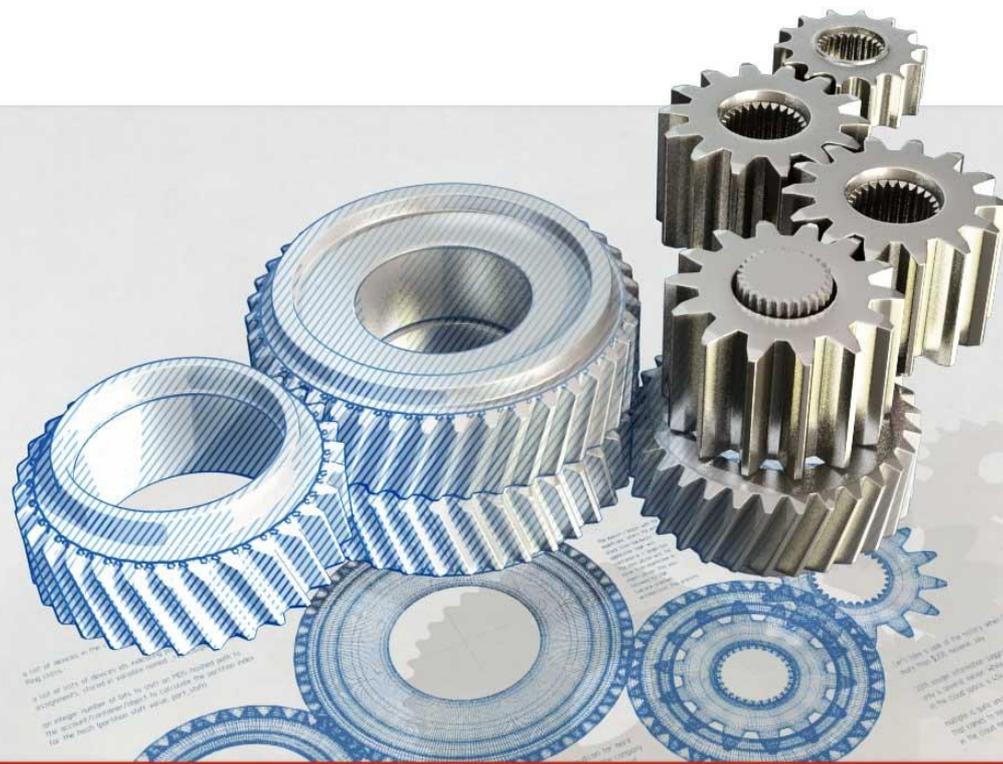




# OpenStack

Il buono il brutto  
e il cattivo



Fabrizio Soppelsa, Linux Day 2014  
LUGANEGA

# OpenStack

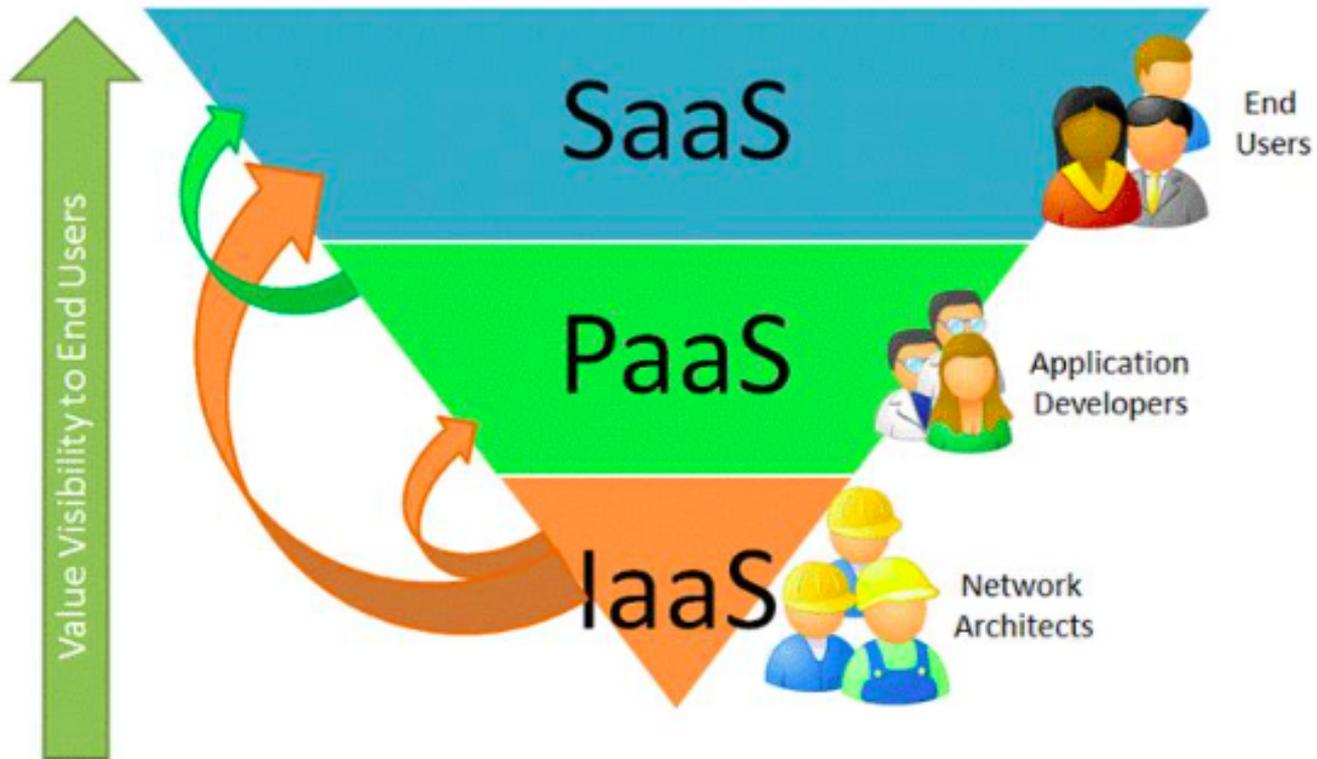
As described by the OpenStack Foundation:

**“Aims to produce the ubiquitous Open Source Cloud Computing platform that will meet the needs of public and private clouds regardless of size, by being simple to implement and massively scalable.”**

# Agenda (praise me!)

- Cloud computing
- OpenStack
  - Definizione
  - Panoramica
  - Storia
  - Progetti
  - Architettura
  - Fuel :-)
  - Il buono, il brutto e il cattivo

# IaaS



# OpenStack

“OpenStack is a cloud computing project aimed at providing an infrastructure as a service (IaaS).”



# About Mirantis

## *#1 pure play OpenStack® company*

Mirantis is the number one pure-play OpenStack Company. We deliver all the technology, integration, training and support required for companies to succeed with production-grade open source cloud. More customers rely on Mirantis than any other company to scale out OpenStack without the compromises of vendor lock-in. Our bench of 400+ open source infrastructure experts helped make us one of the top 5 contributors to OpenStack's upstream codebase.

Mirantis is headquartered in Mountain View, California and operates across five additional international locations in Russia, Ukraine and Poland. The company is venture funded, including investments by Intel Capital, West Summit Capital, Ericsson and SAP Ventures.

OpenStack?  
Ask Mirantis.

Contact us today

# OpenStack - cosa fa

- **Software per i data center**
- Concetto di cloud computing
- VM
- Reti
- Storage per VM
- Storage per file (Amazon S3)
- Multi-tenancy
- Quote per progetti
- Utenti, gruppi, ruoli e domini
- Molto altro!



## Log In

User Name

Password

Sign In

Project

Admin

System Panel

Overview

Hypervisors

Host Aggregates

Instances

Volumes

Flavors

Images

Networks

Routers

System Info

Identity Panel

# Overview

## Usage Summary

Select a period of time to query its usage:

From: 2014-10-01

To: 2014-10-17

Submit

The date should be in YYYY-mm-dd format.

**Active Instances: 2 Active RAM: 1GB This Period's VCPU-Hours: 17.75 This Period's GB-Hours: 17.75**

## Usage

[Download CSV Summary](#)

Project Name	VCPUs	Disk	RAM	VCPU Hours	Disk GB Hours
admin	2	2	1GB	17.75	17.75

Displaying 1 item

## Project

## Compute

Overview

Instances

Volumes

Images

Access &amp; Security

Network

Object Store

Orchestration

Admin

# Instances

## Instances

Filter



Filter

+ Launch Instance

Soft Reboot Instances

Terminate Instances

<input type="checkbox"/>	Instance Name	Image Name	IP Address	Size	Key Pair	Status	Availability Zone	Task	Power State	Uptime	Actions
<input type="checkbox"/>	<a href="#">Cirros-b8de4e4b-4b02-407a-8c91-faff7ecff0e5</a>		<b>net04</b> 192.168.111.3 <b>net04_ext</b> 172.16.0.141	m1.tiny   512MB RAM   1 VCPU   1.0GB Disk	F	Shutoff	nova	None	Shutdown	4 days	Start Instance More
<input type="checkbox"/>	<a href="#">Cirros-2f0a3ea8-93d1-47c7-bdb8-7c79d19ff047</a>		<b>net04</b> 192.168.111.4 <b>net04_ext</b> 172.16.0.142	m1.tiny   512MB RAM   1 VCPU   1.0GB Disk	F	Shutoff	nova	None	Shutdown	4 days	Start Instance More

Displaying 2 items

Project

Compute

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Object Store

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Admin

# Instance Details: Cirros-b8de4e4b-4b02-407a-8c91-faff7ecff0e5

Overview

Log

Console

## Instance Console

If console is not responding to keyboard input: click the grey status bar below. [Click here to show only console](#)  
To exit the fullscreen mode, click the browser's back button.

Connected (unencrypted) to: QEMU (instance-00000002)

Send CtrlAltDel

```
[ 1.997720] TCP cubic registered
[ 1.999716] NET: Registered protocol family 10
[ 2.015649] NET: Registered protocol family 17
[ 2.016239] Registering the dns_resolver key type
[ 2.040520] Freeing initrd memory: 3432k freed
[ 2.048251] registered taskstats version 1
[ 2.065760] Refined TSC clocksource calibration: 2000.026 MHz.
[ 2.066206] Switching to clocksource tsc
[ 2.230950] Magic number: 2:488:877
[ 2.232238] rtc_cmos 00:01: setting system clock to 2014-10-17 08:53:32 UTC (
1413536012)
[ 2.232669] powernow-k8: Processor cpuid 663 not supported
[ 2.234499] BIOS EDD facility v0.16 2004-Jun-25, 0 devices found
[ 2.234753] EDD information not available.
[ 2.261841] Freeing unused kernel memory: 924k freed
[ 2.292664] Write protecting the kernel read-only data: 12288k
[ 2.363318] Freeing unused kernel memory: 1608k freed
[ 2.407726] Freeing unused kernel memory: 1188k freed
[ 2.410364] usb 1-1: new full-speed USB device number 2 using uhci_hcd
```

further output written to /dev/ttyS0

```
login as 'cirros' user. default password: 'cubswin:)' . use 'sudo' for root.
cirros-b8de4e4b-4b02-407a-8c91-faff7ecff0e5 login: _
```

## Project

## Compute

Overview

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Volumes

Images

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Orchestration

Admin

## Volumes &amp; Snapshots

Volumes

Volume Snapshots

## Volumes

Filter



Filter

+ Create Volume

Delete Volumes

<input type="checkbox"/>	Name	Description	Size	Status	Type	Attached To	Availability Zone	Actions
<input type="checkbox"/>	fa7ec784-36da-4d31-8c6c-f02e151becfb		1GB	In-Use	-	Attached to Cirros-2f0a3ea8-93d1-47c7-bdb8-7c79d19ff047 on vda	nova	<a href="#">Edit Volume</a> <a href="#">More</a>
<input type="checkbox"/>	47ad5471-242b-4e43-8190-df41ccecba58		1GB	In-Use	-	Attached to Cirros-b8de4e4b-4b02-407a-8c91-faff7ecff0e5 on vda	nova	<a href="#">Edit Volume</a> <a href="#">More</a>

Displaying 2 items

Project

Compute

Network

Network Topology

Networks

Routers

Object Store

Orchestration

Admin

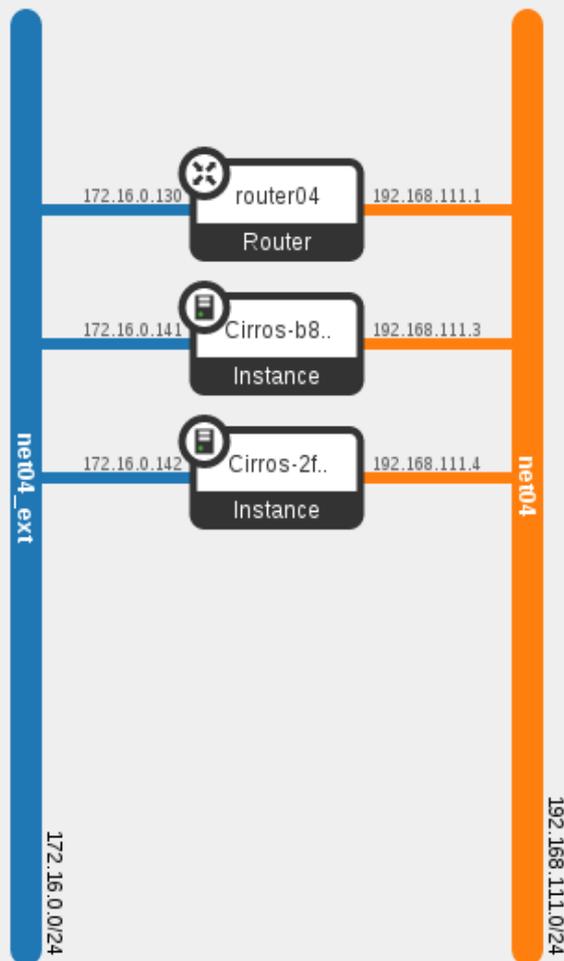
# Network Topology

Small Normal

Launch Instance

Create Network

Create Router



## Project

Compute

Network

Object Store

Containers

Orchestration

Admin

# Containers

## Containers

[+ Create Container](#)

Luganega

Object Count: 2  
Size: 1.9 MB  
Access: [Public](#)[View Details](#)[More](#)

Displaying 1 item

## Objects

Filter



Filter

[+ Create Pseudo-folder](#)

Test

pseudo-folder



Theme

1.9 MB

Displaying 2 items

# OpenStack - storia

- Luglio 2010: NASA e Rackspace
- Ottobre 2010: **POC** (Austin)
- 2011: altri POC Bexar e Cactus
- Settembre 2011: **Produzione** Diablo
- Essex
- Folsom
- Grizzly
- Havana
- Icehouse
- 16 ottobre 2014: **Juno**
- 2015: Kilo

# OpenStack - chi lo usa

- Rackspace e hosting
  - Ebay e ecommerce
  - Calcolo scientifico: CERN
  - Infrastrutture interne: Cisco, Netapp, Samsung, Red Hat, Ericsson
  - Alcuni nomi: NASA, Paypal, Ericsson, Workday, Expedia, Symantec, Netapp ecc.
  - A parte Rackspace, gli altri sono alcuni dei nostri clienti :-)
- 
- Hypervisor favorito: Libvirtd/KVM
  - Distribuzione preferita: Ubuntu
  - Networking preferito: Openvswitch
  - Storage preferito: LVM

# OpenStack - programmi inclusi

- Compute - **Nova**
- Block storage - **Cinder**
- Image service - **Glance**
- Networking: **Neutron** (Quantum)
- Object storage - **Swift**
- Identity - **Keystone**
- Telemetry - **Ceilometer**
- Data processing - **Sahara**
- Orchestration - **Heat**
- Dashboard - **Horizon**
- Database as a service - **Trove**

# OpenStack - programmi incubati e extra

- Metal - **Ironic** (Promosso da incubato a incluso in Kilo)
- Queue - **Zaqar**
- Catalogue - **Murano**
- DNS as a service - **Designate**
- Filesharing - **Manila**
- Scheduling: **Gantt**
- Metering: **Gnocchi**
- Data flow as a service - **Mistral**
- Ecc.

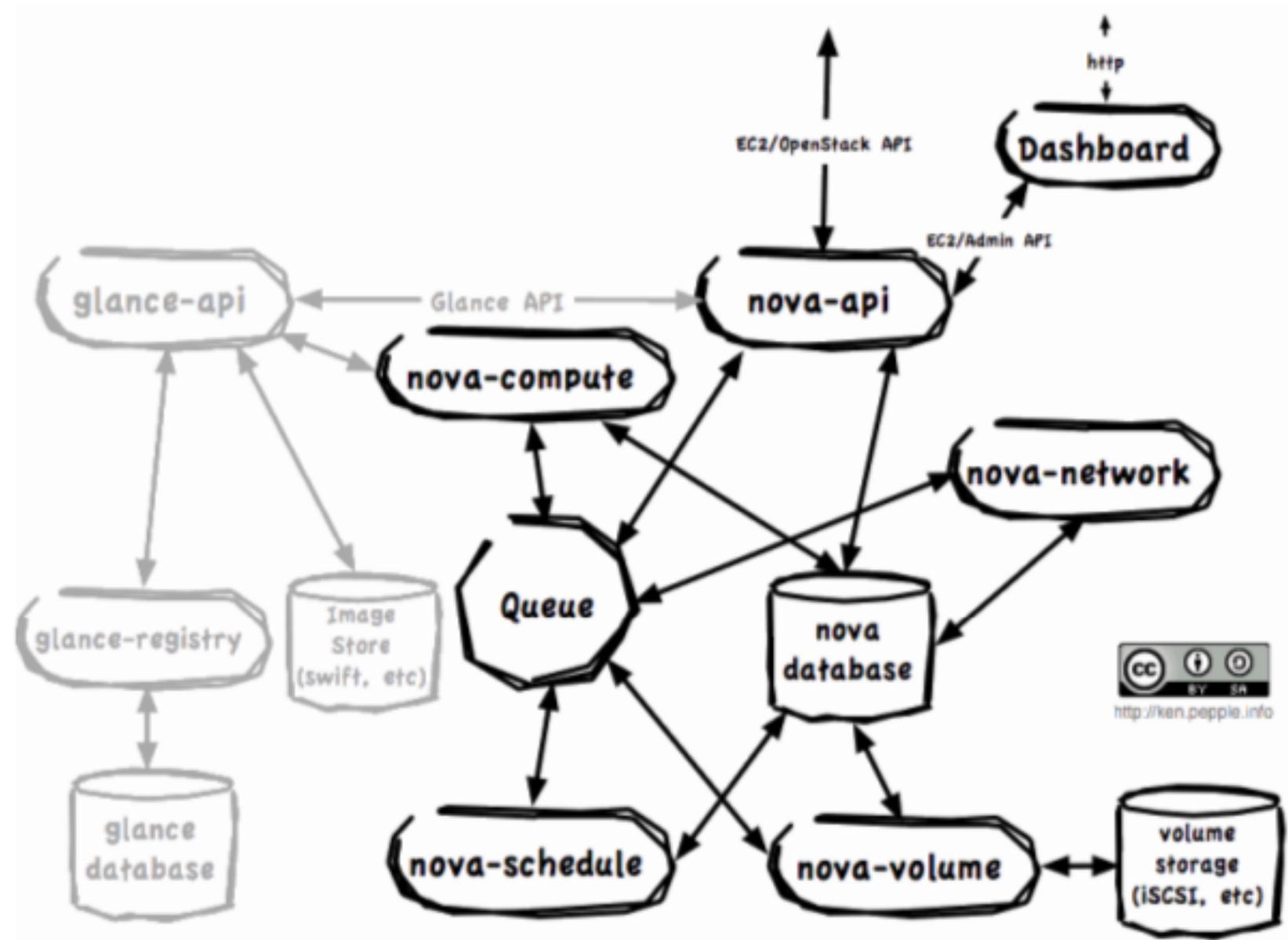
# OpenStack - ogni programma ha

- Un top-level che si incastra in OpenStack
- Project leader
- Team di sviluppo
- Team di progettazione
- API pubblica
- Database/persistence
- Una pagina su launchpad

# OpenStack - community e opensource

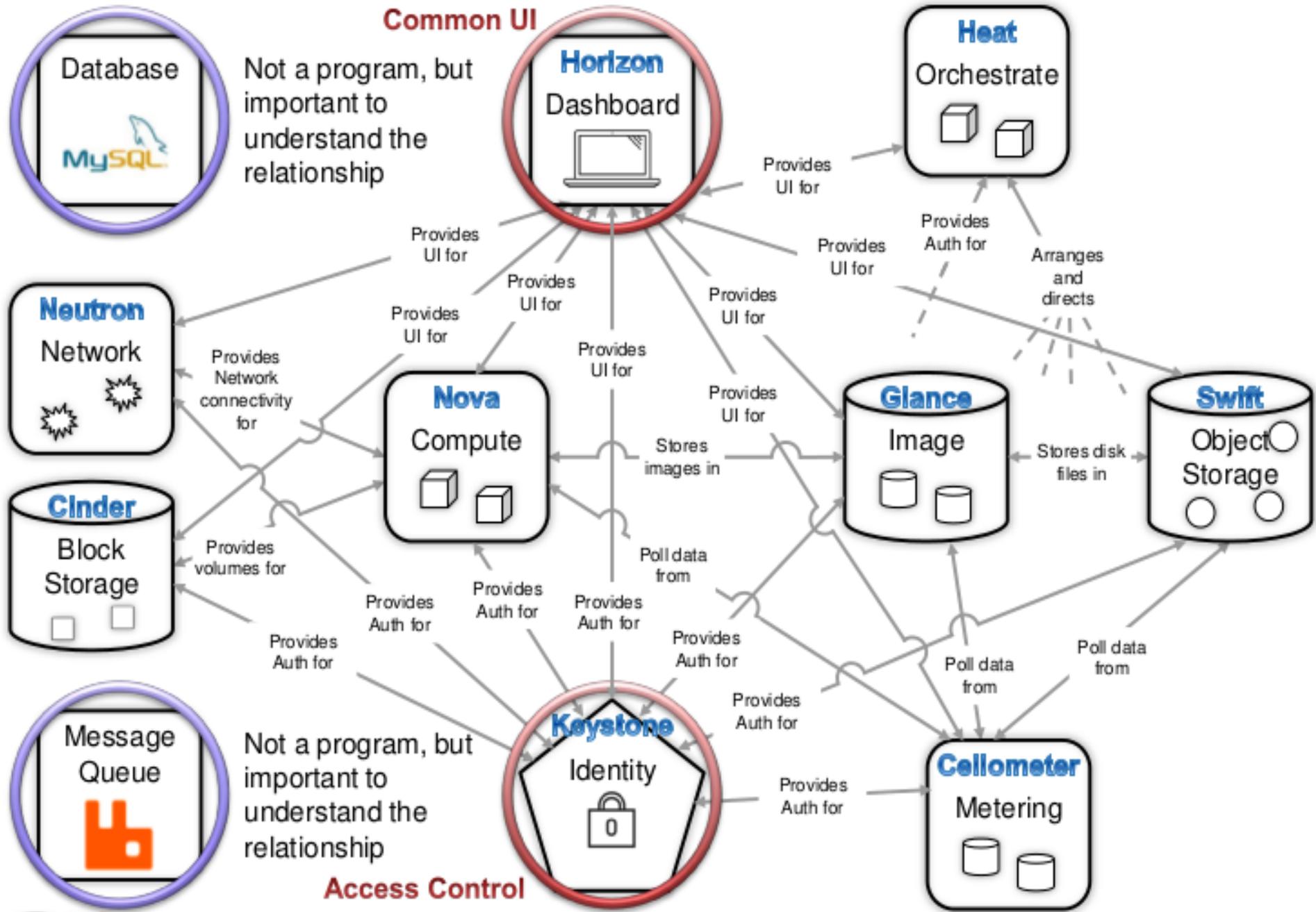
- 19.000 sviluppatori
- Da 144 paesi del mondo
- Centinaia di aziende coinvolte
- Al momento contributi arrivano in gran parte da HP, Red Hat e Mirantis
  
- Uno dei più grandi progetti open-source della storia
- Codebase in **Python**
- Come è fatto?

# OpenStack Architecture: Beginning (Cactus)





# OpenStack Programs Relationships



# OpenStack - Fuel

- OpenStack è difficile da installare
- Multinodo
- HA!
- Esistono pacchetti per le distribuzioni ma come si mette tutto insieme?
  
- Varie soluzioni
- Ma la migliore è sicuramente **Fuel** :-)



# FUEL

for OpenStack®



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Version: 5.1



Master node installation completed successfully.

If you want to register your installation and sign up for trial support, please click [here](#). Otherwise you can close this panel.

## My OpenStack Environments

### ceph

Nodes: 3  
CPU (cores): 9  
HDD: 0.3 TB  
RAM: 10.0 GB

Operational

### ceph-ha

Nodes: 5  
CPU (cores): 11  
HDD: 0.4 TB  
RAM: 14.0 GB

Operational

### Sahara

Nodes: 4  
CPU (cores): 4  
HDD: 140.0 GB  
RAM: 8.0 GB

Stopped

### 51ceph

Nodes: 3  
CPU (cores): 9  
HDD: 0.3 TB  
RAM: 10.0 GB

Operational

### ceph51

Nodes: 3  
CPU (cores): 9  
HDD: 0.3 TB  
RAM: 10.0 GB

Operational

### 51ha

Nodes: 4  
CPU (cores): 4  
HDD: 201.0 GB  
RAM: 8.0 GB

Operational



New OpenStack Environment

[Home](#) / [Environments](#) / 51ha

# 51ha (4 nodes)

OpenStack Release: Icehouse on Ubuntu 12.04.4 (201411-5.1) Deployment Mode: Multi-node with HA Status: Operational

## Success

Deployment of environment '51ha' is done. Access the OpenStack dashboard (Horizon) at <http://172.16.0.9/>

Nodes



Networks



Settings



Logs



Health Check



Actions

[Deploy Changes](#)

Group By

Roles

Filter By

Node name/mac

[Configure Disks](#)[Configure Interfaces](#)[+ Add Nodes](#) Select All

### Controller, Telemetry - MongoDB (3)

 Select All

<input type="checkbox"/>	KVM	Untitled (c7:06) CONTROLLER - MONGO		OFFLINE	CPU:1	HDD:50.0 GB	RAM:2.0 GB	
<input type="checkbox"/>	KVM	Untitled (d7:b1) CONTROLLER - MONGO		OFFLINE	CPU:1	HDD:50.0 GB	RAM:2.0 GB	
<input type="checkbox"/>	KVM	Untitled (87:f3) CONTROLLER - MONGO		OFFLINE	CPU:1	HDD:50.0 GB	RAM:2.0 GB	

### Compute, Storage - Cinder LVM (1)

 Select All

<input type="checkbox"/>	KVM	Untitled (c9:15) COMPUTE - CINDER		OFFLINE	CPU:1	HDD:51.0 GB	RAM:2.0 GB	
--------------------------	-----	--------------------------------------	--	---------	-------	-------------	------------	--

[Home](#) / [Environments](#) / 51ha

# 51ha (4 nodes)

OpenStack Release: Icehouse on Ubuntu 12.04.4 (2014.1.1-5.1) Deployment Mode: Multi-node with HA Status: Operational

## Success



Deployment of environment '51ha' is done. Access the OpenStack dashboard (Horizon) at <http://172.16.0.9/>



Nodes



Networks



Settings



Logs



Health Check



Actions

[Deploy Changes](#)

## Configure interfaces on node-1

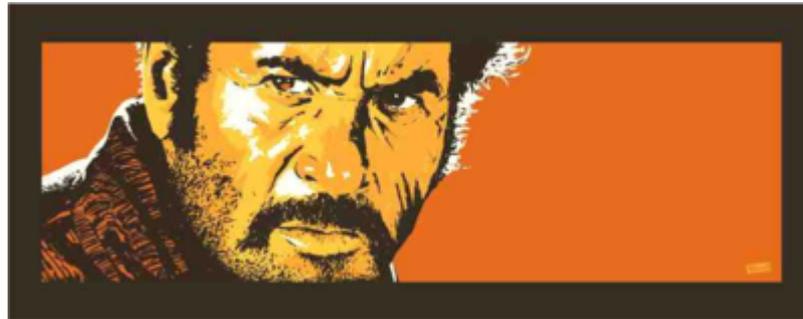


MAC: 52:54:00:74:c7:06  
Speed: N/A

[Admin \(PXE\)](#)[Storage  
VLAN ID: 102](#)[Management  
VLAN ID: 101](#)

MAC: 52:54:00:15:d0:57  
Speed: N/A

[Public](#)[Back To Node List](#)[Load Defaults](#)[Cancel Changes](#)[Apply](#)



# OpenStack - il buono



- Opensource
- Grande comunità
- Governance eletta
- Investimenti e soldi
- Segue gli standard, molte configurazioni
- IaaS opensource più usato: può competere con Amazon e Google
- Buona documentazione
- Tanti driver per hypervisor, storage, rete
- Una release ogni 6 mesi

# OpenStack - il brutto



- Networking!
- Troppa documentazione
- Mancanza di driver specifici
- Una release ogni 6 mesi
- Aggiornamento?
- Integrare due cloud? *“Si può?”*
- Utenti, gruppi, ruoli, capacità, domini... *“Come gestiamo le persone?”*

# OpenStack - il cattivo



- Installazione
- Amministrazione
- Una release ogni 6 mesi: *“Cosa usiamo? Havana, Icehouse o Juno?”*
- Documentazione: su quale release?
- Le aziende cooperano ma sono in competizione: **COOPETIZIONE**

# Fin.

**есть ли у вас вопросы?**