



Information Technology

## Advanced Kubernetes

## Course Introduction

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The training for the Advanced Kubernetes certification enriches participants' knowledge within the Kubernetes ecosystem. Encompassing various subjects such as crafting Kubernetes clusters, establishing network policies, honing disaster recovery skills, administering role-based access control, scaling and overseeing applications, addressing maintenance and troubleshooting issues, and managing APIs, the course offers a comprehensive learning experience. Upon completion of the training, participants will have honed their skills in efficiently overseeing fully operational Kubernetes clusters for production purposes.

## Target Audience

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- Cloud Computing Engineer
- Computer Network Specialist
- Computer Support Specialist
- Database Administrator
- Information Technology Analyst
- Information Technology Leadership

## Learning Objectives

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- Gain an in-depth understanding of the Kubernetes framework and the process of configuring Kubernetes clusters.

- Understand the networking structure of Kubernetes facilitating communication among diverse services within a microservices architecture.
- Obtain expertise on automating the deployment, expansion, and oversight of containerized applications.
- Manage enduring storage using Kubernetes for applications requiring persistent data, along with the ability to monitor, trace, audit, and troubleshoot these applications.
- Execute advanced Kubernetes use cases.

## Course Outline

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### • Day 01

#### Installation, Configuration and Validation

- Design a Kubernetes Cluster
- Installation of Kubernetes Master and Nodes using Hard Way Method
- Bootstrapping the ETCD Cluster
- Bootstrapping the Kubernetes Control Plane
- Bootstrapping the Kubernetes Worker Nodes
- Configure kubectl
- Verify Installation

#### Revisiting Managing Resources

- Managing Pods
- Managing Labels and Selectors
- Managing Replication Controller and Replica Set
- Managing Service

- Managing Deployments
- Managing DaemonSet

## • Day 02

### Storage

- Understand storage classes
- Persistent Volume - HostPath
- Persistent Volume - NFS
- Understand volume mode, access modes and reclaim policies for volumes
- Understand persistent volume claims primitive
- Know how to configure applications with persistent storage

### Managing StatefulSet

- What is StatefulSet
- Why StatefulSet
- Manage StatefulSet
- Managing Headless Service
- StatefulSet DNS Entry
- Storage with StatefulSet

## • Day 03

### Logging and Monitoring

- Understand how to monitor all cluster components
- Prometheus Tool
- Integration of Elastic Search and Kibana with Kubernetes

### Networking in Kubernetes

- Understand CoreDNS
- Configure Custom DNS for Pod
- Ingress – Host Based
- Ingress – Path Based Ingress with TLS
- Metal Load Balancer

## • Day 04

### Helm

- Understand Helm and Helm Charts
- Helm Commands
- Deploy Kubernetes Dashboard using Helm
- Create Helm Chart and Deploy Applications using Helm Chart
- Test Helm Chart
- Upgrade Application using Helm Chart
- Downgrade Application using Helm Chart

## • Day 05

### Istio

- Istio Installation
- Understand Istio Architecture
- Deploy Application and Work with Kiali
- Understand Destination Rule and Virtual Service
- Create Application with Istio
- Microservices Tracing
- Ingress Host Based and Path Based with Istio

- Ingress – Subdomain with Istio

## Confirmed Sessions

FROM	TO	DURATION	FEES	LOCATION
April 21, 2025	April 25, 2025	5 days	4250.00 \$	UAE - Abu Dhabi
Aug. 11, 2025	Aug. 15, 2025	5 days	4250.00 \$	UAE - Dubai
Sept. 22, 2025	Sept. 26, 2025	5 days	5250.00 \$	England - London
Dec. 29, 2025	Jan. 2, 2026	5 days	4950.00 \$	Thailand - Bangkok