



**GETTING  
STARTED**  
*Successful  
Career*



**openstack**  
CLOUD SOFTWARE



## Controller Node

Horizon

Keystone

Heat

Ceilometer

Neutron

## Compute Node

Nova

Ceilometer

Neutron

## Network Node

Neutron

## Storage Node

Glance

Cinder

## Red Hat Certified System Administrator-Red Hat OpenStack-EX-210

### Course description

OpenStack Certification Training course provides students with a detailed understanding of steps necessary to operate OpenStack environment. Six of these projects handle the core cloud-computing services of compute, networking, storage, identity, and image services, while more than a dozen optional projects can be bundled together to create unique, deployable clouds. OpenStack is a combination of open source tools (known as projects) that use pooled virtual resources to build and manage private and public clouds. Participants will go through architectures, live implementations, provisioning and setup for the real-world challenges faced by OpenStack experts.

### Course content

#### Module 1- Understanding Cloud and OpenStack

- 📌 Basics of virtualization
- 📌 Relationship: Virtualization & cloud
- 📌 Introduction to cloud and cloud models
- 📌 Introduction to OpenStack
- 📌 OpenStack ecology and OpenStack services
- 📌 Preparing your environment for lab sessions

## Module 2- Keystone (OpenStack authentication system)

- ✚ OpenStack Identity
- ✚ Users
- ✚ Credentials
- ✚ Tokens
- ✚ Identity Management
- ✚ Service Catalog
- ✚ Role Based Access Control (RBAC)
- ✚ Keystone Internal Architecture
- ✚ Token Validation – API
- ✚ Setting up Keystone as a part of the Controller node

## Module 3- Nova (OpenStack Compute Service)

- ✚ OpenStack Compute Service Architecture
- ✚ Nova internals
- ✚ KVM based Architecture
- ✚ Instances, Images and Nova-Network usage
- ✚ Setting up the Nova node.

## Module 4- Cinder (OpenStack Block Service)

- ✚ A deep dive into OpenStack
- ✚ Cinder Internals
- ✚ Cinder backend
- ✚ Industry implementations
- ✚ Installation of Cinder
- ✚ Manage\troubleshoot Cinder



## Module 5- Glance (OpenStack Image Service)

- ✚ OpenStack Glance Architecture
- ✚ Glance internals
- ✚ Image conversions to qcow2
- ✚ Installation of Glance
- ✚ Best practices on Glance store backend
- ✚ Image uploads and downloads

## Module 6- Neutron (OpenStack Neutron Service)

- ✚ Deep-dive on the OpenStack Neutron Architecture
- ✚ ML2
- ✚ ML3 plugins
- ✚ Installation of Neutron
- ✚ Network creation
- ✚ Bridging
- ✚ Router creation
- ✚ Core Neutron plugins and network configuration

### **Module 7- Horizon (OpenStack Dashboard Service)**

- ✚ Introduction to Horizon
- ✚ Installation of Horizon
- ✚ Django
- ✚ GUI walkthrough

### **Module 8- Heat (OpenStack Orchestration Service)**

- ✚ Deep-dive on OpenStack Heat Architecture Heat agents
- ✚ Write Heat templates
- ✚ Installation of Heat service
- ✚ Integrate heat templates to automate instance launches

### **Module 9- Ceilometer (OpenStack Billing Service)**

- ✚ A deep-dive into OpenStack Ceilometer
- ✚ Data polling
- ✚ Retrieval and setting up alarms Installation of Ceilometer
- ✚ Integrate Heat + Ceilometer for automation of instance\networks\storage launches
- ✚ Create Meters

### **Module 10- Trove (OpenStack Database as a service)**

- ✚ An OpenStack Trove architectural deep-dive Installation of Trove
- ✚ Launching database from CLI or the dashboard

### **Module 11- Swift (OpenStack's Object Storage)**

- ✚ Installation of Swift
- ✚ Swift rings
- ✚ Image locations
- ✚ Component based uploads
- ✚ Replication
- ✚ Account Reaping
- ✚ Ring-building
- ✚ Integrate Swift with Glance to use as an image store

### **Module 12- Installation and troubleshooting**

- ✚ Environment Setup
- ✚ Building a controller node
- ✚ Building a network node
- ✚ Building a compute node
- ✚ Adding additional compute nodes to the existing OpenStack implementation

### Module 13- OpenStack Operators Guide

- ✚ Real-time problem resolutions
- ✚ Real-time operations of OpenStack environment
- ✚ Bug/Issue tracking
- ✚ Troubleshooting scenarios and resolutions

### Module 14- Central Logging

- ✚ Installation of ELK STACK
- ✚ Configuration of ELK Stack for OpenStack
- ✚ Rotation of logs

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