Apache Kafka

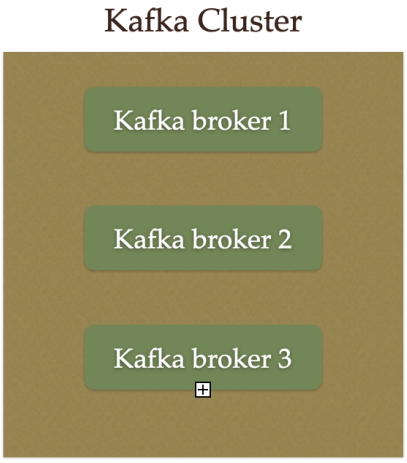
Apache Kafka is an open-source distributed event streaming platform.

Apache Kafka Core Concepts

1. Kafka Cluster
2. Kafka Broker
3. Kafka Producer
4. Kafka Consumer
5. Kafka Topic
6. Kafka Partitions
7. Kafka Offsets
8. Kafka Consumer Group
9. Kafka producer Group
10. Zookeeper

1. Kafka Cluster

- Kafka is a distributed system
- it acts as a cluster
- A Kafka cluster consists of brokers



2. Kafka Broker

- The kafka server is known as kafka broker.
- It acts as a message broker between producer and consumer.
- The producer and consumer don't interact directly. They use the Kafka server as an agent or a broker to exchange messages.

3. Kafka Producer

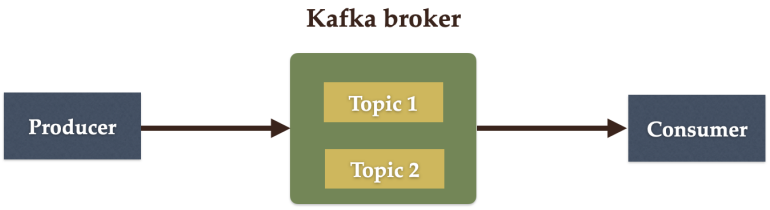
- Producer is an application that sends messages.
- It does not send messages directly to the recipient. It sends messages only to the Kafka server.

4. Kafka Consumer

- Consumer is an application that reads messages from the Kafka server.
- The consumers are the recipients.

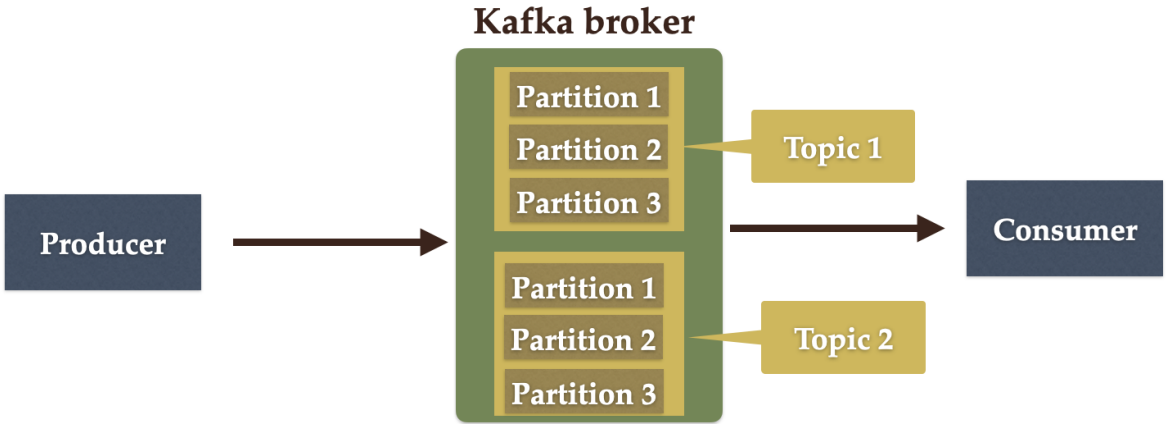
5. Kafka Topic

- Topic is like a table in a database or folder in a file system.
- Topic is identified by a name.
- can have any number of topics.



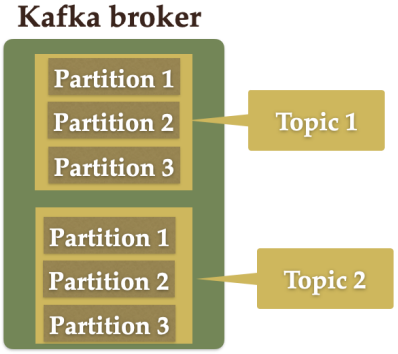
6. Kafka Partitions

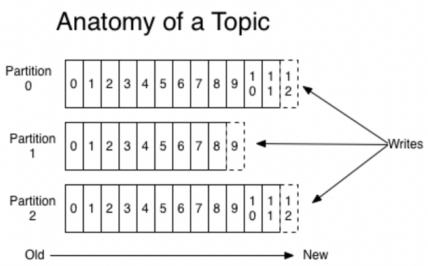
- Kafka topics are divided into a number of partitions, which contain records
- But the capacity of data can be enormous and it may not be possible to store in a single computer. Therefore it will be partitioned into multiple parts and distributed among multiple computers since Kafka is a distributed system.



7. Kafka Offsets

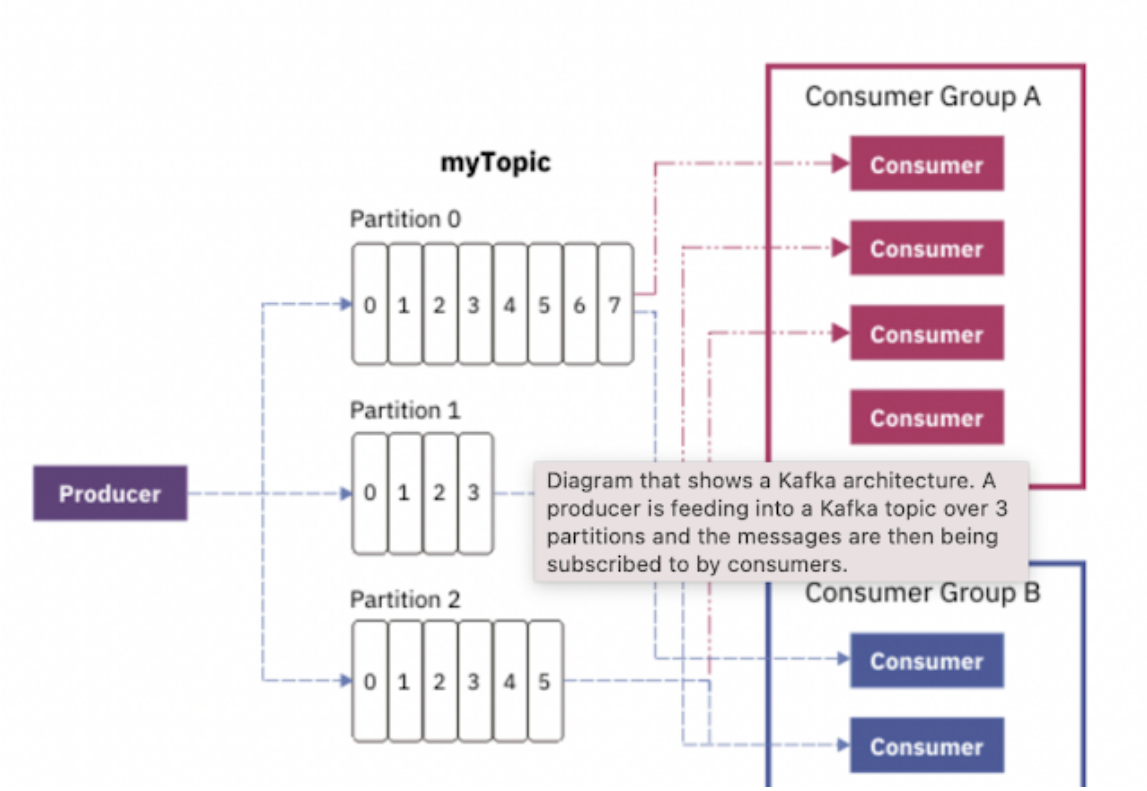
- Offset is a sequence of ids given to messages as they arrive at a partition. Once the offset is assigned it will never be changed. The first message gets an offset zero. The next message receives an offset one and so on.





8. Kafka Consumer Group

A consumer group contains one or more consumers working together to process the messages.



9. Kafka Producer Group

A producer group contains one or more producers working together to produce the messages.

10. Zookeeper

Zookeeper **acts a Kafka cluster coordinator that manages cluster membership of brokers, producers, and consumers participating in message transfers via Kafka**.

Installation and setup:

1. Download Kafka
2. Extract Kafka zip and rename kafka

3. Cd to kafka folder and start zookeeper

```
bin/zookeeper-server-start.sh config/zookeeper.properties
```

4. Open another terminal,Cd to kafka folder and start kafka broker

```
bin/kafka-server-start.sh config/server.properties
```

5. Endpoint (controller end point)

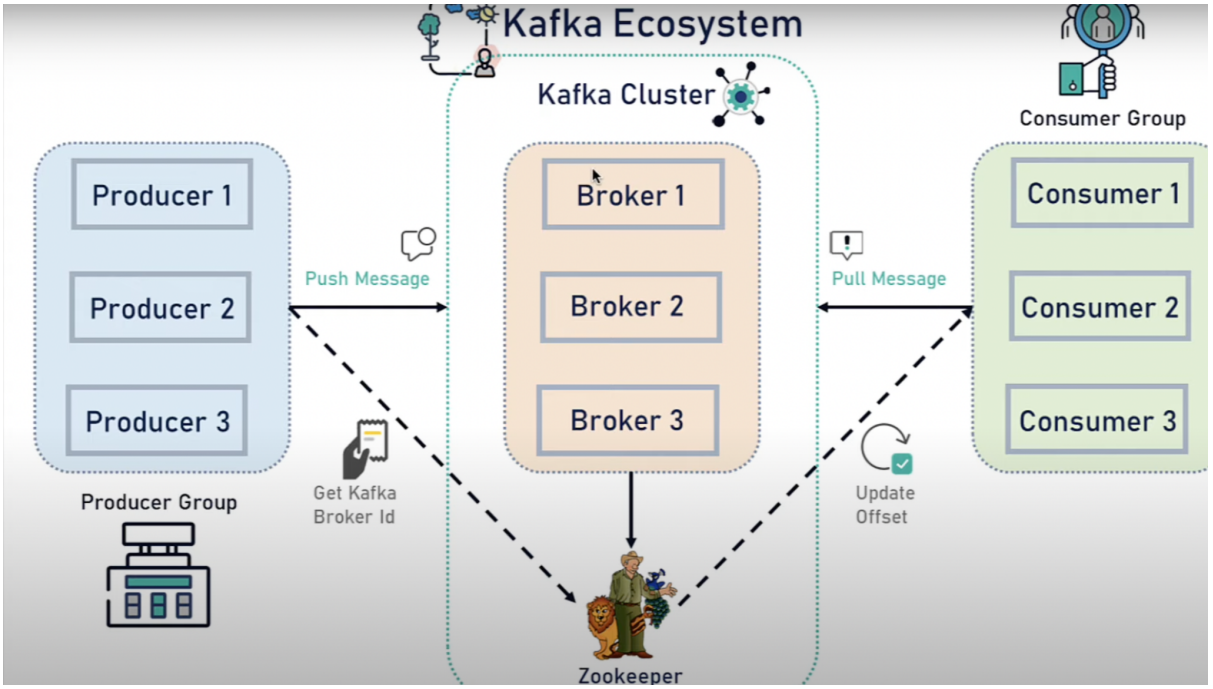
http://localhost:8080/kafka/produce?message=java developer

6. To read all data from topic

bin/kafka-console-consumer.sh --topic divyaKafka --from-beginning --bootstrap-server localhost:9092

Working of Kafka:

1. When the api is triggered, the api calls kafka producer with the message
2. The kafka producer writes message to the kafka topic by using kafka template.
3. In kafka consumer we create a method to consume/subscribe to the topic
4. Kafka Listener is used to listen/consume/subscribe to the topic
5. Whenever Kafka producer sends message to the kafka topic, then the kafka consumer will consume the messages and do actions as inside the consume method.



TO CREATE KAFKA TOPIC

Cd bin

./kafka-topics.sh --create --topic firgo --bootstrap-server localhost:9092

firgo is topic name