

OpenStack Upstream開発におけるCI品質向上施策

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<https://github.com/masayukig/better-testing-through-statistics-ja>

Agenda

- ▶ 自己紹介
- ▶ OpenStack開発の概要
- ▶ “OpenStackゲート”とは？
- ▶ 問題点・課題・困った点
- ▶ 解決方法（利用・開発したツールなど）
 - ▶ Logstash と elastic-recheck
 - ▶ openstack-health/subunit2sqlを用いた解析
- ▶ 結果
- ▶ どのような成果・改善が得られたのか？
- ▶ 今後の課題
- ▶ 質疑応答

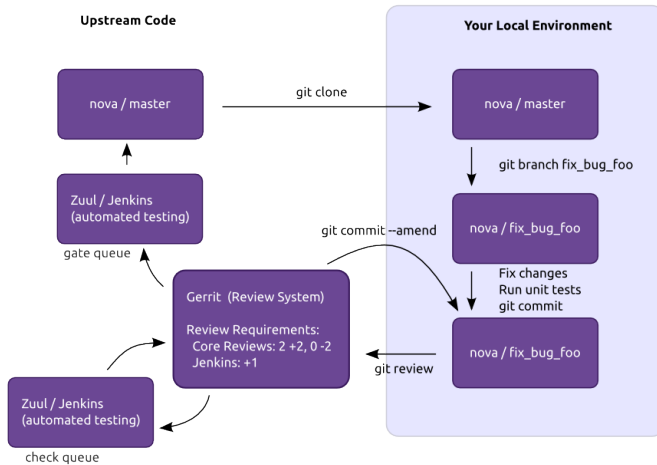
自己紹介

- ▶ 日本ヒューレット・パカード株式会社
 - ▶ Hewlett Packard Enterprise OpenStack アップストリーム開発チーム所属
 - ▶ チームメンバー日本人は私だけ!
- ▶ OpenStack QA 領域でアップストリーム活動実施中
 - ▶ Tempest, OpenStack-Health, Subunit2SQL, Stackviz等のコアメンバ
- ▶ Twitter: [@masayukig](#), github.com/masayukig

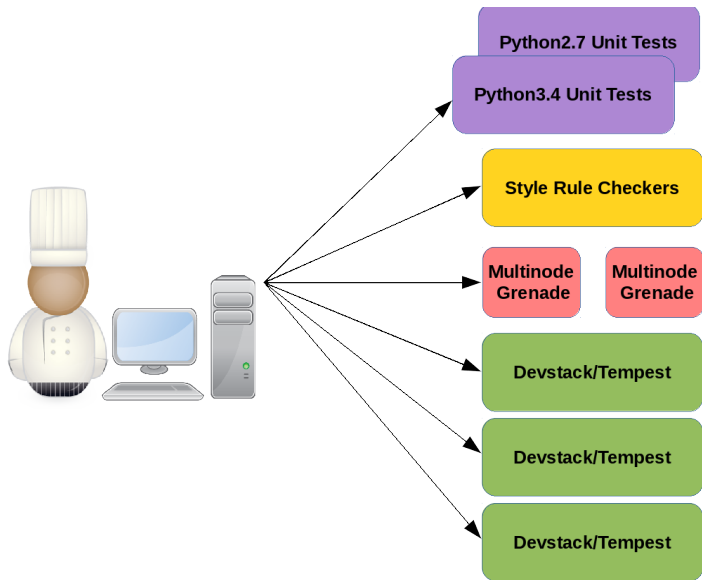
OpenStack開発の概要

- ▶ 6ヶ月毎のリリース (... Liberty, Mitaka, Newton, Ocata, ...)
- ▶ <http://governance.openstack.org/reference/release-naming.html>
- ▶

What is “the OpenStack Gate”?



What Happens when you push a change?



Newly uploaded patchsets enter this pipeline to receive an initial +1-1 Verified vote from Jenkins.

Change queue: **openstack/neutron**

openstack/neutron 181674.23	unknown 3 hr 57 min
gate-neutron-docs:	SUCCESS
gate-neutron-pep8:	SUCCESS
gate-neutron-python27:	FAILURE
gate-neutron-python34:	FAILURE
gate-tempest-dsvm-neutron-full:	queued
gate-grenade-dsvm-neutron:	SUCCESS
gate-neutron-dsvm-api:	SUCCESS
gate-neutron-dsvm-functional:	SUCCESS
gate-neutron-dsvm-fullstack: (non-voting)	SUCCESS
gate-rally-dsvm-neutron-neutron: (non-voting)	SUCCESS
gate-tempest-dsvm-neutron-dvr:	SUCCESS
gate-tempest-dsvm-neutron-identity-v3-only-full-nv: (non-voting)	SUCCESS
gate-tempest-dsvm-neutron-linuxbridge:	SUCCESS
gate-tempest-dsvm-neutron-pg-full: (non-voting)	SUCCESS
gate-neutron-ibaaSv2-dsvm-minimal:	SUCCESS
gate-grenade-dsvm-neutron-multinode: (non-voting)	SUCCESS
gate-grenade-dsvm-neutron-dvr-multinode: (non-voting)	SUCCESS
gate-tempest-dsvm-neutron-multinode-full: (non-voting)	SUCCESS
gate-tempest-dsvm-neutron-dvr-multinode-full: (non-voting)	SUCCESS
gate-tempest-dsvm-ironic-pxe_ipa-nv: (non-voting)	SUCCESS

Change queue: **openstack/networking-generic-sw...**

openstack/networking-generic-switch 306894.3	unknown 3 hr 52 min
gate-networking-generic-switch-docs:	queued
gate-networking-generic-switch-pep8:	SUCCESS
gate-networking-generic-switch-python27:	SUCCESS
gate-networking-generic-switch-python34:	SUCCESS
gate-networking-generic-switch-dsvm:	SUCCESS

Change queue: **openstack/neutron**

openstack/neutron 280595.12	unknown 3 hr 39 min
gate-neutron-docs:	SUCCESS
gate-neutron-pep8:	SUCCESS
gate-neutron-python27:	SUCCESS
gate-neutron-python34:	SUCCESS
gate-tempest-dsvm-neutron-full:	SUCCESS
gate-grenade-dsvm-neutron:	SUCCESS
gate-neutron-dsvm-api:	SUCCESS
gate-neutron-dsvm-functional:	SUCCESS
gate-neutron-dsvm-fullstack: (non-voting)	FAILURE
gate-rally-dsvm-neutron-neutron: (non-voting)	queued
gate-tempest-dsvm-neutron-dvr:	SUCCESS
gate-tempest-dsvm-neutron-identity-v3-only-full-nv: (non-voting)	SUCCESS
gate-tempest-dsvm-neutron-linuxbridge:	SUCCESS
gate-tempest-dsvm-neutron-pg-full: (non-voting)	SUCCESS

Changes that have been approved by core developers are enqueued in order in this pipeline, and if they pass tests in Jenkins, will be merged.

Change queue: **integrated**

openstack/nova 307269.1	0 min 1 hr 10 min
gate-nova-docs:	SUCCESS
gate-nova-pep8:	SUCCESS
gate-nova-python27-db:	SUCCESS
gate-nova-python34-db:	SUCCESS
gate-nova-requirements:	SUCCESS
gate-tempest-dsvm-full:	SUCCESS
gate-tempest-dsvm-postgres-full:	SUCCESS
gate-tempest-dsvm-neutron-full:	SUCCESS
gate-grenade-dsvm:	SUCCESS
gate-nova-releasenotes:	SUCCESS
gate-nova-tox-db-functional:	SUCCESS
gate-grenade-dsvm-multinode:	SUCCESS
gate-tempest-dsvm-cells:	SUCCESS
gate-tempest-dsvm-full-devstack-plugin-ceph:	SUCCESS

openstack/nova 304730.1	0 min 1 hr 10 min
gate-nova-docs:	SUCCESS
gate-nova-pep8:	SUCCESS
gate-nova-python27-db:	SUCCESS
gate-nova-python34-db:	SUCCESS
gate-tempest-dsvm-full:	SUCCESS
gate-tempest-dsvm-postgres-full:	SUCCESS
gate-tempest-dsvm-neutron-full:	SUCCESS
gate-grenade-dsvm:	SUCCESS
gate-nova-releasenotes:	SUCCESS
gate-nova-tox-db-functional:	SUCCESS
gate-grenade-dsvm-multinode:	SUCCESS
gate-tempest-dsvm-cells:	SUCCESS
gate-tempest-dsvm-full-devstack-plugin-ceph:	SUCCESS

openstack/nova 303995.1	0 min 1 hr 5 min
gate-nova-docs:	SUCCESS
gate-nova-pep8:	SUCCESS
gate-nova-python27-db:	SUCCESS
gate-nova-python34-db:	SUCCESS
gate-tempest-dsvm-full:	SUCCESS
gate-tempest-dsvm-postgres-full:	SUCCESS
gate-tempest-dsvm-neutron-full:	SUCCESS
gate-grenade-dsvm:	SUCCESS
gate-nova-tox-db-functional:	SUCCESS
gate-grenade-dsvm-multinode:	SUCCESS
gate-tempest-dsvm-cells:	SUCCESS
gate-tempest-dsvm-full-devstack-plugin-ceph:	SUCCESS

openstack/dev/devstack 308791.1	0 min 1 hr 5 min
gate-devstack-docs:	SUCCESS

This pipeline runs jobs that operate after each change is merged.

Change queue: **openstack/oslo.concurrency**

openstack/oslo.concurrency 342ef03	unknown 5 hr 2 min
oslo.concurrency-branch-tarball:	SUCCESS
oslo.concurrency-docs:	queued
oslo.concurrency-upstream-translation-update:	SUCCESS
oslo.concurrency-coverage:	queued

Change queue: **openstack-infra/project-config**

openstack-infra/project-config 08001cc	unknown 5 hr 0 min
publish-infra-docs-index:	queued
publish-specs-site:	queued

Change queue: **openstack-infra/project-config**

openstack-infra/project-config bd07b6c	unknown 4 hr 56 min
publish-infra-docs-index:	queued
publish-specs-site:	queued

Change queue: **openstack/networking-vsphere**

openstack/networking-vsphere 1931ebe	unknown 4 hr 55 min
networking-vsphere-branch-tarball:	queued
networking-vsphere-docs:	queued

Change queue: **openstack-infra/project-config**

openstack-infra/project-config d700f6	unknown 4 hr 54 min
publish-infra-docs-index:	queued
publish-specs-site:	queued

Change queue: **openstack-infra/project-config**

openstack-infra/project-config 8cb6337	unknown 4 hr 52 min
publish-infra-docs-index:	queued
publish-specs-site:	queued

Change queue: **openstack/stackalytics**

openstack/stackalytics 4007b8	unknown 4 hr 7 min
hook-stackalytics-rtd:	SUCCESS
stackalytics-branch-tarball:	queued

Change queue: **openstack/stackalytics**

openstack/stackalytics ae58a37	unknown 4 hr 7 min
hook-stackalytics-rtd:	SUCCESS
stackalytics-branch-tarball:	queued

Change queue: **openstack/inveniance**

The Size of the Gate

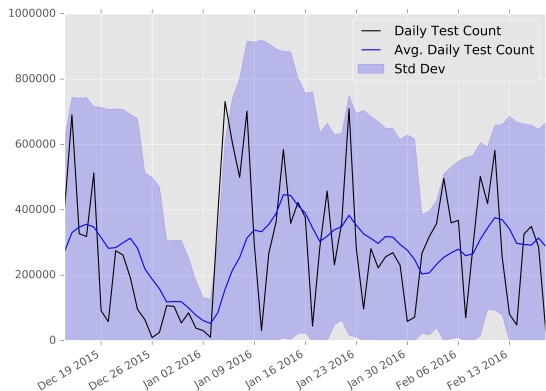
One Proposed Change Generates:

- ▶ 5–25 Devstacks
- ▶ ~10,000 integration tests (roughly 1.5k per devstack)
- ▶ ~151 2nd level guests created in each devstack cloud
- ▶ ~1 GB of logs uncompressed for each run

In aggregate:

- ▶ ~12,500 jobs run in check and gate daily
- ▶ ~0.01% individual tempest test failure rate
- ▶ ~.77% tempest run failure rate

Number of Tempest Tests per Day in the Gate Queue:



Log Server

- ▶ Log Server: <http://logs.openstack.org/>
- ▶ Archive of all artifacts from all jobs for 4 months
- ▶ 8 TB of data compressed

Graphite

- ▶ <http://graphite.openstack.org/>
- ▶ Infra services report to graphite
- ▶ Include job results
- ▶ Limited to job level data
- ▶ Time based, cant' be linked to an individual job
- ▶

ELK

- ▶ Elasticsearch, Logstash, Kibana
- ▶ <http://logstash.openstack.org>
- ▶ Provides a search engine on top of are job artifacts
- ▶ Limited to 10 days of results

Elastic Recheck

- ▶ Designed to answer the question “Have you seen this recently?”
- ▶ <http://status.openstack.org/elastic-recheck/>
- ▶

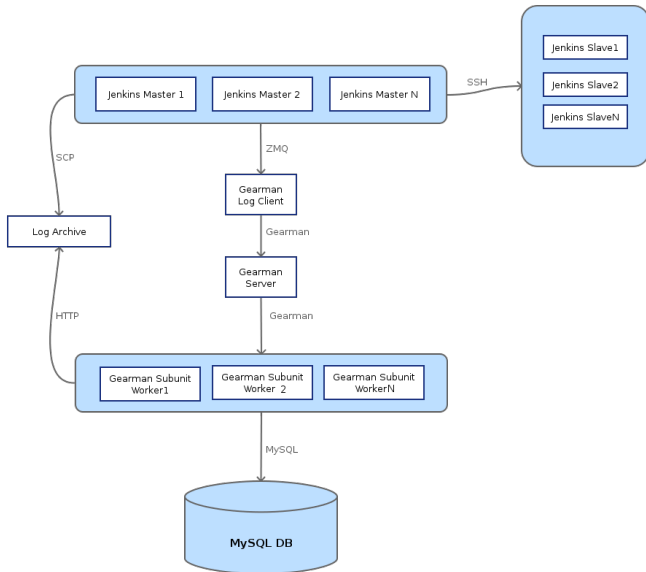
Grafana

- ▶ <http://grafana.openstack.org/>
- ▶ Provides a layer on top of graphite to easily make useful visualizations
- ▶ Adds a number of dashboards
- ▶ Some projects using this to track job failure rates

subunit2sql

- ▶ Designed to store test results data in a sql database
- ▶ Provides a DB schema and a python API for interacting with the database
- ▶ Used to the results from test runs for 6 months
- ▶

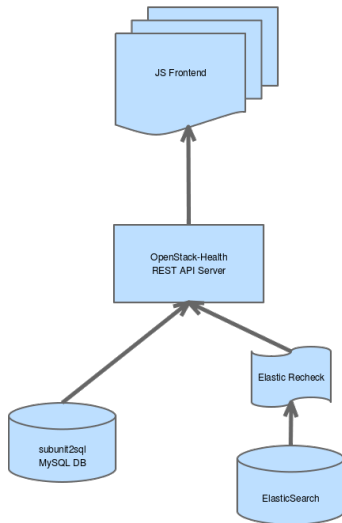
subunit2sql in OpenStack Infrastructure



openstack-health

- ▶ <http://status.openstack.org/openstack-health/#/>
- ▶ Designed to be a single point of access for all the data about the gate
- ▶ Currently can leverage subunit2sql and elastic-recheck

OpenStack-Health Architecture



What did we get/improve?



Issues

- ▶ Too many varied data sources each with unique limitations
- ▶

Future work

- ▶ Integrate all the things in openstack-health
- ▶

Where to get more information

- ▶ openstack-dev ML openstack-dev@lists.openstack.org
- ▶ #openstack-qa on Freenode
- ▶ <http://git.openstack.org/cgit/openstack/openstack-health/>
- ▶ <http://git.openstack.org/cgit/openstack-infra/subunit2sql>
- ▶ <http://git.openstack.org/cgit/openstack-infra/elastic-recheck/>

Questions?