

DevOps: Docker, Kubernetes, Terraform & Ansible (Open Source)

Learn to containerise, orchestrate and provision infrastructure using Docker, Kubernetes, Terraform and Ansible.

5 Days

8 HOURS A DAY

21

MODULES

102

TOPICS

COURSE OVERVIEW

This course opens with an overview of DevOps and its lifecycle before moving into Docker, covering container concepts, image building and pushing images to a registry. It then addresses Kubernetes, including cluster creation, managing pods, labels, replica sets, services, deployments, environment variables, and logging and monitoring, and concludes with an overview of AKS. The course also covers Terraform, from setting up labs and authenticating with Azure through building infrastructure, reading and modifying configurations, and using provisioners. It closes with Ansible, covering installation, ad-hoc commands, playbooks, variables, conditionals, loops, handlers, Jinja2 templates, roles, Galaxy and Vault.

WHO THIS COURSE IS FOR

DevOps Engineers

System Administrators

Cloud Engineers

Infrastructure Engineers

Automation Engineers

LEARNING OBJECTIVES

- Explain the DevOps lifecycle and its purpose
- Build and manage Docker images and containers
- Create and manage a Kubernetes cluster and its pods
- Configure Kubernetes deployments, services and environment variables
- Monitor cluster components and application logs in Kubernetes
- Provision Azure infrastructure using Terraform
- Define and manage Terraform variables, providers and provisioners
- Develop Ansible playbooks with variables, roles and Vault

21 Modules, 102 Topics

01

DevOps Overview

TOPICS

What is DevOps · Why DevOps · DevOps Lifecycle

02

Docker Administration

TOPICS

- Introduction to Containers
- Introduction to Docker
- Downloading and Installing Docker
- Docker Essential Commands
- Understanding Docker Images
- Building Docker Images using Dockerfile
- Storing and Retrieving Docker Images from Docker Hub
- Pushing Image to Docker Registry

03

Core Concepts

TOPICS

Overview of Container Orchestration · What is Kubernetes? · Why Kubernetes? · Creating Kubernetes Cluster

04

Managing Resources

TOPICS

Managing Pods · Managing Labels & Selector · Managing Replica Set · Managing Service - Cluster IP

05

Application Lifecycle Management

TOPICS

Overview of Deployment · Deployment Strategies - Rolling update · Managing Deployment

06

Environment Variable

TOPICS

Plain Key · Config Map · Secret

07

Logging and Monitoring

TOPICS

- Understand how to Monitor all Cluster Components
- Understand how to Monitor Applications
- Manage Cluster Components Logs
- Manage Application Logs

08

Getting Started & Setting Up Labs

TOPICS

Choosing a right Infrastructure as Code tool · Terraform Overview · Installing Terraform · Setting up Azure Account · Authenticate Azure with Terraform · Terraform init, plan and apply

09

Building Cloud Infrastructure with Terraform

TOPICS

- Introduction to Terraform with Azure
- Create Resource Group
- Terraform Destroy
- Azure Virtual Networks
- Azure Subnet
- Azure Public IP
- Azure Network Interface
- Create Windows and Linux VM
- Understanding Terraform State files
- Understanding Desired & Current States
- Terraform Provider Versioning
- Types of Terraform Providers
- Methods to define Terraform provider Version

10

Read, Generate, Modify Configurations

TOPICS

- Understanding Attributes and Output Values in Terraform
- Terraform Variables
- Methods to Define Variables
- Data Types for Variables
- Fetching Data from Maps and List in Variable
- Count and Count Index
- For_each
- Create multiple VMs with Terraform
- Conditional Expressions
- Terraform Functions
- Debugging in Terraform
- Saving Terraform Plan to File

11

Terraform Provisioners

TOPICS

Understanding Provisioners in Terraform · Types of Provisioners · Implementing remote-exec provisioners · Implementing local-exec provisioners

12

Introduce Ansible

TOPICS

Introduction to Ansible · How Ansible Works? · Ansible Terminologies · Ansible Architecture

13

Ansible Deployment

TOPICS

Pre-requisites for Controller Node · Installation and Configuration · Ansible Configuration File · Pre-requisites for Managed Node · Ansible Inventory

14

Ad-hoc Commands

TOPICS

Introduction to Ansible Module · Ad-hoc Remote Executions · Ansible Commands · Privilege Escalation

15

Managing Playbooks

TOPICS

YAML Structure · Ansible Playbooks · Structure of Playbook · Syntax Check of Playbook · Run Playbook

16

Variables in Ansible

TOPICS

Introduction to Ansible Variables · Defining Ansible Variable in Ansible Code · Use Variable File · Ansible Facts - Basics · Facts in Playbooks · Use Cases of Facts

17

Conditionals, Loops, Handlers and Error Handling

TOPICS

Conditionals in Ansible · Loops in Ansible · Notify and Handlers in Ansible

18

Jinja 2 Templates

TOPICS

Introduction to Jinja2 Template · Create Jinja2 Template

19

Ansible Roles and Galaxy

TOPICS

Introduction to Role · Understanding Role Structure · Managing Roles

20

Ansible Vault

TOPICS

Introduction to Ansible Vault · Encrypt and Decrypt Playbooks · Ansible Vault Commands

AWS AKS

TOPICS

AKS Architecture · Difference between On-Prem Kubernetes and AKS · Benefits of AKS

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.

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