Cloud Standards: Raising the bar of completeness

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Opening Thoughts

- Cloud’s no longer hype – it’s a reality. Even Enterprises are embracing Cloud. Concrete workloads are moving into the Cloud, so are data repositories. But is there a real choice? Many IT users are nervous about out-of-premises lock-in. **Can open standards lead the way?**

- The initial Cloud “gold rush” has generated a flurry of new Cloud-related industry initiatives. Some of them are driven by regular Standards Development Groups or by established Industry Associations. Others have been launched by new industry groups, consortia, individual companies or research institutes. Lots of repeated efforts initially (e.g. definition, terminology, use cases…) and too little coordination. **Can (IT) Industry efforts be further optimized?**

- If Technology Vendors / IT specialists can take advantage of such industry momentum with Cloud, it is still much harder for “IT Users” and even for product/solution developers to benefit from these initiatives – at least initially. **How should IT users be empowered to leverage Cloud services?**

- Cloud is such a broad topic from both technical & business angles that it deserves a more “user-friendly” approach to further encourage the global IT eco-system embrace it. **How should the knowledge gap be bridged with potential Cloud adopters?**
Where are we in cloud evolution? Phase 2

Phase 2: Management of Cloud Environments

$4.0BN

IaaS, PaaS & Slaas Revenue:
68% CAGR

Phase 1: On-Demand Infrastructure

2008  2009  2010  2011  2013

PHASE TRANSITION
Investments, product
Intros & new deals point to:
Increase in private activity
Higher end data
Shift to management

$0.5BN

“Focus Shifting to Private/Hybrid Clouds”

Products
Automation
Management
Services

Customers
Enterprise Adoption
Elevates Market

Workloads
Production &
Mission Critical

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Cloud Adoption Barriers

List the top 3 inhibitors/roadblocks you had to overcome for your Cloud projects.

Exhibit 153
Security Still the Largest Barrier to Cloud Adoption

Source: AlphaWise™, AlphaWise™, Morgan Stanley Research

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Cloud “Standards” Landscape

- Association for Retail Technology Standards (ARTS)
- ATIS – Cloud Services Forum
- Cloud Security Alliance (CSA)
- Distributed Management Task Force (DMTF)
- European Telecommunications Standards Institute (ETSI)
- Global Inter-Cloud Technology Forum (GICTF – Japan)
- IEEE – Cloud Computing Standards Study Group
- International Telecommunications Union (ITU-T) FGCC
- Internet Engineering Task Force (IETF) Open Grid Forum (OGF)
- ISO/IEC JTC 1 SC38 (SGCC), SC27, SC7…
- National Bodies: e.g. INCITS DAPS38, AFNOR CN38…
- Object Management Group (OMG)
- Open Cloud Consortium (OCC)
- The Open Group
- Organization for the Advancement of Structured Information Standards (OASIS)
- Storage Networking Industry Association (SNIA) Cloud Storage Initiative (CSI)
- TM Forum
- ...

- Parallel efforts
  - Terminology, Definitions
  - Gap analysis (standards)
  - Liaisons / collaborations
  - Use cases

- Joint efforts
  - “Architectural” Alignments
  - Working on overlapping gaps (e.g. Audit, NaaS…)
  - Joint testing / developments (e.g. OCCI & CDMI)
  - Joint projects (see individual org’s liaisons)

- Some more “global” coordination efforts
  - Partnership Frameworks from trusted SDO
  - E.g. ISO/IEC SC38 SGCC Open meetings
  - E.g. Cloud-standards.org

- Broadening of popular stacks usage
  - E.g. Amazon, Google, MS Azure
  - E.g. Rackspace, Openstack
  - E.g. Telco offers

- Many industry events
  - Education
  - Technology demonstrations
What standards will you require being included in RFPs?

Source: March 2011 Survey StorageStrategies / SNIA
Clients can be in the cloud or enterprise and provide additional services (computing, data, etc.).

Management of the Cloud Storage can be standalone or part of the overall management of your cloud computing.

Clients acting in the role of using a Data Storage Interface:

- Block Storage Client
- Filesystem Client (Exports to Cloud Computing)
- ISCSI, FC, FCoE LUNs, Targets
- POSIX (NFS, CIFS, WebDAV)
- SNIA Cloud Data Management Interface (CDMI)
- Database/Table Client (Multiple, Proprietary Interfaces)

Clients acting in the role of Managing Data/Storage:

- Data/Storage Management Client
- Cloud Data Management
- Data Services
- Storage Services
- Information Services (future)
Another look at CC standards Landscape

Source: NIST Cloud Computing Standards Roadmap
Fifth Working Draft February 23, 2011

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Page 10
Some Possible Standards
Beyond Existing Projects

- Federated security (e.g. identity) across Clouds
- Metadata and data exchanges among Clouds
- Standards for moving applications between Cloud platforms

- Standards for describing resource/performance capabilities and requirements
- Standardized outputs for monitoring, auditing, billing, reports and notification for Cloud applications and services

- Common representations (abstract, APIs, protocols) for interfacing to Cloud resources
- Cloud-independent representation for policies and governance

- Portable tools for developing, deploying, and managing Cloud applications and services
- Orchestration and middleware tools for creating composite applications across Clouds

WHAT CAN WE DO TO REALLY ACCELERATE CLOUD STANDARDS’ ADOPTION?
Initial use case efforts were high-level
  - Private, public, hybrid, end-users, enterprise collaboration, migration

Current use case efforts point at implementing key functions
  - Provider capabilities
  - Tenant management
  - Data (File, Object) ingestion & management
    - Ownership, Location
  - Virtual Machine lifecycle management
  - Interoperability
    - E.g. IT-to-Cloud, Cloud-to-Cloud, Cloud Federation
  - Security
    - ID management, monitoring, secure multi-tenancy, shared access
  - SLA/SLO Management
    - Definition, monitoring
- Leverage existing cloud standards (OVF, OCCI, CDMI) for a concrete use case
  - E.g. MapReduce Services
- Service deployment and scaling
  - Initial resource deployment
  - Service scaling
- Service migration and redeployment
  - Service lookup and discovery
  - Service Export
  - Migration
  - Service Import
- Standards Assist
  - Requires integration and modeling
  - Portability
Accelerate Adoption and Penetration of Standard-based solutions

- Extend standardization coordination efforts globally
  - Leadership from major SDO, IA and User Groups

- Adopt / incentivize “Standards-Inside” approaches
  - E.g. reference implementations, open source…

- Define / regulate minimum interoperability levels of Cloud services
  - National / pan-national directions

- Promote “I trust my Cloud” ideas
  - Best practices, education for all constituencies (current and future), demonstrations
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THANK YOU