Cloud computing in the Enterprise: An Overview

Andrea Greggo
Cloud Computing Initiative Leader, System z Market Strategy
What is cloud computing?

A user experience and a business model
Cloud computing is an emerging style of IT delivery in which applications, data, and IT resources are rapidly provisioned and provided as standardized offerings to users over the web in a flexible pricing model.

An infrastructure management and services delivery methodology
Cloud computing is a way of managing large numbers of highly virtualized resources such that, from a management perspective, they resemble a single large resource. This can then be used to deliver services with elastic scaling.
Cloud-onomics...

CLOUD COMPUTING

VIRTUALIZATION + ENERGY EFFICIENCY + STANDARDIZATION + AUTOMATION = Reduced Cost

...leverages virtualization, standardization and automation to free up operational budget for new investment

AGILITY + BUSINESS & IT ALIGNMENT + SERVICE FLEXIBILITY + INDUSTRY STANDARDS = OPTIMIZED BUSINESS

...allowing you to optimize new investments for direct business benefits
Cloud profitability and cost profile

The Cloud model can be truly disruptive if it can reduce the IT operational expenses of enterprises.

Operational reality

Profit model for Cloud

There is a huge opportunity in minimizing OpEx costs: focus of 2009 Cloud topic.

CapEx costs are being addressed via consolidation & partially addressed in GTO 2008 Internet scale datacenter topic.

Source: The Economist, 10-23-2008
Cloud Computing Delivery Models

Flexible Delivery Models

Public ...
- Access by Service provider owned and managed.
- subscription.
- Delivers select set of standardized business process, application and/or infrastructure services on a flexible price per use basis.

Private ...
- Privately owned and managed.
- Access limited to client and its partner network.
- Drives efficiency, standardization and best practices while retaining greater customization and control.

Hybrid ...
- Access to client, partner network, and third party resources.

- Standardization, capital preservation, flexibility and time to deploy
- Customization, efficiency, availability, resiliency, security and privacy

...service sourcing and service value
The layers of IT-as-a-Service

**Software as a Service**
- Collaboration
- CRM/ERP/HR

**Platform as a Service**
- Middleware
- Web 2.0 Application Runtime
- Java Runtime
- Development Tooling

**Infrastructure as a Service**
- Servers
- Networking
- Data Center Fabric
- Storage

Shared virtualized, dynamic provisioning
Cloud implementation snapshot

- Easy to access, easy to use Service Request Catalog
- Hides underlying complex infrastructure from user and shifts focus to services provided
- Enables the ability to provide standardized and lower cost services
- Facilitates a granular level of services metering and billing
- Workload standardization eases complexity
Mainframe Systems

Example mapping of cloud workloads

- Higher Gain from External Clouds
  - Collaboration
  - Dep’t. BI
  - Web2.0
  - Application Test
  - Data Archive

- Lower Gain from External Clouds
  - Application Dev’t.

- Lower Pain to Cloud Delivery
  - DB-Centric Architecture
  - Content-Centric Architecture
  - Loosely Coupled Architecture

- Higher Pain to Cloud Delivery
  - “Loosely Coupled” Architecture
  - “Content-Centric” Architecture
  - “DB-Centric” Architecture

LE ERP

SME ERP

DB Migration Projects

On-Line Storage

Web Scale Analytics [Enterprise Data]

Transaction Content

Situational Apps

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Personnel represents the largest percentage of operational costs in the enterprise.
FSS company builds a Test cloud and improves productivity of personnel and ROI for the businesses

**Business Problem**

- Complex IT environments, lacking automation. This results in long lead times for requests, and high cost for deploying and managing environment.
- Little standardisation of configuration leading to quality issues and additional maintenance overhead. Want to improve audit results and IT compliance for development and test.
- Need to improve capacity without increasing cost

**Solution Overview**

- Phased pilot, with first phase completed in Q408.
- Use TSAM as the cloud management solution (incl. service management) in a pilot.
- Manage the deployment of distributed WAS ND instances on zLinux, z/VM, DASD.
- Implement and prove a set of scenarios:
  - Instantiation of a distributed WAS ND cluster running on zLinux.
  - Increase capacity of a WAS ND cluster service instance.
  - Delete a WAS ND cluster service instance.
- Tangible results from Pilot:
  - Simplified – Requires less interaction with developers to get a new WAS ND Cluster.
  - Faster time-to-market for developed apps.
  - 100% consistent deployment of environment

**Lessons Learned**

- Set scope around a process not around a function – focus on the people and the skills to drive rapid implementation.
- This is transformative and crosses organizational boundaries. Executive sponsor support is vital.
The operational efficiency of the mainframe

- Near-linear scalability: up to 900,000+ concurrent users; TBs of data
- “Mean Time Between Failure”: measured in decades versus months
- ¼ network equipment costs: virtual and physical connectivity
- 1/25th floor space: 400 sq. ft. versus 10,000 sq. ft
- 1/20 energy requirement: $32/day versus $600/day
- 1/5 the administration: < 5 people versus > 25 people
- Highest average resource utilization: Up to 100% versus < 15%
- Capacity Management & upgrades: On demand; in hours, not weeks/months
- Security intrusion points: Reduced by z architecture and # of access pts.
- Higher concurrent workload: hundreds of applications versus few
Thank you!

For more information, please contact me at:
agreggo@us.ibm.com