Kubernetes Fundamentals and Cluster Operations (KFCO)

ID KFCO   **Price** 2,760.— €(excl. VAT)   **Duration** 4 days

Who should attend

Anyone who is preparing to build and run Kubernetes clusters

Prerequisites

- Linux concepts and command line proficiency
- General networking proficiency

Course Objectives

By the end of the course, you should be able to meet the following objectives:

- Build, test, and publish Docker container images
- Become familiar with YAML files that define Kubernetes objects
- Understand Kubernetes core user-facing concepts, including pods, services, and deployments
- Use kubectl, the Kubernetes CLI, and become familiar with its commands and options
- Understand the architecture of Kubernetes (Control plane and its components, worker nodes, and kubelet)
- Learn how to troubleshoot issues with deployments on Kubernetes
- Apply resource requests, limits, and probes to deployments
- Manage dynamic application configuration using ConfigMaps and Secrets
- Deploy other workloads, including DaemonSets, Jobs, and CronJobs
- Learn about user-facing security using SecurityContext, RBAC, and NetworkPolicies

Course Content

Course Introduction

- Introductions and objectives

Containers

- What and Why containers
- Building images

- Running containers
- Registry and image management

Kubernetes Overview

- Kubernetes project
- Plugin interfaces
- Building Kubernetes
- Kubectl CLI

Beyond Kubernetes Basics

- Kubernetes objects
- YAML
- Pods, replicas, and deployments
- Services
- Deployment management
- Rolling updates
- Controlling deployments
- Pod and container configurations

Kubernetes Networking

- Networking within a pod
- Pod-to-Pod Networking
- Services to Pods
- ClusterIP, NodePort, and LoadBalancer
- Ingress controllers
- Service Discovery via DNS

Stateful Applications in Kubernetes

- Stateless versus Stateful
- Volumes
- Persistent volumes claims
- StorageClasses
- StatefulSets

Additional Kubernetes Considerations

- Dynamic configuration
- ConfigMaps
- Secrets
- Jobs, CronJobs

Security

- Network policy
- Applying a NetworkPolicy
- SecurityContext
- runAsUser/Group
- Service accounts
- Role-based access control

Logging and Monitoring

- Logging for various objects
- Sidecar logging
- Node logging
- Audit logging
- Monitoring architecture
- Monitoring solutions
- Octant
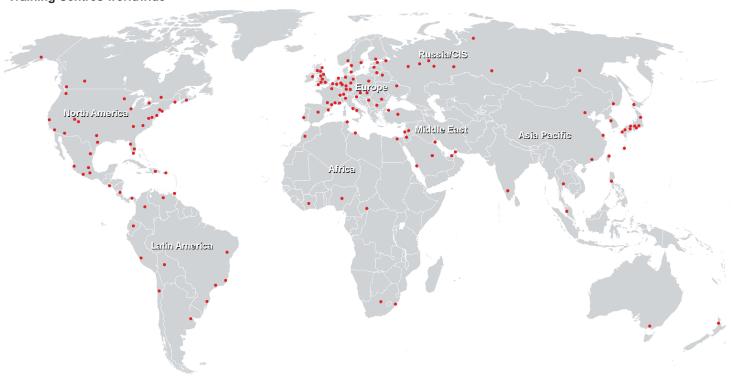- VMware vRealize® Operations Manager™

Cluster Operations

- Onboarding new applications
- Backups
- Upgrading
- Drain and cordon commands
- Impact of an upgrade to running applications
- Troubleshooting commands
- VMware Tanzu™ portfolio overview

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Training Centres worldwide

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