AKS for Beginners and Advanced

Duration: 6 days (8hrs/day)

Prerequisites: Basic knowledge of Linux, Basic knowledge of Containers.

Course Objective: This comprehensive Azure Kubernetes Service course, covering container orchestration, cluster design, installation, resource and application management, security, networking, maintenance, logging, and monitoring on Azure, is designed to equip learners with the skills needed to successfully clear the Certified Kubernetes Administrator exam.

Kubernetes Version: Latest

Lab Requirement: Customer Azure Account Required

Module 1 - Core Concepts

Overview of Container Orchestra9on

Introduction to Kubernetes

Understanding Kubernetes Architecture

Module 2 - Installation, Configuration & Validation

Introduction to Azure AKS Cluster

Lab: Create AKS Cluster

Lab: Setup Azure CLI on Local Desktop

Module 3 - Managing Resources

Understanding Pods, Labels & Selectors

Lab: Managing Pods

Lab: Managing Labels & Selector

Understanding Replica Set

Lab: Deploying Replica Set

Understanding Services – ClusterIP, NodePort & LoadBalancer

Lab: Creating & Managing Service

Module 4 - Application Lifecycle Management

Overview of Deployment

Deployment Strategies – Blue/Green & Canary

Lab: Deploying Applications as Deployment

Lab: Implementing Deployment Strategies on Deployments

Module 5 - Environment Variable

Plain Key

Config Map

Secret

Lab: Using Plain Keys, Config Map & Generic Secret as Environment Variables

Module 6 - Storage

Understanding Volume Management in AKS

Types of Volumes Provisioning

Persistent Volumes

Persistent Volume Claim

Lab: Using PV & PVC to attach Persistent Volume to a Pod using Azure Disk

Understanding Storage Class

Lab: Use AKS Provisioned Storage Class instead of Custom Storage Class

Module 7 - Security

Introduction to Active Directory Authentication for AKS admins

Lab: Create AD Group and User and Enable AD for AKS

Lab: Access Azure AKS Cluster Resources using Azure AD User

Understanding Role, ClusterRole, RoleBinding& ClusterRoleBinding

Lab: Managing Roles and Role Binding

Lab: Managing Cluster Role and Cluster Role Binding

Module 8 – Autoscaling

Introduction to Cluster Autoscaler

Lab: Create AKS Cluster with Autoscaling enabled using Azure AKS

Introduction to Horizontal Pod Autoscaler

Lab: Create Horizontal Pod Autoscaler

Module 9 – Logging and Monitoring

Understand how to Monitor Application and Cluster Components

Lab: Understand how to Read Application & Cluster Component Logs

Lab: Deploying Prometheus & Grafana to Monitor K8s Cluster

Module 10 – Networking

Understand Basics of Kubernetes Networking

Understand Azure CNI

Understand Pod Networking Concepts

Understanding Ingress

Lab: Configure and Manage Ingress Rule

Understanding Namespace & Use-Cases

Lab: Creating Namespace & Deploying K8s resources in Different Namespaces

Lab: Load Balancer Service

Module 11 – High Availability in AKS

Free and Standard tiers for AKS cluster management

Lab: Availability Zones in AKS

Use Azure Front Door to route traffic between multiple AKS clusters

Module 12 – Deploy to AKS using Azure DevOps

Initial setup: Create a project, a service connection, add files, create ACR+AKS

Lab: Use a preconfigured Pipeline to build/push to ACR and deploy to AKS

Module 13 – AKS Access and Identify

AKS Authorization and Authentication

Lab: Generate kubeconfig for admins

Lab: Generate kubeconfig for users

Admin vs User - Security concerns

Module 14 – Disaster Recovery

Introduction to Velero

Lab: Creating AKS cluster backup using Velero

Lab: Restore an AKS cluster from backup