Kubernetes Application Developer (CKAD) Fast Track

- 3 Days
- Lecture and Hands-on Labs

Course Overview

This accelerated course is designed for students preparing for the Certified Kubernetes Application Developer (CKAD) exam. Building upon foundational Kubernetes knowledge, the CKAD Fast Track course emphasizes application design, deployment, and troubleshooting within a live Kubernetes environment.

Through concise lectures and intensive, scenario-based labs, you will develop the skills required to define, build, and manage applications using core Kubernetes resources. Students will practice real-world tasks such as implementing probes, configuring security contexts, deploying multi-container Pods, and managing workloads with Deployments, Jobs, and CronJobs.

This course goes beyond theory—each module reinforces exam-level proficiency through hands-on CKAD practice labs, mirroring the time-sensitive and practical nature of the certification exam. By the conclusion of this training, you will possess the applied expertise and confidence to succeed on the CKAD exam and to design, deploy, and maintain cloud-native applications in production Kubernetes environments.

Review this course online at https://www.alta3.com/courses/kubernetes

Who Should Attend

- Application Developers and Team Leaders who plan to work with Kubernetes at any level or tier of involvement
- Any company or individual who wants to achieve CKAD Certification
- Any Developer/Leader expanding their Kubernetes Learning
- Any company or individual who wants to advance their knowledge of deploying microservices

What You'll Learn

- Initialize and manage a Kubernetes cluster using automation tools such as Ansible
- Build, configure, and deploy containerized applications using Kubernetes primitives
- Define, create, and modify Kubernetes resource manifests efficiently with YAML
- Implement resource requests, limits, and quotas for effective cluster resource management
- Configure health probes, security contexts, and observability for application reliability
- Manage access control using Contexts, ServiceAccounts, and Role-Based Access Control (RBAC)
- Create and consume ConfigMaps and Secrets for secure and dynamic application configuration
- Configure persistent and ephemeral storage using PersistentVolumes, Claims, and CSI drivers
- Deploy, scale, and update workloads using Deployments, ReplicaSets, DaemonSets, and Jobs
- Design multi-container Pods with init containers and sidecars for advanced application patterns
- Define and apply NetworkPolicies to control traffic flow between Pods and Namespaces
- Expose applications using Services (ClusterIP, NodePort, LoadBalancer) and Ingress controllers
- Template and manage deployments using Helm and Kustomize
- Extend Kubernetes functionality with Custom Resource Definitions (CRDs)
- Troubleshoot application and cluster issues using kubectl tools and debugging strategies

- Prepare for and confidently pass the Certified Kubernetes Application Developer (CKAD) exam

Outline

Initialize Kubernetes

- Lecture: Kubernetes the Alta3 Way
- Lecture + Lab: Deploy Kubernetes using Ansible

Containers

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

Pod Basics

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

Resource Management

- Lecture: Limits, Requests, and Namespace ResourceQuotas
- Lecture + Lab: Defining Resource Requirements, Limits and Quotas
- 🚀 CKAD Practice - Resource Requirements

Container Health, Security, and Observability

- Lecture: Readiness and Liveness Probes
- Lecture + Lab: Implement Probes and Health Checks
- 🚀 CKAD Practice - Adding Probes

RBAC

- Lecture: Contexts
- Lecture + Lab: Cluster Access with Kubernetes Context
- Lecture: Role Based Access Control
- Lecture + Lab: Service Accounts
- 🚀 CKAD Practice - ServiceAccounts

Ephemeral Storage

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

Persistent Storage

- Lecture: Persistent Volumes, Claims, and StorageClasses
- Lecture: Persistent Volumes with CSI
- Lecture + Lab: CSI Storage Solution: NFS
- 🚀 CKAD Practice - Storage

Deployments

- Lecture: ReplicaSets
- Lecture: Deployments - Purpose and Advantages
- Lecture + Lab: Create and Configure a Deployment
- 🚀 CKAD Practice - Deployments
- Lecture: Deployments Rollout
- Lecture + Lab: Performing Rolling Updates and Rollbacks
- 🚀 CKAD Practice - Rollbacks
- Lecture: Deployments - Horizontal Scaling
- 🚀 Mastery Challenge - Horizontal Pod Autoscaler

Multi-Container Pod Design

- Lecture: Multi-Container Pods
- Lecture + Lab: Configuring a Fluentd Logging Sidecar
- Lecture: Init Containers
- Lecture + Lab: Using Init Container for Pod Initialization
- 🚀 CKAD Practice - Multi-Container Pods

Jobs and CronJobs

- Lecture: Jobs and CronJobs
- Lecture + Lab: Running and Executing a Job
- Lecture + Lab: Scheduling a CronJob
- 🚀 CKAD Practice - Jobs and CronJobs

NetworkPolicy

- Lecture: NetworkPolicy
- Lecture + Lab: Network Policy Basics
- Lecture + Lab: Namespace Network Policy
- 🚀 CKAD Practice - Network Policies

Services and Ingress

- Lecture: Networking with Services
- Lecture + Lab: Expose Applications via Services
- Lecture: Networking Plugins
- Lecture: Ingress Controllers
- Lecture + Lab: Expose Applications via Ingress Controllers
- 🚀 CKAD Practice - Services

DNS

- Lecture: Hostnames and FQDNs
- Lecture + Lab: Utilizing FQDNs

Helm and Kustomize

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

Extending Kubernetes

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

Troubleshooting

- 🚀 Troubleshooting

CKAD

- Lecture: Tips to Pass your CKAD Exam!

Prerequisites

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