

Kubernetes Administrator (CKA) Fast Track

Course CKAFT

3 Days

Instructor-led, Hands-on

Introduction

This accelerated course is designed for students preparing for the Certified Kubernetes Administrator (CKA) exam. Building on a foundational understanding of Kubernetes, the CKA Fast Track course focuses on real-world cluster administration, troubleshooting, and lifecycle management skills required to confidently operate Kubernetes in production environments.

Through concise lectures and intensive hands-on labs, students will gain direct experience with cluster provisioning, configuration, upgrades, and recovery. You will practice performing essential administrative tasks such as ETCD snapshot and restore, managing node access, configuring network plugins, setting resource quotas, implementing security controls, and troubleshooting networking and DNS issues.

Every module reinforces critical CKA exam domains through guided exercises and practical challenges, simulating the time-constrained, scenario-driven nature of the certification exam. By the end of this course, you will possess the applied knowledge and operational expertise to deploy, manage, and secure Kubernetes clusters with confidence — and to succeed on the Certified Kubernetes Administrator (CKA) exam.

Who Should Attend?

- Systems Administrators (SA), Site Reliability Engineers (SRE) and Team Leaders who plan to work with Kubernetes at any level or tier of involvement
- Any company or individual who wants to achieve CKA Certification
- AnySA/SRE/Leader expanding their Kubernetes Learning
- Any company or individual who wants to advance their knowledge of administrating and maintaining microservice architectures

What You'll Learn

- Prepare for and successfully pass the Certified Kubernetes Administrator (CKA) exam
- Build and manage production-grade Kubernetes clusters using kubeadm and automation tools such as Ansible
- Configure and manage control plane and worker nodes, including network plugin setup and node joins
- Perform essential cluster administration tasks such as ETCD backup and restore, cluster upgrades, and version management

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- Monitor and optimize cluster performance using resource metrics, quotas, and Admission Controllers
- Manage Kubernetes users, contexts, and Role-Based Access Control (RBAC) to enforce secure access control
- Configure application environment data using ConfigMaps, Secrets, and ephemeral storage
- Design advanced Pod configurations including init containers, sidecars, and node scheduling with taints and tolerations
- Implement logging, labeling, and annotation strategies for improved observability and metadata management
- Deploy and maintain workloads using ReplicaSets, DaemonSets, and Deployments with rollout, roll back, and scaling operations
- Configure and manage persistent storage using PersistentVolumes, Persistent Volume Claims, and StorageClasses with CSI drivers
- Extend Kubernetes functionality through Custom Resource Definitions (CRDs)
- Package and manage complex deployments using Helm and Kustomize
- Configure Services, Network Policies, and Gateway APIs to control and route network traffic securely
- Manage and troubleshoot CoreDNS and cluster-level DNS functionality
- Diagnose and resolve networking, scheduling, and resource issues using kubectl and cluster-level troubleshooting tools

Prerequisites

Students should be familiar with basic data concepts and terminology.

Outline

Module 1: Becoming a Certified Kubernetes Administrator

- Lecture: The CKA Exam

Module 2: Cluster Building with Kubeadm

- Lecture: Kubeadm Prerequisites
- Lecture + Lab: Kubeadm Prerequisites
- Lecture: Configure Network Plugin Requirements
- Lecture + Lab: Configure Network Plugin Requirements
- Lecture: Kubeadm Basic Cluster
- Lecture + Lab: Installing Kubeadm
- Lecture: Join Node to Cluster
- Lecture + Lab: Join Node to Cluster

Module 3: Cluster Administration

- Lecture: ETCD Snapshot and Restore

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- Lecture + Lab: ETCD Snapshot and Restore
- Lecture: Kubeadm Cluster Upgrade
- Lecture + Lab: Kubeadm cluster upgrade
- Lecture: Purge Kubeadm
- Lecture + Lab: Purge Kubeadm
- Lecture: Kubernetes the Alta3 Way
- Lecture + Lab: Deploy Kubernetes using Ansible

Module 4: Containers

- Lecture: Container Essentials
- Lecture + Lab: Creating a Docker Image

Module 5: Pod Basics

- Lecture: Manifests for Pods
- Lecture + Lab: Create and Configure Basic Pods
- 🚀 CKA Practice- Pod Basics

Module 6: Resource Management

- Lecture + Lab: Kubectl Top and Application Monitoring
- Lecture: Limits, Requests, and Namespace ResourceQuotas
- Lecture + Lab: Resource Requests and Limits
- 🚀 CKA Practice- Resource Requirements
- Lecture + Lab: Namespace Resource Quota
- Lecture: Admission Controller
- Lecture + Lab: Create a LimitRange AdmissionController

Module 7: User Administration

- Lecture: Contexts
- Lecture + Lab: Contexts
- Lecture: Role Based Access Control
- Lecture + Lab: Role Based Access Control
- Lecture + Lab: RBAC Distributing Access

Module 8: Ephemeral Storage

- Lecture: ConfigMaps and Volume Mounting
- Lecture + Lab: Persistent Configuration with ConfigMaps
- 🚀 CKA Practice- ConfigMaps
- Lecture: Secrets
- Lecture + Lab: Create and Consume Secrets
- 🚀 CKA Practice- Secrets

Module 9: Advanced Pod Design

- Lecture: Multi-Container Pods
- Lecture + Lab: Creating Ephemeral Storage For Fluentd Logging Sidecar
- Lecture: Init Containers
- Lecture + Lab: Understand the Init Container Multi-Container Pod Design Pattern
- Lecture: Taints, Tolerations, and Pod Affinity
- Lecture + Lab: Tainted Nodes and Tolerations

Module 10: Logging

- Lecture: Logging with kubect! log
- Lecture + Lab: Utilize Container Logs
- Lecture: Advanced Logging Techniques

Module 11: Labels

- Lecture: Labels
- Lecture + Lab: Labels and Selectors
- Lecture: Annotations
- Lecture + Lab: Insert an Annotation

Module 12: Replica and Daemon Sets

- Lecture: ReplicaSets
- Lecture + Lab: Create and Configure a ReplicaSet
- Lecture: DaemonSets

Module 13: Deployments

- Lecture: ReplicaSets
- Lecture: DaemonSets
- Lecture: Deployments- Purpose and Advantages
- Lecture + Lab: Create and Configure a Deployment
- 🚀 CKA Practice- Deployments
- Lecture: Deployments Rollout
- Lecture + Lab: Performing Rolling Updates and Rollbacks
- 🚀 CKA Practice- Rollbacks
- Lecture: Blue/Green and Canary Deployment Strategies
- Lecture + Lab: Advanced Deployment Strategies
- Lecture: Deployments- Horizontal Scaling
- 🚀 Mastery Challenge- Horizontal Pod Autoscaler

Module 14: Persistent Storage

- Lecture: Persistent Volumes, Claims, and StorageClasses
- Lecture: PVC, PV, and StorageClass config

- Lecture + Lab: Persistent Storage with NFS

Module 15: Extending Kubernetes

- Lecture: Custom Resource Definitions
- Lecture + Lab: Introduction to CRDs

Module 16: Helm and Kustomize

- Lecture: Helm
- Lecture + Lab: Making Charts and Templates with Helm
- Lecture + Lab: Deploy Existing Packages via Helm
- Lecture + Lab: Using Kustomize

Module 17: Services & Networking

- Lecture: NetworkPolicy
- Lecture + Lab: Deploy a NetworkPolicy
- Lecture + Lab: Namespace Network Policy
- Lecture: Services- LoadBalancer, NodePort, and ClusterIP
- Lecture + Lab: Access to applications via services
- Lecture: Networking Plugins
- Lecture + Lab: Gateway API Routing
- Lecture + Lab: Network Troubleshooting

Module 18: DNS

- Lecture: Hostnames and FQDNs
- Lecture + Lab: Hostnames and FQDNs
- Lecture: CoreDNS
- Lecture + Lab: Install CoreDNS
- Lecture: Configure CoreDNS
- Lecture + Lab: Configure CoreDNS
- Lecture + Lab: Revert CoreDNS to KubeDNS

Prerequisites

- Kubernetes Fundamentals
- Linux for Absolute Beginners
- Any other Formal Linux Training