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)](https://www.cncf.io/ka/) 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.

### Prerequisites
- Strong experience using Linux command line
- Basic experience with Docker
- **KD100** or similar experience

### Lab Requirements
- Laptop WiFi connectivity
- Web browser supporting HTML5
- SSH Client

### Target Audience
- Software developers and Architects
- Deployment Engineers and Cloud Administrators
- IT Professionals who require the skills needed to use Kubernetes and Docker for deploying and managing containerized applications

### 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 installation and maintenance techniques
- Familiarity with methods and tools for troubleshooting, logging, monitoring of a Kubernetes cluster

### Outline
- Introduction to containers and containerized applications
- Introduction to Docker, container orchestration, and Kubernetes
- Installing Docker and installing a Kubernetes cluster
- Building a Docker image and running a Docker container
- Working with Docker volumes and networks
- Kubernetes pods, volumes, deployments, and services
- Using Kubernetes to deploy a web application with a database
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<th>MODULE 1</th>
<th>Theory</th>
<th>Workshops</th>
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| **INTRODUCTION** | • Course introduction  
  • Recap of the basic Kubernetes building blocks  
  • Kubernetes for 12 Factor Applications | • Explore the classroom environment  
  • Kubernetes basic building blocks |

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<th>MODULE 2</th>
<th>Theory</th>
<th>Workshops</th>
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| **KUBERNETES BEST PRACTICES** | • Private container repository  
  • Namespaces, quotas  
  • Multi-container pods, communications between containers in a pod  
  • Multi-tier applications  
  • Pods auto-healing  
  • Release and update strategies  
  • Pods auto-scaling | • Multi-container applications  
  • Multi-container pods  
  • Pods auto-healing  
  • Pods auto-scaling |

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<tr>
<th>MODULE 3</th>
<th>Theory</th>
<th>Workshops</th>
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| **KUBERNETES ARCHITECTURE** | • Overview of Kubernetes architecture, components and addons  
  • Pods scheduling  
  • Kubernetes components: etcd, kube-proxy  
  • Kubernetes High Availability (HA)  
  • Kubernetes federation | • Static pods  
  • Node selector  
  • Node affinity/anti-affinity  
  • Taints and tolerations  
  • Pod affinity/anti-affinity  
  • Custom scheduler |

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<tr>
<th>MODULE 4</th>
<th>Theory</th>
<th>Workshops</th>
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| **KUBERNETES INSTALLATION** | • Installation methods, large clusters  
  • Federation  
  • Addons | • Install a Cluster with Calico  
  • Install a Cluster with Flannel  
  • Install Grafana  
  • Tear down the cluster |

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<th>MODULE 5</th>
<th>Theory</th>
<th>Workshops</th>
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| **KUBERNETES NETWORKING** | • Kubernetes networking overview  
  • Flannel  
  • Calico | • Comprehensive practice, Part 1 |

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<th>MODULE 6</th>
<th>Theory</th>
<th>Workshops</th>
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| **KUBERNETES SECURITY** | • Security goals, roles  
  • Access to the Kubernetes API, authentication, authorization, RBAC  
  • Pods security and isolation  
  • Storage security  
  • Traffic isolation and security  
  • Image security  
  • Auditing, logging and security event management | • Comprehensive practice, Part 2 |