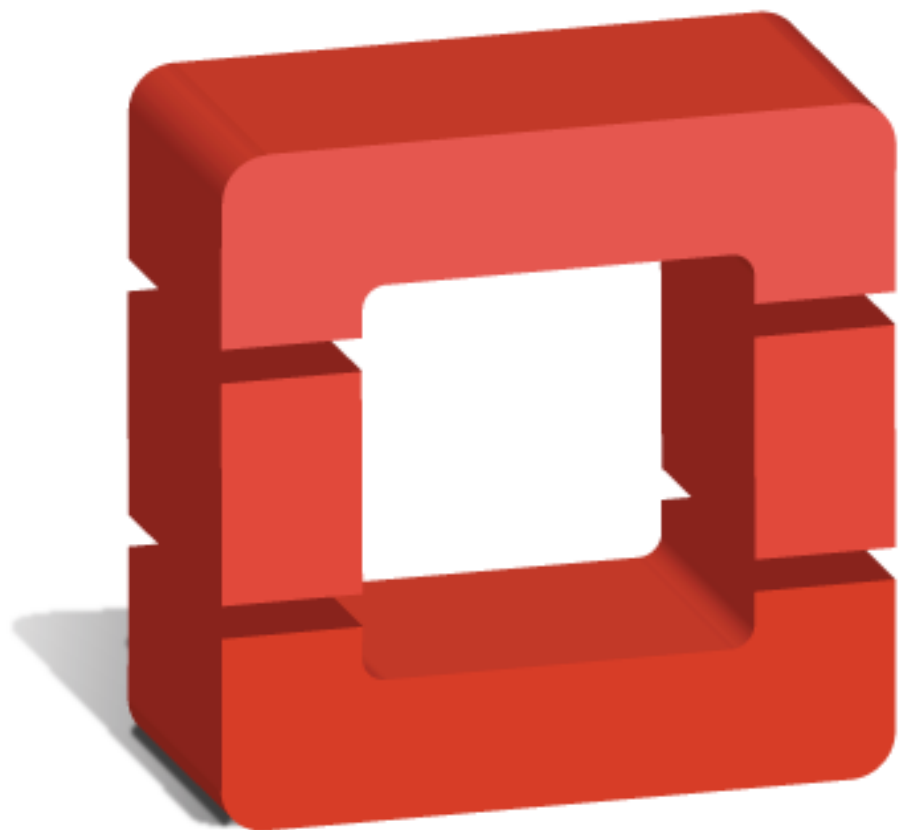# So lets begin

No bug is a minor bug & a patch is a patch.

Even if its one line FIX

openstack™

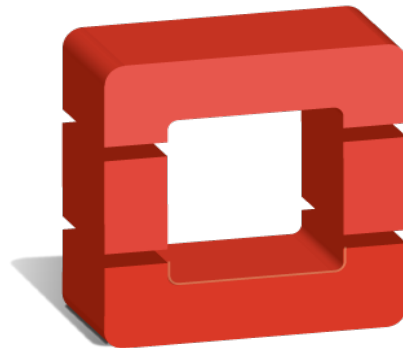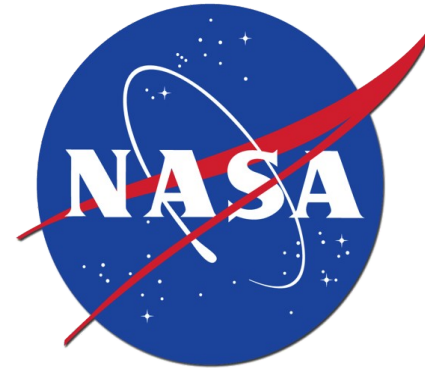CLOUD SOFTWARE

Agenda

- History
- Components of OpenStack
- Contributing to project as Developer
- Q/A

In the beginning...

http://www.openstack.org

Now ..

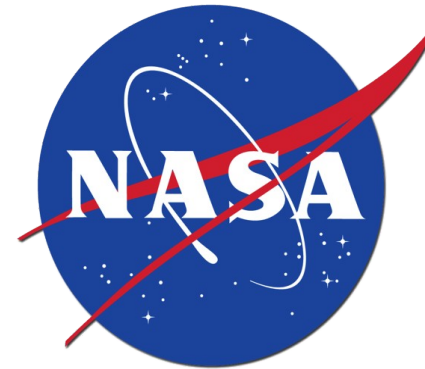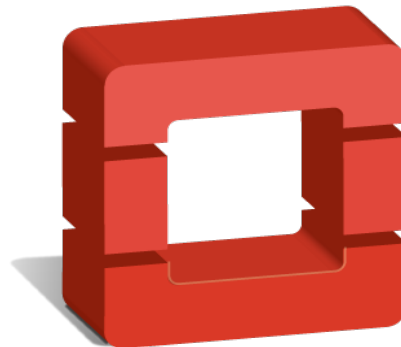# Over 100+ others

Whom I cannot accomodate in my previous slide

Also

VC have pumped in over > 80M USD
Startups & EcoSystem

Developed by more than 330 contributors who
implemented 185 different features
In current stable release name "Folsom"

Release Cycle

June 2010 OpenStack Formed

Austin 21 October 2010
Bexar 3 February 2011
Cactus 15 April 2011
Diablo 22 September 2011
Essex 5 April 2012
Folsom 27 September 2012

Some stats Ohloh ..

In a Nutshell, OpenStack...

...has had 44,874 commits made by 613 contributors
   representing 575,192 lines of code

...is mostly written in Python
   with an average number of source code comments

...has a short source control history
   maintained by a very large development team
   with stable year-over-year commits

...took an estimated 154 years of effort (COCOMO model)
   starting with its first commit in May, 2010
   ending with its most recent commit about 15 hours ago

Some stats Ohloh..

Activity

30 Day Summary
Aug 30 — Sep 29

1551 Commits
176 Contributors
including 49 new contributors

12 Month Summary
Sep 29 — Sep 29

15686 Commits
Down -527 (-3.020%) from previous 12 months

490 Contributors
Up +270 (125.000%) from previous 12 months

Commits per Month

Some stats Ohloh..

And ..

On 4 April 2013

Grizzly is coming out.

Components

Compute (Nova)

provides virtual servers upon demand.

Object Store (Swift)

allows you to store or retrieve files

Image (Glance)

provides a catalog and repository for virtual disk images.

Components

Dashboard (Horizon)

provides a modular web-based user interface for all the OpenStack services.

Identity (Keystone)

provides authentication and authorization for all the OpenStack services.

Landed in Folsom

Network (Quantum)

provides "network connectivity as a service"
between interface devices managed by
other OpenStack services (most likely Nova).

Block Storage (Cinder)

provides persistent block storage to guest VMs.

Incubated Projects

Ceilometer metering project. it provides metering, it is not a billing project.

Heat provides a REST API to orchestrate multiple cloud applications implementing standards such as AWS CloudFormation.

Comparison Against AWS

Nova is conceptually similar to EC2.

Swift is conceptually similar to S3.

Glance provides many of the same features as Amazon's AMI catalog.

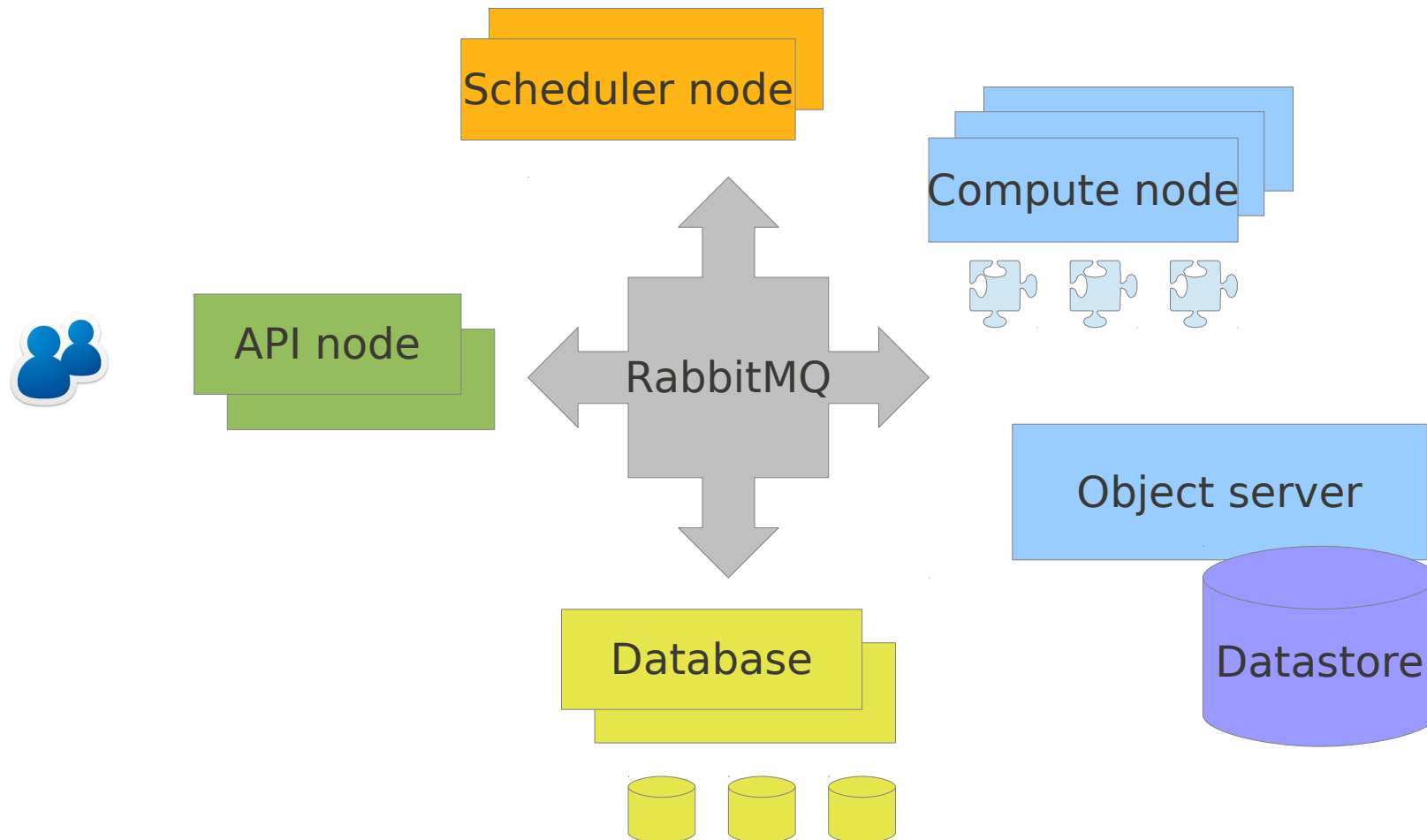Cinder provides block services similar to EBS.

Components little deeper

Nova (OpenStack Compute)

- ReST based API
- Highly-modular framework
- Horizontally and massively scalable
- Hardware agnostic
- Hypervisor agnostic

Nova components

Scheduler node

Compute node

API node

RabbitMQ

Object server

Database

Datastore

Swift (OpenStack Object Storage)

- Object storage
- ReSTful interface
- Objects in containers in accounts
- No object size limit
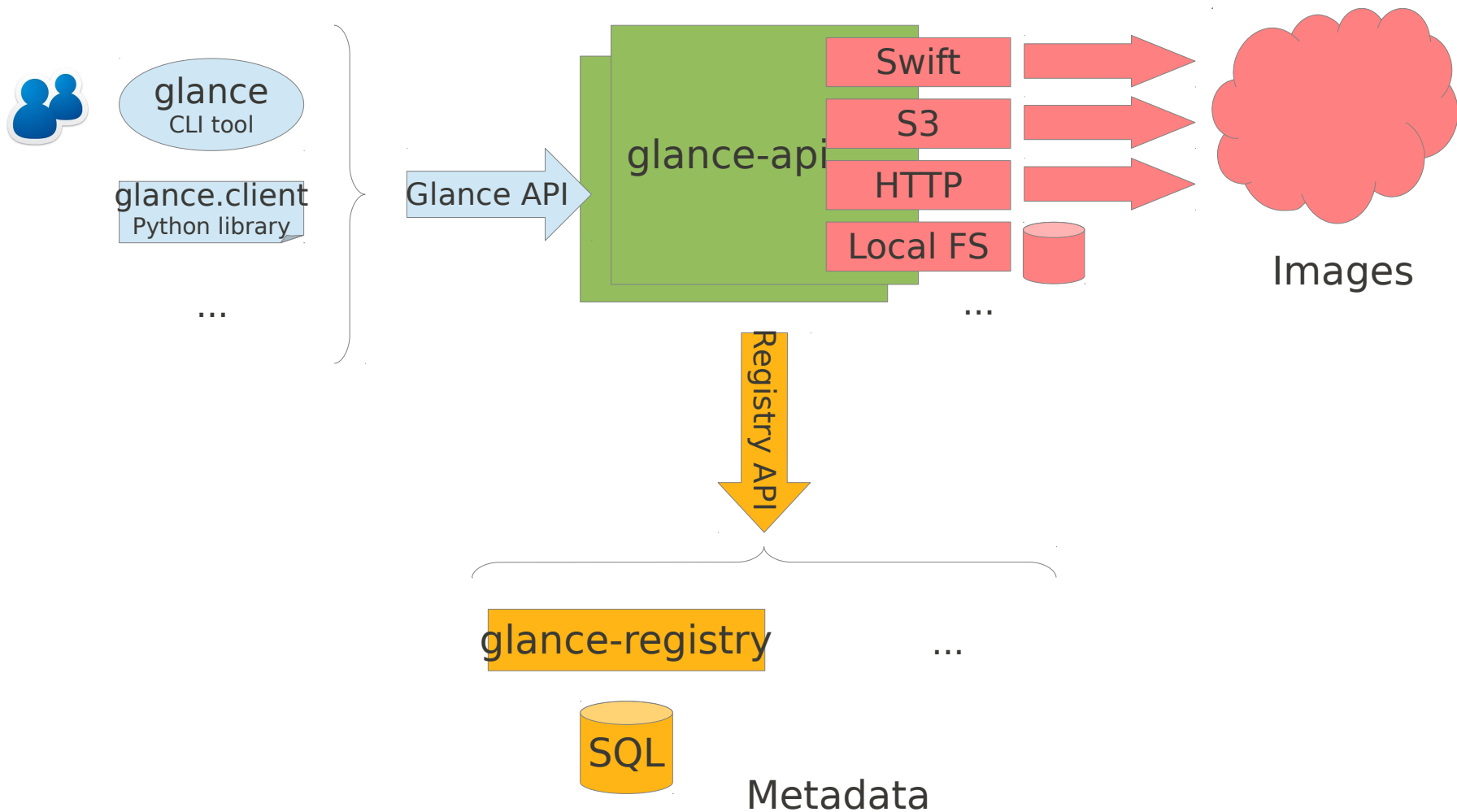- 3+ replication factor in separate
- Stable and deployed in production

Swift main components

Object server

Container server

Account server
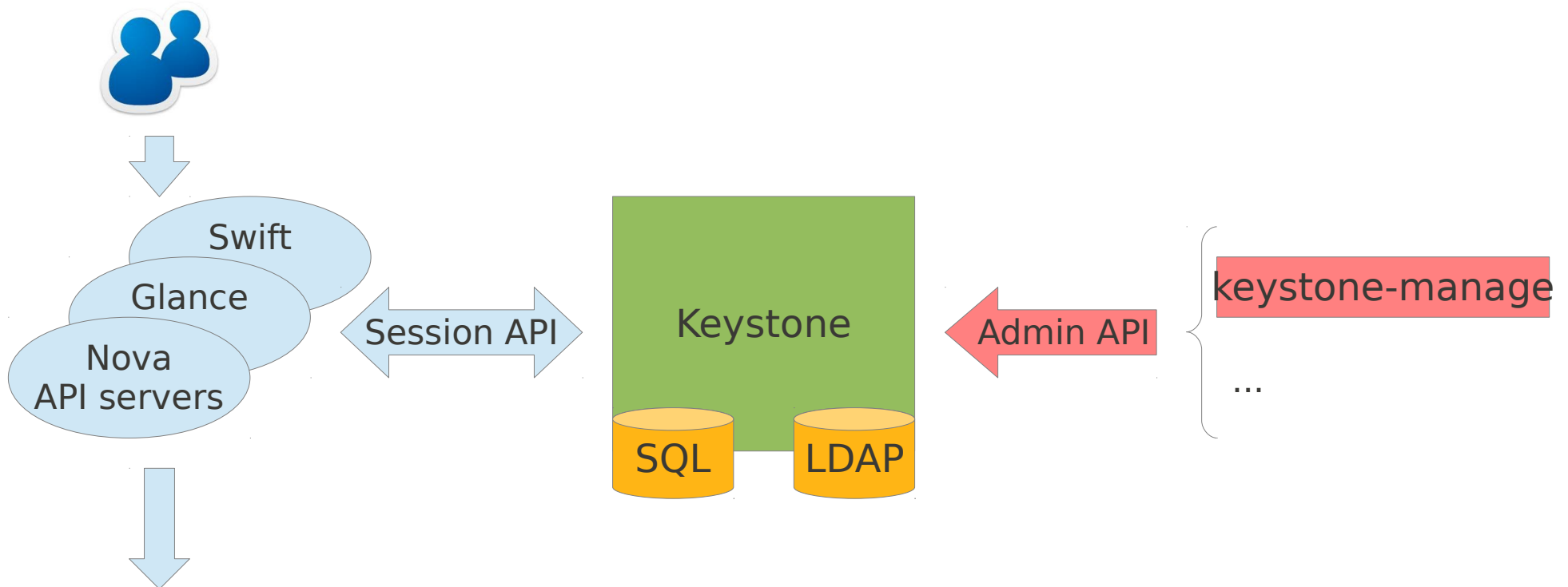
Proxy server

Swift API
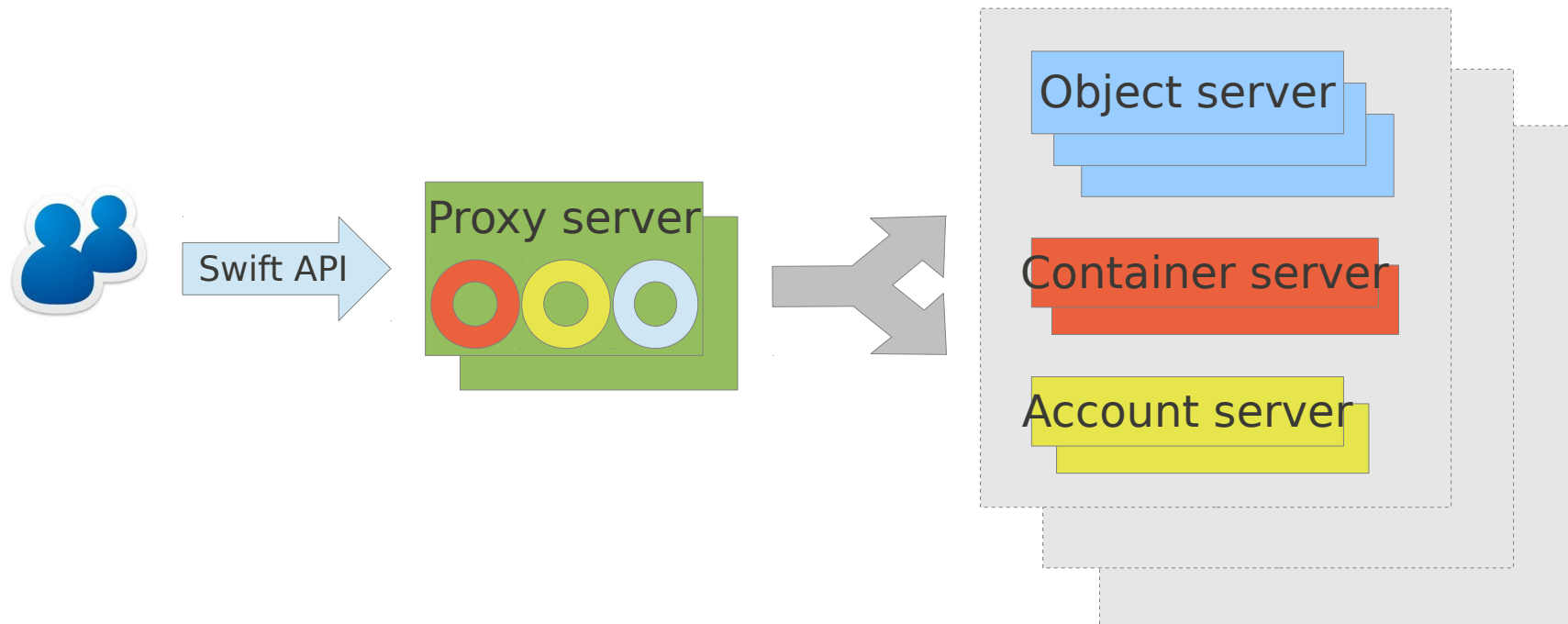
Glance (OpenStack Image service)

- Disk images and associated metadata
- Discover, register and retrieve
- Multiple disk formats :
  raw, VHD, vmdk, vdi, qcow2, aki, ari, ami
- Multiple container formats :
  ovf, bare, aki, ari, ami

Glance architecture
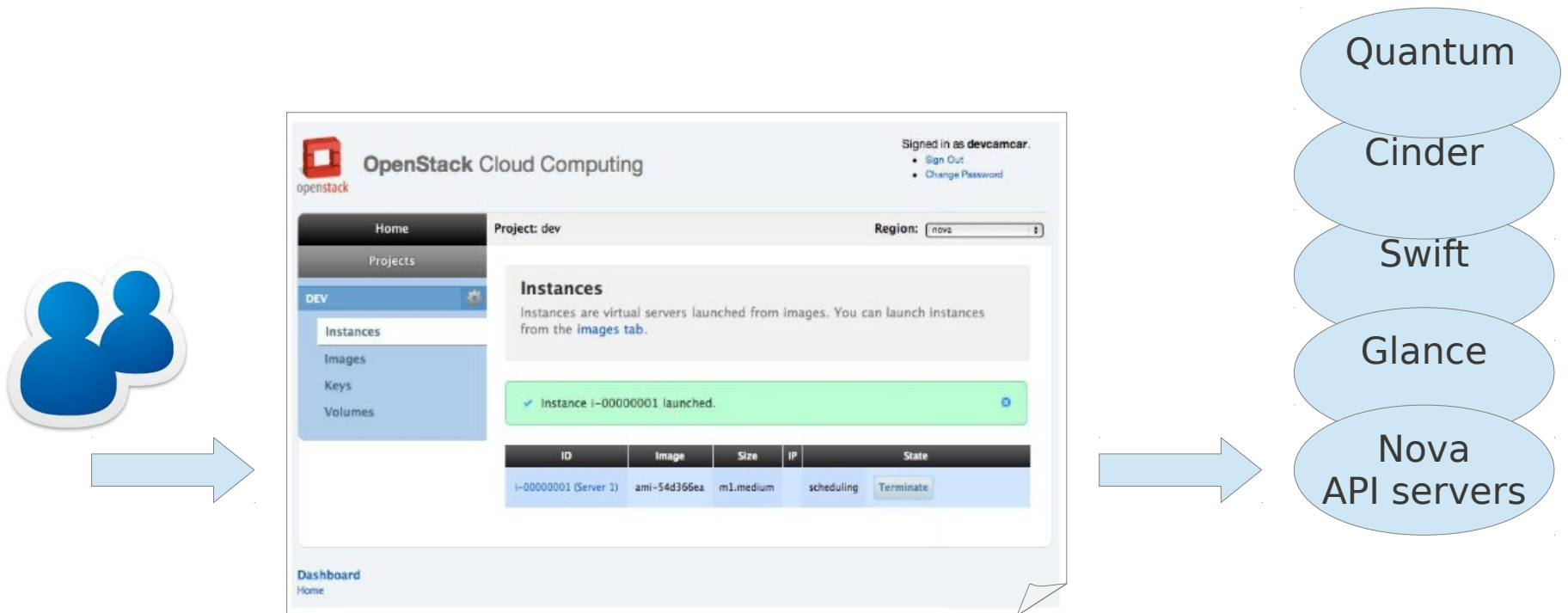
glance
CLI tool

glance.client
Python library

...

Glance API

glance-api

Swift

S3

HTTP

Local FS

...

Images

Registry API

glance-registry

...

SQL

Metadata

Keystone (OpenStack Identity)

- Unified tenants / accounts for all services

"Horizon" (OpenStack Web UI)

- Django module to build web UIs

Did I Miss Something?

Dashboard

Network

Provides
UI for

Provides
UI for

Provides
UI for

Provides
UI for

Provides
UI for

Provides
Auth for

Compute

Image

Object
Storage

Provide
network
connectivity
for

Stores
images in

Stores disk
files in

Provides
volumes for

Block
Storage

Provides
Auth for

Provides
Auth for

Provides
Auth for

Provides
Auth for

Provides
Auth for

Provides
Auth for

Identity

U See this boy!!

Bake bake bake ..

OpenStack
openstack

🔗 http://www.openstack.org/
🕐 Joined on Jul 06, 2010

35 **0**
public repos members

📖 **Repositories** 👥 **Members**

| Find a Repository... |

All *Sources* *Forks* *Mirrors*

📘 **openstack-manuals** JavaScript ⭐ 77 ⑂ 38
Last updated 4 hours ago

📘 **glance** Python ⭐ 167 ⑂ 107
The Glance project provides services for discovering, registering, and retrieving virtual machine images. Glance has a RESTful API that allows querying of VM image metadata as well as retrieval of the actual image.
Last updated 4 hours ago

📘 **tempest** Python ⭐ 61 ⑂ 46
Last updated 5 hours ago

📘 **python-cinderclient** Python ⭐ 7 ⑂ 13
Client library for the Cinder API
Last updated 6 hours ago

📘 **openstack-common** Python ⭐ 53 ⑂ 30
Extraction of openstack-common from openstack-skelaton as a standalone module that can be

OpenStack

Overview Code Bugs Blueprints Translations Answers

Registered 2010-07-07 by Monty Taylor

The OpenStack Open Source Cloud Mission: 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.

Web site - http://wiki.openstack.org
Blogs - http://planet.openstack.org/
Mailing list - openstack@lists.launchpad.net - see https://launchpad.net/~openstack to join.
Continuous Build/Integration - http://hudson.openstack.org/
 IRC - #openstack on freenode.net

OpenStack Compute (nova):
  Read Documentation - http://nova.openstack.org

OpenStack Object Storage (swift):
  Read Documentation - http://swift.openstack.org

OpenStack Clients:
Project - https://launchpad.net/openstack-clients

 Home page

Project group information

Maintainer: **Driver:**

 OpenStack Administrators   Not yet selected

Bug tracker:

None specified

 Download RDF metadata

FAQs for OpenStack

Projects

 Ceilometer
 Cinder
 Glance
 Keystone
 MRaaS
 Melange
 OpenStack Compute (nova)
 OpenStack Core Infrastructure

 Subscribe to bug mail
 Edit bug mail

Get Involved

Report a bug   ➡

Ask a question   ➡

Help translate   ➡

Register a blueprint   ➡

Announcements

Renamed! on 2012-05-06
Renamed!

Horizon 2012.1 "Essex" Released! on 2012-04-06
For anyone who didn't see the general OpenStack announcement, the 2012.1 "Ess...

Essex string freeze and call for translations on 2012-03-06
Hi everyone, As of this morning, Horizon has an up-to-date set of .po files ...

More documentation updates on 2011-11-28
Endpoints and EndpointTemplates are now

1	Idle
precise8	
1	Idle
precise9	
1	Idle
pypi.slave.openstack.org	
1	Idle
tx.slave.openstack.org	
1	Idle

🟢 ☀ gate-openstack-nose	0	0%	0	0%	0	0%	0
🟢 ☀ gate-openstack-planet-merge	0	0%	0	0%	0	0%	0
🟢 ☀ gate-openstack-planet-unittests	0	0%	0	0%	0	0%	0
🟢 ☀ gate-python-keystoneclient-pep8	0	0%	0	0%	0	0%	0
🟢 ☀ gate-python-keystoneclient-python26	0	0%	0	0%	0	0%	0
🟢 ☀ gate-python-keystoneclient-python27	0	0%	0	0%	0	0%	0
🟢 ☀ gate-python-novaclient-python26	0	0%	0	0%	0	0%	0
🟢 ☀ gate-python-quantumclient-merge	0	0%	0	0%	0	0%	0
🟢 ☀ gate-python-quantumclient-pep8	0	0%	0	0%	0	0%	0
🟢 ☀ gate-python-quantumclient-python26	0	0%	0	0%	0	0%	0
🟢 ☀ gate-python-quantumclient-python27	0	0%	0	0%	0	0%	0
🟢 ☀ gate-quantum-merge	0	0%	0	0%	0	0%	0
🟢 ☀ gate-quantum-python26	0	0%	0	0%	0	0%	0
🟢 ☀ gate-quantum-python27	0	0%	0	0%	0	0%	0
🟢 ☀ gate-sandbox-merge	0	0%	0	0%	0	0%	0
🟢 ☀ gate-swift-python26	0	0%	0	0%	0	0%	0
🟢 ☀ gate-swift-python27	0	0%	0	0%	0	0%	0
🟢 ☀ gate-tempest-pep8	0	0%	0	0%	0	0%	0
🟢 ☀ gerrit-package	173	100%	0	0%	0	0%	173
🔴 ⚡ gerrit-trigger-plugin-package	251	100%	0	0%	0	0%	251
🟢 ☀ gerritbot-pypi	0	0%	0	0%	0	0%	0
🟢 ☀ gerritbot-sdist-tarball	0	0%	0	0%	0	0%	0
⚪ gerritbot-tarball	0	0%	0	0%	0	0%	0
🔴 ☁ gerritlib-pypi	0	0%	0	0%	0	0%	0
🔴 ⚡ glance-coverage	0	0%	0	0%	0	0%	0
🟢 ☁ glance-docs	0	0%	0	0%	0	0%	0

🟢	☀	gate-python-keystoneclient-pep8	17 hr (#266)	N/A	1 min
🟢	☀	gate-python-keystoneclient-python26	17 hr (#198)	N/A	1 min
🟢	☀	gate-python-keystoneclient-python27	17 hr (#200)	N/A	1 min
🟢	☀	gate-python-novaclient-python26	20 hr (#315)	N/A	1 min
🟢	☀	gate-python-quantumclient-merge	9 days 2 hr (#245)	N/A	7.8 se
🟢	☀	gate-python-quantumclient-pep8	9 days 2 hr (#210)	N/A	1 min
🟢	☀	gate-python-quantumclient-python26	9 days 2 hr (#189)	N/A	1 min
🟢	☀	gate-python-quantumclient-python27	9 days 2 hr (#188)	N/A	1 min
🟢	☀	gate-quantum-merge	22 hr (#2068)	N/A	10 se
🟢	☀	gate-quantum-python26	22 hr (#1698)	N/A	12 mi
🟢	☀	gate-quantum-python27	22 hr (#1699)	N/A	10 mi
🟢	☀	gate-sandbox-merge	6 mo 2 days (#1)	N/A	10 se
🟢	☀	gate-swift-python26	15 hr (#721)	N/A	1 min
🟢	☀	gate-swift-python27	15 hr (#722)	22 hr (#715)	1 min
🟢	☀	gate-tempest-pep8	4 hr 39 min (#859)	21 hr (#853)	19 se
🟢	☀	gerrit-package	4 days 19 hr (#38)	N/A	19 mi

openstack Code Review
CLOUD SOFTWARE

Code Review Dashboard for koolhead17

ID	Subject	Owner	Project	Branch	Updated	V	R	A
Started by koolhead17								
▶ ☆ I0f0c8867	this will fix missing Public Key error NO_PUBKEY 5EDB1B62EC4926EA	koolhead17	openstack/openstack-manuals	master (master)	2:03 PM		✗	
Review Requests for koolhead17								
(None)								
Recently closed								
☆ I3258f161	Updates to the all-in-one Folsom/ubuntu install. (MERGED)	Anne Gentle	openstack/openstack-manuals	master (master)	3:09 AM	✓	✓	✓
☆ I6420b946	This will fix #1038337 (MERGED)	koolhead17	openstack/openstack-manuals	master (bug-1038337)	1:31 AM	✓	✓	✓
☆ I6b622c6c	Modified the doc as per the best practice method. (MERGED)	koolhead17	openstack/openstack-manuals	master (13713)	Sep 27	✓	✓	✓
☆ I55e5ef43	Remove License Header from /doc/source/conf.py (ABANDONED)	Benjamin Kerensa	openstack/swift	master (bug/1039861)	Sep 26	+1	✗	
☆ I17a67af5	New landing pages (MERGED)	Anne Gentle	openstack/openstack-manuals	master (clean-index-page)	Sep 22	✓	✓	✓
☆ I530b29ec	Adds starting point for an OpenStack CLI guide. (MERGED)	Anne Gentle	openstack/openstack-manuals	master (bug/1019718)	Aug 22	✓	✓	✓

Development cycle

6 months

Design, blueprint creation

Design Summit, 3 days to discuss and brainstorm

PTLs define cycle targets

Feature **milestones** every 4 weeks

Last feature milestone, no more features allowed

Release branch is cut, next cycle starts

Final release
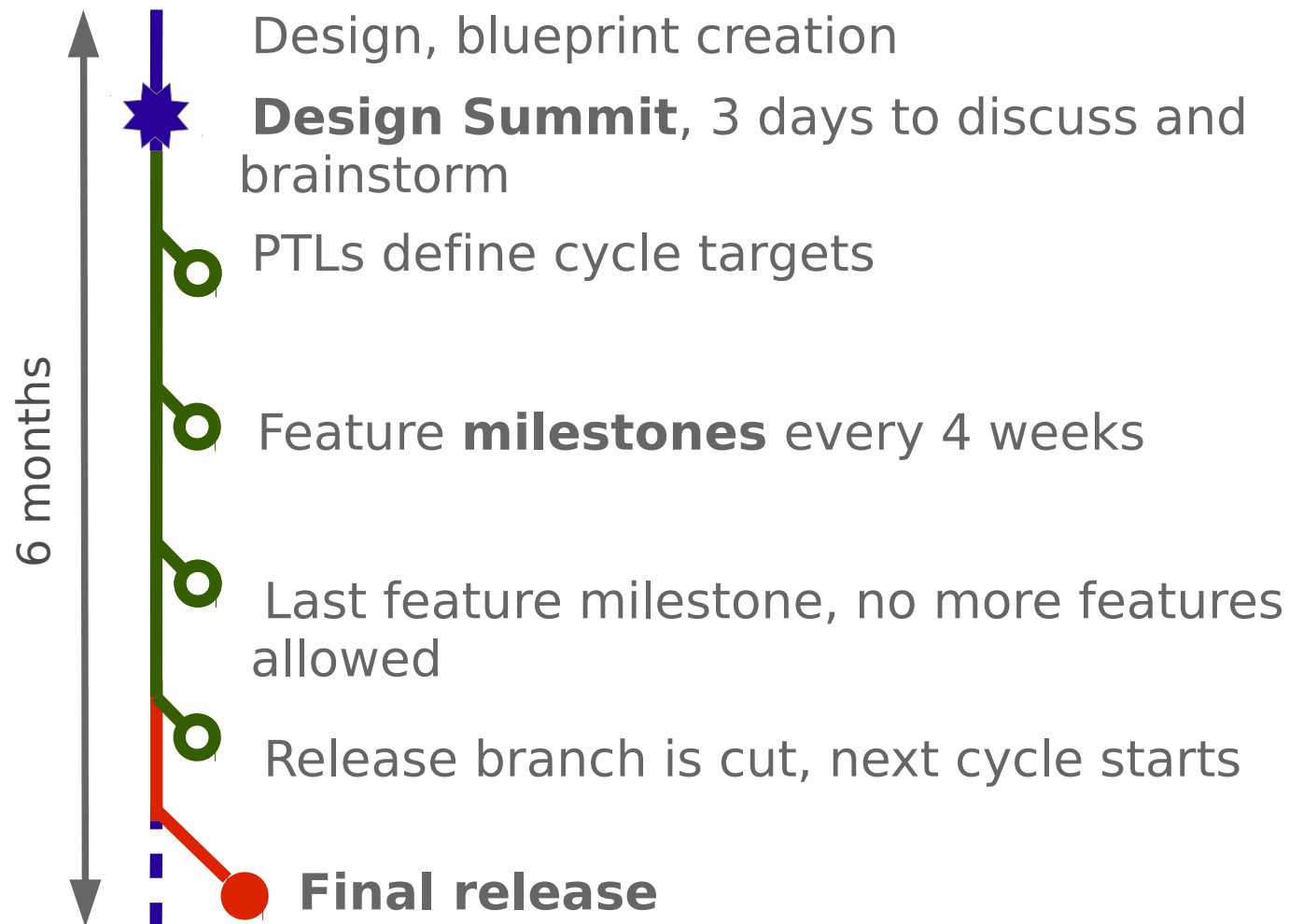
Journey of a feature
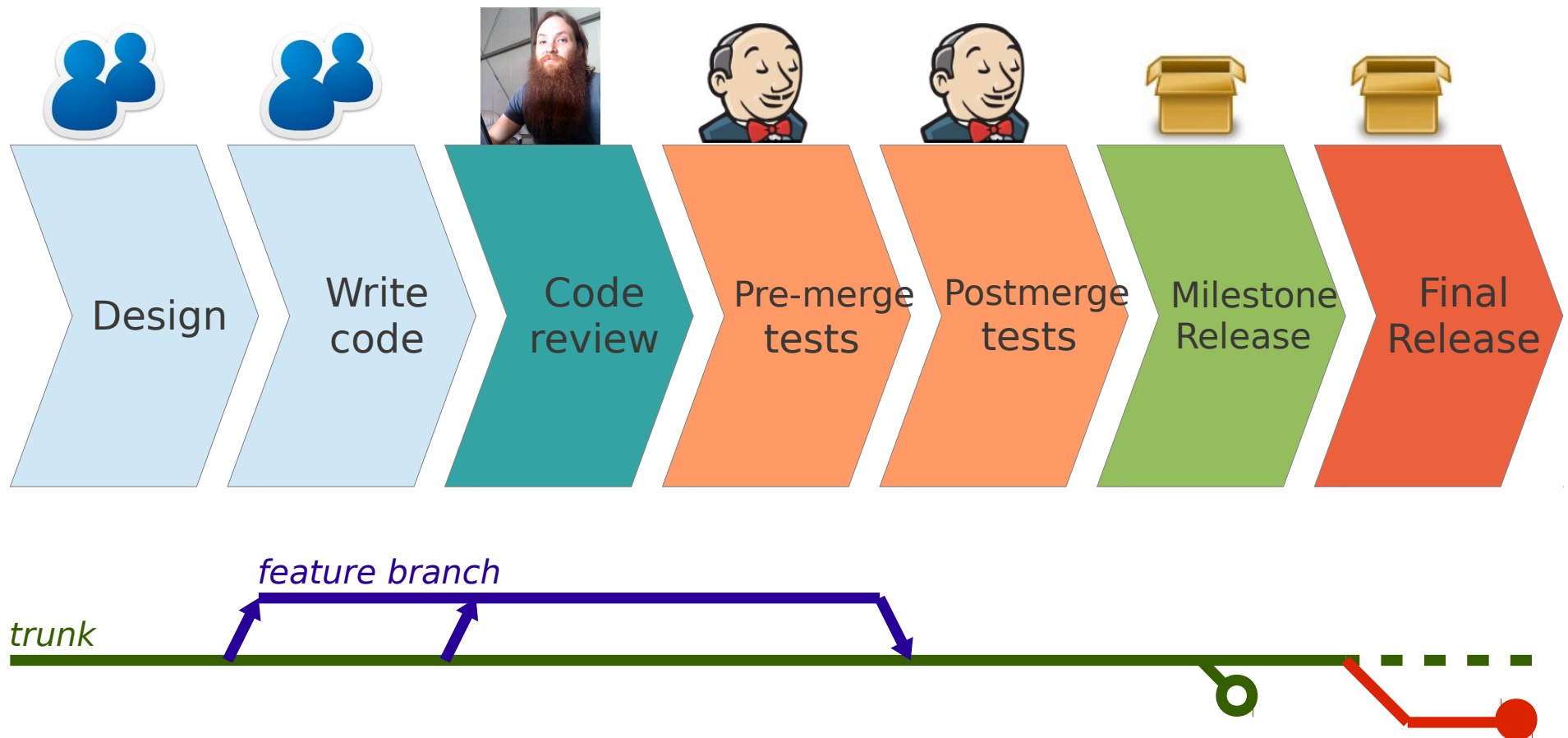
Lets bring back this boy.

He saw a bug in the Code

```
50    cls.os = os
51    cls.servers_client = os.servers_client
52    cls.flavors_client = os.flavors_client
53    cls.images_client = os.images_client
54    cls.extensions_client = os.extensions_client
55    cls.floating_ips_client = os.floating_ips_client
56    cls.keypairs_client = os.keypairs_client
57    cls.floating_ips_client = os.floating_ips_client
58    cls.security_groups_client = os.security_groups_client
59    cls.console_outputs_client = os.console_outputs_client
60    cls.limits_client = os.limits_client
```

Line 55 and 57 were duplicate lines.

STEP 1

(A). Sign the CLA, Every developer needs to sign the Individual Contributor License agreement.

(B) Create a Launchpad Account(https://launchpad.net/) if you don't have one. Its a must.

(C). Add yourself to the contributors wiki

(D). Request membership in the openstack-cla group on Launchpad. Membership in this group is required in order to submit code changes.

2. The Environment Setup

Bug was in Tempest

- Get the source code of tempest project from the github repo.
- Install git on your local machine. Ex: On ubuntu just type sudo apt-get install git-core

- Configure Your user name and password:
  git config --global user.name "Firstname Lastname"
  git config --global user.email "your_email@youremail.com"

- Install git-review tool
    On ubuntu: sudo apt-get install git-review
    On other unix like systems: pip install git-review

STEP 3: Getting the Code

git clone git://github.com/openstack/tempest.git

STEP 4: Fix the Bug

- Enter in to tempest directory and let git-review tool to configure your project. Make sure your gerrit/launchpad user name is the same as the current running user.

      $ cd tempest
      $ git review -s

- Get the latest upstream changes:

      $ git remote update
      $ git checkout master
      $ git pull origin master

      $ git checkout -b duplicate_line_in_base.py

-

- Remove the duplicate line and save it.

- Now commit your change with a commit message. You can read more about commit messages on http://wiki.openstack.org/GitCommitMessages .

  $git commit -am "Removed the duplicate line from base.py."

- Finally send the code for review.
  $ git review

After you submit a change

Any Openstack developer may propose or comment on a change (including voting +1/0/-1 on it). Openstack projects have a policy requiring two positive reviews from core reviewers.

When a review has two +2 reviews and one of the core team believes it is ready to be merged.

Jenkins will run tests on the change, and if they pass, it will be merged.
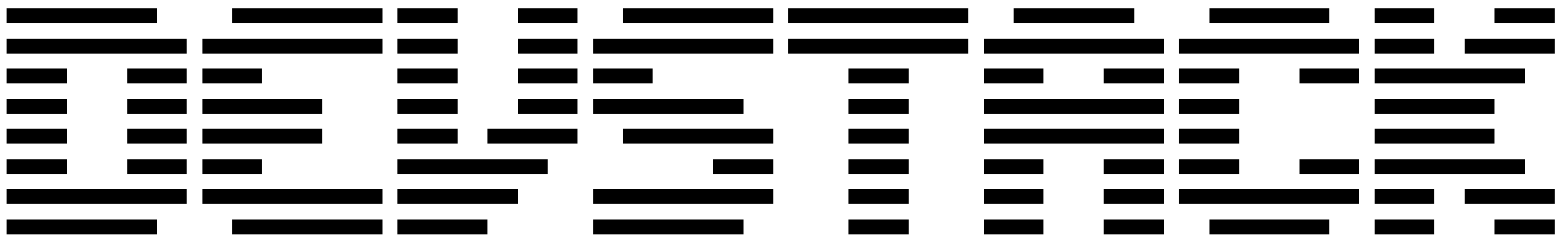
Few links

Gerrit Workflow
http://wiki.openstack.org/GerritWorkflow

Gerrit, Jenkins, and GitHub
http://wiki.openstack.org/GerritJenkinsGithub

How To Contribute
http://wiki.openstack.org/HowToContribute

DEVSTACK

http://devstack.org/

Longtan © Hugo

OpenStack is... you, us

http://launchpad.net/openstack
http://wiki.openstack.org
http://planet.openstack.org

Twitter
   @OpenStack
   @OpenStackIndia

Special Thanks...

Thierry Carrez, Syed Armani,Ken Pepple Tony Dk &
Razique