CLOUD COMPUTING

Creating Value For Businesses Across The Globe

FROST & SULLIVAN

FUJITSU

A Frost & Sullivan White Paper
in Collaboration with Fujitsu

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INTRODUCTION TO CLOUD COMPUTING

Frost & Sullivan defines cloud computing as a flexible and scalable IT environment in which service providers leverage virtualization technologies to create and distribute computing resources to customers on an as-needed basis, through a private or public network and where the service is priced according to a per-use basis. A variety of services are delivered through the cloud, commonly classified under three broad service offerings – Software as a Service (SaaS), Infrastructure as a Service (IaaS) and Platform as a Service (PaaS). These services offer several value propositions to consumers, summarized in the figure below.

Figure 1: Value proposition of Cloud Computing
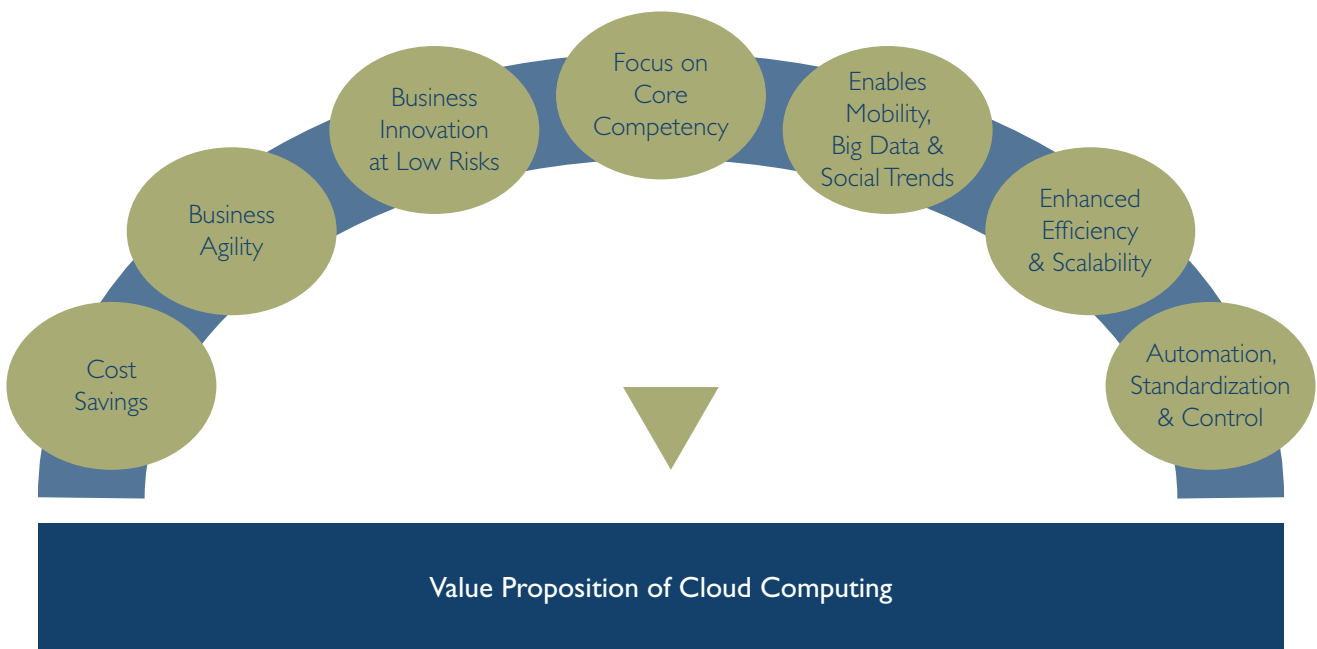
Source: Frost & Sullivan

ADOPTION OF CLOUD COMPUTING

The global cloud computing market is expected to reach approximately US$86 billion in 2016 from an estimated US$36 billion in 2013, growing at a compound annual growth rate of 33.4%. While SaaS continues to be the most popular cloud service offerings with users, IaaS is witnessing growing adoption and is expected to grow at 40% per annum for the 2013-2016 period.

The adoption of IaaS is currently being driven by specific usage scenarios as highlighted in the following chart.

Figure 2: Emerging Use Cases of IaaS

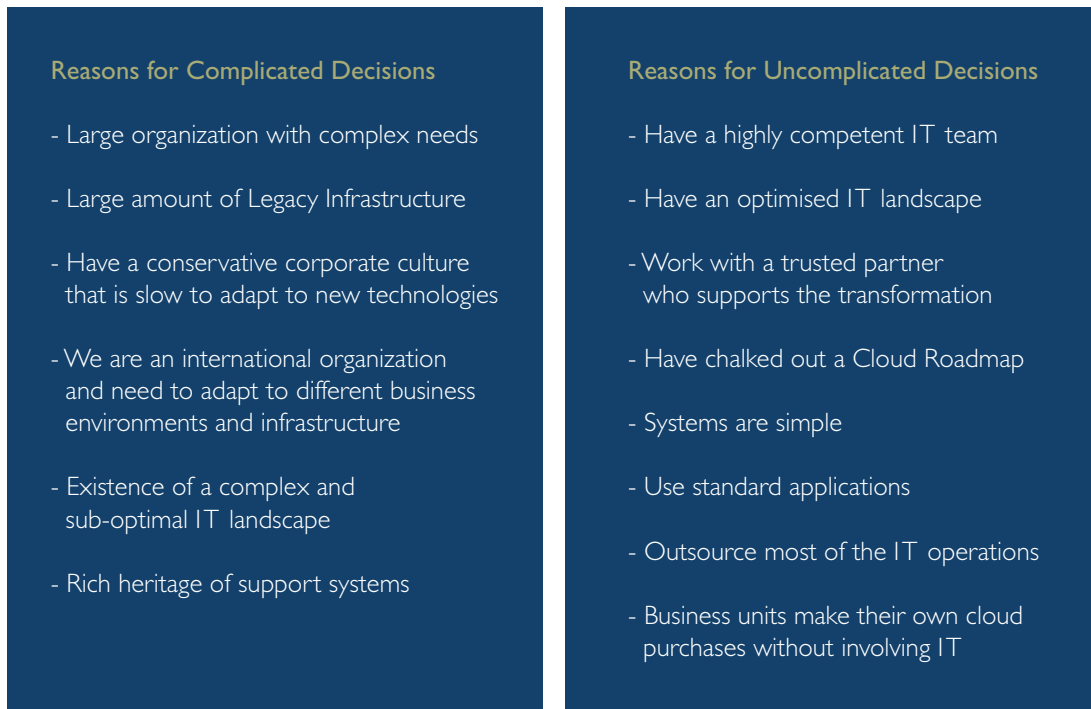| Innovation	Modernization
Allow low cost and low risk manner to test and scale new services	Managed hosting customers switching to IaaS
Cloud bursting for production environments	Test and development environments
Computationally intensive tasks that demand high scalability - High Performance Computing	Storage for Archiving/ Compliance/ DR
Mobile app developers	Rich media storage for access to internet/public users
Start-up businesses looking for agile and scalable infrastructure without CapEx	One-off projects (compute)

Evolving IaaS Use Cases

Source: Frost & Sullivan

According to a recent Frost & Sullivan and Fujitsu enterprise survey with 310 technology decision makers in major technology markets of Australia, France, Germany, Singapore, the UK and the US, prospective users of cloud computing solutions across the globe have a broad level of understanding for what a cloud is. For example, US enterprises are especially confident about their knowledge related to the cloud solution, with 74.0% of them emphasizing their understanding of the three different types of cloud deployment methods. This finding is mostly because enterprises in the United States were early adopters of the cloud and have had more exposure to this technology than the rest of the world. However, a large percentage of enterprises are not clear about the difference between a private, public, and hybrid model. Singapore's and France's markets exhibit the least understanding, with 69.2% and 76.4%, respectively, expressing uncertainty.
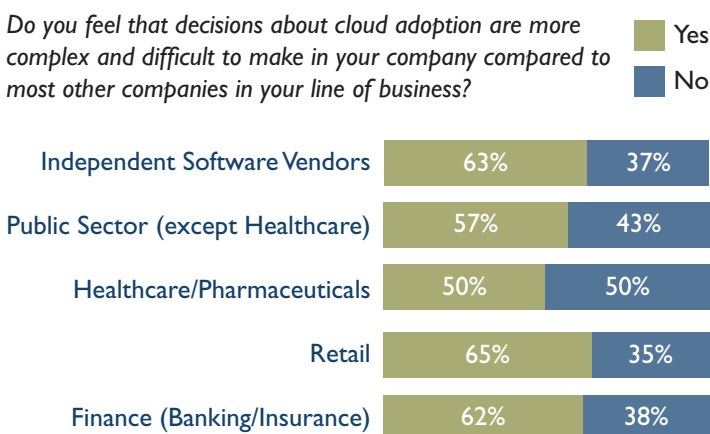
The availability of numerous cloud offerings in the market, ambiguity regarding choice of cloud models, and the process involved in cloud transition complicate the decision-making process regarding cloud implementation for a large number of enterprises. Of the enterprises that responded, 58.7% revealed that they found cloud-based decisions to be particularly complex.

Figure 3: Perceptions about Cloud Computing Decisions

Reasons for Complicated Decisions

- Large organization with complex needs

- Large amount of Legacy Infrastructure

- Have a conservative corporate culture
  that is slow to adapt to new technologies

- We are an international organization
  and need to adapt to different business
  environments and infrastructure

- Existence of a complex and
  sub-optimal IT landscape

- Rich heritage of support systems

Reasons for Uncomplicated Decisions

- Have a highly competent IT team

- Have an optimised IT landscape

- Work with a trusted partner
  who supports the transformation

- Have chalked out a Cloud Roadmap

- Systems are simple

- Use standard applications

- Outsource most of the IT operations

- Business units make their own cloud
  purchases without involving IT

Source: Frost & Sullivan

Figure 4: Percent of Perceived Complexity in Decision Making Among Sectors

Do you feel that decisions about cloud adoption are more complex and difficult to make in your company compared to most other companies in your line of business?

Yes
No

	Yes	No
Independent Software Vendors	63%	37%
Public Sector (except Healthcare)	57%	43%
Healthcare/Pharmaceuticals	50%	50%
Retail	65%	35%
Finance (Banking/Insurance)	62%	38%

Source: Frost & Sullivan

Enterprises across all verticals unanimously agree that cloud computing decisions are complex. The decision making process for cloud implementation varies from one organization to another. Some mention that they have a set strategy that they follow when they migrate from legacy applications to the cloud (34.0%). However, a larger percentage of enterprises (54.0%) admit that they either have no set process or develop strategies reactively as the demand arises.

Moreover, approximately 61.2 percent of the enterprises admit that they are uncertain about the choices available to them or how to select the appropriate ones. This calls for the inputs of cloud service providers, who can educate and collaborate with enterprises, thereby simplifying the decision-making process.

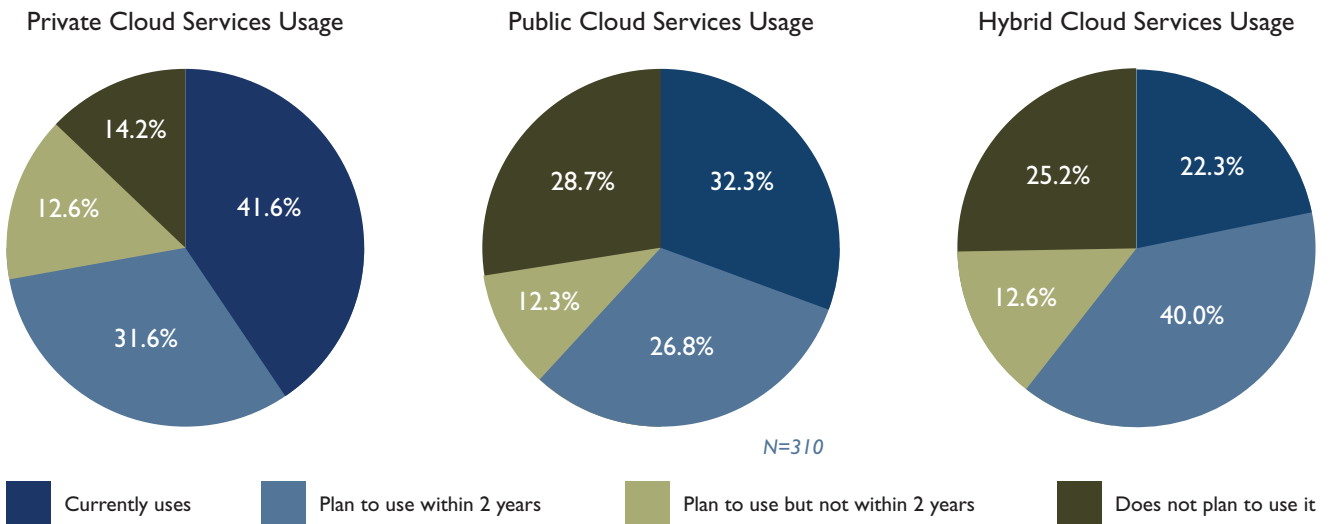## WHICH CLOUD DEPLOYMENT MODEL IS RIGHT FOR YOU?

Cloud computing isn't a one-size-fits-all undertaking. It can be delivered through several service delivery models and multiple services can be provisioned over the cloud. It is essential to understand these different forms of the cloud and identify the right approach for your organization. There are three cloud deployment options available to organizations today, namely private cloud, public cloud, and hybrid cloud. These three cloud deployment models have certain similarities and differences, and it is essential to understand these aspects when evaluating a move into the cloud and selecting the right cloud deployment model for an organization.

Figure 5: Comparison between Cloud Deployment Models

Parameter	Private Clouds	Public Clouds	Hybrid Clouds
Data Storage	Data Remains within a secure enterprise environment	While customers may have a choice of data centre location, its storage continues to remain opaque to end users, raising security and regulatory concerns	Data are divided between a secure hosted environment and a public environment based on criticality and regulatory compliance
Infrastructure	Dedicated infrastructure	Primarily in a multi-tenant, shared environment	A mix of dedicated and shared infrastructure
SLAs	Robust SLAs that are only limited by skill levels and processes of the provider	- Standardized SLAs with compensation limited to service credits - May not meet the exacting requirements of enterprises	Flexible SLAs as per requirement of enterprises
IT Team	Internal IT team / On-demand IT staff of service provider	On-demand IT staff of service provider	Access to internal IT team as well as service provider IT staff
QoS	Private networks offer better QoS through pre-defined SLAs	Public Internet has less reliable QoS	Ability to choose the relevant networks as per requirement
Cost	Expensive (as compared to a public cloud)	- Predictable OPEX - Inexpensive	- Mix of CAPEX and OPEX - More cost effective than private clouds
Suitable Workload	Mission critical applications with demands for high security and low latency, and custom service levels	Elastic workloads; Development and Testing; Analytics; VDI; Mobile/Social apps; custom apps	Workloads with regulated data or to ensure data sovereignty but need elasticity and agility such ERP; business intelligence solutions; VDI; custom apps

Source: Frost & Sullivan

Figure 6: Usage preferences of the Cloud Deployment Models, Global, 2012

Private Cloud Services Usage

- 14.2%
- 12.6%
- 41.6%
- 31.6%

Public Cloud Services Usage

- 28.7%
- 32.3%
- 12.3%
- 26.8%

N=310

Hybrid Cloud Services Usage

- 25.2%
- 22.3%
- 12.6%
- 40.0%

| Currently uses | Plan to use within 2 years | Plan to use but not within 2 years | Does not plan to use it |

- A large percentage (41.6%) of enterprises mention that they use private cloud services.
- At a regional level, more than half of the enterprises in UK and US point out their current involvement with private cloud services.
- The public cloud services model has the highest percentage of enterprises who do not plan to use it in the future.

- This is largely because of the security and performance concerns attached to the public cloud service model.
- 52.0% of the enterprises in the US currently use this model, which is the largest proportion of users among all the other countries.
- 22.3% of the enterprises are currently using the hybrid cloud service model. This points to the low prevalence of true hybrid cloud offerings in the market.

Source: Frost & Sullivan

Figure 6, above, illustrates the usage preferences of the different cloud delivery models across the globe. Among the three cloud delivery options, private solutions were found to be most commonly used. Enterprises exhibit the greatest interest in the future use of private and hybrid solutions, while security concerns cause them to be more hesitant about public cloud solutions.

Among these three cloud deployment models, public clouds offer significant cost savings for users along with elimination of CapEx, reduction in infrastructure management and access to latest in technology. This has translated into availability of enterprise class IT infrastructure to businesses that could not afford this before. SMBs today can have the same infrastructure, SLAs and performance as their larger counterparts, enhancing productivity and business efficiency. While the initial adoption of public cloud services was dominated by test and development, and non-core applications, enterprises are increasingly gaining confidence in the public cloud deployment model and migrating a greater number of applications to public clouds. Public clouds are also being increasingly considered for disaster recovery and business continuity planning being completely independent from the current IT environments. This allows enterprises to take risks and innovate to bring out new solutions or expand into newer markets/geographies as there are no upfront capital investments. These aspects are leading to a shift in the role of the IT department and the CIO into internal service providers or "Cloud Enablers" where they look to aggregate, integrate and manage cloud and non-cloud services in a seamless manner. For the business unit, it enables faster Innovation without increasing overheads or reducing the flexibility.

Furthermore, there is a wide reaching impact on consumers of technology such as marketing teams or the Chief Marketing Officer (CMO). The CMO now has greater flexibility from IT to run their ad-hoc marketing campaigns with significantly lower apprehensions about its return on investments as they can request, or in fact self procure, software solutions or virtual machines to run their campaigns on a pay-per-use model. This is allowing them to take bolder steps towards marketing and experimenting with their marketing approaches.

Figure 7: Advantages of Public Cloud

Source: Frost & Sullivan

Once enterprises reach a certain level of maturity in the adoption cycle, it might become necessary for them to go beyond the public cloud and also include private cloud into their cloud solution portfolio, in the purpose of better distribution of workload without significantly increasing IT budget. Hence, Frost & Sullivan expects that most enterprises in the future will move to a hybrid cloud environment which allows users to get benefits of both the cloud services and traditional IT delivery models giving rise to "Cloud Integration". Hybrid or cloud integration deployments feature a mix of on-premise and off-premise resources managed through one easy to use application / web portal. All critical and compliance related data may be stored on the on-premise network, while the non-core applications may be moved to the off-premise location. This mix creates an attractive value proposition for the customers and is driving increasing adoption across the globe in a long run.

WHICH CLOUD SERVICE PROVIDER SHOULD YOU CHOOSE?

Having identified the distinctness of the three cloud delivery models and why enterprises will choose a mix of traditional and cloud delivery models to meet their business requirements of today, it is also essential to identify the right cloud service provider to meet your business' requirements. Organizations' choice of cloud providers depends on several factors. Most companies point out the significance of partnering with a provider who has

solid experience in the market and has prior relationship with the company. However, a cloud provider offering services that suit the existing infrastructure and activities of a company, is ranked the highest.
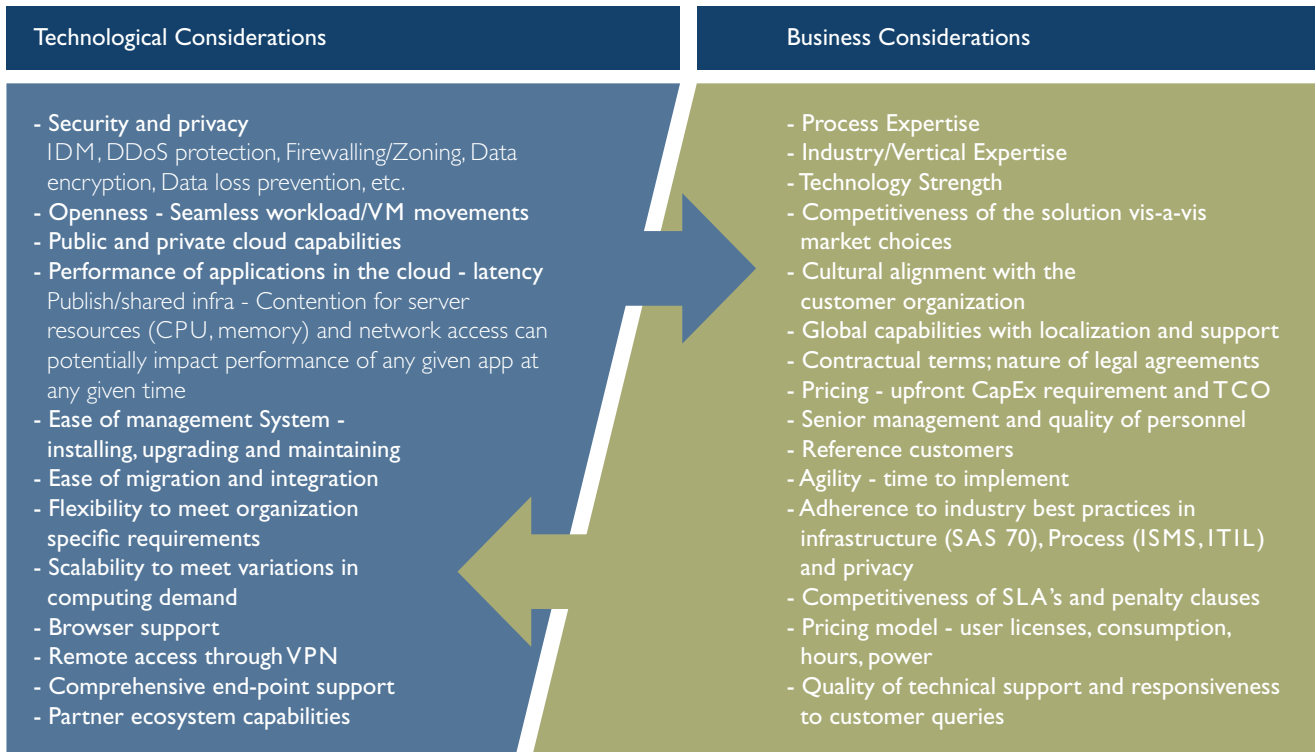
Figure 8: Factors affecting choice of cloud service provider

Factors affecting choice of cloud provider

Providing services relevant to the enterprise:

Including existing infrastructure into the cloud solution

Following a consulting methodology

Holistic understanding of the business of the company

Low ———————————————— High
  1   2   3   4   5

Position of the cloud provider in the market:

Strong track record

Recognised leader in the market /

Long history in the market

Accumulated best practices

Involved in lots of business in the cloud market

Credibility of the roadmap of the provider

Low ———————————————— High
  1   2   3   4   5

Relationship with the cloud provider:

Already do business with the provider/

Have done business in the past

Ability to provide support in the long run

Low ———————————————— High
  1   2   3   4   5

Services offered by the provider:

Broad portfolio of serviecs

Famous for best-of breed technology

Low ———————————————— High
  1   2   3   4   5

Source: Frost & Sullivan

It is essential to ensure that the service provider meets certain critical technological and business considerations:

Figure 9: Technological and Business Consideration in Selecting a Cloud Service Provider

Technological Considerations	Business Considerations

- Security and privacy
  IDM, DDoS protection, Firewalling/Zoning, Data encryption, Data loss prevention, etc.
- Openness - Seamless workload/VM movements
- Public and private cloud capabilities
- Performance of applications in the cloud - latency
  Publish/shared infra - Contention for server resources (CPU, memory) and network access can potentially impact performance of any given app at any given time
- Ease of management System - installing, upgrading and maintaining
- Ease of migration and integration
- Flexibility to meet organization specific requirements
- Scalability to meet variations in computing demand
- Browser support
- Remote access through VPN
- Comprehensive end-point support
- Partner ecosystem capabilities
	- Process Expertise
	- Industry/Vertical Expertise
	- Technology Strength
	- Competitiveness of the solution vis-a-vis market choices
	- Cultural alignment with the customer organization
	- Global capabilities with localization and support
	- Contractual terms; nature of legal agreements
	- Pricing - upfront CapEx requirement and TCO
	- Senior management and quality of personnel
	- Reference customers
	- Agility - time to implement
	- Adherence to industry best practices in infrastructure (SAS 70), Process (ISMS, ITIL) and privacy
	- Competitiveness of SLA's and penalty clauses
	- Pricing model - user licenses, consumption, hours, power
	- Quality of technical support and responsiveness to customer queries

Source: Frost & Sullivan

The above criteria may be adopted as the guidelines in the cloud provider evaluation. The decision makers need to identify the criteria that are most important for their business requirements and judge the various different service providers on a mix of these. These criteria should essentially lead to the service provider offering the best-in-class security and privacy; performance; availability; and customer service and support.

## FUJITSU'S VALUE PROPOSITION AS A CLOUD SERVICE PROVIDER

Human Centric Intelligent Society and Fujitsu Cloud Initiative

Fujitsu is a leading provider of IT services and solutions across the globe. The company has a vision for the future and believes that human centric ICT (Information and Communication Technology) can help create a more intelligent society, a better place for human beings and a better place to conduct our business and create a sustainable place to live and prosper. Human centric ICT is the style of technology to empower people, aligned to needs. It connects everything and harnesses information to create value. It gives knowledge anywhere, anytime. It encourages people to innovate. It is the fusion of advanced technologies encompassing cloud, mobility, Big Data,

the Internet of Things and more.

Fujitsu wants to use the power of human centric ICT to drive a safer, more prosperous and sustainable society. A society where knowledge is continually harnessed for encouraging people to innovate. Fujitsu calls this vision a human centric intelligent society and positions cloud as underpinning of innovation.

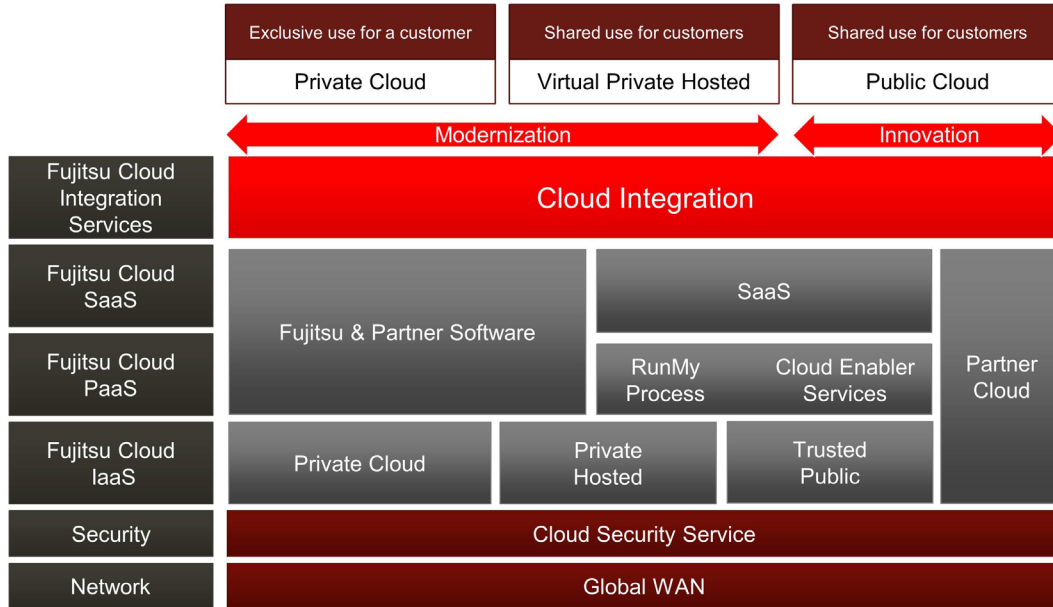**Figure 10: Fujitsu Cloud – Underpinning innovation**
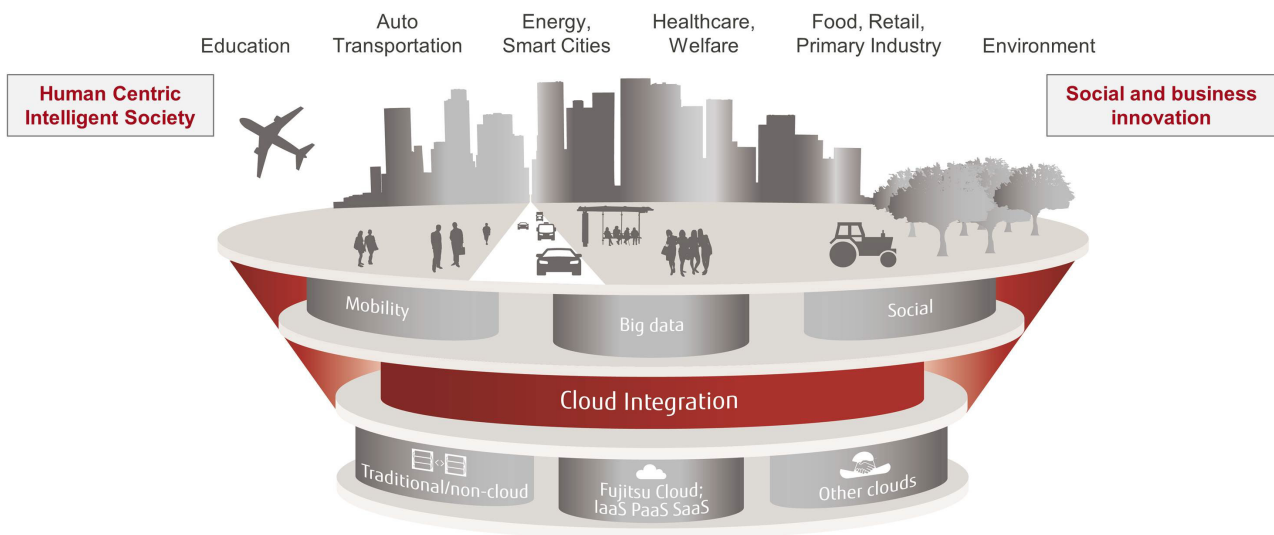
Source: Fujitsu

Over the last couple of years, the company has ramped up its cloud computing capabilities with its "Fujitsu Cloud Initiative" building on its existing strengths – global data centre presence, strong consulting expertise, and implementation and integration excellence. Today, Fujitsu has one of the broadest cloud portfolios on offer in the market. Its cloud portfolio is built on integrating its own and third party solutions to create a seamless end-user experience which encapsulates mobility, big data and social themes to create solutions that meet the demands of businesses across verticals. Fujitsu offers a mix of public and private cloud infrastructures tailoring to specific business needs, together with its cloud integration services, providing unique value propositions to its customers. The company is currently serving more than 3,600 companies with its cloud services portfolio through its 18 cloud centres across the globe.

The company's cloud portfolio comprises the following services:

Figure 11: Fujitsu's Cloud Services Portfolio

Exclusive use for a customer	Shared use for customers	Shared use for customers
Private Cloud	Virtual Private Hosted	Public Cloud

	Modernization	Innovation
Fujitsu Cloud Integration Services	Cloud Integration	
Fujitsu Cloud SaaS	Fujitsu & Partner Software	SaaS / Partner Cloud
Fujitsu Cloud PaaS		RunMy Process / Cloud Enabler Services
Fujitsu Cloud IaaS	Private Cloud	Private Hosted / Trusted Public
Security	Cloud Security Service	
Network	Global WAN	

Source: Fujitsu

Frost & Sullivan will discuss two underscored offerings among Fujitsu's cloud computing services – the IaaS Trusted Public S5 (TPS5) and the Cloud Integration Platform. These solutions allow Fujitsu's customers to embark on a cloud adoption journey where they start off by moving their test and development environments into the TPS5 offering and get accustomed to working in the cloud. This may be followed by migrating production workloads suitable for a public cloud environment into TPS5 and other, more sensitive or mission critical workloads, into the recently launched TPS5 Dedicated cloud. Though the journey, customers gain confidence in cloud computing, leverage best-in-class IT infrastructure; and try out innovative new ideas and services. The next stage in the journey assists the evolution of the CIO and the CMO as highlighted earlier by allowing them to tap into Fujitsu's extensive product portfolio. All the different pieces of enterprises' cloud environment come together through the Cloud Integration Platform. It allows enterprises to manage their entire IT environment – cloud or traditional – through a cloud integration. It can become the underpinning platform for your organization in exploring new services and introducing a new breed of apps as Fujitsu partners with you on your cloud journey.

IAAS TRUSTED PUBLIC S5

Fujitsu's IaaS Trusted Public S5 (TPS5) is a public cloud service that provides unparalleled levels of security and reliability. It has been launched in six locations globally – Japan, Australia, Singapore, the UK, the US and Germany. Each node is standard and identical, and the data resides strictly within the region unless agreed otherwise. The company has also established a global delivery centre in the Philippines to provide support to its expanding global customer base.

The value proposition of the IaaS TPS5 lies in the ability to provide a range of options for users to customize to their exact needs. For example, users can choose their level of compute services, options for network services – global IP address, server load balancing, etc and from a range of storage services. Enterprise customers are looking for best-in-class security and privacy; performance; availability; and customer service and support from their cloud service provider.

Security and Privacy

Concerns around security and privacy related to access, storage and retrieval of data have been the major roadblocks in cloud adoption. Security is inbuilt at every level of the service – in accessing the portal, in accessing the applications, at the network layer, at the data layer and in the data centre. Key security feastures of the solution include authentication/ID management, access control, encryption and key management, and audit trail management. Furthermore, the company's network of global data centres allow enterprises to choose where their data should be located.

Performance

As the cloud computing landscape is maturing, businesses are expecting high performance environments from cloud services. It is essential to have at least the same experience from the cloud as from self-hosted environments. Fujitsu offers virtual machine performance guarantee, which translates into steady performance of machines eliminating the noisy neighbor problem. This has been achieved through an intelligent cloud orchestration platform. Also, the ability to choose the data centre where the data resides can help reduce impacts of network latency and jitter due to distance.

Availability

The availability of cloud services at all times is also a critical factor in choosing a cloud service provider as down times/outages may lead to loss of productivity and revenues. Fujitsu ensures high availability through mirroring and establishing full redundancy at all points of failure – component / device / network. The SLA for this service is committed at 99.95%, excluding maintenance time.

Customer Service and Support

Ultimately, there will be occasions when even the most stringent of availability SLAs fail. Or your IT team needs assistance in integrating a newly deployed IT tool. This is when customer service and support can make the difference. While the IaaS TPS5 is based on a self-service model, it is backed by round the clock monitoring to provide stable environment and ensure SLAs are met. Also, Fujitsu has in-house experts that can advise and support enterprise customers on their cloud journey from roadmap creation to implementation.

Figure 12: What differentiates Fujitsu IaaS TPS5?

Predefined templates reduce deployment time and enhance ease of use
Predefined templates eliminate the need to make extensive system configurations for server and network segments

No additional charge for:
- Complimentary 24/7/365 telephone support services
- System disk storage when VMs are not running
- IOPS* or read/write requests on disks which is crucial for big data applications

Integration with private cloud
User friendly, secure and seamless integration with internal private cloud and/or hosted environment

Local data residency
Compliance with local law of each customer's country for data management

*IOPS – Input / Output Operations per Second   *Source: Frost & Sullivan*

Furthermore, Fujitsu has also launched a dedicated option of this – IaaS Trusted Public S5 Dedicated - that is delivered within the global public cloud service. This is a suitable alternative for clients who are used to private clouds or private hosted environments for deployment of applications such as Oracle and SAP.

HOW FUJITSU IAAS TPS5 HAS HELPED CUSTOMERS?

Case Study 1: LANXESS

TRANSFORMING CRM WITH
FUJITSU IAAS TRUSTED PUBLIC S5 GLOBAL CLOUD

Company Background
LANXESS is a leading specialty chemicals company with sales of EUR 9.1 billion in 2012 and roughly 17,500 employees in 31 countries. The company is currently represented at 52 production sites worldwide. The core business of LANXESS is the development, manufacturing and marketing of plastics, rubber, intermediates and specialty chemicals. The company serves customers across six key verticals – Tires, Automotive, Chemicals, Consumer Goods, Construction and Agriculture and offers solutions covering the four global mega trends – Mobility, Urbanization, Agriculture and Water.

Business Scenario
LANXESS had a legacy CRM system in place which was no longer meeting its business requirements across its multiple business units, 1,000+ users and its SAP deployment. The company was looking to replace this 10 year old application globally for internal users and partners. Furthermore, LANXESS had decided to procure an external "state-of-the-art" solution instead of creating one in-house and was looking for a pay-per-use model which was in a secure environment and met its stringent SLA requirements. Having closely worked with Fujitsu

in the past on implementing managed hosting services as well as SAP BW implementation, LANXESS chose Fujitsu to support its CRM transformation initiative as well.

Solution Implemented

In order to meet LANXESS' business requirements, Fujitsu leveraged its broad cloud capabilities primarily across three key areas – Cloud Enablement and Implementation; SaaS; and IaaS – to deliver a unique solution tailored to the client's needs. It chose Microsoft Dynamics CRM 2011 as the underlying platform, for which it is a Microsoft CRM Partner. The solution was implemented on Fujitsu's global cloud data centre network, with Germany data centre at its core. Fujitsu is also managing License, SLA reporting and Provisioning/Billing for this deployment.

Figure 13: CRM@LANXESS Service Design
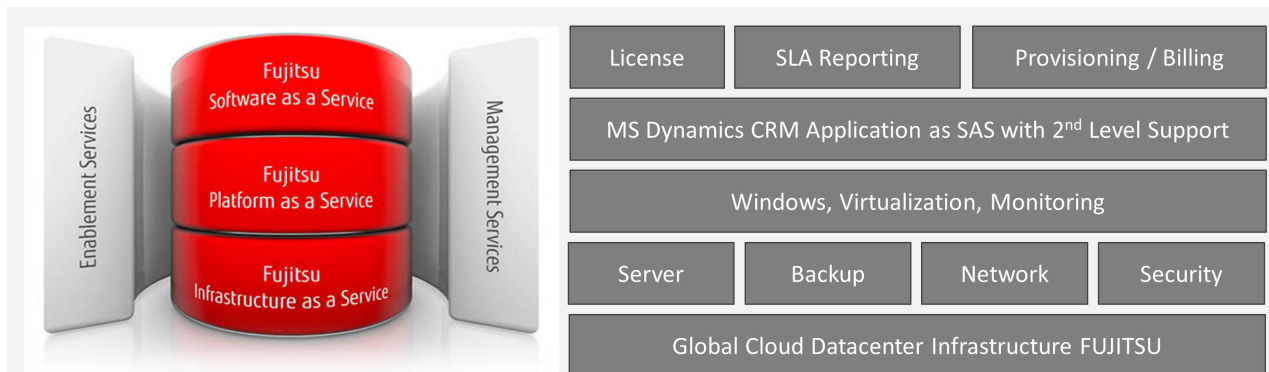
Source: Fujitsu

Business Benefits for LANXESS

LANXESS Business	LANXESS IT
- Flexible cost with price per CRM seat	- Can act as IT-Business Partner
- Flexible for M&A or changes	- Countable OPEX cost with easy price model
- Faster release and rollout times	- No vendor locking
- Quicker response with more IT-Resources	- No license risk
- Tier 3+ data centre and service	- Best of two worlds: Cloud prices with
- Knowing where the business data	managed SLA based application service
are stored (Germany)	- Can care about the CRM community @ LXS

Case Study 2: LocationValue Inc.

RAPID SCALABILITY ACHIEVED THROUGH FUJITSU IAAS TPS5 DRIVES GROWTH

Company Background

LocationValue Inc. (formerly Imanara) is a Japanese "timed coupon" provider. The core of company's offering revolves around leveraging consumer location data and providing targeted coupons thereby, increasing their

relevance for the consumer. The company undertakes this through a mobile app, Imanara!, which is able to access its users' location data. The company matches this location data with its database of vendors and pushes the relevant coupons to the app. Currently, Imanara! is partnered with more than 14,000 merchants and the iPhone app had been downloaded by more than 2.8 million users in January 2013.

Business Scenario

LocationValue Inc. offers coupons that are "timed", i.e., they are valid for only a limited period of time, encouraging users to act quickly – like coupons offering 30% discounts to customers that redeem them within 30 minutes of receiving it. Furthermore, the company has reached a critical mass of consumers and is witnessing wide publicity across the country. These factors together are creating two key challenges for the company. Firstly, it has a highly variable workload with peaks significantly (~100 times) higher than the average. This was demanding either high levels of capital investments or a rapidly scalable environment. Secondly, the app and the platform need to be constantly modified and updated for the new offers. This was mandating access to knowledgeable workforce and led to high turnaround times.

Solution Implemented

In order to meet LocationValue Inc.'s business challenges, Fujitsu IaaS Trusted Public S5 was chosen to move the Imanara! app to a cloud-based environment. The Fujitsu IaaS Trusted Public S5 was considered as the ideal choice for the app given its large local data centre network in Japan, enterprise class solution offering and SLAs, backed by Fujitsu's expertise and support.

Business Benefits for LocationValue Inc.
- Being cloud-based Fujitsu IaaS Trusted Public S5 provides the company the rapid scalability required to meet its business' peaks and troughs in web traffic. - The IT staff can manage the configuration through an easy to use e web-based portal, thereby, full time IT staff can focus on developing and managing the app. - It also led to lower cost of infrastructure management. - The cloud-based infrastructure provides utility pricing as well as enterprise-class availability - Imanara! Platform can now be copied and replicated in a short span of time on the Fujitsu IaaS Trusted Public S5. This has created a new business opportunity for LocationValue Inc. which can now provide this platform as OEM to other service providers.

Case Study 3: ImageWare Systems

LEADING THE BIOMETRIC ID REVOLUTION
WITH FUJITSU IAAS TPS5

Company Background

ImageWare Systems is a leading developer of mobile and cloud-based identity management solutions, providing biometric, secure credential and law enforcement technologies. Scalable for worldwide deployment, ImageWare's biometric product line includes a multi-modal "patented Biometric Engine®" that is hardware and algorithm

independent, enabling the enrollment and management of unlimited population sizes. ImageWare's identification products are used to manage and issue secure credentials, including national IDs, passports, driver's licenses, smart cards and access control credentials.

Business Scenario

ImageWare Systems was looking to meet the increasing demands of its global customer base on three key aspects:
- To shorten the deployment cycle and offer greater agility
- To offer a highly reliable solutions at low cost
- To ensure that the solution works across the world

In order to meet the abovementioned objectives, ImageWare needed a Public Cloud IaaS partner that was able to provide enterprise class cloud services that could scale to meet ramp-up of its global customers.

Solution Implemented

The GoCloudID offering is built on the Fujitsu IaaS TPS5 and features ImageWare's CloudID TM product suite. The solution, being cloud-based, is offered as a service or on a transactional basis. The solution is designed to deliver enterprise class, real-world solutions to meet current biometric identity management, enrollment, authentication and verification needs. This adaptable, modular structure can be scaled, modified, and enhanced as business require-ments evolve. The Fujitsu IaaS TPS5 addresses performance, security, agility and reliability needs required by the enterprise. The solution allows companies to choose their own cloud system, control their own architecture and customize applications. In addition, the Fujitsu IaaS TPS5 ensures ease of access and portability of data, is cost effec-tive, and allows the enterprise to scale its IT environment.

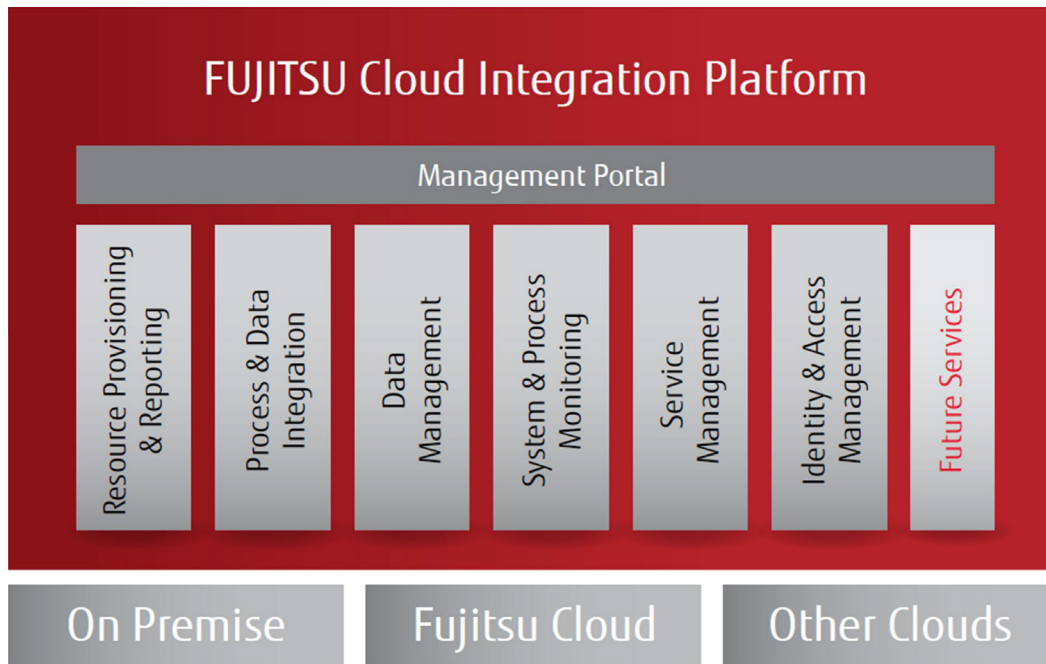| Business Benefits for ImageWare Systems |
| --- |
| - Offers rapid deployment cycle and lower costs of biometric enablement with a pay for use business model
- Provides financial services, retail, healthcare, and manufacturing industries with an agnostic approach permitting multiple modalities such as voice, facial, and fingerprinting applications
- Enables easy deployment of biometric security for mobile and traditional applications across the globe through local capabilities of Fujitsu. This allows customers to develop the best use case for their particular organization and requirements, permitting rapid integration with existing business intelligence and systems
- Eliminates the need for ImageWare Systems to manage a separate computational engine. All necessary computations are undertaken in the Fujitsu IaaS Trusted Public S5 |

CLOUD INTEGRATION PLATFORM

Ensuring smooth functioning of IT by bringing together disparate environments

Another key strength of Fujitsu's cloud offerings is the Cloud Integration Platform, which allows users to use multiple clouds. It is targeted at enterprises that are looking to significantly increase their use of cloud services

in order to drive innovation and leverage the three technology mega trends – mobility, social and big data. This platform provides a range of services including the following:

Figure 14: Fujitsu Cloud Integration Platform

FUJITSU Cloud Integration Platform

Management Portal

Resource Provisioning & Reporting | Process & Data Integration | Data Management | System & Process Monitoring | Service Management | Identity & Access Management | Future Services

On Premise   Fujitsu Cloud   Other Clouds

Source: Fujitsu

Along with customers' business growth, in most cases enterprises need to manage a much more complex working environment which may include on-premise infrastructure, private and/or public cloud provided by Fujitsu, as well as other clouds. The Cloud Integration Platform provides excellent cloud management, cloud integration and cloud aggregation. Through the launch of Cloud Integration Platform, Fujitsu is in the right position to become a trusted partner for its existing customers and also potential customers on facilitating their business expansion. It simplifies adoption of cloud services by ensuring that the necessary governance and operational controls are in place without increasing complexity or reducing the flexibility for the business units to choose the cloud services they want. It provides the functionality you need to aggregate, integrate and manage cloud service alongside non-cloud and traditional ICT services in a consistent manner.

The value proposition of the Cloud Integration Platform can be encapsulated as follows:

Figure 15: Cloud Integration Platform – Value Proposition
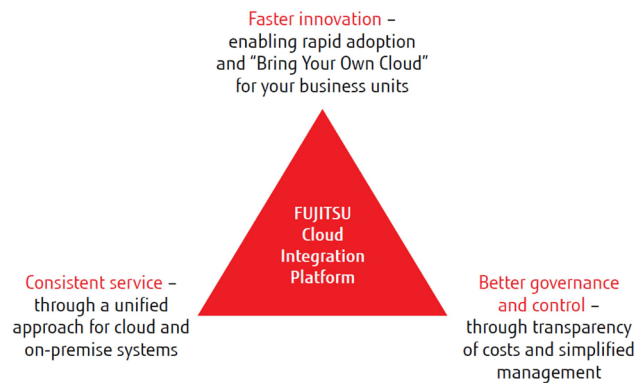
Source: Fujitsu

THE LAST WORD

The information and communication technologies (ICT) industry is undergoing a paradigm shift in the way computing resources are procured. Cloud computing is emerging as a key area of focus for business leaders and technology decision makers due to its support for driving innovation; its ability to save costs; increase business agility and deliver IT in an on-demand manner. Indeed, the use of cloud services has increased significantly over the last 24 months with more than half the enterprises today using cloud services in one form or the other. Among the various cloud deployment models, public cloud is the best choice to start the cloud journey, as it allows enterprises to develop and test new services at low risk with minimum cost. It has emerged as a useful tool to enable enterprises' infrastructure modernization, cost optimization, as well as business/service innovation. In today's competitive environment, business units need to innovate to not only thrive but, survive and the CIOs need to modernize their ICT to be able to respond to business needs. Once enterprises mature in the cloud adoption cycle, they can opt for a mix of public and private cloud, and traditional IT environment to better facilitate the business expansion process.

Fujitsu has established itself in the global cloud computing market with its diverse portfolio and attractive cloud offerings, in spite of the high competition. Fujitsu's Cloud Initiative is redefining the cloud landscape – it allows for management of cloud and non-cloud services and is available on-premise or on the cloud. Fujitsu's solutions leverage the company's existing 18 cloud centres and 32 platforms, well-trained support services, innovation expertise and market leadership in cloud services. Given an end-to-end cloud services portfolio and unique value propositions, enterprises should definitely consider Fujitsu when evaluating cloud service providers. It can be your partner throughout your cloud journey from adopting public cloud solution to moving to a complex IT environment which is underscored by its deep integration capabilities.

About Fujitsu Limited

Fujitsu is the leading Japanese information and communication technology (ICT) company offering a full range of technology products, solutions and services. Approximately 170,000 Fujitsu people support customers in more than 100 countries. We use our experience and the power of ICT to shape the future of society with our customers. Fujitsu Limited (TSE:6702) reported consolidated revenues of 4.4 trillion yen (US$47 billion) for the fiscal year ended March 31, 2013.

For more information, please see http://www.fujitsu.com.

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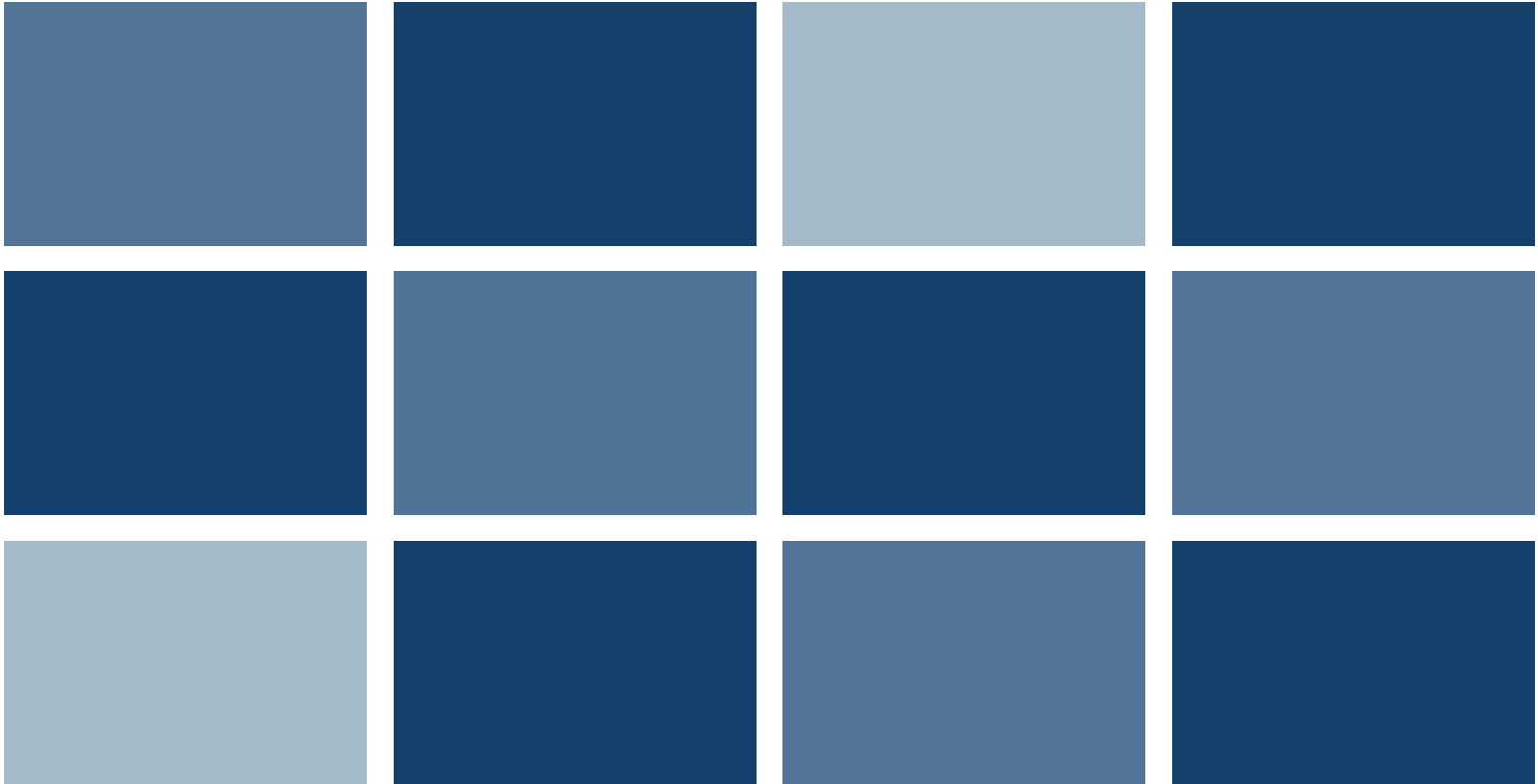
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apacfrost@frost.com
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