

View Point



Realizing the Value Proposition of Cloud Computing

CIO's Enterprise IT Strategy for Cloud

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Abstract

Cloud Computing is a model for provisioning and consuming IT capabilities on a need and pay by use basis. This helps in shifting the cost structure from capital expenditure to operating expenditure and also helps the IT systems become more agile. This innovative model of acquiring IT related services has made organization to relook at their Infrastructure and platform services strategy and optimize their IT spending while improving overall agility.

Adopting Cloud computing completely in an enterprise is a challenge as concerns around data privacy, security and SLAs would need incorporating changes into the organizations IT policies and procedures. Still there are many of the use cases are favorable for adoption today, while others would require careful evaluation of risks and benefits derived

This paper describes how CIO should look at integrating Cloud computing as part of their IT strategy and scenarios where this can be effectively leveraged to provide a business advantage.

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Apr 2009

Overview

In order for organizations to stay ahead of the competition, they need to and constantly innovate and improve while keeping the operations cost low.

Cloud is an alternate delivery and acquisition model for IT-related services which allows organizations to optimize on the IT cost structure. It provides an infrastructure engine which enables organizations to become more agile in service delivery to their customers, partners and employees.

What is Cloud Computing?

Cloud computing is a style of computing which allows consumers to use of a subset of resources from a massive pool of hardware and networking infrastructure managed independently within the organization or externally by a vendor. This computation capability is available on a pay by use basis either as infrastructure, platform or services and is used to deliver scalable business services

Cloud Value Proposition

Cloud Computing value proposition is reduction of Total cost of Ownership, translation the fixed to variable cost, improvement of business agility and ability to build systems of a global class. The cost model allows the business to free up budgets on infrastructure and the platform allows using them for delivering innovation services quickly.

Why should CIO consider including Cloud computing as part of their IT Strategy

Reduce Cost	Reduction in total cost of ownership by optimally using the hardware and software licenses Ability to scale with the demand for peak loads and seasonal variations thus optimize the cost model
De-risk	Investments are translated from the upfront Capital Expense (CAPEX) to Operational expenses (OPEX) for consuming IT Services. Further investment can be put in based on the success of the initiative Alternate sourcing strategy for IT services provides primary and fallback options
Agility	The Infrastructure can be provisioned quickly when required therefore improves the time to market
Global Scale	Massively scalable engine allows building highly scalable services for customers and partners. Infrastructure scale with the demand for peak loads and seasonal variations

When should CIOs consider leveraging Cloud Computing

1. Greenfield Initiatives with crunched budgets
2. Business process has a fluctuating or unpredictable load pattern
3. Non Core systems where IT capability is commoditized
4. Operations and Management costs are too high

Greenfield Initiatives with crunched budgets

Organizations need to continuously improve on their services interfaces with their customers and partners with innovative solutions. However, the CIOs have a significantly less share of investment they can put in such initiatives. Adopting Cloud based models helps for such initiatives as

- Demands minimal upfront investment to get started
- Ongoing costs would be related to the success from such initiatives.
- Ability to provision the Infrastructure quickly.
- No Infrastructure penalties for failures

The low baggage associate with cloud based infrastructure therefore allows organizations to pilot and innovate much quickly and therefore stay ahead of the competition.

Fluctuating or unpredictable load patterns

Systems get over-engineered and therefore underutilized in a traditional model which leads organizations to invest in corrective actions do server consolidation for over-engineered system or address scalability challenges for under provisioned systems. Cloud computing based approach not only addresses elastic scale from a technology standpoint, but also from agility and cost standpoint also.

Cloud computing allows organizations to provision an infrastructure and add to the computing capacity on demand and release them back when not required. This elasticity nature of the cloud allows organizations not only to bring the solution to deployment quickly but also to scale up based on the demand.

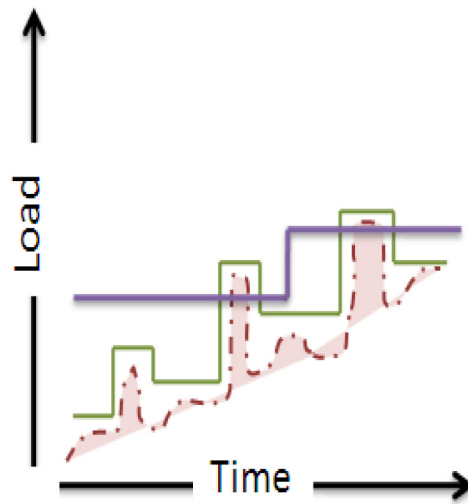


Figure 1: Infrastructure provisioning for a fluctuating load

Here are some of the examples of Business processes and IT functions which fall in this category

Usage	Scenarios
Burst loads:	Partner gateways and Integration Hubs
Cyclic	Public facing and Marketing Websites for seasonal peaks, new product launch, time zone based usage
Unpredictable	B2C interfaces, social sites where success of the capability cannot be assessed upfront.
Scalable	Shared systems and SaaS based capabilities designed for use by multiple tenants need to scale on capacity with time

Non Core systems where IT Capability is Commoditized

Commodity IT services like Infrastructure for storage, backup archival, Emails, Collaboration are non-core functionalities and are serviceable externally at a much lower price point. Moving out such systems to the cloud frees up IT budgets, operational overheads to maintain and manage the in house infrastructure

Many organizations have already externalized many of their business processes like payroll processing to external providers.

Infrastructure Operations and Management Costs are high:

Cloud as a platform option should be considered as part of the IT strategy where the Infrastructure management and operations costs are high. Typically these apply to legacy systems where keeping the lights on is a significant spend of the budget.

Cloud allows managing infrastructure and applications separately. Some of the cloud platforms provide a self healing, automatic failover systems while others allow external service providers to manage and monitor the infrastructure with an optimized price model. In totality this lead to reduction in the overall management and monitoring costs.

Evaluating Cloud Provider

There would not be a one size fits all here. Depending on the business scenarios and technology standards, organizations need to strategically arrive at adopting Cloud platform vendors by evaluating the Cloud Providers on the following parameters

For a largest DVD & Video game rentals organization in the world, Infosys migrated their on premises mail infrastructure to a cloud delivered which brought in benefits of arriving at a standard operating environment across business units and reducing the cost of support and maintenance

Platform Maturity	Richness of the underlying platform vis-à-vis business functionalities to be developed on it
Technology Alignment	Stack supported by the vendor and how much of it aligns with the enterprise architecture standards and existing skills in the organization to support it
Operational Alignment	Committed Service Level agreements and Compliance to infrastructure operating procedures to ensure Data Security concerns are addressed
Geographic Alignment	Does the vendor service the regions where the users would consume these services

External Cloud Providers

The External Cloud vendors are grouped on these categories

Infra Providers (IaaS)	Provides Server and Storage Infrastructure on pay by use model
Platform Providers (PaaS)	Runtime to deploy application leveraging platform services, computation power and storage
Service Providers (SaaS)	Multitenant finished applications configurable readily available for use

Private Enterprise Cloud

Data privacy and Security related challenges cannot be ignored for a large category of business scenarios where customer information and business critical intelligence is involved.

Building a private Enterprise Cloud enables organization keep the data within their control boundaries and also allows them to leverage existing infrastructure effectively.

Enterprise cloud also brings a better utilization control if chargeback model is put on the business units leveraging the share infrastructure across different business units.

Adhering to Standards while building internal cloud or consuming from external cloud is important to ensure that switching and integration costs do not dilute the cost saving benefits in a long run.

Internal cloud initiatives would be based on following

Technology

1. Built on organizations current maturity on Server, Application and Storage Virtualization
2. Augment capabilities from Grid technologies
3. Automated Management, Monitoring capabilities

Process

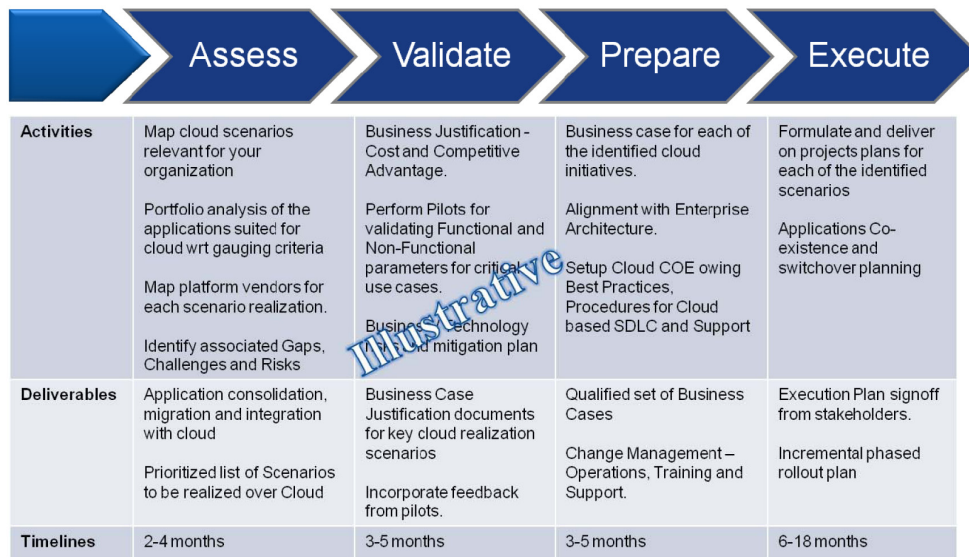
4. Metering and Chargeback model to be defined
5. Standardization of Infrastructure, Technology and Architecture

People and Policies

6. Decouple Infrastructure and Application functions.
7. Amend Governance Policies and Infrastructure SLAs

Cloud Adoption Strategy

Here are some of the steps which need to be followed in order to identify the relevant business scenarios relevant for leveraging cloud



1. Assess:

- a. Application Portfolio to identify Core and Non Core applications
- b. Map the scenarios relevant for cloud adoption the organization. Read the Infosys whitepaper “Evaluating business application for Cloud Migration”
- c. Identify Business Processes which are more suitable for Cloud Adoption
- d. Evaluate the Cloud vendors for strategic and tactical use scenarios

2. Validate:

- a. Justify the cost benefits and business case
- b. Perform pilots and proof of concepts to identify functional gaps and assess user experience

3. Prepare:

- a. There would be changes to be done on the organizations policies and procedures
- b. Governance and operations
- c. Formulation COE to drive standardization across various cloud projects.

4. Execute:

- a. Migration and Integration
- b. Co-existence and Switchover planning

Cloud maturity is evolving and has already seen a good adoption happen in Startup, ISV and social applications and has started making a mark at the enterprise. It is important for organizations to start investing in defining their roadmap for themselves and identify applications which would be

Challenges in Cloud Adoption

The change of sourcing the IT capabilities from within the enterprise to a provider brings in a lot of adoption challenges. These need to be addressed as a part of the adoption roadmap

	Functional Area	On Premises	With Cloud	Implications and Challenges
Business	Security	Controlled	Federated	Trust boundaries and control procedures would be different. This would impact the infrastructure and operations policies to be adjusted to account for the cloud
	Compliance	Defined policies	Vendor trusted procedures	Compliance policies would have to incorporate the change and this would form the basis on the types of applications which can be moved to cloud
Technology	Data Privacy & Ownership	Contained	Shared to vendor trusted	Level of acceptability and therefore category of applications suitable for cloud. When consuming shared data from the cloud like Census, Government and Social data, appropriate disclosures on the end service needs to be done
	Enterprise Billing and Management	Chargeback / Licensed	Pay by use	Vendor Management Overhead & cost provisioning. Form control procedures and provisioning during the budgeting cycles for each group.

	Functional Area	On Premises	With Cloud	Implications and Challenges
Technology	Features stack from vendors	Customizable	Commoditized	Alignment with vendor's standard offerings. Many scenarios Integration of on premises to cloud or inter-cloud integration would be within these boundaries.
	SLAs	Customizable	Vendor Specific	Extreme cases are ruled out. Many vendors do 99.9% as part of default offering. End to end SLAs would be challenge in case of Mashups offerings Chargeback penalties on the cloud provider need to be negotiated. Appropriate provisions needs to be made for business risks if not covered by provider SLAs
	Software Licensing	Enterprise Agreement	Service Provider License Agreement / Pay by use	Limited software is available in this model, but this situation is changing rapidly and packages /vendor products would be available over pay by use license When offering solutions and product over cloud appropriate metering and licensing model needs to be considered for a pay by use basis
	Monitoring & Operations	Good control	Limited Control	Many vendors would limit access to the underlying infrastructure limiting the control. In many cases this is good as platform does provider manageability and therefore needs no additional management overhead. For others tools / vendors to address the gap would be required
	Vendor Lock in and Switching Costs	Complex	Further more complex	All PaaS providers bring in a lot of proprietary APIs in application implementation making migration of applications much complex for off-boarding or migration

Favorable Business capabilities to be enriched using Cloud Computing

Even though the concerns on data security and privacy exist with Cloud Computing adoption in the enterprise, the value proposition of improving the TCO and optimizing the cost structures is driving the adoption today.

Here are Top 10 business scenarios where Cloud Computing is applicable and seen to be adopted in the enterprise space.

Messaging and Team Collaboration	Leverage a cloud based email and collaboration infrastructure
Cross Enterprise Integration	Extend Line of Business applications capability to the cloud such that partners can directly interface with the business process and redundant operations can be eliminated
Infrastructure Consolidation – Server and Desktop Virtualization	Move applications to be hosted from on premises to Cloud.
Web 2.0 and Social Strategy	Build social applications which can be powered from the infrastructure running on the cloud
Web Content Delivery	Use Cloud provider network to geographically distribute your media and content and avoid challenges around latency
Data Analytics and Computation	Use elastic computation and storage to perform analytics on large set of data like examples like Market feeds, Demand repository and scientific data
Realizing the Mobility strategy for the enterprise	Extending the organizations LOB application made available on an internet facing endpoint and available to mobile networks.
CRM Applications	Leverage SaaS based offerings available in this space
Development and Test Bed Lab	Quickly provision an infrastructure and environment for development and testing. Teardown which not required
Backup and Archival	Cloud based durable storage for backup and archival functions for cloud based applications

Conclusion

- Optimization of cost model, agility and Scales are primary value proposition of adopting a Cloud Computing based pay by use, scalable infrastructure and platform services.
- There would be changes in the organizations data compliance and procedures and operations to adopt the Cloud computing models effectively
- Organizations need to analyze their application portfolio to profile applications which would be adaptable for cloud computing models.
- There are business scenarios which are more favorable for delivery in the cloud computing model. These would be the candidate pilots to justify the business case for wider adoption of Cloud Computing within the Enterprise.

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Jitendra Pal Thethi is a Principal architect with Microsoft Technology Center group in Infosys. He has 13 years of experience in the IT industry consulting, architecting and selling solutions across different industries. Jitendra is a part of the presales team responsible for taking Infosys IP and solutions to our customers. He is anchoring the Cloud COE, and working with key Cloud providers to define the solutions which will be delivered by leveraging their platform



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