**Apache Kafka with Confluent**

Duration: 14 hours

**Course Objectives**

This short term course of 14 hours will make sure all participants will get good hands on knowledge in Confluent Kafka fundamentals, setting up Confluent Kafka cluster setup, working with Kafka Connect, Kafka Streams and KSQL. This course also gives knowledge in setting up Kafka in Dockers and Kubernetes. Participants also learn performance tuning in Kafka environment.

Day Wise Curriculum:

Day 1:

1. Kafka Architecture
   1. Review Kafka’s architecture with a focus on scalability, fault tolerance, and high availability.
   2. Discuss Kafka’s internals: replication, leader/follower concepts, and log compaction

Learning outcome: Participants will understand Kafka architecture

Day 2:

1. Confluent Platform Components
   1. Detailed overview of Confluent Platform components: Confluent Schema Registry, Confluent Control Center, and Confluent Replicator.
   2. Use cases and best practices for each component.

Learning outcome: Participants will understand Confluent Platform Components and setting up Confluent Kafka cluster setup.

Day 3:

1. Data Integration with Kafka Connect
   1. Sink and Source connectors, connector configurations, and error handling
   2. Integration patterns with database, cloud services, and other systems.

Learning outcome: Participants will learn working with Kafka Connect.

Day 4:

1. Kafka Streams and KSQL
   1. Stream processing with Kafka Streams: stateful operations, windowing, and interactive queries
   2. Introduction to KSQL: Streaming SQL for Kafka, real-time analytics, and complex event processing

Learning outcome: Participants will understand Kafka Streams and KSQL architecture and API concepts.

Day 5:

1. Multi-Datacenter Replication
   1. Implementing multi-datacenter replication with Kafka: Active-Active and Active-Passive replication strategies.
   2. Disaster recovery planning and failover strategies.

Learning outcome: Participants will learn implementing multi detacenter Kafka Clusters.

Day 6:

1. Kafka Performance Tuning
   1. Performance optimization techniques for Kafka clusters: tuning configurations, partitioning strategies, and hardware considerations.
   2. Benchmarking Kafka clusters and analysing performance metrics.

Learning outcome: Participants will learn Kafka Cluster performance tuning technics.

Day 7:

1. Production Deployment and Operations
   1. Containerization with Docker, orchestration with Kubernetes, and Cloud deployment options
   2. Best practices for monitoring, alerting and troubleshooting Kafka clusters in production.

Learning outcome: Participants will learn setting up Kafka in Docker and Kubernetes.