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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.

Canonical Distribution of OpenStack - Training Curriculum
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.