# Kubernetes CKA Professional plus Advanced

**Duration: 5 Days** **Course Code: GKKUBCKAPA**

## Overview:

This Kubernetes Fundamentals training is very suitable for IT Administrators (engineers) and offers participants a deep inside in the architecture, use, and management of Kubernetes. The training is based on teaching Kubernetes for self-hosting. Each participant gets their own (simulated) bare-metal cluster, which the participant initiates himself.
The training is hands-on and offers knowledge and skills based on exercises and examples you perform. The idea here is, if you understand Kubernetes and can work with it at this level, you will be able to work with any other possible variant.
This training consists of two parts: The first part deals with the Kubernetes Administrator Fundamentals;the second part consists of expert choice modules for Kubernetes Administrators.
Are you or will you become an Engineer, System-Administrator, or DevOps Engineer (partially or fully) responsible for one or more Kubernetes clusters, or you would like to be able to manage or set up Kubernetes for your organization? Then this training is perfect for you.

## Target Audience:

The training is mainly meant for: Engineers responsible for designing, deploying, or managing Kubernetes clusters. The level of entry is from beginning to medium level of knowledge of Kubernetes. For anyone who aims to obtain certification as a Certified Kubernetes Administrator (CKA). This training teaches the theory needed for the CKA Exam.

## Objectives:

- Hands-on learning of Kubernetes in the base and on bare metal. In line with the theory expected by the Cloud Native Foundation for Certified Kubernetes Administrator (CKA) certification.
- The starting point of this training is:
- that after this training the participant is able to make a start with Kubernetes in his/her organization;
- the participant has the basic knowledge needed to set up, use, and manage Kubernetes on on-premise, managed hosting or any Kubernetes variant out there;
- the participants learn the Kubernetes basis, as formulated by the CNCF, from a hands-on approach and based on the Kubernetes architecture;
- this training lays the foundation needed for certification so that in subsequent exam training courses can build on this.
- On the basis of this training, the participant gets insight into Kubernetes and an overview at the level of the Kubernetes application and the Kubernetes hosting architecture:
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- So that a participant knows his way around the technical hosting architecture (for Enterprises) and choices related to the Cloud Native Landscape better and on the basis of insight (on a general level);
- Based on working and elaborated expert examples after the training, Kubernetes can start by introducing Kubernetes expert parts in their own organization or building a solution based on obtained working examples.

## Prerequisites:

Having several years of experience as an engineer and being able to read code are qualities that make that someone has more insight into what is happening and keeps a better overview of what is going on in the training. A lot of work is done with the command-line (shell) and a variety of programming languages and containers pass by in exercises such as: Go, Node.js, Angular, Java, Ubuntu, Debian, CoreOS

Minimum dexterity/basic knowledge of Linux command-line (Bash, Linux commands), Private Keys and Public Keys are required to follow the pace of this training.

## Testing and Certification

In this training, the basic knowledge required for the Certified Kubernetes Administrator exam is taught. The exam tests on pratice skills, basic knowledge is therefore not enough to actually take the exam.

## Follow-on-Courses:

The following courses are recommended for further study:

- Kubernetes Developer Advanced (GKKUBCKADA)

## Content:

*Fundamentals:*

This training follows the contents as prescribed for the CKA exam for certification by offering the theory in presentation form and performing 30 to 40 detailed exercises.

Topics as they pass:

- Some IT history;
- Virtualization: what is a Virtual Machine and what is a Container. And what is the difference between the two?
- What is Kubernetes, what is Cloud Native? And why is this development important;
- Kubernetes architecture;
- Kubernetes principles;
- Kubernetes components;
- Kubernetes Resources (deployment, replicaset, pods);
- Basic concepts of Kubernetes: control plane, resources in detail, services, draining nodes, setting limits, tolerations, anti-affinity, horizontal scaling, deployments, release management ; canary releases, liveliness checks, readiness checks updates, rollbacks, configsmaps ; secrets, lifecycle-hooks ; init containers, logging, monitorin
- Storage
- Kubernetes use principles: Helmet, Ingress Controller;
- Kubernetes networks security: Role-Based Access Control (RBAC).

*Selection of modules:*

The number of topics available in the training as choice modules is more than can be covered during the training. For each training, the trainer decides, in consultation with the group, which topics will be covered in the training. Sometimes this can mean that the group decides on day 5 to work with different components. The choice of modules goes into depth on Administration Expert parts, by means of exercises that are in line with the daily practice of working with Kubernetes, using working examples.

- Granulair Role-Based Access Control (RBAC) with, Keycloak, Single Sign-On
- Auditing, Policies ; API-Server Central Security: validating ; mutating webhooks, OPA, KRails
- Central Logging: ELK Stack
- Central Monitoring: Prometheus, Graphana;
- External (Federated) Storage: Rook, OpenEBS
- Advanced Security: Encryption at Rest, Sealed Secrets, KMS, Vault, Harbor, Notary, Falco
- Service Mesh: SMI, LinkerD, Istio, OSM, horizontal scaling based on latency (monitoring information)
- Operator ; Controllers (Software) Overview
- Own Custom Resources: advanced WordPress, build your own WordPress operator
- Creating your own secure helm registry
- Cluster backup ; Generic State Management
- High Available Kubernetes Cluster
- Infrastructure as Code with Terraform

## Additional Information:

This training is a combination of the 3-day Kubernetes CKA training (GKKUBCKA) and the 2-day Kubernetes Administrator Advanced training (GKKUBCKAA).
The Kubernetes Administrator Fundamentals covers the foundations for engineers, as defined by the Cloud Native Computer Foundation (CNCF), from the background of the Kubernetes Architecture. The training places Kubernetes in the context of IT development, Microservices, and Cloud-Native so that you can start using Kubernetes from a point of overview, understanding, and insight.
By means of exercises and examples (which you do yourself), you will be taught how to use Kubernetes. The experiences you gain during the training will give you tools to use Kubernetes in practice on a level comparable to the daily practice.
The theory in this training matches the basic knowledge requirements of the Cloud Native Computing Foundation in preparation for the Certified Kubernetes Administrator (CKA) exam.

## Further Information:

For More information, or to book your course, please call us on 00 966 92000 9278

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