

TRAINING COURSE

Confluent Stream Processing using Apache Kafka® Streams & ksqlDB

Course Objectives

During this hands-on course, you will learn to:

- Identify common patterns and use cases for real-time stream processing
- Understand the high level architecture of Apache Kafka® Streams
- Write real-time applications with the Kafka Streams API to filter, transform, enrich, aggregate, and join data streams
- Describe how ksqlDB combines the elastic, fault-tolerant, high-performance stream processing capabilities of Kafka Streams with the simplicity of a SQL-like syntax
- Author ksqlDB queries that showcase its balance of power and simplicity
- Test, secure, deploy, and monitor Kafka Streams applications and ksqlDB queries

Hands-on Training

Throughout the course, you will interact with hands-on lab exercises to reinforce stream processing concepts. Some

exercises include:

- Anatomy of a Kafka Streams Application
- Joining Two Streams
- Using the Kafka Streams Processor API
- Testing a Kafka Streams Application
- Using ksqlDB
- Using the ksqlDB REST API
- Scaling a Kafka Streams Application
- Securing a Kafka Streams Application
- Getting Metrics from a Kafka Streams Application
- Using JConsole to monitor a Kafka Streams Application
- Monitoring a Kafka Streams Application in Confluent Control Center

Prerequisites

Attendees should be familiar with developing professional apps in Java (preferred), .NET, C#, Python, or another major programming language.

Additionally, students require a strong knowledge of Kafka architecture as well as knowledge of Kafka client application development, either through:

- Prior experience, or
- By taking the recommended prerequisites: [Confluent Fundamentals for Apache Kafka®](#), and [Confluent Developer Skills for Building Apache Kafka®](#)

Participants are required to provide a laptop computer with unobstructed internet access to fully participate in the class.

To sign-up for one of our courses, visit us [here](#).

Who Should Attend?

This course is designed for application developers, architects, DevOps engineers, and data scientists who need to interact with Kafka clusters to create real-time applications to filter, transform, enrich, aggregate, and join data streams to discover anomalies, analyze behavior, or monitor complex systems.

Content

MODULE	DESCRIPTION
Motivation and Concepts for Streams	<ul style="list-style-type: none"> Motivation and Use Cases for Real-Time Streaming High Level Comparison of Kafka Streams and ksqlDB Stream Processing Concepts
Kafka Streams Architecture	<ul style="list-style-type: none"> Kafka Streams' Place in the Kafka Ecosystem High Level Architecture Design Kafka Streams Data Types
Writing Kafka Streams Applications	<ul style="list-style-type: none"> Anatomy of a Kafka Streams Application Kafka Streams DSL – Stateless Operations Kafka Streams DSL – Aggregations Kafka Streams DSL – Windowed aggregations Kafka Streams DSL – Joins Kafka Streams DSL – Summary Processor API Optimizations
Testing Kafka Streams Applications	<ul style="list-style-type: none"> Get streams of data into and out of Kafka with Kafka Connect and REST Proxy Maintain data formats and ensure compatibility with Schema Registry and Avro Build real-time streaming applications with Confluent ksqlDB & Kafka Streams
The Confluent Platform	<ul style="list-style-type: none"> Unit Tests Integration Tests Stress Tests End-to-end Tests
Introduction to ksqlDB	<ul style="list-style-type: none"> Sample Use Cases End-to-end Examples Interacting with ksqlDB
Using ksqlDB	<ul style="list-style-type: none"> Data Manipulation Aggregations Testing
Deployment	<ul style="list-style-type: none"> Parallelism Elasticity Fault tolerance Capacity planning Troubleshooting ksqlDB-specific considerations
Security	<ul style="list-style-type: none"> Security Overview Access Control Examples ksqlDB-specific considerations
Monitoring	<ul style="list-style-type: none"> JMX Confluent Control Center ksqlDB-specific Considerations

Confluent offers instructor-led courses in both traditional and virtual classroom formats, as well as in a self-paced format. Please visit <http://confluent.io/training> for more information.