

Introduction to Virtualization, Cloud and OpenStack

Learning Objectives:

Learn about how Virtualization is used in Cloud, Understand What is OpenStack and its Architecture and components.

Sub Topics:

- Overview of Virtualization
- How Virtualization is used in Cloud
- Fundamentals of OpenStack
- OpenStack Architecture
- OpenStack Components.
- Case Study

Hands-On: None

Installing & Configuring OpenStack

Learning Objectives:

Learn how to Install & Configure OpenStack. Gain a complete understanding of the 3 different nodes and learn to create nodes.

Sub Topics:

- Installation of OpenStack
- Configure OpenStack

Hands-On:

- Create 3 nodes -Controller, Compute and Network
- Configuring Network Interfaces
- Installing OpenStack

OpenStack Compute (Nova)

Learning Objectives:

Get introduced to the different elements and key components of Nova architecture and learn to run Nova.

Sub-Topics:

- Introduction to Nova
- Nova Architecture
- Nova Components

- Implement and run Nova
- Case Study

Hands-On:

Install and Configure Compute & Controller Nodes.

OpenStack Storage (Cinder & Swift)

Learning Objectives:

Get a complete overview of Cinders, Swift Architecture, Swift Replications, and OpenStack Storage.

Sub-Topics:

- Overview of Cinders
- Cinder Architecture
- How Cinder Works
- How to Manage volumes
- Overview of Swift
- Swift Architecture and Working
- Ring Builder & Swift Replications
- Cinder Snapshots and Backups
- Case Study

Hands-On:

Install and Configure Storage Node.

OpenStack Networking (Neutron)

Learning Objectives:

Master the concepts of Neutron Architecture and learn about different Network services.

Sub-Topics:

- Introduction to Neutron
- Neutron Architecture and Working
- Neutron Components
- Neutron Plugins and Agents
- Fixed and Floating Ips
- Network Services – LbaaS, FwaaS, VPNaaS
- Case Study

Hands-On:

Install and Configure Network Node.

OpenStack Image Service (Glance)

Learning Objectives:

Understand what OpenStack Image Service is and how it can be used for uploads and downloads.

Sub-Topics:

- Introduction to Glance
- Glance Components and Architecture
- Supported image formats.
- Using Glance Images
- Case Study

Hands-On:

Install and Configure Glance.

OpenStack Authentication (Keystone)

Learning Objectives:

Learn how to authenticate and create Users, Groups and Roles.

Sub-Topics:

- Overview of OpenStack Identity Management
- RBAC Authentication
- Creating Users, Roles and Groups, Domains and Projects
- Case Study

Hands-On:

- Installing and Configuring Keystone
- Create domains, projects and users.

OpenStack Dashboard

Learning Objectives:

Gain a complete understanding of the most essential concepts of OpenStack Dashboard.

Sub-Topics:

- Overview of OpenStack Dashboard
- Architecture & Features

- Control Flow
- Case Study

Hands-On:

Install and Configure Dashboard and manage Images.

OpenStack Orchestration (Heat)

Learning Objectives:

Learn how to work with Orchestration Service - Heat.

Subtopics:

- Overview of Heat
- Architecture
- Orchestration Template
- Scaling and Elasticity
- Case Study

Hands On:

Installing and working with Heat.

OpenStack Metering and Monitoring -Ceilometer

Learning Objectives:

Learn how to monitor Billing services using a Ceilometer.

Subtopics:

- Overview of Ceilometer
- Ceilometer Architecture
- Deploying and Working with Ceilometer
- Case Study

Hands-On:

Installing and working with Ceilometer