PROGRAM OVERVIEW

DELL Technologies

Kubernetes Workshop: Develop and Deploy a Microservices Application on Kubernetes

PROGRAM DETAILS

TARGET AUDIENCE

- Developers/Lead Developers who wish to containerize software applications and deploy on Kubernetes clusters
- Architects who are considering using container technologies in software architectures

DELIVERY METHODS

- Online – Virtual Instructor Led

DURATION

Three days

PREREQUISITES

- Experience developing apps using Java, Spring and Spring boot framework
- Basics familiarity with the Linux environment and commands

MORE INFORMATION

For more information, contact your Education Account Manager and learn more about the program and register.

Experience best practices in building and deploying microservices on a production grade Kubernetes cluster in a hands-on workshop session.

This is a 3 days hands-on workshop enabling Java developers to build and deploy Spring Boot Microservice application on Kubernetes cluster following the best practices and architectural patterns for running containerized workloads on Kubernetes. This workshop will be a combination of well-designed lectures and hands-on labs assisted by technology experts. The objective of the workshop is to enable participants learn these technologies and concepts in an experiential mode.

Topics Coverage:

- Kubernetes architecture and concepts.
- Containerization concepts using Docker
- Developing spring boot applications using microservice based architecture following cloud native concepts.
- Design and implement deployment architecture for microservice applications on Kubernetes
- Continuous Integration and Delivery of software to Kubernetes cluster.
- Logging and monitoring applications in Kubernetes clusters
- Leverage Spring Cloud Kubernetes for distributed applications

Workshop Content:

S. No	Topic	Hands-on Lab	Learning Objective
Module 1	Introduction to Cloud Native		• The case for Cloud Native • What is Cloud Native? • Key tenets of Cloud Native
Module 2	Build the first Spring Boot App	Lab 1: Develop a Spring Boot application	• Create Spring Boot Application • Test Driven Development: Building Test Cases • Build, test and run the Spring Application using Gradle
Module 3	Containerization	Lab 2: Dockerize Spring Boot Application	• Learn the core concepts of Containerization (Docker) • Create, build and run a docker image of the application • Push the docker image to docker hub • Verify and monitor the docker container
Module 4	Kubernetes	Lab3: Deploying Spring Boot Application on Kubernetes	• Learn the core concepts of Kubernetes architecture • Understand Kubernetes components and objects • Create and verify Kubernetes objects like Pod, Deployment, Namespace and Service • Access the applications deployed in Kubernetes cluster
Module 5	Externalizing Configurations	Lab4: Externalize Configurations in Kubernetes	• Create an application with configurations externalized to platform • Create ConfigMap and deploy in Kubernetes cluster
Module 6	Implementing CI/CD	Lab 5: Deploying containerized workloads on Kubernetes using CI/CD pipeline	• Build, Test, Run and Deploy with the help of a CI/CD tool • Separate the processes of Build, Release and Run by automating using a CI/CD tool.
Module 7	Schema migration using Jobs in Kubernetes	Lab 6: Database Tier	• Create a MySQL deployment to persist data • Schema migration using Flyway • Creating jobs to run the migration
Module 8	Build a Microservices application	Lab 7: Service Tier	• Connect to the database tier • Create CRUD REST services around an Entity • Test the repository and REST endpoints
Module 9	Logging and Probing	Lab 8: Logging and Monitoring	• Use Logback for application logging • Use Liveness and Readiness Probe in Kubernetes Cluster
Module 10	Scaling in Kubernetes and using persistence	Lab 9: Creating Persistence Volume and Persistence Volume Claim	• Create resource quota • Include resource configuration within Pods • Create Persistence Volume, Persistence Volume Claim and Storage Class • Scale application horizontally and vertically
Module 11	Deploying Distributed Applications	Lab 10: Deploying Distributed Applications	• Deploy microservice and persist using MongoDB
Module 12	Service Discovery	Lab 11: Service Discovery Using Spring Cloud Kubernetes	• Use Spring Cloud Kubernetes for Service discovery • Implement Client-side load balancing • Create ClusterRole and RoleBinding