

# Cloudera Kafka Training

## *COURSE CONTENT*

### GET IN TOUCH



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## About Multisoft

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## About Course

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Cloudera Kafka Training by Multisoft Systems is designed to help professionals master real-time data streaming and event-driven architectures. Apache Kafka is an open-source distributed event streaming platform used by enterprises for building high-performance data pipelines, real-time analytics, and event-driven applications.

## Module 1: Kafka Overview

- ✓ High-Level Architecture
- ✓ Common Use Cases
- ✓ Cloudera's Distribution of Apache Kafka

## Module 2: Deploying Apache Kafka

- ✓ System Requirements and Dependencies
- ✓ Service Roles
- ✓ Planning Your Deployment Deploying Kafka Services
- ✓ Exercise: Preparing the Exercise Environment
- ✓ Exercise: Installing the Kafka Service with Cloudera Manager
- ✓ Exercise (optional): Create Metrics Dashboards
- ✓ Exercise (optional): Using the CM API

## Module 3: Kafka Command Line Basics

- ✓ Create and Manage Topics
- ✓ Running Producers and Consumers

## Module 4: Using Streams Messaging Manager (SMM)

- ✓ Streams Messaging Manager Overview
- ✓ Producers, Topics, and Consumers
- ✓ Data Explorer
- ✓ Brokers
- ✓ Topic Management
- ✓ Exercise: Managing Topics using the CLI
- ✓ Exercise: Connecting Producers and Consumers from the Command Line

## Module 5: Kafka Java API Basics

- ✓ Overview of Kafka's APIs

- ✓ Topic Management from the Java API
- ✓ Exercise (optional): Managing Kafka Topics Using the Java API
- ✓ Using Producers and Consumers from the Java API

## Module 6: Improving Availability through Replication

- ✓ Replication
- ✓ Exercise: Observing Downtime Due to Broker Failure
- ✓ Considerations for the Replication Factor
- ✓ Exercise: Adding Replicas to Improve Availability

## Module 7: Improving Application Scalability

- ✓ Partitioning
- ✓ How Messages are Partitioned
- ✓ Exercise: Observing How Partitioning Affects Performance
- ✓ Consumer Groups
- ✓ Exercise: Implementing Consumer Groups
- ✓ Consumer Rebalancing
- ✓ Exercise: Using a Key to Control Partition Assignment

## Module 8: Improving Application Reliability

- ✓ Delivery Semantics
- ✓ Demonstration (optional): ISRs vs. ACKs
- ✓ Producer Delivery
- ✓ Exercise: Idempotent Producer
- ✓ Transactions
- ✓ Exercise: Transactional Producers and Consumers
- ✓ Handling Consumer Failure
- ✓ Offset Management
- ✓ Exercise: Detecting and Suppressing Duplicate Messages
- ✓ Exercise: Handling Invalid Records

- ✓ Handling Producer Failure

## Module 9: Analyzing Kafka Clusters with SMM

- ✓ End-to-End Latency
- ✓ Notifiers
- ✓ Alert Policies
- ✓ Use Cases

## Module 10: Monitoring Kafka

- ✓ Monitoring Overview
- ✓ Monitoring using Cloudera Manager
- ✓ Charts and Reports in CM
- ✓ Monitoring Recommendations
- ✓ Metrics for Troubleshooting
- ✓ Diagnosing Service Failure
- ✓ Exercise: Monitoring Kafka

## Module 11: Managing Kafka

- ✓ Managing Kafka Topic Storage
- ✓ Demonstration (optional): Message Retention Period
- ✓ Log Cleanup and Collection
- ✓ Rebalancing Partitions
- ✓ Cruise Control
- ✓ Exercise: Installing Cruise Control
- ✓ Exercise: Troubleshooting Kafka Topics
- ✓ Unclean Leader Election
- ✓ Exercise: Unclean Leader Election
- ✓ Adding and Removing Brokers
- ✓ Exercise: Adding and Removing Brokers
- ✓ Best Practices

## Module 12: Message Structure, Format, and Versioning

- ✓ Message Structure
- ✓ Schema Registry
- ✓ Defining Schemas
- ✓ Schema Evolution and Versioning
- ✓ Schema Registry Client
- ✓ Exercise: Using an Avro Schema

## Module 13: Improving Application Performance

- ✓ Message Size
- ✓ Batching
- ✓ Compression
- ✓ Exercise: Observing How Compression Affects Performance

## Module 14: Improving Kafka Service Performance

- ✓ Performance Tuning Strategies for the Administrator
- ✓ Cluster Sizing
- ✓ Exercise: Planning Capacity Needed for a Use Case

## Module 15: Securing the Kafka Cluster

- ✓ Encryption
- ✓ Authentication
- ✓ Authorization
- ✓ Auditing