Open Source Continuous Integration System

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OpenStack Infrastructure

Maintains developer infrastructure for the OpenStack project

- Runs a fully open source Continuous Integration (CI) system for OpenStack commits
- Elizabeth has worked on it for nearly 3 years, is a core/root member of the team

http://docs.openstack.org/infra/
Continuous Integration

“The practice, in software engineering, of merging all developer working copies to a shared mainline several times a day... In addition to automated unit tests, organisations using CI typically use a build server to implement continuous processes of applying quality control in general” Source: https://en.wikipedia.org/wiki/Continuous_integration

- Jenkins
- Travis CI, CircleCI
OpenStack

- Commitment to all open source
- CI is essential for a complex system that has a diverse development team
Developer work flow

Upstream Code

- nova / master
- Zuul / Jenkins (automated testing)
- gate queue
- Gerrit (Review System)
  - Review Requirements:
    - Core Reviews: 2+2, 0-2
    - Jenkins: +1

Your Local Environment

- nova / master
- git clone
- git branch fix_bug_foo
- git commit--amend
- Fix changes
  - Run unit tests
  - git commit
- nova / fix_bug_foo
- git review
- nova / fix_bug_foo
Infrastructure set up

- Github mirror
- git.openstack.org mirror
- Git repository
- Gerrit code review
- Zuul
- Gearman Server
- Jenkins (gearman-plugin)
- pipy mirrors & other semi-privileged servers
- ubuntu, fedora, centos & devstack slaves

Local changes submitted via git-review
Git

- Revision control
- HAProxy, cgit and git-daemon for 8 node git cluster accessible via git.openstack.org
- Mirror to GitHub (not open source)
Gerrit

- Code review
  https://www.gerritcodereview.com/
- Gerrit server at
  https://review.openstack.org
- Open to everyone to propose code*, view proposed changes and do code reviews

* OpenStack requires a Contributor License Agreement to be signed in order to submit code to the project
Zuul

- Project gating, docs: http://docs.openstack.org/infra/zuul/
- Manages change dependencies
- Passes jobs to testing systems
- View jobs in action at http://status.openstack.org/zuul/
Gearman

- Application framework to farm out work to other machines or processes
  http://gearman.org/
- Hands off jobs to the Jenkins server that meets the appropriate requirements
Jenkins

- Fleet of 8 Jenkins servers
Jenkins Job Builder

- Takes simple descriptions of Jenkins jobs in YAML or JSON format and uses them to configure Jenkins, docs: http://docs.openstack.org/infra/jenkins-job-builder/
- Easy to manage submissions from developers in revision control
Nodepool

- A system for launching single-use test nodes, docs: http://docs.openstack.org/infra/nodepool/
- Manages 800+ servers across multiple clouds, public and private
ELK stack

- Elasticsearch, Logstash and Kibana
- Kibana interface at http://logstash.openstack.org/
- Search for failures, run automated scripts to track failures (elastic-recheck)
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