# Kubernetes Fundamentals Training

BİLGİNÇ IT Academy
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Duration: **2 Day**

## Overview

This two-day training provides a **comprehensive introduction to Kubernetes**, covering its architecture, core components, and real-world applications. Participants will gain practical experience in **deploying, scaling, and managing containerized applications** with Kubernetes.

Through **hands-on labs and real-world scenarios**, attendees will learn how to set up a Kubernetes cluster, deploy apps, manage resources, and troubleshoot common issues. By the end of the course, participants will have the knowledge and skills to effectively leverage Kubernetes in different environments.

## Prerequisites

- Minimum **2 years of IT support or software development** experience
- Foundational knowledge of containers and development concepts

## Who Should Attend

- IT support professionals with at least 2 years of experience
- Software developers with foundational technical knowledge
- Professionals starting their DevOps journey

## What You Will Learn

- Understand Kubernetes architecture and core objects
- Work with Pods, ReplicaSets, Deployments, and Services
- Manage resources with Labels, Namespaces, and Operators
- Configure Volumes, ConfigMaps, and Secrets
- Manage networking with Services and Ingress
- Use DaemonSets, Jobs, and CronJobs
- Secure clusters with RBAC, NetworkPolicies, and SecurityPolicies
- Monitor and troubleshoot applications with metrics, logs, and autoscaling

## Outline

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### Module 0: Introduction

- Course overview

### Module 0.5: Containers

- Build a simple containerized app

### Module 1: Kubernetes Essentials

- Using kubectl
- Pods, ReplicaSets, Deployments, Services
- Lab: Managing pods and deployments

### Module 2: Kubernetes Basics

- Kubernetes architecture
- Managed services: GKE, AKS, EKS
- Labels, Namespaces, Operators
- Lab: Working with labels, creating dev/prod namespaces

### Module 3: Volumes and Data

- Types of volumes and mounting
- ConfigMaps & Secrets
- Lab: Volume mounts, secrets, config in namespaces

### Module 4: Kubernetes Networking

- Services and Ingress
- Traffic routing and exposure

### Module 5: Other Workload Types

- DaemonSets
- Jobs & CronJobs
- Lab: DS & Jobs

### Module 6: Kubernetes Design Patterns

- Microservices architecture

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- Multi-container pods
- Labs: Adding functionality with sidecars, using ConfigMaps/Secrets

### Module 7: Security

- RBAC
- NetworkPolicy & SecurityPolicy
- Lab: Secure access controls

### Module 8: Logging and Troubleshooting

- Metrics server
- Log aggregation with FluentD
- Troubleshooting steps
- Lab: HPA (Horizontal Pod Autoscaler)

### Appendices

- Service Mesh (Istio)
- StatefulSets
- Networking fundamentals (CIDR, RFC1918)
- Scheduler deep dive