

Reach for the Sky

Master the Might of the Hybrid Cloud

Introduction

We have all heard of cloud computing – shared computing resources available over a “cloud” or the Internet, and we have all recognized the benefits of a cloud – that resources are provided in a matter of minutes and can theoretically scale infinitely. While the trend toward cloud computing seems inevitable, enterprises still harbour concerns, with scalability, security, privacy, availability and regulatory compliance listed as their key considerations with regard to the cloud. Security is an especially important factor as enterprises entrusting their most confidential and private data to a third-party vendor, which is a primary reason why many enterprises still hesitate about large-scale cloud adoption.

There are different models of cloud deployment available in the market – public, private, community and hybrid clouds – to address different needs. Among all of these, the concept of the hybrid cloud particularly aims to address the above enterprises’ concerns as it provides an optimal mix of flexibility and security. A hybrid cloud provides the much needed flexibility to deploy both public and private cloud resources for respective applications, while giving the elasticity of cloud computing along with the security of dedicated infrastructure.

NTT Com Asia Enterprise Cloud Features - Issue 4

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What is a Hybrid Cloud?

A hybrid cloud solution integrates public cloud resources into the organization's dedicated IT architecture seamlessly and effectively to achieve the best of both worlds, forming one cohesive system and giving IT a cost-effective and scalable way to deliver services. Businesses can use private clouds for their most important computing tasks and public clouds for occasional peaks of demand or less-sensitive tasks, like testing and development, thus providing enterprises the elasticity of cloud computing along with the security of dedicated infrastructure.

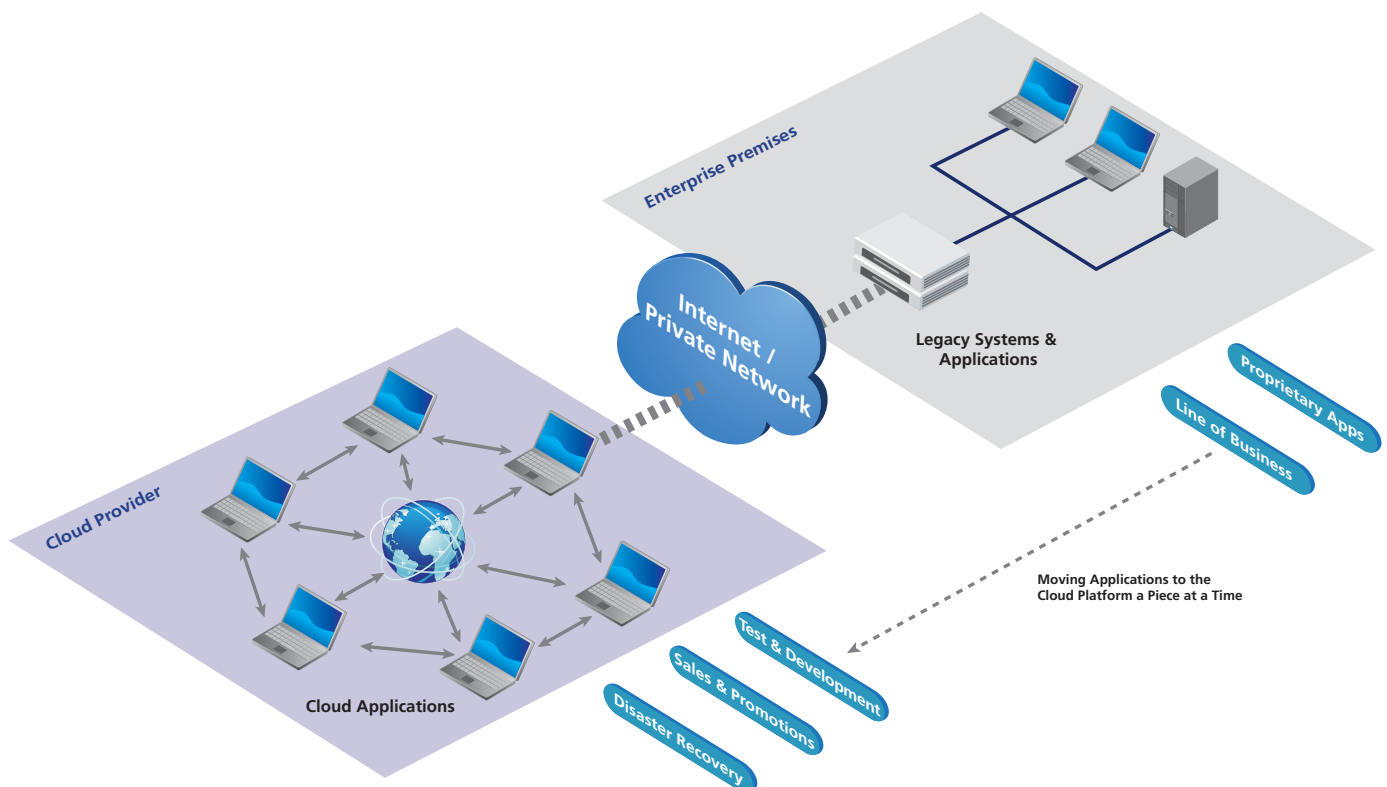
An example would be when an application that needs a secure database on the backend, due to security policies, the database can be hosted in a dedicated, private environment and the less-sensitive portions of the application may be shifted to the Cloud. This is where hybrid hosting can be one of the solutions to overcome complex hosting and IT environments. With hybrid hosting, enterprises can provision cloud (virtual) and dedicated (physical) infrastructure seamlessly on the same network. This also provides compatibility and flexibility for enterprises to seamlessly integrate existing infrastructure into the cloud and start benefiting from the latest development in cloud technology while still maintaining a functional system based on old designs. They can also start to upgrade their legacy systems slowly by connecting their new clouds to the old dedicated servers. Alternatively, such an application could run entirely within a private cloud with the ability to "burst" into the public cloud. This burst of functionality allows enterprises to more fully utilize dedicated resources without concern for performance degradation during a spike in demand. These

types of hybrid approaches give enterprises a greater degree of availability, security and elasticity. Without a hybrid platform, the enterprise would have to invest in infrastructure to support peak capacity, only to have that capacity idle and unused most of the time.

Infrastructure Expansion

The possibility to have "the best of both worlds" also extends to enterprises with on-premises infrastructure - using traditional IT infrastructure in connection with public cloud computing via private networks for maximum effect. In other words, the company provides and manages some resources in-house and has others provided externally by cloud computing providers. Over time, enterprise IT will be able to mix and match public clouds and local IT assets to achieve the maximum cost-efficiency for the company.

Not only does this approach make optimal use of resources, it also helps address most of the security concerns that have held back the adoption of cloud computing. Companies can choose to keep their most important data on local servers, while offloading the rest onto clouds. They can choose to carry out critical operations like business intelligence in their premises, while using cloud computing for more mundane, yet processing-intensive tasks. Furthermore, cloud computing may be a great fit for some applications and workloads, but there will always be some data, processes, and applications that will remain on-premises for reasons of regulatory compliance, mission-critical or classified data, control, and cost.



Hybrid Cloud - Integrating dedicated hosted and cloud services seamlessly

Adoption Strategy

With the number of use cases and variations of the hybrid approach, enterprises should pick and choose applications and their cloud service providers based on their own business needs, risks, and architectural considerations, thus creating a diverse and assorted cloud environment. The most efficient method for enterprises is to use the “bottom-up” strategy and deploy cloud services in isolated pockets to solve specific and tactical problems.

Typical use cases:

- *Companies experience processing spikes* - A marketing campaign drives an unprecedented amount of traffic to your company's website or certain business models call for irregular or unexpected bursts of IT capacity to support increased online traffic.
- *Bursting out from an internal to a public cloud* when needs require more capacity; running logic and processing in the public cloud and leaving the database in the private cloud.
- *Other applications* – for example, web servers and certain SaaS tools – run well in the Cloud because of its elasticity and ability to rapidly scale.

Choosing a Hybrid Cloud Service Provider

When it comes to shortlisting and deciding which cloud service provider to choose to deploy a hybrid cloud solution, however, the task becomes more complex. Many enterprises focus primarily on the cloud services while neglecting the supporting infrastructure and resources, which are fundamental elements that affect the qualities of any cloud solution, as the availability of cloud resources highly depends on the availability and stability of the underlying infrastructure. For example:

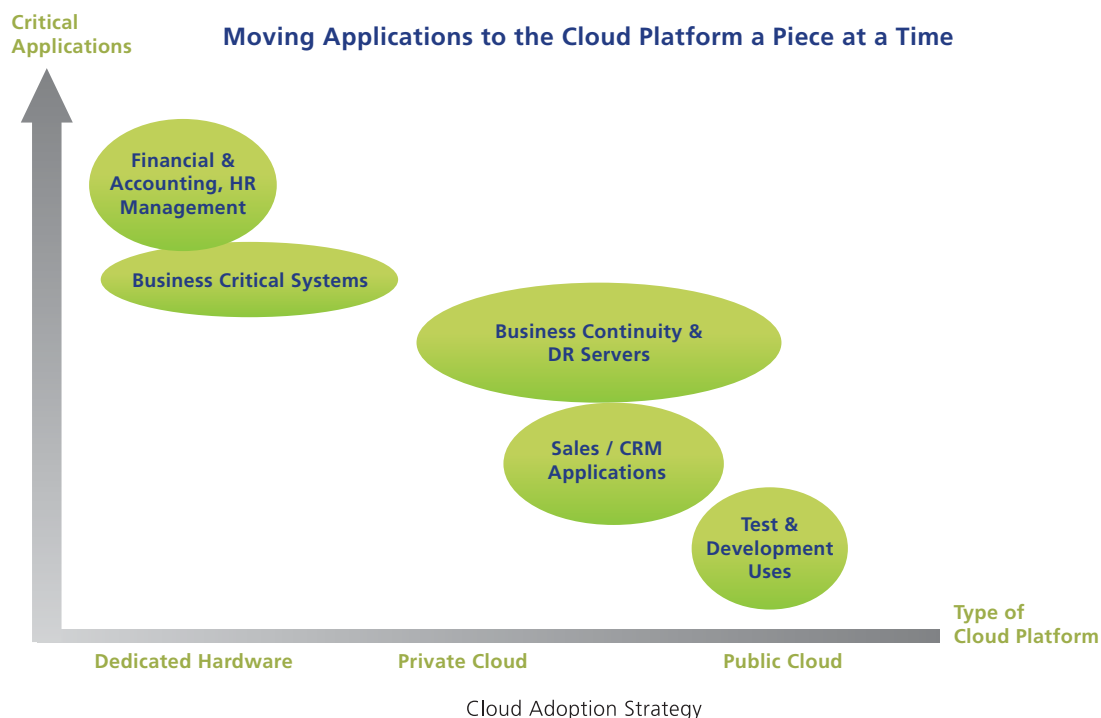
- **Network:**
As the key enabler of a cloud, the stability, scalability and coverage of networks that the Cloud rides on is one of the decisive factors when selecting a cloud provider. Is the Cloud running on a stable and fully redundant network with SLA to

ensure high availability and reliability? Does the network have ample bandwidth to scale up along with the growth of the Cloud? Apart from local connections, how is the capacity and coverage with regard to global connectivity? In the long run, one more concern would be whether the Cloud is running on an IPv6 compatible network owing to the depletion of IPv4 addresses.

To this end, carriers which operate as cloud service providers have an edge. With their own internet and private network infrastructure and the expertise to manage the full stack of services, they are able to provide assured end-to-end SLAs that other service providers may not be able to deliver.

- **Data Centre:**
One key concern for enterprises to tap into a cloud is security. Where is the Cloud? Is it located in a highly secured environment? Is the environment under stringent control and fully redundant facilities to ensure high availability? These are some key questions that private and hybrid cloud service providers should be able to address to their clients.
- **Managed Service:**
The capability to deliver a one-stop solution is another element highly valued by enterprises, which often includes telco expertise and a suite of comprehensive value-adding services such as managed services.

From a more holistic viewpoint, a complete one-stop cloud solution should be viewed as one which includes global data centre support and low-latency network connectivity, in addition to compute resources such as memory and CPU, along with value-adding services such as managed services. Some providers have converged the infrastructure of servers, storage and network connectivity bundled together with automation technologies for management and governance. Additional security will be provided to allow private connectivity such as leased line or MPLS-VPN between clouds and clients' existing IT infrastructure.



Conclusion

Before the concerns of public clouds are fully addressed, especially until the level of their security is tested and proven to the satisfaction of customers and regulators, hybrid solution is a way to get businesses started on cloud architecture. And in some ways they live up to the ultimate promise of cloud computing — scalability, flexibility and cost savings while knowing exactly where the servers and data are physically located.

With the emergence of a variety of cloud service models (IaaS, PaaS, SaaS) and an array of deployment models (private, public and hybrid), we will most likely see an assorted mix of cloud environments in the enterprises of the future. As the ICT solution arm of NTT - the largest telecommunications company* in the world, NTT Communications possesses a worldwide network covering over 150 countries, global data centres in more than 130 locations, robust cloud platforms and a broad suite of ICT services that realize highly secure and customizable hybrid cloud solutions that best fit different business needs.

*Source: Fortune Global 500 list of 2012

About the Author

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Mr. Taylor Man is responsible for developing and managing strategic technology solutions for the business market, and driving new business streams for NTT Com Asia. During his tenure he has successfully launched one of the best-in-class premium data centres in the region, as well as a wide spectrum of innovative ICT solutions featuring the most advanced cloud computing technology.

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NTT Communications provides consultancy, architecture, security and cloud services to optimize the information and communications technology (ICT) environments of enterprises. These offerings are backed by the company's worldwide infrastructure, including leading global tier-1 IP network, Arcstar Universal One™ VPN network reaching over 150 countries, and over 130 secure data centers. NTT Communications' solutions leverage the global resources of NTT Group companies including Dimension Data, NTT DOCOMO and NTT DATA. Further information: www.ntt.com | www.twitter.com/nttcom | www.facebook.com/nttcomtv

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