



Azure Kubernetes Service (AKS) Course Duration: 40 Hours (5 Days)

Overview

The Azure Kubernetes Service (AKS) course is designed to educate learners on deploying, managing, and scaling containerized applications using Kubernetes on Azure. It begins with Module 1: Core Concepts, where students gain foundational knowledge about container orchestration, Kubernetes, and its architecture. As the course progresses, learners will delve into Module 2: Create Azure AKS Cluster, learning how to set up an Azure managed Kubernetes environment and explore it using Kubectl and the Azure CLI. Throughout the course, participants will also learn to manage resources, schedule workloads, understand Application lifecycle management, and configure environment variables. Module 7: Storage teaches about Persistent storage using Azure Disks, a crucial aspect of stateful applications. Security in Module 8 covers Active Directory integration for AKS, a key component for Azure DevOps Kubernetes deployment strategies. Advanced topics include Autoscaling in Module 9, Logging and monitoring in Module 10, and networking in Kubernetes in Module 11. By the end of the course, learners will be well-versed in leveraging AKS for robust, efficient, and secure Kubernetes deployments in the Azure cloud.

Audience Profile

The Azure Kubernetes Service (AKS) course offers in-depth training on managing containerized applications with Kubernetes on Azure.

- DevOps Engineers
- Cloud Solutions Architects
- IT Professionals with a focus on Azure environments
- Software Developers interested in deploying applications on AKS
- System Administrators looking to manage containerized infrastructures
- Kubernetes Administrators aiming to integrate with Azure services
- Technical Team Leads overseeing deployment strategies
- Infrastructure Engineers transitioning to cloud-native solutions
- Security Professionals responsible for cloud security
- Network Engineers involved in Kubernetes networking solutions
- IT Project Managers overseeing cloud-based projects
- Technical Support Staff specializing in Azure ecosystems
- IT Students and enthusiasts seeking knowledge in container orchestration

Course Syllabus





Module 1 – Core Concepts

- Overview of Container Orchestra on
- Introduction to Kubernetes
- Understanding Kubernetes Architecture

Module 2 – Installation, Configuration & Validation

- Introduction to Azure AKS Cluster
- Lab: Create AKS Cluster
- Lab: Explore AKS Cluster using Kubec'll
- Lab: Setup Azure CLI on Local Desktop

Module 3 – Managing Resources

- Understanding Pods, Labels & Selectors
- Lab: Managing Pods
- Lab: Managing Labels & Selector
- Understanding Replica on Controller & Replica Set
- Lab: Deploying Replica on Controller & Replica Set
- Understanding Services ClusterIP, NodePort & LoadBalancer
- Lab: Creating & Managing Service

Module 4 - Scheduling

- Manual Scheduling of Pods
- Taint and Tolerations
- Lab: Using Manual Scheduling or Taints and Tolerations
- Lab: Node Selector and Node Affinity

Module 5 - Application Lifecycle Management

- Overview of Deployment
- Deployment Strategies Blue/Green & Canary
- Lab: Deploying Applications as Deployment
- Lab: Implementing Deployment Strategies on Deployments

Module 6 - Environment Variable

- Plain Key
- Config Map





- Secret
- Lab: Using Plain Keys, Config Map & Generic Secret as Environment Variables
- Lab: Mount Environment Variable as Volumes

Module 7 – Storage

- Understanding Volume Management in AKS
- Types of Volumes Provisioning
- Persistent Volumes
- Persistent Volume Claim
- Lab: Using PV & PVC to ach Persistent Volume to a Pod using Azure Disk
- Understanding Storage Class
- Lab: Use AKS Provisioned Storage Class instead of Custom Storage Class

Module 8 – 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 9 – 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 10 – Logging and Monitoring

- Understand how to Monitor Applica on and Cluster Components
- Lab: Understand how to Read Applica on & Cluster Component Logs
- Lab: Deploying Prometheus & Grafana to Monitor K8s Cluster

Module 11 – Networking in Kubernetes

- Understand Basics of Kubernetes Networking
- Understand CNI
- Understand Pod Networking Concepts





- Understanding DNS of K8s
- 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