

[OS-COA]: Certified OpenStack Administrator

Length : 5 days
Delivery Method : Instructor-led (Classroom)

Course Overview

The course is designed based on official certification training program from OpenStack foundation, however without exam fee included. Each student will be able to deploy a private cloud on Ubuntu server using OpenStack in distributed mode with 3 Ubuntu server (server –A: controller node, Server –B: Network node, Server-C: KVM node) and perform OpenStack administration activities.

Audience Profile

Targeted for Cloud engineers, Centre of excellence team, window server administrators, Unix/Linux administrator, Storage admins, network administrators, Virtualization administrators.

At Course Completion

Participant should be able to deploy a private cloud in distributed mode and also provide ability to showcase for Proof of concept of OpenStack. It also prepares them to appear for the certification exam.

Pre-Requisites

Linux server basics knowledge.

Course Outline

Module 1: OpenStack Ecosystem Overview

Lessons

- OpenStack Releases
- OpenStack Project Overview Part-1
- OpenStack project Overview-Part-2
- Role of OpenStack-Projects

Module 2: Prepare Your Setup for OpenStack Deployment

Lessons

- System Requirements
- Deploy 3 Ubuntu servers

Module 3: Prepare Your OS for OpenStack Nodes

Lessons

- Prepare Controller Node

AVANTUS TRAINING PTE LTD

80 Jurong East Street 21 #04-04 Devan Nair Institute Singapore 609607

Main Line: +65 6661 0888 | Fax: +65 6661 0886

Email: enquiries@AvantusTraining.com

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- Prepare Network Node
- Prepare Compute Node

Module 4: Prepare Your Network OpenStack Nodes

Lessons

- Prepare networking on Controller Node
- Prepare Networking on Network Node
- Prepare Networking Compute Node
- Verify your node communication
- NTP and Sysctl.conf
- Where are we in the lab

Module 5: MySQL

Lessons

- MySQL -Server Overview
- Role of MySQL DB in OpenStack
- Install and configure MySQL Server
- MySQL Management CLI based
- MySQL Management GUI based
- Where are we in the lab

Module 6: Rabbit MQServer

Lessons

- RabbitMQ Server Overview
- Role of RabbitMQ server in OpenStack
- Install and Configure RabbitMQ server
- Where are we in the lab

Module 7: Keystone

Lessons

- Keystone - An Overview
- Role of Keystone in OpenStack
- Keystone - Terms and terminologies
- Install and Configure Keystone
- Create Projects, Users, Service, Endpoints Roles
- Keystone CLI Operations
- Where are we in the lab

Module 8: Horizon

Lessons

- Horizon an overview
- Install and configure Horizon dashboard
- Add your logo to dashboard
- Where are we in the lab

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Module 9: Glance

Lessons

- Glance and its Role in OpenStack
- Create Glance service user and endpoint
- Install and Configure Glance
- Glance CLI, verify operation and Manage Images (add, update, remove)
- Manage image types and backends
- Where are we in the lab

Module 10: Nova - Controller Node

Lessons

- Nova and its Role in OpenStack
- Nova Components
- How VM provisioning happens
- Create Nova service, user and endpoint
- Install and Configure Nova on Controller
- Where are we in the lab

Module 11: Nova – Compute Node

Lessons

- Install and configure KVM and Libvirt
- Install and Configure Nova-compute
- Where are we in the lab

Module 12: Open vSwitch

Lessons

- Open vSwitch - An Overview
- Open vSwitch Components
- Role of Open vSwitch in OpenStack
- OVS cli operations
- Install and configure Open vSwitch on Neutron Node
- Install and configure Open vSwitch on Compute Node
- Where are we in the lab

Module 13: Neutron - Controller Node

Lessons

- Neutron and its Role in OpenStack
- Create Neutron user, service and endpoints
- Install and configure Neutron server
- Where are we in the lab

Module 14: Neutron - Network Node

Lessons

- Overview of neutron agents and their roles
- Configure neutron DHCP, L3 and metadata agent
- Configure Open vSwitch agent

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- Where are we in the lab

Module 15: Neutron- OVS agent on Compute Node

Lessons

- Install and configure Open vSwitch agent
- Open vSwitch peering and Tunneling
- Where are we in the lab

Module 16: Compute –Operations Part-01

Lessons

- OpenStack Dashboard overview
- Create a tenant and user
- Manage compute quotas
- Manage flavors

Module 17: Networking - Operations

Lessons

- Verify operation of network service
- Manage project security group rules
- Manage network quotas
- Create project networks
- Create project routers
- Create external networks

Module 18: Compute Operations Part-02

Lessons

- Manage Nova user keypairs
- Launch a new instance
- Assign security group to Instance
- Assign, Attach and detach a floating IP address to Instance
- Access an Instance using a keypair
- VM operations-shutdown and terminate
- Troubleshoot network issues for a tenant network (enter namespace, run tcpdump, etc)
- Manage instance snapshots
- Launch instance using snapshot

Module 19: Cinder - Controller node

Lessons

- Cinder and its role in OpenStack
- Cinder Components
- Create cinder service, user and endpoint
- Install and Configure cinder
- Create volume group for block storage
- Set up storage pools

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- Manage volumes quotas
- Create a new Block Storage Volume and mount it to a Nova Instance
- Manage volume snapshots (e.g., take, list, recover, verify)
- Manage, backup and restore volumes backups
- Manage volumes encryption

Module 20: Heat/Orchestration – 6%

Lessons

- Heat - and its Role in OpenStack
- Verify Heat/Orchestration stack is working
- Use Heat Orchestration CLI and Launch a Stack (VM instance launch)
- Use Heat Orchestration CLI and Launch a Stack in default network (VM instance launch)
- Create a Heat/Orchestration template that matches a specific scenario
- Use Heat/Orchestration dashboard
- Obtain detailed information about a stack

Module 21: Troubleshooting – 13%

Lessons

- Analyze log files e.g./var/log/COMPONENT_NAME, DB, web, syslog, messaging)
- Backup the database(s) used by an OpenStack instance
- Analyze database servers
- Analyze Host/Guest OS and Instance status
- Analyze messaging servers
- Analyze storage status (local, block & object)
- Manage OpenStack Services
- Digest OpenStack environment (Controller, Compute, Storage and Network nodes)
- Backup and restore an OpenStack instance

Module 22: Object Storage – 10%

Lessons

- Swift and its role in OpenStack
- Swift Components
- Access Swift through Horizon
- Manage access to object storage
- Manage expiring objects
- Manage storage policies
- Monitor space available for object store
- Manage permissions on a container in object storage

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