

## VMware - Kubernetes Foundations

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<b>Code:</b>	EDU-VKUB
<b>Length:</b>	2 days
<b>URL:</b>	<a href="#">View Online</a>

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This two-day course is the first step in learning about Containers and Kubernetes. Through a series of lectures and lab exercises, the fundamental concepts of Kubernetes will be presented and put to practice by containerizing and deploying a two-tier application into Kubernetes.

### Skills Gained

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 authoring YAML files and its syntax
- 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 to debug issues with application deployments on Kubernetes
- Apply resource requests, limits, and probes to deployments
- Manage dynamic application configuration using ConfigMaps and Secrets
- Deploy other workloads, including StatefulSets, DaemonSets, Jobs, CronJobs
- Learn about user-facing security best practices using ServiceAccounts, RBAC, and NetworkPolicies

### Who Can Benefit

- Anyone involved with using or building a Kubernetes cluster

### Prerequisites

- Linux concepts and command line proficiency
- General networking proficiency

# Course Details

## Outline

### Introduction to Containers

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

### Kubernetes Fundamentals

- Why Kubernetes?
- YAML
- Pods
- Services
- Deployments

### Kubernetes Architecture & Troubleshooting

- Cluster architecture
- Cluster components
- Namespaces
- Debugging 101

### Deployment Management

- Application deployment strategies
- Controlling active deployments

### Pod and Container Configurations

- Resource requests, limits, and quotas
- Probes

### Kubernetes Networking

- Pod networking
- Services deep dive
- Ingress controllers

### Kubectl and Resource Organization

- kubeconfig
- Namespaces deep dive
- Labels

- Node/Pod affinity
- Taints/Tolerations

#### Stateful Applications

- Persistent storage
- StatefulSets

#### Dynamic Application Configuration

- Docker dynamic configuration
- ConfigMaps
- Secrets

#### Additional Workloads

- Jobs
- CronJobs
- DaemonSets

#### Security

- Service accounts
- Role-Based access control
- Network policies
- SecurityContext

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