

INFOSOFT IT SOLUTIONS

Training | Projects | Placements

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Apache Kafka Course Content

1. Introduction to Big Data and Apache Kafka

- Introduction to Big Data
- Big Data Analytics
- Hadoop Basics
 - HDFS
 - MapReduce
 - Hive
 - HBase
- Need for Kafka
- What is Kafka?
- Kafka Features
- Kafka Concepts

- Kafka Architecture
- Kafka Components
- ZooKeeper
- Where is Kafka Used?
- Kafka Installation
- Kafka Cluster
- Types of Kafka Clusters
- Configuring Single Node Single Broker Cluster

Hands on:

- Kafka Installation
- Implementing Single Node-Single Broker Cluster

2. Kafka Producer

- Configuring Single Node Multi Broker Cluster
- Constructing a Kafka Producer
- Sending a Message to Kafka
- Producing Keyed and Non-Keyed Messages
- Sending a Message Synchronously & Asynchronously
- Configuring Producers

- Serializers
- Serializing Using Apache Avro

Hands on

- Working with Single Node Multi Broker Cluster
- Creating a Kafka Producer
- Configuring a Kafka Producer
- Sending a Message Synchronously & Asynchronously

3. Kafka Consumer

- Consumers and Consumer Groups
- Standalone Consumer
- Consumer Groups and Partition Rebalance
- Creating a Kafka Consumer
- Subscribing to Topics
- The Poll Loop
- Configuring Consumers
- Commits and Offsets
- Rebalance Listeners

- Consuming Records with Specific Offsets
- Creating a Kafka Consumer
- Configuring a Kafka Consumer
- Working with Offsets

Hands

On:

- Creating a Kafka Consumer
- Configuring a Kafka Consumer
- Working with Offsets

4. **Kafka Internals**

- Cluster Membership
- The Controller
- Replication
- Request Processing
- Physical Storage

- Reliability

- Broker Configuration
- Using Producers in a Reliable System
- Using Consumers in a Reliable System
- Validating System Reliability
- Performance Tuning Kafka

Hands On:

- Create topic with partition & replication factor 3 and execute it on multi-broker cluster
- Show fault tolerance by shutting down 1 Broker and serving its partition from another broker

5. Kafka Cluster Architectures & Administering Kafka

- Use Cases - Cross-Cluster Mirroring
- Multi-Cluster Architectures
- Apache Kafka's MirrorMaker
- Other Cross-Cluster Mirroring Solutions
- Topic Operations
- Consumer Groups
- Dynamic Configuration Changes
- Partition Management

- Consuming and Producing
- Unsafe operations

Hands

on:

- Topic Operations
- Consumer Group Operations
- Partition Operations
- Consumer and Producer Operations

6. Kafka Monitoring and Kafka Connect

- Considerations When Building Data Pipelines
- Metric Basics
- Kafka Broker Metrics
- Client Monitoring
- Lag Monitoring
- End-to-End Monitoring
- Kafka Connect
- When to Use Kafka Connect?

- Kafka connect properties

Hands on:

- Kafka Connect

7. Kafka Stream Processing

- Stream Processing
- Stream-Processing Concepts
- Stream-Processing Design Patterns
- Kafka Streams by Example
- Kafka Stream:Architecture Overview

Hands on:

- Kafka Streams
- Word Count Stream Processing

8. Integration of Kafka With Hadoop, Storm and Spark

- Apache Hadoop Basics
- Hadoop Configuration
- Kafka Integration with Hadoop
- Apache Storm Basics

- Configuration of Storm
- Integration of Kafka with Storm
- Apache Spark Basics
- Spark Configuration
- Kafka Integration with Spark

Hands On:

- Kafka integration with Hadoop
- Kafka integration with Storm
- Kafka integration with Spark

9.Integration of Kafka With Talend and Cassandra

- Flume Basics
- Integration of Kafka with Flume
- Cassandra Basics such as and KeySpace and Table Creation
- Integration of Kafka with Cassandra
- Talend Basics
- Integration of Kafka with Talend

Hands On:

- Kafka demo with Flume

- Kafka demo with Cassandra
- Kafka demo with Talend

10.Kafka Administration

- Setting up and Configuring Multi Node and Zookeeper Multi Node Multi Broker Cluster
- Configuring Apache Kafka Security
- Configuring High Availability and Consistency for Apache Kafka
- Configuring Apache Kafka for Performance and Resource Management
- Viewing Apache Kafka Metrics
- Working with Apache Kafka Logs

11.Course Deliverables

- Workshop style coaching
- Interactive approach
- Course material

- Hands on practice exercises for each topic
- Quiz at the end of each major topic
- Tips and techniques on Confluent Certified Developer for Apache Kafka (CCDAK)



