**KAFKA:**

Apache kafka is an open-source distributed event streaming platform.

-creating real time stream

-processing real time stream

-continous sending the messages or event to the kafka server is called event streaming.

-Kafka was originally developed at linkedin, and was subsequently open sourced in early 2011.

-Kafka-Messaging System

-Pub/Sub Model:

publisher and subscriber

-producer will produce a messages to the broker and subscriber/consumer will get the messages from the broker.

Kafka Architecture & Components:

-Kafka Components:

* + producer
  + consumer
  + broker
  + cluster
  + topic
  + partitions
  + offset
  + consumer groups
  + zookeeper
* The Kafka broker is nothing but just a server. In simple word, A broker is just an intermediate entity that helps in message exchanges between a producer and consumer.
* There can be one or more Kafka brokers in the kafka clusters.
* Topic- It specifies the category of the messages or the classification of the message. Listeners can then just respond to the messages that belong to the topics they are listening on.
* Partitions- partitions are done in the topic to make it easier.
* Offset- offset is a number made to each messages in the partitions.
* Consumer groups- n no. of consumers and make into the single consumers to share the work load to make the better output.(depends on the no of partitions we make the no of consumer groups.)
* Zookeeper- zookeeper is a prerequisite for kafka. Kafka is a distributed system, and it uses zookeeper for coordination and to track the status of kafka clusters nodes. It also keeps track of kafka topics, partitions, offsets etc.

Kafka Installation:

* Open Source- Apache Kafka
* Commercial distribution – confluent kafka
* Managed kafka service- confluent & Aws

-download kafka offset explorer

Command Line Interface:

* We need to start the zookeeper then the broker/kafka.
* Create a topic-need to take the decision how many partitions need to be done and replication factor.
* Go to the folder and open the terminal-**bin/zookeeper-server-start.sh config/zookeeper.properties** (for mac) follow same for windows path
* Default port zookeeper: 2181
* Kafka/broker: 9092
* Start the kafka server- **bin/kafka-server-start.sh config/server.properties** follow same for window path
* To start the topic: **bin/kafka-topics.sh --bootstrap.server localhost:9092 --topic name-topic --partitions 3 --replication-factor 1**

We can run Apache Kafka without zookeeper:

* We can do with Kafka with Kraft.
* Eliminating system complexities.
* Data redundancy while running kafka without zookeeper.
* Simplified kafka architecture without any third-party service dependencies.

Kafka Using Docker:

Producer Example using springboot:

* Create a springboot project with project type(maven) and also choose the dependencies which are required like Spring for Apache Kafka.
* Start the Kafka server -follow the above steps.

<https://youtube.com/playlist?list=PLVz2XdJiJQxwpWGoNokohsSW2CysI6lDc>