



OS100: OpenStack Bootcamp

UPDATE! The OpenStack Bootcamp (OS100) has been updated for the OpenStack Rocky release

This course provides a complete preparation for the OpenStack Certified Administrator (COA) exam and includes one free attempt at the COA exam.

The OS100 bundle is intended for IT Operations Engineers, Network Admins, Security & Storage Architects responsible for design and support/operation of OpenStack installations. The course provides participants with a detailed understanding of all of the steps necessary to operate an OpenStack environment.

The **lectures** provide students with an overview of OpenStack and its Architecture, OpenStack Net-working, and Orchestration using Heat templates, including integration with Telemetry services.

The **labs** provide hands-on experience in an all-in-one OpenStack environment. Students will be given opportunities to use and administer OpenStack using the Dashboard UI (Horizon) and the command line. Each lecture is followed by a series of lab exercises. During the lab exercises, students get to practice and engage with all core components of OpenStack. The labs conclude with a comprehensive review to solidify the hands-on skills that are required to operate an OpenStack environment.

The **certification** exam tests candidates' ability to create, configure, and manage OpenStack. You will be provided with a COA exam voucher upon completing the class.

Course Duration

- 3 Days

Audience & Prerequisites

IT professionals across a broad range of disciplines who need to perform essential OpenStack operational and administrative tasks. This course is best suited to systems administrators and IT managers who have basic Linux experience using command line and vi and have an understanding of networking fundamentals.

Objectives

The OpenStack Bootcamp I course covers the critical skills needed to operate an OpenStack environment. 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
- Use the image, identity, network, and block storage/volume services
- Use the compute service to launch instances and manage quotas
- Use the orchestration service to deploy instances

- Use the CLI and Dashboard UI (Horizon)
- Create and manage users, projects, roles, permissions, and ACLs

Outline

- Cloud fundamentals
- OpenStack business values

- OpenStack overview and architecture
- OpenStack Identity (Keystone), Image (Glance), Block Storage (Cinder), Compute (Nova), Orchestration (Heat) services
- OpenStack networking deep dive
- OpenStack operations through the Dashboard UI and CLI

Course Syllabus

Module 1

Introduction to OpenStack

Theory

- What is Cloud?
- OpenStack business value
- What is OpenStack?
- Introducing the OpenStack projects
- OpenStack deployment considerations

Workshops

- Understanding the classroom environment
- Exploring the Dashboard UI (Horizon)

Module 2

OpenStack Architecture -
VM Request Process Flow

Theory

- Identity service (Keystone)
- Compute service (Nova)
- Image service (Glance)
- Network service (Neutron)
- Block Storage/Volume service (Cinder)

Workshops

- Create, manage, and access Virtual Machines
- Create and manage images
- Create and manage volumes
- Create and manage projects and users

Module 3

Networking Basics

Theory

- OpenStack networks
- Network/device/switch virtualization
- Overlay networks

Workshops

- There are no workshops for this lecture

Module 4

OpenStack networking
(Neutron) deep dive

Theory

- Neutron overview: Abstractions and architecture with plugins
- ML2 plugin
- IPAM, DHCP, L3 agents
- Floating IP addresses
- Network namespaces
- Load Balancer as a Service (LBaaS) v2 - Octavia
- Introduction to Linux Bridge
- Introduction to Open vSwitch (OVS)
- Security groups

Workshops

- Configuring a software load balancer using Octavia
- OpenStack networking and admin operations
- Create and manage networks
- Using security groups to allow ingress traffic
- Using Floating IPs for ingress traffic
- Administering policy controlling user permissions

Module 5

Orchestration (Heat) and
Telemetry services

Theory

- Heat overview and architecture
- Heat Orchestration Template (HOT) syntax and examples
- Using Heat and cloud-init to customize VMs at boot time
- Validating Heat templates
- Autoscaling with Heat/Ceilometer/Gnocchi/Aodh

Workshops

- Become familiar with Heat template format
- Launch and manage Heat stacks from the CLI and dashboard
- Create a Heat template

Module 6

Comprehensive Practice
Workshops

Theory

- Re-enforcing practical skills with comprehensive exercises