Chef for OpenStack Overview

OpenStack Summit April 2013

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Opscode

Why Chef?

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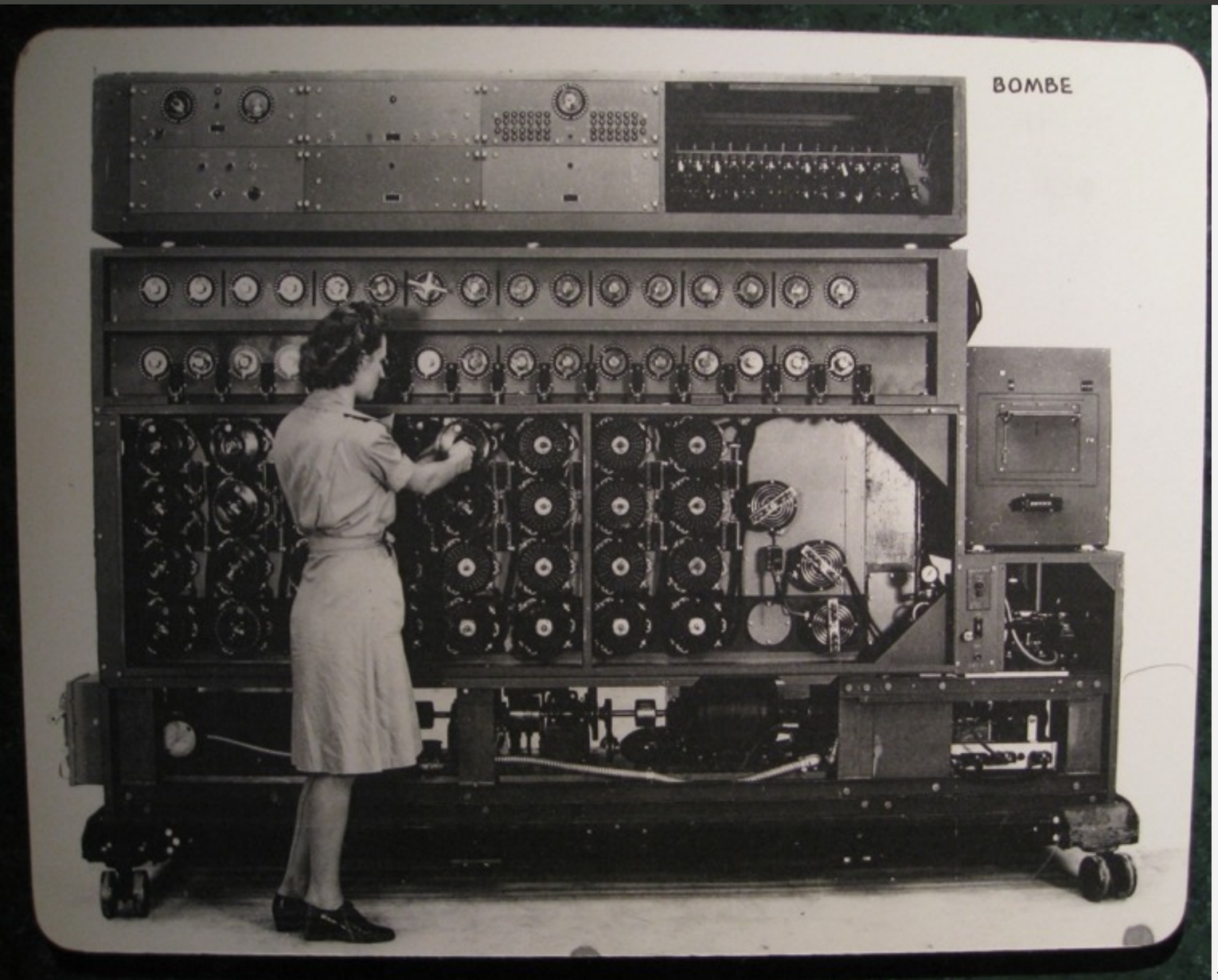
Chef is Infrastructure as Code



- Programmatically provision and configure
- Treat like any other code base
- Reconstruct business from code repository, data backup, and bare metal resources.

http://www.flickr.com/photos/louisb/4555295187/

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Declarative Interface to Resources

- Define policy
- Say what, not how
- Pull not Push

http://www.flickr.com/photos/bixentro/2591838509/

```
extra_packages = case node['platform']
  when "ubuntu","debian"
    %w{
      ruby1.8
      ruby1.8-dev
      rdoc1.8
      ri1.8
      libopenssl-ruby
    }
  end
extra_packages.each do |pkg|
  package pkg do
    action :install
  end
end
```

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Recipes and Cookbooks

- Recipes are collections of Resources
- Cookbooks contain recipes, templates, files, custom resources, etc
- Code re-use and modularity
- Hundreds already on Community.opscode.com

http://www.flickr.com/photos/shutterhacks/4474421855/

The Chef Community

- Apache License, Version 2.0
- 1300+ Individual contributors
- 200+ Corporate contributors
  - Dell, DreamHost, HP, Rackspace, VMware, SUSE and many more
- 900+ cookbooks
- http://community.opscode.com


That's great and all,
but tell me about
OpenStack!

Deploying OpenStack

- Chef ties it all together automatically
- Scaling changes how we deploy
- Interchangeable components
- Configurations shared, supported & documented
- Licensing makes it available to everyone

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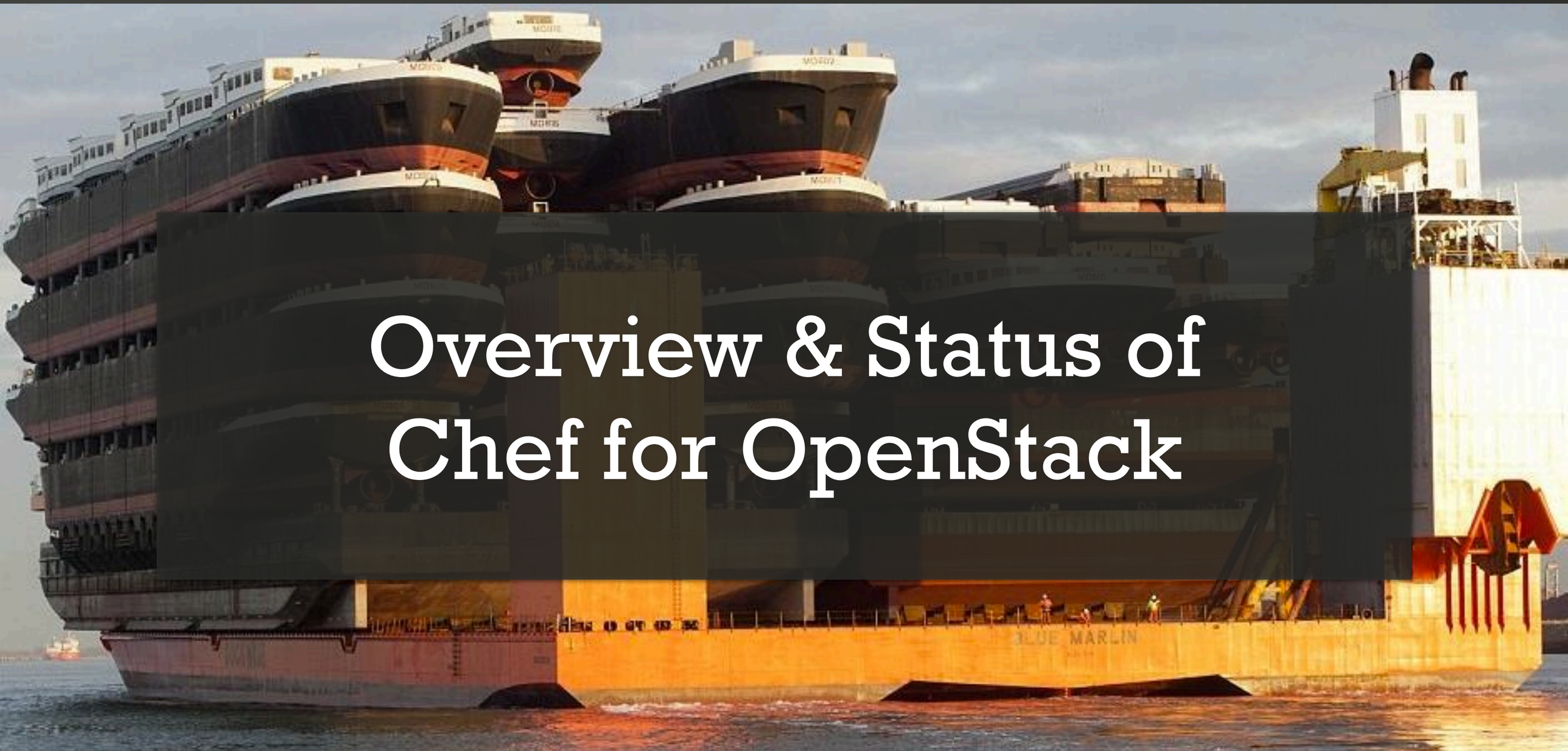

Overview & Status of Chef for OpenStack

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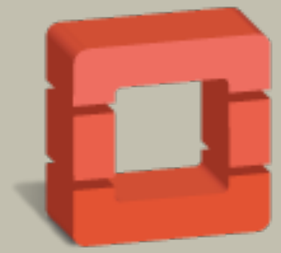
Chef for OpenStack: Who

- Arista
- AT&T
- Baremetal Cloud
- Calxeda
- Dell
- DreamHost
- HP
- HubSpot
- IBM
- Intel
- Internap
- Mercado Libre
- Mirantis
- NTT
- Nebula
- Nicira
- Piston Cloud
- Rackspace
- SUSE
- TryStack.org
- Voxel
- ...and more



RULE THE CLOUD

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Chef for OpenStack: Why

- Community for the automated deployment and management of OpenStack
- Reduce fragmentation and encourage collaboration
- Deploying OpenStack is not "secret sauce"
- Project not a product
- Apache 2 license

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Chef for OpenStack: What

- Chef Repository for Deploying OpenStack
- Documentation for Chef for OpenStack
- Cookbooks
  - Keystone
  - Glance
  - Nova
  - Horizon
  - Swift
  - Quantum
  - Cinder
- knife-openstack

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Chef for OpenStack: Where

- #openstack-chef on irc.freenode.net
- github.com/opscode/openstack-chef-repo
- github.com/opscode-cookbooks/
  - keystone, glance, nova, horizon, swift,quantum,cinder
- github.com/opscode/knife-openstack
- github.com/mattray/openstack-chef-docs
- groups.google.com/group/opscode-chef-openstack
- @chefopenstack

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Chef for OpenStack: When (Today)

- Chef repo for Essex/Grizzly
- Operating Systems (Ubuntu 12.04)
- Hypervisors (KVM, LXC)
- Databases (MySQL)
- Nova network FlatDHCP HA & VLAN
- Quantum Nicira plugin available
- Test Kitchen integration

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Chef for OpenStack: When (Tomorrow)

- Grizzly sprint scheduled in 2 weeks
- Merging AT&T, DreamHost, HubSpot and Rackspace code
- Documentation (docs.opscode.com)

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Chef for OpenStack: When (Roadmap)

- Build packages from source
- Continuous integration
- Hypervisors (Hyper-V, bare metal)
- Databases (PostgreSQL)
- Cinder (Ceph)
- Quantum (Midokura)
- Operating Systems (RHEL, Debian, SUSE)
- Documentation (docs.opscode.com)
- HA Configurations

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Chef for OpenStack Ecosystem

- github.com/att-cloud/
- primary Folsom merge source
- openstack-common
- cinder (lvm, netapp, rbd)
- lots of support cookbooks

Crowbar

- Hardware provisioning and application management platform
- crowbar.github.com
- Dell, SUSE, others
- likely Swift cookbook source combined with Rackspace's

- github.com/dreamhost
- ceph
- ceilometer
- quantum

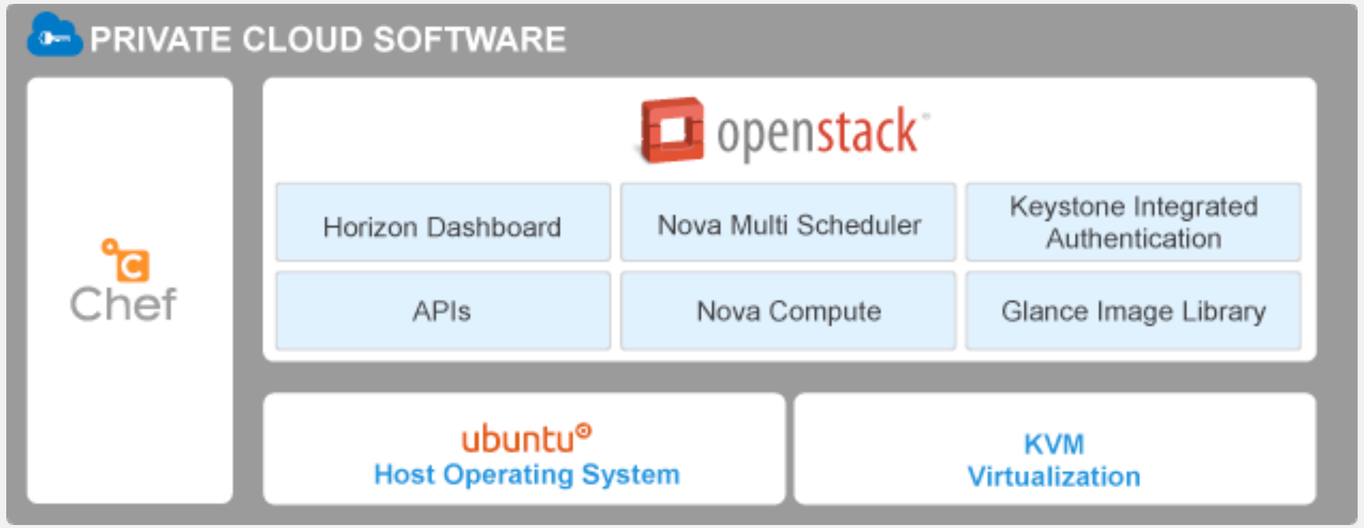
Nicira

- Nicira NVP cookbook
- Open vSwitch cookbook
- Development in progress by Opscode
- github.com/gmiranda23/nvp-cookbook

Rackspace Private Cloud

- www.rackspace.com/cloud/private/
- github.com/rcbops/chef-cookbooks
- primary Essex merge source
- likely Red Hat source

rackspace
the open cloud company



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Chef for OpenStack "Halo Effect"

- Cookbooks reusable outside of OpenStack
- Test Kitchen
- knife-rackspace/hp
- Crowbar, pxe_dust & Razor
- Arista EOS cookbook
- Berkshelf & Librarian
- Spiceweasel & Sputnik

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knife openstack

knife openstack

```
$ knife openstack
Available openstack subcommands: (for details, knife SUB-
COMMAND --help)

** OPENSTACK COMMANDS **
knife openstack flavor list (options)
knife openstack group list (options)
knife openstack image list (options)
knife openstack server create (options)
knife openstack server delete SERVER [SERVER] (options)
knife openstack server list (options)
```

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knife openstack flavor list

```
$ knife openstack flavor list
ID  Name        Virtual CPUs  RAM        Disk
1   m1.tiny     1             512 MB     0 GB
2   m1.small    1             2048 MB    10 GB
3   m1.medium   2             4096 MB    10 GB
4   m1.large    4             8192 MB    10 GB
5   m1.xlarge   8             16384 MB   10 GB
```

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knife openstack image list

```
$ knife openstack image list
ID                                     Name
4a197431-503d-4b85-b61e-84af21ca8654   cirros-image
f8ebb842-c0c0-4be3-8c4c-f72f48edec50   precise-image
```

knife openstack server create

```
knife openstack server create -a -f 1 -I f8ebb842-c0c0-4be3-8c4c-f72f48edec50\
                    -S local -i ~/.ssh/local.pem -x ubuntu
```

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openstack DASHBOARD

Project | Admin

PROJECT **admin**

Manage Compute

- Overview
- Instances & Volumes
- Images & Snapshots
- Access & Security

Instances & Volumes

Logged in as: admin Settings Sign Out

Instances

Launch Instance | Terminate Instances

Instance Name	IP Address	Size	Status	Task	Power State	Actions
os-6385989332551877	192.168.100.7 10.0.111.130	512MB RAM | 1 VCPU | 0 Disk	Active	None	Running	Edit Instance
os-4651023447926228		512MB RAM | 1 VCPU | 0 Disk	Active	Deleting	Running	Edit Instance
ubuntu-1204-test-kitchen		2GB RAM | 1 VCPU | 10.0GB Disk	Active	Deleting	Running	Edit Instance

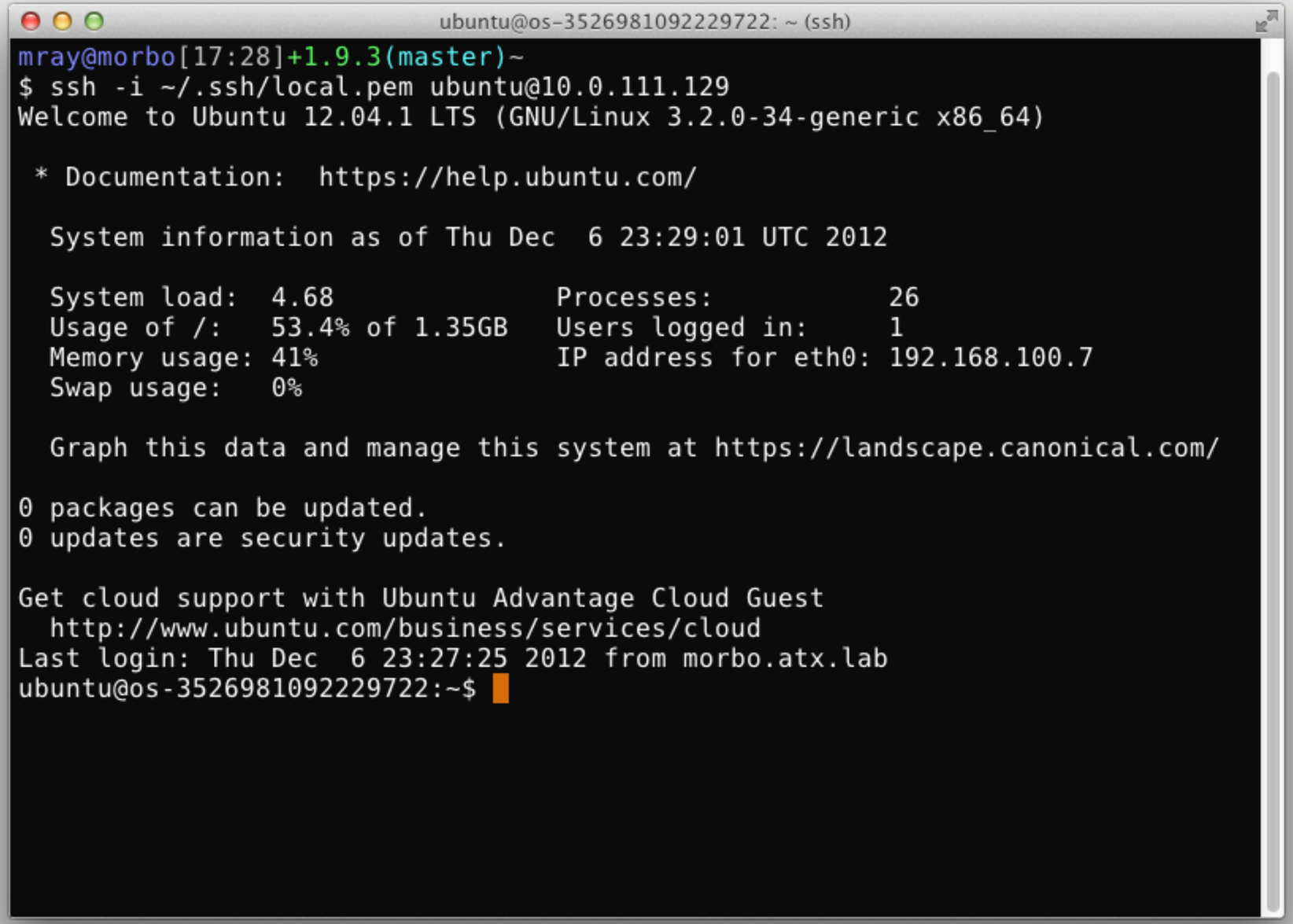
Displaying 3 items

Volumes

Create Volume

Name	Description	Size	Status	Attachments	Actions
No items to display.					

Displaying 0 items


ubuntu@os-3526981092229722: ~ (ssh)
mray@morbo[17:28]+1.9.3(master)~
$ ssh -i ~/.ssh/local.pem ubuntu@10.0.111.129
Welcome to Ubuntu 12.04.1 LTS (GNU/Linux 3.2.0-34-generic x86_64)
* Documentation: https://help.ubuntu.com/
System information as of Thu Dec 6 23:29:01 UTC 2012
System load: 4.68
Usage of /: 53.4% of 1.35GB
Memory usage: 41%
Swap usage: 0%
Processes: 26
Users logged in: 1
IP address for eth0: 192.168.100.7
Graph this data and manage this system at https://landscape.canonical.com/
0 packages can be updated.
0 updates are security updates.
Get cloud support with Ubuntu Advantage Cloud Guest
http://www.ubuntu.com/business/services/cloud
Last login: Thu Dec 6 23:27:25 2012 from morbo.atx.lab
ubuntu@os-3526981092229722:~$

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knife-openstack compatibility

- Uses the OpenStack API
- Diablo, Essex, Folsom, Grizzly
- Cloudscaling
- Crowbar
- DreamHost
- Nebula
- Piston
- Rackspace Private Cloud

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knife-openstack Roadmap

- docs.opscode.com/plugin_knife_openstack.html
- tickets.opscode.com/browse/KNIFE/component/
- floating IP address management
- quantum network management


Why the Cloud?
Why OpenStack?

Why the Cloud?

- Instant infrastructure
- Unlimited capacity
- Autoscaling
- No commitment
- Immediate replacement

Why OpenStack?

- Real Open Source
- Anyone can play
- Choice of features
- Features achieving parity/ accelerating ahead


Know our escape plan
for every infrastructure
provider

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Chef for Infrastructure Portability

- knife ec2
- knife rackspace
- knife hp
- knife google
- knife azure
- knife cloudstack
- knife openstack
- knife vcloud
- … and many others

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Desktop, Virtualization, Private & Public Clouds

- Vagrant
- VMware
- CloudStack
- Eucalyptus
- OpenStack
- bare metal

- AWS
- Rackspace
- HP
- Google
- Azure
- many others

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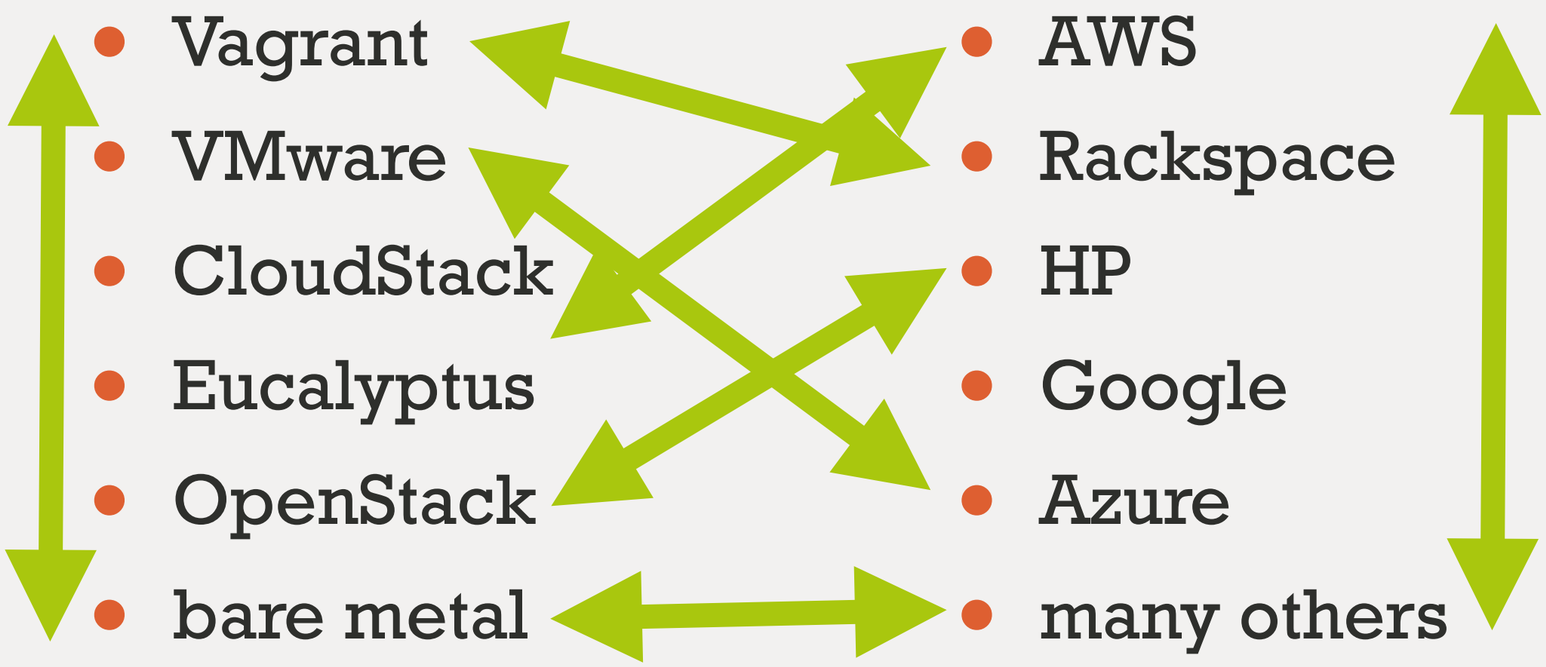
Desktop, Virtualization, Private & Public Clouds



Chef

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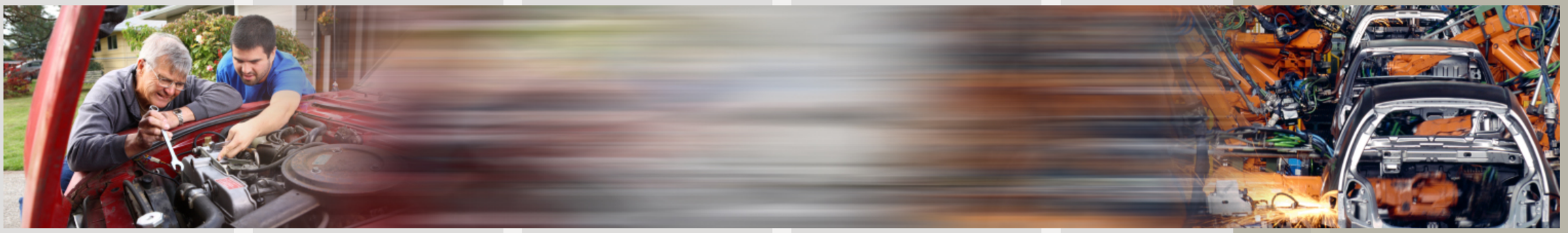
The Path to Full Automation

Chef

Discovery and Visibility	Common Automation Tasks: Scripts, OS Compliance, Updates & Patches	Configuration Management	Application Management	Continuous Deployment	Full Infrastructure Automation



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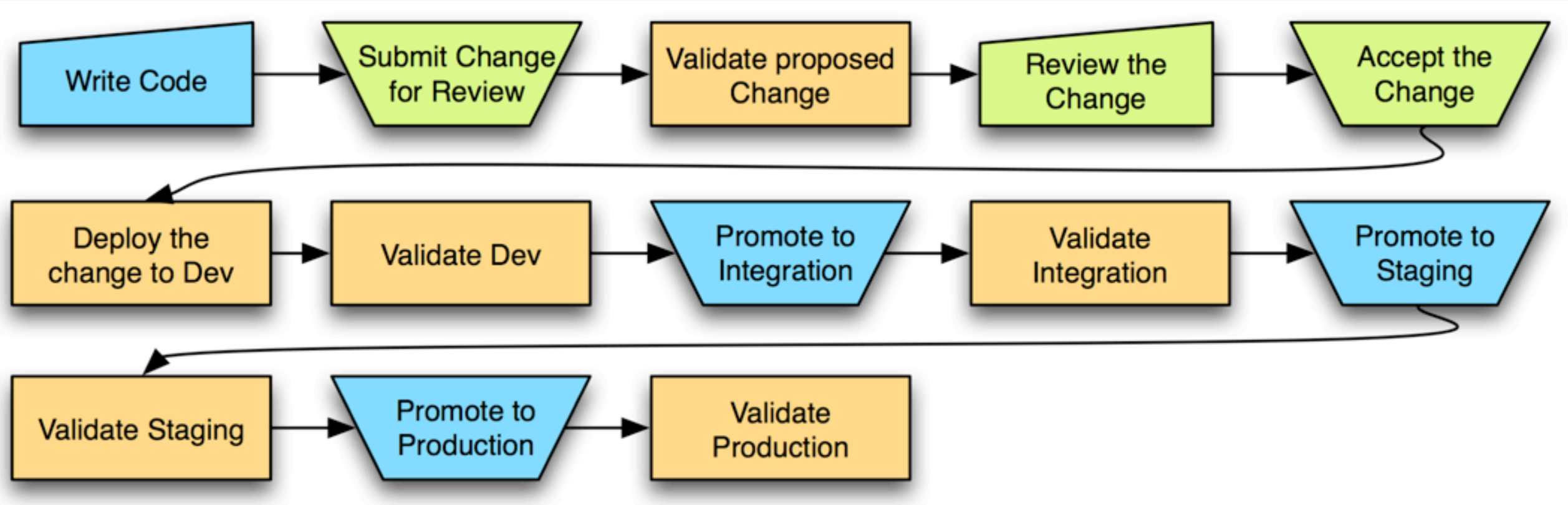
Continuous Deployment Workflow



- Clear, documented workflows for different team members - sysadmins, devs, QA & business stakeholders

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Continuous Deployment Toolchain

Jenkins

- A single, ubiquitous process for building and managing the entire technology platform
- Standardized tooling
- Jenkins and Chef working together
- OpenStack for your private and public clouds

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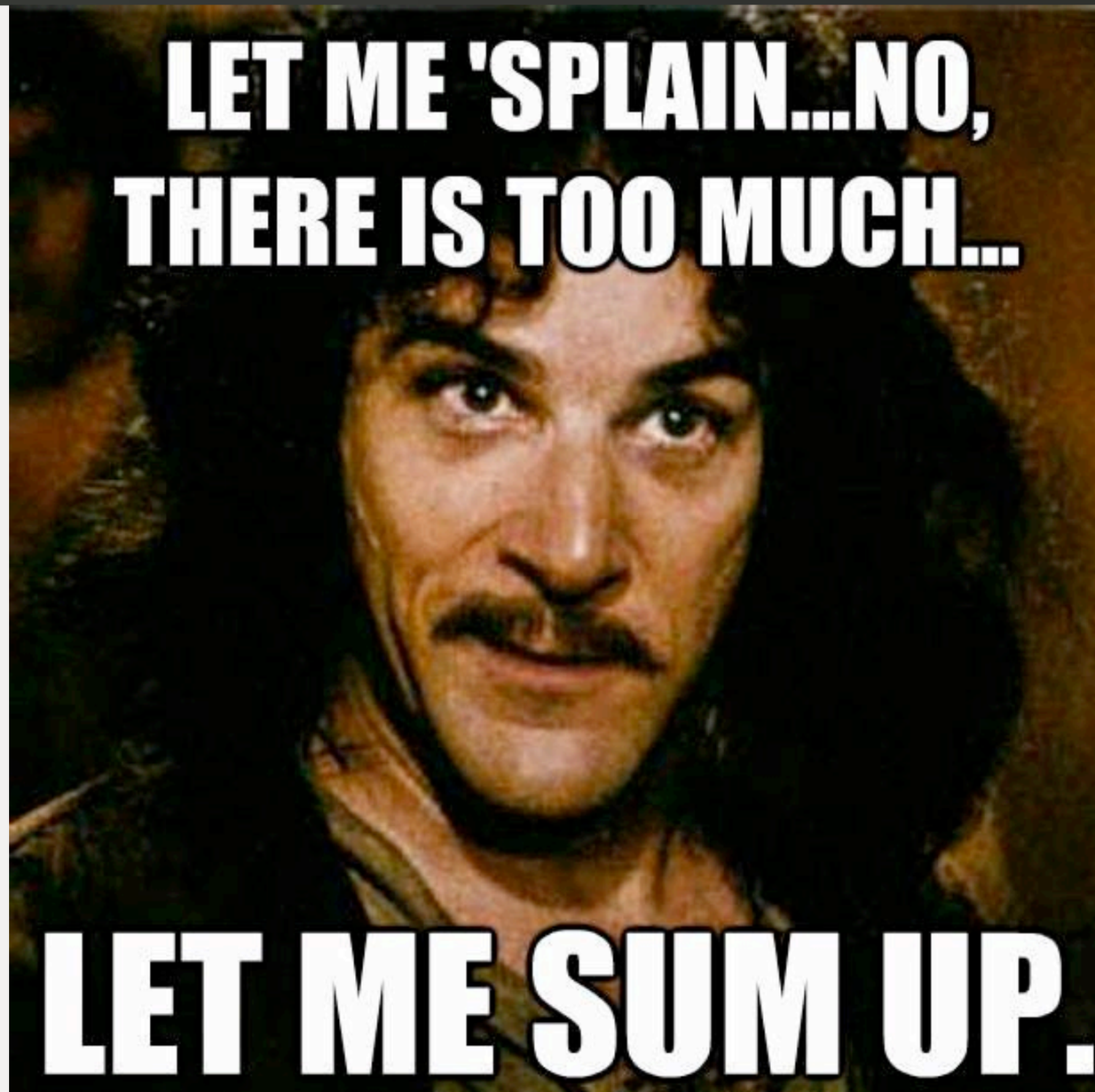
Chef for OpenStack TL;DL

- Project, not a product
- Lots of contributors with real deployments in a vibrant ecosystem
- Essex works, Grizzly soon
- Features driven by demand
- Documentation with examples
- Do real work with OpenStack



Questions?

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