# SASL FOR KAFKA WITH DOCKER-COMPOSE

## 1. SASL CONFIGURE FOR SASL IN DOCKER-COMPOSE.YML

### I. ZOOKEEPER CONFIGURATION :

```
version: '3.7'
services:
  zookeeper:
    image: 'confluentinc/cp-zookeeper'
    container_name: zookeeper
    ports:
      - '2181:2181'
    environment:
      ZOOKEEPER_CLIENT_PORT: 2181
      ZOOKEEPER_TICK_TIME: 2000
      ZOOKEEPER_SASL_ENABLED: 'false'
```

Here we are not want to sasl enabled for the zookeeper server zookeeper wont authenticate the user only the brokers will authenticate the user or Client

### II. KAFKA BROKER-1 CONFIGURATION :

```
kafka-1:
  image: 'confluentinc/cp-kafka:latest'
  container_name: kafka-1
```

```yaml
  depends_on:
   - zookeeper
  ports:
   - '9094:9094'
  environment:
   KAFKA_BROKER_ID: 1
   KAFKA_ZOOKEEPER_CONNECT: zookeeper:2181
   KAFKA_ADVERTISED_LISTENERS:
PLAINTEXT://localhost:9094,SASL_PLAINTEXT://kafka-1:9093
   #KAFKA_INTER_BROKER_LISTENER_NAME: INTERNAL
   KAFKA_LISTENER_SECURITY_PROTOCOL_MAP:
PLAINTEXT:PLAINTEXT,SASL_PLAINTEXT:SASL_PLAINTEXT
   KAFKA_OFFSETS_TOPIC_REPLICATION_FACTOR: 2
   ZOOKEEPER_SASL_ENABLED: 'false'
   KAFKA_SECURITY_INTER_BROKER_PROTOCOL: SASL_PLAINTEXT

KAFKA_SASL_MECHANISM_INTER_BROKER_PROTOCOL: PLAIN
   KAFKA_SASL_ENABLED_MECHANISMS: PLAIN
   KAFKA_OPTS:
"-Djava.security.auth.login.config=/etc/kafka/configs/kafka_server_jaas.conf
         -Dzookeeper.sasl.client=false"
```

- We are mentioning the port for sasl is 9093 in advertised listeners variable.
- Zookeeper sasl is disabled bcz we dont need for authentication from the zookeeper side.
- We have set the inter broker security protocol is SASL_PLAINTEXT.
- And also set inter broker sals mechanism is plain mechanism.

- KAFKA_OPTS Variable Which is essential variable when implementing the authentications (sasl_plaintext, sasl_ssl , etc )
- Jaas files are the files which contains the login credentials for authentication for when client requests and we can specify there which login module we are using to authenticate user or client

These settings are same for all rest of brokers and then we need to check how sasl works

---

# 2. Kafka_jaas.conf FILE for user credentials

Kafka_jaas.conf file  :

```
KafkaServer {
org.apache.kafka.common.security.plain.PlainLoginModule required
username="admin"
password="adminsecret"
user_admin="adminsecret"
user_kafkauser="allkeys";
                              };
```

Here we are using the plain login module means the user will authenticate by the username and passwd creds

---

# 3. client _jaas.properties file :

examples

❖ First user = **kafka_user**   kafkauser_jaas.properties

sasl.jaas.config=org.apache.kafka.common.security.plain.PlainLoginM
odule required username="kafkauser" password="allkeys";
security.protocol=SASL_PLAINTEXT
sasl.mechanism=PLAIN

❖ second  user = **admin**   admin_jaas.properties
sasl.jaas.config=org.apache.kafka.common.security.plain.PlainLoginM
odule required username="admin" password="admin_secret";
security.protocol=SASL_PLAINTEXT
sasl.mechanism=PLAIN

---

# 4.Create volumes :

Creating volumes for mounting the
kafka_server_jaas.properties,  client_jaas.properties files
inside the containers of each brokers

- /home/charan/configs:/etc/kafka/configs

---

# 5. Create topic for sasl test:

Creating topic with unsecure port  Sasl-test topic

Kafka-topics --create --bootstrap-server kafka-1:9092 --topic sasl-test

---

# 6.  Produce with secure port without client props:

Kafka-console-producer --broker-list kafka-1:9093 --topic sasl-test

Which will fails bcz which is secure port that needs client to be authenticated by its properties so It fails

---

# 7. Produce message with secure port using properties files:

Producing with kafkauser_jaas.properties file

Kafka-console-producer --broker-list kafka-1:9093 --topic sasl-test

Now it will works that kafkauser authenticated and he is able to produce messages.

---

# 8. Consume message with admin.prop:

Consume messages with amdin_jaas.properties

Kafka-console-consumer --bootstrap-server kafka-1:9093 --topic sasl-test --from-beginning

It works admin is able to consume the messages

---

# The complete docker-compose file

```
version: '3.7'
services:
  zookeeper:
    image: 'confluentinc/cp-zookeeper'
    container_name: zookeeper
    ports:
      - '2181:2181'
    environment:
```

```yaml
      ZOOKEEPER_CLIENT_PORT: 2181
      ZOOKEEPER_TICK_TIME: 2000
      ZOOKEEPER_SASL_ENABLED: 'false'
    restart: always
  kafka-1:
    image: 'confluentinc/cp-kafka:latest'
    container_name: kafka-1
    depends_on:
      - zookeeper
    ports:
      - '9094:9094'
    environment:
      KAFKA_BROKER_ID: 1
      KAFKA_ZOOKEEPER_CONNECT: zookeeper:2181
      KAFKA_ADVERTISED_LISTENERS:
PLAINTEXT://localhost:9094,SASL_PLAINTEXT://kafka-1:9093
      #KAFKA_INTER_BROKER_LISTENER_NAME: INTERNAL
      KAFKA_LISTENER_SECURITY_PROTOCOL_MAP:
PLAINTEXT:PLAINTEXT,SASL_PLAINTEXT:SASL_PLAINTEXT
      KAFKA_OFFSETS_TOPIC_REPLICATION_FACTOR: 2
      ZOOKEEPER_SASL_ENABLED: 'false'
      KAFKA_SECURITY_INTER_BROKER_PROTOCOL:
SASL_PLAINTEXT
      KAFKA_SASL_MECHANISM_INTER_BROKER_PROTOCOL:
PLAIN
      KAFKA_SASL_ENABLED_MECHANISMS: PLAIN
      KAFKA_OPTS:
"-Djava.security.auth.login.config=/etc/kafka/configs/kafka_server_jaas
.conf
              -Dzookeeper.sasl.client=false"
    volumes:
        - /home/charan/configs:/etc/kafka/configs
    restart: always


  kafka-2:
    image: 'confluentinc/cp-kafka:latest'
```

```yaml
    container_name: kafka-2
    depends_on:
      - zookeeper
      - kafka-1
    ports:
      - '9095:9095'
    environment:
      KAFKA_BROKER_ID: 2
      KAFKA_ZOOKEEPER_CONNECT: zookeeper:2181
      ZOOKEEPER_SASL_ENABLED: 'false'
      KAFKA_ADVERTISED_LISTENERS:
PLAINTEXT://localhost:9095,SASL_PLAINTEXT://kafka-2:9093
      # KAFKA_INTER_BROKER_LISTENER_NAME: INTERNAL
      KAFKA_LISTENER_SECURITY_PROTOCOL_MAP:
PLAINTEXT:PLAINTEXT,SASL_PLAINTEXT:SASL_PLAINTEXT
      KAFKA_OFFSETS_TOPIC_REPLICATION_FACTOR: 2
      KAFKA_SECURITY_INTER_BROKER_PROTOCOL:
SASL_PLAINTEXT
      KAFKA_SASL_MECHANISM_INTER_BROKER_PROTOCOL:
PLAIN
      KAFKA_SASL_ENABLED_MECHANISMS: PLAIN
      KAFKA_OPTS:
"-Djava.security.auth.login.config=/etc/kafka/configs/kafka_server_jaas
.conf
          -Dzookeeper.sasl.client=false"
    volumes:
        - /home/charan/configs:/etc/kafka/configs
    restart: always


  kafka-3:
    image: 'confluentinc/cp-kafka:latest'
    container_name: kafka-3
    depends_on:
      - zookeeper
      - kafka-1
      - kafka-2
```

```yaml
    ports:
      - '9096:9096'
    environment:
      KAFKA_BROKER_ID: 3
      KAFKA_ZOOKEEPER_CONNECT: zookeeper:2181
      ZOOKEEPER_SASL_ENABLED: 'false'
      KAFKA_ADVERTISED_LISTENERS:
PLAINTEXT://localhost:9096,SASL_PLAINTEXT://kafka-3:9093
      #KAFKA_INTER_BROKER_LISTENER_NAME: SASL
_PLAINTEXT
      KAFKA_LISTENER_SECURITY_PROTOCOL_MAP:
PLAINTEXT:PLAINTEXT,SASL_PLAINTEXT:SASL_PLAINTEXT
      KAFKA_OFFSETS_TOPIC_REPLICATION_FACTOR: 2
      KAFKA_SECURITY_INTER_BROKER_PROTOCOL:
SASL_PLAINTEXT
      KAFKA_SASL_MECHANISM_INTER_BROKER_PROTOCOL:
PLAIN
      KAFKA_SASL_ENABLED_MECHANISMS: PLAIN
      KAFKA_OPTS:
"-Djava.security.auth.login.config=/etc/kafka/configs/kafka_server_jaas
.conf
              -Dzookeeper.sasl.client=false"
    volumes:
        - /home/charan/configs:/etc/kafka/configs
    restart: always
```