

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

Oracle Cloud Infrastructure

DURATION

4 Days

MODULES

16 Lectures

COURSE CODE

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Course Overview

Cloud native enables faster software development and the ability to build applications that are resilient, manageable, and dynamically scalable. In this course you learn core fundamentals of Cloud native and you get introduced to the Oracle technologies and their implementation.

What You Will Learn

Module 1: Cloud Native Fundamentals

- Cloud Native Concepts
- Cloud Native Overview
- What is Cloud Native?
- Why Cloud Native?
- Cloud-Native vs Cloud-Enabled vs Cloud-Based Applications
- Cloud-Native vs Cloud-Based Applications
- Cloud Native Principles and Ecosystem
- Key Pillars of Cloud Native Development
- CNCF Overview and Role
- Cloud Native Services on OCI
- Benefits and Challenges
- Benefits of Cloud Native Development
- Challenges of Cloud Native Development

Module 2: Microservices Architecture

- Microservices Fundamentals
- Microservices Architecture Overview
- OCI DevOps Journey
- What Are Microservices?

- Architecture and Design
- Sample E-Commerce Microservices Architecture
- Microservices vs Monolithic Architectures
- Communication Mechanisms in Microservices
- Microservices Design Methodology
- 12-Factor App Methodology
- Pros and Cons
- Benefits of Microservices Architecture
- Drawbacks and Challenges

Module 3: Developer Tooling on OCI

- OCI Code Editor
- OCI Code Editor Overview
- Features and Capabilities

Module 4: Containerization Fundamentals

- Container Concepts
- Introduction to Containerization
- Benefits of Containerization
- Containers vs Virtual Machines
- Docker Fundamentals
- Docker Overview
- When to Use Docker
- Docker Components
- Dockerfile Basics
- Docker Commands
- Working with Docker Images
- Demos: Docker Commands and Image Management

Module 5: Container Registry and Image Management

- Oracle Cloud Infrastructure Registry (OCIR)
- OCIR Overview and Concepts
- Open Container Initiative (OCI)
- OCI Image Layout and Anatomy
- Viewing Image Layers
- Managing OCIR
- Repositories and Images
- Security and Access Control
- Preparing for Container Registry
- Demos: Managing OCIR

Module 6: Cloud Native DevOps Fundamentals

- DevOps Foundations
- DevOps Overview

- DevOps Story and Challenges
- DevOps Definition and Importance
- DevOps Practices
- DevOps Lifecycle
- CI/CD and the Continuous Paradigm
- Benefits of DevOps
- OCI DevOps Service
- OCI DevOps as a Service
- Benefits of OCI DevOps

Module 7: CI/CD with OCI DevOps

- CI/CD Fundamentals
- CI/CD Overview
- CI/CD in OCI DevOps

Module 8: Kubernetes and Container Orchestration

- Kubernetes Fundamentals
- Challenges in Containerization
- Kubernetes Overview
- Container Orchestration Concepts
- Oracle Kubernetes Engine (OKE)
- OKE Overview
- When and Why to Use OKE
- Cluster Components and Node Pools
- Supported Shapes, OS, and Kubernetes Versions
- Version Drift Considerations
- Cluster Prerequisites and Networking
- IAM Policies
- Network Resource Configuration
- Creating OKE Clusters
- Demos: Creating OKE Clusters

Module 9: Kubernetes Access and Application Deployment

- Cluster Access
- kubeconfig Files
- kubectl Tool
- Setting Up Cluster Access
- Demos: Cluster Access
- Application Deployment
- Deploying Applications to OKE
- Python Flask Application Example
- Key Deployment Tasks
- Demos: Application Deployment

Module 10: Serverless Functions on OCI

- Oracle Functions Fundamentals
- Serverless Overview
- Oracle Functions Architecture
- Pricing and Polyglot Containers
- Functions Operations
- Triggers and Events
- Integrations with OCI Services
- Functions Configuration and Observability
- Functions Demos
- Functions QuickStart
- Custom Dockerfile Functions

Module 11: API Management with OCI API Gateway

- API Fundamentals
- What is an API?
- API Gateway Overview
- API Elements and Design
- API Gateway Capabilities
- Networking and Security Policies
- API Creation and Prototyping
- Request Validation and Routing
- Authorization and OAuth
- JWT Validation
- Request and Response Transformation
- Advanced API Gateway Features
- Dynamic Authentication and Routing
- Monitoring APIs
- Demos

Module 12: Event-Driven Architecture

- OCI Events Service
- Events Service Overview
- Event Concepts and Types
- Rule Actions and Destinations
- Event Destinations
- OCI Streaming
- Oracle Functions
- Notifications
- Events in Practice
- Creating and Managing Rules
- Design Considerations
- Metrics and Monitoring
- Demos

Module 13: Messaging and Streaming with OCI Streaming

- Streaming Fundamentals
- Messaging Options
- Apache Kafka Overview
- OCI Streaming Service (OSS)
- Kafka Compatibility and MirrorMaker
- Security and Reliability
- Encryption and IAM Integration
- Private Endpoints and Vault Support
- Integration and Use Cases
- Integration with OCI Services
- Kafka Connect Ecosystem
- Common Streaming Use Cases
- Demos: OCI Streaming

Module 14: Cloud Native Testing and Security

- Cloud Native Testing
- Testing Challenges
- Testing Strategies
- Handling Unknown Unknowns
- OCI Vault and Key Management
- OCI Vault Overview
- Keys, Encryption, Rotation
- Vault Integration with OCI Services
- Secrets Management
- OCI Vault Secrets
- Secret Rules and Usage
- Image and Function Security
- Container Image Signing and Scanning
- Image Digests vs Tags
- Function Security Model
- OCI Certificates and mTLS

Module 15: Monitoring and Observability

- Monitoring and Logging
- OCI Monitoring Service
- Metrics and Alarms
- OCI Logging Service
- Audit Logs
- Observability for Cloud Native Apps
- Metrics and Logs for Functions
- API Gateway Metrics and Logs
- OKE Metrics and Logs
- Application Performance Monitoring

- OCI APM Overview
- Distributed Tracing
- Debugging Microservices
- Demos: Tracing and Debugging

Module 16: Storage for Cloud Native Applications

- Persistent Volumes (PV)
- Persistent Volume Claims (PVC)
- File Storage Provisioning
- Demos: PVCs
- Course Wrap-Up
- Key Takeaways
- Best Practices for Cloud Native on OCI