OCCIware
standard, extensible Cloud consumer platform: an end-to-end demo (IoT, Linked Data, Spark, Docker)

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Overview

Speaker

- Marc Dutoo, R&D projects lead at Smile
  - OCCLware coordinator, Data / API / Cloud expert

Schedule

- OCCI(ware) introduction – XaaS cloud consumer platform
- Smart City use case – IoT to Big Linked Open Data analytics
- Quick demo – Docker Studio, custom Linked Data extension, runtime and Playground, and more
- What's next for OCCLware – and you!
OCCI(ware) Introduction

XaaS cloud consumer platform
A quick question...

Who uses multi cloud today?
A quick question...

Who uses multi cloud today?

... everybody

- Docker in devops, and Kubernetes in production
- AWS, except when its Service - Task model of scalability is not fine enough
- National clouds to ensure data jurisdiction
- ... as soon as appears in your application a new need that calls for a cheaper / faster / more robust / more scalable / ... Cloud
Cloud Computing – the problem

Too many technologies
Lack of overarching standard

Domains

Layers

Application

Platform

Infrastructure

Servers

Laptops

Monitoring

Content

Collaboration

Communication

Finance

Desktops

Object Storage

Identity

Runtime

Queue

Data

Blocks

Laptops

Monitoring

Content

Collaboration

Communication

Finance

Tablets

Computes

Block Storage

Network

Why OCCI?

- So this makes for partitioning, lock-in...
- And a lot of **technical glue**, therefore making it all hard to maintain
- The OCCI standard advocates a unified, uniform architectural approach
  - to **separate** this glue (connectors)
  - from business logic consuming them through the standard, generic OCCI REST HTTP API
- ... the rise of the **Cloud consumer platform**
OCCLware Product

OCCLware Studio
Design, Verify, Simulate & Develop
Everything as a Service

eclipse

OCCL specifications

OCCLware Runtime
Deploy, Execute & Manage
Everything as a Service

Java
EROCCI
OCCI 101

Everything is **Resource** or **Link**, be it at …

- **Infrastructure** level:
  - Network
  - Compute (memory, started, start())
  - Storage
  - NetworkLink

- **Platform** level:
  - Container
  - Database
  - Router
  - DatabaseLink

- **Application** level:
  - Environment
  - Application
  - Deployable
  - EnvironmentLink

OCCI Core (metamodel)

OCCI Extensions (models)

+ flexible typing thanks to Aspect-like Mixins
OCCLware Objective

Managing Everything as a Service in the clouds

Software as a Service (SaaS)
Big Data as a Service (BDaaS)
Linked Data as a Service (LDaaS)
Platform as a Service (PaaS)
Container as a Service (CaaS)
Infrastructure as a Service (IaaS)
DataCenter as a Service (DCaaS)
Network as a Service (NaaS)
OCCLware Factsheet

• 72 man year, 5.6m€ budget, sponsored by French ministry of Industry over 2015-2018
• 3 academics, 5 companies, 2 associations
• To lower Cloud Computing adoption costs and break up barriers between its various implementations, layers, domains
  - Especially Data Center, deployment, Big Data, Linked Data
• By bringing to OGF's Open Cloud Computing Interface (OCCI) the power of formal languages and model driven engineering (MDE)
OCCIware Runtime - end-to-end OCCI API call chain

XML-based Extension

OCCI Requests

HTTP runtime

LDaaS

PaaS

IaaS

HTTP runtime

OCCI Manager

HTTP runtime

Roboconf

HTTP runtime

ProActive Cloud Automation

HTTP runtime

Scalair Cloud Manager

LDaaS

PaaS

IaaS
IoT to Big Linked Open Data Analytics

Use case: energy consumption monitoring
Monitor energy consumption

- Not only per user, or per utility provider company,
- but also per city, region, activity...

Such multi-point of view data requires an open world approach of data: Linked Data.
Electricity consumption
Linked Data
Energy consumption probes

Deep data analysis

Project governance

Blynk gateway

LD OCCI API

Datacore server API

LDProject status: published

LDProject robust: false

LDProject storage: secondary

LDNode name: main

Ozwillo Infrastructure

Mongo primary

Mongo secondary

Mongo secondary

Energy Linked Data server
A point on the IoT integration
Quick demo – Docker Studio, custom extension, NodeMCU, Spark
Cloud Studio, with Docker
Custom Studio for LdaaS (Linked Data as a Service)
IaaS - Virtual Box machine
IaaS - Ozwillo machine

Docker Studio
... started!

Docker Studio
SaaS - Linked Data with dedicated analytics entry point
... using a specific mongodb replica within its cluster!
Big news – Now an OW2 project!

OCCI web Playground
http://occinterface.herokuapp.com/
Allowing to **not hamper data collaboration performance** when aggregating energy consumption - results shown here:

...by consumer

...by his city
Latest news from OCCIware

- **OCCI Studio**: v2, contribute to Eclipse.org in 2018, simulation plugins https://github.com/occiware/OCCI-Studio

  - & Docker Studio & VMWare, OpenShift, Monitoring, SLA, QoS extensions

- **Runtime**: end-to-end, SaaS / PaaS / IaaS OCCI platform
  - MART OCCI server, ActiveEon Multi-IaaS & Roboconf PaaS connectors
  - web Playground now in OW2 http://occinterface.herokuapp.com/
  - OCCI monitoring (Tinom: OCCI monitoring for Java) for QoS (OCCI SLA extensions) and scalability (on Roboconf)

- **Use cases**: Datacenter, Big Data, Deployment, Linked Data IoT analytics

- Inria startup, Smile Linked Data as a Service offering...

- ... and contribute back to **OCCI 2.0** standard!
Any questions?

Thanks for your attention!

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Source: https://github.com/occiware

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