OpenStack Intermediate

ABOUT COURSE

This course is for IT operations, Network Admins, Security or Storage architects responsible for design, and/or indirect support and operation of an OpenStack installation. The course provides participants with a detailed understanding of the steps necessary to operate an OpenStack environment. The lecture covers architecture, best practices, provisioning workflow, component interaction, and is the best preparation for the real-world challenges faced by OpenStack experts. The course is broken up into two sections: lectures and labs. The lectures provide OpenStack Overview and Architecture, Openstack Networking, Cloud Storage using Swift, Metering with Ceilometer, Orchestration using Heat templates, and a look ahead to the OpenStack roadmap. The labs provide hands-on experience in an all-in-one OpenStack Environment. Students will be given opportunities to use and administer OpenStack using Horizon and command line. The Course wraps up with a comprehensive review to solidify the hands-on skills that are required to operate an OpenStack environment, and to better prepare students for OpenStack.

REQUIREMENT

Basic Linux command line

Virtualization concepts

Networking concepts

YOU WILL GET

This course covers the critical skills needed to operate an OpenStack cluster. Upon completing this course, students will be able to:

Describe the architecture of an OpenStack Cloud Environment

Define the key features of OpenStack

Identify suitable use-cases for OpenStack

Implement and use Image, Identity, and Dashboard services

Create and manage images and instances

Create and manage roles, users, and quotas

Find additional OpenStack help and support resources

Use the CLI and Dashboard

Create and manage roles, permissions, and ACLs

TARGET AUDIENCE

Systems Administrators

Technical IT Professionals

COURSE OUTLINE

MODULE 1– OPENSTACK OVERVIEW

- Theory
    - Overview of project history and releases
    - Core projects overview
    - Nova architecture overview
    - VM provisioning walkthrough
- Workshops
    - Understanding the classroom environment
    - Create, manage, and access Virtual Machine
    - Create and manage images
    - Create and manage volumes

MODULE 2– OPENSTACK NETWORKING

- Theory
    - KVM networking with Linux bridges
    - Single-host vs multi-host networking
    - The role of Network Manager in nova-network
    - Accessing VM using floating IP
    - Traffic Flows
    - Neutron Architecture and plug-ins
    - OpenVSwitch concepts
    - Neutron L3 and DHCP Agents
    - Load Balancer as a Service
- Workshops
    - Configuring a software load balancer
    - OpenStack Networking and Admin operations
    - Create and manage networks

- Security groups and Floating IPs
- Create Users, Projects, and Quotas
- Administering Tenants and User permissions

MODULE 3– SWIFT

- Theory
  - Project overview
  - Usage and use cases
  - Account, container, and object servers
  - Replication • Security/ACLs
  - Deployment and Operations
- Workshops
  - Swift Operations
  - Uploading in segments
  - Adding metadata to Objects
  - Swift maintenance with swift-recon

MODULE 4– CEILOMETER

- Theory
  - Ceilometer background and use cases
  - Ceilometer architecture
  - Ceilometer meters and pipelines
  - Ceilometer Deployment
- Workshops
  - Metering and Monitoring with Ceilometer
  - Ceilometer Meters
  - Statistics and Pipelines
  - Working with Ceilometer Alarms

MODULE 5– HEAT

- Theory
  - Heat background and use-cases
  - Heat architecture
  - Heat Orchestration Template (HOT) format
  - Heat Autoscaling
- Workshops
  - Orchestration with Heat
  - Understanding HOT
  - Launching Stack

MODULE 6– WORKSHOPS

- Workshops
    - Re-enforcing practical skills with comprehensive exercises
    - OpenStack To Go: Devstack Installation Instruction

DURATION

32 Hours.