FROM SERVERS TO SERVICE

Building intelligent enterprise infrastructures

WHITE PAPER
EXECUTIVE SUMMARY

We are in the midst of a generational transition from personal towards Cloud computing.

For many enterprises, the Cloud debate is already over as they have already moved a material portion of their IT workloads to various Cloud environments to gain scalability, business agility and significant cost savings. The question is no longer “Shall our company use Cloud services or not?”, but rather “How do we orchestrate our multiple environments to work seamlessly and leverage the advantage of all the data to maximize the use of agile Cloud environments?».

We’re finding that there’s a real shift in how enterprises are approaching their IT and information systems, as part of a bigger journey towards their digital transformation and global strategies. Enterprises are putting in a lot of effort to build the IT model that works for them and secure the technological advantage foundation that will help them improve efficiencies, meet business goals and deliver ROI in the long run. However, this poses real challenges, especially when dealing with multi cloud environments, which makes it necessary to realign resources to avoid system inconsistencies or underutilized resources in the cloud.
Pursuing Digital Transformation

Leading companies are showing a stronger commitment to investing in their IT infrastructure modernization and unlocking untapped Cloud capabilities that will help them capture the full potential of their digital blueprint.

 Enterprises have been actively pursuing digital transformation projects in an attempt to update and revolutionize their business models and become more competitive against market disruptions. These developments are changing the way companies operate in an increasingly fast and cost-competitive global landscape. Gaining greater scalability, reliability and efficiency across different IT environments has proved to be the point of departure to achieve a first-mover advantage against competition and drive breakthrough revenue growth.

The hybrid cloud advantage

Many companies have also realized that they can profit from Cloud mobility while continuing to leverage existing on-premises equipment by taking advantage of Hybrid Cloud deployments. Most organisations will not migrate straight from on-premises infrastructure to the public Cloud, but instead will move gradually through a combination of both by using the Hybrid approach. Many companies have already started to offload most of their non mission critical services to the public Cloud, and this tendency will continue to grow.

For this reason, every organization over the next few years needs a well defined strategy for how they move from where they are today to a position where they can take advantage of the possibilities of the intelligent enterprise. By combining experts with technology you are able to migrate to and use Hybrid Cloud in a smarter way than ever before.

A network to unleash growth potential

IT decision makers need to enable digital transformation across their IT establishment, powered both by public Cloud and their own bespoke private Cloud. However, many enterprises haven’t been able to maintain the network pace needed to propel their expansion in the digital economy. Often times enterprise networks are too slow, inflexible or too expensive to keep up with an optimal Cloud performance to maximize the outputs of their rapid Cloud application production.

Microsoft™ Azure managed services

Hybrid Cloud brings borderless growth and countless productivity benefits, but making the switch to hybrid with confidence can be challenging. Designing, integrating and managing public and private cloud services while maximizing its benefits requires expertise that can place a drain on in-house IT resources.

Tata Communications’ Microsoft™ Azure Managed Service provides enterprises a complete end-to-end, SLA-based service that redefines Cloud strategy. It offers companies access to the right expertise, infrastructure, and control to fuel growth with a lower total cost of ownership and improved performance.
Cloud is all about agile infrastructure. However, the processes running on hybrid IT systems are usually too complex to be useful. This calls for a rethink on how virtualization and cloud deployment models can actually help enterprises become smarter.

The intelligent enterprise is a primarily a mental shift towards smart decision making to ultimately automate a wider range of processes and knowledge tasks in order to decrease operating costs. It's currently made up of services and solutions that enable organizations to respond to external input and user generated data in an autonomous, self-sustainable manner. In other words, your focus should be a “problem-solving” Cloud which connects and analyses your business data so you can take the best possible action in each specific situation.

**Increasing productivity**

Most organizations in practically every industry around the world are facing some level of challenge to really become a digital organization, and everyone who likes to stay in business is putting in a lot of effort aimed at improving and achieving their digitalization goals. In order to keep up, enterprises have made a considerable shift to Cloud productivity in the past few years, adopting innovative Cloud solutions to achieve cost reduction, unlock innovation, and improve their time to market.

**Enterprise cloud infrastructure**

Companies are still heavily investing in private Cloud, but there is a clear shift happening towards public Cloud solutions. According to McKinsey research, in the next three years, enterprises will make a fundamental shift from building IT to consuming IT. Enterprises are planning to migrate their IT workloads quickly to a Hybrid Cloud infrastructure, with off-premise environments seeing the greatest growth in adoption.

Migrating to Hybrid Cloud will enable companies to achieve cost efficiency, flexibility, scalability and more deployment options. The most important, off-premise solutions eliminate the need for massive financial expenditures to handle short-term spikes in demand as well allow to free up local resources for more sensitive data or applications. Despite the big shift towards Cloud, enterprises will still maintain traditional, on-premises environments, since legacy, cost, and security reasons do not allow enterprises to offload all the processes, which results in a Hybrid Cloud approach being the most efficient.

It is vital to develop roadmaps for both, cloud migration itself and future cloud applications. Later we will try to give concrete advice on building successful roadmaps.
End-to-end cloud management

Managing operations, maximizing resources, and executing projects in persistent Hybrid Cloud environments remains a stress point for traditional internal IT departments. This is primarily due to loss of visibility and control as there is no single touch point for deployment and the rising risks and concerns over data security, integrity and availability, as well as the lack of end-to-end SLA support for cloud services. Having a reliable partner who will design, integrate and manage all your Cloud services while maximizing the benefits of scalable IT is a MUST nowadays. With the right partner, achieving both efficiency and innovation in all key business areas across the entire portfolio becomes much easier.

To make initial migrations smooth and create successful Cloud-first cultures, enterprises should focus on executing their migration road maps and getting meaningful data at every point of the plan. Our approach at Tata Communications is to offer complete end-to-end managed service which redefines Cloud strategies by providing access to the right experts, infrastructure, and control to fuel growth with a lower total cost of ownership and improved performance. Our own data centers and proprietary solutions provide effective intermediary steps between in-house and public cloud, helping enterprises begin their cloud journey in a SMART hybrid way.

Identify the right cloud partner

Possibly the hardest element of migration is determining your cloud migration personnel. There’s no shortage of vendors with a range of tools and consulting services to accelerate this process. But this can quickly drive up costs. Leaders in this space develop an internal team that specializes in application architecture with cloud provider expertise. This team informs their real-time decisions. Although these enterprises use their teams for strategic decisions and application rework efforts, they still leverage tools where possible and look to outsource more-arduous development tasks.
PREPARING YOUR ORGANIZATION FOR TRANSFORMATION

It is important to have consistency across the cloud and on-premises in order to get benefits of a Hybrid Cloud, while minimizing complexity and risks.

**Business applications**

Managing operations, maximizing resources, and executing projects in persistent Hybrid Cloud environments remains a stress point for traditional internal IT departments. This is primarily due to loss of visibility and control as there is no single touch point for deployment of various productivity and business tools like CRM, ERP, or other custom mission critical applications and the rising risks and concerns over data security, integrity and availability, as well as the lack of end-to-end SLA support for cloud services. Having a reliable partner who will design, integrate and manage all your Cloud services while maximizing the benefits of scalable IT is a MUST nowadays. With the right partner, achieving both efficiency and innovation in all key business areas across the entire portfolio becomes much easier.

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**Infrastructure**

You need to start envisioning an agile infrastructure to accelerate and optimize your IT practices. Organizations today are thinking bigger and doing more by combining trusted Cloud services and existing IT infrastructure. It is very important to understand the opportunities before evaluating the potential of building a Smart Hybrid Cloud infrastructure.

Hybrid cloud infrastructure is a composition of two or more distinct cloud concepts that have unique advantages and disadvantages, but are bound together by standardized or proprietary technology that enables data and application portability. It is important that public and private setups, are running smoothly and have seamless communication flow. Constant modernization of the Hybrid Cloud is important to drive innovation.

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In cases like these, solutions like Microsoft’s Azure Express Route serve to guarantee a high quality connection so your business can continue to innovate and grow unimpeded.

**DISASTER RECOVERY**

- By using Automated protection and replication of virtual machines in the Intelligent Cloud. Hyper-V, VMware and physical servers can be protected.
- You can also coordinate and manage the ongoing replication of data by integrating with existing technologies including System Centre and SQL Server Always On.
- With orchestrated Disaster Recovery as a service (DRaaS), you can automate the orderly recovery of services in the event of a site outage at the primary data center with Site Recovery. Transfer your applications in an orchestrated way to help restore service quickly, even for complex multi-tier workloads.
- Ensure you get a risk-free, frequent, and high-confidence DR testing that meets your compliance needs by using Audit and Compliance Reporting with Reliable Recovery.
- Use Near-Synchronous Replication for supporting Recovery Point Objectives (RPOs) as fast as in 30 seconds. It also can retain (and use) consistent snapshot shots from a 24-hour window.

**COMPLIANCE DRIVEN DEPLOYMENT**

- Customers who want to offload non-critical instances on Public Cloud can use a reliable Cloud service provider such as Microsoft Azure.
- Ensure you receive support when integrating such services and benefit from a provider that offers best pricing models.
- You should rely on an an expert IPC team to facilitate in setting up a Hybrid Model using the existing ExpressRoute NNI with Microsoft.
- Choosing this set-up, solutions like SAP HANA and ADFS can be implemented.

**Security**

Security and privacy are the most critical issues that need to be addressed when proposing any modern computing environment if it is to be perceived as both reliable and trustworthy. Since data and storage are more and more frequently outsourced to third party service providers, users lose direct control of data management and must depend solely on providers who may not always be dependable. This distinctive feature of Cloud Computing makes the choice of vendors an important mitigating factor to many security threats and vulnerabilities. It is therefore crucial for customers to have a clear understanding of the security threats associated with different Cloud Computing service providers. This topic is namely still dominating the Cloud conversation and not without reason.

As the demand of cloud services is increasing at an ever more rapid pace it drives Cloud service providers to overcome security limitations by creating a robust architecture to guarantee sustainable service and un-compromising protection. If you are planning to move your business to the Cloud, you should always do thorough research and choose a reputable and trustworthy provider. Such a provider has processes in place that small and medium-sized businesses cannot replicate on their own since they are very often time-consuming and expensive to maintain.

The scale and level of functionality that can be obtained though, is almost unprecedented. In terms of guaranteeing security, the features and processes that reputable cloud vendors have built are purposefully designed to provide it at the maximum level. The current digital security landscape for businesses can be described in one word: complicated.

**Networking**

Organizations engaged in digital transformation require a reliable Hybrid Cloud deployment connected by a secure and predictable network. There are a lot of instances when customers complain about the safety and reliability of connecting on-premise Cloud services an public services like Microsoft Azure. They encounter issues like latency, packet loss, gaps in security or applications generally not performing as well and usually end up simply blaming Azure for it. However, usually the culprit lies somewhere else.

In cases like these, solutions like Microsoft’s Azure Express Route serve to guarantee a high quality connection so your business can continue to innovate and grow unimpeded. Network management with such a service becomes simplified, security and data protection is assured and overall operating costs are optimized. This way organizations can always stay connected as a single unit as they continue spreading across geographies – more importantly, they can now deliver a high-quality end user experience thanks to secure, predictable connectivity.

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**SMART hybrid deployments**

**Preparing your organization for transformation**

**An enterprise framework for dealing with complexity**

**Conclusion**
THE ERA OF HYBRID CLOUD

A solution that links enterprise VPNs to leading cloud service providers via MPLS or Ethernet gives enterprises the network predictability while allowing them to access their cloud provider from anywhere in the world.

Much-needed support on that path can be provided via the new Managed Enterprise Connector which can provide a clear way forward for your Hybrid Cloud vision and beyond, by offering O365 integration, managed services, and even LOB integration. All this is achieved while leveraging your existing infrastructure. The Managed Enterprise Connector solution eliminates your requirement to host an onsite Cloud Connector Appliance at each site - this requirement is managed on site by the Cloud services provider.

What does the future hold?

Smart Hybrid Cloud approach enables enterprises to take advantage of the Cloud and their existing applications and infrastructure to innovate automate and increase the speed of business.

According to a recent report by International Data Corporation (IDC), Cloud IT infrastructure spending is predicted to grow at a compounded annual growth rate of 15.6 percent reaching $54.6 billion by 2019, accounting for 46.5 percent of the total spending on IT infrastructure. At the same time, spending on non-cloud IT infrastructure will decline at a -1.4 percent CAGR (Industry Trend). This is a very strong indicator that business processes are becoming increasingly reliant on external cloud services. Moreover, highly scalable networks, load balancing capabilities, and the ability to provide failover makes Cloud Computing services highly reliable. By outsourcing IT services to third party providers, companies can focus more on their core business.
AN ENTERPRISE FRAMEWORK FOR DEALIGN WITH COMPLEXITY

Businesses from different industries are already taking advantage of intelligent enterprise solutions to:

1. Identify the level of integration required between traditional data centres and public Cloud platforms
2. Invest in hybrid architectures to enable public cloud consumption
3. Establish a data protection strategy that spans the data center and the public Cloud

Global business expansions today are primarily driven by technology, but for many organizations the internal IT structure can still present a bottleneck. Managing operations, maximizing resources, and executing projects in the Cloud presents a big challenge for traditional organizations due to lack of in-house experience, IT silos, and loss of visibility and control as there is no single touch point for deployments. All these factors lead to a longer time to market and reduced ROI. Additionally, concerns over data security, integrity and availability of public Cloud and the lack of end-to-end SLA support for Cloud services limits the full understanding of the benefits of transferring your business to the Cloud. It is essential to partner with the best service providers the industry has to offer to get top experts at hand for designing, integrating and managing your deployments. This is where Tata Communication’s Microsoft Azure Managed Services can lend you a helping hand. Organizations can leave their IT issues to us and focus on their business.

1. Identify the level of integration required between traditional data centres and public Cloud platforms

The Cloud operating model prioritizes speed and efficiency and empowers developers. A Smart-Hybridcloud allows your infrastructure to be utilized consistently across public, partner, and private cloud environments, while providing ultimate flexibility. With Microsoft Azure, Hybrid deployments are one of the core pillars of everything we do at Tata. You can think of Azure as an extension of your datacenter, but you can also think of your datacenter as an extension of the tasks you are performing in Azure in accordance with your broader cloud strategy.

Another great feature that enables integration between on-premise and Cloud environment is SQL Server 2016 which enables new Hybrid Cloud solutions that can help you reduce CAPEX and OPEX while improving Mission Critical scenarios such as disaster recovery (DR). You can add asynchronous replicas to Microsoft Azure Virtual Machines and manage them simply with an Add Replica wizard that makes it a “point and click” experience directly in SSMS (SQL Server Management Studio). We still recommend you keeping your synchronous replica on-premises but by having the additional replicas in Microsoft Azure you gain improved DR and can reduce your CAPEX and OPEX costs of physically maintaining additional hardware in additional data centers.

2. Identify the level of integration required between traditional data centers and public Cloud platforms

We believe that making the right investments into technology with real ROI is one of the imperatives when it comes to choosing the right service provider to transfer your business to the Cloud. We build, deploy and support Hybrid Clouds by investing throughout the entire portfolio of available services to make sure that the tools people need are available where and whenever they need them. We also understand that one of the core things organizations strive for is to minimize the time needed to get the desired business results.
Our solution is the Stretch database hybrid scenario, where you stretch your database to Azure without modifying your applications. All you need is to set the policy you want to apply on the historical data and run the query as you normally would.

For example, in many organizations one of the most time-consuming processes is the development and testing. In the case of Telenor group, one of the leading mobile operators in the world, they “saved 70% on test, development and demo that could be turned off when finished to minimize their capital outlays.”, as stated by Marius Pedersen.

Another crucial aspect of the operational sustainability for any organization and one of the things to consider when it comes to Hybrid Cloud is the balances between network reliability, quality and cost. That is why Kumar KV, vice president for information technology at Narayana Health, one of India’s leading healthcare providers, turned to Tata Communications and Microsoft Azure to receive the centralized solution that perfectly balanced all that. With it they were able to:

- Achieve higher performance and save more lives because their medical teams can now quickly access data since vital clinical applications respond three-times faster as with the legacy systems.
- Get a special treatment for their massive PACS files (e.g. X-rays) via Dynamic Path Selection.
- Have a uncompromised business continuity as Dynamic path selection also provides technology which automatically recognizes application traffic and chooses the appropriate route. It also routes traffic over the Internet in the event of a network fault.

Companies looking to move to a Hybrid Cloud solution encountered two key issues: public internet which could potentially expose critical enterprise data to malicious attacks and the lack of a true Hybrid Cloud. This created a need for a reliable Hybrid Cloud connected by a secured and predictable network. Both Microsoft and Tata Communications realized this need early on and built trustworthy, reliable, and cost-effective solution ensuring high levels of scalability and security.

3. Establish a data protection strategy that spans the data center and the public Cloud

There are numerous advantages and innovative hybrid scenarios that can complement your on-premises SQL Server Mission Critical investments. One of them is Stretch database, something that only Microsoft provides and can be extremely valuable in your data strategy. At some point we all have to think what to do with our historical and sensitive data. Ideally, we want it at our fingertips but don’t want it residing on premium storage with your actively used data because it’s too costly.

Our solution is the Stretch database hybrid scenario, where you stretch your database to Azure without modifying your applications. All you need is to set the policy you want to apply on the historical data and run the query as you normally would. And there is also a solution for your possible security concerns as it works with the new Always Encrypted technology that protects the columns you desire (at rest and in motion), even in the memory buffer pool, so sensitive customer information is secure. In short, you can significantly cut storage costs with Stretch Database as:

- Data is encrypted & queryable
- It helps you save money & improve customer experience
- No application changes are needed

With these types of an end-to-end expertly managed solutions and TATA Communications’ global network reach it is easy for organizations to maximize the benefits of the public and private Cloud.

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We can all agree that moving enterprises to the Cloud has vastly accelerated. Your customers are facing daily struggles such as declining employee productivity, lack of visibility due to constant changes in IT requirements, infrastructure obsolescence and many more similar issues arising from trying to process every aspect of IT operations internally. Even the greatest sceptics are realizing that moving to the managed Cloud (with a reliable partner) is not only a smart but almost an inevitable decision.

Numerous Cloud platforms and related technologies are revolutionizing the information and communications industry, creating opportunities to utilize new business models, deploy on-demand capabilities at scale, improve quality of service and rationalize business expansion costs. To succeed, you need a partner who can provide strategy, guidance and support through the complex stages of cloud adoption and its future evolution. Be it the technology with a Hybrid solution or open source technologies, our approach is to enable and manage a totally secure and integrated Hybrid cloud service for you and your customers. Tata Communications is the connection to the Public Cloud such as Azure through private connectivity, and our global network of high performing partners are an assurance that the services we provide are at the top in the IT industry.

The reasons why it all started are visible through the likes of Microsoft, Airbnb, Uber, Tesla and many more. This economic reality makes it necessary to rethink your Digital Platforms with some defined Transformation Objectives in mind.