Developing Event-Driven Applications with Apache Kafka and Red Hat AMQ Streams (AD482) Training

Duration: **4 Day**

BILGINÇ IT Academy
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Overview

Build, scale, and debug **event-driven microservice applications** using Apache Kafka and **Red Hat AMQ Streams**.

In this hands-on course, you'll learn how to use Kafka and AMQ Streams to design, develop, and test event-driven applications. Such microservices allow real-time data processing, global scalability, and low-latency user feedback.
This {*training} targets **application developers** and is based on **Red Hat AMQ Streams 1.8** and **Red Hat OpenShift Container Platform 4.6**.

> Participants of live virtual classes receive continued access to the hands-on lab environment for **up to 45 days** after course completion.

Technical Requirements

For **virtual, self-paced, and classroom** learners:

- Internet access is required.
- Labs are hosted in **Red Hat's Online Learning Environment**.
- Future on-premise classroom options may be offered.

Prerequisites

- Experience in **microservice application development** (e.g., completion of Red Hat DO378 or equivalent).
- Familiarity with **OpenShift** is recommended but not mandatory.

Who Should Attend

This course is designed for:

- **Application Developers** experienced in microservice architecture and development.

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What You Will Learn

By the end of this {*training}, you will have gained knowledge and skills in the following areas:

- Understand Kafka's fundamentals and architecture.
- Develop applications using the **Kafka Streams API**.
- Integrate systems with **Kafka Connect**.
- Implement **change data capture (CDC)** with Debezium.
- Troubleshoot common streaming application issues.

Impact on the Organization

Traditional synchronous systems often struggle to scale or handle growing real-time data needs. By adopting **event-driven architectures** with Kafka and AMQ Streams, organizations can achieve **global scalability**, **instant feedback loops**, and **ultra-low latency** communication between services.

Impact of This Training

After completing this course, you will:

- Understand **Kafka and AMQ Streams architecture** and their ideal use cases.
- Gain the skills to **design, build, and test event-driven applications**.
- Learn to use **Debezium** for data synchronization and change detection.
- Troubleshoot and optimize real-time streaming microservices effectively.

Key Skills You'll Master:

- Designing event-driven microservices using standard architecture patterns.
- Implementing change data capture (CDC) to improve data responsiveness.
- Troubleshooting streaming pipelines and maintaining application reliability.

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Outline

1. Designing Event-Driven Applications
Learn the key principles and advantages of building event-driven architectures.

2. Introducing Kafka and AMQ Streams
Understand Kafka's messaging concepts and create basic read-and-write applications.

3. Building with the Streams API
Leverage Kafka Streams API to create dynamic data streaming applications.

4. Asynchronous Services with Event Collaboration
Implement asynchronous communication patterns using event collaboration.

5. Data Integration with Kafka Connect
Integrate external data systems and use**Debezium** to capture data changes in real time.

6. Troubleshooting AMQ Streams Applications
Identify and resolve common challenges in Kafka and AMQ Streams deployments.