

Billing and Revenue Management: Cloud Native Implementation Ed 1

Oracle Communications

DURATION

3 Days

MODULES

14 Lectures

COURSE CODE

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Course Overview

Service providers and enterprises are increasingly looking to deploy cloud native architectures to modernize and automate their IT operations. Oracle Communications Billing and Revenue Management (BRM) provides a cloud native deployment option, supporting Kubernetes-orchestrated containerized components to facilitate continuous integration/continuous delivery and DevOps practices. In this course students will learn how to deploy BRM in an Oracle Cloud Infrastructure (OCI) hosted Cloud Native Environment (CNE) using the Oracle Kubernetes Engine (OKE).

What You Will Learn

Module 1: Introduction to DevOps and Cloud Native

- Agenda Overview
- DevOps and Cloud Native
- The Past: Monolithic Applications
- Cloud Native Definitions
- DevOps and Cloud Native: The New Normal
- Modernize your IT, Increase Your Control
- Cloud Native Principles
- Docker & Kubernetes
- Customer Benefits of Cloud Native
- BRM Cloud Native Deployment Option
- Oracle as a Leader in Cloud Native
- M&O Cloud Native Portfolio
- Importance of Cloud Native to Monetization & Orchestration
- BRM Cloud Native Deployment Option - The New Norm
- Easier Installs
- Runs on Dynamic Cloud Native Infrastructure

Module 2: Oracle Cloud Infrastructure (OCI)

- OCI Overview
- Cloud Regions and Multicloud
- OCI Region – High Availability Building Blocks
- Inside an AD – High Scale, High Performance Network
- Off-box Network Virtualization
- OCI Services
- Virtual Cloud Network (VCN), IP Ranges, Subnets
- Compute Shapes: Bare Metal, VM, Dedicated Hosts
- Database Editions and Options
- Compartments and Resource Identifiers
- Security in the Cloud
- Billing and Consumption
- Universal Credits
- Free Trial Options
- Always Free Services
- Kubernetes on OCI
- Three Ways to Run Kubernetes
- Container Engine for Kubernetes (OKE)
- OCI Kubernetes-as-a-Service
- Working with OKE and OCIR
- Quick Create and Pricing Options
- Terraform Installer for OKE
- Labs Overview

Lab 1–12: Configuration, Cluster, Database, Ingress, Monitoring, Logging, BRM & ECE Installation

- Sizing Considerations

Module 3: Docker, Kubernetes, and Helm

- Containers Evolution
- From Servers to Containers
- Containers vs. Virtual Machines
- Historic Timeline of Unix Containers
- Docker
- What is Docker?
- Docker Image, Docker File, Docker Container
- Kubernetes (K8S)
- Cluster Overview: Master & Worker Nodes

K8S Resources: Pods, Controllers, Replica Sets, Deployments, Stateful Sets, Services, Namespaces

- Storage: Volumes, Volume Types, Access Modes
- Config Maps
- kubectl Commands and Examples
- Helm
- Helm Charts, Repositories, Templates, Values File
- Lifecycle Management

Module 4: Prerequisites

- Kubernetes Clusters
- OKE, GKE, AWS, AKS
- Database Options
- Oracle Database Offerings in OCI
- Multi-Tenant Database
- Existing BRM Database
- Other Prerequisites

Module 5: Ingress

- Exposing BRM
- Implementation Options: NodePort, LoadBalancer, Ingress
- Sample Setup and Traefik Helm Chart
- Load Balancer Overview
- Destination Service Explanation

Module 6: Operational Aspects - Monitoring

- Multi-Service Cloud Native Architecture
- Features & Architecture
- Installation Pre-Requisites
- Installation Steps (1 & 2)
- Grafana Dashboard
- Standard Dashboard
- ECE Monitoring: Latency and Throughput
- Using Grafana Query Language
- Importing Dashboards

Module 7: Operational Aspects - Logging

- Kubernetes Logging Overview
- Node-Level Logging Agent & Sidecar Containers
- OpenSearch and Fluentd Overview
- BRM Cloud Native Deployment Logging
- Installing OpenSearch & Fluentd (Daemonset, ConfigMap)
- OpenSearch Dashboards UI
- Launch Dashboards
- Create Index Pattern
- Time Filter Selection
- Discover & Filter Logs

Module 8: Installation

- BRM Cloud Native Deployment Steps
- Deployment Architecture & Artifacts

- Docker Registry
- BRM Cloud Native Helm Charts
- Configuring Global Values in Helm Chart
- Configuring Deployment Package

Module 9: Persistent Storage

- Storage Scenarios and Options
- NFS Provisioner
- OCI FSS
- OCI Block Storage
- NFS with OCI Block Storage
- BRM Volumes Examples: PVT, ECE, Billing Care, BOC, PDC

Module 10: WebLogic Kubernetes Operator (WKO)

- Tools for Operations
- Kubernetes Controllers Limitations
- Operators: Introduction, Core Features, Examples
- WebLogic Kubernetes Operator
- Operator Job Helm Chart
- BRM Helm Chart

Module 11: Architecture

- BRM Cloud Native Deployment Artifacts
- Deployment Architecture Overview
- K8S Internal Networking – Services
- DM-oracle Service Examples
- Helm Template & Configuration Files
- Readiness and Liveliness Checks
- Config Map Volumes
- Overall Configuration File

Module 12: Operating BRM

- Kubernetes Jobs
- Configuration Changes & Rolling Updates
- Restarting BRM Components
- Configurator Job, brm-apps Job
- PDC Jobs: ImportExportPricing, SyncPDC
- Scaling Multi-Replica PODs

Module 13: Elastic Charging Engine (ECE)

- Kafka, Zookeeper, NoSQL Overview
- Multi-Service Cloud Native Architecture – ECE PODs
- One Image, Many Pods

- Stateful Sets
- Startup and Republishing Pricing Data
- Restarting ECE Services
- ECE State Management

Module 14: Customization

- Overview of Docker Files for Base Images
- Customizing BRM & BC
- Customizing ECE
- Interim Patches and Patch Sets