Red Hat Training and Certification

CS120
Introduction to Red Hat OpenShift Service on AWS

Course Description

Learn how to deploy, access, and perform day-to-day operations to a ROSA cluster.

This course teaches IT operations staff how to deploy a public Red Hat OpenShift Service on AWS (ROSA) cluster for experimentation and to provision projects for development teams to work within. IT operations staff will learn how to perform day-to-day operation of ROSA clusters and support application teams which use that cluster. IT operations staff can then apply the same skills and similar procedures to private ROSA clusters of their organizations.

Course content summary

- Introduction to Managed OpenShift
- Identify prerequisites to create and deploy a ROSA cluster
- Access a ROSA cluster as an administrator
- Configure GitHub authentication
- Connect ROSA clusters to Red Hat cloud services
- Configure projects with guardrails for application teams
- Declarative project provisioning and configuration by using OpenShift GitOps
- Perform OpenShift version updates
- Clean AWS resources from deleted clusters

Audience for this course

- **Primary:**
  - ROSA administrators
  - System administrators, platform engineers, cloud engineers, other infrastructure-related IT roles who are responsible for providing and supporting infrastructure for applications deployed on AWS.
- **Secondary:**
  - Enterprise architects
  - Application and development infrastructure professionals such as site reliability engineers and DevOps engineers.

Recommended training

- All students must be knowledgeable about Amazon Web Services (AWS), including operating and managing AWS compute, storage, and network resources

- For students who are new to Red Hat OpenShift, it is recommended that you learn the fundamental skills of managing Red Hat OpenShift clusters from the following courses:
    - Red Hat OpenShift I: Containers & Kubernetes (DO180)
    - Red Hat OpenShift Administration II: Operating a Production Kubernetes Cluster (DO280)

- Students with previous experience of managing Kubernetes clusters are advised to take DO180 and DO280 or at least to acquire foundational skills in operating Red Hat OpenShift clusters by using the following free resources from Red Hat:
    - Red Hat Developer Sandbox for OpenShift
    - OpenShift and Kubernetes learning from Red Hat Developer
    - Containers, Kubernetes and Red Hat OpenShift Technical Overview (DO080)

Outline for this course

- **Create Public Red Hat OpenShift Service on AWS (ROSA) Clusters**
  Create a Red Hat OpenShift Service on AWS (ROSA) cluster that is accessible through the internet

    - **Introduction to ROSA**
      Describe how ROSA clusters fit into the AWS infrastructure, the required tools to create and access ROSA clusters, and the typical deployment patterns for ROSA clusters: public, bring your own Amazon Virtual Private Cloud (VPC), and private link

    - **Prerequisites for ROSA Cluster Creation**
      Describe the required tools and services to create ROSA clusters. Prepare an AWS account and a management workstation to create a ROSA cluster, and verify that an AWS account meets all the prerequisites for creating a ROSA cluster

    - **Creating a ROSA Cluster**
      Create an internet-accessible ROSA cluster

    - **Accessing a ROSA Cluster as an Administrator**
      Create OpenShift cluster administrator credentials to access a managed cluster by using the OpenShift CLI, OpenShift Web Console, and Kubernetes CLI

    - **Connecting a ROSA Cluster to Red Hat Services**
      Connect a managed cluster to Red Hat Cloud Services

- **Configure Projects for Application Teams**
  Configure projects for application teams to develop or deploy applications, and grant non-cluster administrators sufficient autonomy for their jobs and to prevent misusing a ROSA cluster and AWS services

    - **Configuring Identity Providers for ROSA Clusters**
      Configure an identity provider for developers to access a ROSA cluster and self-service projects to deploy unprivileged applications

    - **OpenShift Multi-Tenancy with Projects**
      Describe the OpenShift features that enable multi-tenancy

    - **Configuring Project Self-Service**
      Describe the OpenShift features that enable self-service for application teams

Course reference: https://www.redhat.com/en/services/training/cs120-introduction-red-hat-openshift-service-on-aws

- **Declarative Project Management**
  Automate project creation and ongoing maintenance by using OpenShift GitOps while preserving the autonomy of non-administrator users over those projects

    - **GitOps for Kubernetes**
      Define the fundamentals of GitOps and its use with Kubernetes clusters and applications. Describe the essential concepts of Argo CD that Red Hat OpenShift GitOps supports

    - **Automating ROSA Cluster Management with OpenShift GitOps**
      Describe the GitOps approach to automating OpenShift cluster management

    - **Drift Remediation with OpenShift GitOps**
      Describe ROSA resource reconciliation with OpenShift GitOps. Describe the OpenShift GitOps approach to remediating cluster state deviation

- **ROSA Cluster Upgrades**
  Upgrade ROSA clusters with new OpenShift versions

    - **OpenShift Updates and Application Availability**
      Describe the OpenShift update process and how it affects application availability

    - **Configuring Scheduled Cluster Upgrades**
      Describe the process of scheduling a ROSA cluster upgrade and configuring automated y-stream upgrades

- **Delete ROSA Clusters**
  Delete ROSA clusters and ensure that all of its related AWS resources are deleted

    - **Deleting AWS Resources from Deleted ROSA Clusters**
      Describe the process of deleting a ROSA cluster

    - **Deleting AWS Resources from Deleted ROSA Clusters**
      Describe scenarios that require manual deletion of AWS resources that are related to a ROSA cluster after the cluster was deleted

As a result of attending this course, students can create ROSA clusters. Most day-to-day application and cluster administration tasks are performed the same way across Red Hat OpenShift products, so IT professionals apply the same skills in managing Red Hat OpenShift clusters to both cloud and on-premise environments

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