LinuxTag
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OpenNebula
The Open Source Solution for Data Center Virtualization

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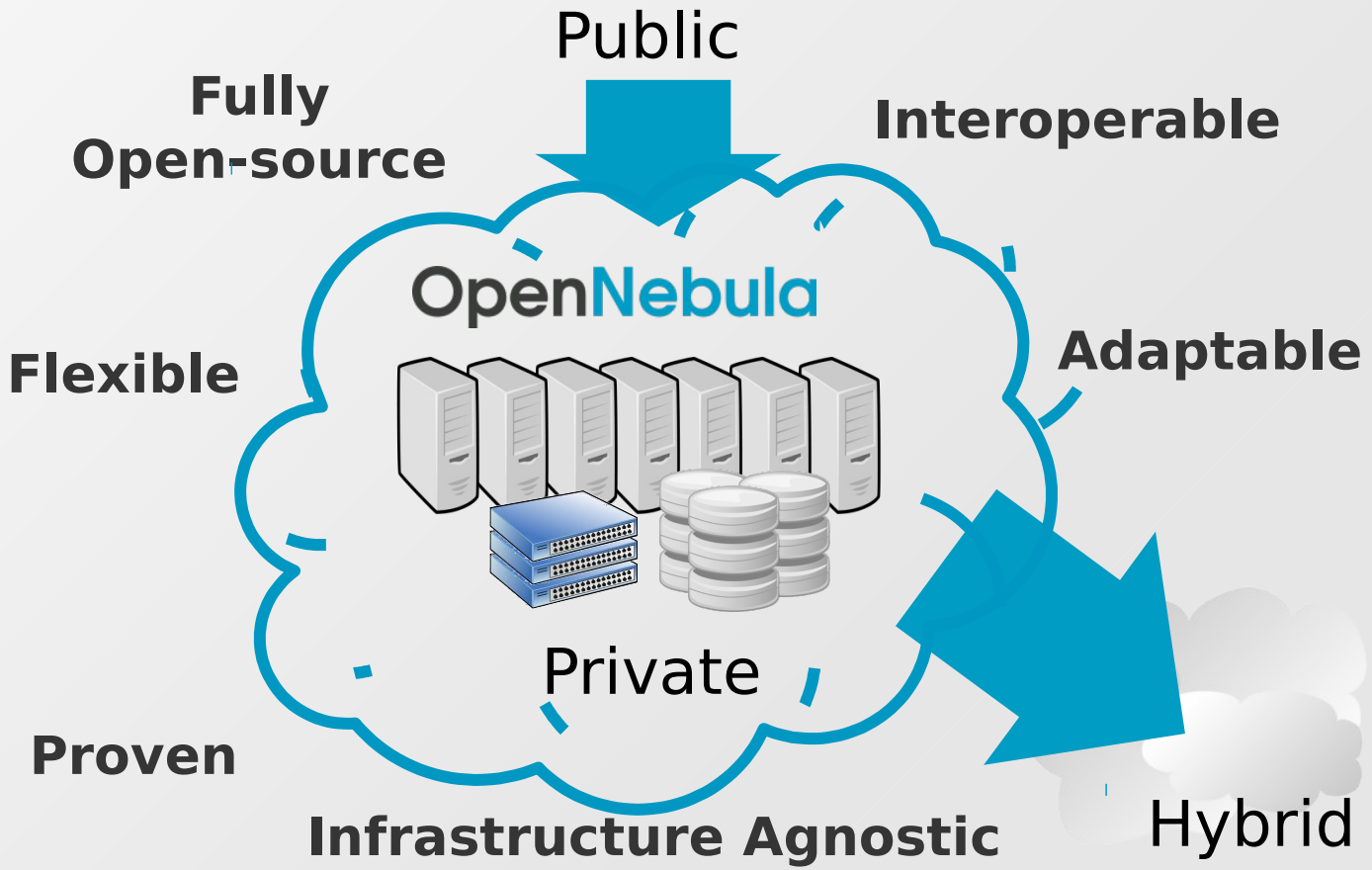
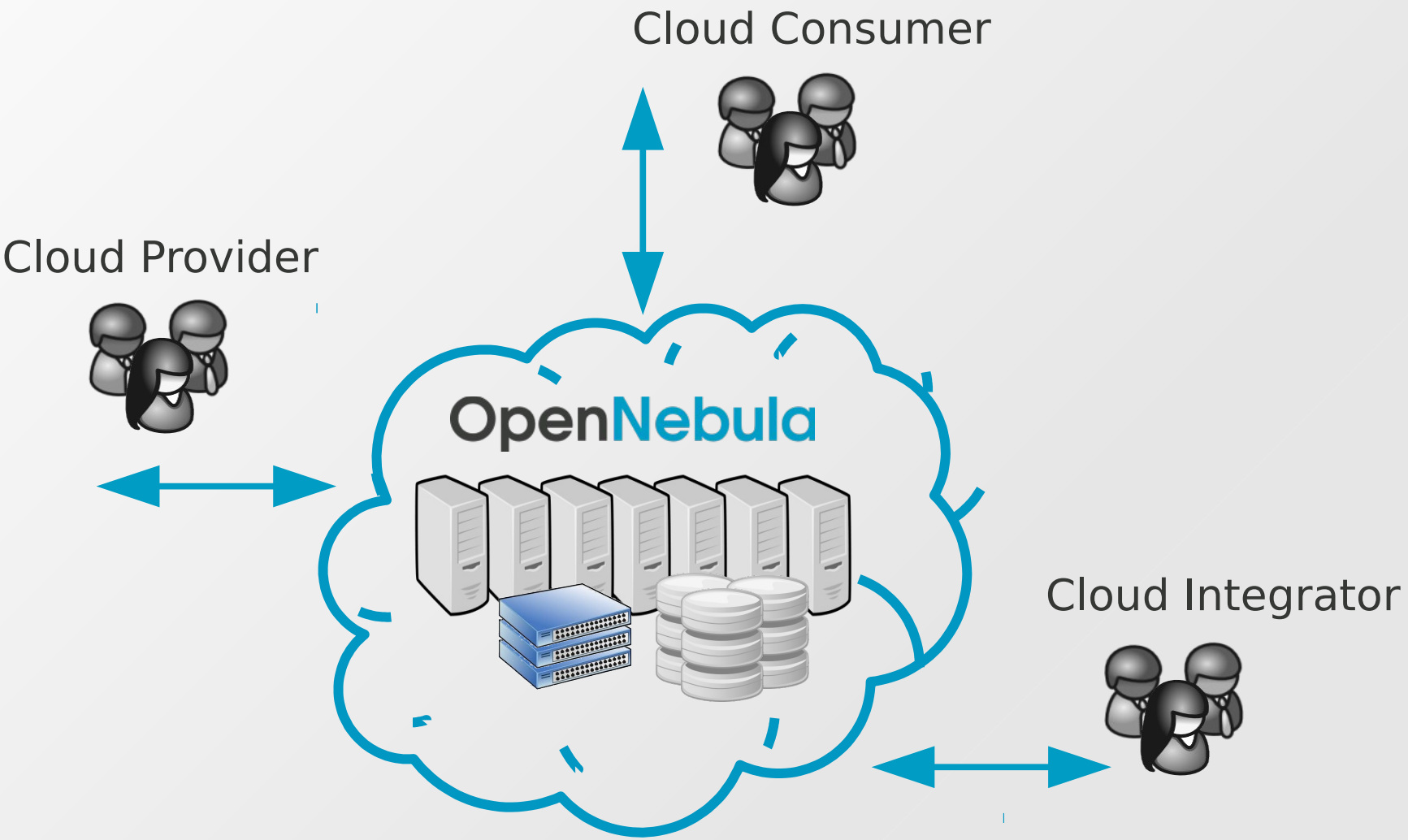
What is OpenNebula?

- Multi-tenancy, Elasticity and Automatic Provision on Virtualized Environments



Different perspectives on the Cloud: Aims and needs



User perspective

Remote Connection

- SSH
- VNC
- Remote desktop

Network Management

- Network catalog
- Public & elastic IPs
- Private isolated networks

Usage Data

- Accounting info
- Monitoring info

Storage Management

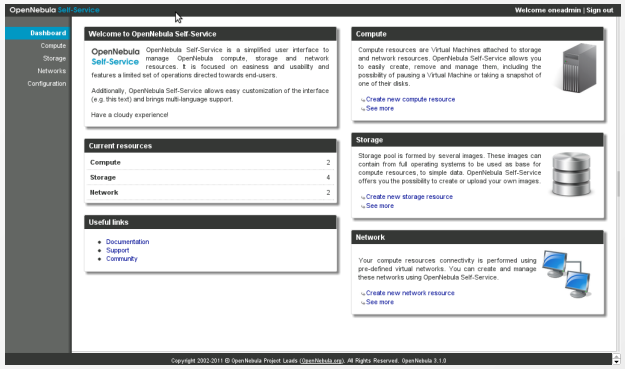
- Image catalog management
- Prepared on-site & uploaded
- Pre-defined appliances
- OS and Data types (persistent)

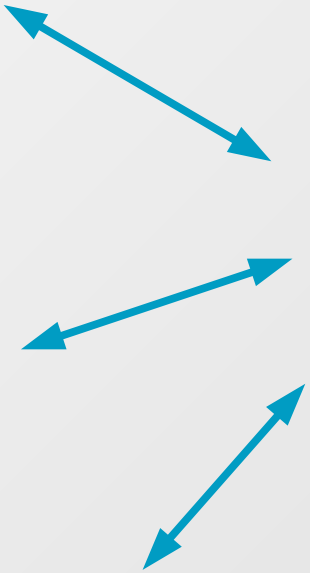
VM Management

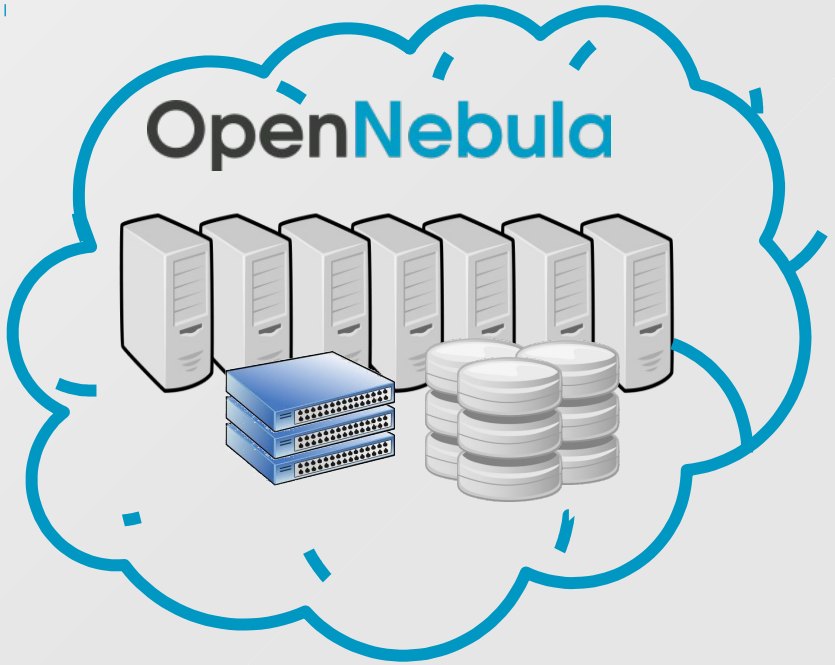
- VM template catalog
- Life-cycle control
- Contextualization

User perspective – infraestructure management

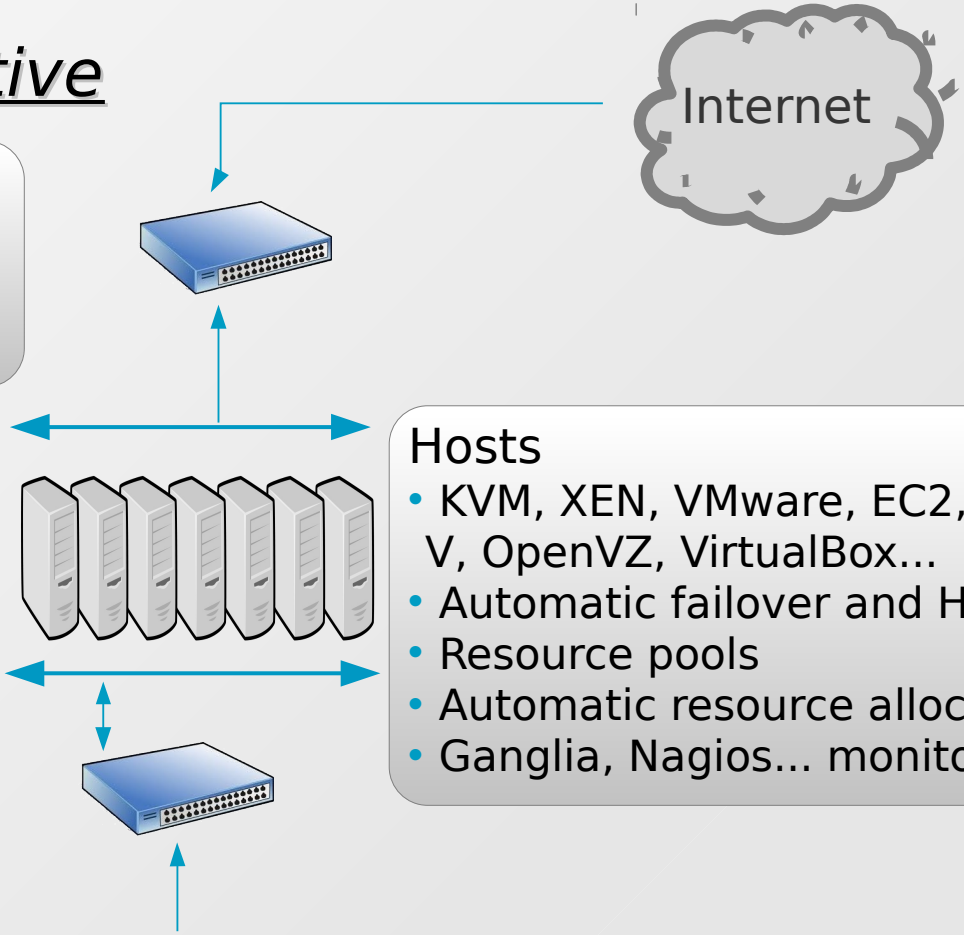
OpenNebula Self-Service







Cloud Provider perspective



VM Networks

- Public and private networks
- Open vSwitch, 802.1q, Ebtables
- Lease management

Front-end

- Authentication: x509, LDAP, SSH, Basic
- Authorization: ACLs, roles, groups, resource quotas...
- Accounting
- Logging

Hosts

- KVM, XEN, VMware, EC2, Hyper-V, OpenVZ, VirtualBox...
- Automatic failover and HA
- Resource pools
- Automatic resource allocation
- Ganglia, Nagios... monitoring

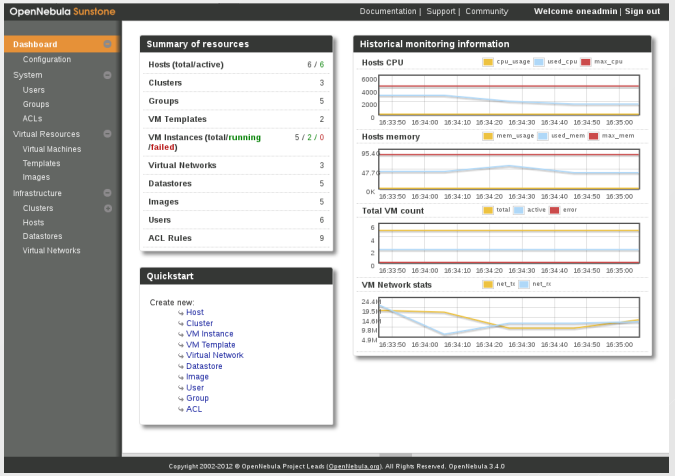
Datastores

- VM image storage
- Multiple datastores
- Heterogeneous configurations
- Shared or non-shared

- DFS: NFS, GlusterFS...
- SAN, iSCSI, LVM...
- SSH, Bittorrent...
-

Operating the Cloud Infraestructure

- Web UI
  OpenNebula Sunstone

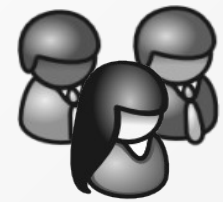


- Command Line Interface

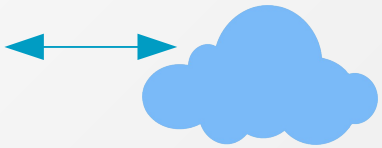
```
oneadmin@hecturch1:~> onehost list
  ID NAME            CLUSTER    RVM   TCPU   FCPU   ACPU   TMEM   FMEM   AMEM STAT
   0 localhost       mycluste     1    400    310    400   3.8G   1.8G   3.8G   on
   1 pepe            mycluste     0      0      0    100     0K     0K     0K  err
   2 juan            mycluste     0      0      0    100     0K     0K     0K  err
oneadmin@hecturch1:~> onevm list
  ID USER     GROUP    NAME            STAT CPU     MEM         HOSTNAME        TIME
   7 oneadmin oneadmin one-7          runn   5    100M       localhost   11d 01:10
oneadmin@hecturch1:~> onedatastore list
  ID NAME            CLUSTER  IMAGES TYPE   TM
   0 system          mycluste 0      -      shared
   1 default         mycluste 1      fs     shared
 100 abadab          -        0      fs     shared
oneadmin@hecturch1:~> oneacl list
   ID      USER RES VHNIUTGDC    RID OPE UMAC
    0       @1     V-NI-T---      *     ---c
    1       @1     -H-------      *     -m--
   23     @102     V--I-T---      *     ---c
   24       #6     ----U----      *     ---c
   25       #6     ----U----   @102     uma-
   31     @103     V--I-T---      *     ---c
   32       #7     ----U----      *     ---c
   33       #7     ----U----   @103     uma-
   34       #7     V--I-T---   @103     um--
   35     @103     -H-------     #0     -m--
   36     @103     --N------     #0     u---
   37     @102     -H-------     #0     -m--
   38     @102     -------D-     #1     u---
   39     @102     --N------     #0     u---
oneadmin@hecturch1:~>
```

- APIs
  - Ruby, Java, Python (ecosystem)
  - XML-RPC

Cloud provider perspective – Managing multiple ONEs



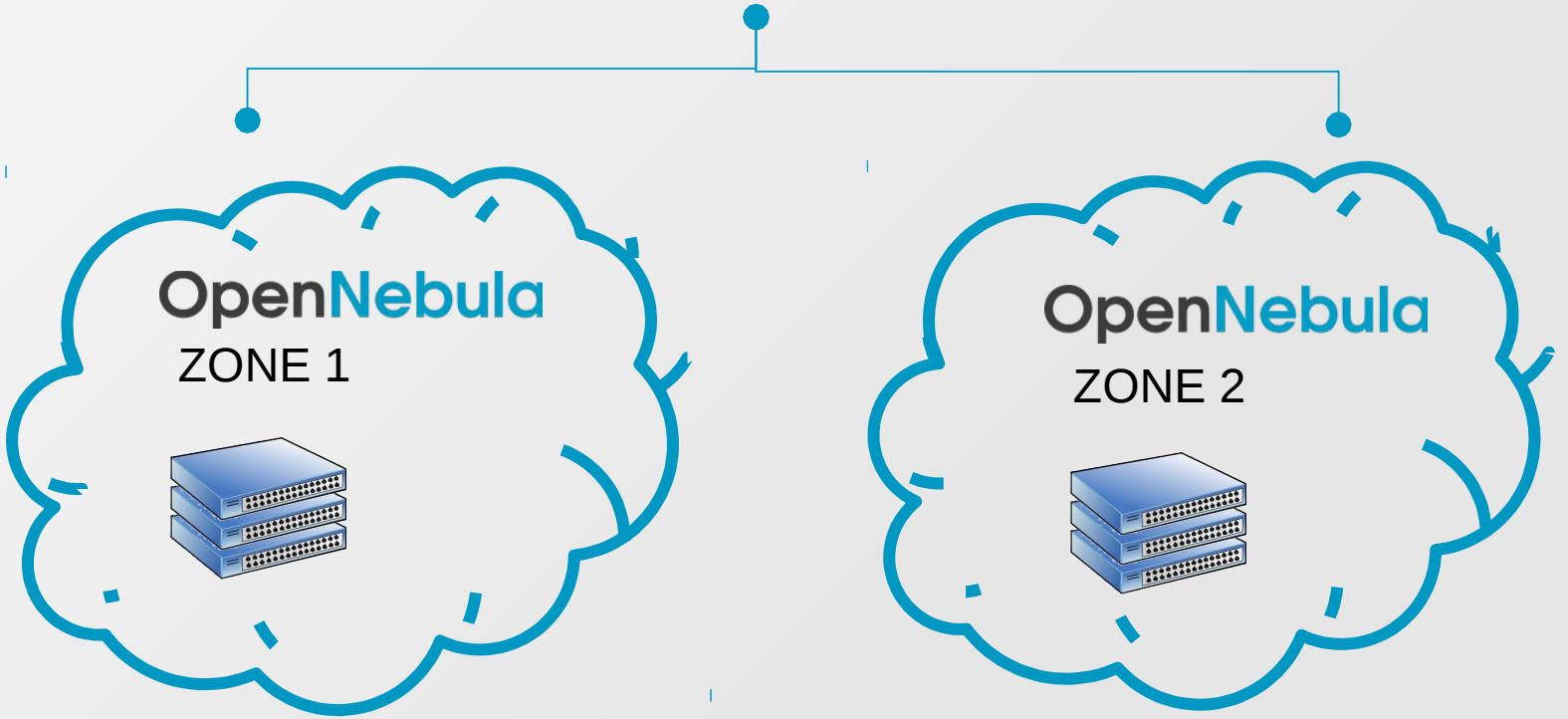
Cloud Consumer



oZones Server

- Web Portal / CLI
- Resource overview
- VDC management

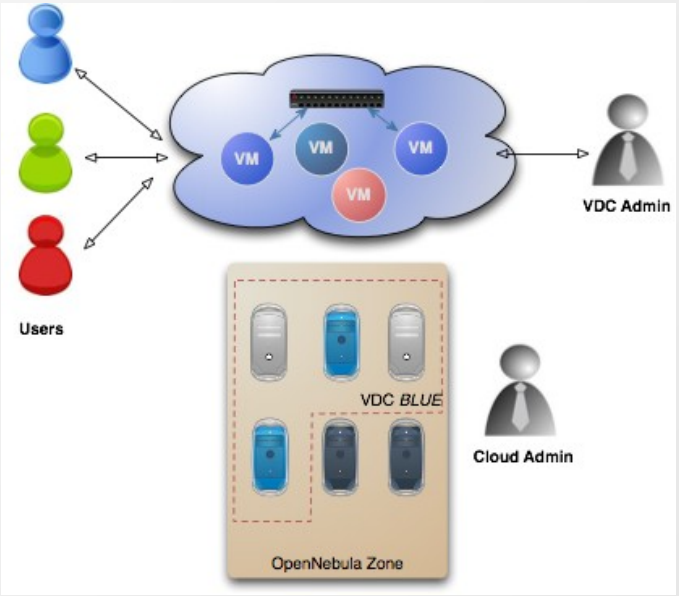
Federation of Clouds
- Multi-tier architecture
- Scalability
- Isolation
- Multiple-site support

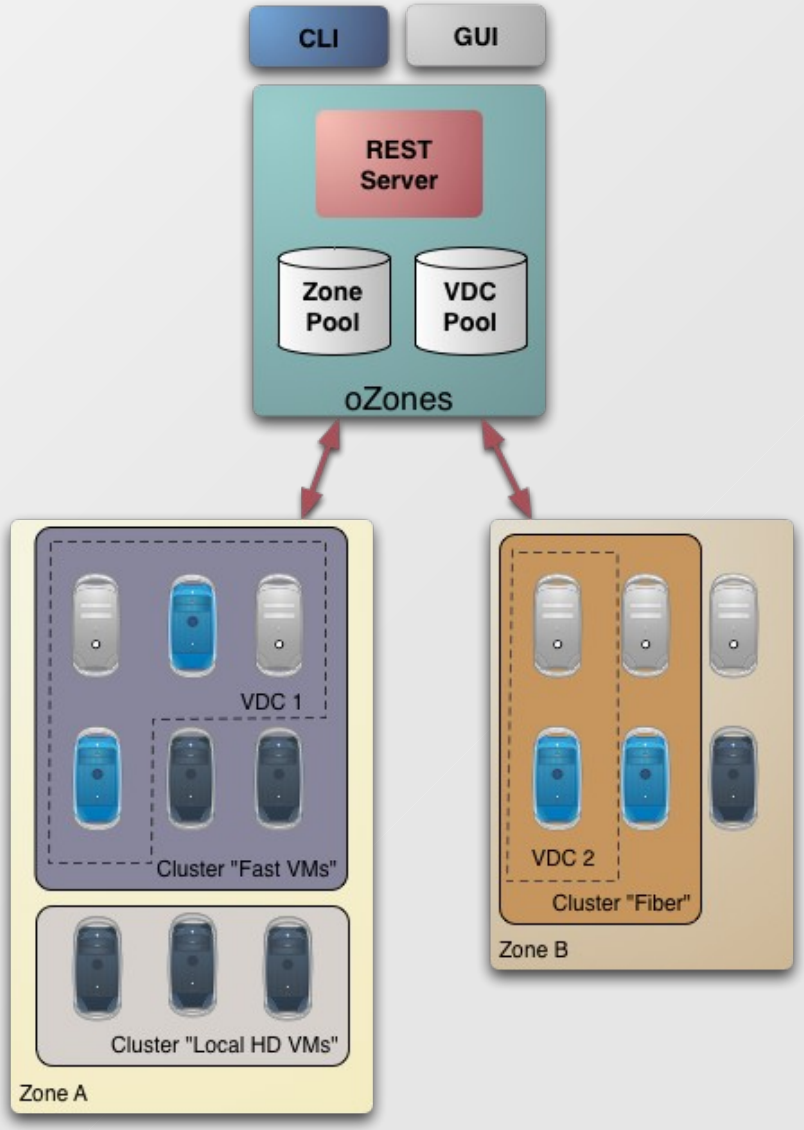


Cloud provider perspective – Virtual Data Centers

Virtual Private Cloud Computing

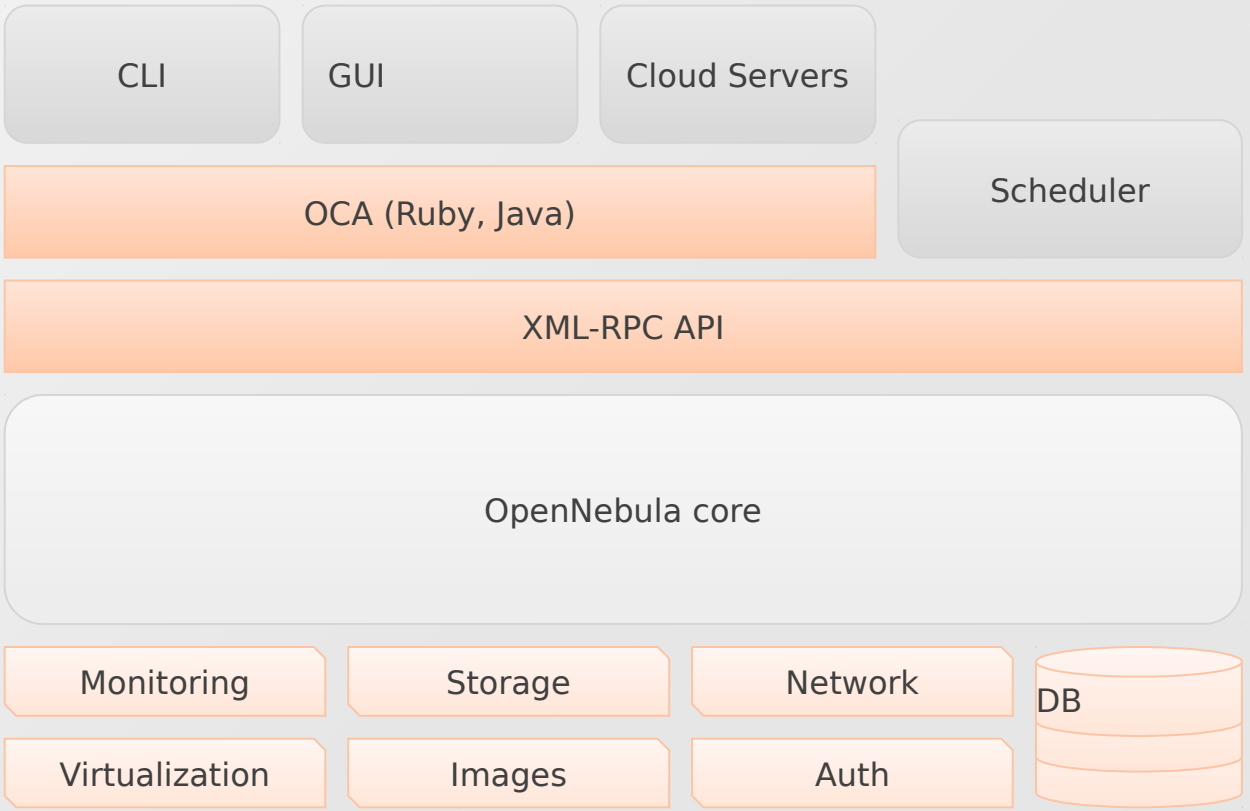
- Typical scenario in large organizations and cloud providers
- On-demand provision of fully-configurable and isolated VDC with full control and capacity to administer its users and resources





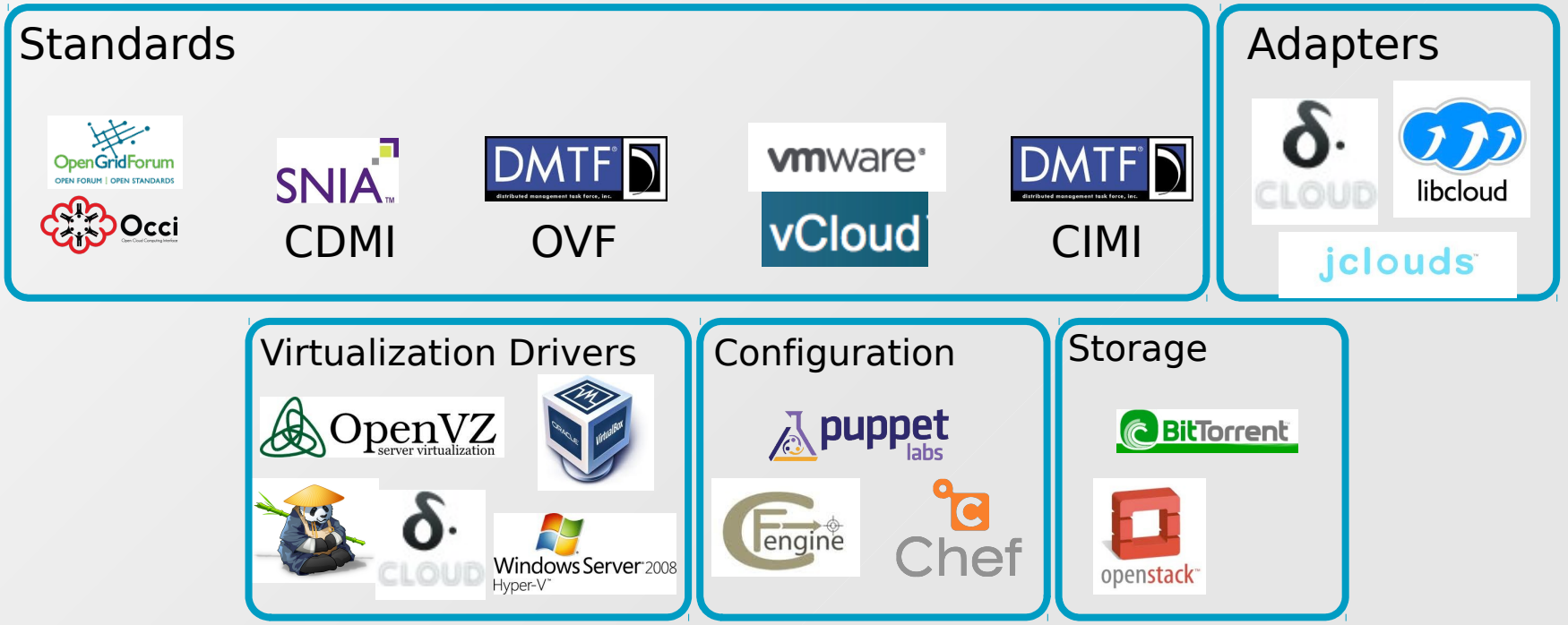
The Cloud Integrator perspective

- Modular design. All parts well documented.
- Custom applications: SelfService, Sustone plugins
- Custom network, storage, VM, auth, information... drivers
- etc...



Some more keys about OpenNebula

- Fully open-source: Apache License
- Comprehensive, extensive and fully updated documentation resources, including Screencasts and tutorials.
- Rich ecosystem



Some more keys about OpenNebula

- Stable solution: more than 4 years old
  - Fast growth: 3500+ downloads/month
  - +1000 public cloud registered users
  - Active community and support lists
  - Commercial support via C12G LABS
- Fast release cycle every 3 months
  - Current stable release: 3.4.1

Who is using OpenNebula and what for

- Hosting, cloud products

Enabling Hosting Companies and Telcos to Offer Cloud Services

Enabling Technology Companies to Offer Cloud Products

Enabling Service Companies to Offer Cloud Consulting and Integration

Who is using OpenNebula and what for

- Industry, scientific research

Industry

Supercomputing Centers

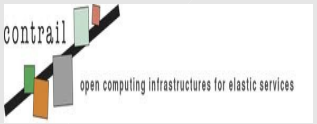

Research Centers

Who is using OpenNebula and what for

- Research projects

Distributed Computing Infrastructures

Research Projects



Some more keys about OpenNebula

- What's coming in OpenNebula 3.6?
  - OpenNebula market place with ready-to-use appliances provided by the community
  - Improved accounting, monitoring and quota systems
  - Hotplugging and dynamic CPU and Memory assignment
  - UIs improvements (VNC, translations, usage plots etc...)

OpenNebula

Thank you!

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Questions?