

White Paper



Cloud Computing Relevance to Enterprise

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Abstract

Enterprises need to do more with less than never before. Cloud Computing is in the early stage for enterprise adoption. This paper illustrates the evolution of cloud computing, key cloud providers and enterprise early adopters.

Context

Enterprise Challenges

- There is a world wide recession and enterprises need to do more with less than never before.
- Enterprises need to conserve capital and raising capital in current markets is a challenge. And there is a need to reduce the capex.
- Enterprises need to react more quickly to market conditions with improved flexibility.

In Search of Solution

Cloud Computing is in the early stage to address few of the above enterprise needs.

Google search to “Cloud Computing” gives 12 Million Page links and more than a year old search gives only 2 Million page links. And this shows the current interest and momentum on the Cloud Computing.

Currently, 20% of all servers are being bought by a handful of companies like Amazon, Google and Microsoft. They are driving the Cloud Computing Infrastructure.

The following sections provides a high level view of how enterprises have started to leverage cloud computing.

What is Cloud Computing?

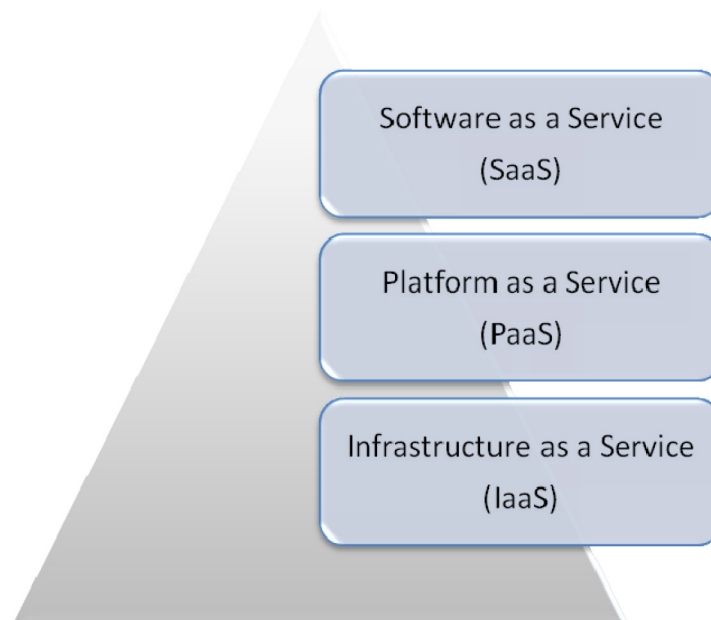
“It is a marketing hype campaign...” - Richard Stallman, President, Free software Foundation

- It started with applications in the cloud (e.g. Salesforce.com – CRM application)
- Moved to Infrastructure in the cloud (e.g. Amazon AWS – Infrastructure service through web service interface)
- And now there are application platforms in the cloud (e.g. Microsoft Azure - .net Platform, SQL data services)

All of these are different aspects of Cloud computing. These aspects vary in the approach and implementation. But, they have one common model – Pay based on usage and taps into IT using the Internet. These services typically can be provisioned rapidly with higher elasticity (scaling up and down based on need).

Typical Cloud computing Stack

Below is a typical simplified cloud computing stack.



Software as a Service (SaaS) exists for the last 2/3 years. Some good examples are

- a. Salesforce.com CRM apps
- b. Infosys SaaS offerings – Social platform, e-Commerce.

The next emerging services in the cloud are Infrastructure as a Service (IaaS) and Platform as a Service (PaaS).

The focus for this paper is PaaS and IaaS space.

Key players in the Cloud

“Dip your (CIOs) toe in the water (Cloud computing)...” - Ray Ozzie Chief, Software Architect, Microsoft

Below are the large technology companies who are offering / planning to offer cloud computing platform to the enterprises.

Company	Offering Name	Year of Launch	Key Offerings
Top 3			
Amazon.com	AWS (Amazon Web Services)	2006	Infrastructure as a service (Storage, Computing, Message Queues, Datasets, Content Distribution)
Microsoft	Azure	2009	Application platform as a service (.Net, SQL Data Services)
Google	Google App. Engine	2008	Web Application Platform as a service (Python Run time Environment)
Next			
IBM	Blue Cloud	2008	Virtualized Blue cloud data center (e.g. Wuxi China center)
Salesforce.com	Force.com	2008	Proprietary 4GL Web application framework as an on Demand platform

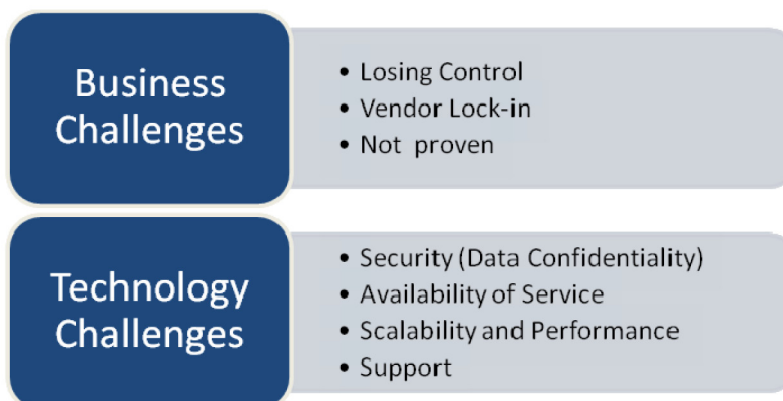
Also, there are more start-ups in this space (Engine Yard, Appirio, Heroku, Coghead, Rightscale etc).

Some of them are value added service providers using the large cloud service provider’s infrastructure (for e.g. Heroku provides Ruby on rail platform service on top of Amazon Web services).

Cloud Concerns and Challenges

“100% availability is the only goal that you can have” - Werner Vogels, CTO, Amazon

Cloud computing is in nascent stage. Lot of business and technology challenges need to be addressed for enterprises to adopt.



Cloud Sourcing

For the enterprise to tap these services in the internet this is a kind of outsourcing and termed as Cloud sourcing. Small and Medium enterprises were the early adopter to cloud sourcing. However, there are few adoptions in the large enterprises for select needs.

Enterprise	Scenario	Usage and Benefit
Eli Lilly	R&D High performance computing	Usage: Use of Amazon – Server and storage cluster for drug discovery analysis and modeling Benefit: Quick deployment time at a lower cost
New York times	Data conversion	Usage: Conversion of archival articles (3 Million) into new data formats using Amazon elastic compute services Benefit: Rapid provisioning and higher elasticity on the infrastructure resources
Pitney Bowes	B2B Application	Usage: Few of Pitney Bowes Client wanted a hosted model mail printing application. Uses MS Azure .net & SQL services for the hosted model option (2009 Go live) Benefit: Flexibility at a lower cost and new biz opportunity

Also, Infosys is piloting an auto dealer B2B application using MS Azure platform.

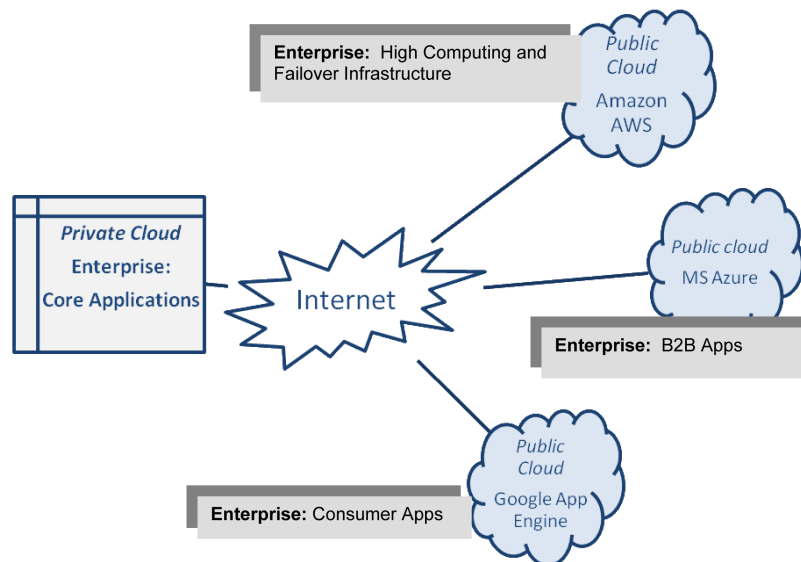
Imagining Cloud Computing

“IT in 2018: Computing grid like the Electricity Grid” - Nicholas Carr, Author, The Big Switch

This is an illustrative view of how cloud computing could look in the future for an enterprise.

Like the external service clouds (Public clouds), CIOs are interested to provision their internal infrastructure and applications seamlessly and this is termed as Private clouds.

This is a distributed Hybrid cloud environment with a mix of Private and Public clouds.



Way forward

“Brightness in the Cloud...” - Kris, CEO, Infosys

Cloud Computing is getting embraced by small medium businesses and new biz start-ups. Also, large enterprises have started using for select work loads and business need.

There is value proposition in terms of improved speed and flexibility at a lower cost.

Enterprises should identify select work load / applications to leverage the public clouds. Need to define the service contract addressing the business and technology needs (including technology and operation changes, integrating with public cloud etc.)

Also, enterprises should build a business case and roadmap to re-architect their IT infrastructure as private clouds for seamless provisioning and efficient usage.

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