

# Apache Kafka Fundamentals

**Duration:** 7 Days

**Format:** Instructor-Led Training with Hands-on Labs

**Target Audience:** System Administrators, Developers, DevOps Engineers, and Integration Engineers

## Day 1 — Introduction to Event Streaming & Kafka

### Topics

- Introduction to Event Streaming
- Messaging Systems Overview
- Kafka vs Traditional Messaging Systems
- Kafka Architecture Overview
- Core Kafka Components
  - Broker
  - Topic
  - Partition
  - Producer
  - Consumer
- Kafka Use Cases in Enterprise Systems

### Lab

- Install Java and Kafka
- Start Kafka and Zookeeper
- Create the first Kafka topic
- Produce and consume messages using CLI tools

## Day 2 — Kafka Installation & Basic Configuration

### Topics

- Kafka Installation Methods
- Kafka Directory Structure
- Basic Broker Configuration
- Zookeeper Overview
- Kafka Cluster Basics
- Topic Creation and Management

### Lab

- Install Kafka on Linux
- Configure a single Kafka broker
- Create and describe topics
- Test message publishing and consumption

## Day 3 — Kafka Producers

### Topics

- Producer Concept
- Message Structure
- Producer Configuration Basics
- Message Delivery Concepts
- Partitioning Overview

## Lab

- Send messages using the Kafka producer CLI
- Create a simple producer application
- Test message publishing

## Day 4 — Kafka Consumers & Consumer Groups

### Topics

- Consumer Concept
- Consumer Groups
- Offset Management Basics
- Message Consumption Flow
- Parallel Processing Concept

## Lab

- Create a consumer group
- Consume messages from topics
- Test consumer group behavior

## Day 5 — Kafka Topics, Partitions & Replication

### Topics

- Topic Structure
- Partitions Overview
- Replication Concept

- Leader and Follower Brokers
- Data Durability in Kafka

## **Lab**

- Create multi-partition topics
- Configure replication
- Observe message distribution

# **Day 6 — Kafka Monitoring & Basic Troubleshooting**

## **Topics**

- Kafka Logs and Monitoring
- Basic Performance Monitoring
- Consumer Lag Concept
- Common Kafka Issues
- Troubleshooting Approach

## **Lab**

- Monitor Kafka broker logs
- Check topic status
- Identify consumer lag

# Day 7 — Kafka Use Cases & Best Practices

## Topics

- Kafka Integration Architecture
- Kafka in Microservices
- Kafka with Databases
- High-Level Kafka Security Overview
- Kafka Deployment Best Practices
- Course Review and Q&A

## Lab

- End-to-end Kafka message pipeline
- Simple event streaming demonstration

## Certification (Optional)

Participants interested in certification can prepare for:

- **Confluent Certified Developer for Apache Kafka (CCDAK)**