VEDITHTECH

OpenStack:

Course Description

OpenStack is an open source platform that uses pooled virtual resources to build and manage private and public clouds. The tools that comprise the OpenStack platform, called "projects," handle the core cloud-computing services of compute, networking, storage, identity, and image services. More than a dozen optional projects can also be bundled together to create unique, deployable clouds.

In virtualization, resources such as storage, CPU, and RAM are abstracted from a variety of vendor-specific programs and split by a hypervisor before being distributed as needed. OpenStack uses a consistent set of application programming interfaces (APIs) to abstract those virtual resources 1 step further into discrete pools used to power standard cloud computing tools that administrators and users interact with directly.

REDHAT CEPH STORAGE ARCHITECHTURE AND ADMINISTRATION

REDHAT CEPH STORAGE ARCHITECHTURE AND ADMINISTRATION (CEPH125)

Course Outline

Prepare for Red Hat Ceph Storage
Identify challenges faced by traditional storage and explain how Ceph addresses them.

Deploy Red Hat Ceph Storage
Deploy and expand the storage capacity of a new Red Hat Ceph Storage cluster.

Configure Red Hat Ceph Storage
Manage how Ceph stores data with pools, configure Red Hat Ceph Storage using its configuration file, and configure users for Ceph clients that may access the Ceph storage cluster.

Provide block storage with RBD
Configure Ceph to provide block storage for clients by using RADOS block devices (RBDs).

Provide object storage with RADOSGW
Configure Ceph to provide object storage for clients by using a RADOS gateway (RADOSGW or RGW).

Provide file storage with CephFS
Configure Ceph to provide file storage for clients using the Ceph Filesystem (CephFS).

Configure the CRUSH map
Adjust the CRUSH map—which controls how data is stored, replicated, and distributed across OSDs in the Ceph cluster—in order to optimize resiliency and performance.

Manage and update the cluster maps
Explain how the monitor and OSD maps are managed in order to maintain cluster operation, quorum, and consistency.

Manage a Red Hat Ceph Storage cluster
Check Ceph cluster status, troubleshoot Ceph daemon problems, and upgrade Ceph software.

Tune and troubleshoot Red Hat Ceph Storage
Identify the key performance metrics for a Ceph cluster and use them to help tune and troubleshoot the operating system and Ceph software for optimal performance.

Integrate Red Hat Ceph Storage with OpenStack
Configure an OpenStack cloud to use Ceph to provide image, block, object, and file storage.

REDHAT OPEN STACK ADMINISTRATION I (CL110)

REDHAT OPEN STACK ADMINISTRATION I (CL110)

Course Outline

Introduce launching an instance
Launch an instance and describe the OpenStack architecture and use cases.

Organize people and resources
Manage projects, users, roles, and quotas.

Describe cloud computing
Describe the changes in technology and processes for cloud computing.

Manage Linux networks
Administer Linux networks and bridges.

Prepare to deploy an instance with public access
Manage images, flavors, and private networks in preparation for launching an instance.

Deploy an instance
Launch and verify an instance.

Manage block storage
Manage ephemeral and persistent block storage.

Manage object storage
Administer object storage.

Prepare to deploy an external instance
Manage external networks and security in preparation for launching an instance with public access.

Deploy an instance with public access
Launch and verify an instance with public access.

Customize instances
Customize an instance with cloud-init.

Deploy scalable stacks
Deploy a stack and configure autoscaling.

Install an OpenStack overcloud
Install an OpenStack proof of concept using the director UI and provisioning service templates.

Lab: Comprehensive review of CL110
Review tasks in the Red Hat OpenStack Administration I: Core Operations for Cloud Operators course.

REDHAT OPEN STACK ADMINISTRATION I

REDHAT OPEN STACK ADMINISTRATION I/II(CL110/210)

Red Hat Enterprise Linux OpenStack Platform architecture

- Understand Red Hat Enterprise Linux OpenStack Platform features and terminology.

Red Hat Enterprise Linux OpenStack Platform installation

- Install Red Hat Enterprise Linux OpenStack Platform using packstack and Foreman.

- Create an instance with the Horizon web front-end.

Qpid message broker

- Install and configure the Qpid message broker service.
- Secure Qpid using authentication and encryption.

Keystone identity service

- Install, configure, and use the Keystone authentication services.

Swift object storage service

- Install, configure, and use the Swift object storage service.

Glance image service

- Install and use the Glance image service.

Cinder block storage service

- Install the Cinder block storage service.
- Manage Cinder volumes.

Networking service

- Install, configure, and manage Red Hat Enterprise Linux OpenStack Platform networking service.

Nova compute and controller services

- Install Nova compute and controller services.
- Deploy an instance from the command line.

Implement an additional compute node

- Learn to add and remove additional Nova compute nodes.

Heat orchestration service

- Install the Heat orchestration service.
- Launch a stack using preconfigured templates

Ceilometer metering service

- Install and manage the ceilometer metering service.

The future of the OpenStack development community

- Learn about the future of OpenStack.

Comprehensive review

- Review the installation and management of Red Hat Enterprise Linux OpenStack Platform.

REDHAT OPEN STACK ADMINISTRATION II

- Course introduction
- Introduce and review the course.
- Manage an enterprise OpenStack deployment
- Manage the undercloud, the overcloud, and related services.
- Manage internal OpenStack communication
- Administer the Keystone identity service and the advanced message queueing protocol (AMQP) messaging service.
- Build and customize images
- Build and customize images.
- Manage storage
- Manage Ceph and Swift storage for OpenStack.
- Manage resilient compute resources
- Add compute nodes, manage shared storage, and perform live instance migration.
- Manage and troubleshoot
- Manage and troubleshoot virtual network infrastructure.
- Manage resilient compute resources
- Add compute nodes, manage shared storage, and perform live instance migration.
- Troubleshoot OpenStack issues
- Diagnose and troubleshoot OpenStack issues and services.
- Monitor cloud metrics for autoscaling
- Monitor and analyze cloud metrics for use in orchestration autoscaling.
- Orchestrate deployments
- Deploy Heat stacks that automatically scale.

REDHAT OPEN STACK ADMINISTRATION III WITH EXAM

REDHAT OPEN STACK ADMINISTRATION III WITH EXAM (CL311)

Course Outline

Manage networks in Linux
Administer network interfaces, bridges, and virtual networking devices.

Manage OpenStack networking agents
Manage the L2, L3, DHCP, and other OpenStack networking agents.

Deploy IPv6 networks
Set up IPv6 networks in OpenStack.

Provision OpenStack networks
Provision tenant networks and provider networks.

Implement distributed virtual routing
Enable distributed virtual routing (DVR) to provide scaling and performance.

Tune NFV performance
Tune OpenStack networking performance.

Implement NFV data paths
Execute network functions virtualization (NFV) data paths.

Build software-defined networks with OpenDaylight
Create software-defined networks with OpenDaylight (ODL).

Comprehensive review of Red Hat OpenStack Administration III
Configure advanced networking on Red Hat® OpenStack Platform.

REDHAT OPEN STACK ADMINISTRATION III

REDHAT OPEN STACK ADMINISTRATION III(CL310)

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