Cloud Standards

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www.cloudcomp.ch, @ICC_Lab, #ICCLab
Intros

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- Senior Researcher@ ICCLab, ZHAW
- IaaS, Interop, Dependability
Lots of Standards

How standards proliferate:
(See: A/C chargers, character encodings, instant messaging, etc)

Situation: There are 14 competing standards.

14? Ridiculous! We need to develop one universal standard that covers everyone's use cases. Yeah!

Soon:

Situation: There are 15 competing standards.
Lots of Cloud Standards

Booz & Co. finds* 160 cloud standards!!!

The EC calls it the "Standards Jungle"

Lots of Cloud Standards

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SO...

What is a Standard?

More importantly, what is an Open Standard?
Open Standards

- Ken Krechmer, Colorado University - KK
  - Paper: "Open Standards: a Call for Action"

- Open Cloud Initiative - OCI

- OpenStand - OS
Open Standards

The elements:

Organisation +
Specification +
Implementation +
Adoption ==

Open Standard
Open Standards

The elements:

Organisation + Specification + Implementation + Adoption ==

OPEN STANDARD

FORMULIZED
Open Standards

- **Open Meetings (KK, OS)**
  - All can join in without barrier, not a "pay-to-play"
- **Consensus (KK, OS)**
  - All views considered
- **Due Process (KK, OS)**
  - Process in place to oversee document creation/updates, provide time for objections/updates
- **Open IPR (KK, OCI)**
  - Copyright, Trademarks, Patents
  - IPR must not be used as an offensive strategy
- **One World (KK)**
  - Not specific to a geographic region
Open Standards

- Open Change (KK, OS)
  - process, modifications are documented
- Open Documents (KK, OS)
  - All documents easily and publicly accessible
- Open Interface (KK, OCI)
  - IPR unencumbered interface, supports backward compatibility, extensible
- Open Access (KK, OCI)
  - Access to testing suites and associated events
- Ongoing Support (KK)
  - Remain open to adjustments from implementers
- Open Formats (OCI)
  - Data and meta data must be represented in Open Standards formats
BUT!

- A "standard" in these terms is **only** a specification

- To be a "standard" it requires **adoption**
  - The beginning of adoption comes with reference implementations (**OCI**)
  - IETF "running code"

- Therefore an open standard requires **implementations**
  - Ideally multiple - one is **not** enough
  - At least one under Open Source License (**OCI**)
The Reality: *De Facto vs. De Jure*

The market dictates the standards

- It selects the API that makes sense collectively
- *de facto*!
- Win for Amazon in the world of IaaS

- *de jure*
  - Specification by committee
## Open Standards Scorecard

<table>
<thead>
<tr>
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<th>EC2</th>
<th>OCCI</th>
<th>CIMI</th>
<th>OpenStack</th>
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</tbody>
</table>
Impasse

EC2 is *de facto* but **not** an Open Standard
- Must avoid monopolistic power

Solutions:
- Accept EC2?
- Demand EC2 submit to the open standards definition?
- Recommend/require a different API?
- Compromise?

This is a challenge that the ECP aims to tackle via ETSI
Conclusions

Standards have their place

● Interoperability and independence

Standards are essential but know where they come!

● Standards are not needed for many activities related to:
  ○ Start-up, "F*ck it, Ship it"
  ○ Prototyping
Conclusions

Upcoming... federated clouds!

● They will need interoperability standards
● Europe given its geo/political borders could tackle the CC market via federation
  ○ Great example: EGI FedCloud
● How will you manage and move your cloud workload?
Thank You!
Let's talk!

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Backup
EGI FedCloud

Members
- 60 individuals.
- 23 institutions.
- 13 countries.

Technologies
- 7 OpenNebula.
- 3 StratusLab.
- 3 OpenStack.
- 1 Okeanos.
- 1 WNoDeS.

Stakeholders
- 15 Resource Providers.
- 7 Technology Providers.
- 5 User Communities.
- 3 Liaisons.

Interop Demonstrated!
OCCI Impact

Implementations

Recommendations

NIST
National Institute of Standards and Technology
U.S. Department of Commerce