Implementing Kubernetes

Hands-on course of 3 days - 21h
Ref.: UBE - Price 2024: CHF2 520 (excl. taxes)
The price for the 2025 session dates may be revised

EDUCATIONAL OBJECTIVES
At the end of the training, the trainee will be able to:

Understand the positioning of Kubernetes and the notion of orchestration

Install Kubernetes and its various components

Use YAML descriptive files

Define best practices for working with Kubernetes

THE PROGRAMME
last updated: 07/2021

1) Introduction to kubernetes
- From virtualization to containerization. The Docker/Kubernetes pair.
- Installation solutions (MiniKube, On-Premise, etc.).
- Installing and configuring Docker.
- Accessing the Kubernetes cluster: CLI (kubectl), GUI (dashboard) and APIs.
- Manual deployment and publishing.
- Detail and introspection of deployment.
Hands-on work : Deployment of a test platform.

2) Descriptive files
- YAML syntax.
- Scalability of a deployment.
- Update/rollback strategy.
- Deleting a deployment.
Hands-on work : Deployment, publication and analysis of a deployment.

3) Kubernetes Architecture
- Components of the master node: API server, scheduler, controller manager, etc.
- Architecture of a minion: Kubelet, the container engine (docker), Kube-proxy.
- Kubernetes objects: volume, service, pod, etc.
- Solution of the deployment.
- Stateful object, stateless object.
Hands-on work : Use of deployment.

4) Running Kubernetes
- Clustering with replicas and deployment.
- Types of services.
- Labels and choosing a node for deployment.
- Affinity and anti-affinity.
- Daemons set, health check, config map and secrets.
- Persistent Volumes and Persistent Volumes Claim.
Hands-on work : Deployment of a database and an application.

5) Advanced container management
- Creation and automation of custom images.

- Dockerfile.
- One container and multiple services.
- Deployment of a custom image.
Hands-on work : Creation and automation of custom images.

6) Kubernetes in production
- Frontal administrable Ingress.
- Resource limitation.
- Resource management and autoscaling.
- Service Discovery (env, DNS).
- Namespaces and quotas.
- Access management.
- High availability and maintenance mode.
Hands-on work : Container deployment and scalability management.

7) Deploying a Kubernetes cluster
- Preparing the knots.
- Deployment: of a master-nodeadm, a master-node, a worker-node.
- Setting up the Dashboard and the network.
Hands-on work : Deploying a cluster.

DATES

REMOTE CLASS
2024 : 16 Dec

2025 : 31 Mar, 02 Jun, 04 Aug, 19 Nov