## ****3. Setting Up Kafka with Docker****

### ****Step 1: Create a**** docker-compose.yml ****File****

Create and edit the docker-compose.yml file:

Copy and paste the following .

version: '3'services:

zookeeper:

image: confluentinc/cp-zookeeper:latest

container\_name: zookeeper

environment:

ZOOKEEPER\_CLIENT\_PORT: 2181

ZOOKEEPER\_TICK\_TIME: 2000

ports:

- "2181:2181"

kafka-broker:

image: confluentinc/cp-kafka:latest

container\_name: kafka-broker

depends\_on:

- zookeeper

ports:

- "9092:9092"

environment:

KAFKA\_BROKER\_ID: 1

KAFKA\_ZOOKEEPER\_CONNECT: 'zookeeper:2181'

KAFKA\_LISTENER\_SECURITY\_PROTOCOL\_MAP: PLAINTEXT:PLAINTEXT,PLAINTEXT\_INTERNAL:PLAINTEXT

KAFKA\_LISTENERS: PLAINTEXT://0.0.0.0:9092,PLAINTEXT\_INTERNAL://localhost:29092

KAFKA\_ADVERTISED\_LISTENERS: PLAINTEXT://kafka-broker:9092,PLAINTEXT\_INTERNAL://localhost:29092

KAFKA\_AUTO\_CREATE\_TOPICS\_ENABLE: "true"

KAFKA\_OFFSETS\_TOPIC\_REPLICATION\_FACTOR: 1

KAFKA\_LOG\_RETENTION\_HOURS: 168

KAFKA\_MESSAGE\_MAX\_BYTES: 10485760

## ****4. Deploying the Kafka Environment****

### ****Step 2: Start Kafka and Zookeeper****

Run the following command to start the services:

sh

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docker-compose up -d

### ****Step 3: Verify Running Containers****

Check if the containers are running:

sh

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docker ps

Expected output:

bash

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CONTAINER ID IMAGE STATUS NAMES

xxxxx confluentinc/cp-kafka:latest Up XX seconds kafka-broker

xxxxx confluentinc/cp-zookeeper:latest Up XX seconds zookeeper

## ****5. Creating a Kafka Topic****

### ****Step 4: Create a Kafka Topic****

To create a new topic inside the running Kafka container, use:

sh

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docker exec -it kafka-broker kafka-topics --create \

--bootstrap-server kafka-broker:9092 \

--replication-factor 1 --partitions 1 \

--topic my-topic

**Explanation:**

* --bootstrap-server kafka-broker:9092 → Connects to the Kafka broker.
* --replication-factor 1 → Since it's a single-node Kafka, this must be 1.
* --partitions 1 → Creates one partition.
* --topic my-topic → Topic name.

### ****Step 5: Verify Topic Creation****

To confirm the topic was created, run:

sh

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docker exec -it kafka-broker kafka-topics --list \

--bootstrap-server kafka-broker:9092

Expected output:

perl

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my-topic

## ****6. Producing and Consuming Messages****

### ****Step 6: Start a Kafka Producer****

To send messages to the topic, run:

sh

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docker exec -it kafka-broker kafka-console-producer \

--bootstrap-server kafka-broker:9092 \

--topic my-topic

After running this, type messages and press **Enter** to send.

### ****Step 7: Start a Kafka Consumer****

To read messages from the topic, open another terminal and run:

sh

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docker exec -it kafka-broker kafka-console-consumer \

--bootstrap-server kafka-broker:9092 \

--topic my-topic \

--from-beginning