Kubernetes Training Curriculum

STRUCTURE

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"Give an edge to your career with Kubernetes Training Course at Croma Campus and prepare for the global certification exam too."

About Croma Campus:

Croma Campus Training & Development Private Limited is an education platform since 2010 providing rigorous industry-relevant programs designed and delivered in collaboration with world-class faculty and industry.

- Hands-On Live Projects
- Simulation Test Papers
- Industry Cases Studies
- 61,640+ Satisfied Learners
- 140+ Training Courses
- 100% Certification Passing Rate
- Live Instructor Classroom / Online Training
- 100% Placement Assistance

Course Objectives:

- Understand Kubernetes Core Concepts
- Deploy a Kubernetes cluster
- Secure cluster objects using TLS Certificates
- Leverage Kubernetes Networking Concepts
- Deploy Services and Load Balancers to route traffic
- Implement different Pod Scheduling techniques
- Use various Controllers to manage your applications
- Create and use Persistent Storage for your applications
- Secure your cluster against unauthorized access
- Monitor and log your cluster events
- Troubleshoot application and cluster failures.

Course Description:

The Kubernetes Training Course is designed in reference with CNCF's Certified Kubernetes Administrator Exam. This course will give you an in-depth understanding of various aspects of the Exam such as Kubernetes Core Concepts, Kubernetes Networking, Pod Scheduling, Logging, Monitoring, Cluster Security, and Troubleshooting.

The course also provides you with a set of MCQs, demos, and an Exam-level Industry-grade project, which will help you prepare for the CKA Exam. Docker revolutionized the IT industry with the introduction of their Portable Lightweight Container Engine. More than 30% of the organizations in the IT industry have already adopted Docker, and the adoption rate is increasing by 40% every year. Over 50% of these environments are orchestrated.

Kubernetes is the biggest player in the Container Orchestration world. Tools such as Docker Swarm and Mesos, which have been competitors of Kubernetes in the Container Orchestration market, have added support for Kubernetes within their ecosystems.

Croma Campus Training Program Deliverables:

- **Session Recordings** - Original Class Room Voice & Video Recording
- **Training Material** - Soft Copy Handbooks
- **Assignments** | 25+ Hands-on Exercises
- **Test Papers** - We provide **Practice Test** as part of our course to help you prepare for the actual certification exam.
- **Live Case Studies**
- **Live Projects** - Hands-on exercises and Project work. You will work on real time industry-oriented projects and assignments for each module to practice.
- **Key focus on Hands-on exercises and Project work**. You will work on real time industry-oriented projects.
- Faculty with more than **10+ Years of Experience** in the Industry.
- **Technical Resume Designing & Job Assistance:** With more than 100+ Clients across the Globe and we help learners to get a good job in their respective field. We also help learners with resume preparation.
- **Interview Q&A**
- **About Croma Campus Training Certificate:** Croma Campus will provide you with an industry-recognized (Certified by **ISO 9001:2015** & **E-Cell IIT Jodhpur**) course completion certificate which has lifelong validity.
- **How I Unlock my Croma Campus Certificate:** Attend Complete Batch & Submit at least One Completed Project.

Course Content:

Module 1: Kubernetes Core Concepts and Networking

- Kubernetes Fundamentals
  - Kubernetes Core Concepts
  - Kubectl common commands
  - Understanding Pods
  - Configure network on cluster nodes
  - Pod Networking Concepts
  - Setting up a cluster - Kubernetes Certificates
- Practical Assignment:
  - Perform basic Kubectl commands
  - Deploy pods and use INIT containers to pre-set an environment
  - Configure Kubernetes network using Calico
  - Use certificates to authenticate resources

Module 2: Kubernetes Services and Scheduling

- Services and Controllers
- Service Networking
- Deploy different kinds of services
- Deploy and configure network Load Balancer
- Primitives necessary for self-healing apps
- Effects of resource limiting on pod scheduling
- Configure Kubernetes Scheduler
- Running multiple Schedulers

Module 3: Kubernetes Controllers

- Replica Set and Replication Controller
- Deploy different Replication Controllers
- About Daemon Sets
- Use Daemon Sets on nodes
- Deployments
- Manage pod updates using Deployments
- Rolling updates and Rollbacks
- Scaling applications and Ingress
- Use HPA for dynamic work-load management
- Use Ingress controller and rules to manage network traffic

Module 4: Persistent Storage in Kubernetes

- Persistence Storage Overview
    - Persistent Volume and Persistent Volume Claim
    - Access modes for volumes
    - Primitives for Persistent Volume Claim
    - Secrets and Config Maps in your pods
    - Storage classes
    - Headless services
    - Stateful Sets
- Lab Work:
    - Deploy Persistent Volume and Persistent Volume Claim
    - Use Secrets and Config Maps in your applications
    - Use Storage Class for dynamic storage allocation
    - Use stateful applications for sticky identities for pods
    - Deploy a highly available replicated MariaDB cluster

Module 5: Securing Clusters

- Basic Concepts:
    - Authentication
    - Authorization
    - Kubernetes security primitives
    - Configure Network Policies
    - Security Contexts
- Lab Work:
    - Create and use Roles and Role Bindings
    - Define custom Egress and Ingress policies
    - Use probes and configure a restart policy for pods
    - Define privilege and access control using security contexts

Module 6: Logging & Monitoring Clusters

- Monitor cluster using Prometheus
- Visualize logs using EFK stack
- Deploy jobs to run tasks to completion
- Manage etcd cluster
- Use Helm Charts

Module 7: Troubleshooting Clusters

- Troubleshooting application failures
- Troubleshooting cluster failures

Module 8: Placement Guide

- Tips to clear an Interview
- Common Interview questions and answers
- Kubernetes Interview Questions and Answers
- Resume Building Guide
- Career roadmap and certifications
- Attempt for related Global Certification Exam
- Start applying for Jobs