

GitOps with ArgoCD: Helm, Kustomize & CI/CD

Learn to implement GitOps workflows with ArgoCD, using Helm, Kustomize and CI/CD pipelines to deploy and manage applications.

4 Days

DURATION

8

MODULES

32

TOPICS

8

HANDS-ON LABS

COURSE OVERVIEW

This course covers GitOps concepts and ArgoCD fundamentals, followed by setting up Git, Kubernetes and ArgoCD environments. It then examines GitOps repository structure, manifests, Helm charts and Kustomize before exploring ArgoCD architecture, application deployment, secrets, synchronisation and rollback. Advanced topics include multi-cluster deployment, ApplicationSets, blue-green and canary deployments, building CI/CD pipelines with GitHub and GitHub Actions, custom configuration management with plugins and Terraform, and using ArgoCD resource hooks.

WHO THIS COURSE IS FOR

DevOps Engineers

Platform Engineers

Kubernetes Administrators

Release Engineers

Site Reliability Engineers

PREREQUISITES

- Basic Linux, containerization, kubernetes and DevOps Knowledge

TOOLS AND REQUIREMENTS

Applications Required

- Git
- Github
- ArgoCD
- Terraform
- Kubernetes

LEARNING OBJECTIVES

- Explain GitOps concepts and compare GitOps techniques
- Configure Git, a Kubernetes cluster and ArgoCD
- Describe GitOps repository structure and best practices
- Deploy applications in ArgoCD using Helm charts and Kustomize
- Implement synchronisation, rollback and secrets in ArgoCD
- Apply multi-cluster, blue-green and canary deployments
- Build CI/CD pipelines with GitHub Actions and ArgoCD
- Configure ArgoCD plugins, Terraform integration and resource hooks

How the Course Is Taught

This hands-on class is approximately 80/20 lab to lecture ratio, combining engaging lecture, demos, group activities and discussions with comprehensive machine-based practical programming labs and project work.

COURSE SYLLABUS

8 Modules, 32 Topics

01

Lab

Introduction to GitOps and Argo CD

TOPICS

Understanding GitOps · Introduction to ArgoCD · Why GitOps with ArgoCD · Comparison of different GitOps techniques

02

Lab

Getting Ready

TOPICS

Installing and configuration of Git · Setting Kubernetes cluster · Installation of ArgoCD

03

Lab

GitOps Workflow and Best Practices

TOPICS

GitOps Git repository structure · Manifests, helm charts and Kustomize · Best practices

04

Lab

ArgoCD Indepth

TOPICS

- Architecture
- Demo of simple application deployment in ArgoCD
- Demo of simple application deployment in ArgoCD using Helm chart
- Demo of simple application deployment in ArgoCD using Kustomize
- Passing application information using secrets
- Synchronization and Rollback in ArgoCD

05

Lab

ArgoCD Advance Features and Integration

TOPICS

- Multi-cluster deployment
- ApplicationSets
- Demo of simple application deployment in ArgoCD using Helm chart
- Blue Green deployment Implementation
- Canary deployment Implementation

06

Lab

ArgoCD CI/CD Pipeline

TOPICS

Sample application preparation · ArgoCD with GitHub · CI pipeline with GitHub actions · ArgoCD for continuous deployment (CD)

07

Lab

ArgoCD for Custom Configuration Management

TOPICS

ArgoCD plugins · Introducing Terraform with ArgoCD

08

Lab

ArgoCD Resource Hooks

TOPICS

Need of Hooks · Using PreSync Hook · Using Sync hook · Using PostSync and SyncFail hook · Using PostDelete hook

HANDS-ON LABS

Practise What You Learn

#	MODULE	ACTIVITY
01	Introduction to GitOps and Argo CD	All above topics with demonstration
02	Getting Ready	All above topics with demonstration
03	GitOps Workflow and Best Practices	All above topics with demonstration
04	ArgoCD Indepth	All above topics with demonstration
05	ArgoCD Advance Features and Integration	All above topics with demonstration
06	ArgoCD CI/CD Pipeline	All above topics with demonstration

#	MODULE	ACTIVITY
07	ArgoCD for Custom Configuration Management	All above topics with demonstration
08	ArgoCD Resource Hooks	All above topics with demonstration

WHAT IS INCLUDED

Everything You Need to Succeed

- Koenig course material for every module
- Delivery by certified instructors and subject matter experts
- Hands-on exercises throughout the course
- Course completion certificate from Koenig

ABOUT KOENIG

Who We Are

Established in 1993, Koenig Solutions is a globally recognised training provider with 35+ technology partnerships, 5,000+ training programmes and a network of certified instructors and subject matter experts, supporting individuals and enterprise teams worldwide.

FLEXIBLE DELIVERY

Learn the Way That Suits You

Classroom Training

Live Online Classes (ILO)

Fly-Me-A-Trainer (FMAT)

Flexi (Self-Paced)

1-on-1 Training

Ready to Get Started?

Talk to a learning advisor about schedules, group training and customised delivery.

Visit koenig-solutions.com

✉ info@koenig-solutions.com