openstack.

Octavia

Project Onboarding, OpenStack Summit Vancouver
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What is Octavia?

Network Load Balancing as a Service for OpenStack.

- Octavia provides scalable, on demand, and self-service access to network load balancer services, in a technology agnostic manner, for OpenStack.
- The reference load balancing driver provides a highly available load balancer that scales with your compute environment.
- Founded during the Juno release of OpenStack.
- 90 contributors from 30 companies for latest release
- Moved from a Neutron sub-project to a top level OpenStack project during the Ocata series.
- #1 Neutron feature "actively using, interested in using, or looking forward to using" for the past two April OpenStack user surveys.

April 2017 OpenStack User Survey

Which features in Neutron are you actively using, interested in using, or looking forward to using?
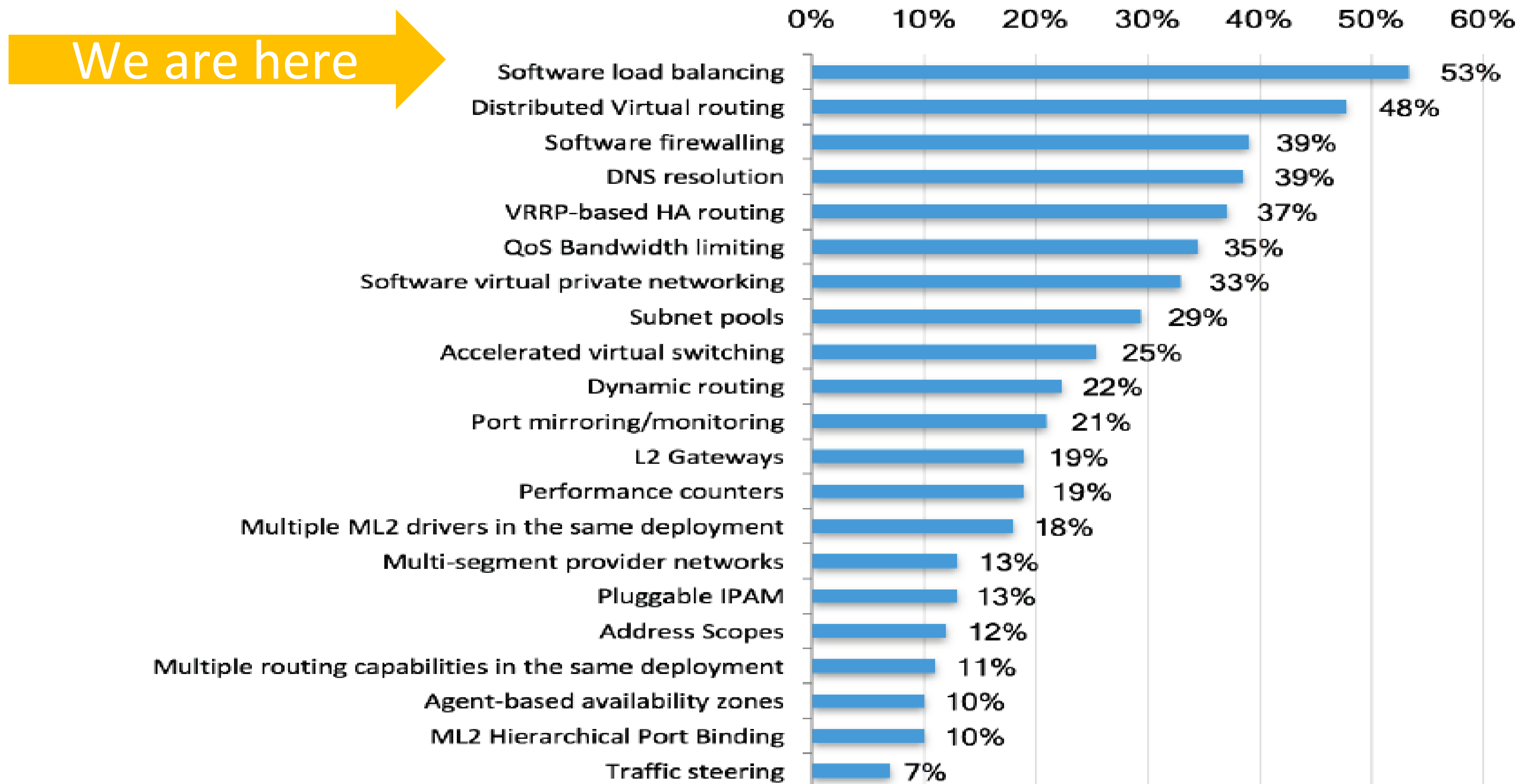
We are here →

Feature	Percentage
Software load balancing	53%
Distributed Virtual routing	48%
Software firewalling	39%
DNS resolution	39%
VRRP-based HA routing	37%
QoS Bandwidth limiting	35%
Software virtual private networking	33%
Subnet pools	29%
Accelerated virtual switching	25%
Dynamic routing	22%
Port mirroring/monitoring	21%
L2 Gateways	19%
Performance counters	19%
Multiple ML2 drivers in the same deployment	18%
Multi-segment provider networks	13%
Pluggable IPAM	13%
Address Scopes	12%
Multiple routing capabilities in the same deployment	11%
Agent-based availability zones	10%
ML2 Hierarchical Port Binding	10%
Traffic steering	7%

Figure 6.6 n=197

Who is the Current Octavia Core Team?

- Michael Johnson – Octavia PTL (founding member)
- Adam Harwell – Core Reviewer (founding member)
- German Eichberger – Core Reviewer (founding member)
- Jacky Hu – Core Reviewer
- Nir Magnezi – Core Reviewer

- Many more developers, reviewers, and translators!
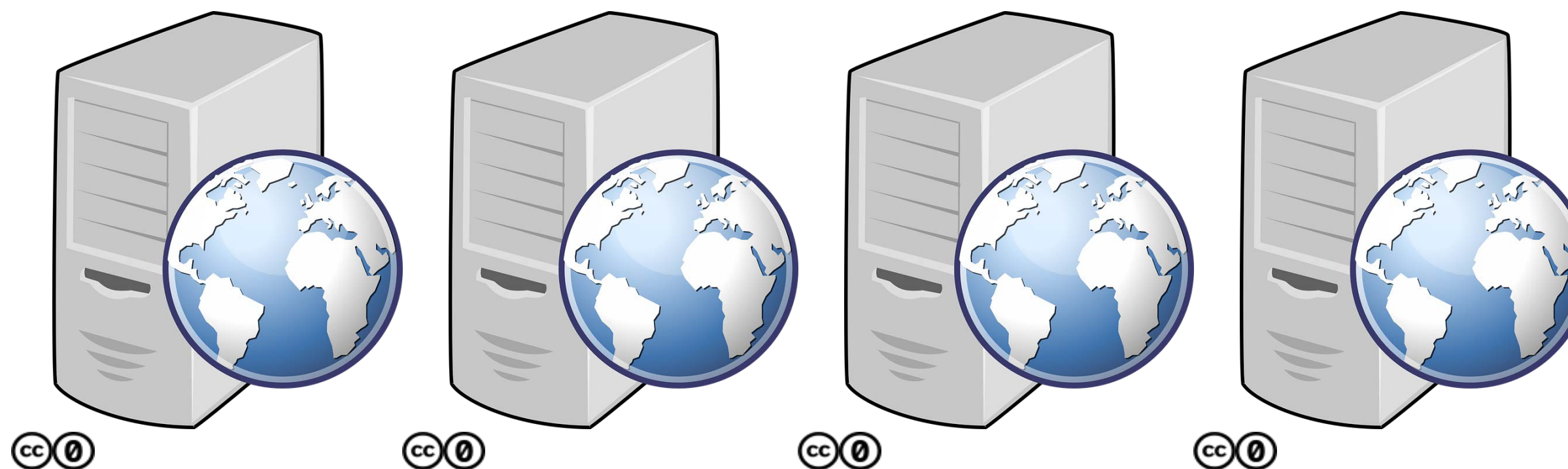
What is network load balancing?

http://www.openstack.org

Network
Load Balancer

http://www.openstack.org
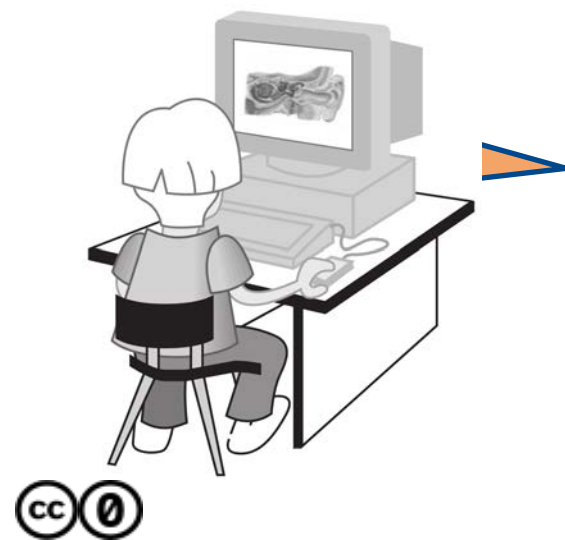
Use cases for using load balancing

- Distributing the network load between many servers
- Increasing the availability of the served resource
- SSL offload and centralized certificate management
- Protocol conversion
  - IPv6 VIP but IPv4 member servers
- Protocol port conversion
  - VIP may listen on port 80 when member servers listen on 8080
- L7 policies and rules
  - Static image files may be served from different member servers than the web page itself
- Abstracting the physical network topology
  - Ease the upgrade and rollback of applications or equipment
- Many more…

The Octavia Deliverables

Go forward deliverables

- octavia
- octavia-dashboard
- octavia-tempest-plugin
- python-octaviaclient

Legacy deliverables (deprecated)

- neutron-lbaas
- neutron-lbaas-dashboard

Octavia Documentation
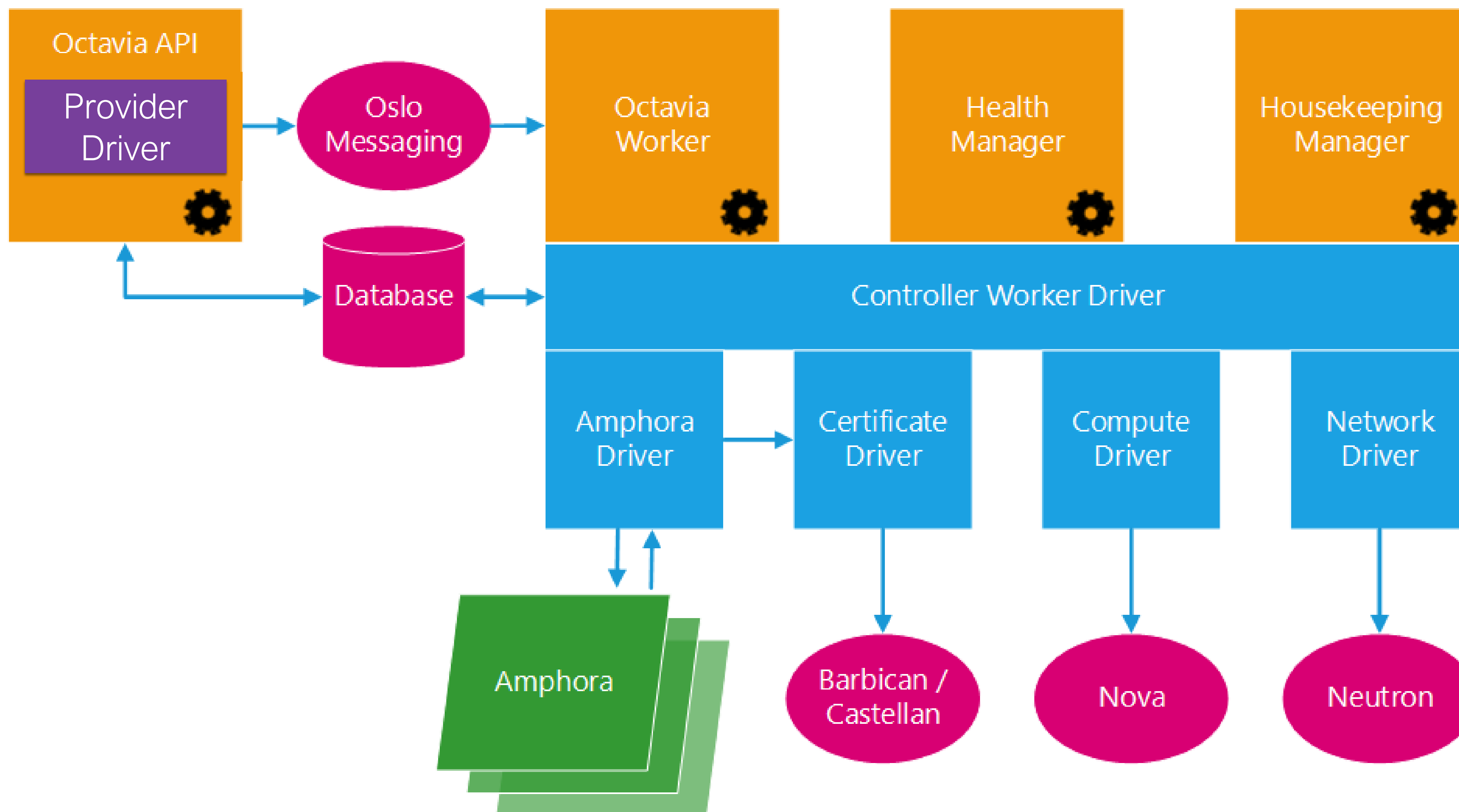
Octavia Architecture

Octavia Architecture

Octavia Code Structure

```
michjohn@devstackpy27:~/.../OpenStack/octavia$ ls
api-ref               HACKING.rst            setup.py
babel.cfg             httpd                  specs
bin                   LICENSE                specs-tests
CONSTITUTION.rst      lower-constraints.txt  TESTING.rst
CONTRIBUTING.rst      octavia                test-requirements.txt
devstack              playbooks              tools
diskimage-create      README.rst             tox.ini
doc                   releasenotes           zuul.d
elements              requirements.txt
etc                   setup.cfg
michjohn@devstackpy27:~/.../OpenStack/octavia$ cd octavia/
michjohn@devstackpy27:~/.../octavia/octavia$ ls
amphorae      cmd       controller   hacking      network    tests
api           common    db           i18n.py      opts.py    version.py
certificates  compute   distributor  __init__.py  policies
michjohn@devstackpy27:~/.../octavia/octavia$
```
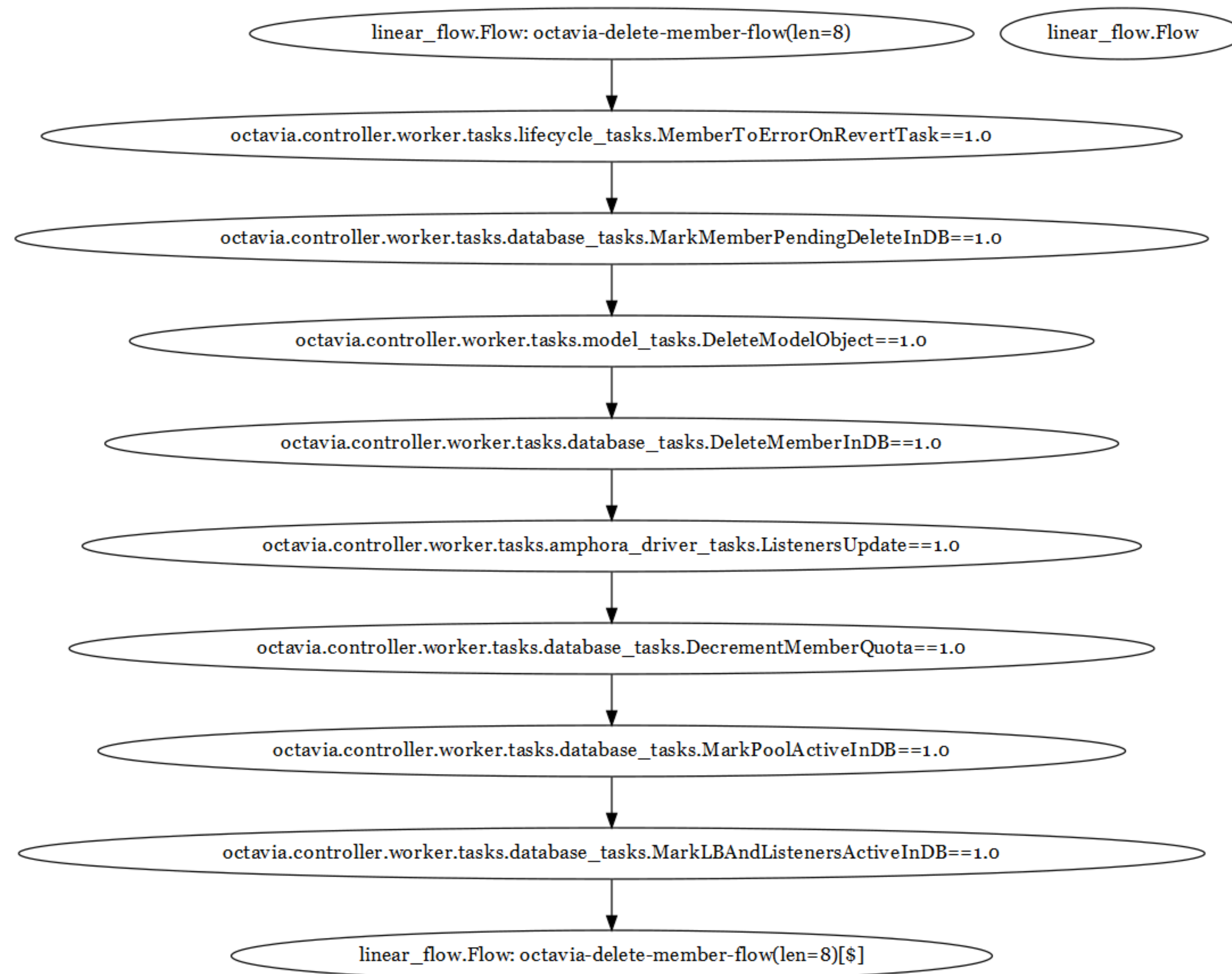
Octavia TaskFlow Flow – Member Delete

Octavia Testing

- Currently at 90% code coverage with unit and functional tests

- All tests run using both Python 2.7 and 3.5 using tox

- Unit tests
  - Approximately 1,190 unit tests

- Functional tests
  - Approximately 1,096 functional tests
  - Focused on Amphora agent, API, and database testing

- Tempest tests
  - API validation tests
  - Scenario tests

Zuul check	May 11 6:47 PM
openstack-tox-pep8	SUCCESS in 6m 09s
openstack-tox-py27	SUCCESS in 4m 59s
openstack-tox-py35	SUCCESS in 4m 47s
build-openstack-sphinx-docs	SUCCESS in 5m 54s
openstack-tox-cover	SUCCESS in 7m 19s
neutron-lbaasv2-dsvm-api	SUCCESS in 1h 08m 22s
neutron-lbaasv2-dsvm-py3x-api	SUCCESS in 1h 12m 04s
neutron-lbaasv2-dsvm-scenario	SUCCESS in 1h 16m 33s (non-voting)
neutron-lbaasv2-dsvm-py3x-scenario	SUCCESS in 1h 09m 06s (non-voting)
openstack-tox-lower-constraints	SUCCESS in 12m 00s
openstack-tox-functional	SUCCESS in 8m 54s
openstack-tox-functional-py35	SUCCESS in 6m 43s
octavia-v1-dsvm-scenario	SUCCESS in 56m 55s
octavia-v1-dsvm-py3x-scenario	SUCCESS in 50m 22s
octavia-v1-dsvm-scenario-multinode	SUCCESS in 1h 05m 48s (non-voting)
octavia-v1-dsvm-py3x-scenario-multinode	SUCCESS in 1h 12m 31s (non-voting)
octavia-v1-dsvm-scenario-kvm-centos.7	SUCCESS in 1h 00m 01s (non-voting)
octavia-v1-dsvm-scenario-ubuntu.bionic	SUCCESS in 57m 54s (non-voting)
octavia-v2-dsvm-noop-api	SUCCESS in 33m 37s (non-voting)
octavia-v2-dsvm-noop-py35-api	SUCCESS in 30m 37s (non-voting)
octavia-v2-dsvm-scenario	SUCCESS in 49m 01s (non-voting)
octavia-v2-dsvm-py35-scenario	SUCCESS in 1h 02m 25s (non-voting)

Octavia StoryBoard

Octavia Opportunities

- Provider driver development

- Active/Active

  - Looking for OVS/OpenFlow experience

- Flavors

- Installation guide

- Log offloading

- Amphora in containers

- Backend re-encryption

- Bug fixes

https://wiki.openstack.org/wiki/Octavia/Roadmap

Q&A

Thank you!

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