

Azure Red Hat OpenShift

Duration: 5 days (8hrs/day)

Prerequisites: Knowledge of Linux and Containers

Course Objective: The objective of this training is to empower participants with comprehensive knowledge and practical skills in utilizing container orchestration using OpenShift and work with Azure RedHat OpenShift.

Lab Requirement: Customer Azure Account Required

Module 1 – OpenShift Basics

What is Kubernetes

What is OpenShift?

OpenShift Architecture and Components

OpenShift Operators

Module 2 – Starting with Azure Red Hat OpenShift (ARO)

What is Azure Red Hat OpenShift (ARO)?

Understand the main ARO features, integrations and benefits

ARO Pricing

Understand the main differences between ARO and AKS

Available options to deploy an ARO cluster and discover Azure Cloud Shell

Understand and create a Resource Group, Virtual Network and Subnets

Understand and create a Service Principal

Understand and create Red Hat pull secret

Create our first ARO Cluster

Explore the ARO cluster and the managed/node/infrastructure resource group

How to connect to the ARO cluster (using oc cli and the OpenShift console)

Use a token to login

Understand “oc login” and Kubeconfig

Understand and use Admin Kubeconfig

ARO Support Policy, Responsibility Matrix, Release Notes and Roadmap

Basic Networking Considerations

Explore the Openshift console

Explore Operators

Deploy and Operator (Azure Service Operator) from the Operator hub

Integrate ARO with Azure ARC-Enabled Kubernetes

Work with Kubernetes resources from Azure Arc-Enabled Kubernetes

Get inside nodes

Get inside Pods

Module 3 – Understand specific OpenShift commands and resources with examples

Play with basic Kubernetes resources

How to find more about the OpenShift resources

Understand Projects

Understand the internal/integrated container registry

Explore and access the internal/integrated container registry

Understand ImageStream and ImageStreamTag and use “oc import-image”

Understand and use “oc new-app”

Understand and use Routes

Understand and use “oc status”

Use Source-to-Image (S2I) and understand Build and BuildConfig

Understand and use Templates

Create your custom Template (and Catalog item)

Understand and use SecurityContextConstraints (SCC)

Use “oc plugin” and understand how to manage CLI plugins (including krew)

Module 4 – Play with OpenShift Routes

Expose an application using a Route

Understand secure Routes and expose an application via HTTPS

Customize Routes to route traffic as per your needs

Configure a custom domain with the help of an Azure Public DNS zone

Expose an application using your own domain

Module 5 – Identity providers in ARO

Identity providers overview

Understand and implement htpasswd

Understand and configure Microsoft Entra authentication

Remove identity providers

Module 6 – Integrate Azure Container Registry (ACR) with ARO

What is Azure Container Registry (ACR)?

Create an Azure Container Registry (ACR) and push/import images into it

Integrate ARO with Azure Container Registry (ACR)

Module 7 – Nodes and Compute in ARO

Understand compute related terminologies

Create a new MachineSet (in a different subnet)

Understand infrastructure nodes

Use a MachineConfig to perform configurations on the nodes

Module 8 – Scaling in ARO

Understand node resource allocation and reservation

Manually scale nodes

Manually scale pods

Understand and Implement Cluster Autoscaler

Understand and Implement Horizontal Pod Autoscaler (HPA)

Module 9 – Networking in ARO

Understand ARO's network plugin Open Virtual Network (OVN) Kubernetes

Understand DNS in ARO

Modify the VNET level DNS

Modify the DNS Operator

Understand public and private ARO clusters

Understand ARO egress lockwon

Understand outbound types in ARO (LoadBalancer and UDR)

Create a private ARO cluster without a public IP (using UDR and Azure Firewall)

Deploy a jumbox VM in a peered VNET to connect to a private ARO cluster

Explore and work with the private ARO cluster (using UDR and Azure Firewall)

Understand and Implement Network Policies

Module 10 – Security, Governance and Identities in ARO

Integrate ARO with Azure Key Vault Provider for Secrets Store CSI Driver

Implement Kubernetes Policies with Azure Policy

Manually update cluster certificates

Understand how to rotate and update the service principal

Module 11 – Storage in ARO

Explore the storage options in ARO

Dynamically provision Azure Disk

Statically provision Azure Disk

Create a new StorageClass to dynamically provision Azure File

Statically provision Azure File

Module 12 – Troubleshoot and monitor ARO

Activity Logs

Azure Status and Resource health

Enable Azure Monitor with Container Insights in ARO

Explore Insights

Metrics Explorer for ARO

Metrics Explorer for ARO related resources

Explore Workbooks

Explore Logs

Understand Alerts in Azure

Create an Azure metrics-based alert

Create an Azure log-based alert

Disable Container Insights

Explore basic OpenShift troubleshooting and monitoring

Explore OpenShift alerts

Module 13 – OpenShift Versions and ARO Cluster Update

Understand OpenShift Versions and Channels

Understand support lifecycle for ARO

Understand the ARO version update operation

What to check to facilitate the version update and prevent failure

Perform an OpenShift version upgrade in ARO