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Centre de Calcul
de l'Institut National de Physique Nucléaire
et de Physique des Particules

Openstack deployments

Openstack components :

Operational :

Keystone
Glance
Nova
Horizon
Cinder

Tested :

Swift

Soon to be :

Neutron
Ceilometer

Clusters :

Infrastructure services
test/dev machines
community cloud
(~500 cores)

Computing
(~600 cores)

One dedicated to eTRIKS project
(~100 cores)

openstack™

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Existing Openstack clusters

Deployment :

- Scientific Linux 6
- EPEL up to Folsom, RDO starting from Grizzly
- Every single config file puppetized

Test/dev/service/community cluster :

- DELL C6100 and R610 compute nodes
  (400 cores for test/dev VMs, 100 cores for infrastructure services, 1.6TB RAM)
- DELL PE R720xd (30TB Cinder volumes ~ Amazon EBS)
- DELL PE R720xd and GPFS for instances shared storage

Computing cluster :

- 70 DELL PE 1950 (recycled batch WNs)
- 10 ISILON nodes (instances storage)
- Capacity : 560 VMs (1 core, 20GB disk, 2GB RAM)

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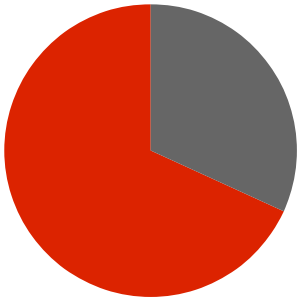
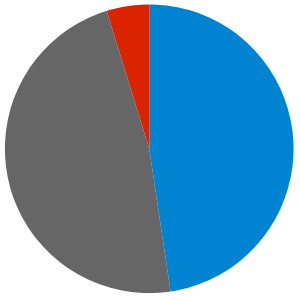
Cloud usage

Physical Openstack VM vSphere VM

Testing and developments systems :

- ~150 VMs (400 capacity) in regard with ~70 physical
- Destinated to IN2P3-CC employees
- **Production !**



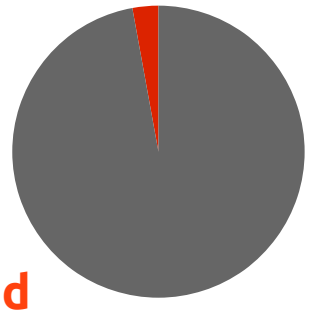


: Infrastructure services

- ~10 VMs (50 capacity) in regard with ~100 physical and ~100 vSphere virtualized
- **Production !**

Computing resources :

- ~500 cores in regard with 17000 HT cores (no production yet)
- Atlas, LSST, Euclid testing
- **Still a lot of testing and validations required**



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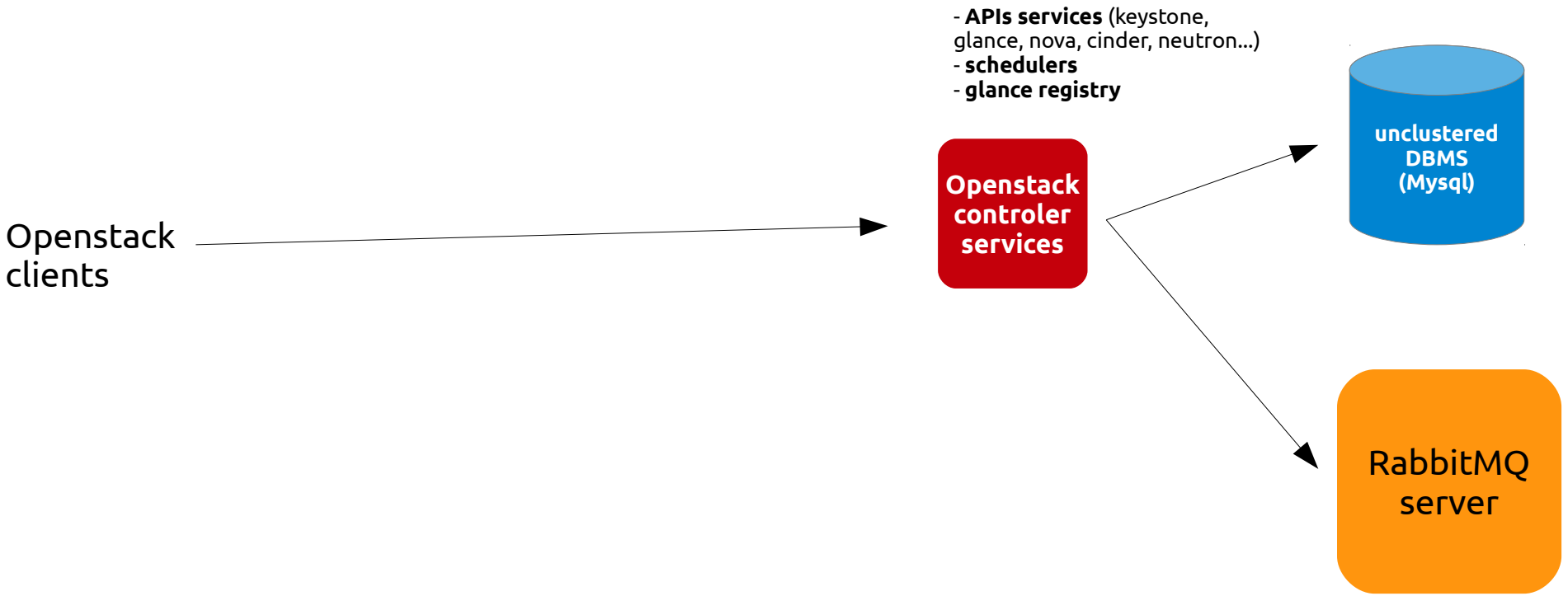
Openstack high availability

Keepalived → frontend high availability failover (using IPVS/VRRP)
Haproxy → load balancing amongst redundant services



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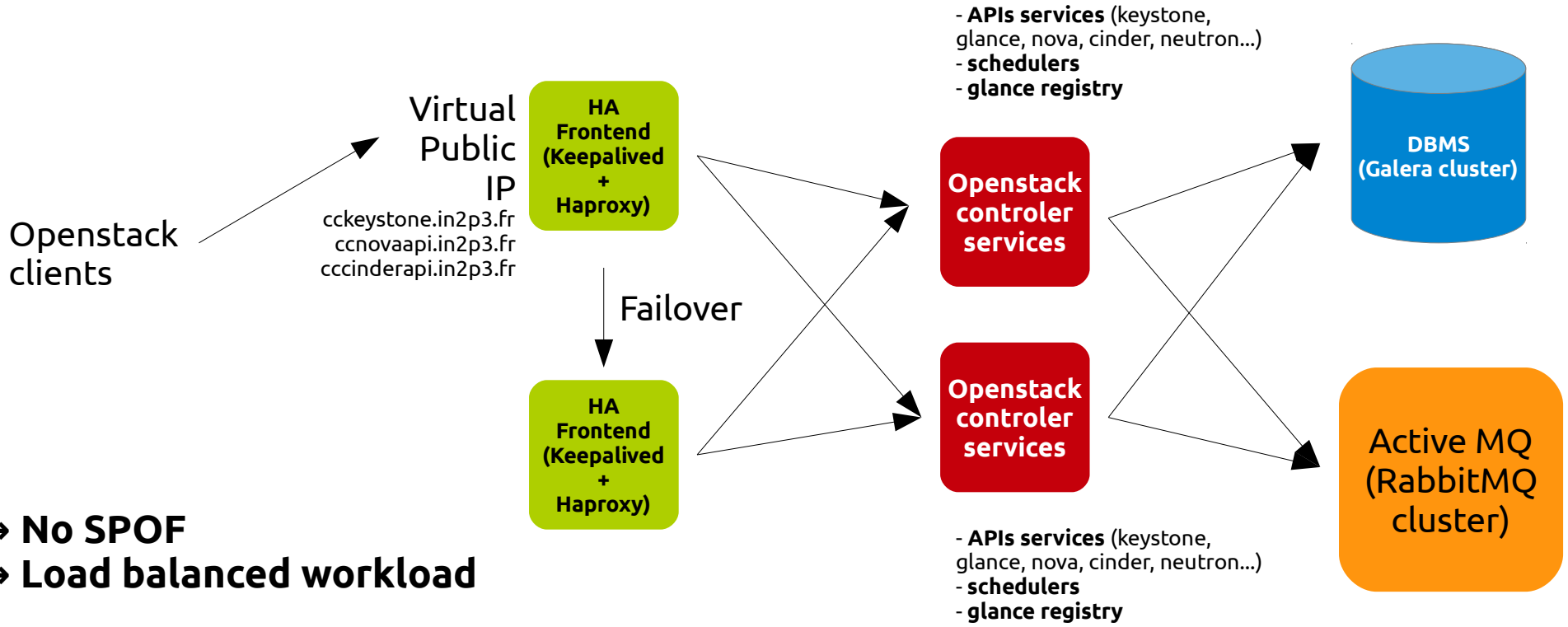

→ **No SPOF**
→ **Load balanced workload**

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Achieved lately what's next ?

Latest achievements :

- Validated Grizzly
- Validated HA
- Validated RDO

Other short term objectives :

- Validating France Grilles efforts on cloud federation :
  DIRAC computing over 5 French clouds (IN2P3-CC Lyon, LAL Orsay, IPHC Strasbourg, IRIT Toulouse, LLR Palaiseau), Openstack, Stratuslab and OpenNebula based clouds

Longer term objectives :

- Migrate everything virtualizable to compute cloud
- Public IPv6 networking to get rid of NAT
- IN2P3 community cloud offering ?

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Federations efforts

- EGI FCTF :
  - EGI sites : BSC, CC-IN2P3, CESGA, CESNET, Cyfronet, FZ Jülich, GRIF, GRNET, GWDG, INFN, KTH, SARA, TCD, OeRC, STFC, SZTAKI
  - Technologies :
    - Cloud interface : OCCI
    - AuthN/Z : VOMS
    - Information system : BDII
    - Images sharing : StratusLab Marketplace
    - Accounting : APEL/SSM
- France Grilles :
  - Federate 5 french sites : IN2P3-CC@Lyon, LAL@Orsay, IPHC@Strasbourg, IRIT@Toulouse and LLR@Palaiseau
  - Technologies :
    - cloud interface : Libcloud
    - AuthN/Z : VOMS
    - Contextualization : cloud-init
    - Image : CernVM/other
    - On top scheduler : VMDirac