What is Cloud Computing?

- X as a Service (XaaS)
- Public
- Private
- Hybrid
Our Project

- Show Benefits with POC System
- Phase 2 of the SFSU Openstack Project
- Install Openstack Folsom
- Across Multiple Machines
- Successfully Create Instance
Challenges We Faced

- Novices to Linux and the CLI
- Limited resources and time
  - "Hand-me-down" servers
  - Difficulty securing server space
  - Handful of hours a week
Our Approach

- Ubuntu Server 12.04 LTS x86-64
- Started with DevStack
- OpenStack Folsom install guide
Architecture

Network Node

Compute Node

Controller Node

Management Network

Data Network

Internet

External Network

API Network

Switch

Switch

Eth0

Eth0

Eth0

Eth1

Eth1

Eth1

Eth2

Eth1

192.168.0.2

192.168.0.3

192.168.0.1

10.10.10.1

10.10.10.2

130.212.14.70

130.212.14.66

130.212.14.70

10.10.10.1
Installation

- Controller Node
  - Databases, Message Queue, Dashboard

- Network Node
  - Virtual Bridging and Routing

- Compute Node
  - Processing, memory, network, and storage
OpenStack components

✓ Compute (Nova)
✓ Networking (Neutron, née Quantum)
❑ Object Storage (Swift, or 3rd party Ceph)
❑ Block Storage (Cinder, or 3rd party Ceph)
✓ Dashboard (Horizon)
✓ Identity (Keystone)
✓ VM Images (Glance)
❑ Future components
  ❑ Metering (Ceilometer)
  ❑ Orchestration (Heat)
  ❑ Hadoop/Analytics-aaS (Savanna)
  ❑ DBaaS (Trove)
  ❑ PaaS-like features
  ❑ Bare Metal (Ironic)
Logging In
Creating an Instance
Problems Encountered

- Install guide could be clearer
  - Installed as user with sudo
  - Caused ENV issues
  - Re-installed as root with sudo su
- Could not spin up instances
  - Hardware doesn't support accelerated virtualization
  - KVM hypervisor -> QEMU
- Associate floating public IP address w/ VMs
  - Dashboard VNC console only
  - Can't remote login to VMs from outside
  - Fixed in future releases
Future Scope

- Additional Compute Nodes
- Recent release of OpenStack (eg Havana)
- MAAS and Juju
- Multi-host architecture
- New hardware
Wrap-Up

- Successfully Created POC System
- Model for future IT infrastructure
- Benefits School and Students
- Time for Pictures!
Nova - Compute
Cinder - Storage Block
Glance - Image
Keystone - Identity
Horizon - Dashboard
Swift - Object Storage
Quantum - NAAS
16 Apr - Ubuntu OS \[\text{Stable}\]
- Switches

23 Apr - Install Nova, Quantum... t'3 Nov.
- Campus/Other.

30 Apr - Functional OpenStack.

7 May - Presentation.
[Part 1] Refer to URL

deversion → experiment/cruse.

Multiple machines.

- How many?
- Network?
- Storage?

→ How to follow this

Arch.
3 server (table)
2 switch
Install Ubuntu Server
Config.
Note that all data on the disk you select will be erased, but not before you have confirmed that you really want to make the changes.

Select disk to partition:

SCSI5 (0,0,0) (sdb) - 73.4 GB SEAGATE ST973401LSUN72G
SCSI5 (0,1,0) (sdc) - 73.4 GB SEAGATE ST973401LSUN72G
Questions?