

# OPENNEBULA 1.4 FEATURES

## MAY 2010 - REV20100519

### A. Key Features and Benefits for Cloud Management

Capabilities fro Cloud Computing Private Cloud Computing	KVM	XEN	VMware
<b>User Management</b>			
- Authentication framework based on passwords	x	x	x
- Multiple user support and cloud administrator roles	x	x	x
- Security enforcement through the definition of user ownership on virtualized resources	x	x	x
- Functionality for user management: create, delete and list	x	x	x
<b>Storage Management</b>			
- Multiple hardware support: FibreChannel, iSCSI, NAS shared storage, local SCSI/SAS/SATA storage...	x	x	x
- Multiple storage backend: Virtual Machine images can be stored and transferred using SSH on a non shared filesystem, or using a variety of shared filesystems (NFS, LVM with CoW, VMFS, etc)	x	x	x (only shared storage)
<b>Virtual Network Management</b>			
- Functionality for virtual network management to interconnect your virtual machines: create, delete, monitor and list	x	x	x
- Create ranged or fixed networks	x	x	x
- Network isolation at layer 2	x	x	
<b>Virtual Machine Management</b>			
- Functionality for virtual machine management: submit, deploy, migrate, livemigrate, stop, save, resume, cancel, shutdown, restart, delete, monitor and list	x (livemigrate only with shared storage)	x (livemigrate only with shared storage)	x (livemigrate needs VMotion)
- The same physical box can be accessed through different hypervisors, and different hypervisors can coexist in the same infrastructure	x	x	x
- Support for automatic configuration of virtual machines	x	x	x
- Administration scripts can be triggered upon VM state change	x	x	
<b>User Interfaces</b>			
- Unix-like command line interface to manage users, virtual machines, virtual networks, physical hosts and storage	x	x	x
- Libvirt interface can be plugged to manage the distributed infrastructure	x	x	x
<b>Service Management</b>			
- Deploy multi-tier services consisting of groups of inter-connected VMs, and their auto-configuration at boot time	x	x	x
- Contextualize each virtual machine to feed information related to the service it belongs to (IP of the front-end, public ssh keys, software licenses, certificates,...)	x	x	x
<b>Scheduling</b>			

- Powerful and flexible Requirement/Rank matchmaker scheduler	x	x	x
- Define workload and resource-aware allocation policies such as packing, striping, load-aware, affinity-aware...	x	x	x
<b>Infrastructure Management</b>			
- Management of physical hosts: create, delete, enable, disable, monitor and list	x	x	x
- System features a small footprint, its installation fits in less than 700Kb.	x	x	x

Hybrid Cloud Computing			
<b>Cloudbursting</b>			
- Outsource virtual machine to a public cloud using pre-uploaded images configured with your particular service	x	x	x
- Support for Amazon EC2	x	x	x
- Support for ElasticHosts	x	x	x
- Simultaneous access to different clouds	x	x	x
<b>Federation</b>			
- Federate different cloud instances to build a hierarchy of independent virtualization clusters, enabling higher levels of scalability	x	x	x

Public Cloud Computing			
<b>Cloud Interfaces</b>			
- Turn your local infrastructure into a public cloud by offering REST interfaces to your users	x	x	x
- Implementation of OGF OCCl, the emerging cloud API standard	x	x	x
- Implementation of Amazon EC2, the de facto cloud API standard	x	x	x
- Support for simultaneously exposing multiple cloud APIs	x	x	x
- Client tools available to access your public cloud	x	x	x
- Secure your public cloud by exposing an https interface	x	x	x

**B. Key Features and Benefits for Integration**

Capabilities for Integration
<b>Infrastructure Abstraction</b>
- An abstraction layer independent from underlying services for virtualization, networking and storage
- Modular approach to fit into any existing datacenter, and to enable its integration with any product and service in the data center
<b>Adaptability and Customization</b>
- Enable the deployment of any cloud architecture: private, public, hybrid and federated
- Customizable plug-ins to access virtualization services
- Customizable plug-ins to access storage services
- Customizable plug-ins to access information services
- Customizable plug-ins to access remote cloud services for hybrid cloud computing
- New plug-ins can be easily written in any language
- Configuration and tuning parameters to adjust behavior of the cloud management instance to the requirements of the environment and use cases
- Hook mechanism to trigger administration scripts upon VM state change
<b>Interoperability and Standards</b>
- Open standard-based architecture to avoid vendor lock-in and to enable interoperability
- Implementation of standards
<b>Openness</b>
- Open-source technology distributed under Apache license that is matured through a vibrant community.
- Open internal and external interfaces
<b>Programming Interfaces</b>
- Native cloud API in Ruby to create new cloud interfaces
- XMLRPC API to access the core functionality

**C. Key Features and Benefits for Production**

Capabilities for Production
<b>Security</b>
- Authentication framework based on passwords
- External and internal communications through SSL
- Isolation of virtualized resources
- Isolated networks
<b>Fault Tolerance</b>
- Persistent database backend to store hosts, networks and virtual machines information
<b>Scalability</b>
- Tested on large scale infrastructures consisting of thousands of cores and VMs
<b>Performance</b>
- Very efficient core developed in C++ language