The Virtual Data Center:
Using The Cloud To Restore and Recover Your Data

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Research compiled and published by IT analyst and business strategy firm Enterprise Strategy Group (ESG) indicates that 58% of professionals in small and medium-sized organizations can tolerate no more than four hours of downtime before experiencing significant adverse effects.1

The loss of critical data can be crippling to any business. IT managers within many small and mid-size companies are concerned about their ability to recover their data after an error, corruption, or disaster. However, the burden of backing up locally and sending those backups offsite for disaster recovery, presents tremendous financial and resource challenges.

That's where the ubiquitous "cloud" comes in. Much like a utility company that delivers electricity over a power distribution network, the cloud is being used to deliver IT services on demand. While definitions for "cloud" may vary, most would agree that the potential benefits are compelling and range from reduced complexity to added flexibility, increased reliability, and reduced costs.

Server virtualization is a catalyst for cloud-based backup and recovery adoption on two fronts. First, the rapid adoption of server virtualization is causing organizations to redesign their existing backup and business continuity strategies. Second, the enhanced flexibility and recoverability provided by server virtualization provides an excellent foundation for out-of-region recovery after a disaster.

"BUT I CAN DO THIS ON MY OWN...REALLY."

By and large if you have the infrastructure, the human resources and unlimited capital you might want to consider handling disaster recovery on your own by establishing a fault-tolerant High Availability (HA) environment. Or maybe you wouldn't. What would happen, for example, if your entire building was suddenly compromised by a natural disaster (e.g. flood, hurricane)? Or your servers go down and the data on all of your customers goes with it and your business comes to a standstill?

Let's not forget the hard and fast costs associated with building and maintaining your own DR facility. In addition to the upfront costs of servers, networking equipment and software licenses, there are facility costs such as energy and cooling as well as infrastructure costs, including IT administration, management and maintenance.

Still want to go it alone? Are you sure? So what are the alternatives? That's an easy one: look to the cloud.

KEY COMPONENTS OF EFFECTIVE CLOUD-BASED BC/DR

Basic Business Grade solution providers deliver the controls, security and flexibility that most businesses require of a back-up and recovery solution; however, they typically lack the more complex features required to quickly and easily, recover a lost server. That leaves it to the IT department to spend hours or days restoring a lost system to full production. And that only accounts for

1 Source: ESG Research Report, Medium-Size Business Server & Storage Priorities, June 2008.

the loss of a single server. If multiple servers go out at the same time – as in the case of a disaster situation – the time and effort required to recover an environment encompassing multiple servers can be catastrophic.

On the other hand, Disaster Grade (DR) solution providers enable organizations to recover multiple systems – even an entire production environment – in hours or days, as opposed to the days or weeks that would be required by using Basic Business Grade providers. The following represent proven approaches to keep in mind as you evaluate both Disaster Recovery Grade providers as well as your own Business Continuity/Disaster Recovery plans.

REPLICATED REMOTE BACK-UP TO HARDENED DATA CENTERS

If you measure your organization's ability to bounce back following a catastrophic event in terms of Recovery Time Objective (RTO) and Recovery Point Objective (RPO), the ability to quickly access an online copy of your data at an offsite location, in a cloud, makes remote data replication an innovative disaster recovery strategy. Through real-time replication of all systems to multiple, geographically dispersed sites, your data is effectively backed up to a second site, giving you the ability to recover it rapidly and get back to work. In addition, business grade DR providers' storage facilities are in "hardened" data centers with features like n+1 infrastructure, highly physical secure access, fortified structure and more. Additionally, the fact that access to the DR facility is exclusively available to authenticated clients reduces security risks.

DR GRADE ONLINE BACK-UP AND RECOVERY

One of the most popular alternatives to real-time replication is Online Backup and Recovery, (OBR) a facility that allows businesses to back-up their data at a remote site. Coupling data compression and data de-duplication with disk storage, OBR is a far superior to tape in ease of use, reliability, ease of recovery and time to recovery. OBR providers typically maintain disk storage in very large volumes that drive the cost of storage per gigabyte, far below what most businesses

could achieve on their own. While a DR Grade solution may cost more than a non-DR Grade solution, the costs of NOT having a DR Grade solution can be catastrophic.

CONTINUOUS DATA PROTECTION

Most businesses need to recover critical systems like ERP or Online ordering without loss of any data. Continuous Data Protection (CDP) is the real-time backup of data, whereby all data is transmitted to the back-up exactly as it is written to disk. That means in the case of an outage, even the most recently written data can be recovered. Look for business grade DR providers that include either real-time CDP or "Nearly Continuous" data protection, where data is transmitted within 15 minutes of being written to disk.

BARE METAL RESTORE

When a server fails, it can take days to fully install and activate the OS, install software, restore data, restore connections to that data and return the server to production. Bare Metal Restore eliminates this "component-based" recovery by fully restoring the entire server – OS, software, data and associated connections – in a single process. As a result, Bare Metal Restore is dramatically faster than re-building servers from restored components. Because of the time to recovery advantage, Bare Metal Restore is essential to any Disaster Recovery effort that entails the recovery of multiple servers. Selected DR providers include the ability to recover seamlessly to hardware that is dissimilar to the original server.

WARM SPARE CAPABILITY

Recovery of any production environment in a time of disaster means having servers to recover too. This may mean purchasing a "warm spare" environment and keeping it in the DR grade provider's facility. DR grade providers typically allow clients to place warm spare environments into collocation facilities within the same data center where the back-up data is stored. In addition to providing a facility for recovery, collocation of servers with back-up storage means that data transfer occurs at LAN speed (as opposed to transmission across WAN lines, which run much slower).

VIRTUALIZED DATA RESTORE

A true cloud-based recovery solution, Virtualized Data Restore is a relatively new and powerful technique implemented by some DR Grade Providers. Virtualized Data Restore (VDR) takes full advantage of the virtual nature of the "cloud" by allowing for the recovery of servers (including non-virtual servers) to a virtual server host within the DR provider's environment. With VDR, the DR provider creates a "virtual spare" of clients' servers for later restore if that server needs to be recovered. If the configuration of the production server changes, a new virtualized spare can be easily created. In time of disaster, the virtual spares are recovered as guests on a host virtual server owned by the DR provider. From there, OS, software and data are recovered to the virtual spare. VDR allows extremely fast recreation of a production environment, and is strongly recommended for clients with more than a few critical servers. VDR provides all of the advantages of Warm Sparing, but some distinct advantages. VDR eliminates:

- the cost of acquiring and maintaining warm spares
- the cost and complexity of updating warm spare server configurations in parallel with changes to the production environment
- collocation charges associated with housing the warm spare environment
- the possibility of hardware issues within the warm spare environment which might delay recovery efforts

Combining remote data replication with virtualized data restore enables a more cost-effective disaster recovery strategy. Replication provides a mirror copy of primary system data on a local or remote secondary system. If the primary system has an interruption of service, the secondary system can take over, minimizing downtime and data loss.

MANAGED HOSTING

Fast and effective recovery of a production environment is difficult to plan and even more difficult to execute. Few IT departments have staff with real-life experience in recovering entire environments in a crisis.

By leveraging the "cloud" as both a support as well as a strategic asset for clients, managed hosting enables organizations to not only save money on implementing an internal infrastructure, usually at great expense, but also to maintain both the efficiency of their current IT environment and its long-term scalability to compensate their evolving needs.

DR grade managed hosting providers have staff skilled and experienced in complex recoveries. This experience, leveraged to offer a broad set of IT services including data center outsourcing, IT consulting and technical support, means their technical specialists are regularly practicing and developing their expertise across a wide range of production experiences. Such providers tend to offer much deeper recovery support than many business-grade only providers.

A managed hosting provider also enables you to enjoy a lower fixed cost of ownership. There are no surprises in terms of operating costs that result from system failures, maintenance, or other situations. It is the hosting provider that takes care of any and all expenses related to the upkeep of the infrastructure. A customer's costs are fixed with an annual or monthly fee. And, without having to focus their time on routine tasks and troubleshooting, internal IT staff can be more efficiently deployed on initiatives that deliver the greatest value to their organizations.

SUMMARY

Obviously, nobody plans to have a disaster. But well-prepared businesses do plan for what they will do if a disaster strikes. Whether it's a high-profile disaster like a hurricane or a server that just went down, businesses can be crippled or put out of business if they are not ready to respond to a crisis that wipes out the production IT environment or renders it unavailable for more than a few hours.

With the emergence and maturity of the cloud computing paradigm as a means to not just store data, but also a way to provide secure access to it in times of disaster recovery, more virtual and fewer physical datacenters will be coming online. As a result, IT organizations must be ready to adapt their business continuity and disaster recovery approaches accordingly. A holistic approach to DR maintains your virtual servers in the same top tier, hot site facilities that protect your data, giving you rapid access to the systems required to ensure your business continues to experience optimum performance and operational continuity in the face of even the most adverse conditions or interruptions in service. ■

About the Author: Brian Vandegrift, vice-president at Venyu, is a problem solver. With over 14 years in technology consulting, he has helped architect data protection, disaster recovery, and hosting solutions for just about every challenging scenario a business could face. He holds certifications from Microsoft, Citrix and VMware and has been with Venyu since 2000. Brian's innate ability to identify a client's underlying issue and deliver a cost-effective, meaningful solution has made him one of the top leaders in the data protection and recovery industry.