

Day 7 - KAFKA Concepts

Step 1: Start Kafka and Zookeeper

1. Start Zookeeper:

2. Start server1, server2, server2 - Brokers

Step 2: Create Kafka Topics

1. Create a topic orders with 3 partitions and replication factor 2

```
[racit@192 ~ % kafka-topics.sh --create --topic orders --bootstrap-server localhost:9092 --partitions 3 --replication-factor 2  
Created topic orders.  
racit@192 ~ % ]
```

2. List all topics to verify

```
[racit@192 ~ % kafka-topics.sh --list --bootstrap-server localhost:9092  
orders  
[racit@192 ~ % ]
```

3. Describe the topic to see partitions and leaders info

```
[racit@192 ~]# kafka-topics.sh --describe --topic orders --bootstrap-server localhost:9092
Topic: orders    TopicId: kvuR_qr_R40060vRcmusnQ PartitionCount: 3      ReplicationFactor: 2      Configs:
          Topic: orders    Partition: 0    Leader: 0      Replicas: 0,2    Isr: 0,2
          Topic: orders    Partition: 1    Leader: 2      Replicas: 2,1    Isr: 2,1
          Topic: orders    Partition: 2    Leader: 1      Replicas: 1,0    Isr: 1,0
[racit@192 ~]
```

Step 3: Produce Messages

1. Start a Kafka Producer to send order messages and send few messages

```
[racit@192 ~ % kafka-console-producer.sh --topic orders --bootstrap-server localhost:9092  
>OrderID:1001,Item:Laptop,Quantity:2  
>OrderID:1002,Item:Mobile,Quantity:1  
>OrderID:1003,Item:Headphones,Quantity:5  
>
```

Step 4: Consume Messages and Observe Partitions

1. Start a Kafka Consumer with partition and offset info displayed

```
Last login: Fri Nov 14 00:01:35 on ttys022
racit@192 ~ % kafka-console-consumer.sh --topic orders --from-beginning --bootstrap-server localhost:9092 --property print.partition=true --property print.offset=true
Partition:0    Offset:0        OrderID:1001,Item:Laptop,Quantity:2
Partition:0    Offset:1        OrderID:1002,Item:Mobile,Quantity:1
Partition:0    Offset:2        OrderID:1003,Item:Headphones,Quantity:5
Partition:0    Offset:3        OrderID:1003,Item:Headphones,Quantity:5
Partition:0    Offset:4        OrderID:1003,Item:Headphones,Quantity:5
Partition:0    Offset:5        OrderID:1003,Item:Headphones,Quantity:5
Partition:0    Offset:6        OrderID:1003,Item:Headphones,Quantity:5
Partition:0    Offset:7        OrderID:1003,Item:Headphones,Quantity:5
|
```

Step 5: Use Consumer Groups

1. Start multiple consumers in the same group to simulate load balancing
2. Produce more messages and observe partition assignments among consumers.
3. List consumer groups

```
Last login: Fri Nov 14 00:20:58 on ttys024
racit@192 ~ % kafka-consumer-groups.sh --bootstrap-server localhost:9092 --list
retailGroup
racit@192 ~ % |
```

4. Describe a consumer group

```
racit@192 ~ % kafka-consumer-groups.sh --bootstrap-server localhost:9092 --describe --group retailGroup
GROUP      TOPIC     PARTITION  CURRENT-OFFSET  LAG--END-OFFSET  LAG      CONSUMER-ID          HOST          CLIENT-ID
retailGroup  orders      0           8              8               0      console-consumer-d66616cc-7338-4ffc-a13c-cae2989b9e4e  /127.0.0.1  console-consumer
retailGroup  orders      1           0              0               0      console-consumer-d66616cc-7338-4ffc-a13c-cae2989b9e4e  /127.0.0.1  console-consumer
retailGroup  orders      2           0              0               0      console-consumer-db4ded55-d304-4f3e-517d49d41381 /127.0.0.1  console-consumer
racit@192 ~ % |
```

Step 6: Explore Message Keys

1. Produce messages with keys to control partition assignment

```
racit@192 ~ % kafka-console-producer.sh --topic orders --bootstrap-server localhost:9092 --property parse.key=true --property key.separator=:
>1001:Laptop
>1003:Phone
>1002:Headphones
>1001:Hi
>1002>Hello
>|
```

2. Consumers in same group

```
racit@192 ~ % kafka-console-consumer.sh --topic orders --group retailGroup --bootstrap-server localhost:9092 --property print.partition=true --property print.offset=true
Partition:0    Offset:10      Hi
Partition:0    Offset:11      Hello
|
```

```
racit@192 ~ % kafka-console-consumer.sh --topic orders --group retailGroup --bootstrap-server localhost:9092 --property print.partition=true --property print.offset=true
|
```

Step 7: Explore Replication Factor

```
racit@192 ~ % kafka-topics.sh --describe --topic orders --bootstrap-server localhost:9092
Topic: orders  TopicId: kvuR_qr_R40060vRcmusnQ PartitionCount: 3      ReplicationFactor: 2      Configs:
  Topic: orders  Partition: 0    Leader: 0      Replicas: 0,2  Isr: 0,2
  Topic: orders  Partition: 1    Leader: 2      Replicas: 2,1  Isr: 2,1
  Topic: orders  Partition: 2    Leader: 1      Replicas: 1,0  Isr: 1,0
racit@192 ~ % |
```