

# OpenStack Workshop for SDN and NFV

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

A hands-on in-depth technical training to personnel involved in design, engineering, and operations and monitoring telecom networks.

## 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
- Provision, manage, and monitor resource pools in a Cloud Computing Center
- Create simple virtual network over OpenStack IaaS
- Explore OpenStack features such as Snapshot, etc.
- Contrast the benefits and considerations of cloud deployments
- Cloud partitioning over physical host deployments

## What You Can Expect

- Expert-Led Live Duration: 21 HOUR
- Prerequisite: Cloud and Virtualization
- Prerequisite: NFV

## Outline

### 1. Prologue

- 1.1 Cloud computing
- 1.2 Role of OpenStack in NFV and SDN Networks
- 1.3 OpenStack services highlights

**Exercise:** OpenStack Lab Setup

### 2. 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

**Exercise:** Lab: Horizon (Dashboard)

### 3. Identity Service (Keystone)

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

**Exercise:** Lab: Identity Service (Keystone)

### 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

**Exercise:** Lab: Compute Service (Nova)

### 5. Image Service (Glance)

- 5.1 Glance capabilities and concepts
- 5.2 Glance services

**Exercise:** Lab: Image Service (Glance)

### 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

**Exercise:** Lab: Network Service (Neutron)

### 7. Block Storage Service (Cinder)

- 7.1 Cinder overview
- 7.2 Cinder architecture
- 7.3 Cinder volume management

**Exercise:** Lab: Block Storage Service (Cinder)

### 8. Object Service (Swift)

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

**Exercise:** Lab: Object Storage Service (Swift)

### 9. Telemetry and Alarm Services

- 9.1 Capabilities, components and services

**Exercise:** Lab: Telemetry and Alarming Service

### 10. Orchestration (Heat)

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

**Exercise:** Lab: Orchestration (Heat)