

CANONICAL



Canonical Distribution of Openstack: Operations Training Curriculum

Prepared On: 14 Oct 2019

Version: 1.6

Page Index

Introduction & Scope	2
Module 1: MaaS - Day 1	2
MAAS Overview Presentation	2
Management/Scaling	2
Networking	2
Images	3
Machines	3
Composable Machines (Pods)	3
Backup/Restore	3
Upgrade	3
Problem Resolution	3
Module 2: Juju - Day 2	3
General operation, CLI and UI	3
Management/Scaling	4
Backup/Restore	4
Upgrade	4
Charm Operations	4
Monitoring (Charms)	4
Capacity	4
Problem Resolution	5
Module 3: OpenStack - Days 3-5	5
OpenStack Overview	5
Identity management	5
Dashboard	5
Image management	5
Compute	6
Storage	6
Block Storage	6
Ceph Storage	6
Object Storage	6
Networking	6
Heat/Orchestration	7
Backup/Restore	7
High Availability	7
Problem Resolution	7
Troubleshooting	7
Canonical Distribution of OpenStack - Training Curriculum	1

Introduction & Scope

This course is intended to enable the Customer to assume operations knowledge of their OpenStack environment. As such it will teach the Customer the additional skills and knowledge set needed to achieve this aim.

Each module will contain a theory session (Presentation by Instructor) followed immediately by a practical lab. In this way the student is gaining practical experience while the information is still fresh in their minds. The practical lab will contain a series of core competencies for the module and the student will sign off on successful completion of each that they have mastered the competency. They will also retain complete step-by-step documentation for later re-use. In this way we try to avoid the deer-in-the-headlights effect when a student is confronted with practical application of theory weeks or months after learning it (which is why some people then require "shadowing" by an engineer to teach the core competencies again)

Module 1: MaaS - Day 1

MAAS Overview Presentation

This module will provide an overview of MAAS

Management/Scaling

Management of the KVM/LXD hosts, an/or the physical nodes and virtual instances which resides on it.

- Rack Controllers

- Region controllers

- Adding Controllers

- Adding / Removing machines

- High Availability

Networking

- Network Discovery

- Availability Zones

- Subnet Management

- DHCP

- IP Ranges

- Other Network Considerations

Images

Machines

- Power Management
- Enlistment
- Commission
- Deployment

Composable Machines (Pods)

- Adding a Pod
- Adding a VM

Backup/Restore

Backup and restoration of the MAAS and PostgreSQL

Upgrade

- MAAS upgrade
- PostgreSQL upgrade

Problem Resolution

- Hardware Testing
- Recover from node failure
- Problem diagnosis and resolution

Module 2: Juju - Day 2

Juju general operation, CLI and UI

This module will cover the general operations of working with Juju in a Juju-deployed OpenStack

- CLI – Overview and Authentication
- Juju Client CLI Usage
- Juju CLI Command reference

Management/Scaling

- Controller High-Availability
- Application High-Availability
- Scaling Up/Down
- Scaling applications
- Removing things
- Configuring
- Deploying applications - advanced

Backup/Restore

- Backup and restoration of the juju controller

Upgrade

- Upgrading a machine series
- Upgrading models
- Upgrading applications (charms)
- Juju client upgrade

Charm Operations

- Actions: Working with Actions
- Charm Writing: Actions
- Hooks
- Charm Writing: Hooks
- Debugging Charms
- Charm Hook Debugging

Monitoring (Charms)

- Alarm and Alert Management
- Monitoring Alert Setup
- Hardware and software failure monitoring and application of fixes

Capacity

- Application Metrics

Problem Resolution

Incident Management

Problem Identification and description

Problem diagnosis and resolution

Adding / Removing diagnostic and support tools and services

- Test the node
- Recover from node failure
- Replace failed hardware

Diagnostic Changes

Workaround Implementation

Module 3: OpenStack - Days 3-5

OpenStack Overview

This module will provide a quick high-level overview of OpenStack.

Presentation Content:

- Understand the components that make up the cloud
- Use of the OpenStack API/CLI, Authentication

Identity management

This module will deal with Identity management within OpenStack.

Presentation Content:

- Manage Keystone catalogue services and endpoints
- Manage/Create domains, groups, projects, users, and roles
- Manage the identity service
- Verify operation of the Identity service

Dashboard

This module will briefly deal with the Horizon dashboard.

Presentation Content:

- Verify operation of the Dashboard
- Configuration
- Scaling
- Troubleshooting

Image management

This module will deal with the Glance image management system.

Presentation Content:

- Image Management (Add, Update, Remove)
- Image Service operation verification
- Storage backing

Compute

This module will go in depth on the Nova compute component.

Presentation Content:

- Internal architecture
- Flavors, Keypairs, Host consoles, Floating IP addresses, Snapshots, Quotas
- Compute Instances, recovering, deleting, moving
- Scaling
- Nova Service operation verification
- Disaster Recovery

Storage

Block Storage

This module will deal with Cinder block storage.

Presentation Content:

- Volumes, Quotas, Snapshots, Encryption, Migration
- Backup and restore disks, volumes and snapshots
- Troubleshooting, i.e. disk full, etc

Ceph Storage

This module will touch on Ceph storage.

Presentation Content:

- Adding/Removing OSD Devices
- Adding removing nodes
- Troubleshooting/preventive actions

Object Storage

This module will touch on Swift object storage.

Presentation Content:

- Swift API
- Client libraries
- Authentication

Networking

This module will deal with the Neutron networking module.

Presentation Content:

- Network resources, Routers, Subnets create/delete/modify
- External/Project Networks
- Security Groups, Quotas, Network Interfaces
- Troubleshooting

Heat/Orchestration

This module will deal with Heat orchestration component.

- Presentation Content:
- Heat/Orchestration template overview
- Operating Heat (Launch/Verify/Update)

Backup/Restore

High Availability

Problem Resolution

Troubleshooting

This module will deal with basic troubleshooting of the OpenStack cloud system.

Presentation Content:

- Log Files
- OpenStack Databases
- OpenStack Status
- Messaging Servers
- Meta Data Servers
- Network Status/Performance
- Storage Status

Additional Topics

If there is any remaining time during the Training, the trainer will make efforts to cover additional topics or provide clarifications based on questions from the customer during the training sessions.