Red Hat Ceph Storage for OpenStack (CL260) Training

Duration: **5 Day**

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Overview

Design, deploy, and manage **cloud-scale, software-defined storage** with **Red Hat Ceph Storage**.

The **"Cloud Storage with Red Hat Ceph Storage (CL260)"** course is built for **storage administrators** and **cloud operators** responsible for implementing and maintaining Red Hat Ceph clusters in enterprise environments or as part of **Red Hat OpenStack** or **OpenShift** infrastructures.

Through practical, hands-on exercises, participants learn to **deploy, configure, monitor, and scale** Ceph clusters to provide **object, block, and file-based storage** that supports hybrid cloud workloads — including **Amazon S3** and **OpenStack Swift-compatible** solutions.

> *This course is based on Red Hat Ceph Storage version 5.0.*

Who Should Attend

This course is ideal for:

- **Storage administrators** and **cloud operators** managing Ceph in data centers or hybrid cloud environments.
- **Developers** working on applications that leverage cloud storage and need to understand various storage models and client access methods.

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What You Will Learn

- Deploy and manage **Red Hat Ceph Storage clusters** using standard hardware.
- Perform key management operations through the **web-based dashboard**.
- Create, expand, and manage **storage pools** and define access policies.
- Connect clients via **object**, **block**, or **file-based** protocols.
- Analyze and tune **Ceph performance metrics**.
- Integrate Ceph with **Red Hat OpenStack Platform** and **OpenShift** for unified storage management.

Impact on the Organization

Reliable, high-performance storage is the foundation of modern enterprise infrastructure.
Red Hat Ceph Storage provides:

- **Scalability** — grow capacity without downtime using commodity hardware.
- **Flexibility** — support object, block, and file storage workloads.
- **Resilience** — achieve redundancy and fault tolerance across distributed systems.

Organizations completing this course can deploy and operate **software-defined storage clusters** that support modern, cloud-native workloads efficiently.

Impact on the Individual

Upon completing this course, participants will be able to:

- Deploy, manage, and scale **Red Hat Ceph Storage clusters**.
- Configure **object, block, and file storage** for various enterprise use cases.
- Integrate Ceph with **Red Hat OpenStack Platform** and **OpenShift**.
- Analyze and optimize performance for large-scale deployments.
- Manage day-to-day operations, maintenance, and troubleshooting.

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Outline

1. Introduction to Ceph Architecture
Understand Ceph's core architecture, data distribution model, and client access methods.

2. Deploying Red Hat Ceph Storage
Install and scale a new Ceph cluster across commodity servers.

3. Configuring Ceph Clusters
Manage configuration files, monitor nodes, and network layouts.

4. Creating Object Storage Components
Set up and manage **OSDs**, **pools**, and cluster authorization mechanisms.

5. Customizing Storage Maps
Adjust **CRUSH** and **OSD maps** to optimize performance and redundancy.

6. Providing Block Storage (RADOS Block Devices)
Configure Ceph to deliver block storage via **RBDs** for virtual and physical workloads.

7. Providing Object Storage (RADOS Gateway)
Enable **S3/Swift-compatible object storage** using the **RADOS Gateway (RGW)**.

8. Providing File Storage (CephFS)
Configure and mount **Ceph File System (CephFS)** for shared storage access.

9. Managing Ceph Clusters
Monitor and maintain cluster health, replace faulty components, and optimize operations.

10. Tuning and Troubleshooting Ceph
Identify performance metrics, fine-tune cluster behavior, and resolve operational issues.

11. Integrating with Cloud Platforms
Use Ceph as the backend for **OpenStack** (Cinder, Glance, Swift) and **OpenShift** environments.

12. Comprehensive Review
Review and reinforce course concepts through real-world practice exercises.