection.** QTS DRaaS physical to cloud solution provides continuous data protection from your physical environment to your target site hosted in our Enterprise Cloud, ensuring you always have access to a current copy of data, applications and operating systems.

- **Security.** Security of sensitive data is one of the top priorities not only for CIOs but CEOs as well. With a direct physical link connecting the DR source and target, most of the modes of attack by hacker organizations are blocked by the nature of the connection itself.

- **Non-Disruptive Testing.** Test your recoveries without impacting your production site.

PROVEN BENEFITS OF DRAAS
RECOVER ALMOST 3X FASTER FROM EACH EVENT
60% SAVINGS IN OPERATIONAL EXPENSES
40% SAVINGS ON STORAGE COSTS
ACHIEVE RPO OF SECONDS AND RTO OF MINUTES

3 http://www.backupcentral.com/mr-backup-blog-mainmenu-47/13-mr-backup-blog/395-gartner- never-said-71-of-tape-restores-fail.html

DIY VS. 3RD PARTY EXPERTISE:

Support is critical during a disaster.

As experienced IT professionals have already learned, migrating anything to the cloud is not as simple as the hype would indicate. In fact, with DR there are many different options. Unfortunately, most of them have a strong do-it-yourself component.

It's worth noting that cloud computing isn't the primary business of the major cloud providers such as Amazon and Google. Rather, it's a convenient way to monetize the excess capacity that they may have on any given day after their primary business needs have been met. For this reason, their offerings to some extent take a one-size-fits-all approach.

This is not to say that these providers don't offer SLAs and have competent people on staff to help. But IT teams should be aware that the "help" is typically available only via e-mail, which means taking a place in a queue and waiting for a response. During the migration phase, this might be acceptable. During a crisis, any delays can cost huge sums.

A cloud and managed service provider whose total company focus is on service is often a better option. QTS + Carpathia, for example, will custom architect a DR solution, remotely install it and provide 24x7x365 live support when there are problems to solve.

DR THAT MAKES BUSINESS SENSE

Ultimately, decisions about DR should be business decisions that weigh the cost of quicker recovery against the cost of an outage in terms of sales, productivity, or other appropriate metrics. But no matter what metrics are involved, it is highly likely that cloud- based DR will prove to be the best solution.

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