

Updated 10/30/2024

Sign up

Kubernetes training

3 days (21 hours)

Presentation

As a Kubernetes Training Partner (KTP) and official member of the CNCF (Cloud Native Computing Foundation), we offer you our main CPF-eligible training course on Kubernetes, the DevOps container orchestrator that will enable you to evolve your applications towards the microservice standard, making them both modular and scalable.

Enter the Cloud Native era! Kubernetes is the best containerization technology for scaling your IT infrastructure. This open source technology enables you to control the scalability of your applications in a secure, reproducible and flexible way.

During this Kubernetes training course, you'll discover how to modernize your infrastructure by enhancing the scalability of your application systems and enabling users to scale containers horizontally.

As with all our training courses, this one will introduce you to the latest version of the platform (at the time of writing: [Kubernetes 1.31](#)).

Being an expert on Kubernetes requires solid knowledge that can be validated by passing certifications. Following this training, you can take our [CKA](#) or [CKAD](#) exams.

Objectives

- Understanding the benefits and features of Kubernetes and microservices
- Deploy large-scale Cloud-Native applications on a cluster or in the cloud
- Master kubeadm, the Kubernetes installation tool
- Understanding how to deploy Kubernetes in production
- Enable automatic scaling of applications
- Implement high availability and self-healing of software services
- Optimize storage of large amounts of data with volumes
- Develop advanced monitoring of infrastructure and applications

- Automate the updating of application software versions

Teaching aids

Whether face-to-face or distance learning, the trainer will be there to support you throughout the course, as well as answering your questions and discussing the various exercises and concepts.

Combining learning by doing thanks to our enriched labs and feedback from our certified experts: our teaching method (40% theory and 60% practice) will enable you to quickly learn THE must-have DevOps technology of 2023.

You'll be able to put the concepts you've learned to the test in the many case studies and workshops set up during your session. At the end of your training session, you will receive an on-the-spot evaluation to test your skills. You will also receive a certificate of achievement proving that you have mastered these objectives.

Target audience

- DevOps
- Developers
- System administrators
- Cloud Architects

Prerequisites

- Ideally have taken our [Docker training course](#), or have some basic knowledge of containers
- Basic knowledge of a Linux system
- [Test My Knowledge](#)

Technical requirements

- SSH client and virtual machines at your disposal
- Docker installed
- Unrestricted Internet access

Kubernetes training program

Day 1

Introduction to microservices

- Monolithic applications versus microservices
- Best practices in the cloud: the "12 factors" methodology
- Evolving an application towards microservices

Reminders about containers

- Container overview: Docker and containerd
- Installing and running Docker images
- Interacting with containers
- Create your own images
- The difference between public and private

Kubernetes repositories: the basics

- Create a cluster: on your workstation, in your datacenter or in the cloud
- Kubernetes architecture and components (Control Plane and Node sides)
- Life cycle of a kubectl request
- Deploying an application on multiple machines
- Explore an application
- Exposing an application on the network
- Scaling up

Day 2

Kubernetes: the main concepts

- Pod overview
- Interacting with Pods
- Application configuration and security (ConfigMaps and Secrets)
- Services overview (ClusterIP, NodePort, LoadBalancer, Headless)
- Create your own services to showcase your applications
- Organizing Pods with Labels

Deploying microservices

- Cloud-Native deployment strategies
- High-Performance Computing strategies (Jobs)
- Case study: deploying with kubectl and yaml
- Scale-up strategies (Replicasets and Daemonsets)
- Case study: using replicas
- Case study: installing a distributed log manager
- Software update strategy (Deployments)
- Case study: Rolling update
- Easily manage application updates
- Advanced techniques: blue/green, canary deployment
- Case study: Continuous GitOps deployment with ArgoCD

Day 3

Managing data persistence

- Volatile and persistent storage (PersistentVolume / PersistentVolumeClaim)
- Deploying distributed databases (StatefulSet)
- Case study: installing MongoDB and/or PostgreSQL in distributed mode

Kubernetes observability

- Introduction to observability with OpenTelemetry
- Types of observability data
 - Cluster and infrastructure components
 - Monitoring
 - Logs
 - Metrics
 - API traces
- Cloud Native observability strategy
 - Deployment of a log collection solution: FluentD
 - Deployment of a solution capable of collecting metrics: Prometheus
 - Deployment of a trace correlation solution: OpenTelemetryOperator
 - Unified visualization tool : Grafana
- Multiple components
 - API server
 - Controller
 - network proxy
 - Cluster infrastructure
- Identifying problems within a cluster

Companies concerned

This course is aimed at both individuals and companies, large or small, wishing to train their teams in a new advanced computer technology, or to acquire specific business knowledge or modern methods.

Positioning on entry to training

Positioning at the start of training complies with Qualiopi quality criteria. As soon as registration is finalized, the learner receives a self-assessment questionnaire which enables us to assess his or her estimated level on different types of technology, as well as his or her expectations and personal objectives with regard to the training to come, within the limits imposed by the selected format. This questionnaire also enables us to anticipate any connection or security difficulties within the company (intra-company or virtual classroom) which could be problematic for the follow-up and smooth running of the training session.

Teaching methods

Practical course: 60% Practical, 40% Theory. Training material distributed in digital format to all participants.

Organization

The course alternates theoretical input from the trainer, supported by examples, with brainstorming sessions and group work.

Validation

At the end of the session, a multiple-choice questionnaire verifies the correct acquisition of skills.

Sanction

A certificate will be issued to each trainee who completes the course.