Kubernetes & Docker Bootcamp KD200

Advanced training for Kubernetes professionals

The Kubernetes and Docker Bootcamp II (KD200) is an advanced Docker and Kubernetes course, the perfect continuation of the famous Kubernetes and Docker Bootcamp (KD100). Designed for software developers and architects, deployment engineers, and cloud administrators who want to acquire complete knowledge in using Kubernetes for deploying and managing containerized applications.

This course requires students to be very familiar with the Linux command line, Docker concepts and basic Kubernetes building blocks. The course provides participants with a detailed understanding of Kubernetes features and best practices. It is broken up into a number of sections, each section typically includes an instructor-led presentation outlining theory and hands-on labs that put that theory into practice.

Bundle the CKA with our KD200

The Certified Kubernetes Administrator (CKA) program was created by the Cloud Native Computing Foundation (CNCF), in collaboration with The Linux Foundation, to help develop the Kubernetes ecosystem. As a Kubernetes Certified Service Provider, Mirantis offers a bundle with our KD200 for the CKA which will save you $50 off the total exam price ($300). If you'd like to bundle the exam with our class, please email us at training@mirantis.com after you've purchased your KD200 seat.

Course Details
- Duration: 3 Days
- Hours: 9:00 a.m. - 5:00 p.m.

Target Audience
- Software developers and Architects
- Deployment Engineers and Cloud Administrators

Prerequisites
- Strong experience using Linux command line
- Good understanding of Docker and Linux containers
- Good understanding of JSON and YAML
- Basic understanding of microservice design pattern
- Comfortable installing Kubernetes on your own
- KD100 Bootcamp or similar experience

Lab Requirements
- Laptop wifi connectivity
- Web browser supporting HTML5
- SSH Client

Objectives
After completing this course students will understand:
- Hands-on experience with Kubernetes building blocks
- Hands-on experience with Kubernetes best practices for developing, deploying and managing containerized applications
- Understanding of Kubernetes architecture, high availability and security principles
- Familiarity with Kubernetes cluster reinstallation and maintenance techniques
- Familiarity with methods and tools for troubleshooting, logging, monitoring of a Kubernetes cluster
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<th>MODULE 2</th>
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| **Theory** | • Main Kubernetes building blocks (API Resources)  
| | • Kubernetes API, kubectl options/shortcuts, accessing API using curl |
| **Workshops** | • Pods, volumes, labels, annotations  
| | • Deployments, services  
| | • Namespaces, quotas  
| | • Kubernetes jobs, cronjobs, daemonSets  
| | • Kubernetes statefulSets, init-containers  
| | • kubectl shortcuts, display options  
| | • kubectl proxy  
| | • kubectl port-forward  
| | • Using curl to access Kubernetes API |

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<td><strong>Workshops</strong></td>
<td>• Creating, configuring, and deploying a multi-tier application</td>
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| **Theory** | • Kubernetes addons  
| | • Kubernetes ingress/ingress controller |
| **Workshops** | • Kubernetes ClusterDNS, dashboard, ingress |

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<th>MODULE 5</th>
<th>KUBERNETES BEST PRACTICES</th>
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| **Theory** | • Working with Kubernetes in production overview  
| | • Private container repository  
| | • Namespaces, quotas  
| | • Multi-container pods, communications between containers in a pod  
| | • Multi-tier applications  
| | • Pods auto-healing  
| | • Workload release and update strategies  
| | • Pods auto-scaling |
| **Workshops** | • Multi-container applications  
| | • Multi-container pods  
| | • Pods auto-healing |

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**Course Syllabus**

**Lecture, Demos and Group Exercises**

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**MODULE 7**

**KUBERNETES ARCHITECTURE**

**Theory**
- Kubernetes architecture, components and addons
- Kubernetes components: etcd, kube-proxy
- Pods scheduling
- Kubernetes High Availability (HA)

**Workshops**
- Static pods
- Node selector
- Taints and tolerations
- Node affinity/anti-affinity
- Pod affinity/anti-affinity
- Custom scheduler

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**MODULE 8**

**KUBERNETES SECURITY**

**Theory**
- Security goals, roles
- Access to the Kubernetes API, authentication, authorization, RBAC
- Auditing, logging and security event management
- Pods security and isolation
- Storage security
- Traffic isolation and security
- Image security

**Workshops**
- User Authentication and Authorization
- Cluster Auditing
- Network Policy and Traffic Isolation

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**MODULE 9**

**KUBERNETES NETWORKING DEEP DIVE**

**Theory**
- Kubernetes networking overview

**Workshops**
- Tear down the cluster
- Install a Cluster with Calico
- Install a Cluster with Flannel

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**MODULE 10**

**KUBERNETES COMPREHENSIVE PRACTICE**

**Workshops**
- Comprehensive practice