Kubernetes Administrator (CKA) Training

Duration: **4 Day**

BILGINC IT Academy
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This **four-day specialist training** covers the core skills required to **build, configure, and manage Kubernetes clusters in production environments**. Participants will learn to handle **cluster networking, application deployment, storage, security, monitoring, troubleshooting, and high availability** using vendor-independent tools.

The course is an **excellent preparation for the Certified Kubernetes Administrator (CKA) exam**.

Prerequisites

- Linux administration and CLI proficiency
- Familiarity with containers (Docker, images, volumes, networking)
- Ability to edit files in CLI editors (vi, nano, etc.)
- Basic understanding of YAML and cloud-native concepts

Who Should Attend

- IT administrators and system engineers
- DevOps professionals
- Cloud-focused professionals starting Kubernetes careers
- Anyone managing containerized infrastructure

What You Will Learn

- Install a **multi-node cluster with kubeadm**
- Configure and grow clusters with proper networking
- Manage application lifecycle: scaling, updates, rollbacks
- Secure clusters and pods with RBAC, Admission Controllers, Network Policies
- Configure persistent storage (Persistent Volumes, ConfigMaps, Secrets)
- Monitor, log, and troubleshoot containers and clusters
- Automate deployments with **Helm & Charts**
- Implement federation and **high availability clusters**

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Training Outline

Introduction

- Linux Foundation overview
- CNCF governance
- Lab setup

Kubernetes Basics

- Define Kubernetes, cluster structure
- Adoption and CNCF governance
- Lab: First Kubernetes pod

Installation & Configuration

- Minikube, kubeadm, alternative tools
- Lab: Multi-node installation

Architecture

- Control Plane & Worker Nodes
- Networking fundamentals
- Lab: Configure cluster networking

APIs & Access

- kubectl & API integration
- Swagger & OpenAPI
- Lab: API-driven pod creation

API Objects

- v1 group, RBAC APIs
- Lab: Role-based access

Deployments & State Management

- Deployments, ReplicaSets, DaemonSets, Labels
- Lab: Deployment lifecycle

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Volumes & Data

- Persistent Volumes, ConfigMaps, Secrets, Rook
- Lab: Data persistence

Services

- Service overview, DNS access
- Lab: Service exposure

Helm

- Helm basics, Helm Charts
- Lab: Automating deployments

Ingress

- Ingress controllers, rules, Service Mesh
- Lab: Configure Ingress

Scheduling

- Scheduler policies, affinity, taints, tolerations
- Lab: Scheduling exercises

Logging & Troubleshooting

- Logs, monitoring plugins
- Troubleshooting methodology
- Lab: Debugging pods & clusters

Custom Resource Definitions

- CRDs, Aggregated APIs
- Lab: Custom resources

Security

- Authentication & Authorization
- Admission controllers
- Pod Security & Network Policies
- Lab: Security use cases

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High Availability (HA)

- Stacked & external DB architectures
- Lab: HA cluster setup

Exam Preparation & Closing

- Domain review for CKA exam
- Cilium network plugin overview
- Evaluation & feedback