S'inscrire

Presentation

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

Enter the era of "Cloud Native"! Kubernetes is the best containerization technology for scaling your IT infrastructure. This open source technology lets you control the scalability of your applications securely, reproducibly and flexibly.

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

As with all our trainings, this one will introduce you to the very latest version of the platform (at the time of writing: Kubernetes 1.27).

Being an expert on Kubernetes requires solid knowledge that can be validated by passing certifications. Following this training, you can take our exam preparations CKA or CKAD.

Objectives

- Understanding the benefits and features of Kubernetes and microservices
- How to 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 the storage of large amounts of data with volumes
- Develop advanced monitoring of infrastructure and applications
- Automate the updating of software versions of its applications

Teaching aids

Whether face-to-face or remote, the trainer will be there to support you throughout the training, but also to answer your questions, and discuss the various exercises and concepts. Combining learning by doing thanks to our enriched labs and feedback from our certified experts: our teaching method (60% theory and 40% practice) will enable you to quickly learn THE must-have DevOps technology of 2023.

You will be able to test the concepts taught during the many practical cases 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 mastery of its objectives.

Target audience

- DevOps
- Developers
- System administrators
- Cloud Architects

Prerequisites

- Ideally have attended our Docker training course, or have basic knowledge of containers
- Basic knowledge of a Linux system
- Be able to install minikube on your machine (this is what we'll be using in our workshops)
- VirtualBox (v6.1) and Vagrant for multi-machine installations (1 worker 1 master)

Kubernetes training program

Day 1

Introduction to microservices

- Monolithic applications versus microservices
- Best practices in the cloud: the "12 factors" methodology
- Upgrading an application to micro-services

Container reminders

- Overview of containers: Docker and containerd
- Installing and running Docker images
- Interacting with containers
- Create your own images
- The difference between private and public deposits

Kubernetes: the basics

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

Day 2

Kubernetes: the main concepts

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

Deploying microservices

- Deployment strategies in "Cloud-Native" mode
- High-Performance Computing strategies (Jobs)
- Case study: deploying with kubectl and yaml
- Strategies for scaling up (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: deployment blue/green, canary
- 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 PostreSQL 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 solution capable of collecting logs: 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

Sociétés concernées

Cette formation s'adresse à la fois aux particuliers ainsi qu'aux entreprises, petites ou grandes, souhaitant former ses équipes à une nouvelle technologie informatique avancée ou bien à acquérir des connaissances métiers spécifiques ou des méthodes modernes.

Méthodes pédagogiques

Stage Pratique : 60% Pratique, 40% Théorie. Support de la formation distribué au format numérique à tous les participants.

Organisation

Le cours alterne les apports théoriques du formateur soutenus par des exemples et des séances de réflexions, et de travail en groupe.

Validation

À la fin de la session, un questionnaire à choix multiples permet de vérifier l'acquisition correcte des compétences.

Sanction

Une attestation sera remise à chaque stagiaire qui aura suivi la totalité de la formation.