

# Kubernetes – Complete Topics Guide

## Kubernetes Basics

- What is Kubernetes
- Kubernetes Architecture
- Control Plane & Worker Nodes
- Cluster Components
- kubectl Basics

## Core Objects

- Pod
- ReplicaSet
- Deployment
- StatefulSet
- DaemonSet
- Job & CronJob
- Namespace
- Labels & Annotations

## Networking

- Service Types
- Ingress & Ingress Controller
- DNS in Kubernetes
- Network Policies
- CNI Plugins

## Storage

- Volumes
- PersistentVolume (PV)
- PersistentVolumeClaim (PVC)
- StorageClass
- ConfigMap & Secrets

## Security

- RBAC
- Service Accounts
- Authentication & Authorization
- Pod Security Standards
- TLS & Certificates

## **Scaling & Availability**

- Horizontal Pod Autoscaler
- Vertical Pod Autoscaler
- Cluster Autoscaler
- Rolling Updates & Rollbacks

## **Observability**

- Logs & Events
- Probes
- Metrics Server
- Prometheus & Grafana

## **CI/CD & DevOps**

- YAML Manifests
- Helm
- Kustomize
- GitOps
- Blue-Green & Canary Deployments

## **Advanced Kubernetes**

- CRDs
- Operators
- Admission Controllers
- Webhooks
- Scheduler Extensions

## **Production Best Practices**

- High Availability
- Security Hardening
- Resource Optimization
- Cost Optimization
- Disaster Recovery