OpenStack & The Cloud

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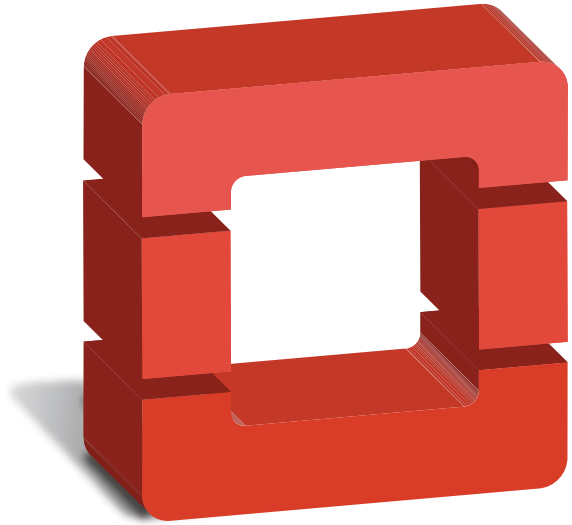
Goals

Goals for this presentation:

- Who is OpenStack?
- What is OpenStack?
- How can you OpenStack?

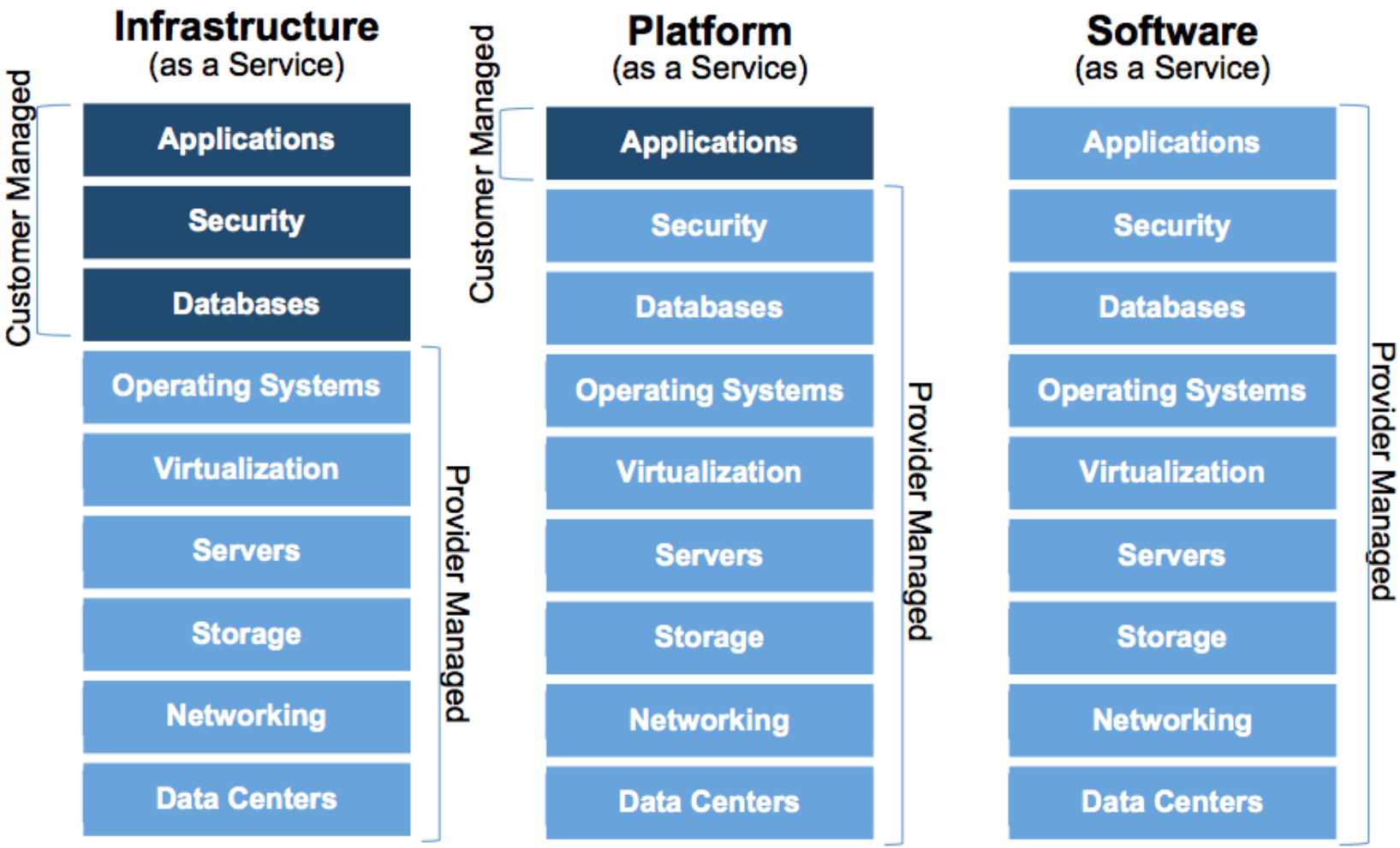


openstack™

CLOUD SOFTWARE

Reply hazy, try again.

What is the cloud?

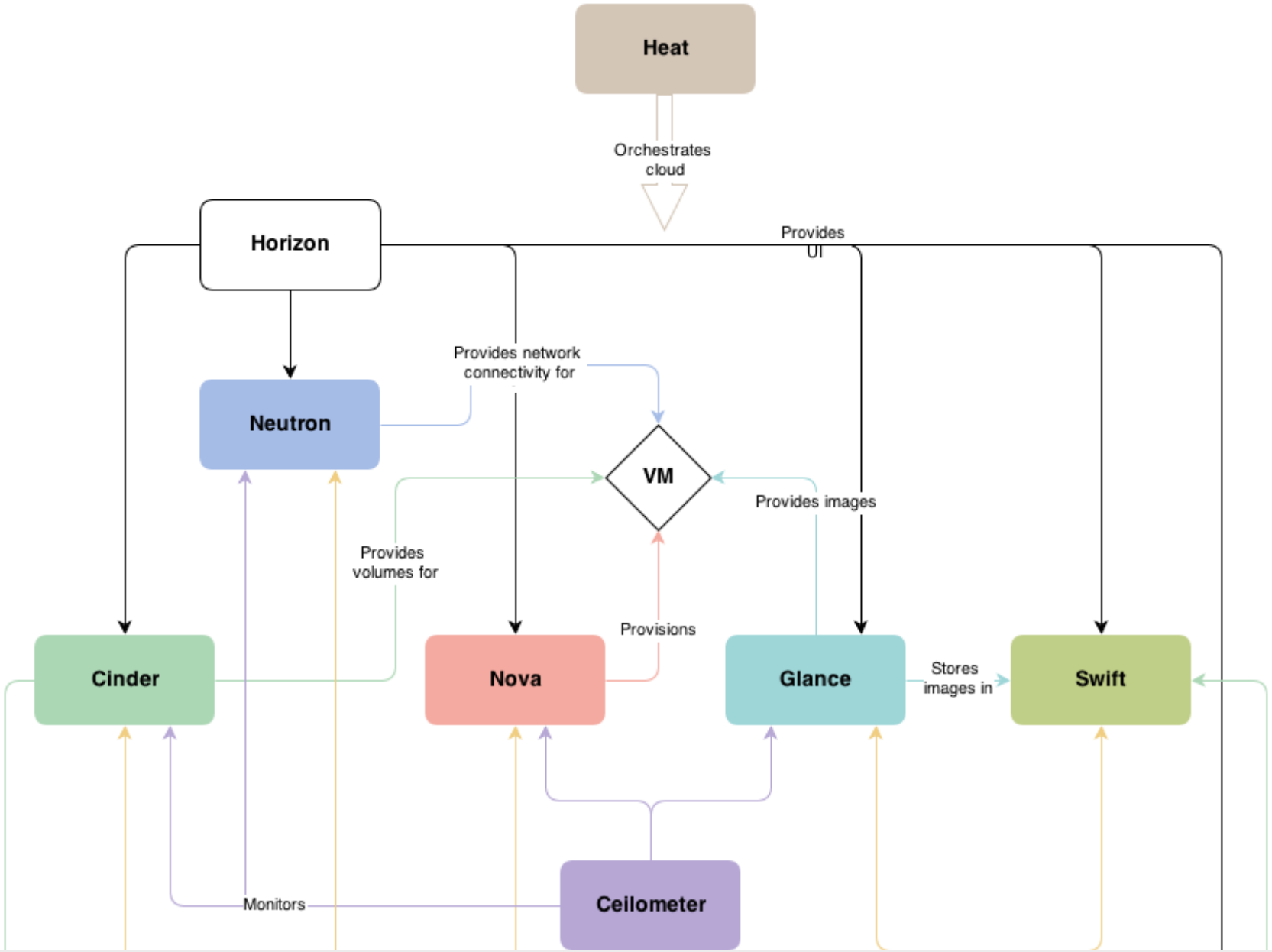

Infrastructure
(as a Service)
Customer Managed
Applications
Security
Databases
Operating Systems
Virtualization
Servers
Storage
Networking
Data Centers
Provider Managed
Platform
(as a Service)
Customer Managed
Applications
Security
Databases
Operating Systems
Virtualization
Servers
Storage
Networking
Data Centers
Provider Managed
Software
(as a Service)
Applications
Security
Databases
Operating Systems
Virtualization
Servers
Storage
Networking
Data Centers
Provider Managed

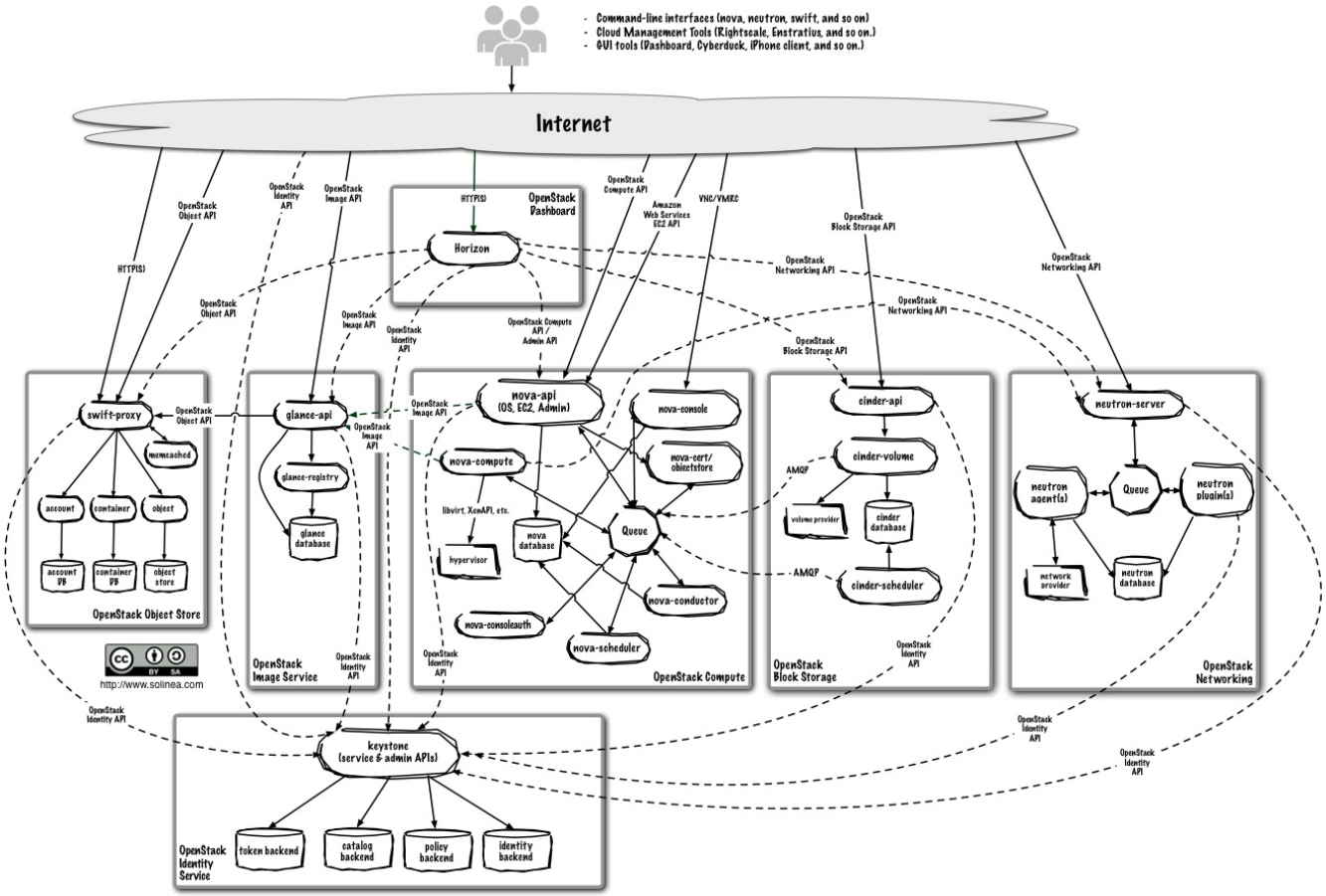
users
openstack
summit
devs
PORTLAND//2013
ubuntu
Supported by Canonical
rackspace
the open cloud company
hp
redhat
CISCO
nuagenetworks
intel
IBM
SUSE
eNovance
DELL
vmware
hastexo!
gridcentric
nebula
metacloud
MIRANTIS
cloudbase
MORPHLABS
CloudBolt
RIGHTSCALE
cloudscaling
bigswitch
swiftstack
DreamHost
BROCADE
anutanetworks
NetApp
ZEROVM
CloudByte
midokura
inktank
PLUMgrid
TALLIGENT
NEC
PERSISTENT
Seagate
OPSCODE
Mellanox
puppet
SOLIDFIRE
SAMSUNG
SAMSUNG SDS
Hortonworks
SALTSTACK
ZADARA
JUNIPER
AMD
SEAMICRO
transcend

OpenStack is People

- 2010: Rackspace (Swift) & Nasa (Nova)
- 2011: Ubuntu 11.04
- 2012: Red Hat, Debian (previews)
- 2013: Red Hat, Debian

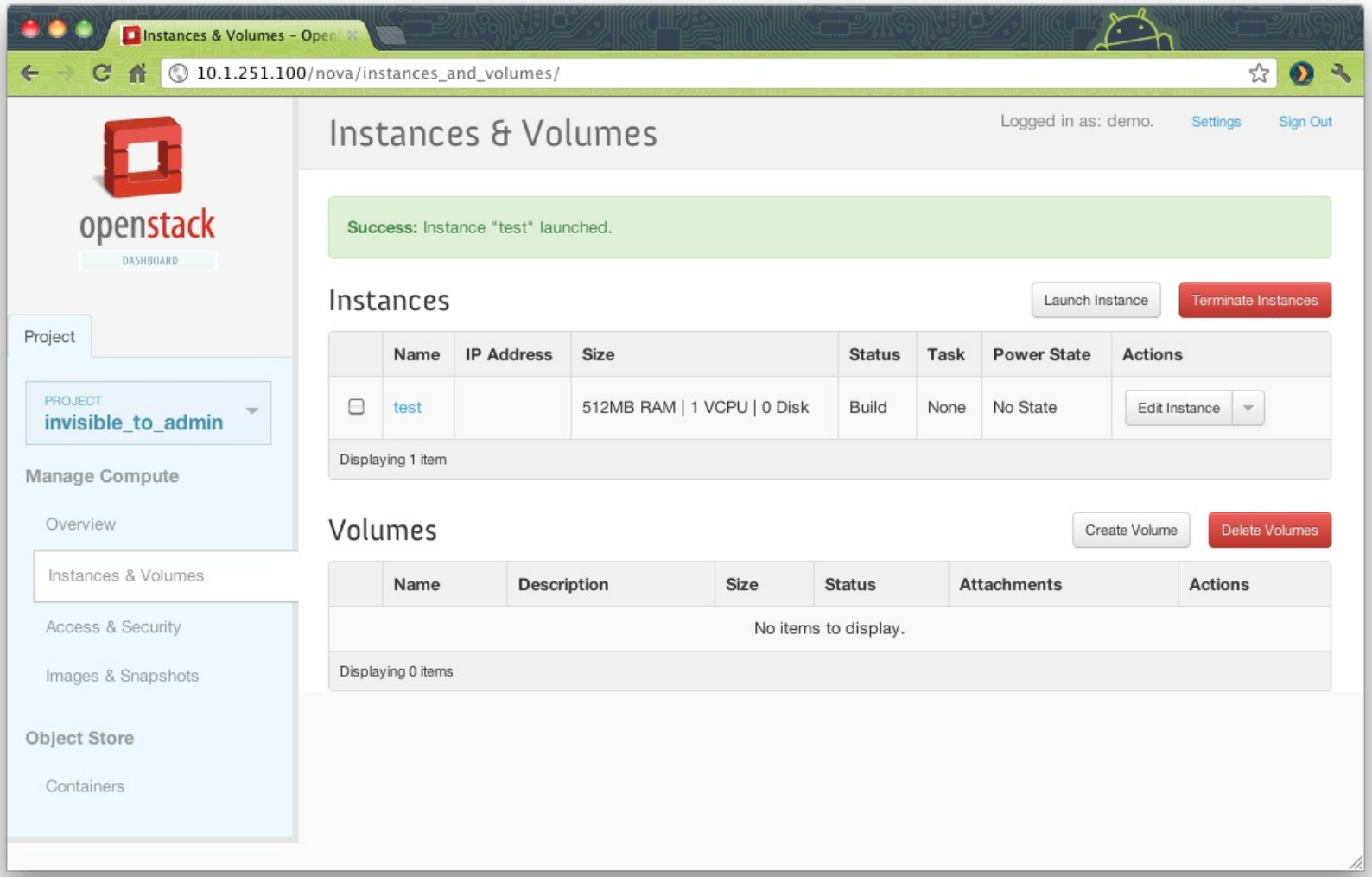
I'M KIND OF A
ANCHORMAN
BIG DEAL

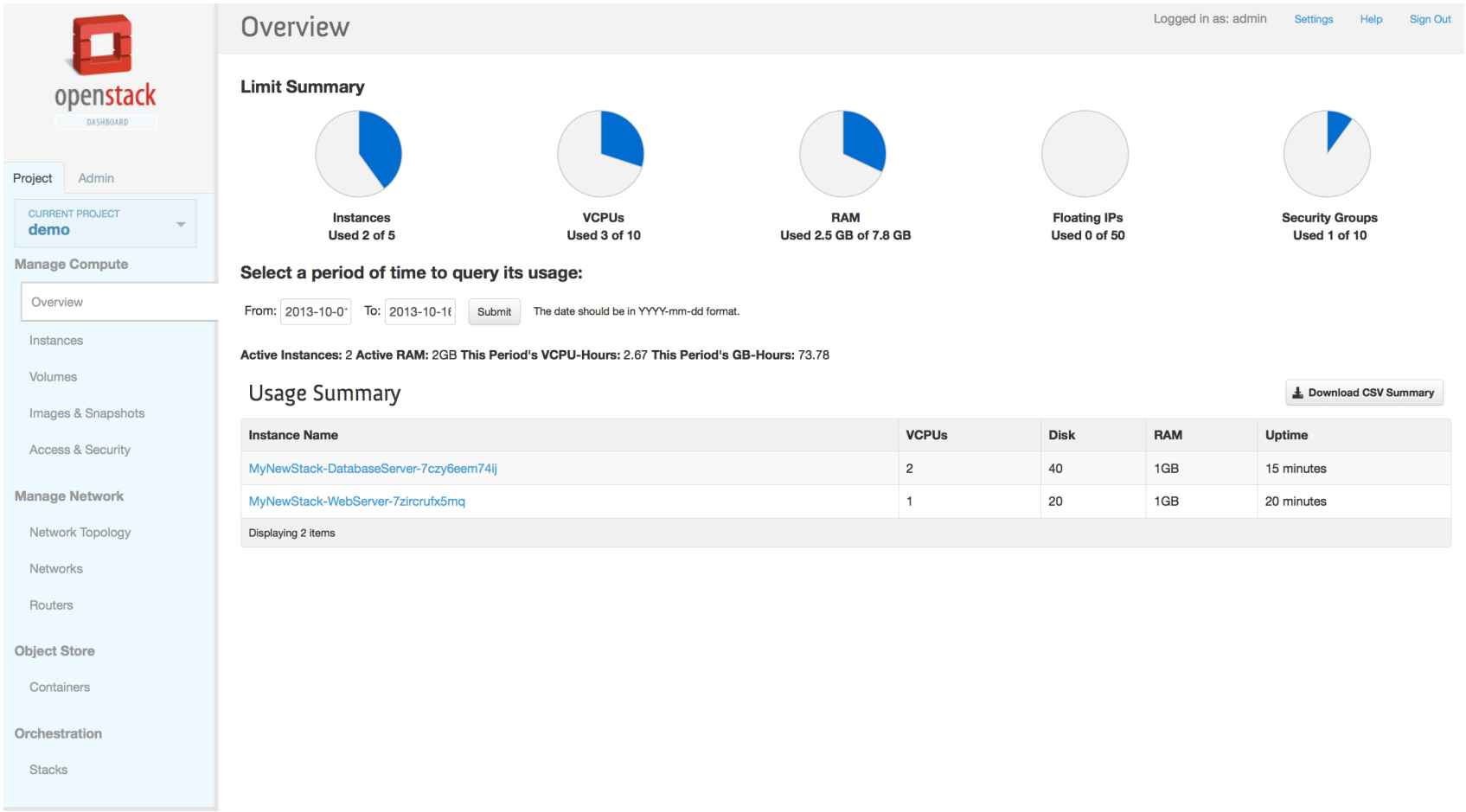

Heat
Orchestrates cloud
Horizon
Provides UI
Provides network connectivity for
Neutron
VM
Provides images
Provides volumes for
Provisions
Cinder
Nova
Glance
Stores images in
Swift
Monitors
Ceilometer


- Command-line interfaces (nova, neutron, swift, and so on)
- Cloud Management Tools (Rightscale, Enstratius, and so on.)
- GUI tools (Dashboard, Cyberduck, iPhone client, and so on.)
Internet
OpenStack Dashboard
Horizon
HTTP(S)
OpenStack Object API
OpenStack Identity API
OpenStack Image API
OpenStack Compute API
Amazon Web Services EC2 API
VNC/VMRC
OpenStack Block Storage API
OpenStack Networking API
OpenStack Compute API / Admin API
swift-proxy
memcached
account
container
object
account PB
container PB
object store
OpenStack Object Store
glance-api
glance-registry
glance database
OpenStack Image Service
nova-api (OS, EC2, Admin)
nova-console
nova-cert/ objectstore
nova-compute
libvirt, XenAPI, etc.
hypervisor
nova database
Queue
nova-conductor
nova-consoleauth
nova-scheduler
OpenStack Compute
cinder-api
cinder-volume
AMQP
volume provider
cinder database
cinder-scheduler
OpenStack Block Storage
neutron-server
neutron agent(s)
Queue
neutron plugin(s)
network provider
neutron database
OpenStack Networking
http://www.solinea.com
keystone (service & admin APIs)
OpenStack Identity Service
token backend
catalog backend
policy backend
identity backend

Nova, Swift, Glance, Grizzly...

- Install Guide for trunk
- See components, structure, etc


Instances & Volumes - Open
10.1.251.100/nova/instances_and_volumes/
openstack
DASHBOARD
Project
PROJECT
invisible_to_admin
Manage Compute
Overview
Instances & Volumes
Access & Security
Images & Snapshots
Object Store
Containers
Instances & Volumes
Logged in as: demo.
Settings
Sign Out
Success: Instance "test" launched.
Instances
Launch Instance
Terminate Instances
Name
IP Address
Size
Status
Task
Power State
Actions
test
512MB RAM | 1 VCPU | 0 Disk
Build
None
No State
Edit Instance
Displaying 1 item
Volumes
Create Volume
Delete Volumes
Name
Description
Size
Status
Attachments
Actions
No items to display.
Displaying 0 items


openstack
DASHBOARD
Project
Admin
CURRENT PROJECT
demo
Manage Compute
Overview
Instances
Volumes
Images & Snapshots
Access & Security
Manage Network
Network Topology
Networks
Routers
Object Store
Containers
Orchestration
Stacks
Overview
Logged in as: admin
Settings
Help
Sign Out
Limit Summary
Instances
Used 2 of 5
VCPUs
Used 3 of 10
RAM
Used 2.5 GB of 7.8 GB
Floating IPs
Used 0 of 50
Security Groups
Used 1 of 10
Select a period of time to query its usage:
From: 2013-10-0
To: 2013-10-1
Submit
The date should be in YYYY-mm-dd format.
Active Instances: 2 Active RAM: 2GB This Period's VCPU-Hours: 2.67 This Period's GB-Hours: 73.78
Usage Summary
Download CSV Summary
Instance Name
VCPUs
Disk
RAM
Uptime
MyNewStack-DatabaseServer-7czy6eem74ij
2
40
1GB
15 minutes
MyNewStack-WebServer-7zircrufx5mq
1
20
1GB
20 minutes
Displaying 2 items

LIVE Demo

```
export OS_REGION_NAME="HKG"
export OS_AUTH_URL=https://id.api.example.com/v2.0/
export OS_USERNAME=openstack_username
export OS_PASSWORD=USE_KEYRING
export OS_TENANT_NAME=nova-production
export OS_AUTH_SYSTEM=rackspace
export NOVA_SERVICE_NAME=cloudServersOpenStack
export OS_PROJECT_ID=12345
export OS_NO_CACHE=1
```

LIVE Demo (2)

```
iad
snr boot gatorlug-test --flavor performance1-1
--image 2ab974de-9fe5-4f5b-9d58-766a59f3de61
--key-name cloudhosts --poll
snr show gatorlug-test
ssh -l root 162.242.244.186 -i
/.ssh/id_rsa_cloudhosts
snr delete gatorlug-test
```

Beyond the examples...

- Command line clients for everything
- SDKs for various language environments

Examples of the SDKs...

Get OpenStack

Complete Environment - devstack.org
Rackspace Loves Developers - developer.rackspace.com/devtrial

Infrastructure as an API – Project Ironic
Developer Portal – developer.rackspace.com

Questions? Answers!