CC-IN2P3 cloud computing (IAAS) status
Atelier Operations France-Grilles
Mattieu Puel – Novembre 2012
Timeline

November 2011
- Project started through CAPRI

March 2012
- 1st testbed installation

June 2012
- Solution choice

September 2012
- EGI FCTF testbed integration

July 2012
- First user (Webimatics)

January 2013
- CMS/LHCb DIRAC HTC first tests

Mid 2013
- Production grade?
  Grid Engine Integration?

March 2013
- Distributed storage
  S3 implementation
  EBS implementation
  Mar 2013
Timeline

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1st testbed installation

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Solutions evaluation
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2012

Distributed storage
S3 implementation
EBS implementation
Mar 2013

France Grilles fundings

2013

16 DELL Poweredge C6100 hosts:
- 2 Xeon 24cores X5675 @ 3.07GHz
- 96GB RAM
- 2TB raid 10 local storage (4 SAS 7.2krpm)

Total infrastructure:
- 400 cores
- 1.5TB RAM
- 32TB disk
- 32Gbps network
→ ~400 VMs m1.medium (1c, 4GB RAM, 50GB disque)

10Gbps NICS with NPAR/SR-IOv technologies

Essex (2012.1)
Folsom (2012.2)
Features

Currently available:

- VOMS authentication
- EC2/Nova API/OCCI
- Network access policies (aka secgroups / network acls)
- New images Upload
- Start/stop/pause/suspend instances
- Snapshots
- VLAN isolation
- Floating (public) Ips
- VNC graphic console access
- Federation features (authn/z, accounting...)
Toward a unified infrastructure

Grid

User → Broker

OCCI

Batch

Queue > θ

SDM OCCI

Cloud API

CPU & RAM

DISK

Corporate worker node
External type worker node
Public cloud
Private cloud

GPFS / Ceph / GlusterFS
Use cases

- **Corporate worker node**
  - Support for multiple specific environments (SL5/6, python dists, ...)

- **External worker node (N users/3 groups)**
  - DIRAC
  - Simple HTC cases (CMS, LHCb)
  - EGI FCTF testbed

- **Public cloud (11 users/9 groups)**
  - IRT Bioaster
  - Webimatics
  - Academic/institutional

- **Private cloud (26 users/2 groups)**
  - eTRIKS
  - Test servers
  - Aims at deploying production services
Use cases (federation projects)

- **EGI Fedcloud** (BSC, CC-IN2P3, CESGA, CESNET, Cyfronet, FZ Jülich, GRIF, GRNET, GWDG, INFN, KTH, SARA, TCD, OeRC, STFC, SZTAKI)
- **France Grille** (LAL, IRIT, CC...)
- **IRT Bioaster** (Institut Pasteur/CC)
- **Ibercloud**?
- **EU-Brazil**?
Costs

Cost per sector

- racks
- EDF
- PDUs
- Switchs
- Hyperviseurs
- FTE

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Some hypothesis: Linux VMs, cost based on RAM usage
What's next

Incoming features:
- Dynamic block assignment (Cinder, EBS, 24TB)
- Live migration
- Storage cloud (S3/CDMI, 24TB)
- Batch integration

Next goals:
- Reuse of worker nodes, upgrade the platform to 1000~10k Vms
- IN2P3-CC private cloud, ready for production?
- IN2P3 public cloud (compute/storage), FG, other institutions?
- Keep on integrating federations
- Virtualized HTC for some simple use cases (CernVM/FS/dcache)
- Network as a service (Quantum)
Thanks !

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<thead>
<tr>
<th><strong>Project</strong></th>
<th>CC-IN2P3 IAAS cloud</th>
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<tbody>
<tr>
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