



OpenStack advanced operations

Introduction and scope

The OpenStack advanced operations training is designed for administrators who already have a working knowledge of OpenStack and want to deepen their expertise in operating Canonical OpenStack in production environments.

This course focuses on the practical aspects of maintaining highly functional and performant clouds by performing upgrades and patching, preventing, troubleshooting, and recovering from incidents, all using Canonical's tools and best practices.

Participants will learn how to navigate the challenges of OpenStack's complex architecture using Canonical's opinionated operations tools and automation frameworks.

The course combines in-depth lectures and guided labs, ensuring participants develop both theoretical knowledge and real-world operational skills. By the end of the training, attendees will be able to confidently manage, scale, and troubleshoot Canonical OpenStack clouds, preparing them to operate production environments at enterprise scale.

Who is this training for?

This training is designed for OpenStack administrators who already have generic knowledge of OpenStack.

PRE-REQUISITES

- General knowledge of Linux system fundamentals
- Familiarity with the terminal and basic UNIX commands
- Familiarity with the OpenStack platform

Training objectives

- Learn how to operate Canonical OpenStack
- Learn how to prevent and troubleshoot incidents
- Forecast and adapt storage and compute capacity
- Optimize the performance of OpenStack

Course outline

The program is designed in atomic modules that can be bought separately, each spanning 1 or 2 weeks.

Each week includes 40 hours of live meetings with Canonical's Managed Solutions engineers and/or managers.

BASICS MODULES

These modules cover the basics required to run your cloud smoothly. This includes modules for proactive operations and reactive incident management.

Common operations (2 weeks)

- VM management
 - Console Logs
 - Common Placement Issues
 - Event List
 - Migrations
- Vault
 - Unlocking after a power failure
 - Certificate Management
- Effective incident response
 - SOS reports
 - Effective ticket creation
 - Using the Canonical Knowledge Base
 - Launchpad bug reporting and searching
- Recovery from stuck OpenStack resources
 - VMs
 - Volumes
 - DNS zones
 - Heat stacks
- Log locations and general diagnostics
 - OpenStack logs
 - Snap logs
 - System logs
- Basic service recovery
 - Service restarts
 - Container restarts
 - Juju agent restarts
 - MAAS service restarts
 - DB recovery

Canonical tooling (2 weeks)

- OpenStack practical guide
 - Overview of the components
 - Deep dive into services
- Introduction to Juju
 - Adding/removing units
 - Service configuration
 - Juju status
 - Using Juju to run maintenance tasks
- Introduction to MAAS
 - Hardware expansion/contraction/replacement
 - BMC firmware access
- Snaps (upgrades, logs)
- LXD CLI and LXD containers
- Apt patching and CVE scanning

Monitoring (1 week)

- COS and alerts
 - COS configuration
 - Alert configuration
 - Adding pager duty or other out-of-band alerts
- Reports
 - Capacity dashboards (compute, storage, ceph, etc)
 - OpenStack dashboards
 - Ceph dashboards
 - How to create new dashboards
- CVE scanning
 - Landscape
 - Patching procedures

ADVANCED MODULES

These modules cover a set of advanced procedures used to keep the cloud safe and up to date.

Security (1 week)

- CIS hardening
- Password hiding and rotation
- Secrets and vaults
- TLS certificate setup and renewal
- Build VM images for the cloud
 - Ubuntu
 - Other OS

How to do safe upgrades (2 weeks)

- Updating minor versions (OpenStack and other components)
- Upgrading major versions (OpenStack and other components)

Patching and rebooting (1 week)

- Regular cadence patching
- Regular node rebooting
- Re-installing infra nodes and MAAS from scratch

PRO MODULES

These modules cover a set of procedures for recovering from major incidents involving hardware issues and full disaster recovery strategies.

Hardware repairs and recovery (1 week)

- Prepare hardware for repair
 - Disable services
 - Ceph no-out
 - InnoDB, MySQL, PostgreSQL
 - Resetting and rebooting hardware alerts
- Ceph repair and drive replacement
- Recovering from
 - Power outages
 - Server crashes
- Checking service health
 - Manually checking specific service status
 - Common charm actions to support diagnostics
 - Recommended diagnostic steps during outage
- Network and bond recovery
 - Bond analysis
 - Identify packet loss
 - Common MTU issues

Recovery from a disaster (1 week)

- Backup/restore
 - SQL databases (MySQL, PostgreSQL)
 - Juju controllers
 - MaaS
 - K8s (etcd)
 - Vault
- Snapshots
 - VMs
 - Volumes

PEERING SESSIONS ON YOUR CLOUDS

These modules are a series of laboratories where Canonical's team and the customer's team share access to Canonical's testing environment and learn hands-on how to react to incidents and perform complex tasks.

Hands-on incident solving (1 week)

- Logs and tracing
- How to troubleshoot issues
- Challenge Tests

Hands-on upgrades (2 weeks)

- Planning
- Executing

Hands-on patching/rebooting (1 week)

- Main steps
- Temporal

Execution

- Hands-on recovering assets (1 week)
- Execution

BOOK YOUR TRAINING TODAY

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