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A HYBRID APPROACH – DISASTER RECOVERY FOR DATABASES IN THE CLOUD

Dbvisit
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DR in the Cloud for DBAs

For the past several years, DBAs have been constantly reminded about the importance of moving to the cloud. Some DBAs have embraced this new operational situation, while others have turned their backs on this monumental shift. Whether DBAs like it or not, the cloud is here to stay. In fact, the cloud shows all signs of increasing in the coming years.

Another area that has received a lot of attention over the past few years is that of business continuity and Disaster Recovery. Disaster Recovery (DR) plans are often an afterthought although they should be considering when designing the system. DR is becoming increasingly more important and organizations ignoring it do so at their own peril.

According to the Cost of Data Center Outages study by Ponemon Institute, the average cost of a data center outage rose from $690,204 in 2013 to $740,357 in 2016, that is a 7 percent increase. In fact the cost of downtime has increased 38 percent since the first study in 2010.*

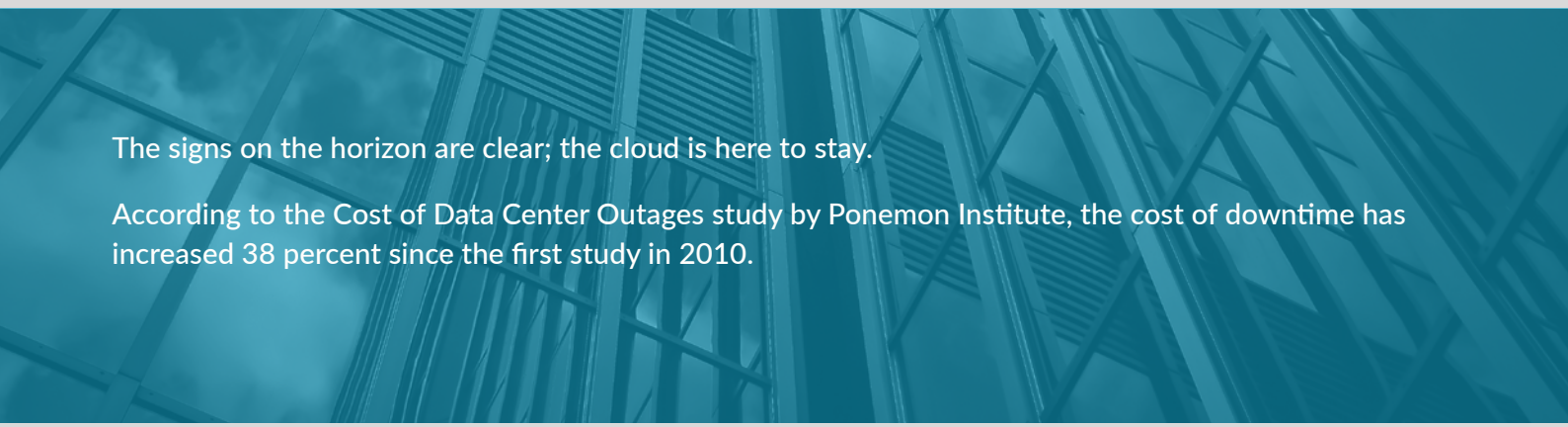
While Disaster Recovery is not as controversial as moving databases to the cloud, it is something that not all organizations have in place because of limited budgets or other operational concerns. According to the 2012 IOUG Database Availability Survey, almost half of the DBAs responding to a survey stated that budget was a factor when discussing challenges to Disaster Recovery planning.** In the same study, a third of the DBAs surveyed responded that adequate testing was an issue.

DBAs know that they need to implement a proper Disaster Recovery strategy but hear the lament of no budget and are often strapped for time to implement and test.

DR and Cloud Convergence

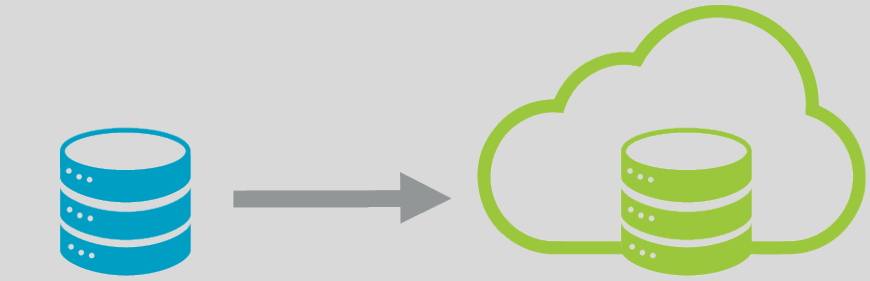
There often comes a time when technologies reach a synergistic stage and can work well when blended together. Disaster Recovery and cloud are two such technologies.

While DR and cloud are very different, there is a convergence on how DBAs and organizations can embrace the cloud and implement an effective DR solution. By combining these two topics, an on-premises production system and a DR solution in the cloud, this allows DBAs to experiment with the cloud and become comfortable with the new world, but still have their production systems on-premises where they feel more comfortable. The cloud can also be a cost effective solution for DR without buying new hardware.



What does DR in the Cloud Actually Mean?

DR in the Cloud means having a fully functional database ready to be promoted to the production database, at a moment's notice, in the cloud.It is also possible to have a cloud-to-cloud solution, where both the production system and DR solution is in the cloud. Having a production environment in the cloud will have a few different options for DR. When people say DR in the Cloud, they typically mean having a production system on-premises and the DR in the Cloud, which is often referred to as a "hybrid solution". For the purposes of this white paper, we will limit ourselves to a discussion around the hybrid offering, that is, production database systems on-premises and DR in the Cloud.



Primary Database
On-Premises

Standby Database
in the Cloud

DR versus Backups

It is important to note that DR in the Cloud does not mean having your database backups in the cloud. While backups are an important part of a proper DR strategy, it is not full disaster recovery strategy as a stand alone. The reason for this is that it may take time to restore the backup to a proper database. Also depending on the time of the last backup, it may not meet certain business requirements around RTO (Recovery Time Objective) and RPO (Recovery Point Objective). A proper DR database should be a full database that is as up-to-date as possible and ready to be activated at a moment's notice. Having a database that is ready to be switched to at any time to become the production database will give the DBA, and the business, the confidence and peace of mind needed for proper business continuity.

Disaster Recovery (DR)	BACKUPS
Database is on standby	Database must be restored
More recently up-to-date	Backups can be old
Operating system and infrastructure in place	Need to provision operating system and infrastructure
Able to meet RTO and RPO SLAs	May not meet RTO and RPO SLAs

Designing your DR Cloud Solution

There are several areas that DBAs will need to focus on when designing a DR solution in the cloud:

- Vendor selection: The first thing to decide is which cloud vendor to use.
- Cost: The next factor will most likely be cost; this will somewhat be determined by the vendor but not all costs are the same and some cloud vendors have 'hidden' costs.
- Testing/testability: A third factor to consider is the ease of testing the Disaster Recovery solution.

Which Cloud Vendor is Appropriate?

The Information Technology departments that are looking to move to the cloud, as well as have their data protected, are going to be looking to the DBA for advice on which cloud vendor to use; this can be a daunting task at first.

There are many different major vendors in the market, Amazon Web Services (AWS), Microsoft Azure, Oracle Cloud, Google Cloud, Rackspace and more. There are also a host of local cloud vendors that might also be a good fit. Don't discount them if it is not a nationwide name; you will still want to do your research.

The different vendors have many different options in terms of size, storage and speed. It may take some time to figure out the exact size and nature of the database instance you want for DR. Typically, you can start with a smaller instance and then upgrade to a larger instance in the event of a disaster; this will allow you to have a 'just big enough'instance during periods when the cloud is the DR site, and scale up to handle the needs of the business when disaster strikes.

Another important factor is the different SLAs (Service Level Agreement) regarding uptime. It is easy for them to say they have 99.9% uptime, but you will want to read the fine print to make sure that is part of your agreement. You don't want to be wondering where your DR database is when the need for switching from production to DR comes about.

The cloud vendors have options from 'bare metal' all the way to full hosted and managed databases. Oftentimes, when starting out, DBAs prefer to have a 'bare metal' solution as it will 'feel' like what they are used to operating on-premises; this can be a good way to start out with the cloud. DBAs start off with a platform they are familiar with and, as time goes on and familiarity with the cloud grows, more options can be explored.

What is the Real Cost of Cloud DR?

Be careful when pricing the cloud instance. It can seem that it is just pennies per hour, and in many cases it can be, but there are often hidden fees such as bandwidth and per MB fees. When exploring different cloud venders, make sure you compare like-to-like offerings when researching the various database and server options. Some vendors have hourly pricing, which can be great for testing, while others may have monthly or yearly pricing. Another consideration is that you will NOT be buying hardware for your DR solution. Make sure that the savings in that area are factored in when making a cloud solution. The savings on hardware alone might allow you to have DR in two different sites.

Testing

How easy is it to test your Disaster Recovery solution? Does the vendor allow you to switch over from on-premises to the cloud and then back again? You will probably want to duplicate your production environment so that you can have a test instance; this makes sure that you have the steps needed to perform in the event of a disaster.

It is often said that everyone knows how to make a DR solution but few test out their plan. Make sure that testing becomes an integral part of the plan. In the event of an emergency, you want a plan that has proven steps that work and have been tested so that you can switchover to the standby database with confidence.

Vendor choice, cost and testing are integral parts of what DBAs should be looking at as they move their DR to the cloud. Picking the right vendor can be difficult, which is all the more reason to start playing with the different vendors now. Many will give you free test instances so that you can try out the different features of the cloud. Make the most of it and take notes about what you like and dislike about the vendor's options. Start a pricing document so that you become familiar with the pricing model of the different vendors. Then, when you do decide upon a vendor, take it upon yourself to **TEST your DR solution.**

The Way Forward to the Cloud

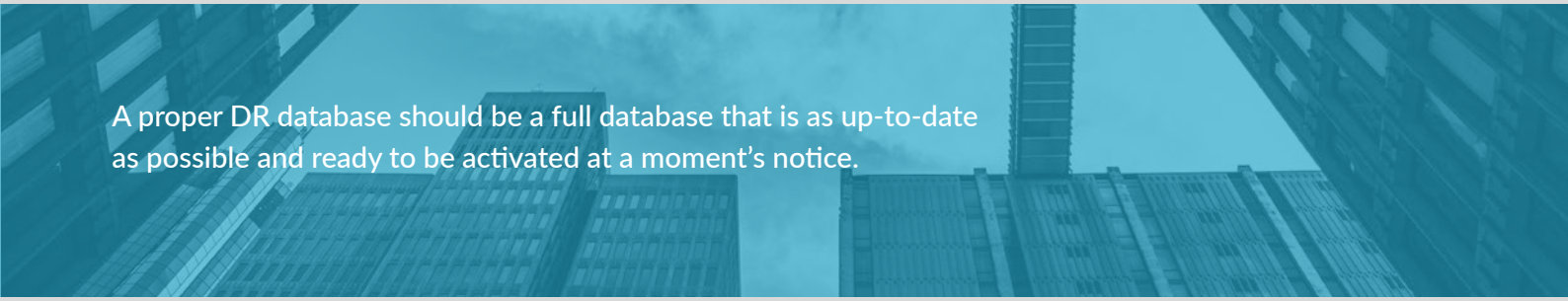
DBAs are already aware they should be looking at the different cloud vendors before they actually need to make use of them. The signs on the horizon are clear; the cloud is here to stay. So to make the best use of those DBA skills, and to future proof roles, it is important to upskill towards a cloud DBA now. Through researching vendors and actual costs, alongside testing the different cloud environments offered today, DBAs can become trusted and knowledgeable advisors who can lead the cloud transformation within their business units; beginning with a DR database in the cloud solution for confidence that your business' data is protected.

*Cost of Data Center Outages. (2016).

http://planetaklimata.com.ua/instr/Liebert_Hiross/Cost_of_Data_Center_Outages_2016_Eng.pdf

** IOUG Database Availability Survey. (2012).

http://www.ioug.org/d/do/2162



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Im Fokus von HUNKLER stehen leistungsfähige, wirtschaftliche Infrastrukturen für Oracle-datenbanken mit den Schwerpunkten Hochverfügbarkeit, Ausfallsicherheit und Zero Downtime Migration. Die integrierten Komplettlösungen der Produktfamilie Oracle Engineered Systems sowie der Datenbank-/Anwendungsbetrieb in der Oracle Cloud sind weitere Themenfelder, die das Unternehmen umfassend abdeckt.

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