

**Xen Directions 2009
Berlin, Germany June 27, 2009**

The OpenNebula Virtual Infrastructure Engine

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The Vision – OpenNebula Engine

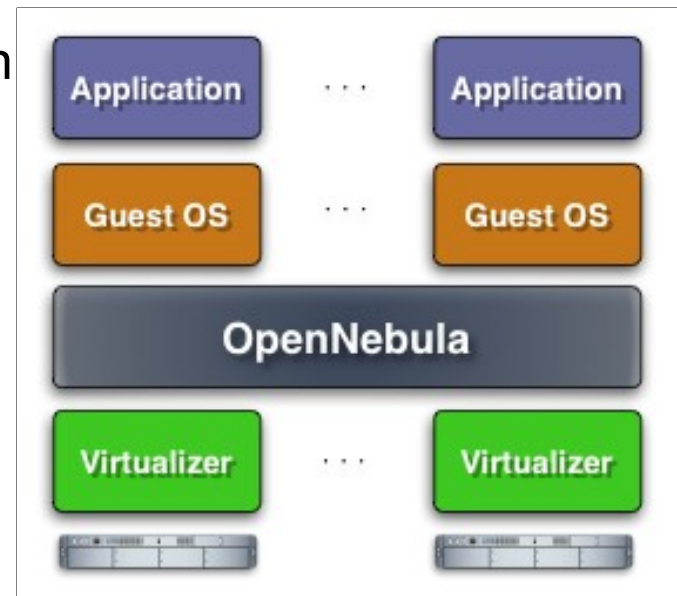
The OpenNebula VM Manager

OpenNebula is an **open source virtual infrastructure engine** that dynamically deploys and re-allocates virtual machines on a pool of physical resources

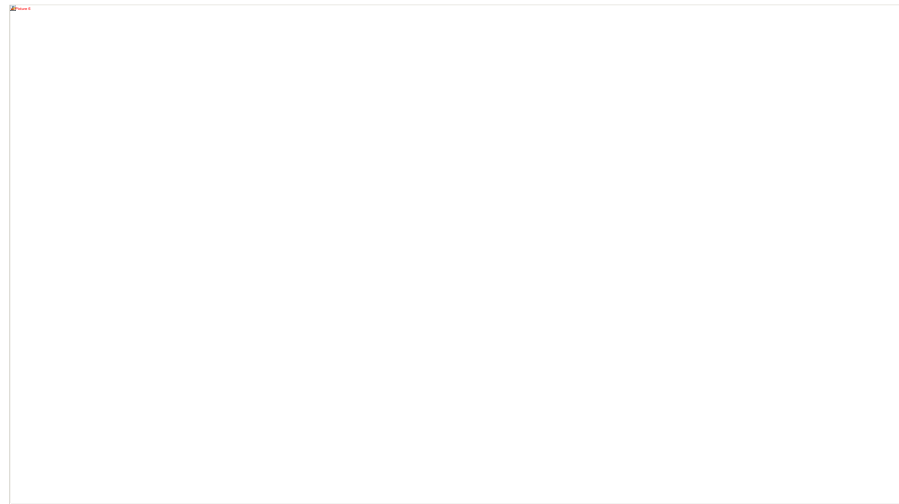
Whom it may benefit

Anyone willing to use their infrastructure in a flexible manner, enabling the deployment of new services and the adjustment of their capacity

- Datacenters
- Cloud providers



- The **service** as a first-class management entity
- Service **structure**
 - Service components run in VMs
 - Inter-connection relationship
 - Placement constraints
- The VM Manager is **service agnostic**
- However, it should provide **infrastructure context**



Benefits

The OpenNebula VM Manager

for the System Manager

- Centralized management
- Balance of workload
- Server consolidation
- Dynamic resizing of the infrastructure
- Dynamic cluster partitioning
- Support for heterogeneous workloads

for the Service Manager

- On-demand provision of virtual machines



Architecture

The OpenNebula VM Manager

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On-demand Scaling of Computing Clusters

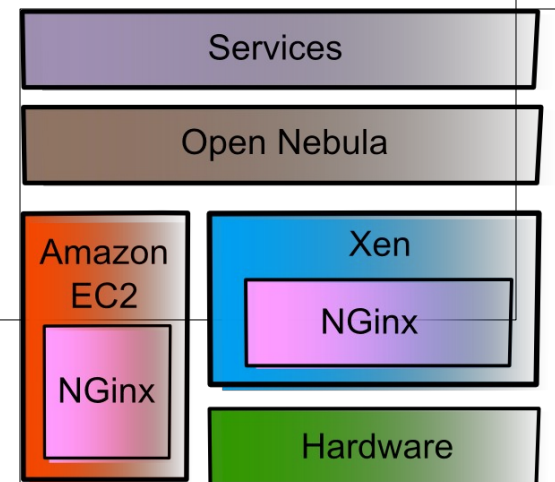
- OpenNebula allows a **physical cluster** to dynamically execute **multiple virtual clusters**



Web Server

- A Web Server can be provisioned with additional nodes to meet fluctuating or peak demands

- **Nginx** as a load balancer
- **Nginx** as a web sever



Ecosystem

The OpenNebula VM Manager

Schedulers

- **Haizea:** open-source VM-based resource manager:
 - allows Advance Reservation
 - queuing of best-effort requests
 - works as a drop-in replacement for OpenNebula scheduler



Interfaces

- **Libvirt:** provides an abstraction of a whole cluster of resources as one host, hiding specific hypervisor details.
- **Nimbus:** can be used as a WSRF or EC2 front-end.

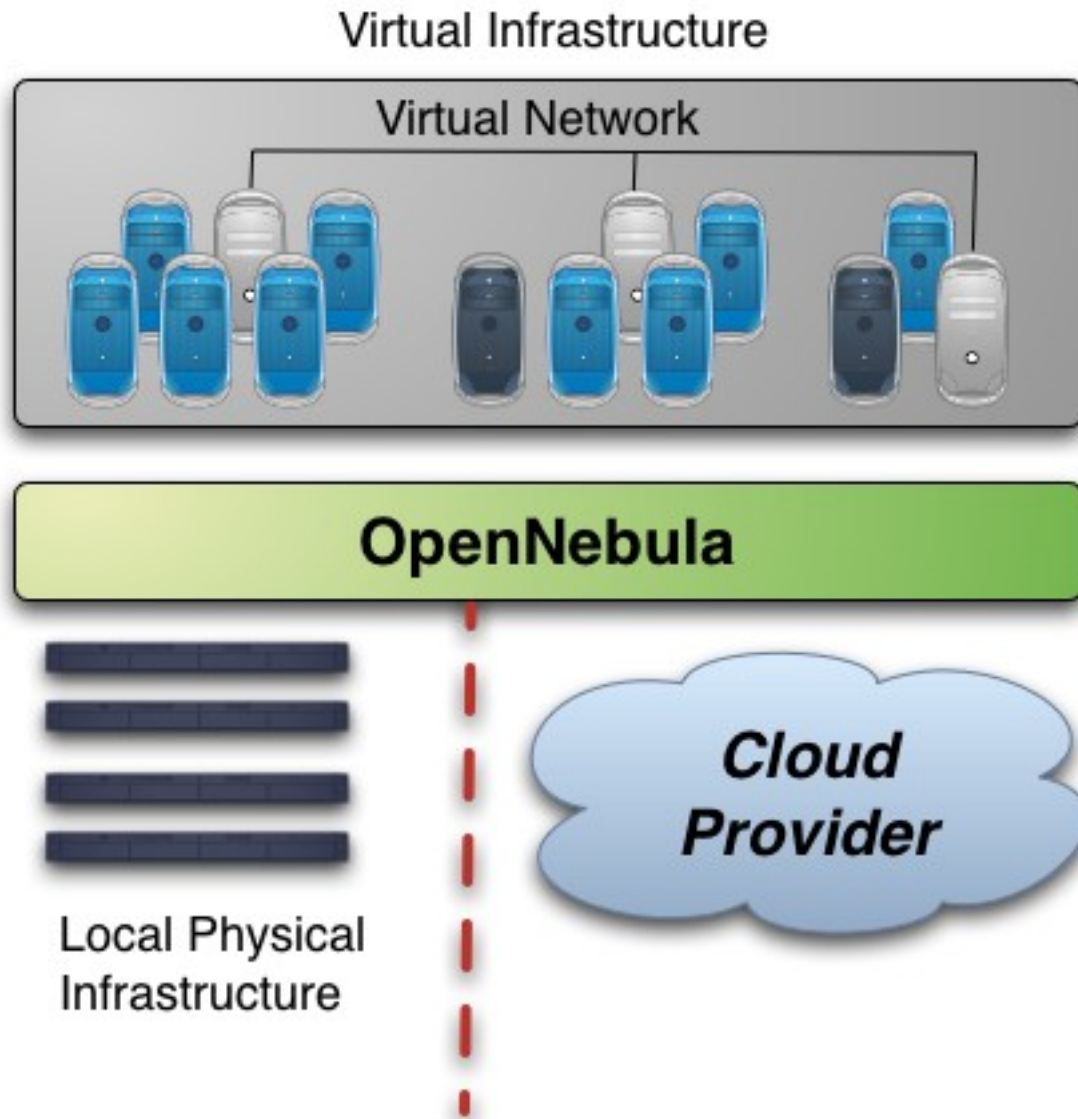
Plug-Ins

- **ElasticHosts:** enables the dynamically increase capacity of your virtualized infrastructure to meet fluctuating peak demands using a cloud provider.

Scaling SGE cluster with OpenNebula and EC2

The OpenNebula VM Manager

Infrastructure Perspective





Scaling SGE cluster with OpenNebula and EC2

The OpenNebula VM Manager

Service Perspective

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THANK YOU FOR YOUR ATTENTION!!!
More info, downloads, mailing lists at
www.OpenNebula.org

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EU grant agreement 215605



www.reservoir-fp7.eu/

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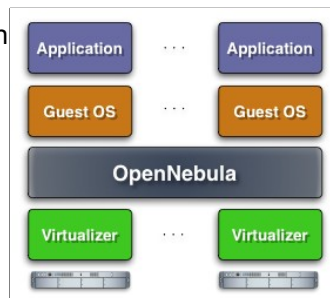
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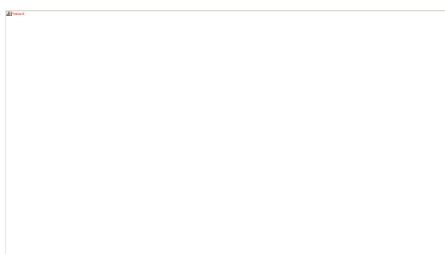
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- Datacenters for flexibility providing services
- Cloud providers willing to offer their static infrastructure

Virtual Machine Model

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