

# Kubernetes Fundamentals and Cluster Operations

Kód kurzu: VMW\_KFCO

Školení je vedené virtuálně v angličtině. Cena kurzu je 1 510 EUR a bude přepočtena aktuálním kurzem poslední den školení. This four-day course is the first step in learning about Containers and Kubernetes Fundamentals and Cluster Operations. Through a series of lectures and lab exercises, the fundamental concepts of containers and Kubernetes are presented and put to practice by containerizing and deploying a two-tier application into Kubernetes.

## Pro koho je kurz určen

Anyone who is preparing to build and run Kubernetes clusters.

## Co Vás naučíme

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

## Požadované vstupní znalosti

- Linux concepts and command line proficiency.
- General networking proficiency.

## Osnova kurzu

### 1 Course Introduction

- Introductions and objectives

### 2 Containers

- What and Why containers
- Building images
- Running containers
- Registry and image management

### 3 Kubernetes Overview

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

### 4 Beyond Kubernetes Basics

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

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# Kubernetes Fundamentals and Cluster Operations

- Pod and container configurations
- ## 5 Kubernetes Networking
- Networking within a pod
  - Pod-to-Pod Networking
  - Services to Pods
  - ClusterIP, NodePort, and LoadBalancer
  - Ingress controllers
  - Service Discovery via DNS
- ## 6 Stateful Applications in Kubernetes
- Stateless versus Stateful
  - Volumes
  - Persistent volumes claims
  - StorageClasses
  - StatefulSets
- ## 7 Additional Kubernetes Considerations
- Dynamic configuration
  - ConfigMaps
  - Secrets
  - Jobs, CronJobs
- ## 8 Security
- Network policy
  - Applying a NetworkPolicy
  - SecurityContext
  - runAsUser/Group
  - Service accounts
  - Role-based access control
- ## 9 Logging and Monitoring
- Logging for various objects
  - Sidecar logging
  - Node logging
  - Audit logging
  - Monitoring architecture
  - Monitoring solutions
  - Octant
  - VMware vRealize® Operations Manager™
- ## 10 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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