

## Containers, Kubernetes and OpenShift Administration II

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### Course Summary

#### Description

Learn to build and manage container images, administrate an OpenShift cluster, and troubleshoot applications running on Kubernetes Containers, Kubernetes, and Red Hat OpenShift Administration II (DO285) helps you gain core knowledge in building and in configuring and managing OpenShift Container Platform. This immersive and intensive, hands-on course shows you how to deploy applications to a local container engines and OpenShift clusters, manage the cluster on a day-to-day basis, and troubleshoot the deployment of containerized applications.

#### Objectives

At the end of this course, students will be able to:

- Manage containers and container images.
- Create custom container images.
- Describe the Red Hat OpenShift Container Platform cluster installation and update processes.
- Troubleshoot application deployment issues.
- Control access to projects using groups and role-based access control (RBAC).
- Configure service and container networking.
- Expose applications to clients external to the cluster using TLS encryption.
- Configure network isolation between services and applications using network policies.
- Configure application scheduling using labels and selectors.
- Limit compute resource usage of applications with resource limits and quotas.
- Install Kubernetes Operators with the web console.

#### Topics

- Introduction to container technology
- Create containerized services
- Manage containers
- Manage container images
- Create custom container images
- Deploy containerized applications on OpenShift
- Deploy multicontainer applications
- Explore Red Hat OpenShift Container Platform
- Verify the health of a cluster
- Configure authentication and authorization
- Configuring application security
- Configure OpenShift networking for applications
- Control pod scheduling
- Scale an OpenShift cluster
- Describe cluster updates
- Manage a cluster with the web console
- Execute a comprehensive review

#### Audience

- System and software architects interested in understanding features and functionality of an OpenShift cluster
- System administrators who are interested in the ongoing management of clusters and containerized applications
- Cluster operators who are interested in managing access to cluster resources by users and applications
- Site reliability engineers interested in the ongoing maintenance and troubleshooting of a cluster

#### Prerequisites

Before taking this course students should be able to demonstrate Enterprise Linux system administration experience

#### Duration

Five days

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### Course Outline

- I. Introduction to container technology*
  - A. Describe how applications run in containers orchestrated by Red Hat OpenShift Container Platform.
- II. Create containerized services*
  - A. Provision a service using container technology.
- III. Manage containers*
  - A. Modify prebuilt container images to create and manage containerized services.
- IV. Manage container images*
  - A. Manage the life cycle of a container image from creation to deletion.
- V. Create custom container images*
  - A. Design and code a Dockerfile to build a custom container image.
- VI. Deploy containerized applications on OpenShift*
  - A. Use OpenShift Container Platform to deploy single container applications.
- VII. Deploy multicontainer applications*
  - A. Deploy applications that are containerized using multiple container images.
- VIII. Explore Red Hat OpenShift Container Platform*
  - A. Describe the architecture of OpenShift Container Platform.
- IX. Verify the health of a cluster*
  - A. Describe OpenShift installation methods and verify the health of a newly installed cluster.
- X. Configure authentication and authorization*
  - A. Configure authentication with the HTPasswd identity provider and assign roles to users and groups.
- XI. Configuring application security*
  - A. Restrict permissions of applications using security context constraints and protect access credentials using secrets.
- XII. Configure OpenShift networking for applications*
  - A. Troubleshoot OpenShift software-defined networking (SDN) and configure network policies.
- XIII. Control pod scheduling*
  - A. Control the nodes on which a pod runs.
- XIV. Scale an OpenShift cluster*
  - A. Control the size of an OpenShift cluster.
- XV. Describe cluster updates*
  - A. Describe how to perform a cluster update.
- XVI. Manage a cluster with the web console*
  - A. Use the web console to manage a Red Hat OpenShift cluster.
- XVII. Execute a comprehensive review*
  - A. Verify, manage, and troubleshoot an OpenShift cluster for enterprise use.