Getting Started With OpenStack Development

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People frequently ask how they can get started with OpenStack development. There's a process which needs to be followed, from setting up a launchpad account, to signing the CLA, to sending off your first patch with adequate testing. In this session Michael Still, a Nova core reviewer, will guide the audience through this process and send off a patch to a real bug in the Nova codebase, stopping to answer questions along the way.

After the session attendees should know everything they need to about the OpenStack development environment to start sending off real patches.

Overview

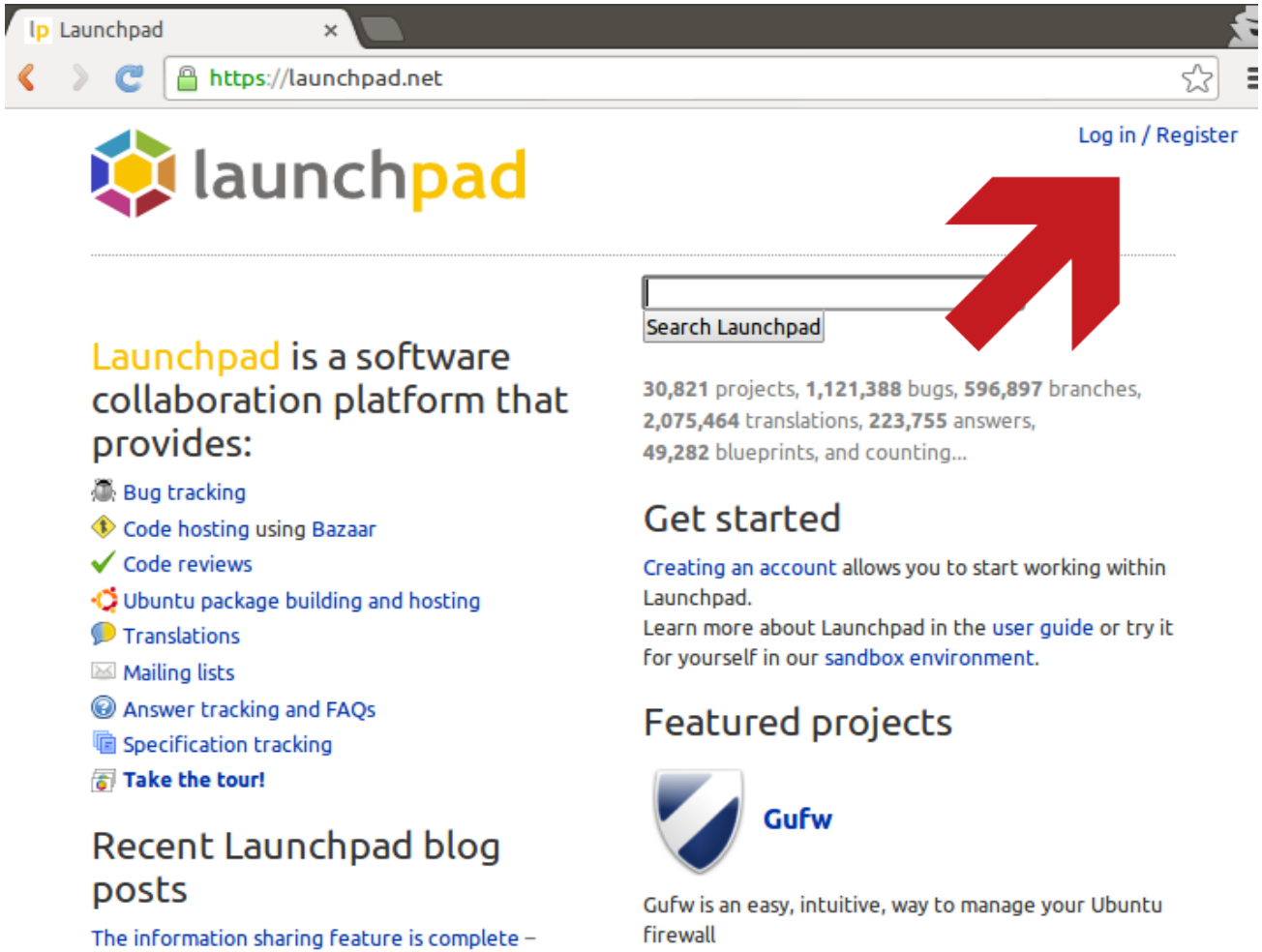
- What is a core reviewer?
- Signing up for accounts
- Signing the Copyright License Agreement
- Mailing lists / IRC
- Setting up a development environment
- Writing a change
- Testing the change
- Uploading code for review

What is a core reviewer?

Signing up for accounts: LaunchPad

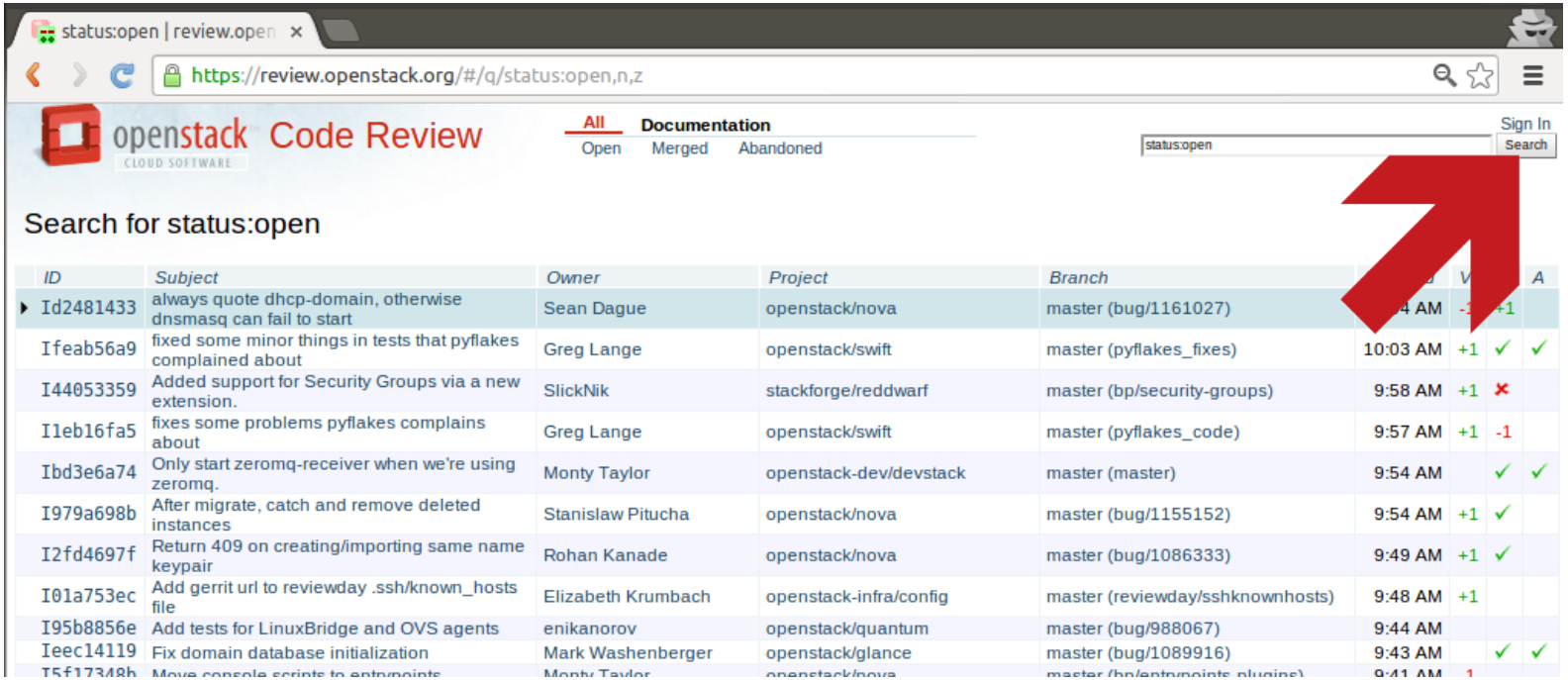
- **The OpenStack project uses LaunchPad for a few things**
  - Bug tracking
  - Blueprints
  - Groups
  - Mailing lists (sometimes)
- **Each OpenStack project will have a LaunchPad project**
  - https://launchpad.net/nova
  - https://launchpad.net/glance
  - … etc
- **Once you've signed up to LaunchPad, join the projects which interest you**
  - A side effect is that you get added to the OpenStack LaunchPad project "for free"
- **You really do need a LaunchPad account. Keep the username short and descriptive, because it appears in a bunch of places.**

Signing up for accounts: LaunchPad



Signing up for accounts: Gerrit

- **You must have a LaunchPad account first… That's how you sign on!**
  - http://review.openstack.org



Signing up for accounts: Gerrit

- **You need to set a ssh key**
  - Click Settings (top right), then add a key
- **To test the key**
  - You can ssh to gerrit and ask it stuff, but it uses a different port…
  - I have this in my ~/.ssh/config file:

```
# Openstack
Host review.openstack.org
  Hostname review.openstack.org
  Port 29418
  User mikalstill
```

- **An example ssh to test with:**

```
ssh -i ~/.ssh/id_gerrit review.openstack.org gerrit query \
project:openstack/nova --all-approvals --patch-sets \
--format JSON
```

Sign the Copyright License Agreement

- **The old way**
  - Echosign transaction, and then a request to join a LaunchPad group
  - If someone tells you to do this, they're showing their age
- **The new way**
  - This is managed in Gerrit settings
  - Click "Agreements" on the left, and then "New Contributor Agreement"
  - You must have a signed CLA before you can send off a code review
- **Are you being paid to work on OpenStack?**
  - Your employer must sign a Corporate CLA as well
- **Are you a US Government employee?**
  - Its all confusing and different. Come talk to me after the session

Mailing lists you should be on

- **http://lists.openstack.org**
  - Openstack-announce
  - Openstack-dev

  - Foundation
  - Openstack-docs
  - Openstack-operators
  - Openstack-security

- **https://launchpad.net/~openstack**
  - At the bottom left there is a “mailing list” box. Click the subscribe button.

IRC channels

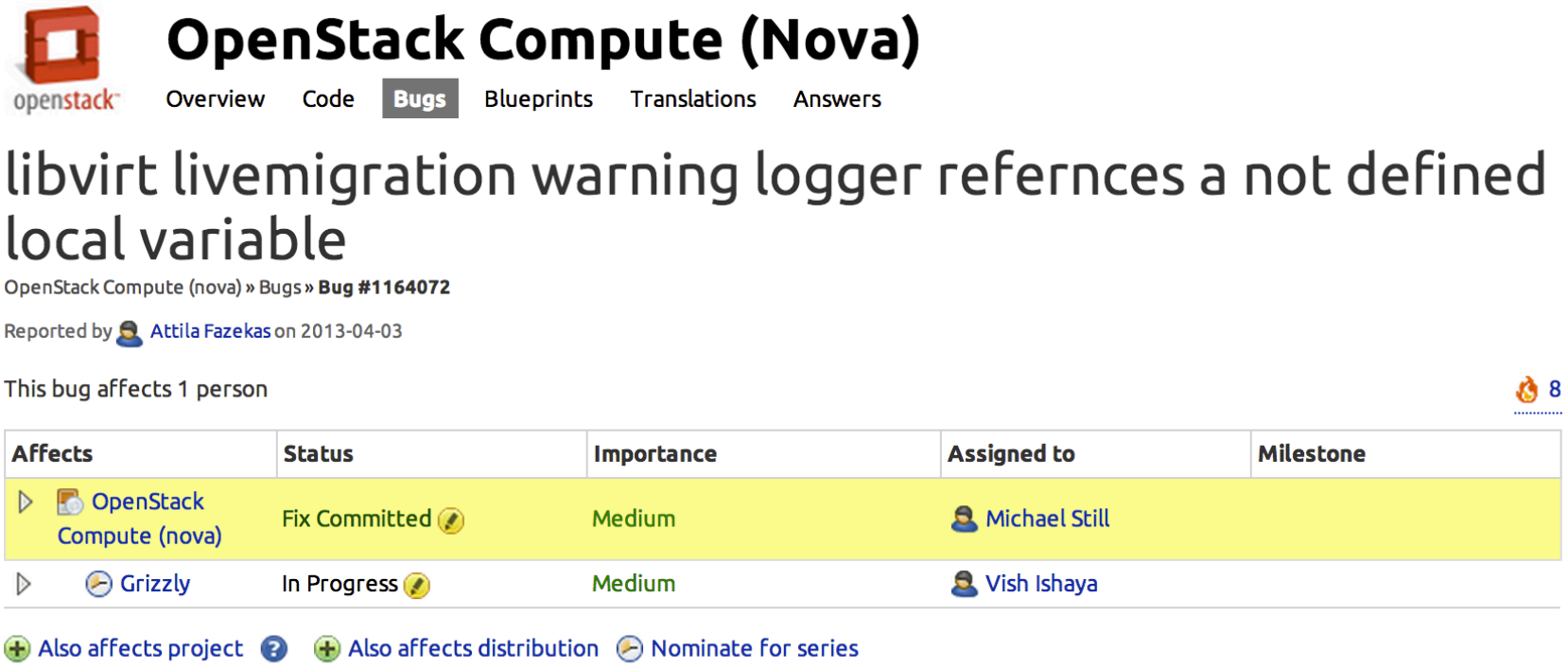
- **Freenode.net**
  - #openstack
  - #openstack-dev
  - #openstack-infra
  - #openstack-meeting
  - #openstack-meeting-alt

No wait, seriously?!?

Setting up your development environment

- **I am assuming Ubuntu 12.10 because that's what I develop on. Other operating systems and distributions are supported though.**
  - sudo apt-get install git python-pip
  - sudo pip install tox
  - sudo apt-get install git-review libxml2-dev libxml2-utils libxslt-dev libmysqlclient-dev pep8 postgresql-server-dev-9.1 python2.7-dev python-coverage python-netaddr
- **Finally we can fetch some code!**
  - git clone https://github.com/openstack/nova.git
- **Branching**
  - Write your new code in a topic branch.
  - Names are normally "bug/123456"; "bp/my-blueprint"; or a descriptive title

I promised to actually fix a bug…



OpenStack Compute (Nova)

Overview Code **Bugs** Blueprints Translations Answers

libvirt livemigration warning logger refernces a not defined local variable

OpenStack Compute (nova) » Bugs » **Bug #1164072**

Reported by Attila Fazekas on 2013-04-03

This bug affects 1 person 8

Affects	Status	Importance	Assigned to	Milestone
OpenStack Compute (nova)	Fix Committed	Medium	Michael Still	
Grizzly	In Progress	Medium	Vish Ishaya	

Also affects project Also affects distribution Nominate for series

I promised to actually fix a bug…

```
2013-04-03 19:45:56.433 7807 TRACE nova.compute.manager [instance: db05a638-846f-41cc-b013-e2e352e707d0] KeyError: u'u\'hostname\'\nTraceback (most recent call last):\n\n File "/usr/lib/python2.7/site-packages/nova/openstack/common/rpc/amqp.py", line 430, in _process_data\n rval = self.proxy.dispatch(ctxt, version, method, **args)\n\n File "/usr/lib/python2.7/site-packages/nova/openstack/common/rpc/dispatcher.py", line 133, in dispatch\n return getattr(proxyobj, method)(ctxt, **kwargs)\n\n File "/usr/lib/python2.7/site-packages/nova/compute/manager.py", line 3071, in pre_live_migration\n migrate_data)\n\n File "/usr/lib/python2.7/site-packages/nova/virt/libvirt/driver.py", line 3201, in pre_live_migration\n % locals())\n\nKeyError: u\'hostname\'\n'
2013-04-03 19:45:56.433 7807 TRACE nova.compute.manager [instance: db05a638-846f-41cc-b013-e2e352e707d0]
2013-04-03 19:45:58.036 ERROR nova.openstack.common.rpc.amqp [req-8a1d4d7f-8bff-4e57-b57c-dc4698f5c25c 6787bedca8804cd7b204748d0240235c 4251d38a5827440299d71e3b3d78350b] Exception during message handling
2013-04-03 19:45:58.036 7807 TRACE nova.openstack.common.rpc.amqp Traceback (most recent call last):
2013-04-03 19:45:58.036 7807 TRACE nova.openstack.common.rpc.amqp File "/usr/lib/python2.7/site-packages/nova/openstack/common/rpc/amqp.py", line 430, in _process_data
2013-04-03 19:45:58.036 7807 TRACE nova.openstack.common.rpc.amqp rval = self.proxy.dispatch(ctxt, version, method, **args)
2013-04-03 19:45:58.036 7807 TRACE nova.openstack.common.rpc.amqp File "/usr/lib/python2.7/site-packages/nova/openstack/common/rpc/dispatcher.py", line 133, in dispatch
2013-04-03 19:45:58.036 7807 TRACE nova.openstack.common.rpc.amqp return getattr(proxyobj, method)(ctxt, **kwargs)
2013-04-03 19:45:58.036 7807 TRACE nova.openstack.common.rpc.amqp File "/usr/lib/python2.7/site-packages/nova/compute/manager.py", line 3115, in live_migration
2013-04-03 19:45:58.036 7807 TRACE nova.openstack.common.rpc.amqp block_migration, migrate_data)
2013-04-03 19:45:58.036 7807 TRACE nova.openstack.common.rpc.amqp File "/usr/lib64/python2.7/contextlib.py", line 24, in __exit__
2013-04-03 19:45:58.036 7807 TRACE nova.openstack.common.rpc.amqp self.gen.next()
2013-04-03 19:45:58.036 7807 TRACE nova.openstack.common.rpc.amqp File "/usr/lib/python2.7/site-packages/nova/compute/manager.py", line 3108, in live_migration
2013-04-03 19:45:58.036 7807 TRACE nova.openstack.common.rpc.amqp block_migration, disk, dest, migrate_data)
2013-04-03 19:45:58.036 7807 TRACE nova.openstack.common.rpc.amqp File "/usr/lib/python2.7/site-packages/nova/compute/rpcapi.py", line 408, in pre_live_migration
2013-04-03 19:45:58.036 7807 TRACE nova.openstack.common.rpc.amqp version='2.21')
2013-04-03 19:45:58.036 7807 TRACE nova.openstack.common.rpc.amqp File "/usr/lib/python2.7/site-packages/nova/openstack/common/rpc/proxy.py", line 80, in call
2013-04-03 19:45:58.036 7807 TRACE nova.openstack.common.rpc.amqp return rpc.call(context, self._get_topic(topic), msg, timeout)
2013-04-03 19:45:58.036 7807 TRACE nova.openstack.common.rpc.amqp File "/usr/lib/python2.7/site-packages/nova/openstack/common/rpc/__init__.py", line 140, in call
2013-04-03 19:45:58.036 7807 TRACE nova.openstack.common.rpc.amqp return _get_impl().call(CONF, context, topic, msg, timeout)
2013-04-03 19:45:58.036 7807 TRACE nova.openstack.common.rpc.amqp File "/usr/lib/python2.7/site-packages/nova/openstack/common/rpc/impl_qpid.py", line 610, in call
2013-04-03 19:45:58.036 7807 TRACE nova.openstack.common.rpc.amqp rpc_amqp.get_connection_pool(conf, Connection))
2013-04-03 19:45:58.036 7807 TRACE nova.openstack.common.rpc.amqp File "/usr/lib/python2.7/site-packages/nova/openstack/common/rpc/amqp.py", line 613, in call
2013-04-03 19:45:58.036 7807 TRACE nova.openstack.common.rpc.amqp rv = list(rv)
2013-04-03 19:45:58.036 7807 TRACE nova.openstack.common.rpc.amqp File "/usr/lib/python2.7/site-packages/nova/openstack/common/rpc/amqp.py", line 562, in __iter__
2013-04-03 19:45:58.036 7807 TRACE nova.openstack.common.rpc.amqp raise result
2013-04-03 19:45:58.036 7807 TRACE nova.openstack.common.rpc.amqp KeyError: u'u\'hostname\'\nTraceback (most recent call last):\n\n File "/usr/lib/python2.7/site-packages/nova/openstack/common/rpc/amqp.py", line 430, in _process_data\n rval = self.proxy.dispatch(ctxt, version, method, **args)\n\n File "/usr/lib/python2.7/site-packages/nova/openstack/common/rpc/dispatcher.py", line 133, in dispatch\n return getattr(proxyobj, method)(ctxt, **kwargs)\n\n File "/usr/lib/python2.7/site-packages/nova/compute/manager.py", line 3071, in pre_live_migration\n migrate_data)\n\n File "/usr/lib/python2.7/site-packages/nova/virt/libvirt/driver.py", line 3201, in pre_live_migration\n % locals())\n\nKeyError: u\'hostname\'\n'
```

I promised to actually fix a bug…

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2013-04-03 19:45:58.036 7807 TRACE
nova.openstack.common.rpc.amqp KeyError: u'u\'hostname
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python2.7/site-packages/nova/openstack/common/rpc/amqp.py",
line 430, in _process_data\n rval =
self.proxy.dispatch(ctxt, version, method, **args)\n\n File
"/usr/lib/python2.7/site-packages/nova/openstack/common/
rpc/dispatcher.py", line 133, in dispatch\n return
getattr(proxyobj, method)(ctxt, **kwargs)\n\n File "/usr/
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line 3201, in pre_live_migration\n % locals())\n\nKeyError:
u\'hostname\'\n'
```

Let’s do this as performance art…

Testing your changes: tox and pep8

- **It is important to test your change before you send them off for review:**
  - tox –e py27
  - tox –e pep8

Testing your changes: devstack

- **You should also test your changes in devstack, but that's outside the scope of this talk**

Uploading your change for review

- **Uploading your change for review is super simple:**
  - git review

  - This command will upload your change to gerrit via ssh
  - Before doing this, it will also add a change identifier to the git commit's message. This is important, and should be the last paragraph of the commit message.

Uploading your change for review

- **An example commit message:**

```
commit 676b16bfe5ff41eb28d782c888c17dae6bdff76a
Author: Michael Still <mikal@stillhq.com>
Date:   Fri Apr 5 08:57:35 2013 +1100

    Fix error message in pre_live_migration.

    We are using locals() to reference a variable which doesn't exist
    in this error message. Also rename the instance variable while I
    am here to be more consistent with other uses.

    Resolves bug 1164072.

    Change-Id: I96f5e2a81ac2e97181c3e87df83e19b381f4bcd2
```

Uploading your change for review

- **An example commit message:**

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```

The review process

Merging the change

A word on vulnerability management

THANK YOU

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