# OpenStack Administration & Operations (Caracal)

**Duration: 4 Days** **Course Code: OS220** **Delivery Method: Virtual Learning**

## Overview:

The OpenStack Administration and Operations course is a 4 day class designed to provide you with an in-depth experience with administering and operating the most common OpenStack components to implement Infrastructure as a Service (IaaS) in a private cloud; from image management to instance creation to network plugins and more.

At the end of this course, you have the skills required to pass the COA exam.

All Mirantis OpenStack courses are vendor agnostic. Tasks are performed in an OpenStack environment without any vendor add-ons that might change the way OpenStack works. Reference implementations are utilized, such as Logical Volume Manager (LVM) for Block Storage, Open vSwitch (OVS) for L2 networking, or KVM/QEMU for the hypervisor.

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Virtual Learning

This interactive training can be taken from any location, your office or home and is delivered by a trainer. This training does not have any delegates in the class with the instructor, since all delegates are virtually connected. Virtual delegates do not travel to this course, Global Knowledge will send you all the information needed before the start of the course and you can test the logins.

## Target Audience:

This course is targeted at students with the following:
**Skills:**
- Basic understanding of cloud and virtualization technologies
- Basic hypervisor skills are beneficial, such as KVM or VMware, but not required
-Basic Linux skills
- OS100 or equivalent OpenStack experience
**Motivations:** Learn the critical skills needed to operate and administer an OpenStack environment
**Roles:** System/network administrators, Technical IT Professionals, Deployment engineers, Cloud administrators, & Cloud operations

## Objectives:

- After this course participants should be able to:
- Understand and manage core **OpenStack services** including Identity, Compute, Networking, Storage, Images, Orchestration, Load Balancing, and Telemetry.
- Configure secure authentication, access control, networking, and storage resources to support cloud operations.
- Deploy, manage, and optimize virtual machine workloads, images, volumes, and load balancing services.
- Automate infrastructure provisioning and application deployment using orchestration templates and cloud-init.
- Monitor cloud performance, collect metrics, configure alarms, and implement scaling and operational best practices.

## Prerequisites:

- Solid Linux command line skills
- OS100 or equivalent experience, including:
- Familiarity with the OpenStack Dashboard UI & command line client
- Although not required, an understanding of hypervisors, virtualization, networking, and storage concepts is beneficial
- OS100 - OpenStack Essentials

## Testing and Certification

- *N/A*

## Follow-on-Courses:

- OS250 - OpenStack Administration Bootcamp

## Content:

Keystone (Identity service): Authenticating with Keystone, including authentication methods, such as, Multi-factor authentication (MFA) and Time-based One-time Password (TOTP), managing tokens, security compliance options, such as, requiring users to change their password on initial login, RBAC policies, the purpose of the Service Catalog, plus introductions to implied roles and unified limits (similar to quotas)

Glance (Image service): Creating ; managing images, options to build an image, the purpose of cloud-init, use of image metadata and its effect on the nova-scheduler, using AMI images, Image compression, using the local image cache to improve performance

Neutron (Network service): Understand what networks OpenStack uses, such as, the management network. Neutron architecture, including plugins, namespaces, layer 2 protocols, layer 3 routing, Neutron security groups, including stateful security groups, using the metadata proxy service, implementing bandwidth limits for improved Quality of Service. Open vSwitch (OVS) is used as the reference implementation.

Nova (Compute service): Using Nova to deploy virtual machine (VM) instances ; control where the instances are deployed. Deploying instances with SSH keys for better security. Understanding the supported hypervisors. Implementing resource quotas. Using Server Groups to control where instances are deployed. Pre-caching images on a nova-compute node to improve performance. Live migration of instances. How to use Nova and the Placement service to display statistics related to an instance.

Cinder (Block Storage Service): Create and manage volumes using Logical Volume Manager (LVM) as the reference implementation, including an introduction to LVM. Create boot volumes to launch instances. Volume Types – what are they? Why do you need them? Deferred delete of volumes. Migrating volumes across backends.

Heat (Orchestration Service): Discusses Heat templates, their syntax, and MANY practical day-to-day examples of Heat templates, including examples of installing and configuring software on your instances at boot.Heat (Orchestration service): Discusses Heat templates, their syntax, and MANY practical day-to-day examples of Heat templates, including examples of installing and configuring software on your instances at boot.

Octavia (LBaaS): Using the CLI to create ; manage a load balancer, load balancer resources, as well as, managing the amphora. Understanding what load balancing algorithms are available. Understanding what a load balancer provider is. Using diskimage-create utility to build image for amphora.

Ceilometer / Aodh (Telemetry services): Discuss the role ; architecture of each component. What metrics are collected, how, when, and how can you configure that. Displaying alarms and understanding the data collected. Review a sample application with load balancing and autoscaling.

## Additional Information:

**Lab Requirements**Laptop with WiFi connectivityAttendees should have the latest Chrome or Firefox installed, and a free account at strigo.io

## Further Information:

For More information, or to book your course, please call us on 00 971 4 446 4987

training@globalknowledge.ae

www.globalknowledge.com/en-ae/

Global Knowledge, Dubai Knowledge Village, Block 2A,First Floor, Office F68, Dubai, UAE