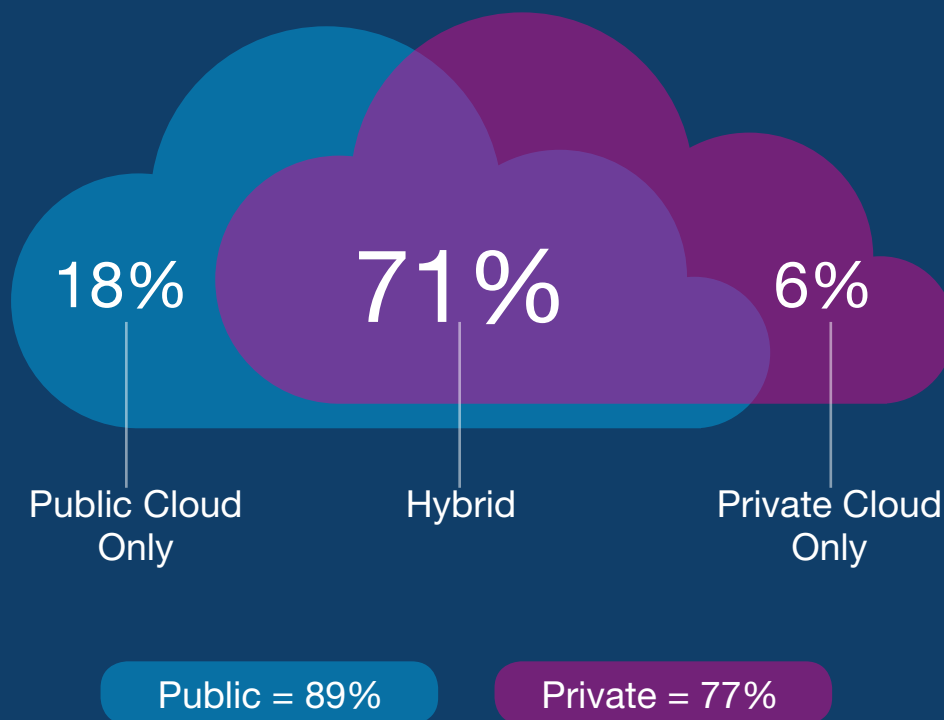# Hybrid Cloud for Flexible, Accelerated and Sustainable IT
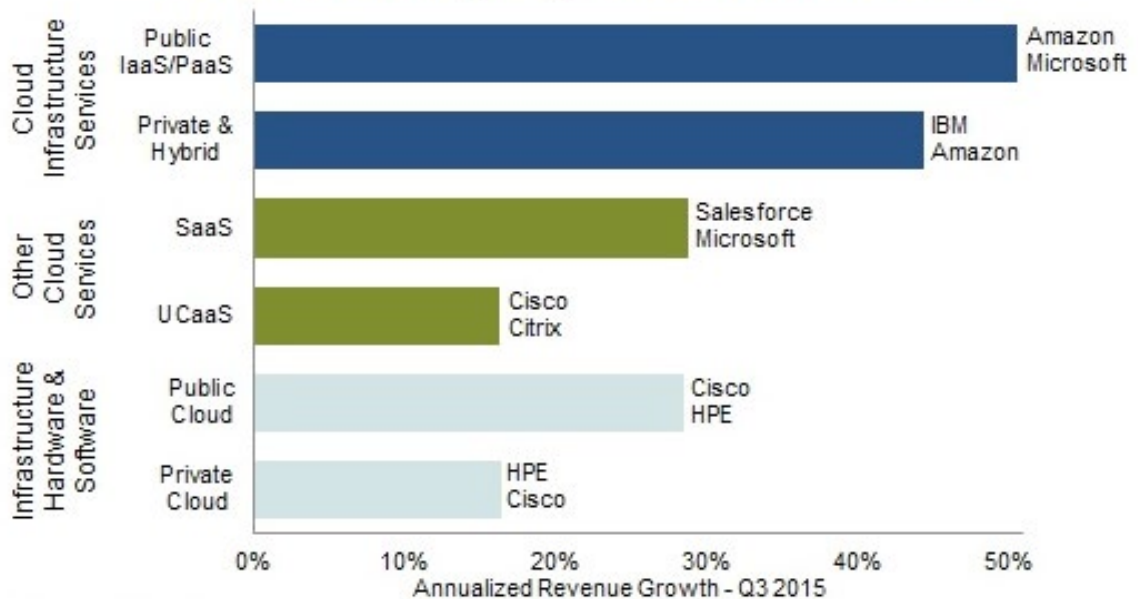
State-of-the-Cloud

Early cloud adoption rush was fuelled by enterprises seeking a cheaper, scalable and simpler alternative to complex on-premise IT. This trend has certainly grown stronger. It is more about adopting the right cloud strategy, one that not only maximizes value gained, but also helps enterprises remain relevant in a digital economy. Irrespective of where they are, in their cloud journey, customer cloud conversations typically revolve around identifying which cloud model is best suited for an enterprise's specific use –private, public cloud, on-premise datacenter or a combination thereof.

95% of Respondents are using Cloud

18%

71%

6%

Public Cloud
Only

Hybrid

Private Cloud
Only

Public = 89%   Private = 77%

Cloud Growth by Segment & Market Leaders

Chart showing Annualized Revenue Growth - Q3 2015 by segment:

Cloud Infrastructure Services
- Public IaaS/PaaS — Amazon, Microsoft
- Private & Hybrid — IBM, Amazon

Other Cloud Services
- SaaS — Salesforce, Microsoft
- UCaaS — Cisco, Citrix

Infrastructure Hardware & Software
- Public Cloud — Cisco, HPE
- Private Cloud — HPE, Cisco

X-axis: 0%, 10%, 20%, 30%, 40%, 50%
Annualized Revenue Growth - Q3 2015

Source: Synergy Research Group

As cloud applications mature in sophistication and usage, some enterprises are moving business critical workloads from public cloud to private cloud as a means to have more control over burgeoning business assets. Others are integrating workloads as part of asset consolidation to gain business insights. For e.g., companies using SaaS-based sales force automation software on a public cloud usually connect this application to their on-premises enterprise resource planning (ERP) systems, and to finance or e-commerce systems. Then there are enterprises with in-house IT and private cloud deployments, are trying to meet sudden surges in demand and additional compute, storage capacity needs through cloud bursting. Mix-cloud usage is a logical outcome of maturing of enterprise cloud strategy, as it transitions into hybrid cloud architectures. The enterprise focus is shifting beyond the initial benefits of cloud: speed and cost, towards a more flexible, accelerated and sustainable IT, than can derive maximum value and ROI from cloud.

Latest state of the cloud surveys show that 82% of enterprises now adopt a multi-cloud strategy, while only 10% use a single public cloud and another 5% use a single private cloud.

This article is for businesses that desire control of on-premise IT while simultaneously deriving cloud benefits such as on-demand scalability, and cost effectiveness, such that their IT processes are flexible and agile. Read on if you are grappling with any of the following dilemmas:

- *How to determining which of the enterprise applications can be moved to cloud architecture?*

- *Whether to choose public or private cloud?*

- *Does it make better business sense to invest in building newer applications on the cloud as opposed to on-premise?*

- *Is an opportunistic mix of multiple clouds, the hybrid cloud architecture, the way forward for sustainable IT?*

What are Hybrid Clouds?

Hybrid cloud architectures are the de-facto state of IT today. Their rise can be directly attributed to the strong growth in the use of private cloud, combined with the popularity of public cloud. It is relatively easier to gain additional agility through hybrid architecture if the enterprise has already converted its IT and end users to automated private cloud processes. Hybrid clouds are helping businesses reduce overall cost of ownership and improve cost efficiency by more closely matching cost patterns to the revenue and demand patterns.

So what constitutes a hybrid cloud? Hybrid cloud is a radical mix and match approach to consuming enterprise IT using a cloud model that suit business and application needs best, rather than trying to fit it all in a single architecture. It uses a combination of two or more different IT infrastructures, including private cloud, public cloud and / or traditional IT. Hybrid cloud is not just about the use of multiple cloud platforms for various isolated functions within an organization. Its key objective is enabling one or more of these functions within an enterprise:

- Integration of applications, data and/or services,

- Orchestration and management of workloads, and

- Portability of data and applications.

http://mashable.com/2015/05/11/cloud-computing-infographic/

State of the Cloud Survey 2016 http://www.rightscale.com/blog/cloud-industry-insights/cloud-computing-trends-2016-state-cloud-survey

For a quick comparison between the different cloud types, refer to the charts below. They highlight various capabilities in each cloud type, the advantages and disadvantages of one type of cloud over the other and insights such as who manages the IT infrastructure, what workloads are best suited for a particular cloud type and their primary use cases prevalent in the industry today. If you compare and analyze various cloud types, you can see from these charts that hybrid clouds offer the best of both worlds – the convenience and scalability of public clouds with security and control of private clouds. If you take a closer look, in the context of your enterprise needs, there are several considerations that need to be carefully evaluated before you jump onto hybrid clouds.

Public Clouds

A standardized computing model used by service providers for delivering services such as storage, computing resources, and applications to enterprises and end-users accessed over the internet.

Advantages	Disadvantages
• Mature technology, universally acceptable • Easy to use and onboard, quick deployment • On-demand, pay per use model • No capital costs • Highly Scalable with unlimited capacity	• Risk of unreliability, unavailability, outage • Security & Privacy issues • Data sovereignty and jurisdiction issues • Concerns on Guaranteed Performance • Vendor lock-in • Customer need to have highly available and high speed network link to cloud provider

Managed By	Best Suited for	Use Cases
• Third Party Cloud Provider	• Applications with a short shelf life • Promotional Events & Campaigns • Applications that experience highly variable demand pattern	• Startups, new apps, Big Data apps • Test & Development workloads • Used to manage web application traffic peaks & trough

Private Clouds

Consolidated infrastructure hosted within the firewall of an enterprise. It caters only to the needs of a single enterprise, fully owned and controlled by them. Infrastructure includes computing HW, storage, applications, data, and virtualization platforms that are accessed by end-users.

Advantages	Disadvantages
• Customizable for an enterprise resource needs • More reliable and secure than public clouds • Better SLA and performance management • Complete Data Sovereignty • Ease of compliance & regulatory processes • Easier to migrate from on-premise to private cloud than public cloud	• Deployment Challenges • Expensive to set up, operate & manage • Limited Scalability • Demands highly Skilled IT resources

Managed By	Best Suited for	Use Cases
• Enterprise IT	• Workloads that handle sensitive theft prone data or regulatory compliance	• Mid-sized enterprises with regulatory & compliance needs • Healthcare, Financial Services, & industries with patented intellectual property

Hybrid Clouds

Combination of a private & public cloud model. It comprises of two or more public & private clouds that together cater to an organization's computing needs. Allows some of the server operations on-premises while utilizing the services of a cloud provider for other operations.

Advantages

- Balance: best of both worlds, cloud and on-premise, sans their limitations
- High Flexibility, customizability to enterprise needs and workloads
- Highly Scalable
- Cost-effective solution
- Big boost for compliance and security in enterprise

Disadvantages

- Complex to set up especially for application and data integration across cloud models
- Network performance issues due to mixing up on on-site and cloud traffic

Managed By

- Mix of in-house IT and Third Party Cloud Providers

Best Suited for

- Enterprises that can split data into 'sensitive' and 'non-sensitive' spheres
- Dynamic and highly changeable workloads – in terms of demand, type of data (sensitive v.s non sensitive)
- Workloads that need API compatibility and high speed network connectivity

Use Cases

- Companies that require stringent security and high scalability of cloud models.
- Government organizations
- SME & Large Enterprises with a mix of workloads, new and old legacy applications, new applications that quickly evolve into ones that are critical for business health and growth.

Capabilities	Public Cloud	Private Cloud	Hybrid Cloud
Ease of Deployment	High	Low	Medium
Costs	Medium	High	Low to Medium
Scalability	Unlimited	Limited	Unlimited
Performance	Low	High	Just Right
Security	Low	High	Just Right
Availibity	Medium to Low	High	Medium to High
Control over IT resources	Low	High	Just Right
Data Control	Cloud Vendor	Enterprise	Enterprise + Cloud Provider
Need for skilled IT resources	Low	High	Medium
Flexibility and Customizability	Low	Very High	High
Vendor Lock-in	High	Low	Medium

Hybrid Cloud Considerations

According to a survey[3], by connecting dedicated or on-premises resources to cloud components, businesses can see an average reduction in overall IT costs of around 17%. Cost is certainly one of the big considerations in an enterprise cloud strategy. But there is no one right cloud model that fits all. Nor is there an industry type or workload that is more beneficial to run on one kind of cloud vs. the other. Unlike onboarding of public cloud, which is usually line of business decision and a reactive one, implementing a hybrid cloud requires strategic thinking and aligning with organization's overall objectives and obligations.

Although hybrid clouds provide the agility, performance and scalability necessary for critical internal IT systems, cloud applications, and growing mobile device application needs, they can work well for an enterprise only if the enterprises can segment their data into "sensitive" and "non sensitive" spheres, and big data. For instance, the enterprise could host its ecommerce website data that includes customer credit card details on a private cloud and host non-sensitive data such as marketing data and training resources on the public cloud. Enterprises could also use this approach to handle seasonal spikes of data effectively – for instance they could have a secure private cloud in place, and take up extra space on the public cloud on a temporary basis, to cater to the seasonal spike of data. Other considerations before embarking on cloud journey are listed below:
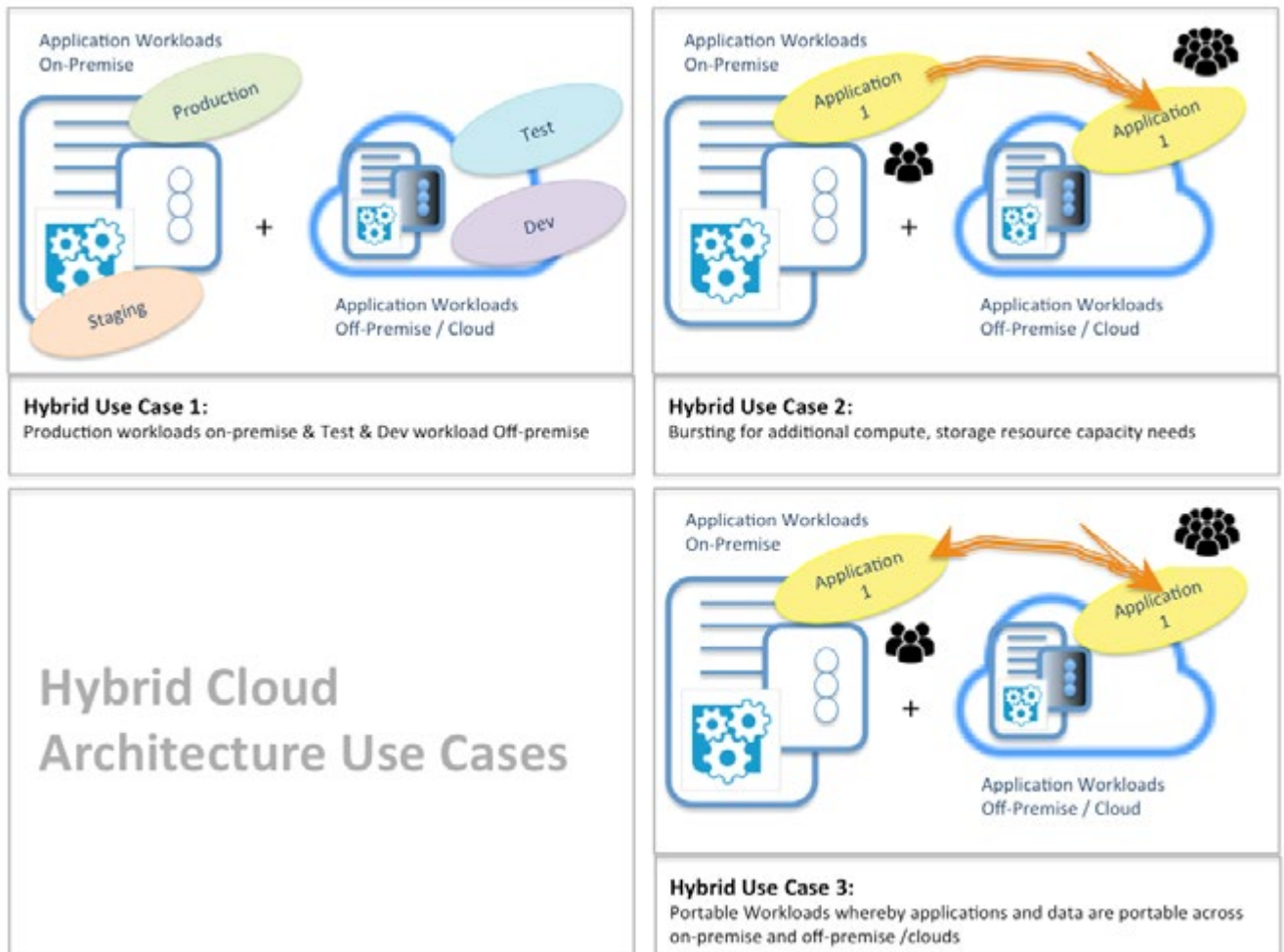
Business consideration for Hybrid Cloud adoptation

- Enterprise Compatibility requirements
- Budget and associated costs
- Granularity of service customizability
- Features required from cloud such as scalability, flexibility, application integration, application orchestration
- Reliability and Availability needs
- Data Access Patterns
- Industry Compliance and Legal obligations
- Workload growth and changes in terms of access patterns
- Data Security considerations
- Network considerations

In addition to these, enterprises must ensure that network bandwidths and connectivity to cloud providers are adequate to interface appropriately and meet additional traffic demands. Other considerations include number of total users, remote workers, and plans for future growth.

Despite its many benefits, hybrid clouds are only as strong as the integrations that unite the applications within the hybrid IT environment. It is fairly complex to manage disparate infrastructures while ensuring business processes take place seamlessly. If not implemented adequately, hybrid cloud could mean extra work and more costs. Many cloud vendors such as Netmagic, allow their customers to intelligently integrate workloads running on-premise, or on dedicated infrastructure with those running in a hybrid cloud model with great simplicity and cost-effectiveness. The next section provides more insights on Netmagic's Hybrid cloud offerings.

3. Cloud survey by RightScale http://www. rackspace.co.uk/hybrid-hosting/benefits

Netmagic: Hybrid Cloud Offerings

Application Workloads On-Premise

Production

Staging

Application Workloads Off-Premise / Cloud

Test

Dev

Hybrid Use Case 1:
Production workloads on-premise & Test & Dev workload Off-premise

Application Workloads On-Premise

Application 1

Application Workloads Off-Premise / Cloud

Application 1

Hybrid Use Case 2:
Bursting for additional compute, storage resource capacity needs

Hybrid Cloud Architecture Use Cases

Application Workloads On-Premise

Application 1

Application 1

Application Workloads Off-Premise / Cloud

Hybrid Use Case 3:
Portable Workloads whereby applications and data are portable across on-premise and off-premise /clouds

If you need to have enterprise data and applications in the cloud while maintaining control over organizational network topology and policies, or if you'd like to scale the existing on-premise IT infrastructure with limited capacity by borrowing additional resources from cloud on a need basis, then Netmagic's HybriCloud offering can help your organization leverage Hybrid Cloud Architecture.

Customers subscribing to Netmagic's colocation or dedicated hosting services can augment existing physical infrastructure by securely provisioning additional capacity from Netmagic's public cloud offering, on-demand, in a hybrid model, and pay as per usage. Customers with in-house IT that requires additional capacity can benefit from Netmagic Hybrid cloud service to scale out or cloud-burst on-demand resources. These offerings are built upon Microsoft technology making it easier for customers that deploy Microsoft technologies on-premise to onboard hybrid cloud model. Also, those using IBM or EMC storage on-premise can seamlessly scale into dedicated cloud storage served via IBM and EMC storage at Netmagic's cloud services. Going forward, Netmagic is also planning to offer Software Defined Storage to its customers that can be leveraged through hybrid cloud architecture. For those businesses that prefer to place backend systems within their own datacenters for security, latency and other reasons, Netmagic's secure VPC enables bursting of critical computing and storage resource to cloud in hybrid cloud architecture. Following are some of the key differentiators of Netmagic's Cloud Offerings:

Netmagic's Key Differentiators

Integrated Services

Comprehensive Portfolio of Public / Private / Hybrid Clouds and others such as VPC. Customers have the flexibility of choice ease of adaptability to dynamic business needs. Netmagic offerings are interated at the backed, so if a customer is using one or more of its services, it is fairly easy for them to avail additional services suc as load balancing, VPN, Backup, or Disaster Recovery in cloud only on the selected resources, This helps to manage cloud costs better.

## Customization at Finer Granularity

Customers can avail various Netmagic offerings and integrated services on a per granularity. This makes it significantly cost effective and flexible. Also, customers are charged for integrated cloud services on a per virtual machine basis, unlike other vendors. With Netmagic, users can provision a dedicated blade node where storage and server performance are guranteed by Netmagic. customers can deploy as many virtual machines on this dedicated node as per their QoS needs, and workload or usage patterns. Several SaaS application providers (70% of Netmagic's SaaS customers in India) find this capability very beneficial as they can choose and pay for the cloud services they need on a per virtual machine granularity.

Provisioning Ease with Unique Architecture

For effective cloud onboarding, provisioning resources needs to be standardized, using a template specific to an enterprise needs. This helps to ensure that system performance and service levels are clearly and easily monitored. Netmagic offers programmable Network Fabric that provides ease of configuration. In addition to network configuration, Customer can create and use templates for deploying different solutions and applications such as database, e-commerce etc. Within the hybrid cloud infrstructure, IT process engineering places a strong emphasis on consistent and extensive automation procedures. For example, customers can use a native compute resource at Netmagic's facility to deploy performance sensitive databse application while use virtual machines for test and development workload. These per application templates help to automate application level infrastruture orchesration while addressing individual application deployment needs.

Self-service Model

Netmagic is only Indian Cloud Vendor with a self service option that provides customers on-demand resources in hybrid cloud environment today.
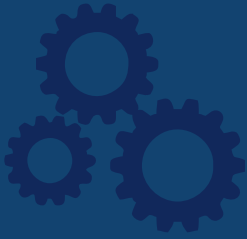
Netmagic has helped accelerate more than 500 customers with over 50 private cloud deployments in Indian cloud marketplace. More than 70% of SaaS solution providers that use Netmagic infrastructure to deliver their offerings to end users, have opted for hybrid cloud and integrated services such as load balancing, virtual firewall, backup and shared storage. These Netmagic customers deploy various workloads including SAP& HANA, BI & Analytics, besides SaaS applications. Hybrid Cloud architecture is ideal for e-commerce sites, high-traffic blogs with variable volumes, content management systems and database driven web applications.

Towards Hybrid Cloud Future

Clouds have become an integral part of digital enterprise strategy for effectively leveraging IT to achieve desired business objectives. Before embarking upon cloud journey, it is imperative that CXOs truly understand the possibilities and opportunities that can be realized in the context enterprise-specific business initiatives, priorities and expected outcomes.

Hybrid clouds empower IT to move from an on-premise, static, limited scalability endeavor with mostly reactive, time-consuming break-fix processes to a highly responsive service delivery model that can lead business and operational change. IDC multi-client study found that 70% of heavy cloud users are considering a "hybrid" cloud strategy in next 24 months. Choosing a singular type of cloud deployment model is not of prime importance. The spotlight should be on delivering the right combination of cloud model, at right cost, with the right characteristics, that align closely with an enterprise's business demands.

ABOUT NETMAGIC (AN NTT COMMUNICATIONS COMPANY)

Netmagic - An NTT Communication company – is India's leading Managed Hosting and Cloud Service Provider. With 9 carrier-neutral, state-of-the-art data centers across Mumbai, NCR, Chennai and Bangalore, we support over 2000 enterprises globally. Since its inception in 1998, Netmagic has been a pioneer in the IT Infrastructure services space with an extensive portfolio of services including Disaster Recovery, Managed Security Services, Networking and Co-location. Netmagic also provides Remote Infrastructure Management services to NTT Communications' customers across Americas, Europe and Asia-Pacific region.

Netmagic's award-winning solutions are the first choice of India's CIO community. Our recent accolades include 6 awards at the CIO Choice Awards 2016, Infrastructure as a Service Provider of the Year by Frost & Sullivan, mentioned in Gartner's 2015 Magic Quadrant Report for Cloud-Enabled Managed Hosting, Asia/Pacific, where NTT Communications was named in the Leader quadrant.

RECENT ACCOLADES

The 2016 Frost & Sullivan India ICT Awards

'Infrastructure
as a Service Provider of the Year'

CIO Choice Awards 2016

Data Center Managed Services ⬜ Public Cloud
Hybrid Cloud ⬜ Private Cloud ⬜ DRaaS ⬜ Cloud Storage

NTT Communications
Transform. Transcend.

netmagic®
An NTT Communications Company

FOR FURTHER DETAILS PLEASE CONTACT: **1800 103 3130**