Open Cloud Computing Interface

An Overview

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Motivation

- The current lack of a standard for IaaS based Clouds lead to the creation of the group
  - OCCI was founded as Cloud API BoF during OGF 25 in March 2009 by Ignacio Llorente and Thijs Metsch
  - Renamed to Open Cloud Computing Interface working group and started work in April 2009
- The creation is driven based on the background of:
  - Interoperability – ability to let different system interoperate (HybridCloud)
  - Portability – ability to move services and port them as easy as possible
  - Integration – wire up cloud computing with the legacy resources
Contributors & Implementors

• Four different chairs to represent the whole cloud community
  • Academia – Andy Edmonds (SLA@SOI - Intel)
  • Industry – Thijs Metsch (RESERVOIR - Sun Microsystems)
  • End-Users – Sam Johnston (Australian Online Solutions)
  • Service Providers – Alexis Richardson (RabbitMQ & CohesiveFT)
• Over 170 members on the mailinglist – ~ 30 contributing actively
• 4 Providers and 2 projects are going to implement the OCCI standard
• Interest in the group has been huge
  • Used to setup use cases and requirements according to the needs of the Cloud community
  • Interactive development of the API on the Wiki
Open Process = Open Standard

- The Open Grid Forum has an established open process where anybody can join and collaborate
  - Many people and companies joined and are so able to be part of the game
- Very aggressive timeline to be one of the first APIs in the field Clouds
  - OGF 25 – BoF session and creation of the group (100 Attendees)
  - OGF 26 – First presentations at a OGF meeting in Chapel Hill
  - OGF 27 – Presentation of the first API which will be ready to implement
  - OGF 28 – Start working on extensions to the API
- Feel free to join the discussion at:
  http://www.occi-wg.org
The OCCI Cloud API

- Focused on the Infrastructure as a Service based Clouds
  - Small overlap with Software and Platform as a Service based Clouds
- Goal was the creation of a simple and RESTful API
  - Simple means ~15 commands → slim
  - Very extensible!
- Based on the requirements and ideas of existing APIs
- Still work in progress but many hurdles have already been taken
A RESTful view of the API

operation: GET http://abc.com/compute/uid123foobar/

Provider

Instance

Compute

Network

Storage

Operations

Resources can be linked

Operations operate on resources (start, stop, delete, update)

Covered by OCCI
Another view of the API

- Each resource is identified by its **URL**
  - e.g. `http://abc.com/compute/uid123foobar`

- Create, Retrieve, Update and Delete (**CRUD**)
  - **POST** – Posting to a resource will lead to creation of a resource
  - **GET** – Getting will return information
  - **PUT** – Putting information to a resource will lead to updating/creating resource
  - **DELETE** – Will result in the deletion of a resource

- Attributes are assigned to resources e.g. compute resources:
  - `compute.cpu.arch`
  - `compute.cpu.cores`
  - `compute.cpu.speed`
  - ...
Other features of OCCI

- Requests are used to trigger state transitions
  - Used for e.g. Backups, snapshots, migration,...
  - `POST /compute/uid123foobar/requests HTTP/1.1`

- Extensions
  - `Caching` – performance improving
  - `Links` – Linking to resources
  - `Status` – For monitoring of resource states
  - ...

- Rendering formats
  - Support of AtomPub, TXT, JSON renderings
OCCI & Storage

• Currently the OCCI specification states the following about storage
  • A storage resource is capable of mass storage of data (e.g. a virtual hard drive).
  • `storage.reliability` which can be `transient`, `persistent`, `reliable`
  • `storage.size` an Integer (10^9 bytes) Drive size in gigabytes

• Collaboration between OCCI and SNIA Cloud TWG needed!
OCCI & Storage (2)
Conclusions & Future work

• Currently the group is working on
  • Requirements & Use cases – prioritize and finalizing the document on requirements
  • API design – creation of the draft API description which can be implemented
  • Members and Implementers recruitment – Gather all the members and implementers of OCCI

• Also OCCI is involved and engaging in collaboration efforts
  • OGF has a work register describing the collaboration with DMTF – And therefore also the Cloud Incubator
  • The OCCI working group will have joint meeting with the SNIA Cloud technical working group (Storage)
  • OCCI is aware and contributing to the SCRM group which tries to coordinate all Cloud standards efforts
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