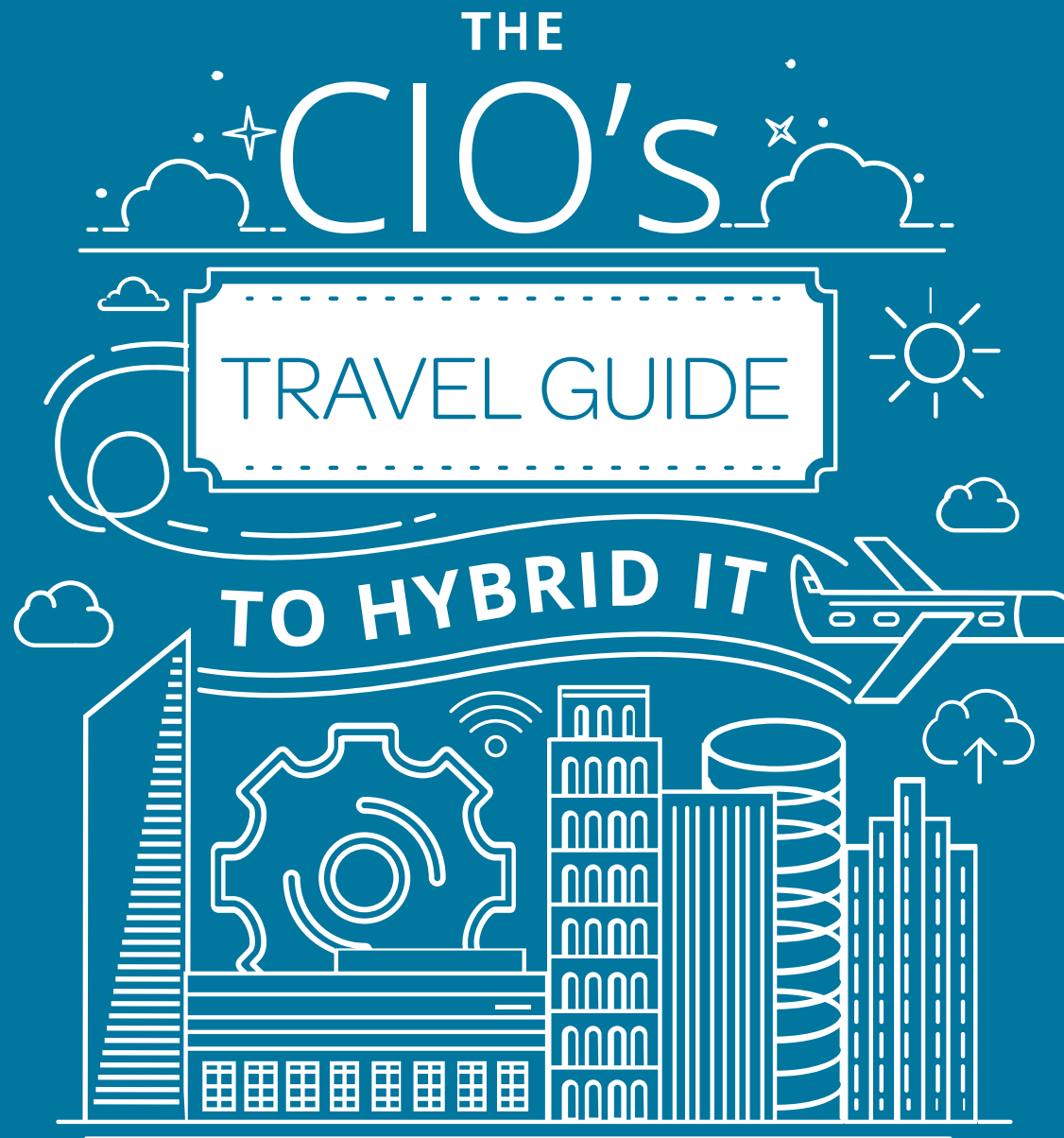
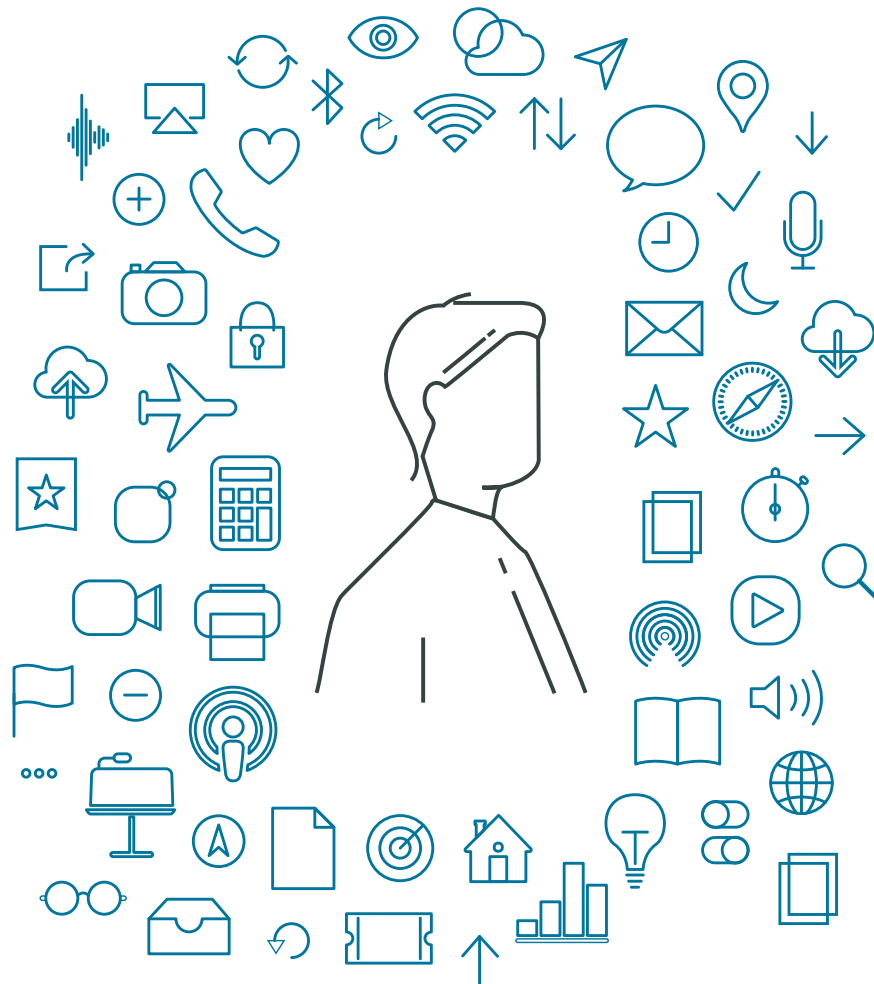


THE  
**CIO'S**  
TRAVEL GUIDE  
TO HYBRID IT

A white line-art illustration on a blue background. At the top, the text "THE CIO'S TRAVEL GUIDE TO HYBRID IT" is arranged in a decorative, hand-drawn style. Below the text, there's a city skyline with various buildings. A large gear is integrated into the skyline, with a Wi-Fi symbol above it. To the right, an airplane is shown flying towards the right. There are also clouds, a sun, and a cloud with an upward-pointing arrow.

How to manage a complex reality



# The CIO's role is changing

With technology's importance in business now reaching stellar heights, the role of the Chief Information Officer (CIO) is changing fast.

The CIO was once seen as the gatekeeper of the technology infrastructure, responsible for controlling end-to-end decision making. Now the CIO is seen as the enabler, responsible for overseeing a vast IT estate.

A large part of this IT estate is being operated by multiple external service providers, making management even more complex.

At the same time, the role of the CIO is becoming increasingly difficult as we move into what analyst firm IDC calls the third platform of computing – social, mobile, cloud and big data – which is transforming business way faster than the first – mainframe – or second – client/server – platforms.

This has put huge pressure on CIOs. As well as innovate, they are expected to keep costs down, while maintaining an infrastructure that meets business demands as enterprises go through digital transformation.

To answer these challenges and stay ahead of the curve, CIOs are turning to hybrid cloud, comprising a mix of on-premises, private cloud and, public cloud services with coordinated and automated tasks between the various platforms.

When the enterprise's very own on-premises infrastructure and assets are coupled with cloud we arrive at hybrid IT.

CIOs who stay operational will find themselves further marginalized over the next three years. For these executives to stay relevant, they must shift their focus to transformation and innovation and incorporate those innovations into their stable infrastructures. 'Just keeping the lights on' will lead the business to find other sources for technology leadership and innovation."

**Mike Jennett**  
Vice President of Research for  
Enterprise Mobility in IDC's IT Executive Program



# The big 5 business roles CIOs need to fill

CIOs today must step out of their traditional role as the custodians of IT and actively journey through emerging technologies to drive revenue and provide more business value than ever before.

The top five challenges that CIOs face in taking the business forward into digital transformation and beyond:

## 1. Accelerator

The ability to meet changing business demands and markets. CIOs need to be the accelerators of technology, from strategy through to deployment. Hybrid cloud provides a way to achieve this goal by speeding up processes, encouraging collaboration and

providing cost effective solutions to free up IT budget for growth, transformation and innovation.

## 2. Cost controller

Previously IT budget was eaten up by maintenance and integration. Hybrid cloud is providing a way for CIOs to reduce operating and capital costs, whilst improving performance, productivity and business agility via a flexible, scalable solution.

## 3. Risk mitigator

The traditional on-premises IT environment was a security nightmare, with so many disparate parts and security protocols. With hybrid cloud, CIOs can mitigate risk with a single, unified, fail proof cyber security solution guarded over the by the cloud vendor.

## 4. Integrator

We live in a data-driven, 24/7 digital world. Every day

we create 2.5 quintillion bytes of data – with 90% of this data estimated to have been created in the last two years (1). Enterprises generate a lot of information, in many disparate locations, and the CIO needs to tame this complexity and integrate, consolidate and provide easy data access, giving meaning to this information. CIOs must be integrators, and also demand high levels integration from their service providers.

## 5. Transformer

Enterprises are currently going through digital transformation to varying degrees. Transitioning from legacy systems remains a huge challenge. The CIO has an important role to play as they have a holistic view of the entire business infrastructure and IT estate. CIOs can help define new business models and processes. The CIO must make sure their role is seen as an important cog in the change process, and not relegated to simply “keeping the lights on”.

# CIOs must understand the hybrid vista

To fully exploit the advantages of hybrid cloud, CIOs must take time out to understand exactly how a hybrid IT infrastructure works and how and where it can fulfil the needs of their particular business model.

Cloud computing's business model – the ability to rapidly provision IT services without large capital outlay – appeals to budget-minded senior executives. At the same time CEOs and CFOs are looking to IT to lower overheads and shift expenditure models by moving services towards consumption based service models.

Users are demanding faster, intuitive solutions – and are willing to jump across to Shadow IT and purchase them under the radar, if the IT department can't come up with the applications they want to work with.

CIOs must have an overall picture of the business needs in context of the IT real-estate and public cloud options (its business processes) to manage its complexity efficiently and drive business value.

## Key points to underscore your hybrid strategy:

**Risk:** – Reducing and managing risk

**Innovation:** Hybrid IT also delivers on innovation, which can actually create a higher value return in the long run.

**Cost:** CIOs need to understand that their hybrid environment – a mix of on-premises and cloud-based isn't just about cost.

**Visibility:** When multiple clouds are aggregated with on-premises systems, there are parts of the IT process that will leave the CIO's control. Some operational performance will now rest on the shoulders of external systems. When IT departments have a number of cloud providers they can be difficult to track. The end result is they have little idea of what they are consuming or where they are consuming it. To ensure optimum performance - it is imperative the CIO has complete visibility of the IT estate.

Remember – A hybrid strategy gives IT departments flexibility and scalability - allowing them to become a broker of IT services between private and public clouds.

By 2018, over 50% of enterprises will create and/or partner with industry cloud platforms to distribute their own innovations or source others (IDC) (2)

source: IDC+ 2016 worldwide predictions.

# CIOs: champions for hybrid IT

Forward-looking and visionary CIOs have a real opportunity to bring together cloud, new on-premises IT and legacy environments to deliver a compelling value proposition for the enterprise that delivers on performance and flexibility.

Why? Because Hybrid IT directly addresses the challenges facing CIOs today. It is made up of the enterprise's entire IT infrastructure – balancing agility, innovation and improved efficiency alongside governance, managing risk and cost management.

- Hybrid IT enables CIOs to run non-cloud corporate infrastructures alongside public cloud and run a full migration path to the cloud, which is far more cost effective than having to re-architecture systems.
- Mixing public and private cloud enterprises can leverage the best of both worlds. Cost-effective public cloud for non-sensitive data and private cloud for sensitive, business critical information. Cloud can also be leveraged to achieve higher levels of security and compliance around sensitive data which is a big opportunity driven by the General Data Protection Regulation (GDPR), designed to strengthen and unify data protection for individuals within the European Union. Coming into effect on 25th May 2018, it is not just EU who will have these challenges.

- Hybrid cloud is an extremely powerful and economical way of delivering IT services against traditional on-premises.
- Rather than totally replacing legacy systems, hybrid IT can bridge the gap between legacy and new, providing major cost savings.

“After years of growth in cloud services, organizations are realizing that they must manage a hybrid of cloud and traditional infrastructure services for the indefinite future. Sourcing managers can use this research to select which infrastructure services to invest in and which to retire”: Gartner (4)

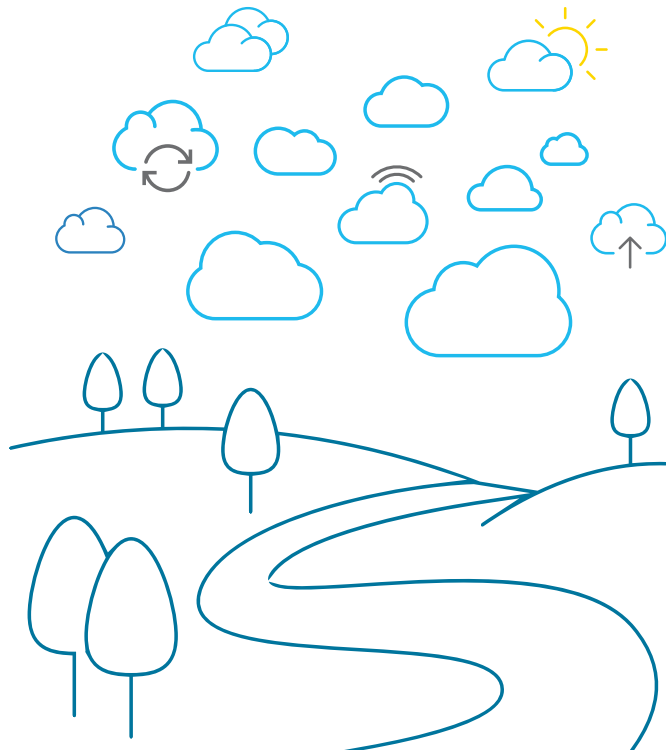
The hybrid cloud market is estimated to grow from USD 33.28 Billion in 2016 to USD 91.74 Billion by 2021, at a Compound Annual Growth Rate (CAGR) of 22.5% during the forecast period.

(3). Source: Markets & Markets – Hybrid Cloud Market report 2016

(4)Source: Gartner – IT Market Clock for Hybrid Infrastructure Services.



# Key considerations for adopting hybrid cloud



Technology leaders are increasingly looking to third-party vendors to help them address these challenges – implementing, managing and delivering a hybrid cloud. Analyst firm Forrester Research, found that over half of the companies it surveyed are looking for providers capable of “breaking down organizational silos by demonstrating the ability to work effectively and engage with business and IT leaders”. In addition, 43% said they looked for global delivery capabilities from providers to ensure regulatory and compliance factors.

Source: Forrester’s Business Technographics® Global Infrastructure Survey, 2015

The million dollar question for CIOs is how can they build, control and sustain an effective hybrid IT estate, while meeting both business demands and end-user expectations.

There are some key considerations that CIOs need to make before going down the hybrid route to ensure investment is maximized in a scalable, flexible solution that works for the business now and in the future roadmap. Before you take the leap of faith consider the following:

- Hybrid IT offers some major benefits, but building controlling and sustaining a hybrid infrastructure can be complex. However, market experiences and tools now means that this is more easily achievable than the early adopters found.
- On-premises, hosted, Cloud services, IoT and Bimodal IT by their very nature create a complex mix of legacy systems and new IT that needs to be managed effectively.
- Managing and monitoring systems across multiple providers and networks is a major challenge.
- Cloud security typically tops enterprises’ worry lists as cybercriminals get more sophisticated. It is vital to carefully address security during hybrid cloud planning. This should include tools and policies to check back in the event of unauthorized data access, data leakage or a security breach.
- Latency is a pain point for hybrid IT, if the infrastructure isn’t built properly from the onset.
- Interoperability can also be a problem, if applications don’t seamlessly integrate across the hybrid solution.
- Control over your data – you want to be safe in the knowledge that you have the same level of control over data stored in the cloud as on-premises.



# Managing the risk

Hybrid cloud brings with it significant business benefit in terms of cost efficiency, flexibility and scalability, but as with all technology there are risks that have to be managed.

Hybrid environments, by their very nature, come with a unique set of challenges thanks to on-premises and cloud applications working together in a complex ecosystem of private and public clouds and on-premises.

Taking control out of the hands of the CIO  
Hybrid cloud takes some of the control away from the CIO, which needs to be carefully handled.

Managing change: Applications change all the time, for example. An application change may trigger integration problems with other applications. Cloud-based applications that are outside the control of the business can also be particularly vulnerable.

Keeping on top of security: Companies may rely on cloud providers to handle security tasks, for example. But hybrid cloud environments often involve multiple vendors, so keeping up with security policies is a job in itself.

Agreeing to disagree: One of the main problems with introducing official policies on cloud computing in organizations is that people can't actually agree on what it means, according to Gartner. While Chief Information Security Officers (CISOs) see cloud computing as a style of computing, other departments within the enterprise view cloud computing as "things accessed over the internet." Regardless of how cloud computing is defined, it is imperative that enterprises have policies in place on how cloud, within the hybrid cloud scenario, will be used, and that employees are fully briefed on these.

Automating risk management: ensure that all applications in the hybrid environment integrate with each other, including critical applications. The IT department needs to be immediately alerted if an issue arises. Including automation in your hybrid cloud strategy can reduce risks.



# legacy systems: No mountain to climb



Integrating legacy systems into your hybrid cloud strategy does not have to feel like yet another major expedition into uncharted territory.

Integrating legacy systems does not need to be any more challenging than moving your other applications into the cloud. Remember that cloud isn't an all or nothing road. You don't need to immediately relocate every application to the cloud. The move from on-premises to cloud doesn't happen overnight.

Cloud computing actually has a key role to play running alongside legacy systems. It can offer flexibility and scalable capacity during spikes in demand, generating additional value from a legacy infrastructure that is slowly being replaced. Services can be added as and when required, allowing CIOs to manage the move to cloud without over-committing capital expenditure.

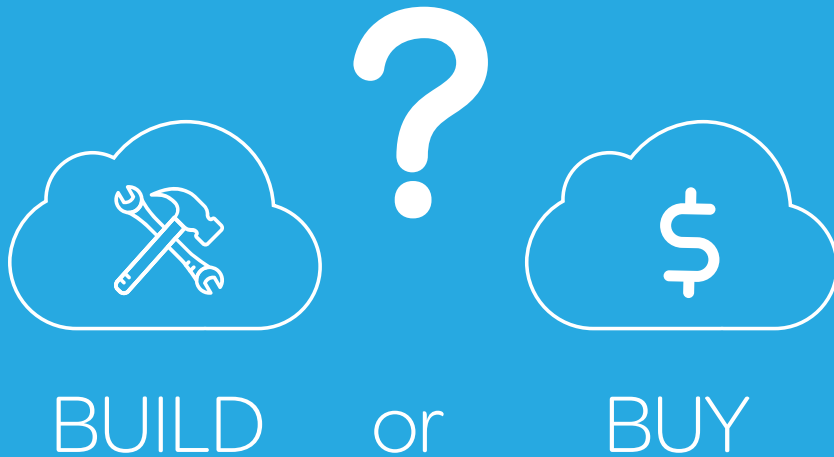
Running cloud alongside legacy systems also minimizes the requirement for on-premises systems integration, which again maximizes the return on investment in legacy equipment.

Cloud also enables CIOs to close the door on rambling, complex on-premises IT infrastructures, while improving data responsiveness and accessibility.

Remember - legacy systems and integration are an important part in planning a move to hybrid cloud.



# The big question for CIOs



The questions CIOs most generally ask is: Do we build or buy? There is actually no 'yes' or 'no' answer to this question – it is instead a cocktail of the two.

Blending a turnkey hybrid cloud infrastructure that combines 'best in show' into one, pre-integrated solution for on and off-premises with a self-built hybrid cloud procurement and integration process ensure that the solution fits the enterprise's demands.

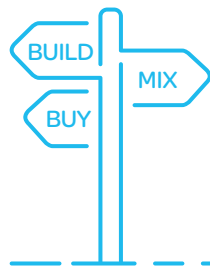
Organizations must bear in mind that although build-your-own offers customization options, it will require intensive resource input from the IT team.

Companies must not feel compelled to leap off at the deep end, hybrid is a step-by-step approach. The service provider should be there to help you through the process. The service provider should fully understand your current infrastructure, what you are trying to achieve and how the processes and commercial framework can be put in place to support this and make it happen – while future-proofing your roadmap.

Looking at performance, cost, accessibility and security, your provider and IT department can help you work out which applications and workloads work best on or off premises – what works best bespoke and what should be brought in.

Whichever route you choose in your move to the hybrid cloud consumption model from your traditional applications, you will be enhancing your IT operations and making a major step in your journey towards digital transformation.

No  
yes or no answer



but take a look  
at the route  
signposted 'mix'

More than 80 percent of enterprise IT organizations will commit to hybrid cloud architectures by the end of 2017 - IDC

(5) Source: IDC Futurescape: Cloud Predictions

# MSPs: taking the complexity out of PaaS

Today, many cloud-native applications can take advantage of the platform as a service (PaaS) capabilities within offerings from hyperscale cloud providers such as Amazon Web Services, Microsoft Azure and Google Cloud Platform.

PaaS provides a comfortable environment that enables developers to build applications on the internet and leverage complex services. PaaS services are hosted in the cloud and users can access them through their web browsers (SaaS). PaaS has the ability to reduce costs and speed up development, test and deployment.

However, these PaaS offerings are largely highly complex and feature-rich, and require expertise to get maximum optimization. Many IT organizations do not have a sufficiently deep understanding of best practices in cloud-native architecture and DevOps-style operations for these platforms, which if carried out successfully can reduce time to market and cut operating costs. This is where Managed Service Providers (MSPs) come in – beyond giving enterprises the environment they want, it puts a team of experts in place who will maintain infrastructure as it evolves and priorities change.

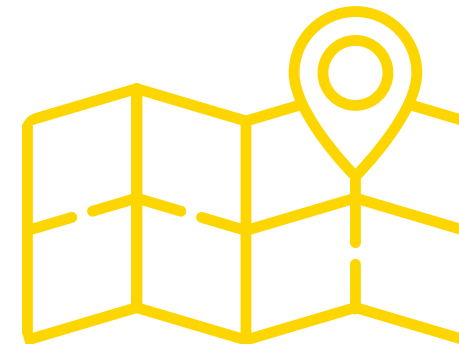
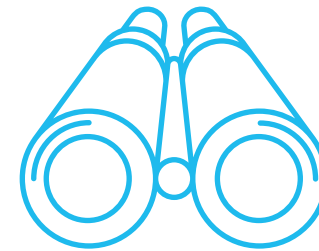
Managed services enable enterprises to focus on code development, leaving platform administration to the MSP. PaaS delivers a very strong framework on which to build your analytics assets and implement enterprise strategies.

NTT's Cloud PaaS, for example, includes built-in services for rapid development. These embedded services run autonomously.

By using an MSP with the pedigree and expertise of NTT Com Managed Services, enterprises can be sure they are getting best of breed technology to deliver services utilizing a highly scalable, secure, robust and resilient infrastructure. This is all backed up by full disaster recovery.

Managed services offer the very best enterprise and carrier grade solutions available. At the same time, enterprises 'pay for what they consume' which means there are no unforeseen charges. It is a win/win situation.

EXPLORE  
PaaS as a service



but a complex route to take



# How MSPs can help you succeed

In a bid to get a handle on the bigger picture, CIOs are turning to MSPs to outsource day-to-day management responsibilities and operations, so that the IT department can focus its energy on R&D, new products and better customer service – all of which can boost the bottom line and speed up innovation.

Managed Services enable CIOs to tap into external expert resources to bolster or complement existing skill sets in the company, especially for complex IT implementations such as hybrid IT. At the same time it can improve the predictability of IT spend, making budget planning easier.

It is no secret that cloud technologies are bringing the benefits of automation, consolidation and cost reduction to enterprises. Server, network, storage and application virtualization can seem like a maze for CIOs. Managed services make the way ahead clear. They can help ensure the success of cloud deployments manage difficult and labyrinthine heterogeneous environments that can be an offshoot of virtualization.

CIOs are increasingly asked to deliver higher quality services with reduced resources, while coming in on budget. Not an easy task when enterprises are going through dramatic change, comprehending and delivering new strategies to expedite digital transformation.

CIOs need to be able to change their IT infrastructure fast enough to keep pace with technology and market evolutions. Hybrid infrastructure models and the right MSP can help you innovate, achieve your goals and gain a competitive advantage, while delivering on digital transformation.



# tick list on what your service provider should offer



Hybrid MSPs are there to address both your on-premises network management as well as your workload in the cloud.

Next generation MSPs can provide as granular a network management as your enterprise requires. They can provide constant management of all your assets and also ensure that performance is optimized for reliability, security and compliance, minimizing downtime and keeping your business ahead of the curve.

## Questions to ask:

When a CIO is considering adopting a hybrid model they need to ask themselves several questions:

What value will a hybrid infrastructure bring to the business?

Will it help the enterprise to lower costs, improve process and better manage security risks?

How can the enterprise best manage a hybrid cloud infrastructure?

How can deal with change management moving to a hybrid cloud infrastructure?

Can the enterprise manage a new service model? In which areas does it need help?

## An ideal profile for a hybrid MSP partner:

- The right tools to truly manage a complex hybrid environment and provide a 360-degree view of your assets.
- The right people who understand your roadmap and goals and can see where vulnerabilities might appear
- The ability to pay for what you consume while ensuring your hybrid environment is truly optimized.



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## NTT Communications

Head Quarters:  
NTT America, Inc.  
757 Third Avenue  
14th Floor  
New York, NY 10017

[www.us.ntt.com](http://www.us.ntt.com)

NTT Communications is a leading next generation global managed services provider, delivering smart, reliable and secure IT solutions that make an impact on the bottom line, energize businesses and propel innovation. We are totally focused on guiding and enabling our customers on their digital transformation journeys.

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