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The OpenNebula Virtual Infrastructure Engine

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The Vision – OpenNebula Engine

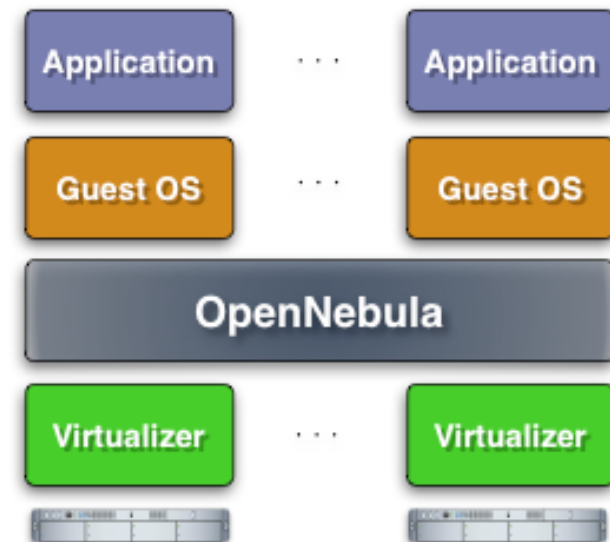
The OpenNebula VM Manager

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

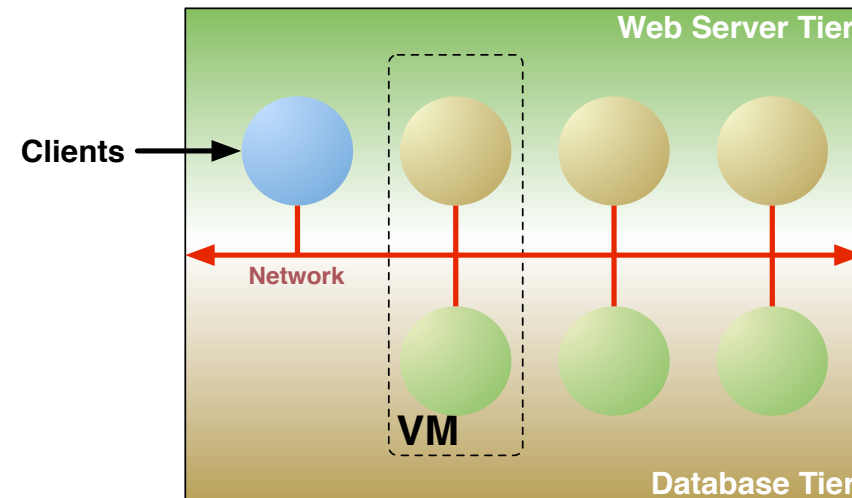
- Datacenters
- Cloud providers



Virtual Machine Model

The OpenNebula VM Manager

- 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**

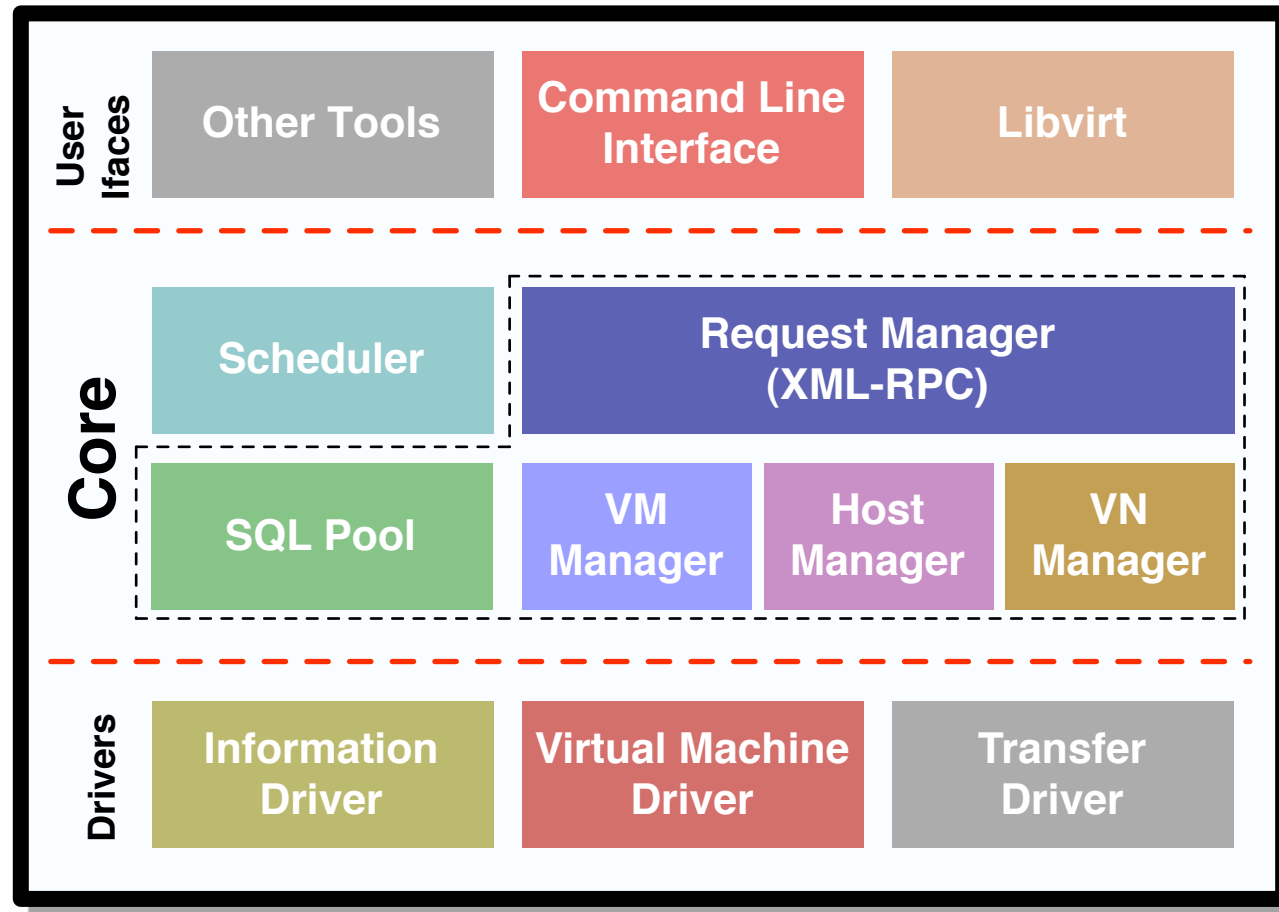
- On-demand provision of virtual machines



Architecture

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Use Cases

The OpenNebula VM Manager

On-demand Scaling of Computing Clusters

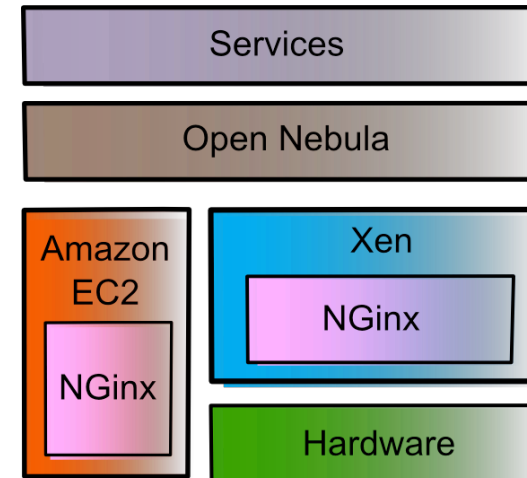
- OpenNebula allows a **physical** cluster to dynamically execute **multiple virtual** clusters



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.

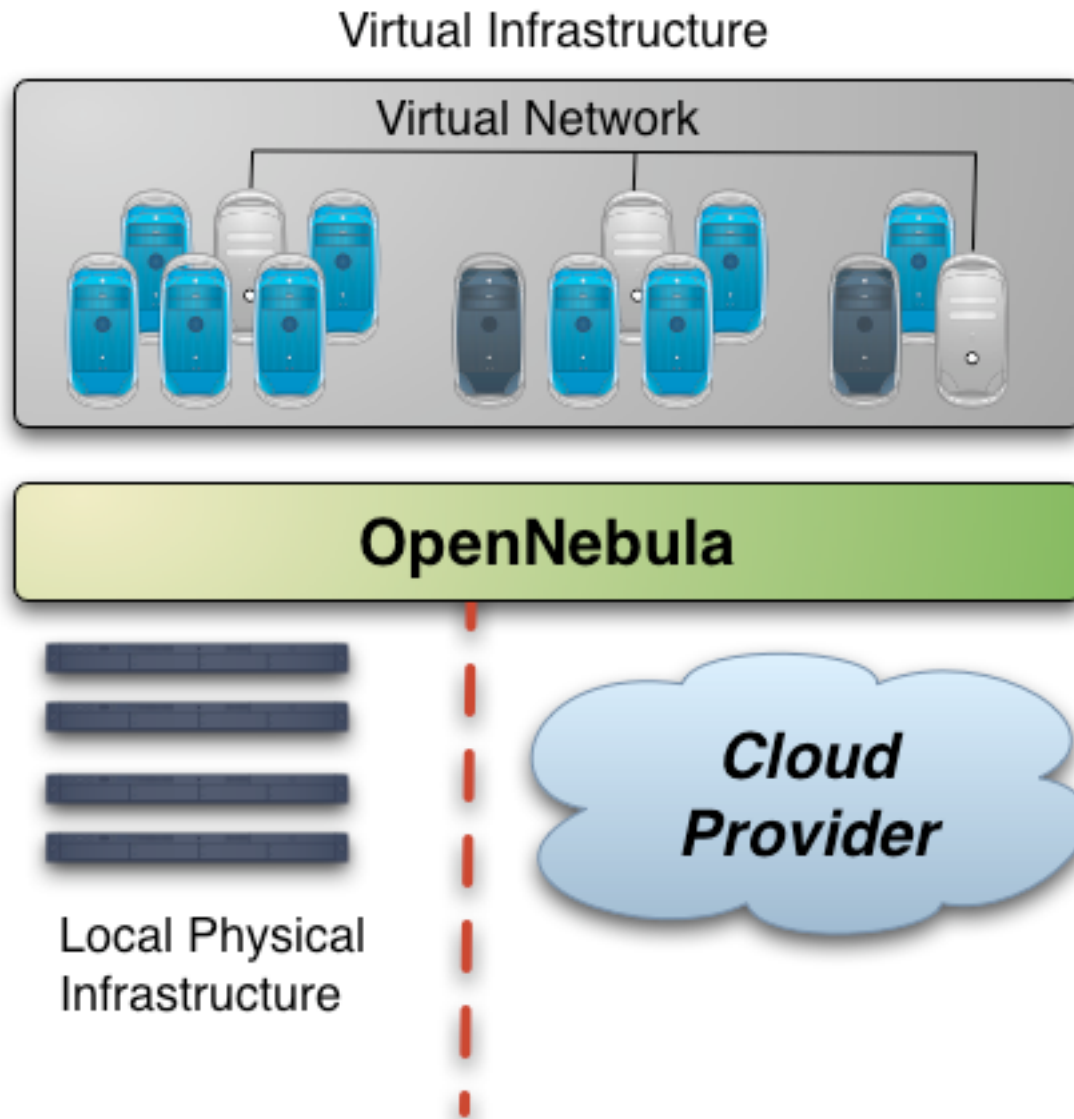
Plug-Ins

- **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

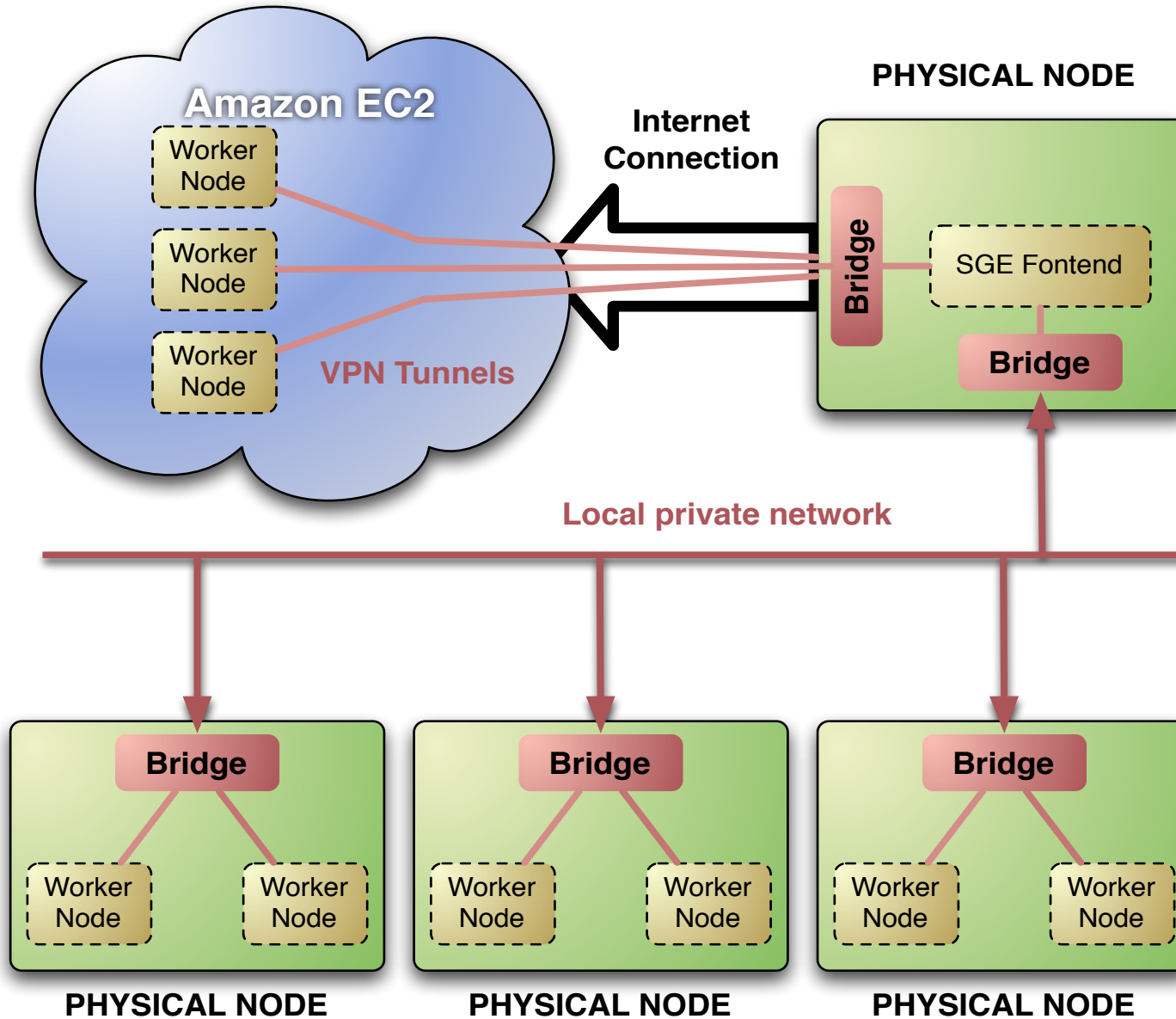
Infrastructure Perspective



Scaling SGE cluster with OpenNebula and EC2

The OpenNebula VM Manager

Service Perspective





The OpenNebula VM Manager

THANK YOU FOR YOUR ATTENTION!!!

More info, downloads, mailing lists at
www.OpenNebula.org

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www.reservoir-fp7.eu/

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