#MorfeoFussion
Madrid on Rails
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OpenNebula
Leading Innovation in Cloud Computing Management

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Acknowledgments

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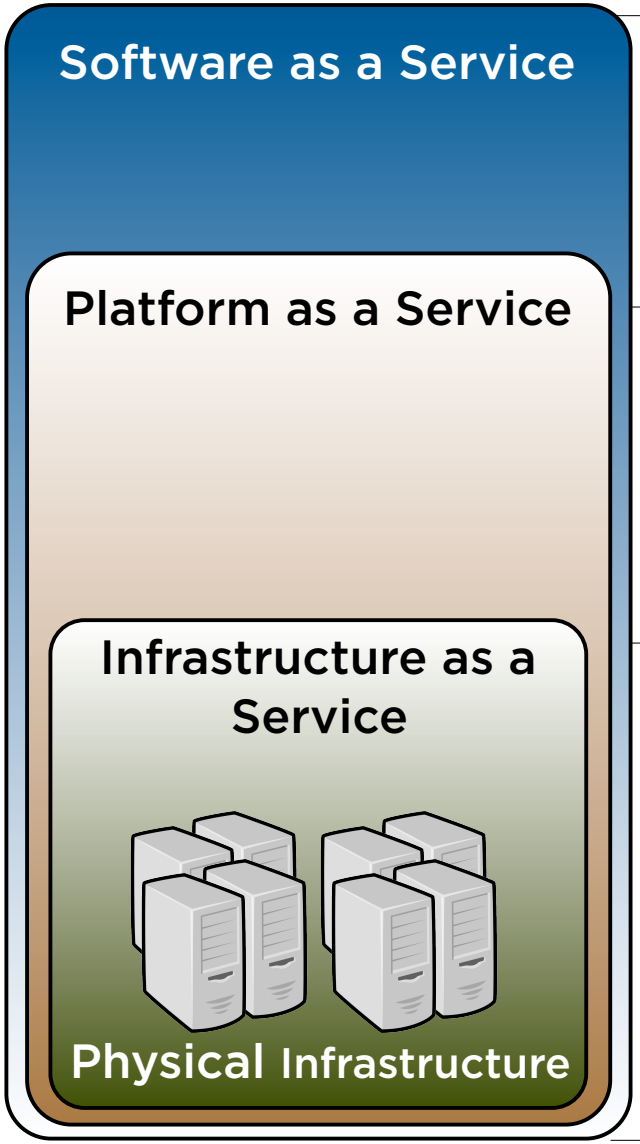
OpenNebula – Leading Innovation in Cloud Computing Management

OpenNebula in the Cloud Ecosystem

Open-source Toolkit to Build your IaaS Cloud



What	Who
On-demand access to any application	End-user (does not care about hw or sw)
Platform for building and delivering web applications	Developer (no managing of the underlying hw & swlayers)
Raw computer infrastructure	System Administrator (complete management of the computer infrastructure)

What Can I Do with OpenNebula?

Building Your Own IaaS Public, Private or Hybrid Cloud

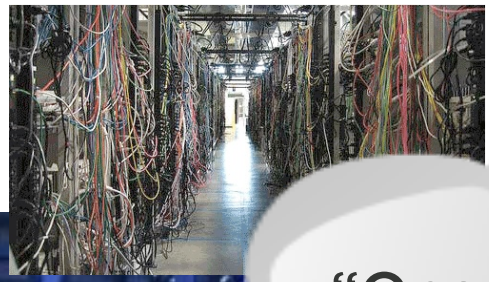
	Definition	Examples of Deployment
Private	Infrastructure is owned by a single organization and made available only to the organization	• Optimize and simplify **internal operation** • **SaaS/PaaS** support • IT consolidation within **large organizations** (Goverment Clouds, University Clouds...)
Public	Infrastructure is owned by a single organization and made available to other organizations	• **Commercial cloud providers** • **Community public clouds** by ICT service centers to enable scientific and educational projects to experiment with cloud computing
Hybrid	Infrastructure is a composition of two or more clouds	• **Cloudbursting** to address peak demands • **Cloud Federation** to share infrastructure with partners • **Cloud Aggregation** to provide a larger resource infrastructure

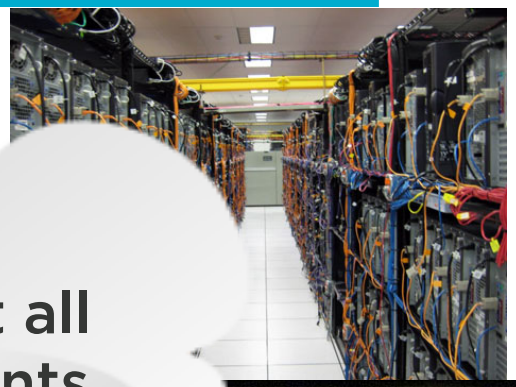
What is our Vision?

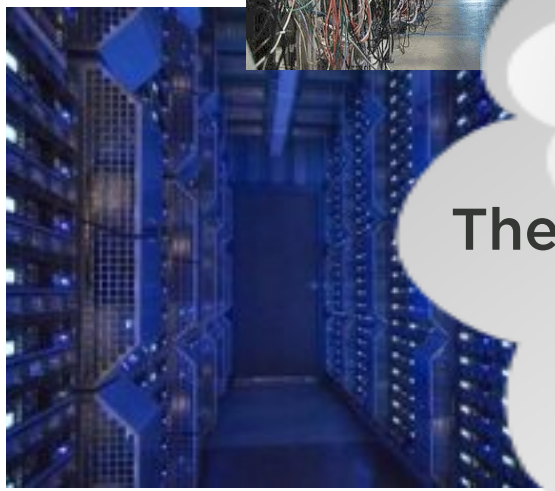
Cloud as an Evolution of the Data Center

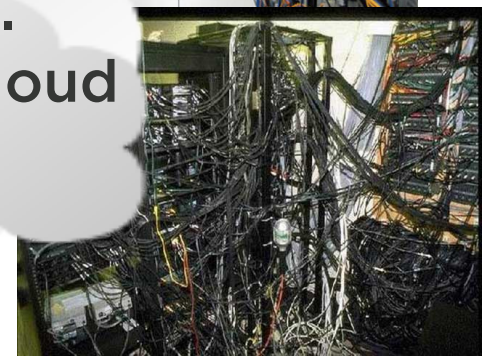
Constraints from Existing Infrastructure and Processes

Requirements from Usage and Deployment Scenarios









"One solution does not fit all requirements and constraints. There cannot be turnkey quick cloud solutions"

What is the Innovation in OpenNebula?

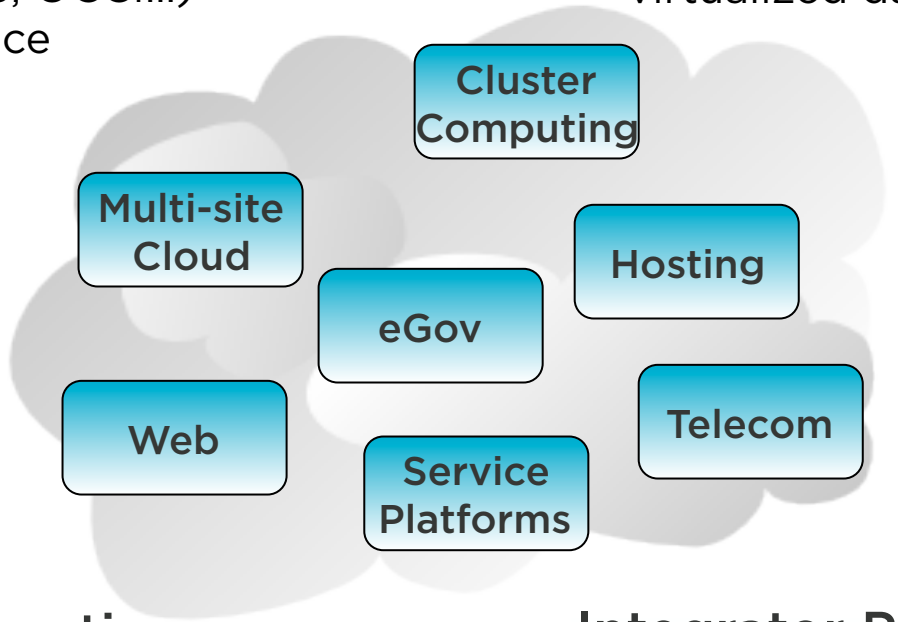
Unique Features to Address Requirements from Business Use Cases

User Perspective

- Multi-tier services with capacity/ placement constraints
- Leverage existing cloud ecosystem (AWS, OCCI...)
- Graphical interface

Management Perspective

- Massively scalable
- Stable, robust and secure
- Comprehensive management of virtualized data center



Business Perspective

- Hybrid cloud computing and federation
- Hypervisor independence

Integrator Perspective

- Fully open, standard-based, adaptable and portable
- Fit into any existing data center

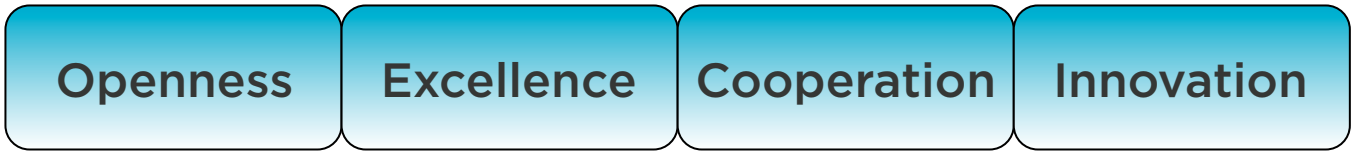
What is the OpenNebula Open-Source Project?

Building the Industry Standard Open Source Cloud Computing Tool

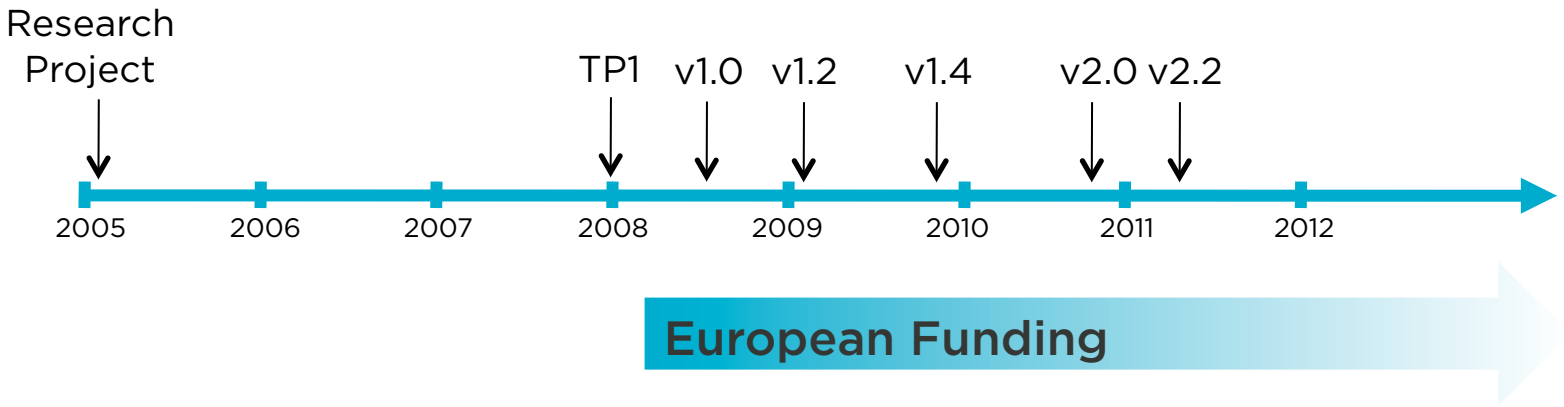
Lead Innovation in Enterprise-Class Cloud Computing Management

- Develop OpenNebula, the most-advanced, highly-scalable and adaptable software toolkit and assure its stability and quality
- Collaborate with open-source and research projects and communities, and the most demanding users
- Support the ecosystem and the community of users and developers

Core Values



From a Research Project on Scalable Management of VMs



Who Make Up our Community?

An Active and Engaged Community

Users
Provide feedback

Developers
Test the development versions
Develop bug fixes and enhancements

Reference Users
Host very large scale deployments

Ecosystem Contributors
Provide tools and extensions

OpenNebula.org

Standardization Groups
Provide open specifications

Research Projects
Collaborate in innovation

Sponsors
Allocate or found resources

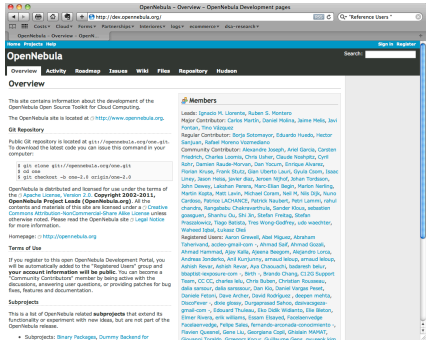
Open-source Efforts
Integration to create complete solutions

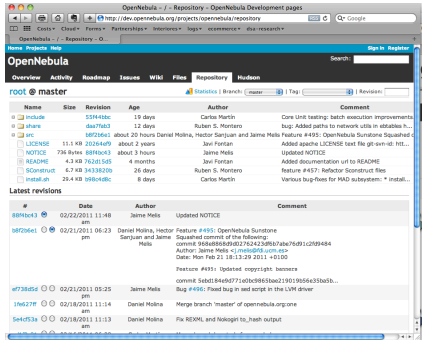
How Do We Support our Community?

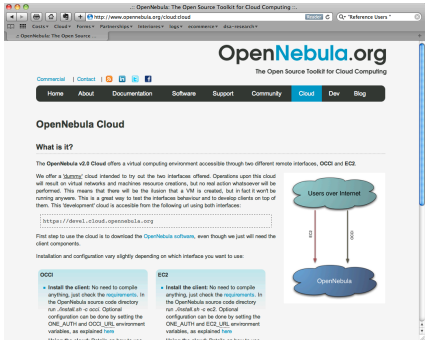
OpenNebula.org

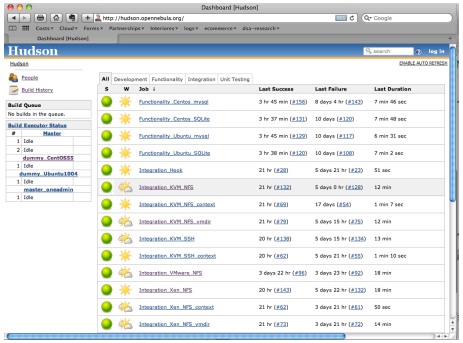
Our Instruments to Help you to Help us

Development

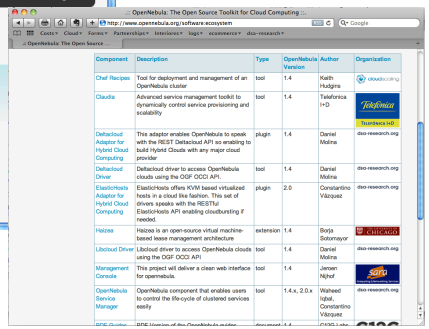




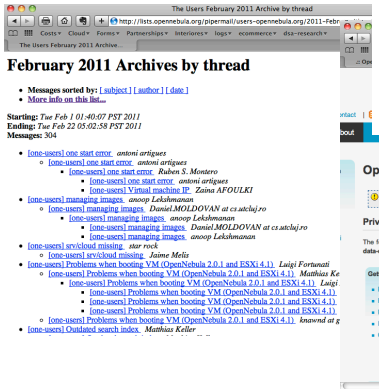




Ecosystem and Integrators



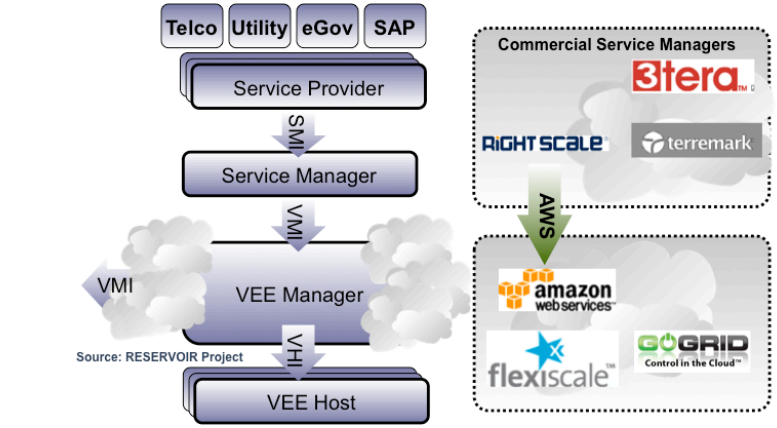
Support



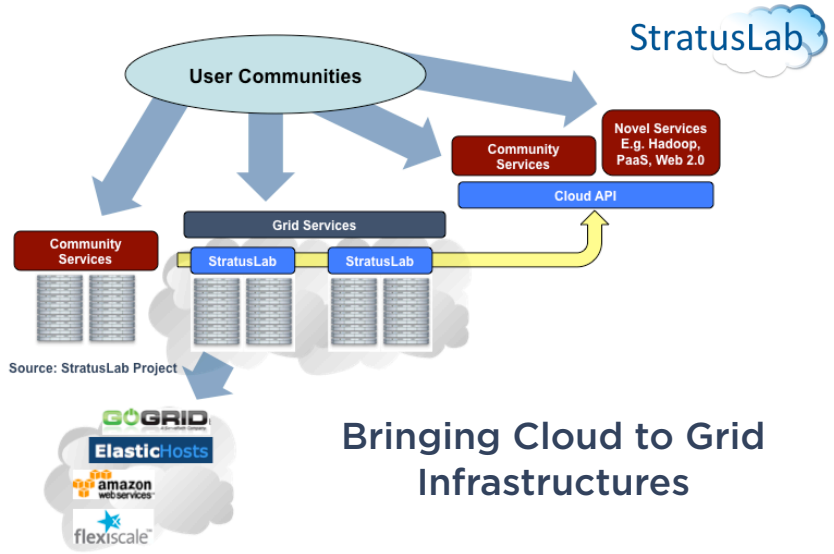
Reference Open Stack for Cloud Computing

International Projects Building an Open Cloud Ecosystem Around OpenNebula

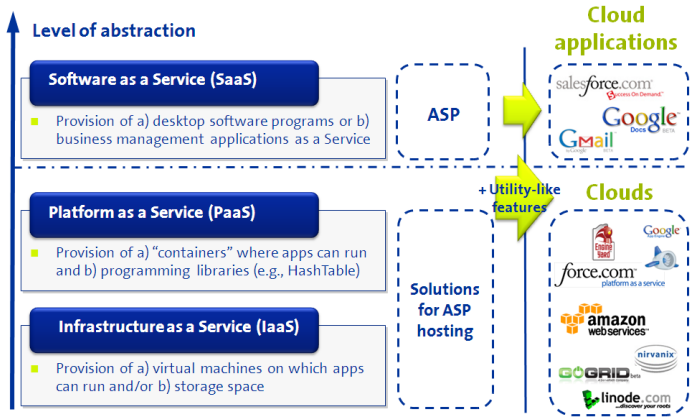
Developing an Open Stack for IaaS Clouds



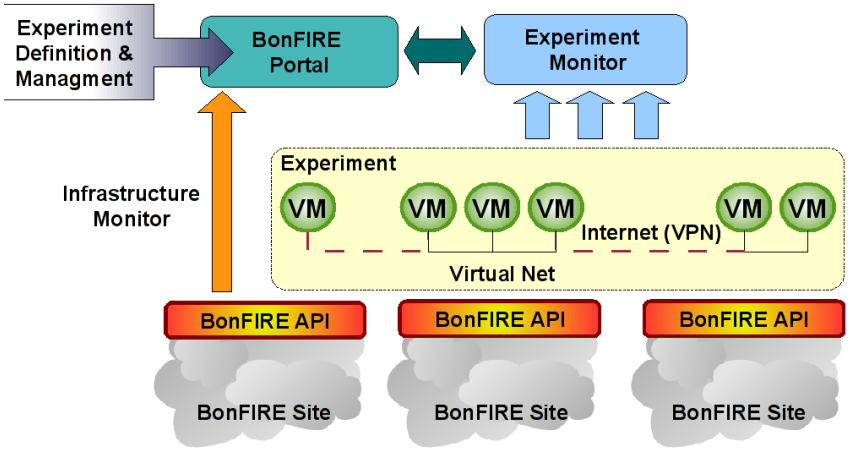
Bringing Cloud to Grid Infrastructures



Developing an Open Stack for PaaS Clouds



Building Service Multi-site Testbeds



Who Uses OpenNebula?

Organizations Building Clouds for Development, Testing and Production

Users

- 3,000 downloads/month + repository + Linux

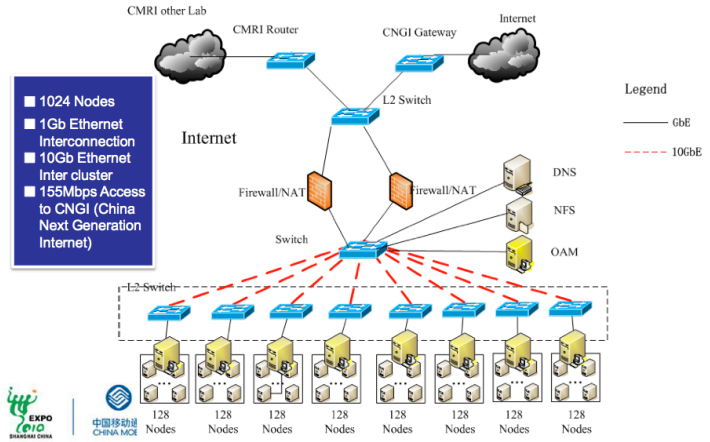
ubuntu · debian · openSUSE

esa esac european space astronomy centre · SURFNET · CERN · Orion VM .com.au · CESCA · CESGA · NIKHEF · CR S4 · Telefónica Telefónica Investigación y Desarrollo · sara Computing & Networking Services · NCHC · 中国移动通信 CHINA MOBILE

Private Cloud to Support the Batch Farm

Cloud for Internal Operations and to Explore new Models

中國移動有限公司 CHINA MOBILE LIMITED



Who Distributes and Maintains OpenNebula?

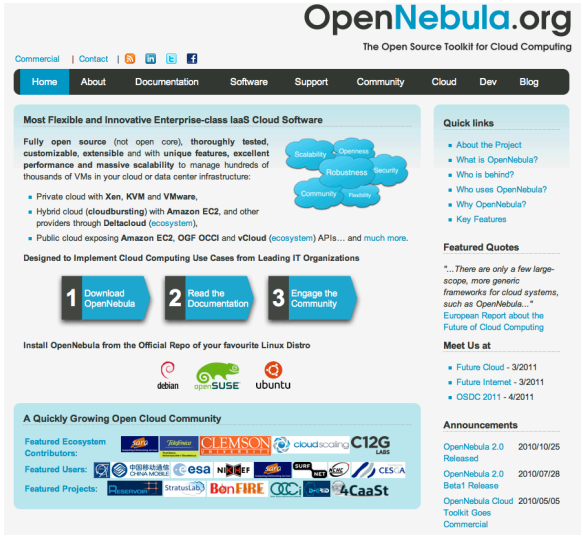
A Leading Company in Private Cloud Computing Management

The C12G Labs Private Company

- Very young company founded by **OpenNebula** developers in March 2010
- Mature technology (5 years) with first public release in March 2008
- Associated with the Scientific Park of Madrid

Activities

- Manage the **OpenNebula** open-source project
- Maintain and distribute **OpenNebulaPro**, the commercially supported distribution of OpenNebula
- Provide the professional support services and tools to integrate, build, certificate and manage production-ready cloud environments



Questions?

We Will Be Happy to Answer Any Question

What is the OpenNebula Toolkit?

IaaS Cloud Computing Tool for Managing a Data Center's Virtual Infrastructure

Comprehensive Management Tool

- Common cloud interfaces
- Powerful management CLI and GUI
- Manage images, instances and networks
- Scheduling policies
- Hypervisor independence
- Cloudbursting and federation

Production-ready

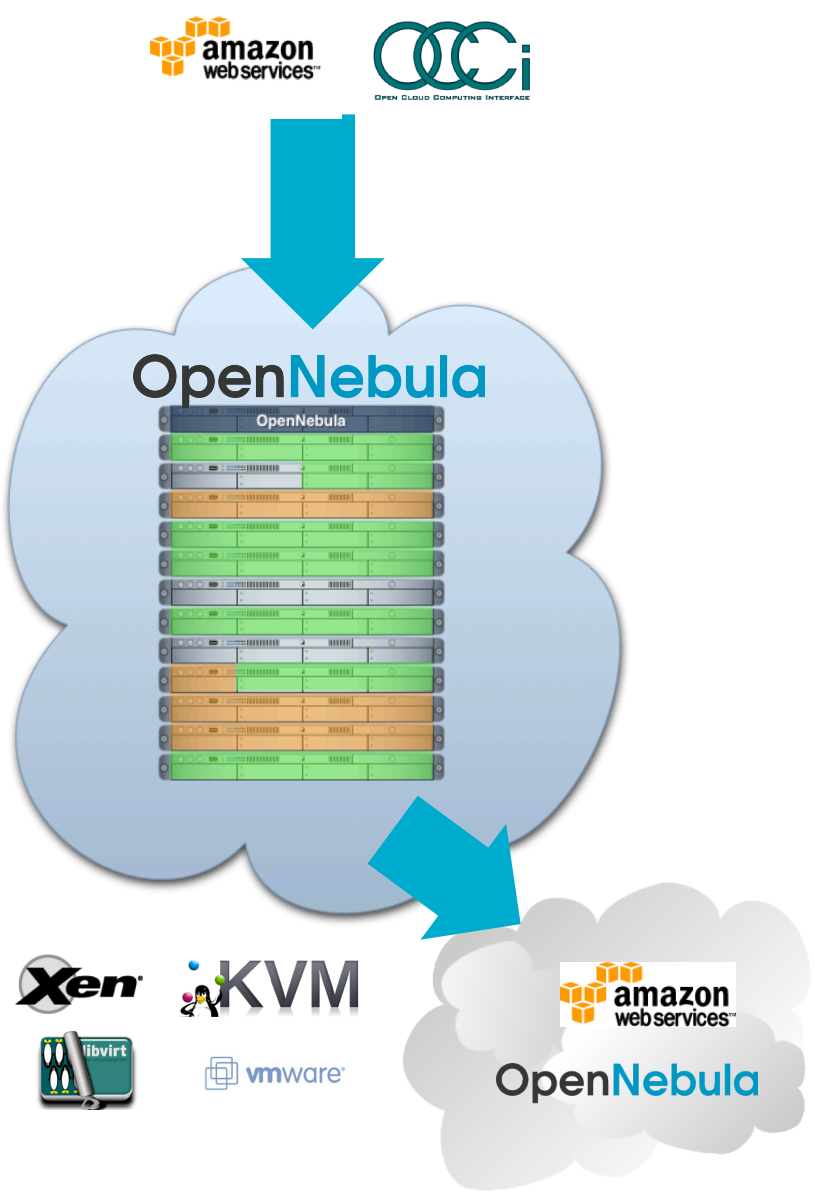
- Highly efficient and scalable
- Mature technology (5 years)
- Monitoring, accounting and security

Capabilities for integration

- APIs and Open-source
- Adaptable modular architecture

Fully Open-source

- 3,000 downloads per month
- Active engaged community/ecosystem



Why OpenNebula?

Differentiating Factors in Comparison with Competing Technologies

Capabilities for Cloud Management
Most advanced open-source toolkit offering unique features to administer the complexity of large-scale distributed infrastructures

Capabilities for Integration
Open, flexible and extensible architecture, interfaces and components that fit into any existing data center

Capabilities for Production Environments
Scalability and performance tested on very large-scale infrastructures consisting of thousands of cores, with the security and fault tolerance levels required in production

Leverage the Vibrant Cloud Ecosystems
Leverage the ecosystems being built around OpenNebula and the most common cloud interfaces, Amazon AWS, OGC OCCI and VMware vCloud

Fully Open Source Cloud Software
OpenNebula is NOT a feature or performance limited edition of an Enterprise version. OpenNebula is truly open, and not open core.

Interoperability Points in a Cloud Architecture