

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.

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 available through the Confluent Self-Paced Subscription. Visit confluent.io/training for more information.

Disclaimer: Subscriptions purchased with Training Credits will have an end date matching the Training Credits order.