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Link to github repo: [https://github.com/gordonfgz/OTOT\\_TASK\\_D.git](https://github.com/gordonfgz/OTOT_TASK_D.git)

Followed instructions here:

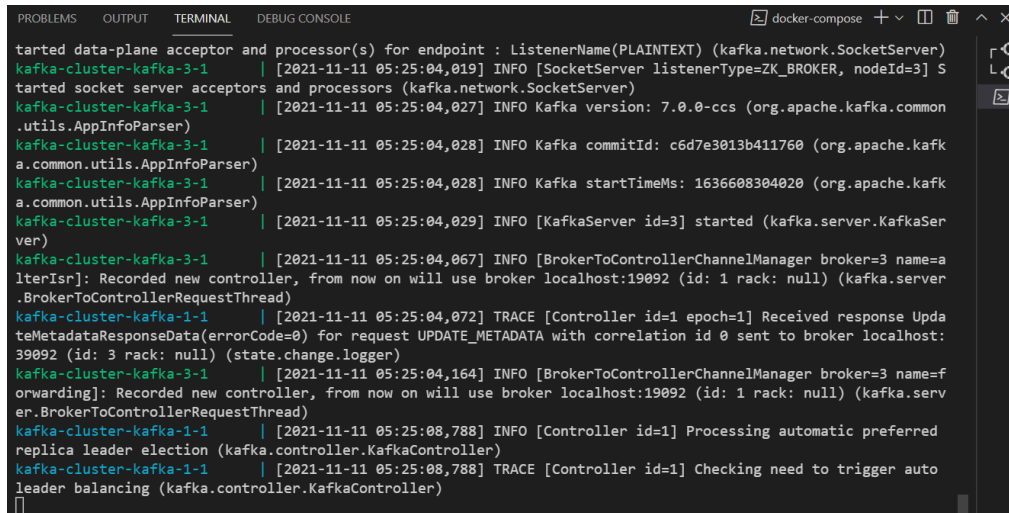
<https://docs.confluent.io/5.0.0/installation/docker/docs/installation/clustered-deployment.html#docker-setup-3-node>

How to setup:

first, cd cp-docker-images/examples/kafka-cluster

Then, docker-compose up

You should see the clusters firing up:

A terminal window titled 'docker-compose' showing the logs of a Kafka cluster startup. The logs include messages from 'kafka-cluster-kafka-3-1' and 'kafka-cluster-kafka-1-1'. Key messages include: 'started data-plane acceptor and processor(s) for endpoint : ListenerName(PLAINTEXT) (kafka.network.SocketServer)', 'INFO [SocketServer listenerType=ZK\_BROKER, nodeId=3] S', 'INFO Kafka version: 7.0.0-ccs (org.apache.kafka.common)', 'INFO Kafka commitId: c6d7e3013b411760 (org.apache.kafk', 'INFO Kafka startTimeMs: 1636608304020 (org.apache.kafk', 'INFO [KafkaServer id=3] started (kafka.server.KafkaSer', 'INFO [BrokerToControllerChannelManager broker=3 name=a', 'TRACE [Controller id=1 epoch=1] Received response Upda', 'INFO [BrokerToControllerChannelManager broker=3 name=f', 'INFO [Controller id=1] Processing automatic preferred', 'TRACE [Controller id=1] Checking need to trigger auto'.

```
PROBLEMS OUTPUT TERMINAL DEBUG CONSOLE
torted data-plane acceptor and processor(s) for endpoint : ListenerName(PLAINTEXT) (kafka.network.SocketServer)
kafka-cluster-kafka-3-1 | [2021-11-11 05:25:04,019] INFO [SocketServer listenerType=ZK_BROKER, nodeId=3] S
torted socket server acceptors and processors (kafka.network.SocketServer)
kafka-cluster-kafka-3-1 | [2021-11-11 05:25:04,027] INFO Kafka version: 7.0.0-ccs (org.apache.kafka.common
utils.AppInfoParser)
kafka-cluster-kafka-3-1 | [2021-11-11 05:25:04,028] INFO Kafka commitId: c6d7e3013b411760 (org.apache.kafk
a.common.utils.AppInfoParser)
kafka-cluster-kafka-3-1 | [2021-11-11 05:25:04,028] INFO Kafka startTimeMs: 1636608304020 (org.apache.kafk
a.common.utils.AppInfoParser)
kafka-cluster-kafka-3-1 | [2021-11-11 05:25:04,029] INFO [KafkaServer id=3] started (kafka.server.KafkaSer
ver)
kafka-cluster-kafka-3-1 | [2021-11-11 05:25:04,067] INFO [BrokerToControllerChannelManager broker=3 name=a
lterIsr]: Recorded new controller, from now on will use broker localhost:19092 (id: 1 rack: null) (kafka.serv
er.BrokerToControllerRequestThread)
kafka-cluster-kafka-1-1 | [2021-11-11 05:25:04,072] TRACE [Controller id=1 epoch=1] Received response Upda
teMetadataResponseData(errorCode=0) for request UPDATE_METADATA with correlation id 0 sent to broker localhost:
39092 (id: 3 rack: null) (state.change.logger)
kafka-cluster-kafka-3-1 | [2021-11-11 05:25:04,164] INFO [BrokerToControllerChannelManager broker=3 name=f
orwarding]: Recorded new controller, from now on will use broker localhost:19092 (id: 1 rack: null) (kafka.serv
er.BrokerToControllerRequestThread)
kafka-cluster-kafka-1-1 | [2021-11-11 05:25:08,788] INFO [Controller id=1] Processing automatic preferred
replica leader election (kafka.controller.KafkaController)
kafka-cluster-kafka-1-1 | [2021-11-11 05:25:08,788] TRACE [Controller id=1] Checking need to trigger auto
leader balancing (kafka.controller.KafkaController)
```

Open docker desktop to check that the kafka cluster is up and running with 3 zookeepers and 3 kafka brokers:



Next, create a topic called bar by running the following commands:

```
1.
cd cp-docker-images/examples/kafka-cluster
2.
docker run \
  --net=host \
  --rm \
  confluentinc/cp-kafka:5.0.0 \
  kafka-topics --create --topic bar --partitions 3 --replication-factor 3 --if-not-exists --zoo
keeper localhost:32181
```

Results:

```
gordonfgz@DESKTOP-0AU805U:/mnt/c/Users/gordo/OneDrive/Desktop/School/CS3219/OTOT_TASK_D$ cd cp-docker-images
gordonfgz@DESKTOP-0AU805U:/mnt/c/Users/gordo/OneDrive/Desktop/School/CS3219/OTOT_TASK_D/cp-docker-images$ cd ex
amples
gordonfgz@DESKTOP-0AU805U:/mnt/c/Users/gordo/OneDrive/Desktop/School/CS3219/OTOT_TASK_D/cp-docker-images/exampl
es$ cd kafka-cluster
gordonfgz@DESKTOP-0AU805U:/mnt/c/Users/gordo/OneDrive/Desktop/School/CS3219/OTOT_TASK_D/cp-docker-images/exampl
es/kafka-cluster$ docker run \
> --net=host \
> --rm \
> confluentinc/cp-kafka:5.0.0 \
fka-topi> kafka-topics --create --topic bar --partitions 3 --replication-factor 3 --if-not-exists --zookeeper
st:32181s
Created topic "bar".
gordonfgz@DESKTOP-0AU805U:/mnt/c/Users/gordo/OneDrive/Desktop/School/CS3219/OTOT_TASK_D/cp-docker-images/exampl
es/kafka-cluster$
```

Check that it works by describing the topic by running:

```
docker run \
  --net=host \
  --rm \
  confluentinc/cp-kafka:5.0.0 \
  kafka-topics --describe --topic bar --zookeeper localhost:32181
```

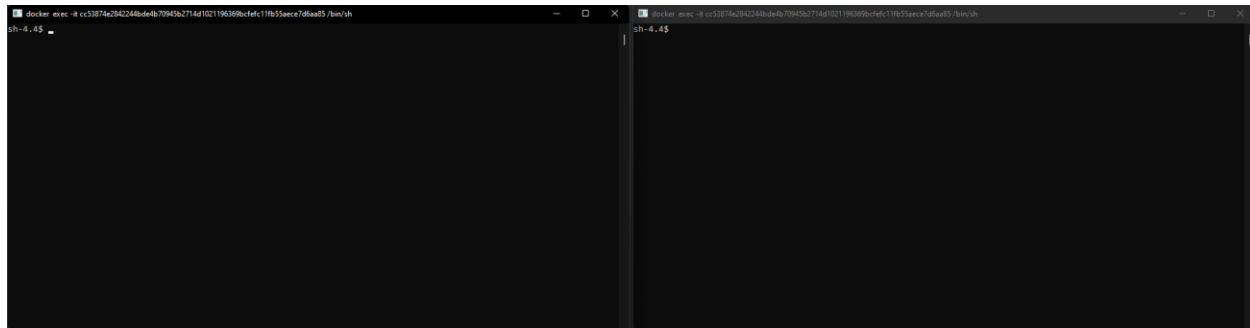
Results:

```
gordonfgz@DESKTOP-0AU805U:/mnt/c/Users/gordo/OneDrive/Desktop/School/CS3219/OTOT_TASK_D/cp-docker-images/exampl
es/kafka-cluster$ docker run \
> --net=host \
> --rm \
> confluentinc/cp-kafka:5.0.0 \
fka-topi> kafka-topics --describe --topic bar --zookeeper localhost:32181
Topic:bar      PartitionCount:3      ReplicationFactor:3      Configs:
  Topic: bar    Partition: 0      Leader: 1      Replicas: 1,3,2 Isr: 1,3,2
  Topic: bar    Partition: 1      Leader: 2      Replicas: 2,1,3 Isr: 2,1,3
  Topic: bar    Partition: 2      Leader: 3      Replicas: 3,2,1 Isr: 3,2,1
gordonfgz@DESKTOP-0AU805U:/mnt/c/Users/gordo/OneDrive/Desktop/School/CS3219/OTOT_TASK_D/cp-docker-images/exampl
es/kafka-cluster$
```

Choose one of the kafka broker, in this example I choose kafka-cluster-kafka-1-1. Open up 2 bash terminals (I did this by clicking the cli button twice):



2 terminals should pop out like this:



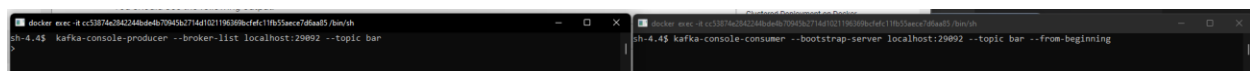
Choose the left one to be producer by running:

kafka-console-producer --broker-list localhost:29092 --topic bar

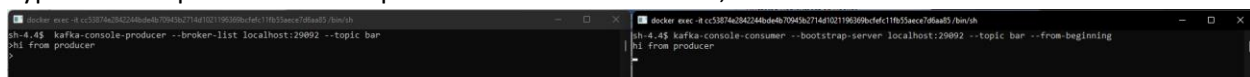
Choose the right one to be consumer by running:

kafka-console-consumer --bootstrap-server localhost:29092 --topic bar --from-beginning

Results:



Type "hi from producer" in the producer terminal and enter, and it should come out on the consumer:



Next, moving on to killing a node, I will choose to kill kafka-1-1. From the zookeeper describe call we did previously, it is shown that kafka-1 is the leader of partition 0

```
gordonfgz@DESKTOP-8AU805U: /mnt/c/Users/gordo/OneDrive/Desktop/School/CS3219/OTOT_TASK_D/cp-docker-images/example/kafka-cluster$ docker run \
> --net=host \
> --rm \
> confluentinc/cp-kafka:5.0.0 \
fka-topi> kafka-topics --describe --topic bar --zookeeper localhost:32181
Topic:bar      PartitionCount:3      ReplicationFactor:3      Configs:
Topic: bar      Partition: 0      Leader: 1      Replicas: 1,3,2      Isr: 1,3,2
Topic: bar      Partition: 1      Leader: 2      Replicas: 2,1,3      Isr: 2,1,3
Topic: bar      Partition: 2      Leader: 3      Replicas: 3,2,1      Isr: 3,2,1
```

Hence I kill kafka-1-1 by running: docker container kill kafka-cluster-kafka-1-1

And verify that there is no more kafka-cluster-kafka-1-1 by running: docker ps

```
C:\Users\gordo> docker container kill kafka-cluster-kafka-1-1
kafka-cluster-kafka-1-1

C:\Users\gordo> docker ps
CONTAINER ID   IMAGE                                COMMAND                  CREATED        STATUS        PORTS          NAMES
647f1366bcd   confluentinc/cp-kafka:latest        "/etc/confluent/dock-  18 minutes ago Up 18 minutes kafka-cluster-kafka-3-1
7a5dc45424    confluentinc/cp-kafka:latest        "/etc/confluent/dock-  18 minutes ago Up 18 minutes kafka-cluster-kafka-2-1
73f51104006   confluentinc/cp-zookeeper:latest    "/etc/confluent/dock-  18 minutes ago Up 18 minutes kafka-cluster-zookeeper-1-1
e6eb239706e   confluentinc/cp-zookeeper:latest    "/etc/confluent/dock-  18 minutes ago Up 18 minutes kafka-cluster-zookeeper-2-1
a8e95046f433   confluentinc/cp-zookeeper:latest    "/etc/confluent/dock-  18 minutes ago Up 18 minutes kafka-cluster-zookeeper-3-1
a97f605c7c63   k8s.gcr.io/hpa-example              "apache2-foreground"   4 hours ago   Up 4 hours     k8s_php-apache_php-apache-d4cf6
1c433d0ff4e5   6399e119787a                        "docker-entrypoint.s-  4 hours ago   Up 4 hours     k8s_bulletinboard_db-6509b54c5c
d2e638173ca   6399e119787a                        "docker-entrypoint.s-  4 hours ago   Up 4 hours     k8s_db-site_db-demo-65cfff5f5c-
```

After killing kafka-1-1, I ran zookeeper describe again and the following result shows that partition 0 now have kafka 3 as leader:

```
gordonfgz@DESKTOP-0AU805U: /mnt/c/Users/gordo/OneDrive/Desktop/School/CS3219/OTOT_TASK_D/cp-docker-images/examples/kafka-cluster$ docker run --net=host --rm confluentinc/cp-kafka:5.0.0 kafka-topics --describe --topic bar --zookeeper localhost:32181
Topic:bar      PartitionCount:3      ReplicationFactor:3      Configs:
      Topic: bar      Partition: 0      Leader: 3      Replicas: 1,3,2 Isr: 3,2
      Topic: bar      Partition: 1      Leader: 2      Replicas: 2,1,3 Isr: 2,3
      Topic: bar      Partition: 2      Leader: 3      Replicas: 3,2,1 Isr: 3,2
gordonfgz@DESKTOP-0AU805U: /mnt/c/Users/gordo/OneDrive/Desktop/School/CS3219/OTOT_TASK_D/cp-docker-images/examples/kafka-cluster$
```

Now that I open 2 terminals for kafka-cluster-kafka-2-1 and do the same producer consumer setup, I still get the previous hi from producer:

```
gordonfgz@DESKTOP-0AU805U: /mnt/c/Users/gordo/OneDrive/Desktop/School/CS3219/OTOT_TASK_D/cp-docker-images/examples/kafka-cluster$ docker run --net=host --rm confluentinc/cp-kafka:5.0.0 kafka-topics --describe --topic bar --zookeeper localhost:32181
Topic:bar      PartitionCount:3      ReplicationFactor:3      Configs:
      Topic: bar      Partition: 0      Leader: 3      Replicas: 1,3,2 Isr: 3,2
      Topic: bar      Partition: 1      Leader: 2      Replicas: 2,1,3 Isr: 2,3
      Topic: bar      Partition: 2      Leader: 3      Replicas: 3,2,1 Isr: 3,2
gordonfgz@DESKTOP-0AU805U: /mnt/c/Users/gordo/OneDrive/Desktop/School/CS3219/OTOT_TASK_D/cp-docker-images/examples/kafka-cluster$
```