Kubernetes Fundamentals Training

Duration: **2 Day**

BILGINÇ IT Academy
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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

Training 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