DISASTER RECOVERY
Continuity in an Uncertain World

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Introduction

Disasters are an inevitable certainty for any organization—but while inevitable, disasters are also generally unpredictable. The best strategy then in the face of inevitable but uncertain negative events is to have a holistic plan that sets out the process by which an organization can return to normal operations after a disaster.

This paper will define some core concepts around disaster recovery, contrast it with the related but distinct field of High Availability, and give some key guidelines as to how an organization can plan, react and recover from a disaster.

An Experiential Basis

In September 2010, my home town, Christchurch New Zealand, was rocked by a major earthquake. In the twelve months that followed, many thousands of earthquake events occurred including a significant event in February 2011 that resulted in the near-total destruction of the downtown area and the loss of close to 200 lives.

In the period following the earthquake, I spent time talking with a wide variety of organizations and exploring their individual technology situations before, during and after the earthquake.

This firsthand experience showed me that, rather than a 'nice to have' document that gets filed in a drawer and forgotten, a Disaster Recovery plan is a critical tool to ensure business continuity.

I would like to acknowledge the many business people whom I spoke to about their Disaster Recovery situation and salute their resilience in the face of almost overwhelming events.

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Definitions – Setting the Context

In discussions with business people and Disaster Recovery experts, it became apparent that many people confuse the various terms that relate to business continuity.

It is necessary, before discussing a Disaster Recovery plan, to define some terms that relate to the space. The following are definitions developed from Wikipedia entries.

Business Continuity

Business Continuity (BC) is the activity performed by an organization to ensure that critical business functions will be available to customers, suppliers, regulators, and other entities that must have access to those functions. These activities include many daily chores such as project management, system backups, change control, and help desk. Business continuity is not something implemented at the time of a disaster; Business Continuity refers to those activities performed daily to maintain service, consistency, and recoverability.

Disaster Recovery

Disaster Recovery (DR) is the process, policies and procedures related to preparing for recovery or continued operation of technology infrastructure critical to an organization after a natural or human-induced disaster. Disaster recovery is a subset of Business Continuity. While business continuity involves planning for keeping all aspects of a business functioning in the midst of disruptive events, Disaster Recovery focuses on the IT or technology systems that support business functions.

High Availability

High Availability (HA) is a system design approach and associated service implementation that ensures a prearranged level of operational performance will be met during a contractual measurement period. Setting up a High Availability environment seeks to mitigate the need for Disaster Recovery; if systems are architected to be highly available, they are less likely to fail in the event of a natural or man-made disaster.

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Disaster Recovery Does Not Equal High Availability

It is important to reiterate the distinction between High Availability (HA) and Disaster Recovery (DR). HA's focus is targeted to ensuring minimal interruptions and therefore involves a lot of activity around replication, redundancy and automated processes to manage the two.

DR on the other hand relates to the timely recovery of data and processes following an incident. The time to recovery will vary depending on the type of data and the situation and hence DR will include a broad range of approaches, typically involving some mix of automated preparation for and manual intervention during an incident.

Cloud Computing with its economies of scale, speed and agility is well suited to Disaster Recovery functions and anecdotal evidence suggests that DR is one area that organizations are looking to move rapidly to the Cloud.

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Developing a Disaster Recovery Plan

The National Institute for Standards and Technology has developed a framework for planning DR and other functions. The Contingency Planning Guide for Information Technology Systems[1] lists the following seven steps to disaster preparation:

Develop the Contingency Planning Policy Statement

A formal department or agency policy provides the authority and guidance necessary to develop an effective contingency plan.

Conduct the Business Impact Analysis (BIA)

The BIA helps to identify and prioritize critical IT systems and components.

Identify Preventative Controls

Measures taken to reduce the effects of system disruptions can increase system availability and reduce contingency life cycle costs. High Availability architectures fit in here.

Develop Recovery Strategies

Thorough recovery strategies ensure that the system may be recovered quickly and effectively following a disruption.

Develop an IT Contingency Plan

The contingency plan should contain detailed guidance and procedures for restoring a damaged system.

Plan Testing, Training and Exercises

Testing the plan identifies planning gaps, whereas training prepares recovery personnel for plan activation; both activities improve plan effectiveness and overall agency preparedness.

Plan Maintenance

The plan should be a living document that is updated regularly to remain current with system enhancements

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The NIST approach is tailored to large government departments and hence has a formulaic approach towards DR planning, however even the smallest organization can apply a simplified planning approach towards DR that sees them assess the risks, plan the approach towards DR and ensure the DR plan is regularly tested and updated.

It is important to note that a DR plan that is overly complex for the type of organization and situation using it can be worse than having no DR plan at all. Organizations should always err on the side of simplicity when it comes to DR, experience has shown that in times of crisis people are more able to follow a short concise plan than one that is lengthy and complex.

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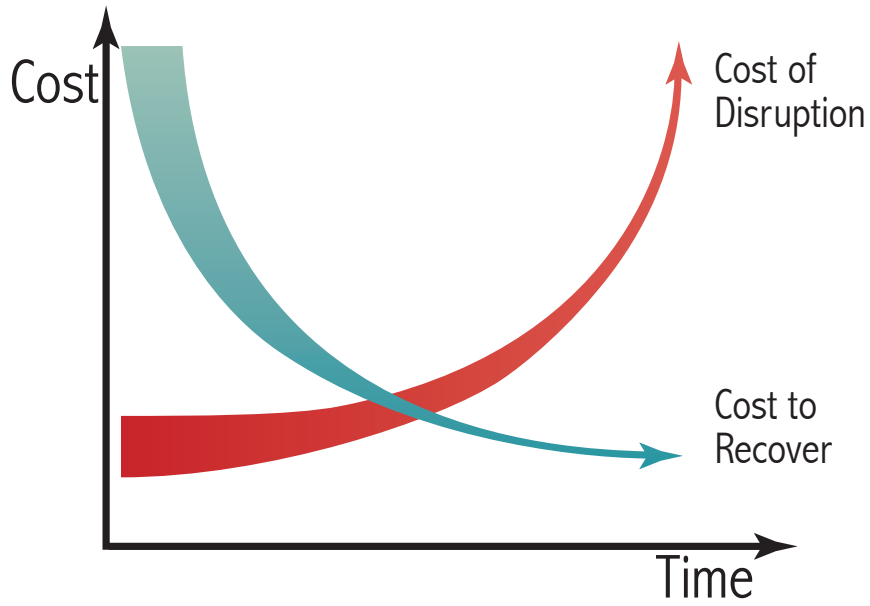
Suitability for Purpose

All organizations have a wealth of information types from the highly critical, to the relatively unimportant. For example a system that holds data for an externally facing e-commerce solution is more critical than a payroll system that is only accessed once a month.

One of the key parts of planning therefore is to develop a list of the different processes an organization needs to carry out its core business and the systems that drive those processes.

The aim of this stage is to ensure that organizations have DR strategies in place that are appropriate for them. This can be graphically predicted by plotting the cost of a disruption against the cost to recover. Any system where the cost to recover is lower than the cost of the disruption, will likely be a good candidate for a DR system that ensures recovery within the particular timeframe. For a payroll system this timeframe may be a couple of weeks, in the case of e-commerce it may be mere minutes.



It is important to remember that DR does not simply concern itself with the replacement of hardware systems; rather it looks holistically at the OUTCOMES an organization wishes to achieve and maps the component parts of those outcomes.

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It is no use having a DR system that replaces lost infrastructure only to realize that key personnel are needed to run the system or that the core data is missing with which the system operates.

A Disaster Recovery system should also include documentation of key roles and responsibilities, an explanation of how personnel process the particular operation at hand and some thoughts around the assurance of continuity of data. It is the second and third aspects of DR – infrastructure and data – that Cloud can help with.

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Infrastructure – Cloud as an Agility Gain

In previous CloudU whitepapers we have written at length about the impact that Cloud Computing has in terms of agility. Instead of having to undergo a lengthy requisition process to install a new server, administrators can simply "spin up" a new server with a Cloud Computing provider. Indeed this creation of new servers can even be automated and undertaken programmatically.

While in a particularly large disaster, it may take a lengthy period of time for a replacement physical internet connection to be obtained, more and more of the infrastructure elements an organization needs to operate can be abstracted away from the organization and to the Cloud – making DR a quicker and less complex task.

The traditional approach for organizations has been to have redundant infrastructure within their own facilities. For a small business this may mean simply a spare server in a cabinet somewhere, while for a large enterprise it may mean a fully redundant data center.

It's not difficult to see that, across the spectrum of organizational size, an in-house redundant system is expensive, complex and resource intensive to maintain. By using a Cloud-based approach towards DR organizations can minimize DR costs outside of disaster time, secure in the knowledge that many key systems can be created at will.

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Data is Critical

Data is unique. Whereas it is possible to replace a physical server with a virtual one and have the system maintain functionality, without core data, a system is largely useless. Financial records, technical documentation and other core digital assets can be critical to Disaster Recovery and hence a DR plan needs to think about data replication.

This is another example where Cloud can provide value – organizations can pursue a strategy that sees them replicate data in multiple locations. In this way, and in the event of a disaster, they are able to get back up and running quickly once applications are brought back up to speed. This approach of considering both application recovery and data recovery will stand an organization in good stead should the unfortunate occur.

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Don't Forget the People

Any Disaster Recovery plan needs to be holistic in its approach and part of this is ensuring that the plan takes into account the people element in recovery. There is little use in having applications and data running as normal if there is no documentation that allows people to take over the running of these applications.

Organizations need to ensure they have clear and detailed standard operating procedures that outline how applications and processes run to ensure that DR can be as painless as possible.

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Multiple Strategies for Multiple Workloads

One key aspect of Disaster Recovery that needs to be stressed is the fact that not one type of solution fits all different applications and data types. Some classes or workloads that organizations need to think about include mission critical "big iron" applications, mission critical applications running on Windows or Linux servers and generic applications that are not mission critical.

"Big Iron" Mission Critical Applications

So called "Big Iron" applications, those that run on traditional mainframe computers, are complex from a DR perspective, both because of their level of mission criticality, but also because they tend to run on specific hardware and often run specialized operating systems and environments.

DR for this class of application tends to rely on either on-premises or co-located replication that can meet the highly specific needs of these workloads.

Mission Critical Applications Running on Windows or Linux Servers

These applications lend themselves well to Cloud DR. It is a relatively trivial task to architect a cloud environment on which sit replications of these applications that can readily be turned on when needed. Alongside this replication of the applications, organizations need to consider the replication of application data to ensure business continuity.

An individual business' decision on whether to run DR for these workloads in the public or the private cloud will largely rest on their own internal decision making processes about Cloud – we covered the different options around public and private Clouds in a previous CloudU paper.[2]

Non Mission Critical Generic Applications

The DR plan will indicate the thresholds for these applications in terms of how much downtime is acceptable and this will indicate the particular strategy for these applications. However generally these applications can pursue a DR strategy that sees them use a Cloud target as a target for the backup.

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Conclusion

Like many things in life and technology, Disaster Recovery isn't a case of black and white. Rather it is a continuum where organizations need to think about the criticality of particular data sets and the value they place in quick recovery of those workloads in a disaster event.

Disaster Recovery is also an amalgam of both technical processes and procedures and human ones; because of this it is critical for an organization to fully look into the human elements of their Disaster Recovery plan to ensure this important aspect has not been forgotten.

Notwithstanding the breadth of possible approaches towards Disaster Recovery that exist, it is fair to say that Cloud Computing has made a higher quality DR setup to become more obtainable and as such it improves the overall disaster preparedness an organization can achieve.

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Diversity Analysis is a broad spectrum consultancy specializing in SaaS, Cloud Computing and business strategy. Our research focuses on the trends in these areas with greater emphasis on technology, business strategies, mergers and acquisitions. The extensive experience of our analysts in the field and our closer interactions with both vendors and users of these technologies puts us in a unique position to understand their perspectives perfectly and, also, to offer our analysis to match their needs. Our analysts take a deep dive into the latest technological developments in the above mentioned areas. This, in turn, helps our clients stay ahead of the competition by taking advantage of these newer technologies and, also, by understanding any pitfalls they have to avoid.

Our Offerings: We offer both analysis and consultancy in the areas related to SaaS and Cloud Computing. Our focus is on technology, business strategy, mergers and acquisitions. Our methodology is structured as follows:

- Research Alerts
- Research Briefings
- Whitepapers
- Case Studies

We also participate in various conferences and are available for vendor briefings through Telephone and/or Voice Over IP.

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Rackspace® Hosting is the service leader in Cloud Computing, and a founder of OpenStack™, an open source Cloud platform. The San Antonio-based company provides Fanatical Support® to its customers, across a portfolio of IT services, including Managed Hosting and Cloud Computing. Rackspace has been recognized by Bloomberg BusinessWeek as a Top 100 Performing Technology Company and was featured on Fortune's list of 100 Best Companies to Work For. The company was also positioned in the Leaders Quadrant by Gartner Inc. in the "2010 Magic Quadrant for Cloud Infrastructure as a Service and Web Hosting." For more information, visit www.rackspace.com.

About the Author

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Ben Kepes is an analyst, an entrepreneur, a commentator and a business adviser. His business interests include a diverse range of industries from manufacturing to property to technology. As a technology commentator he has a broad presence both in the traditional media and extensively online. Ben covers the convergence of technology, mobile, ubiquity and agility, all enabled by the Cloud. His areas of interest extend to enterprise software, software integration, financial/accounting software, platforms and infrastructure as well as articulating technology simply for everyday users. More information on Ben and Diversity Limited can be found at http://diversity.net.nz

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Endnotes

[1] http://www.itl.nist.gov/lab/bulletns/bltnjun02.htm

[2] http://broadcast.rackspace.com/hosting_knowledge/whitepapers/Creative_Configurations_Whitepaper.pdf