Cloud technologies status at CC-IN2P3

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Cloud status at CC-IN2P3

Main goals :
- Build an academic community cloud, integrated to wider federations
- HTC use case is no option

Motivation & User needs :
- Users need more specific environments
- Users need flexibility (elasticity)
- Another way of achieving distributed computing (vs/with grids)
- Satisfying new use cases (servers on demand...)

Steps :
- Offer IAAS ressources through generic interfaces (EC2/OCCI)
- Integrate national/european/worldwide accademic federations

Cloud status at CC-IN2P3

Work in progress :
- State of the art of existing/upcoming technologies : evaluation of proprietary (IBM, DELL/Canonical, VMware, Oracle, Redhat) and OSS (OpenNebula, Openstack, Nimbus...) solutions
- Reuse experience
- Identify the hot spots : security concerns, storage, performance, networking...

And then :
- Open to new communities (other scientific fields, academic institutes, industry ?)
- Higher level tools for users (to PAAS/SAAS)
- Branch to the batch system
- Will the users follow the move and adopt those new technologies ?

A cloudy approach to use cases

- IAAS
  has to conform to adopted standards (EC2/OCCI/CDMI...)
  offer VMs instanciation
  offer storage cloud resources (ala S3)

- PAAS
  Example : provide support for Grid Engine cluster instanciation

- SAAS
  integrate workflow management solutions (sysfera)
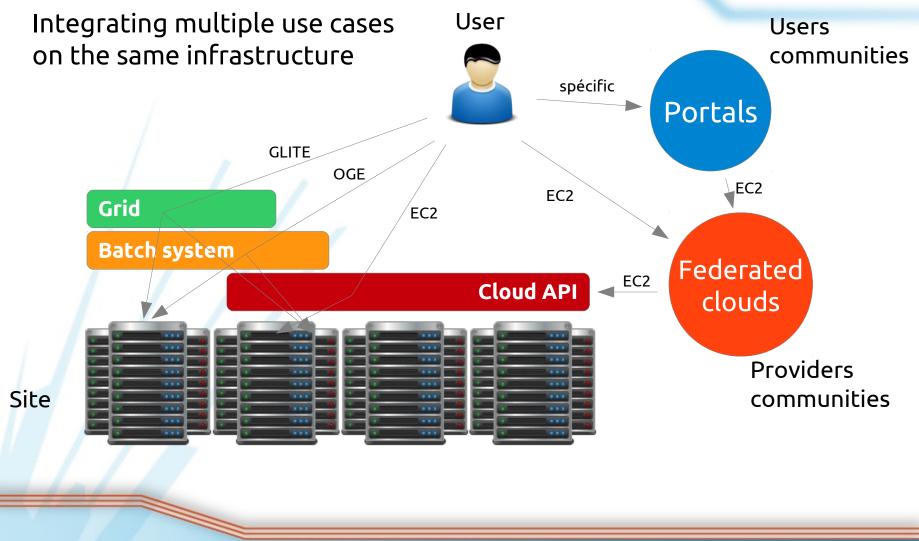 eg : support for jobs submission through web portals

Identified use cases

- **EGI FCTF testbed** (HEP, traditional grid users)
  provide IAAS ressources to former grid users, computing

- **Webimatics** (neurobiology)
  medical image data analysis

- **Etriks** (academic and pharmaceutical companies)
  data analysis

- **Sysfera**
  SAAS approach to workflow management

- **Dirac**
  Yet Another grid scheduler

Testbed infrastructure

- 16 DELL Poweredge C6100 hosts

- On each node :
  2 Xeon 24cores X5675 @ 3.07GHz
  96GB RAM
  2TB raid 10 local storage (4 SAS 7.2krpm)

- Total of 400 cores

- Remote copy, then centralized storage

- 10Gbps NICS with NPAR/SR-IOv technologies

- Images catalog (1.4TB)

- Public IPv4 subnet, full VMs network isolation

- Powered by Openstack

- Available interfaces : EC2 and Nova API at the moment, ongoing OCCI

Computing & cloud interfaces

CCIN2P3

Integrating multiple use cases
on the same infrastructure

User

Users
communities

spécific

Portals

GLITE

OGE

EC2

EC2

Grid

Batch system

EC2

Cloud API

EC2

Federated
clouds

EC2

Site

Providers
communities