Introduction to OpenStack

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OpenStack

- Founded in 2010
- Open Source cloud, written in Python
- Vast marketplace of supportive companies in the ecosystem:
  https://www.openstack.org/marketplace/
3 Parts of this Tutorial

- Introduction to some OpenStack deployments
- Demonstration
- Building your own cloud
OpenStack can build clouds that:

Offer compute power
Handle storage (object, block)
Orchestrate bare metal systems

...  
And more each release
Private Compute Cloud
with Nova
Public Compute Cloud
with Ceilometer
Block Storage Cloud
with Cinder
Object Storage Cloud
with Swift
Bare metal “Cloud”
with Ironic
Containers in the Cloud
with Magnum
Database Cloud
with Trove
Cloud, with SDN!
with Neutron
Cloud, with DNS!
with Designate
More OpenStack Services

Project Navigator:
https://www.openstack.org/software/project-navigator/

OpenStack Project Teams:
http://governance.openstack.org/reference/projects/
Vendor Support and Hybrid Clouds
30 minute Demonstration with DevStack

Follow along and try at home/office at:

http://princessleia.com/presentations/sanog28.txt

Using Ubuntu 14.04 on a Virtual Machine with:
64-bit x86 CPU, 4G of RAM, 25G of hard drive space, 2 vCPUs
Prerequisites for Building a Cloud
Configuration Management

Installing OpenStack was hard.

But today you don't need to get bogged down with basic configuration, you can leverage existing configuration management tooling!

And it's no longer proprietary and vendor-specific!
The Usual Suspects

- Puppet: puppet-nova
- Chef: cookbook-openstack-compute
- Ansible: openstack-ansible-os_nova
- Juju: charm-nova-compute

And more available at
https://git.openstack.org/cgit/openstack
I'll be honest.

Installing OpenStack is still kind of hard.
Team Expertise

- Strong Linux Systems Engineers
- Network Engineers
- Strong relationship with Data Center Technicians
- Python Developers to assist with patches and relationship with upstream
What should your cloud to do?

Just like any other cloud or virtualization environment, determine what you need and have preliminary plans for how you'll scale over time.

- Compute power?
- Block storage?
- Object storage?
- Do you need speed? Reliability?
Networking

- Network planning is essential, and difficult to change later
- OpenStack networking with Neutron is very flexible
- Local and public address planning and allocation
Backups, Recovery

• Backup strategy
  – What to back up
  – Location of back ups (on/off-site)

• Fail-over
  – “Regions” across racks? Data centers?
  – Automatic/manual
Doing more with Open Source

Sure, you could build customizations internally, but...

• The OpenStack project runs an open source infrastructure with a CI system and a large community for development of common solutions

OpenStack Project Code Review and Continuous Integration, 
ref: https://review.openstack.org/#/c/303726/
Questions?
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