OPENSTACK-ANSIBLE

Simple flexible deployments of OpenStack
Agenda

1. Genesis - My story
2. Ansible?
3. OpenStack-Ansible?
4. Get involved! Try it, join the community
We seriously needed another way to deploy OpenStack clouds?
Standards

https://xkcd.com/927/
About me

- Worked in Banks/ISP/IT as PL/PM/Dev
- Passionate about automation
- Previous proud owner of gôôgle be until it was not funny anymore
- Wait, did I tell you I love automation?
- Love XKCD
- OpenStack-Ansible contributor
Different use cases demand different deployment methods.
We want it all.

We want it now.
Expectations

Called the Ballmer Peak, it was discovered by Microsoft in the late 90s. The cause is unknown, but somehow a BAC between 0.04% and 0.08% confers superhuman programming ability.

However, it’s a delicate effect requiring careful calibration — you can’t just give a team of coders a year’s supply of whiskey and tell them to get cracking.

...has that ever happened?

Remember Windows ME?

I knew it!

https://xkcd.com/323/
See, I’ve got a really good system: if I want to send a YouTube video to someone, I go to File → Save, then import the saved page into Word. Then I go to “Share this Document” and under “Recipient” I put the email of this video extraction service...

I’ll often encourage relatives to try to solve computer problems themselves by trial and error. However, I’ve learned an important lesson: if they say they’ve solved their problem, never ask how.

https://xkcd.com/763/
Guess what?

CHANGES IN VERSION 10.17:
THE CPU NO LONGER OVERHEATS WHEN YOU HOLD DOWN SPACEBAR.

COMMENTS:

LONGTIME_USER4 WRITES:
THIS UPDATE BROKE MY WORKFLOW! MY CONTROL KEY IS HARD TO REACH, SO I HOLD SPACEBAR INSTEAD, AND I CONFIGURED EMACS TO INTERPRET A RAPID TEMPERATURE RISE AS "CONTROL".

ADMIN WRITES:
THAT'S HORRIFYING.

LONGTIME_USER4 WRITES:
LOOK, MY SETUP WORKS FOR ME. JUST ADD AN OPTION TO REENABLE SPACEBAR HEATING.

EVERY CHANGE BREAKS SOMEONE'S WORKFLOW.

https://xkcd.com/1172/
Existing deployment methods had limitations

- Rigid configuration
- Upgrade challenges
- Small or no community available (vendor lock-in)
Why Ansible?
Highly extensible

Each task does one action

Tasks are grouped into roles

Roles are tied together with playbooks
Simple variable scope

Every role or task **variable** can have a **default** value

Additional variables **per environment**

Deployers can **override all** of these variables **easily**
Dependencies make sense

If you can read top-down, you understand Ansible’s dependencies
Very little baggage

No daemons or agents

No clients or servers

Everything uses ssh

Use your existing keys, users, and auth mechanisms (like Kerberos!)
Why OpenStack-Ansible?
Large collection of roles

A backbone of playbooks that links multiple roles together

Each openstack service has its own role

We define “standards” defaults in roles

We give an overridable, opinionated override
OpenStack-Ansible is built by operators for operators
Isolation

Each service deploys into a different lxc container

Each service gets unique message queue and database credentials

Each service queries different databases and message queue virtual hosts
Coordination and testing

Every change is tested as part of the whole stack

If a keystone change breaks nova, automated testing will fail

We test multiple scenarios per role when possible

Deprecated configurations and imports are handled gracefully
Documentation

Lots of installation documentation and reference guides

Real-world use cases and integrations

We have openstack docs cores reviewing it on a daily basis!
Growing, diverse community

Over 5k commits from 42 companies

Top 5 contributors overall: Rackspace, Comcast, Independants, Walmart, Intel
Deploy, maintain, and upgrade with ease
Deploy

- Deploy to one host, 100 hosts, or 1,000 hosts

Maintain

- High availability is built-in
- Control over quantity and location of Openstack services

Upgrade

- Comes with opinionated defaults from OpenStack operators
Deploy
Maintain
Upgrade

Change configurations with little or no downtime
Rebuild any container quickly after a failure or disruption
Add, remove or replace control plane nodes as needed
Comprehensive host security hardening
Deploy

Maintain

Upgrade

Upgrading between and within major releases is a first class feature.

Services are carefully upgraded along with database migrations.

Deprecations are handled gracefully.
What about security?
OpenStack-Ansible has a security role

Applies 200+ security configurations on hosts and virtual machines

Follows the guidelines from the DISA STIG

Lots of auditor-friendly documentation

Supports Ubuntu 14.04/16.04, CentOS 7 and Red Hat Enterprise Linux 7
Join our community

Freenode IRC: #openstack-ansible

Mailing list: openstack-dev@lists.openstack.org
(use the [openstack-ansible] tag in the subject line)

Code: https://github.com/openstack/openstack-ansible

Docs: http://docs.openstack.org/developer/openstack-ansible/

AIO quickstart:
http://docs.openstack.org/developer/openstack-ansible/developer-docs/quickstart-aio.html
Try an AIO!

> git clone https://git.openstack.org/openstack/openstack-ansible

   /opt/openstack-ansible

> cd /opt/openstack-ansible

> scripts/bootstrap-ansible.sh

> scripts/bootstrap-aio.sh

> cd playbooks

> openstack-ansible setup-everything.yml
Future

Improve test coverage (scenarii, upgrades)

Add more roles

Improve the inventory

Blueprints: https://blueprints.launchpad.net/openstack-ansible
Thank you!

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Credits

Lock on old door: Denise Krebs (Flickr) https://www.flickr.com/photos/mrsdkrebs/13006945815/

Bike evolution: https://commons.wikimedia.org/wiki/File:Bicycle_evolution-en.svg

16th Avenue Tiled Stair Project: Ed Bierman (Flickr) https://www.flickr.com/photos/edbierman/13360393053

Cyberbunker datacenter: https://commons.wikimedia.org/wiki/File:CyberBunker_Data_Center.jpg

Freddie Mercury: https://commons.wikimedia.org/wiki/Freddie_Mercury#/media/File:Freddy_Mercury_statue_in_Montreux.jpg

Operator: https://commons.wikimedia.org/wiki/File:Offutt_Air_Force_Base_operator.jpg

All other photos are provided courtesy of Rackspace

Original slide deck from Major Hayden