

December, 2014
The Cloud Standards Customer Council

THE Customer’s Voice for Cloud Standards!

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

500+ Organizations participating

2011/2012 Deliverables
- Practical Guide to Cloud Computing
- Practical Guide to Cloud SLAs
- Security for Cloud Computing
- Impact of Cloud Computing on Healthcare

2013/2014 Deliverables
- Convergence of SoMoClo
- Analysis of Public Cloud SLAs
- Cloud Security Standards
- Migrating Apps to Public Cloud
- Social Business in the Cloud
- Big Data in the Cloud
- PGCC Version 2
- Migrating Apps: Performance Rqmnts
- Cloud Interoperability/Portability

2015 Projects (partial)
- Update to Security for Cloud Computing whitepaper
- Update to Practical Guide to Cloud SLAs
- Practical Guide to Privacy for the Public Sector
- Practical Guide to PaaS

http://cloud-council.org

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Motivations

- Impact of cloud computing accelerating
- Variety of cloud services has led to proprietary architectures & technologies
- Risk of vendor lock-in for customers has increased
- Issues of portability & interoperability need to be addressed head on
- Portability & interoperability critical to future cloud service adoption
Basic Definitions

**Interoperability**
- Ability for two or more systems or applications to exchange and mutually use information
- Ability of public clouds, private clouds, and other customer systems to use each other’s APIs
- Standard interfaces ideal so customers can switch to another cloud service provider with minimal impact

**Application Portability**
- Ability to easily transfer an application or application components from one cloud service to another
- Significant changes to the application code should not be required

**Data Portability**
- Ability to easily transfer data from one cloud service to another without requiring re-entry of data
- APIs to retrieve/import data are an important aspect of portability
- Syntax and semantics of transferred data is an important aspect of portability
Challenges

Interoperability Challenges

- Multiple interfaces & APIs across several dimensions
- Non-standardized interfaces & APIs
- IaaS has highest level of interoperability
- PaaS has lower level of interoperability
- SaaS has lowest level of interoperability

Potential solutions:
- ESBs can help address interoperability challenges
- Inter-cloud providers (i.e. brokers) are an option

Portability Challenges

- IaaS: Highest level of app portability
- PaaS: Varying software stacks make app portability more challenging
- SaaS: Data portability is of most concern

Potential solutions:
- IaaS: Operating systems like Linux and standards like OVF ease app portability
- PaaS: Adoption of common open source platforms helpful (e.g. Cloud Foundry)
- Common container technology allows independent deployment of app parts (e.g. Docker)
IaaS services: Main considerations

- Derived data
- App code
- App environment
- In-house data
- Customer data
- Derived data

- Application Portability
- Functional interfaces
- Admin interfaces
- Business interfaces

- Cloud Service
- Security

- End Users
- DevOps
- Administrators
- Business Managers
- Cloud service customer

- Interoperability

- In-house Applications & Systems

- Business Managers
  - In-house data

- Cloud service customer
  - Derived data

- Customer data
PaaS services: Main considerations

- Application Portability
- Functional interfaces
- Admin interfaces
- Business interfaces

End Users
- DevOps
- Administrators
- Business Managers
- Cloud service customer

In-house Applications & Systems
- In-house data

Cloud Service
- App code
- App environment
- Derived data
- Customer data

In-house Applications & Systems

Application Portability

Interoperability
SaaS service: Main consideration

- End Users
- DevOps
- Administrators
- Business Managers
- Cloud service customer

In-house Applications & Systems

Functional interfaces
Admin interfaces
Business interfaces

Cloud Service

Security

App code
App environment

Derived data
Customer data

Interoperability

Data Portability
Scenarios

1. Customer switches providers for a cloud service
2. Customer uses cloud services from multiple providers
3. Customer links on cloud service to another cloud service
4. Customer links in-house capabilities with cloud services
5. Migration of customer capabilities into cloud services
Scenario 1: Customer switches providers for a cloud service

**Considerations**
- For SaaS, APIs and user interfaces are key – not often standard
- For IaaS & PaaS, application portability is the biggest issue
- For SaaS, data portability is a major concern

**Recommendations**
- For IaaS, ensure cloud service accepts standard app packaging formats like OVF
- For PaaS, require app environment based on open technologies & APIs
- For SaaS, demand well defined APIs, protocols & data formats, standardized where possible
Scenario 2: Customer uses cloud services from multiple providers

Considerations
- Customer systems must interact with 2 or more cloud services
- Need consistency of admin, management and business interfaces

Recommendations
- Consider use of ESB as a mapping layer
- Choose business and admin tools that provide adapters
- Look for support of common or standard technologies e.g. IDaM
Scenario 3: Customer links one cloud service to another cloud service

**Cloud Service 1**
Provider A

**Cloud Service 2**
Provider B

**Considerations**
- Service 1 has to consume API of service 2
- Interoperability the main problem
- Security between 2 services often required

**Recommendations**
- Ensure service 2 has well defined & consumable API
- Consider use of adapter layer (e.g. PaaS app fronting SaaS service)
- Ensure security technologies of service 2 can be used by service 1
Scenario 4: Customer links in-house capabilities with cloud services

Considerations

- Well-defined APIs for on-prem data and functionality must exist
- Integration of in-house admin functionality with cloud admin functionality
- New Security requirements
- New business interfaces defined by cloud provider

Recommendations

- Ensure that on-prem apps leverage SOA
- Leverage ESB to perform interface, protocol and data transformations
- Address security issues with cloud services accessing on-prem capabilities
- Examine if in-house systems can deal with business aspects of cloud services
Scenario 5: Migration of customer capabilities into cloud services

**Before…**

- Cloud Customer
- App 1
- App 2
- App1 environment
- Customer data

**After…**

- Cloud Customer
- App 1
- App environment
- Cloud Service Provider
- App 2
- Customer data

**Considerations**
- For SaaS, API differences for apps migrated to cloud and format/content of customer data
- For IaaS/PaaS, ease of migrating app to cloud
- New security requirements
- Compatibility of admin and business interfaces for the migrated app

**Recommendations**
- For SaaS, consider compatibility with on-prem apps and the migrated cloud service
- For PaaS, ensure cloud app environment is compatible with on-prem environment
- Ensure cloud admin and business capabilities can be integrated with in-house systems
Summary of recommendations

Portability
- IaaS: Use standard package formats like OVF
- PaaS: Use compatible app environment(s)
- PaaS: Support common open technologies
- SaaS: Insist on standard protocols & data formats

Interoperability
- Use SOA principles for on-premises systems
- Consider ESBs for interface mappings
- Leverage 3rd party IDaM using standards
- Use API Management to access on-premises systems
- Insist on open technologies for admin & business APIs
- Check for standard security technologies
- Demand well defined APIs
- Consider use of PaaS mapping layer
Open Technologies

- **OVF**
  - [http://www.dmtf.org/standards/ovf](http://www.dmtf.org/standards/ovf)
- **CDMI**
  - [http://www.snia.org/cdmi](http://www.snia.org/cdmi)
- **ISO 17789 CCRA**
- **OASIS TOSCA**
- **DMTF CADF**
  - [http://www.dmtf.org/standards/cadf](http://www.dmtf.org/standards/cadf)
- **SAML 2.0**
- **OAuth 2.0**
  - [http://oauth.net/2/](http://oauth.net/2/)
- **OpenStack**
  - [http://www.openstack.org/](http://www.openstack.org/)
- **Docker**
  - [https://www.docker.com/](https://www.docker.com/)
- **Cloud Foundry**
Call to Action

- **Join the CSCC Now!**
  - To have an impact on customer use case based standards requirements
  - To learn about all Cloud Standards within one organization
  - To help define the CSCC’s future roadmap
  - Membership is free & easy: [http://www.cloud-council.org/application](http://www.cloud-council.org/application)

- **Get Involved!**
  - Join one or more of the CSCC Working Groups
    - [http://www.cloud-council.org/workinggroups.htm](http://www.cloud-council.org/workinggroups.htm)
Additional Resources


- **Practical Guide to Cloud Computing V2**
  - [http://www.cloud-council.org/10052011.htm](http://www.cloud-council.org/10052011.htm)

- **Migrating Applications to Public Cloud Services: Roadmap for Success**

- **Cloud Security Standards: What to Expect & What to Negotiate**
  - [http://www.cloud-council.org/security.htm](http://www.cloud-council.org/security.htm)

- **Security for Cloud Computing: 10 Steps to Ensure Success**
  - [http://www.cloud-council.org/security.htm](http://www.cloud-council.org/security.htm)

- **Convergence of Social, Mobile & Cloud: 7 Steps to Ensure Success**

- **Social Business in the Cloud: Achieving Measurable Business Results**

- **Practical Guide to Cloud SLAs**
  - [http://www.cloud-council.org/04102012.htm](http://www.cloud-council.org/04102012.htm)

- **Public Cloud Service Agreements: What to Expect & What to Negotiate**
  - [http://www.cloud-council.org/publiccloudSLA.pdf](http://www.cloud-council.org/publiccloudSLA.pdf)

- **Impact of Cloud Computing on Healthcare**
  - [http://www.cloud-council.org/healthcare.htm](http://www.cloud-council.org/healthcare.htm)
Thank You