Code Review for DevOps

FOSSASIA 2016
Saturday, 19 March 2016

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Elizabeth K. Joseph

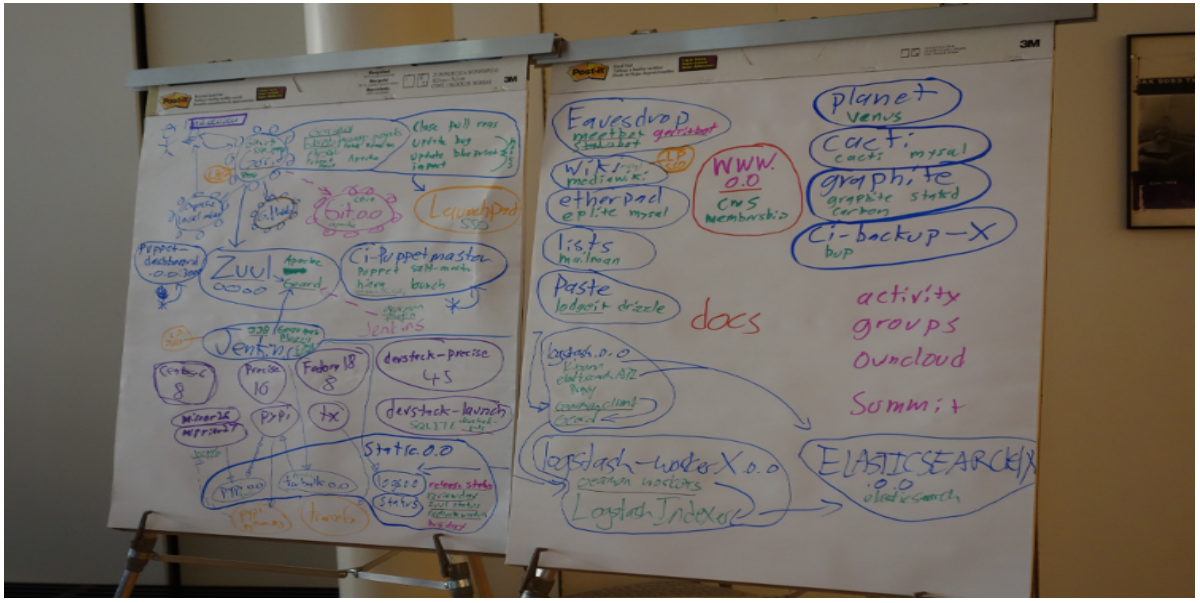
- OpenStack Infrastructure Team DevOps Engineer, paid by Hewlett Packard Enterprise
- Long time contributor to various open source projects
- Co-author of The Official Ubuntu Book, 8th ed

OpenStack Infrastructure Team

- Our job is to make sure the OpenStack developers can do *their* job
- All of our system configurations are open source and tracked in git: https://git.openstack.org/cgit/openstack-infra
- Anyone in the world can propose patches for direct inclusion in our infrastructure, instructions at: http://docs.openstack.org/infra/manual/developers.html
- We all work remotely, worldwide.

We run services for developers

- Askbot
- Continuous Integration systems
- Cacti
- Elasticsearch, Logstash and Kibana
- IRC Bots
- Etherpad
- Git
- Paste
- Planet
- Puppetboard
- Mailing Lists
- Translations platform
- Various web services
- Wiki



OpenStack Continuous Integration (CI) System

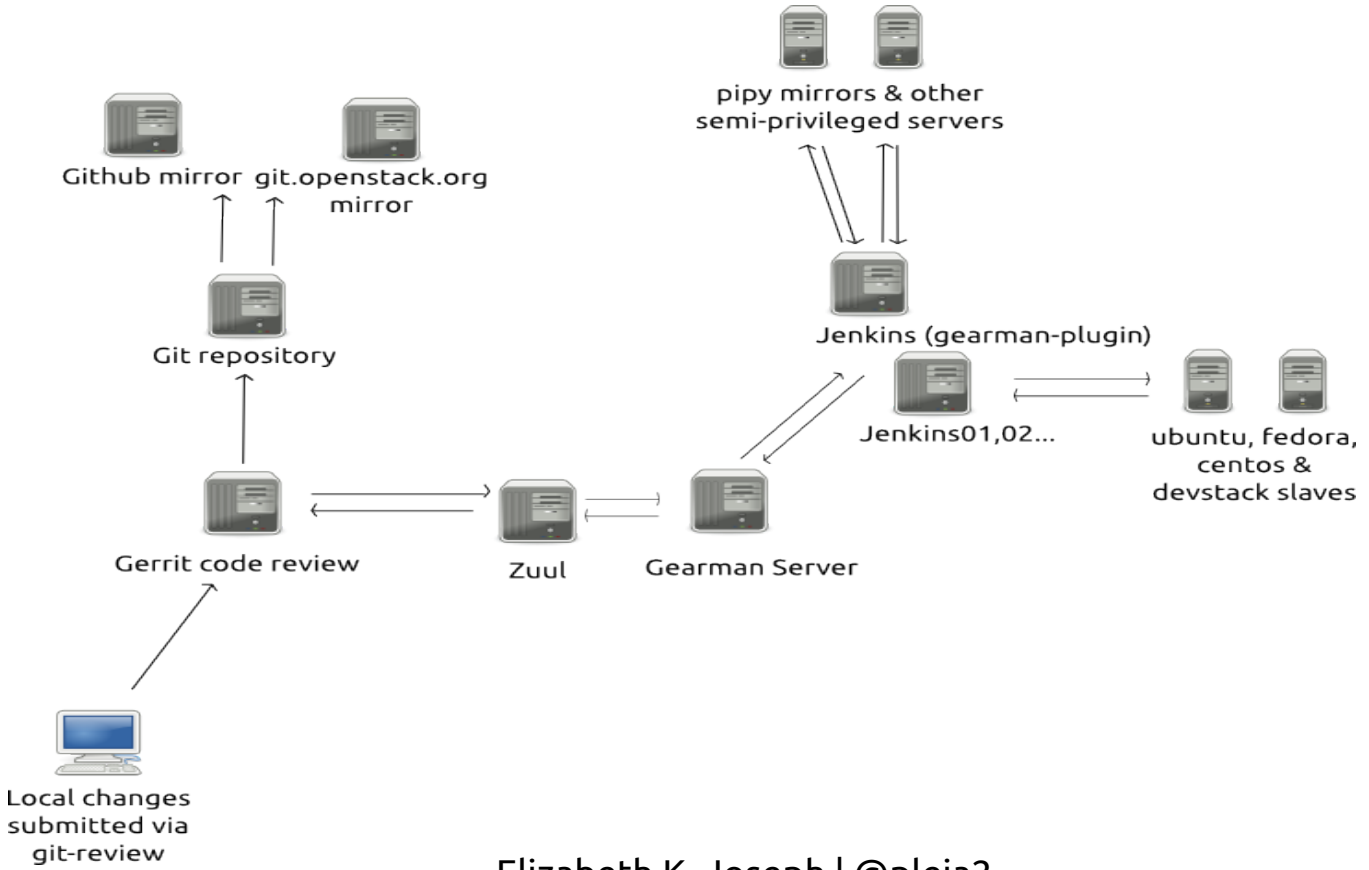
- Lots of individual projects (1000+)
- All projects must work together
- Changes can't break master branch
- Code should be syntactically clean
- Testing must be completed automated

Tools we're using for CI

- Launchpad (someday: openstackid)
- Git
- Gerrit
- Zuul*
- Gearman
- Jenkins (with jenkins-job-builder*, devstack-gate*)
- Nodepool*

* Started by the OpenStack Infrastructure team

Workflow


pipy mirrors & other
semi-privileged servers
Github mirror
git.openstack.org
mirror
Git repository
Jenkins (gearman-plugin)
Jenkins01,02...
ubuntu, fedora,
centos &
devstack slaves
Gerrit code review
Zuul
Gearman Server
Local changes
submitted via
git-review

Why do I care?

The Infrastructure team uses it too!

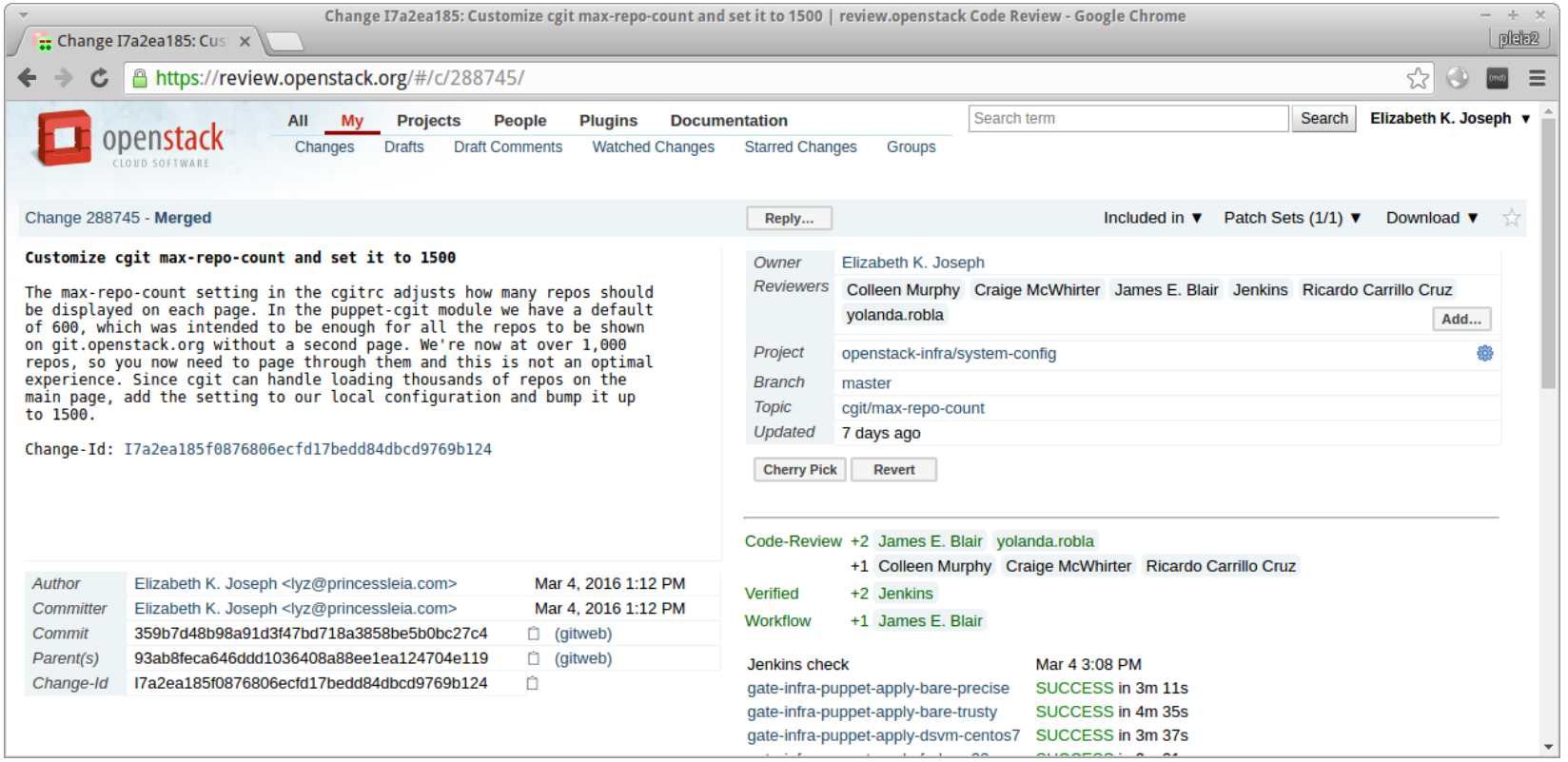
Automated tests for infrastructure

- flake8 (pep 8 and pyflakes)
- puppet parser validate
- puppet lint
- Puppet application tests
- XML checkers
- Alphabetized files
- IRC channel permissions

Peer review

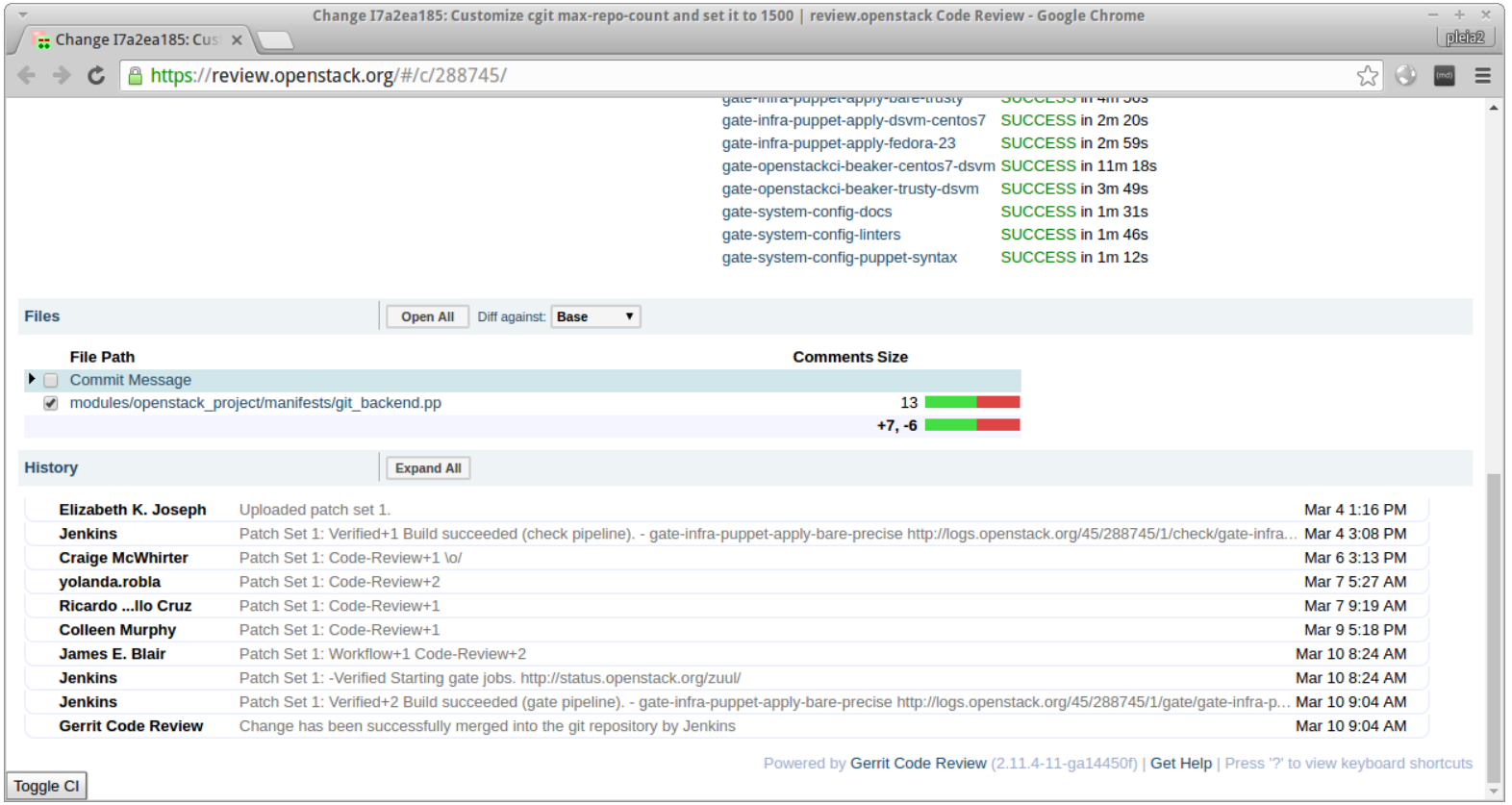
- Multiple eyes on changes prior to merging
- Good infrastructure for developing new solutions
- No special process to go through for commit access
- Trains us to be collaborative by default
- Anyone can contribute, anyone can devote resources to it

Gerrit 1/2



https://review.openstack.org/#/c/288745/

Gerrit 2/2


Change I7a2ea185: Customize cgit max-repo-count and set it to 1500 | review.openstack Code Review - Google Chrome
Change I7a2ea185: Cus
pleia2
https://review.openstack.org/#/c/288745/
gate-infra-puppet-apply-dsvm-centos7 SUCCESS in 2m 20s
gate-infra-puppet-apply-fedora-23 SUCCESS in 2m 59s
gate-openstackci-beaker-centos7-dsvm SUCCESS in 11m 18s
gate-openstackci-beaker-trusty-dsvm SUCCESS in 3m 49s
gate-system-config-docs SUCCESS in 1m 31s
gate-system-config-linters SUCCESS in 1m 46s
gate-system-config-puppet-syntax SUCCESS in 1m 12s
Files
Open All
Diff against: Base
File Path
Comments Size
Commit Message
modules/openstack_project/manifests/git_backend.pp
13
+7, -6
History
Expand All
Elizabeth K. Joseph Uploaded patch set 1. Mar 4 1:16 PM
Jenkins Patch Set 1: Verified+1 Build succeeded (check pipeline). - gate-infra-puppet-apply-bare-precise http://logs.openstack.org/45/288745/1/check/gate-infra... Mar 4 3:08 PM
Craige McWhirter Patch Set 1: Code-Review+1 \o/ Mar 6 3:13 PM
yolanda.robla Patch Set 1: Code-Review+2 Mar 7 5:27 AM
Ricardo ...llo Cruz Patch Set 1: Code-Review+1 Mar 7 9:19 AM
Colleen Murphy Patch Set 1: Code-Review+1 Mar 9 5:18 PM
James E. Blair Patch Set 1: Workflow+1 Code-Review+2 Mar 10 8:24 AM
Jenkins Patch Set 1: -Verified Starting gate jobs. http://status.openstack.org/zuul/ Mar 10 8:24 AM
Jenkins Patch Set 1: Verified+2 Build succeeded (gate pipeline). - gate-infra-puppet-apply-bare-precise http://logs.openstack.org/45/288745/1/gate/gate-infra-p... Mar 10 9:04 AM
Gerrit Code Review Change has been successfully merged into the git repository by Jenkins Mar 10 9:04 AM
Powered by Gerrit Code Review (2.11.4-11-ga14450f) | Get Help | Press '?' to view keyboard shortcuts
Toggle CI

Gerrit in-line comments

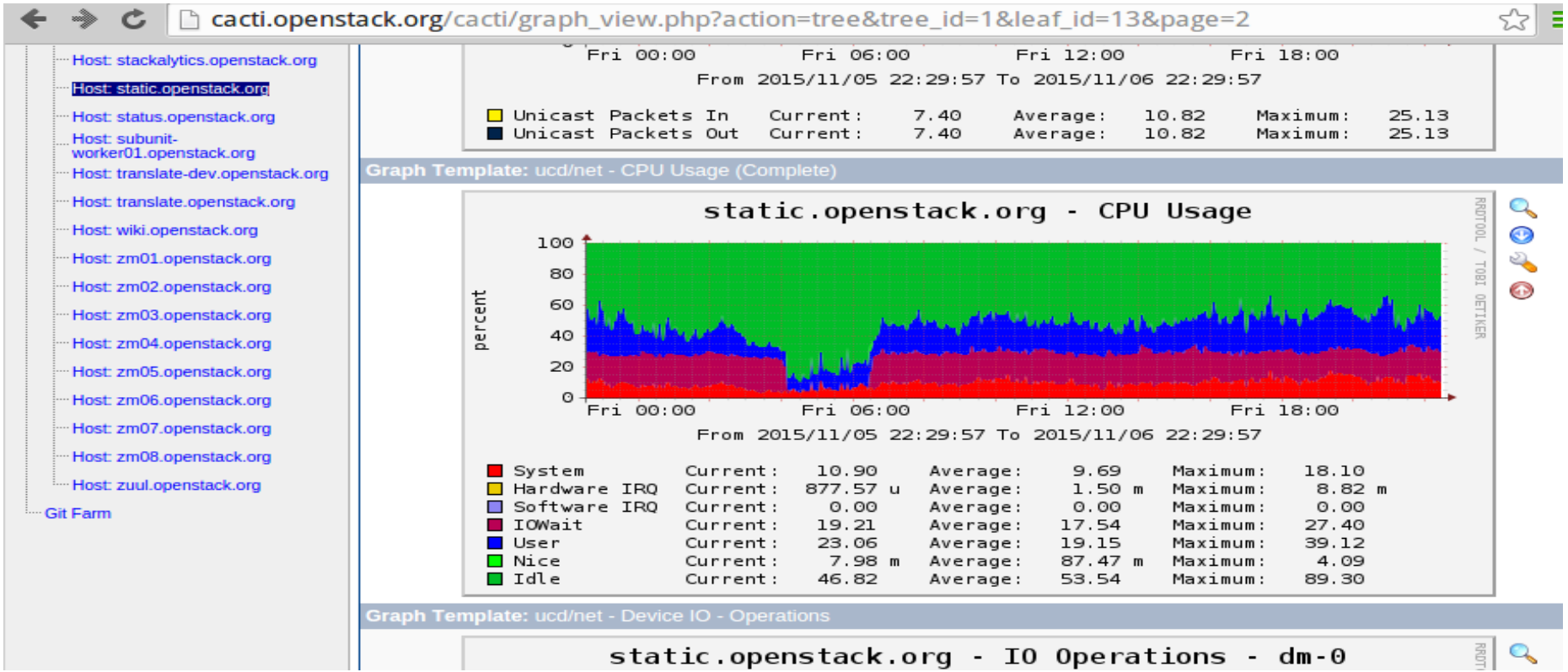
Automated deployment

- Change gets approved, tested and merged
- ...Either puppet master gets updated and applies change
- ...Or continuously deploy via the vcsrepo module in Puppet pulls in latest version of project

Can you really manage an infrastructure via git commits?

Cacti (http://cacti.openstack.org/) to keep an eye on server usage

Cacti


cacti.openstack.org/cacti/graph_view.php?action=tree&tree_id=1&leaf_id=13&page=2
Host: stackalytics.openstack.org
Host: static.openstack.org
Host: status.openstack.org
Host: subunit-worker01.openstack.org
Host: translate-dev.openstack.org
Host: translate.openstack.org
Host: wiki.openstack.org
Host: zm01.openstack.org
Host: zm02.openstack.org
Host: zm03.openstack.org
Host: zm04.openstack.org
Host: zm05.openstack.org
Host: zm06.openstack.org
Host: zm07.openstack.org
Host: zm08.openstack.org
Host: zuul.openstack.org
Git Farm
Fri 00:00 Fri 06:00 Fri 12:00 Fri 18:00
From 2015/11/05 22:29:57 To 2015/11/06 22:29:57
Unicast Packets In Current: 7.40 Average: 10.82 Maximum: 25.13
Unicast Packets Out Current: 7.40 Average: 10.82 Maximum: 25.13
Graph Template: ucd/net - CPU Usage (Complete)
static.openstack.org - CPU Usage
percent
100
80
60
40
20
0
Fri 00:00 Fri 06:00 Fri 12:00 Fri 18:00
From 2015/11/05 22:29:57 To 2015/11/06 22:29:57
System Current: 10.90 Average: 9.69 Maximum: 18.10
Hardware IRQ Current: 877.57 u Average: 1.50 m Maximum: 8.82 m
Software IRQ Current: 0.00 Average: 0.00 Maximum: 0.00
IOWait Current: 19.21 Average: 17.54 Maximum: 27.40
User Current: 23.06 Average: 19.15 Maximum: 39.12
Nice Current: 7.98 m Average: 87.47 m Maximum: 4.09
Idle Current: 46.82 Average: 53.54 Maximum: 89.30
Graph Template: ucd/net - Device IO - Operations
static.openstack.org - IO Operations - dm-0

Can you really manage an infrastructure via git commits? (2/3)

PuppetBoard (http://puppetboard.openstack.org/) so you can watch your changes get applied, or not

PuppetBoard

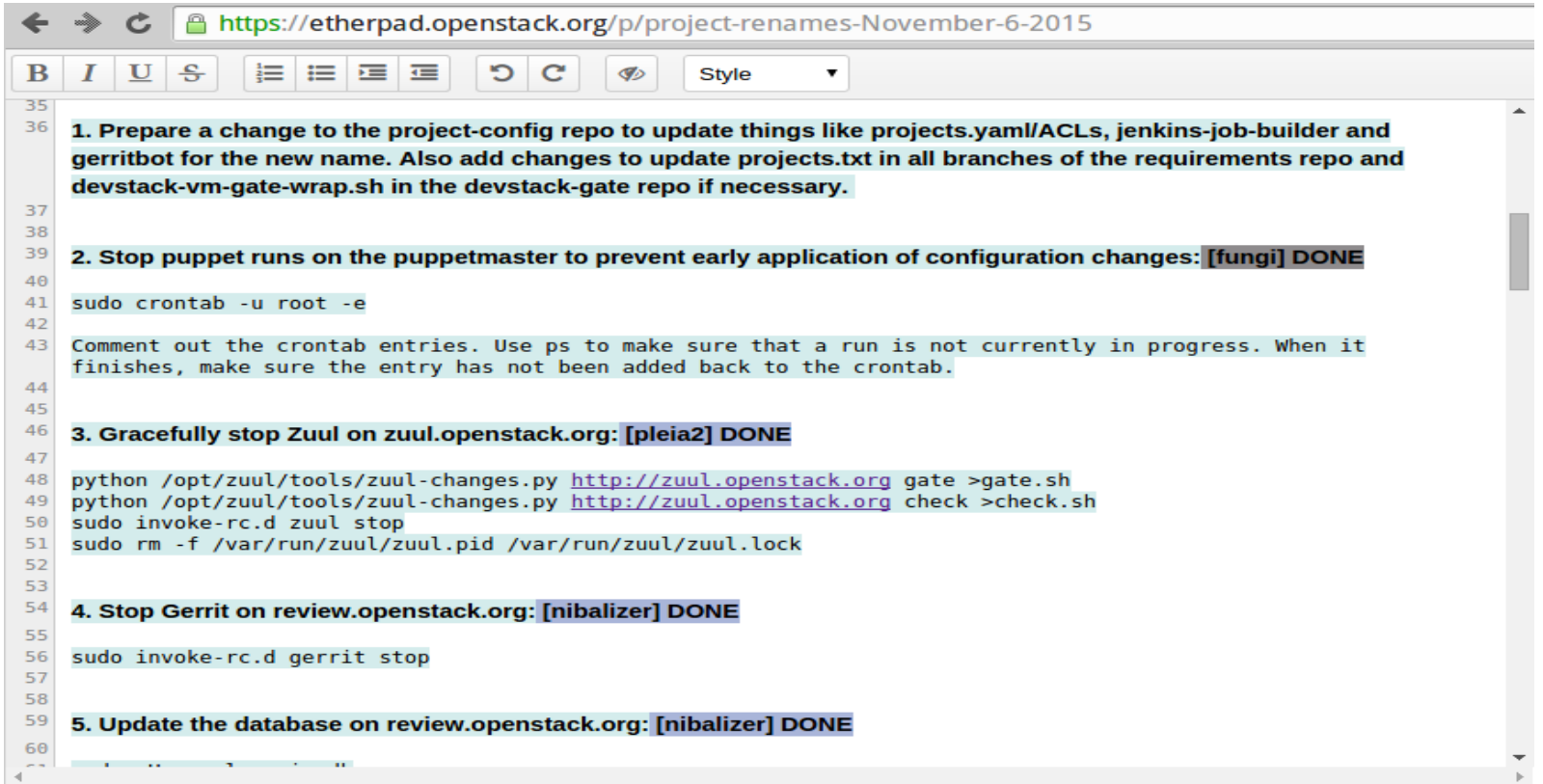
Can you really manage an infrastructure via git commits? (3/3)

Thorough, specific documentation at
http://docs.openstack.org/infra/system-config

Well, not everything

- Automation is not perfect, sometimes you just need to log into a server
- Complicated migrations and upgrades need manual components (but we automate more every time!)
- Initial persistent server deployment still has manual components
- Passwords need to be privately managed (but we use git!)

Maintenance collaboration on Etherpad



Human collaboration

- Main IRC channel (#openstack-infra)
- Incident IRC channel (#openstack-infra-incident)
- Sprint IRC channel (#openstack-sprint)
- Weekly IRC-based meetings (#openstack-meeting)
- Channel/Meeting logs on http://eavesdrop.openstack.org/
- Pastebin http://paste.openstack.org/
- In person collaboration at the OpenStack Design Summit every 6 months

No voice or video calls.

And then there are time zones :(

- Increased coverage is great, but...
  - The first core/root member in a particular region struggles to feel cohesion with the team
  - Increased reluctance to land changes into production
  - Makes for slower on-boarding for key tasks
- Only solved by increasing coverage in that time zone so they're not alone

But mostly it's pretty great!

(and our team always needs help)

Questions

The email address I use: lyz@princessleia.com

HPE email: lyz@hpe.com

Freenode: pleia2

OpenStack CI Resources:
http://docs.openstack.org/infra/system-config/