

Oracle Cloud Infrastructure DevOps Professional (2023): Hands-on Workshop

Oracle Cloud Infrastructure

DURATION

3 Days

MODULES

11 Lectures

COURSE CODE

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Course Overview

This course will help you in developing a strong foundation in core concepts and features of the Oracle Cloud Infrastructure (OCI) DevOps service.

What You Will Learn

Module 1: DevOps Introduction

- OCI DevOps Professional Course Overview
- Course Speakers
- For Whom is This Course Intended?
- Prerequisites
- Course Outline
- Course Big Picture (Modules One to Eleven)
- What Does the DevOps Pro Exam Validate?
- Get the Most Out of This Course
- OU Community Value for You
- Ratings and Feedback
- Happy Learning!
- DevOps Overview
- A DevOps Story and Challenges
- Turning Point in DevOps
- DevOps Definition and Importance
- DevOps Life Cycle
- DevOps Life Cycle and CI/CD
- The “Continuous” Paradigm
- Benefits of DevOps
- OCI DevOps Service
- DevOps in the Cloud

- OCI DevOps as a Service
- Benefits of DevOps as a Service

Module 2: Microservices and Containerization

- Microservices Architecture Overview
- What Are Microservices?
- Sample E-Commerce Application
- Microservices vs Monolithic Architectures
- Communication Mechanisms
- Design Methodology of Microservices
- 12-Factor Methodology
- Benefits and Drawbacks
- Introduction to Containerization
- What is Containerization?
- Benefits of Containers
- Docker Overview
- When to Use Docker
- Docker Components
- Virtual Machines vs Containers
- Basic Docker Commands (Demo)
- Working with Docker Images
- Dockerfile Overview
- Commands and Demo
- Oracle Cloud Infrastructure Registry (OCIR)
- Introduction to OCIR
- Managing Repositories, Images, and Security
- Demo: Managing OCIR
- Introduction to OCI Container Instances
- Features and Use Cases
- Working with Container Instances
- IAM Policies and Shapes
- Demo: Deploying WordPress with Container Instances

Module 3: Managed Container Orchestration (OKE)

- Introduction to Kubernetes
- Challenges in Containerization
- Kubernetes Overview and Container Orchestration
- Kubernetes Architecture and Components
- Main Components and Features
- Introduction to OKE (Oracle Kubernetes Engine)
- Components, Node Pools, Supported Shapes & OS
- Kubernetes Versions and Version Drift
- Prerequisites to Create OKE Cluster
- Network Configuration and Required Policies
- Creating OKE Cluster on OCI

- Demo: Cluster Creation
- Setting Up Cluster Access
- Kubeconfig, Kubectl, Cloud Shell, Demo
- Deploying Applications to OKE
- Python Flask App Deployment Demo
- Observing OKE Cluster
- Monitoring, Status, Dashboard Access (Demo)
- Scaling and Deleting OKE Clusters
- Autoscalers, Node Pools, Demo
- Enhanced and Basic Clusters Overview
- Features, Types, Demo
- Serverless Kubernetes with Virtual Nodes
- Virtual Nodes vs Managed Nodes, Demo
- Kubernetes Cluster Add-on Lifecycle Management
- Add-on Management, Demo

Module 4: OCI DevOps Project

- DevOps IAM Policies
- Policy Process and Syntax
- Demo: Configuring OCI Security for DevOps
- DevOps Projects and Code Repositories
- OCI DevOps Service Overview and Benefits
- OCI Code Repository, GitHub, GitLab
- Demos: Project Creation, SSH Tokens, Repository Mirroring
- Artifacts and Registries
- Types, External Registries, Demo
- DevOps Environments
- BM Instances, VM Instances, Containers, OKE, Functions

Module 5: OCI DevOps Project - CI/CD

- Continuous Integration and Deployment (CI/CD) Overview
- Build Pipeline
- Flow, Prerequisites, Build Specification, Stages, Trigger Options, Demo
- Deployment Pipeline
- Concept, Workflow, Release Strategy, Monitoring, Rollbacks, Demo

Module 6: OCI DevOps Project - Deployment Strategies

- Blue-Green Deployment
- Environment, Stages, Benefits, Drawbacks, Demos
- Canary Deployment
- Environment, Stages, Benefits, Drawbacks, Demos

Module 7: OCI DevOps Project - Helm Chart Deployments

- Helm Overview and Architecture

- Helm Chart Structure and Commands
- Demo: Using Helm with OCI DevOps to Deploy to OKE
- Continuous Testing and External Tools Integration

Module 8: Configuration Management and Infrastructure as Code

- Automation Overview
- Configuration Management vs IaC
- Ansible vs Terraform
- Configuration Management Overview
- OCI Tools, Ansible Basics, Playbooks, Demos
- Ansible with OCI
- Modules, Playbooks, Inventory, Demo
- Terraform Introduction and Workflow
- CLI Commands, Configuration, Providers, Modules, Registry, Demos
- OCI Resource Manager
- Basics, Drift Detection, Resource Discovery, Templates

Module 9: DevSecOps

- DevSecOps Introduction
- Shift-Left Approach, Best Practices
- Applying DevSecOps in OCI
- OCI Vault
- Keys, Secrets, Encryption, Integration with OCI Services
- Application Dependency Management
- IAM Policies, Scanning for Vulnerabilities, Demo

Module 10: DevSecOps - OKE and Container Image Security

- Security for OKE
- IAM Policies and RBAC
- Kubernetes Secrets and Cluster Security
- Node Pool Security
- Network Security (Calico Example)
- Multi-Tenant Considerations
- Image Security (Signing, Scanning, Demo)

Module 11: Observability Services

- Observability Platform Overview
- Key Services, Capabilities
- Monitoring
- Metrics, Namespaces, Alarms, Queries, Demo
- Logging Service
- Log Groups, Types, Audit Logs, Service Logs, Demo
- Events Service
- Concepts, Event Types, Rules, Demo