

OpenStack Workshop for SDN and NFV

Instructor Led | Duration: 3 Day | Course Number: NWV_405



Competitive advantages of business agility drives the need for responsive and flexible IT infrastructure; which can be slow and expensive. The lead time to procure, install, configure, and commission new HW can take weeks. Cloud Computing IaaS brings speed, agility, scalability, and availability with lower CapEx and OpEx. This hands-on workshop is conducted in a Production Communication Service Provider context and the role OpenStack plays in NFV and SDN networks. Hands-on operational exercises are provided with detailed explanations of OpenStack's component implementation, along with basic troubleshooting. Participants become Tenants and create multi-tiered network topologies and web service applications, enabling the participant to more adeptly deploy and support Cloud applications in an IaaS environment.

Intended Audience

This course is designed for professionals in the communications industry who wish to quickly build their knowledge of OpenStack.

Learning Objectives

After completing this course, the student will be able to:

- OpenStack's role in NFV and SDN networks
- Identify the benefits and applications of IaaS and OpenStack
- Diagram OpenStack's logical and physical architectures
- Trace OpenStack components, their capabilities, and interactions across the DataCenter physical networks
- Provision, manage, and monitor resource pools (compute, network, and storage) in a Cloud Computing Center
- Create simple virtual network over OpenStack IaaS
- Explore OpenStack features such as VM migration, Snapshot, etc.
- Trace a packet through the Infrastructure
- Associate basic failure behavior to problem discovery, employ isolation techniques using log file
- Contrast the benefits and considerations of cloud deployments regarding:
 - Cloud partitioning over physical host deployments
 - Cloud segregation (Regions, Zones, Host Aggregates)
 - High Availability considerations vs SPOF

Suggested Prerequisites

- Basic understanding of computing

Course Outline

1. Prologue

- 1.1. Introduction to cloud computing
- 1.2. Role of OpenStack in NFV and SDN Networks
- 1.3. OpenStack services highlights

2. Introduction to OpenStack IaaS

- 2.1. OpenStack components and architecture, and supporting systems
- 2.2. OpenStack services on physical hosts and physical networks
- 2.3. Cloud segregation techniques

3. Identity Service (Keystone)

- 3.1. Keystone concepts
- 3.2. Keystone authentication and authorization policy enforcement.
- 3.3. Keystone database and service catalogue

4. Compute Service (Nova)

- 4.1. Nova capabilities, components and service daemons
- 4.2. Nova under-the-hood VM provisioning trace
- 4.3. Scheduler and filter algorithms

5. Image Service (Glance)

- 5.1. Glance overview capabilities and concepts
- 5.2. Glance services

6. Networking Service (Neutron)

- 6.1. Networking capabilities, components and service agents
- 6.2. Network use cases
- 6.3. Under-the-hood implementation
- 6.4. Network frame trace

7. Block Storage Service (Cinder)

- 7.1. Cinder overview
- 7.2. Cinder architecture
- 7.3. Cinder volume management, configuration and log files

8. Object Service (Swift)

- 8.1. Swift capabilities, architecture and service daemons
- 8.2. Account, Container, Object Walk-Through
- 8.3. Swift deployment considerations

9. Telemetry Service (Ceilometer)

- 9.1. Capabilities, components and service daemons

10. Orchestration (Heat)

- 10.1. Capabilities, components and service daemons
- 10.2. Heat Stack templates