

# FluxCD GitOps

**Duration: 2 Days (8hrs/day)**

**Prerequisites:**

- Basic Knowledge of Linux and Git
- Knowledge of Docker and Kubernetes

**Course Objective:** Equip learners with knowledge of GitOps principles and Flux CD for efficient Kubernetes continuous delivery. Focus on source control, Helm charts, image automation, secret management, and monitoring. Hands-on labs enhance practical skills in implementing GitOps workflows

**Lab Requirement:** Koenig DC

## **Module 1 – Introduction**

GitOps Introduction

GitOps Principles

GitOps vs DevOps

## **Module 2 – Flux Overview**

What/Why/How Flux CD

FluxCD Concepts and Terminology

FluxCD Features

FluxCD Architecture

FluxCD Installation Options

Lab: FluxCD Installation

## **Module 3 – Source and Kustomize Controller**

Source Controller

Lab: Source Controller – Git – Manifest in Flux Report

Kustomize Controller

Lab: Kustomize Controller – Plain YAML Manifests in Different Repo

Lab: Kustomize Controller – Kustomize Overlay

## **Module 4 – Helm Controller and OCI Registry**

Helm Controller

Lab: Helm Controller – with Git as Source

Lab: Helm Controller – with Helm Repository as Source

What are OCI Artifacts?

Source Controller – OCI Repository

Lab: Push Kubernetes Manifests to OCI Registry

Lab: Push Helm Chart to OCI Registry

Lab: Setting Up the MySQL Database

Lab: Flux Pull and Deploy from OCI Registry

## **Module 5 – Image Automation Controller**

Image Automation Controller

Lab: Install Image Automation Controller

Lab: Initialize DockerHub

Lab: Image Automation Controller – Repository

Lab: Image Automation Controller – Policy

Lab: Image Automation Controller - Update

## **Module 6 – Secret Management and Sign Verification**

Bitnami Sealed Secrets

Lab: Setup Bitnami Sealed

Lab: Encrypt/Decrypt Secret using Bitnami Sealed Secrets

Mozilla SOPS

Lab: Mozilla SOPS – Admin

Lab: Mozilla SOPS – Developer

Cosign + OCI Artifacts

Lab: Install Cosign

Lab: Cosign + OCI Artifacts

## **Module 7 – Notification Controller**

Webhook Receiver

Lab: Webhook Receiver

Alerts and Providers

Lab: Alerts and Providers

## **Module 8 – Monitoring and User Interface**

Flux Monitoring

Lab: Install Kube Prometheus Stack

Lab: Monitor Flux using Prometheus Grafana

Lab: Flux User Interface