Business Case for the Cloud

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Abstract

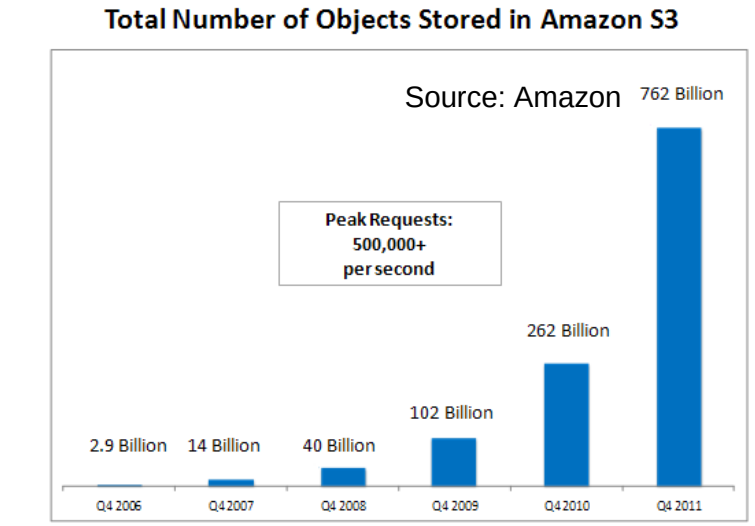
- Building the Business Case for Clouds – Moving Beyond Vanilla Use Cases
  - The fast emerging cloud services business arena is creating numerous new opportunities for both IT users and IT players beyond the traditional Enterprise IT ecosystem.
  - This presentation will cover popular use cases for cloud including storage clouds and enterprise or application specific clouds including multi-tenancy, private, and hybrid clouds while exploring why IT professionals are interested in each use case.
  - SNIA's Cloud Storage Initiative (CSI) has created the Cloud Data Management Interface (CDMI) that can assist in cloud implementations and incorporation into your business case to prevent lock-in or solution obsolescence.

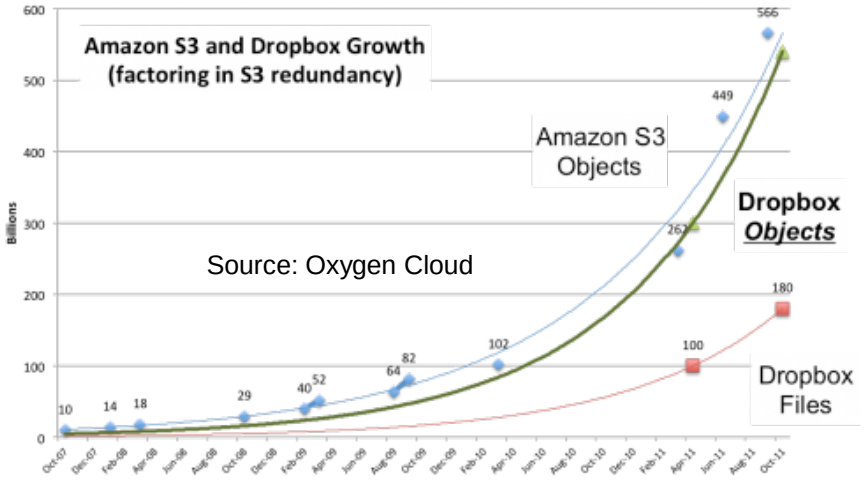
Agenda

- What is Cloud Storage?
  - Is it separable from & does it differ from cloud services?
- The “Killer App”
  - Where are your users putting their data?
- Legal Considerations
  - Why and when you need a lawyer
- Deployment Types of Cloud Storage
  - Private, Public and Hybrid
- Example Use Cases
  - Backup & Archive
  - Virtualization
- CDMI & Cloud Standardization
- Final Thoughts

Where are your users putting their data?

- With corporate users bringing their own devices (BYOD), where are they putting files?
- Devices have limited storage capacity
- They are saving them in the storage cloud!
- Corporate data is already in the public cloud and unmanaged/protected





Data Storage Interface Evolution

- New digital data is being generated by an ever diversifying set of devices
- 75% of data being generated by individuals (IDC)
  - Amount of Data doubling every two years
- 5 Billion Mobile Phones
  - Tablets on the rise
- Storage space on devices will always be limited (although this continues to grow exponentially)
- Device Apps are accessing content/storage via the Internet
  - Cloud Storage largely driven by device based use cases
- Traditional data storage interfaces (filesystems) are not up to this task!

Distilled Requirements

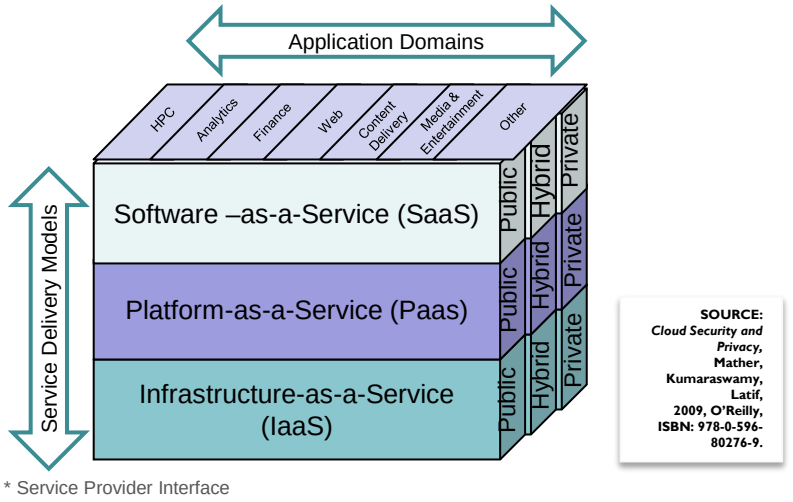
- Need a Global Namespace for data location
  - FILE handle -> URL + Unique Object ID globally
- Need support for Rich Metadata associated with the data
  - Plus Metadata Query and Index based Search
- Need HTTP access – browser support
- Data Services need to be transparent to the user, but extensible and powerful
  - Driven by Metadata
- Support for large objects, many small objects
- Support for active preservation operations
  - Driven by preservation Metadata

Legal Considerations

- Why and when you need a lawyer
- Transborder Data Flow
  - May generate legal obligations (sometimes conflicting) in multiple jurisdictions
  - "The Right To Be Forgotten"; many jurisdictions have such laws
  - Exporting data may be illegal
    - EU Data Protection Directive; does NOT permit transferring personal information to countries that do not provide EU protection levels; the USA is one such country
- Expectation of "Reasonable Security"
  - Security breaches leading to potential liability
  - Only as strong as weakest link
- Electronic evidence & e-discovery
  - What constitutes evidence?
  - Multiple copies, digital signing, data fragmentation
  - Retrieval of data often complicated
- Existing non-Cloud contracts insufficient
  - License agreement vs service agreement
  - Ownership vs use of content
- Mobile Devices
  - The law applies where you are, and where your data is stored
- Get Legal Involved
  - Early and often; laws change

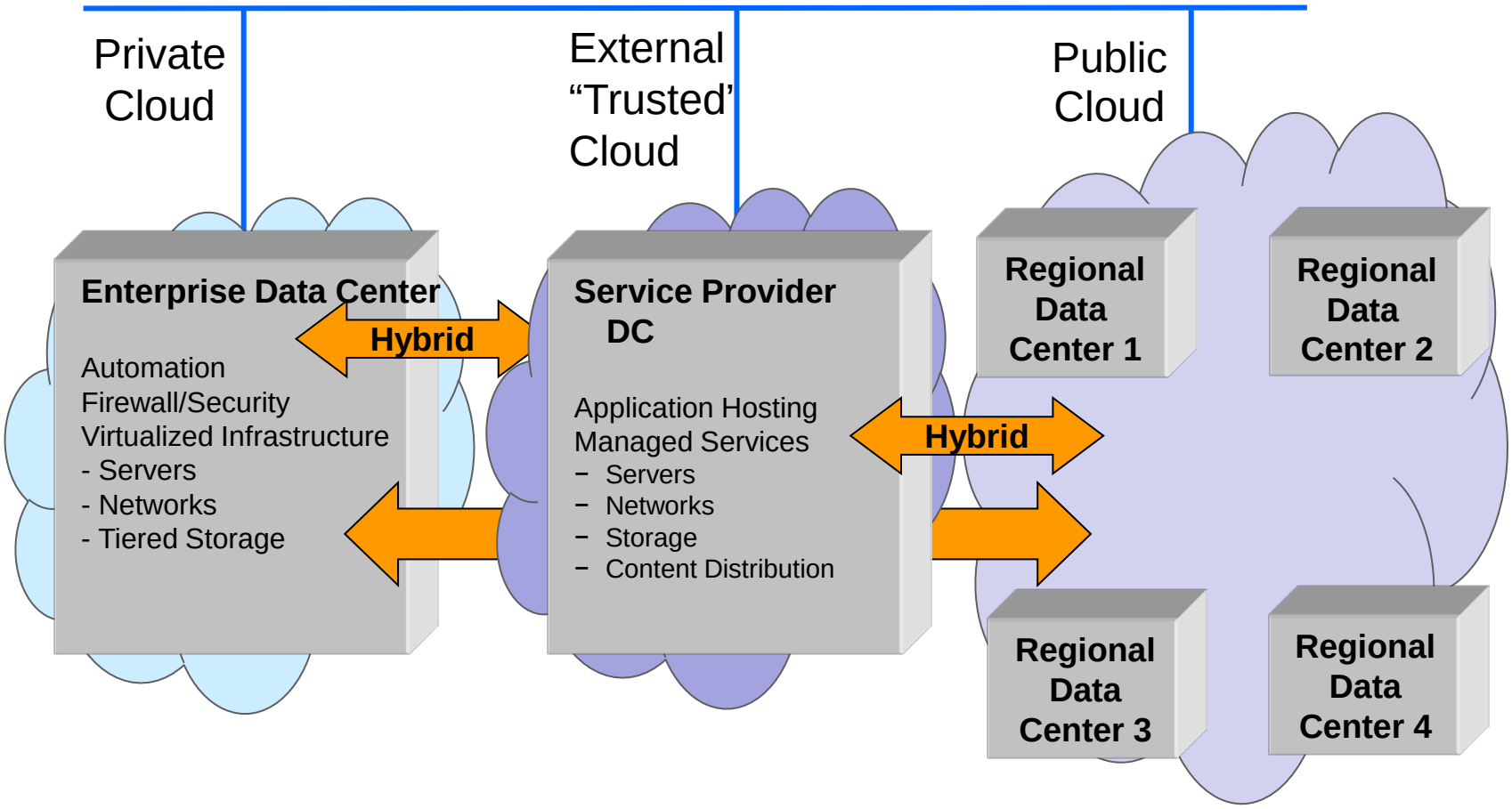
Storage Cloud Flavors

- A Storage Cloud can be depoyed as public, private or hybrid
  - Public – secure multi-tenant externally hosted
  - Private – secure single or multi-tenant usually hosted in-side the firewall or by a 3rd party
  - Hybrid – combination of public and private cloud infrastructures and services
  - Storage Cloud may be mixed with other Cloud services



* Service Provider Interface

Private, Hybrid & Public Clouds



Cloud Storage Use Cases

- Elastic demand for web based media (video, eBooks, audio)
- Backup to the cloud
  - Restore, Recovery, "Seed" the backup with hard drive
- Sync of files to the cloud and multiple devices
  - Internet "Drive" secondary storage
- Archive/Preservation in the cloud
  - Including Compliance, Retention and eDiscovery
- Storage for Cloud Computing
  - Support for legacy storage interfaces key
  - Self Service Storage Administration

Application Data: Build Your Own Cloud

- Corporations already offer their own email (instant messaging, etc.) services to their employees
- Cloud Storage is the next type of service offering for employee devices
  - Enterprise “Dropbox” implementations
- Essentially a “private” cloud with access over the Internet from corporate and other applications
- Data is retained “in house”, protected, available, secured and compliant

Application Data Implementation

- Develop or acquire a Drop Box client for supported devices (iDevice, Android, etc.)
- Connect back to the mother ship (internal enterprise storage) with a standard protocol (CDMI)
- Provide robust, available, protected and compliant storage services to those clients
- Manage the data stored via the enterprise “dropbox” usage
- Implement data retention and expiration policies on the data

CDMI: Post-Filesystem Data Storage

- The SNIA has produced the Cloud Data Management Interface (CDMI) standard for post-Filesystem Data Storage
  - i.e. Public and Private/Hybrid Storage Clouds
- Specifically designed to meet the requirements (for the foreseeable future) of contemporary data usage and management
  - Superset of features currently being offered, but “shrink to fit”
- Innovative use of Metadata to express “Data Requirements”
  - Requirements are then met by the implemented Data Services
- CDMI can be (and is being) extended compatibly
  - To accommodate new types of data requirements, use cases

CDMI Overview

- Data Portability Standard
  - Move Data (and most importantly – Metadata) from cloud to cloud
- Advanced Cloud Services
  - Data System Metadata allows cloud vendors to up-sell!
  - Specialized storage clouds for specific use cases
- Logging, Security, Audit Trails
- Extensible to accommodate rapid innovation in cloud market
  - Proposed Extensions: CIMI/OVF, Versioning, Jobs
- Shrink-to-fit
  - Only implement what makes sense for your cloud
  - Profiles: Simple Storage (i.e. S3), Simple Storage Management (NAS)

CDMI Benefits

- Adoption
- Interoperability
- Portability
- Compliance
- Security
- Simplicity
- Extensibility
- Coordinated
- Data Management
- International

- Commercial implementations, research infrastructures widely deploy CDMI
- Broad participation in plugfests
- CDMI standardizes moving the data (and metadata) between clouds (FedEx or Network)
- CDMI Retention, Hold, Query address requirements and eDiscovery
- Secure TLS, Encrypting Data at Rest, ACLs, audit logging, media sanitization all standardized
- CDMI Profiles: Simple Storage, Self Service Storage Management, Archive/Preservation
- CDMI Extensions: published publically and incorporated upon multiple implementations
- CDMI Cloud Storage for Cloud Computing working with OGF, DMTF, many others
- Replication, Archiving, Backup, Encryption, and even Tiering all standardized by CDMI
- CDMI is now ISO/IEC 17826:2012

Why not just adopt one of the existing interfaces?

- Despite the "open" licensing of several existing cloud storage interfaces, they all remain under the change control of a single vendor
- No cloud vendor wants to have a competitor have change control over their interface
  - Thus they release their own interface which they do have change control over
- This leads to the propagation of multiple interfaces, each essentially locking developers/customers into that service
- CDMI is under change control of a standards body, accommodates requirements from multiple vendors and can be extended for proprietary functions

Final thoughts

- There are significant differences in how cloud services are delivered to the various categories of users. The integration of these services with traditional IT operations will remain an important success factor but also a challenge for IT managers.
- The Cloud industry is still in its infancy. We can expect many more developments for IaaS, PaaS and SaaS solutions across business segments and verticals. It will become increasingly important to understand how such services can be combined in a secure and cost-efficient fashion.
- Mobile & virtualised use of data well suited to cloud. Embracing it now will prevent data proliferation on unsuitable services.

For More information

- One Web Site to Remember: http://snia.org/cloud
- Large Cloud Storage Community
  - http://groups.google.com/group/snia-cloud
  - http://twitter.com/SNIAcloud (@SNIAcloud)
- SNIA Cloud Blog Site:
  - http://sniacloud.com

Attribution & Feedback

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