Lessons Learned: Business agility through open standards & cloud
Discussion agenda

1. It’s not your parents standards process
   - A new approach to standards drives business results.

2. Business agility through open standards & cloud

3. Lessons learned: 3 steps to successful adoption of cloud computing.
Businesses globally are facing an unparalleled rate of change...

- React with agility to competitive landscape
- Execute with reduced risk & cost
- Achieve desired business outcomes
- Manage business transformation
- Enable business flexibility
- React to rapid market shifts
- Differentiate their products and services

80% of CEOs anticipate turbulent change & bold moves

64% of CIOs are expected to work with business executives to drive innovation & manage change

54% IT budgets were spent on ongoing operations and maintenance costs, limiting investments in innovation

*Source: IBM CEO Study*
Standards allow enterprises to manage & leverage change across market evolution cycles

Today’s Focus: Cloud & social builds on and leverages the standards which preceded this market cycle
Open standards: Invention? or Reinvention?

reinventing standards  OR  using existing standards

vendor-driven standards  OR  customer-driven standards

proprietary social business tech  OR  interoperable social business tech

Or is it somewhere in between...?
A Smarter Approach to Standards Development


**Innovative**
Open standards for cloud: Invention? Reinvention?
Cloud computing is changing the economics of IT and requires a rethinking of how we all engage in standards development

**Practical**
Business success is not theoretical. Practical cloud computing is grass roots plain and simple: it involves leveraging real world implementations of standards & open source

**Architectural**
Standards allow enterprises to manage change across market evolution cycles extending the value of customers’ services based architectures and investments

**User-driven**
The members of the Cloud Standards Customer Council create a cross-industry view into market-leading Cloud use cases and best practices
The standards landscape is changing and multiple standards development models are utilized and in many cases evolving.

**Industry standards organizations**

Industry like automotive, retail, and communications engage their ecosystems and embrace their common challenges answering the question: *How do we solve common problems with software standards?*

**International standards organizations**

In both national or international bodies, increasingly the global community is engaged to identify new technology directions that will yield the market growth critical for today’s economy.

**Ad hoc specification collaborations**

Whether two companies or twenty-two developers, specification collaboration often starts with a simple idea. Increasingly innovative models of ad hoc collaboration are emerging to shape the IT landscape.

**Software standards consortia**

Software consortia continue to generate strong IT sector participation and generate the software interoperability standards critical to compete in today’s integrated global economy.

*IBM is helping the charge in evolving standards organizations to become user driven, practical, architected and innovative (e.g. OASIS, OMG, W3C, SC38)*
Open Source, Open Standards, Open Architectures

What is Open Computing?

Open standards
- Improving information sharing by simplifying integration of disparate technologies
- Promoting interoperability by using open published specifications

Open architecture
- Increasing collaboration by easily extending business processes – eg SOA
- Innovating on top of common specifications

Open source
- Promoting innovation by leveraging community development
- Accelerating open standards adoption

Committed to freedom of action for open computing
Cloud computing is changing the economics of IT and speeding the delivery of innovative products & services

- Improve the speed, agility and dexterity of business
- Improve security and compliance control postures
- Deliver IT without boundaries
- Deliver new business value in real time
- Standardization, normalization, and reduction of unnecessary complexity
CIO: Significant growth in hybrid cloud is driving the need for interoperability and openness

*Source: IBM CEO Study

60% of CIOs plan to use cloud, up from 33% two years ago.

...the majority being hybrid environments

*Source: 2010 IBM STG Private Cloud Study (Q3-Q5b)

### Technology Features Most Often Rated As Differentiators Worth Paying Extra For

<table>
<thead>
<tr>
<th>Feature</th>
<th>% Selecting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ability to predict hardware failures and migrate workloads before failure occurs</td>
<td>37%</td>
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<tr>
<td>Availability of a single tool to manage a heterogeneous Cloud environment</td>
<td>34%</td>
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<tr>
<td>Fault tolerance and high availability</td>
<td>32%</td>
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<tr>
<td>Dynamic scaling that automatically allocates additional resources to existing virtual machines as work</td>
<td>32%</td>
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<tr>
<td>An extensible architecture that is easy to integrate with existing systems</td>
<td>31%</td>
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<tr>
<td>Cloud management solution that provides high automation and availability across data center environments</td>
<td>29%</td>
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<tr>
<td>Ability to manage a geographically distributed Private Cloud environment through a centralized management system</td>
<td>29%</td>
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<tr>
<td>Security for multi-tenancy environment</td>
<td>28%</td>
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<tr>
<td>Networking resource allocation and management</td>
<td>27%</td>
</tr>
</tbody>
</table>

*Source: 2010 IBM STG Private Cloud Study (Q3-Q5b)*
Non-IT Executives: Significant growth in hybrid cloud is driving the need for interoperability and openness

60% of CIOs plan to use cloud, up from 33% two years ago

...the majority being hybrid environments

McKinsey Global Survey results:

**How IT is managing new demands**

*Source: IBM CEO Study*
Dozens of new communities and organizations have formed around cloud standards including industries and governments.

<table>
<thead>
<tr>
<th></th>
<th>DMTF</th>
<th>The Open Group</th>
<th>OASIS Standard</th>
<th>ETSI</th>
<th>CSA</th>
<th>Open Grid Forum</th>
<th>TM Forum</th>
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<td><strong>Management</strong></td>
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<td><strong>SLA</strong></td>
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<td><strong>Network</strong></td>
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<td><strong>Security</strong></td>
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*IBM Leadership / Participation ✔️*  
*IBM Monitoring ✔️*
The Cloud Standards Customer Council

http://www.cloud-council.org

- Provide customer-lead guidance to the multiple cloud standards-defining bodies
- Establishing the criteria for open-standards-based cloud computing

“CSCC Forms New Security Working Group”

- Feb. 2012 Co-chaired by The Kroger Co. and Boeing
  - Develop high priority use cases for cloud security that reflect customer issues and pain points
  - Identify Regulatory Compliance Capabilities and Options through Security Architecture Standards
  - Identify “Best-of-Breed” Security Solutions for Customers of Cloud

“CSCC Forms New SLA Group”

- Feb. 2012 Co-chaired by Boeing & IBM
  - Practical reference to help enterprise IT analyze service level agreements (SLAs)
  - Checklist of key criteria for evaluating and comparing SLAs from different providers
  - Highlight the role of standards to improve interoperability across different cloud providers

2012 Projected Workgroups & Projects

Use Cases: Entry, Provisioning, Orchestration & Continuous Delivery (DevOps)
Gap Analysis: DMTF CIMI (IaaS API) & OASIS TOSCA
Liaisons use case scenarios with DMTF, OASIS, SNIA, TMF, TOG
Health Care & Government Working Groups

2011 Deliverables:

- Practical Guide to Cloud Computing,
- Cloud Computing Use Cases,
- Cloud Computing Business Patterns.

300+ companies are participating

50% operate outside the IT realm
Deliverable: CSCC Practical Guide to Cloud

The **CSCC Practical Guide to cloud computing** details a prescriptive plan & key considerations for success

- Assemble your (cloud consumer) decision team
- Develop business case and an enterprise cloud strategy
- Select cloud deployment model(s)
- Select cloud service model(s)
- Determine who will develop, test and deploy the cloud services
- Develop a proof-of-concept before moving to production
- Integrate cloud solution(s) with existing enterprise services
- Develop and manage Service Level Agreements (SLA)
- Manage the cloud environment

World wide launch & public release webcast hosted by Melvin Greer (Lockheed Martin – CSCC Steering Group Chair) on Oct 5, 2011

3 Steps to the successful adoption of cloud computing technologies

1. **Plan** – Identify your cloud computing advocates and form a cross-functional team to develop your business case and articulate the expected returns from empowering processes with social capability.

2. **Act** – Develop a proof of concept by leveraging the appropriate technology that extend existing solution investments.

3. **Measure** – Obtain stakeholder agreement for the proof of concept and establish the metrics of success by which the project will be measured.

Evaluate each implementation, replicate successes & build upon consecutive investments to grow a comprehensive cloud infrastructure program.
"We reached a critical point – at a time when we were confronting serious challenges to the campus’ student computing model, the NC Supercomputing Center closed due to state funding cuts. Unfortunately, only 50% of the amount needed to solve both problems was available, leaving us with the option of doing both services poorly or inventing a novel solution without any reassuring evidence that one existed. We chose latter course of action, daunting being preferable to failure, and the rest is history.”

Mladen A. Vouk, Head of Computer Science, and Associate Vice-Provost for Information Technology
Samuel F. Averitt, Vice Provost Information Technology

North Carolina State University, circa 2004
The successful adoption of cloud computing

Step 1: Plan

- Establish a balanced IT / Business team, with members who are passionate about driving change & represent a diverse set of organizational interests
- Plan small, inexpensive, easy-to-action projects that are assured to be successful due to their simplicity
- Leverage each small success to build a transformational momentum that can be used to grow a larger program

[The plan] would deliver the core functionality as soon as possible without the risks of a “big bang” approach.

~Samuel F. Averitt
Vice Provost Information Technology
Assemble your (cloud consumer) decision team

Bringing IT and line of business together to leverage the cloud

- Business leaders will leverage cloud to increase sales/revenues
- Senior management leadership is critical
  - Make final decisions
  - Accountable for success
- Technical leaders drive detailed business and technical analysis
- Legal / Admin integral to team support
- Education is important at all levels and varies by recipient

**Strategic (CEO/Senior Management)**
- Vision
- Terms of reference
- Guidelines

**Tactical (CIO/CTO)**
- Business Analysis
- Technical Analysis

**Operational (IT, Finance etc.)**
- Procurement
- Implementation
- Operation
# Develop business case and an enterprise cloud strategy

## Key Elements of Strategic Planning

<table>
<thead>
<tr>
<th>Element</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td><strong>Educate the team</strong></td>
<td>All team members (IT, business, operations, legal) must be educated on what cloud computing is and what it is not</td>
</tr>
<tr>
<td><strong>Consider the existing IT environment</strong></td>
<td>Develop a complementary cloud adoption strategy focusing on integrating and leveraging existing technologies and standards</td>
</tr>
<tr>
<td><strong>Understand required services and functionality</strong></td>
<td>Determine business justification and potential ROI and/or potential new revenue opportunities</td>
</tr>
<tr>
<td><strong>Establish a long term plan</strong></td>
<td>Reduce risk of vendor lock in and disconnected cloud services – avoid increased integration and maintenance costs</td>
</tr>
<tr>
<td><strong>Identify clear success goals and metrics to measure progress</strong></td>
<td>Define benchmarks for the existing service. Ensure objective of implementing new cloud service has been achieved. Metrics need to be agreed to by executives</td>
</tr>
<tr>
<td><strong>Understand Legal/Regulatory Requirements</strong></td>
<td>Consumers must understand responsibilities associated with national and supra-national obligations. Examples include:</td>
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<td></td>
<td>• Physical location of the data</td>
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<td></td>
<td>• Data Breach</td>
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<tr>
<td></td>
<td>• Personal Data Privacy</td>
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<tr>
<td></td>
<td>• Intellectual Property, Information Ownership</td>
</tr>
<tr>
<td></td>
<td>• Law Enforcement Access</td>
</tr>
<tr>
<td><strong>Track results for an extended time</strong></td>
<td>Identify trends that may need to be addressed to improve existing service</td>
</tr>
</tbody>
</table>

*Strategic plan reduces potential impacts and facilitates future decisions*
The successful adoption of Cloud Computing

Step 2: Act

- Keep an overall view of the architecture in mind, but keep projects small and manageable.
- Extend existing architecture before building from scratch to help build confidence for more complex projects.
- Execute tasks crisply and avoid sacrificing quality for the schedule.

...the advantage [of the solution] is its extensibility and re-use of existing servers. There is almost no limit to the range of services we can offer... we can keep adding functionality to improve the experience.

~Samuel F. Averitt
Vice Provost Information Technology
Select cloud deployment model(s)

Establish criteria for selecting the right deployment model

<table>
<thead>
<tr>
<th></th>
<th>Private (on-site)</th>
<th>Private (outsourced)</th>
<th>Public</th>
</tr>
</thead>
<tbody>
<tr>
<td>Criticality of cloud services</td>
<td>Mission critical, security sensitive services</td>
<td>Mission critical, security sensitive services</td>
<td>Non mission critical services</td>
</tr>
<tr>
<td>Migration costs</td>
<td>Managing cloud software may incur significant costs</td>
<td>Lower costs since cloud hardware and software provisioned and managed by provider</td>
<td>Similar to private (outsourced) with additional security precautions to be taken into account</td>
</tr>
<tr>
<td>Elasticity</td>
<td>Limited resources are available. Computing and storage capacity fixed.</td>
<td>Extensive resources are available</td>
<td>Generally unrestricted in their size</td>
</tr>
<tr>
<td>Security threats</td>
<td>Implement same level of security as non-cloud resources</td>
<td>Techniques need to be applied to subscriber's and provider's perimeter</td>
<td>Limited visibility and control over data regarding security</td>
</tr>
<tr>
<td>Multi-tenancy</td>
<td>Clients would typically be members of the subscriber organization</td>
<td>Similar to those for Private (on-site) cloud</td>
<td>Single machine may be shared by the workloads of any combination of subscribers</td>
</tr>
</tbody>
</table>
### Select cloud service model(s)

<table>
<thead>
<tr>
<th></th>
<th>Large Organizations</th>
<th>Small / Medium Business</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>IaaS</strong></td>
<td>- Primary consideration is capital expense reduction and access to IT capacity that would otherwise not be available</td>
<td>- May not be feasible given insufficient ROI associated with consolidating a relatively small number of existing IT assets</td>
</tr>
<tr>
<td></td>
<td>- Private (on-site) provides a good initial transition to IaaS with relatively low risk</td>
<td>- A direct move to SaaS may be advisable for many SMBs</td>
</tr>
<tr>
<td></td>
<td>- Private (outsourced) and Public can potentially deliver added business value</td>
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<tr>
<td><strong>SaaS</strong></td>
<td>- Benefit from the “pay-as-you go” concept, with highly scalable offering flexibility to companies to provision and de-provision based on business needs</td>
<td>- Evaluate and identify business processes that can be enhanced by cloud-based applications to improve competitiveness with larger organizations</td>
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<tr>
<td></td>
<td>- Consider SaaS initially for non-critical business functions to deliver improved ROI</td>
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<td></td>
<td>- Adopt new disruptive SaaS solutions to maintain or extend competitiveness</td>
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<tr>
<td><strong>PaaS</strong></td>
<td>- Integrated development and runtime platform optimized for creating, deploying and managing cloud applications</td>
<td>- Assess in-house development resource to justify the expense of a PaaS environment</td>
</tr>
<tr>
<td></td>
<td>- Analyze PaaS offerings in terms of TCO / ROI and risks such as vendor lock-in, interoperability, existing IT infrastructure</td>
<td>- A direct move to SaaS may be the best alternative for many SMBs</td>
</tr>
</tbody>
</table>

Many organizations face the challenge of staging a gradual adoption of cloud capabilities, incrementally advancing their IT environment.
Determine who will develop, test & deploy cloud services

Maximize resources to accelerate Cloud adoption

- **Options**
  - In-house development and deployment
  - Cloud provider development and deployment
  - Independent cloud service development provider
  - Off the shelf cloud service offerings

- **Critical factors**
  - Cost
  - Responsiveness
  - Flexibility

- **Considerations**
  - Available skills
  - Start up considerations
  - Updates to existing services
  - Testing / deployment
The successful adoption of Cloud Computing

Step 3: Measure

- Identify clear, pertinent metrics that can be measured accurately without additional expense
  - Project cost vs. ongoing savings or revenue (ROI)
  - User experience metrics (response time, volume, usability)

- Ensure that measurements gauge success that is significant to stakeholders

- Measure consistently and honestly to make certain each project is truly having the desired impact
### Key Elements of SLA Management

<table>
<thead>
<tr>
<th>Activity</th>
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</tr>
</thead>
</table>
| **Assign core SLA team**                          | • Must consist of members from IT, business, operations and legal  
• Must also understand the expectations of the cloud service |
| **Develop SLA for contracted service**             | • Identifies elements which are critical to protecting the ongoing operations of the enterprise  
• SLA sets expectations for when issues must be resolved, and spells out any penalties and an exit strategy should the cloud provider not be able to meet the terms of the SLA |
| **Define critical processes with the cloud provider** | • Process to ensure issues which cause service to perform outside of the agreed to performance levels are resolved consistent with the SLA  
• Escalation process to elevate the visibility of issues, depending on impact, to the appropriate parties in both the cloud consumer and cloud provider organizations |
| **Schedule regular review meetings with key stakeholders within the enterprise** | • Objective is to review SLA status on an on-going basis  
• Increasing important as more cloud services are being implemented and/or the number of cloud providers increases |
| **Schedule regular checkpoint meetings with cloud provider** | • Establishes ongoing dialogue to ensure problems are addressed before they become major issues  
• Establish a trail on the status of the elements of the SLA |
| **Maintain a continuous level of responsibility**  | • SLA does not absolve the cloud consumer of all responsibilities  
• Ongoing vigilance required to ensure that enterprise users continue to receive expected level of service |
Take action on your cloud journey

Contact your local IBM rep

- Visit the IBM Cloud virtual briefing center for more information on our capabilities: https://events.unisfair.com/rt/ibm~cloudlaunch

- Use the Cloud Adoption Advisor to identify cloud adoption opportunities: http://www.ibm.com/cloud/advisor

- View demos of IBM Workload Deployer: http://tinyurl.com/iwdDemos
  http://www.youtube.com/watch?v=c4YEvw6BqnM

- Join the Cloud Standards Customer Council for practical advice on architecting your open cloud:
  - Member Application: http://www.cloud-council.org/application

www.ibm.com/smartcloud