**OCI DevOps Professional with Containers & Kubernetes**

(1Z0-1109-23)

**Duration 5 Days**

GCC Code: D1105671GC10

***Enhancing "Oracle Cloud Infrastructure DevOps Professional 2023" Certification***

Accelerate your career with our OCI DevOps Professional learning path. Gain a deep understanding of DevOps principles and leverage OCI for efficient automated workflows. Ideal for DevOps engineers and developers, this training equips you with skills for dynamic DevOps environments, including application development, testing, security, and deployment using OCI's capabilities.

The Oracle 1Z0-1109-23 certification exam is mainly targeted to those candidates who have some experience or exposure to Oracle Cloud Infrastructure technology and want to flourish their career with Oracle Cloud Infrastructure 2023 DevOps Certified Professional credential.

The Oracle 1Z0-1109-23 certification exam validates your understanding of the Oracle Cloud Infrastructure technology and sets the stage for your future progression. Your preparation plan for Oracle Cloud Infrastructure 2023 DevOps Professional Certification exam should include hands-on practice or on-the-job experience.

At the end of this training, you will be prepared to take on the Oracle Cloud Infrastructure DevOps Professional Certification.

**Learning Objective:**

* Master Version Control system **Git** and Containerization Tool **Podman**
* Learn to work with Kubernetes locally and on OCI with OKE.
* Master DevOps principles for efficient software delivery.
* Explore microservices, containerization, and services like OCIR and Container Instances.
* Deploy and manage containerized apps effectively with OKE.
* Utilize OCI DevOps projects, including Code Repositories and Artifact Registries.
* Implement CI/CD practices for automated software builds and deployments.
* Automate resource management with config management and IaC techniques.
* Enhance DevOps workflow security by implementing DevSecOps best practices and leveraging OCI security services.
* Gain insights into App performance and troubleshoot issues with observability services.

**Audience**

* Developers
* System Integrators
* Operations Managers

**Pre-Requisite:**

* Working Knowledge of Oracle Cloud Infrastructure Web Console
* Provisioning of Resources using Web Console
* *Working knowledge of Linux- Basic Commands, Editing Files using vi, Files and Directory Permissions, Installation Process etc.*

**Pre Leaning Track**

* Oracle Cloud Infrastructure Architect Associate Certification (1072)
* Essential of Infrastructure as a Code on OCI
* Linux Foundation Course

**Next Learning Track**

* OCI DevOps Professional with Ansible and Terraform

**Hands on Labs**

**Microservices and Containerization**

Lab 1. Working with Git

Lab 2. Working with Podman

Lab 3. Create Container Image for a Web Application Using Dockerfile

Lab 4. Manage OCIR and Push and Pull Images Using Podman

**Managed Container Orchestration**

Lab 5. Install Kubernetes on Linux

Lab 6. Setting up Container Clusters in OCI

Lab 7. Working with Kubernetes

Lab 8. Deploy a load-balanced Web application on an OKE cluster using Kubectl.

Lab 9. Create and Manage Persistent Storage in K8s

**Configuration Management and Infrastructure as Code**

Lab 10.Leverage Ansible Collection to Provision and Manage Resources in Oracle Cloud

Lab 11.Create a Reusable VCN Configuration with Terraform

**OCI DevOps Project**

Lab 12. Work with Code Repositories in OCI DevOps Project

Lab 13. Create an Artifact Registry and Set Up Artifacts and Environments in a DevOps Project

**Continuous Integration and Continuous Delivery (CI/CD)**

Lab 14. Build microservices using DevOps

Lab 15. Automate Web App Deployment to an OKE Cluster Using OCI DevOps CI/CD Pipeline

**DevSecOps**

Lab 16. Create and manage encryption keys and secrets in OCI Vault

Lab 17. Scan Container Image for Vulnerabilities

**Observability**

Lab 18. Create and manage logs with OCI Logging service

Lab 19. Define Rules that Trigger a Specific Action When a DevOps Event Occurs

**Section 1. Microservices and Containerization**

**1. Version Control with Git**

* Installing GIT
* Initialize a GIT Repository
* GIT Log
* Git Branches
* Initialize Remote Repositories
* Pushing to remote Repositories
* Cloning Remote Repositories

Lab 1. Working with Git

**2. Working with Podman**

* What is a Podman
* Use case of Podman
* Podman vs. Virtualization
* Installing Podman on Linux.
* Working with Podman.

Lab 2. Working with Podman

**3. Podman Images and Containers**

* Modifying Images
* OCIR
* Uploading images to OCIR
* Design and code a Podman file to build a custom container image.

Lab 3. Create Container Image for a Web Application Using Dockerfile

Lab 4. Manage OCIR and Push and Pull Images Using Podman

**4. DevOps Introduction**

* Explain DevOps practices
* DevOps terminologies
* Discuss DevOps solutions and tools
* Describe DevOps as a service
* DevOps life cycle

**Section 2. Managed Container Orchestration**

**5. Introduction to Kubernetes**

* What is Kubernetes & why
* Kubernetes Terminology
* Kick start Kubernetes
* Install Kubernetes Locally

Lab 5. Install Kubernetes on Linux

**6. Kubernetes Cluster on Oracle Infrastructure - OKE**

* Setting up the Kubernetes Cluster in OCI
* Installing Kubernetes Dashboard
* Exploring your Cluster

Lab 6. Setting up Container Clusters in OCI

**7. Working with Kubernetes Clusters**

* Accessing a Cluster Using Kubectl
* Adding a Service Account Authentication Token to a Kubeconfig File
* Pulling Images from Registry during Deployment
* Introduction to Pods and Pod Lifecycle
* Create & Manage Pods
* Deployments

Lab 7. Working with Kubernetes

Lab 8. Deploy a load-balanced Web App on an OKE using Kubectl.

**8. Kubernetes Networking**

* Pod and Node Networking
* Container Network Interface
* Service Networking
* Cluster DNS

**9. Persistent Data in Kubernetes**

* Volumes
* Persistent Volumes
* Volume Access Modes
* Persistent Volume Claims
* ConfigMaps
* Secrets

Lab 9. Create and Manage Persistent Storage in K8s

**Section 3. Configuration Management and Infrastructure as Code**

**10. Provision, configure and manage infrastructure using code and Templates**

* Explain the concepts of Infrastructure as code
* Provision infrastructure as code with **OCI Resource Manager**
* Explain the Configuration Management process
* Automate infrastructure configuration with **OCI Anisble collection**

Lab 10.Leverage Ansible Collection to Provision and Manage Resources in Oracle Cloud

Lab 11.Create a Reusable VCN Configuration with Terraform

**Section 4. OCI DevOps Project**

**11. Configure and manage Continuous Integration and Continuous Delivery (CI/CD)**

* Automate Software Development Life Cycle using OCI DevOps service
* Configure and manage source code in Code Repositories

Lab 12. Work with Code Repositories in OCI DevOps Project

**Section 5. Continuous Integration and Continuous Delivery (CI/CD)**

**12. Create and configure Build Pipelines**

* Create and configure Deployment Pipelines
* Create and manage Artifacts for automated deployment

Lab 13. Create an Artifact Registry and Set Up Artifacts and Environments in a DevOps Project

**13. Build and deploy microservices using containers and manage using container orchestration engine**

* Explain and implement Microservices Architecture
* Identify the need for containerization and create containers using docker
* Create and manage Oracle Cloud Infrastructure Registry OCIR
* Create and manage Kubernetes clusters with Oracle Container Engine for Kubernetes (OKE)

Lab 14. Build microservices using DevOps

Lab 15. Automate Web App Deployment to an OKE Cluster Using OCI DevOps CI/CD Pipeline

**Section 6. DevSecOps**

**14. Enable DevSecOps**

* Discuss the concepts of DevSecOps
* Configure and manage IAM policies and Dynamic Groups for DevOps resources
* Secure OKE and Functions environments
* Create and manage encryption keys and secrets in OCI Vault

Lab 16. Create and manage encryption keys and secrets in OCI Vault

Lab 17. Scan Container Image for Vulnerabilities

**Section 7. Observability**

**15. Implement Monitoring and Observability**

* Explain the concepts of DevOps measurement
* Monitor metrics with OCI Monitoring service
* Create and manage logs with OCI Logging service
* Track and report events with OCI Events service

• Monitor and diagnose performance issues with OCI Application Performance Monitoring service

Lab 18. Create and manage logs with OCI Logging service

Lab 19. Define Rules that Trigger a Specific Action When a DevOps Event Occurs