OpenStack: Installing the Lab Environment

WHAT IS OPENSTACK AND THE COA?

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Objectives

- Identify OpenStack Operating System
- Identify the COA Exam and Requirements
- Lab Environment Single Node
- Install OpenStack with PackStack

OpenStack History

Project by NASA / 2010

Rackspace

First release = Austin

Current release = Newton

OpenStack Operating System

Keystone Identity Service	Glance Image Service	Nova Compute Service
Neutron Networking	Cinder Volumes Storage	Horizon Web UI

COA Exam Requisites

Topic	Percent

COA Exam Requisites

Topic	Percent
Getting to know OpenStack	3

COA Exam Requisites

Topic	Percent
Getting to know OpenStack	3
Identity management	12

COA Exam Requisites

Topic	Percent
Getting to know OpenStack	3
Identity management	12
Dashboard	3

COA Exam Requisites

Topic	Percent
Getting to know OpenStack	3
Identity management	12
Dashboard	3
Compute	15

COA Exam Requisites

Topic	Percent
Getting to know OpenStack	3
Identity management	12
Dashboard	3
Compute	15
Object storage	10

COA Exam Requisites

Topic	Percent
Getting to know OpenStack	3
Identity management	12
Dashboard	3
Compute	15
Object storage	10
Block storage	10

COA Exam Requisites

Topic	Percent
Getting to know OpenStack	3
Identity management	12
Dashboard	3
Compute	15
Object storage	10
Block storage	10
Networking	16

COA Exam Requisites

Topic	Percent
Getting to know OpenStack	3
Identity management	12
Dashboard	3
Compute	15
Object storage	10
Block storage	10
Networking	16
Heat	8

COA Exam Requisites

Topic	Percent
Getting to know OpenStack	3
Identity management	12
Dashboard	3
Compute	15
Object storage	10
Block storage	10
Networking	16
Heat	8
Troubleshooting	13

COA Exam Requisites

Topic	Percent
Getting to know OpenStack	3
Identity management	12
Dashboard	3
Compute	15
Object storage	10
Block storage	10
Networking	16
Heat	8
Troubleshooting	13
Image management	10

Lab Environment (Single Node)

Virtualization Host
CentOS 7.2
KVM
192.168.56.1

Virtual Machine

Packstack

Centos 7
192.168.56.5

Lab Environment (Multi-Node)

Virtualization Host
CentOS 7.2
KVM
192.168.56.1

Virtual Machines

controller

Ubuntu 14.04
192.168.56.6

Ubuntu 14.04
192.168.56.7

compute

Single Node - Packstack

Installing OpenStack is time consuming and laborious. It is also not a requirement for the exam. So for the COA series we will use Packstack to install OpenStack in a single-node environment. This is simple and reliable.

The default install does not allow connectivity to the outside world. To overcome this we add a few customizations into the install.

Multi-Node Manual Install

When I was first learning OpenStack I was frustrated by automated installers and wanted to understand the install process. For this reason we include a manual install of OpenStack on Ubuntu.

We will, however, use the Packstack install for the main COA series. This makes the manual install optional, whereas, the PackStack install is mandatory if you are to follow the subsequent courses.

```
# systemctl disable firewalld NetworkManager
# systemctl stop firewalld NetworkManager
# systemctl start network
# systemctl enable network
```

Start with a Minimal Install of Centos 7

We will start with a minimal install of CentOS 7 without any GUI. The VM or physical hardware requires 20GB Disk and 4GB RAM. Configured with a static IP Address. Then stop firewalld and NetworkManager and ensure the network service is running

```
# yum install -y centos-release-openstack-liberty

# yum install -y bash-completion vim epel-release

# yum upgrade -y

# reboot

# yum install -y packstack
```

Set-up Repos

We use the Liberty release of OpenStack to match the current Spring 2017 exam.

```
# packstack --gen-answer-file=/root/answers.txt

# vim answers.txt or use sed

# packstack --answer-file=/root/answers.cfg
```

Create Answer File and Start Install

We can set parameters for the install in the answer file. We can edit this with vim or use sed. A script is provided within the exercise files using sed to edit the answer file. Allow up to 1 hour for the install or more depending on hardware.

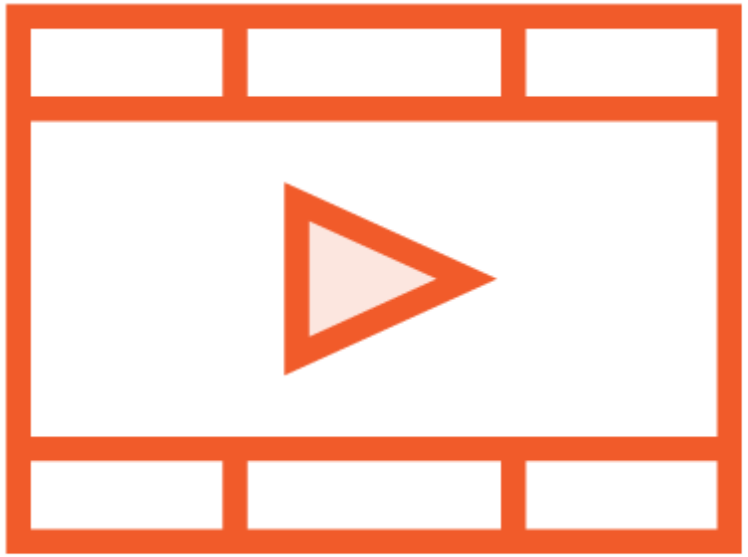
```
# grep -Ec '(vmx|svm)' /proc/cpuinfo # 0 =qemu >=1 =kvm

# # If KVM is supported edit /etc/nova/nova.conf

# systemctl restart openstack-nova-compute-service
```

Check for KVM Support

Your hardware or virtual machine may or may not support KVM as a hypervisor. We have the choice of qemu or kvm. The default is qemu but if we support KVM we need to change the setting.

Installing OpenStack Using PackStack

Demonstration of OPenStack



NASA: Came up with the idea of OpenStack in 2010

Rackspace: Started the developement

PackStack: Automated installer for Red Hat based systems. Packstack is method we will use for COA courses

Manual Install: Lean more but a lot of work and configuration. The rest of this course takes you through the manual install.

Next up: Installing Ubuntu 14.04