Kafka 3 Node cluster single system

System details:

OS : centos 8
IP : 192.168.1.210

Apache Kafka

Apache Kafka is a distributed publish-subscribe based fault tolerant messaging system It is used in real-time streaming data architectures to provide real-time analytics and to get data between systems or applications and It uses Zookeeper to track status of kafka cluster nodes.

Zookeeper

ZooKeeper is used for managing and coordinating Kafka broker, it service is mainly used to notify producer and consumer about the presence of any new broker in the Kafka system or failure of the broker in the Kafka system. We can use the zookeeper which is available in the apache kafka

Setup java Open jdk 8

- Download and setup java openjdk 8 from https://www.digitalocean.com/community/tutorials/how-to-install-java-on-centos-and-fedora
- Set path for java_home in .bashrc file

export JAVA_HOME=/usr/lib/jvm/java-1.8.0-openjdk-1.8.0.232.b09-0.el8_0.x86_64

Download and Setup Confluent Platform

- *curl -O http://packages.confluent.io/archive/5.2/confluent-5.2.1-2.12.tar.gz*
- *tar -xvzf confluent-5.2.1-2.12.tar.gz*

As it is doing as 3NODES we have to create path for 3 confluent

- *mv confluent-5.2.1 /opt/confluent1/ ### 1st Node*
- *Cp /opt/confluent1/confluent-5.2.1 /opt/confluent2/ ### 2nd node*
- *Cp /opt/confluent1/confluent-5.2.1 /opt/confluent3/ ### 3rd node*

Setup .bashrc path for confluent_home

```
export PATH=/.local/bin:$PATH
export CONFLUENT1_HOME=/opt/confluent1/confluent-5.2.1
export CONFLUENT2_HOME=/opt/confluent2/confluent-5.2.1
export CONFLUENT3_HOME=/opt/confluent3/confluent-5.2.1
export JAVA_HOME=/usr/lib/jvm/java-1.8.0-openjdk-1.8.0.232.b09-0.el8_0.x86_64
export PATH=$JAVA_HOME/bin:$CONFLUENT1_HOME/bin:$CONFLUENT2_HOME/bin:$CONFLUENT3_HOME/bin:$PATH
```

Setting Data Directory for Zookeeper instances

- *mkdir -p kafka/data/zookeeper1/myid*
- *mkdir -p kafka/data/zookeeper2/myid*
- *mkdir -p kafka/data/zookeeper3/myid*

Creating the unique id for each zookeeper instance

- *echo 1 > /opt/kafka/data/zookeeper1/myid*
- *echo 2 >/opt/kafka/data/zookeeper2/myid*
- *echo 3>/opt/kafka/data/zookeeper3/myid*

Creating the Zookeeper properties files

- *Mv /opt/confluent1/confluent-5.2.1/etc/kafka/zookeeper.properties zookeeper_1.properties*

- *Mv /opt/confluent2/confluent-5.2.1/etc/kafka/zookeeper.properties zookeeper_2.properties*
- *Mv /opt/confluent3/confluent-5.2.1/etc/kafka/zookeeper.properties zookeeper_3.properties*

Configure Zookeeper in each node (1st node)

- *vi /opt/confluent1/confluent-5.2.1/etc/kafka/zookeeper_1.properties*

  tickTime=2000

  dataDir=/opt/kafka/data/zookeeper1

  clientPort=2181

  initLimit=5

  syncLimit=2

  server.1=192.168.1.210:2888:3888

  server.2=192.168.1.210:2889:3889

  server.3=192.168.1.210:2890:3890

  autopurge.snapRetainCount=3

  autopurge.purgeInterval=24

```
tickTime=2000
dataDir=/opt/kafka/data/zookeeper1
clientPort=2181
initLimit=5
syncLimit=2
server.1=192.168.1.210:2888:3888
server.2=192.168.1.210:2889:3889
server.3=192.168.1.210:2890:3890
autopurge.snapRetainCount=3
autopurge.purgeInterval=24
```

Configuration of 2nd node

- vi /opt/confluent2/confluent-5.2.1/etc/kafka/zookeeper_2.properties

    tickTime=2000

    dataDir=/opt/kafka/data/zookeeper2

    clientPort=2182

    initLimit=5

    syncLimit=2

    server.1=192.168.1.210:2888:3888

    server.2=192.168.1.210:2889:3889

    server.3=192.168.1.210:2890:3890

    autopurge.snapRetainCount=3

    autopurge.purgeInterval=24

maxClientCnxns=0

```
tickTime=2000
dataDir=/opt/kafka/data/zookeeper2
clientPort=2182
initLimit=5
syncLimit=2
server.1=192.168.1.210:2888:3888
server.2=192.168.1.210:2889:3889
server.3=192.168.1.210:2890:3890
autopurge.snapRetainCount=3
autopurge.purgeInterval=24
maxClientCnxns=0
```

Configuration of 3rd node

- vi /opt/confluent3/confluent-5.2.1/etc/kafka/zookeeper_3.properties

  tickTime=2000

  dataDir=/opt/kafka/data/zookeeper3

  clientPort=2183

  initLimit=5

  syncLimit=2

  server.1=192.168.1.210:2888:3888

  server.2=192.168.1.210:2889:3889

  server.3=192.168.1.210:2890:3890

autopurge.snapRetainCount=3

autopurge.purgeInterval=24

Running Zookeeper Instances

node1

```
re/java/kafka/commons-digester-1.8.1.jar:/opt/confluent1/confluent-5.2.1/bin/../share/java/kafka/commons-lang3-3.8.1.jar:/opt/confluent1/con
fluent-5.2.1/bin/../share/java/kafka/scala-logging_2.12-3.9.0.jar:/opt/confluent1/confluent-5.2.1/bin/../share/java/confluent-support-metric
s/zookeeper-3.4.13.jar:/opt/confluent1/confluent-5.2.1/bin/../share/java/confluent-support-metrics/audience-annotations-0.5.0.jar:/opt/confl
uent1/confluent-5.2.1/bin/../share/java/confluent-support-metrics/support-metrics-fullcollector-5.2.1.jar:/opt/confluent1/confluent-5.2.1/bi
n/../share/java/confluent-support-metrics/common-utils-5.2.1.jar:/opt/confluent1/confluent-5.2.1/bin/../share/java/confluent-support-metrics
/netty-3.10.6.Final.jar:/opt/confluent1/confluent-5.2.1/bin/../share/java/confluent-support-metrics/slf4j-api-1.7.25.jar:/opt/confluent1/con
fluent-5.2.1/bin/../share/java/confluent-support-metrics/jline-0.9.94.jar:/opt/confluent1/confluent-5.2.1/bin/../share/java/confluent-suppor
t-metrics/zkclient-0.10.jar:/usr/share/java/confluent-support-metrics/* (org.apache.zookeeper.server.ZooKeeperServer)
[2019-12-20 12:50:23,774] INFO Server environment:java.library.path=/usr/java/packages/lib/amd64:/usr/lib64:/lib64:/lib:/usr/lib (org.apache
.zookeeper.server.ZooKeeperServer)
[2019-12-20 12:50:23,774] INFO Server environment:java.io.tmpdir=/tmp (org.apache.zookeeper.server.ZooKeeperServer)
[2019-12-20 12:50:23,774] INFO Server environment:java.compiler=<NA> (org.apache.zookeeper.server.ZooKeeperServer)
[2019-12-20 12:50:23,774] INFO Server environment:os.name=Linux (org.apache.zookeeper.server.ZooKeeperServer)
[2019-12-20 12:50:23,774] INFO Server environment:os.arch=amd64 (org.apache.zookeeper.server.ZooKeeperServer)
[2019-12-20 12:50:23,774] INFO Server environment:os.version=4.18.0-144.el8.x86_64 (org.apache.zookeeper.server.ZooKeeperServer)
[2019-12-20 12:50:23,774] INFO Server environment:user.name=root (org.apache.zookeeper.server.ZooKeeperServer)
[2019-12-20 12:50:23,774] INFO Server environment:user.home=/root (org.apache.zookeeper.server.ZooKeeperServer)
[2019-12-20 12:50:23,774] INFO Server environment:user.dir=/opt/confluent1/confluent-5.2.1 (org.apache.zookeeper.server.ZooKeeperServer)
[2019-12-20 12:50:23,775] INFO Created server with tickTime 2000 minSessionTimeout 4000 maxSessionTimeout 40000 datadir /opt/kafka/data/zook
eeper1/version-2 snapdir /opt/kafka/data/zookeeper1/version-2 (org.apache.zookeeper.server.ZooKeeperServer)
[2019-12-20 12:50:23,776] INFO FOLLOWING - LEADER ELECTION TOOK - 21830 (org.apache.zookeeper.server.quorum.Learner)
[2019-12-20 12:50:23,777] INFO Resolved hostname: 192.168.1.210 to address: /192.168.1.210 (org.apache.zookeeper.server.quorum.QuorumPeer)
[2019-12-20 12:50:23,857] INFO Getting a diff from the leader 0x200000056 (org.apache.zookeeper.server.quorum.Learner)
```

Node 2

```
[2019-12-20 12:50:23,668] INFO Server environment:user.dir=/opt/confluent2/confluent-5.2.1 (org.apache.zookeeper.server.ZooKeeperServer)
[2019-12-20 12:50:23,669] INFO Created server with tickTime 2000 minSessionTimeout 4000 maxSessionTimeout 40000 datadir /opt/kafka/data/zook
eeper2/version-2 snapdir /opt/kafka/data/zookeeper2/version-2 (org.apache.zookeeper.server.ZooKeeperServer)
[2019-12-20 12:50:23,670] INFO LEADING - LEADER ELECTION TOOK - 277 (org.apache.zookeeper.server.quorum.Leader)
[2019-12-20 12:50:23,780] INFO Follower sid: 1 : info : org.apache.zookeeper.server.quorum.QuorumPeer$QuorumServer@24db7242 (org.apache.zook
eeper.server.quorum.LearnerHandler)
[2019-12-20 12:50:23,856] INFO Synchronizing with Follower sid: 1 maxCommittedLog=0x200000056 minCommittedLog=0x200000001 peerLastZxid=0x200
000056 (org.apache.zookeeper.server.quorum.LearnerHandler)
[2019-12-20 12:50:23,856] INFO leader and follower are in sync, zxid=0x200000056 (org.apache.zookeeper.server.quorum.LearnerHandler)
[2019-12-20 12:50:23,857] INFO Sending DIFF (org.apache.zookeeper.server.quorum.LearnerHandler)
[2019-12-20 12:50:23,906] INFO Received NEWLEADER-ACK message from 1 (org.apache.zookeeper.server.quorum.LearnerHandler)
[2019-12-20 12:50:23,907] INFO Have quorum of supporters, sids: [ 1,2 ]; starting up and setting last processed zxid: 0x300000000 (org.apach
e.zookeeper.server.quorum.Leader)
```

Node 3

```
[2019-12-20 12:51:49,297] INFO Server environment:java.compiler=<NA> (org.apache.zookeeper.server.ZooKeeperServer)
[2019-12-20 12:51:49,297] INFO Server environment:os.name=Linux (org.apache.zookeeper.server.ZooKeeperServer)
[2019-12-20 12:51:49,298] INFO Server environment:os.arch=amd64 (org.apache.zookeeper.server.ZooKeeperServer)
[2019-12-20 12:51:49,298] INFO Server environment:os.version=4.18.0-144.el8.x86_64 (org.apache.zookeeper.server.ZooKeeperServer)
[2019-12-20 12:51:49,298] INFO Server environment:user.name=root (org.apache.zookeeper.server.ZooKeeperServer)
[2019-12-20 12:51:49,298] INFO Server environment:user.home=/root (org.apache.zookeeper.server.ZooKeeperServer)
[2019-12-20 12:51:49,298] INFO Server environment:user.dir=/opt/confluent3/confluent-5.2.1 (org.apache.zookeeper.server.ZooKeeperServer)
[2019-12-20 12:51:49,299] INFO Created server with tickTime 2000 minSessionTimeout 4000 maxSessionTimeout 40000 datadir /opt/kafka/data/zook
eeper3/version-2 snapdir /opt/kafka/data/zookeeper3/version-2 (org.apache.zookeeper.server.ZooKeeperServer)
[2019-12-20 12:51:49,299] INFO FOLLOWING - LEADER ELECTION TOOK - 54 (org.apache.zookeeper.server.quorum.Learner)
[2019-12-20 12:51:49,300] INFO Resolved hostname: 192.168.1.210 to address: /192.168.1.210 (org.apache.zookeeper.server.quorum.QuorumPeer)
[2019-12-20 12:51:49,324] INFO Getting a diff from the leader 0x200000056 (org.apache.zookeeper.server.quorum.Learner)
```

Setting Data Directory for Kafka instances

- *mkdir -p kafka/data/kafka1*
- *mkdir -p kafka/data/kafka2*
- *mkdir -p kafka/data/kafka3*

Kafka Broker Configuration :

Creating the Server properties files

- Mv /opt/confluent1/confluent-5.2.1/etc/kafka/server.properties server_1.properties
- Mv /opt/confluent2/confluent-5.2.1/etc/kafka/server.properties server_2.properties
- Mv /opt/confluent3/confluent-5.2.1/etc/kafka/server.properties server_3.properties

Kafka Broker Instance 1 : server_1.properties

broker.id=0

listeners=PLAINTEXT://192.168.1.210:9092

log.dirs=/opt/kafka/data/kafka1

zookeeper.connect=192.168.1.210:2181,192.168.1.210:2182,192.168.1.210:2183

```
############################# Server Basics #############################

# The id of the broker. This must be set to a unique integer for each broker.
broker.id=0

############################# Socket Server Settings #############################

# The address the socket server listens on. It will get the value returned from
# java.net.InetAddress.getCanonicalHostName() if not configured.
#   FORMAT:
#     listeners = listener_name://host_name:port
#   EXAMPLE:
#     listeners = PLAINTEXT://your.host.name:9092
listeners=PLAINTEXT://192.168.1.210:9092
```

```
############################# Log Basics #############################

# A comma separated list of directories under which to store log files
log.dirs=/opt/kafka/data/kafka1

# The default number of log partitions per topic. More partitions allow greater
# parallelism for consumption, but this will also result in more files across
# the brokers.
num.partitions=1
```

```
############################# Zookeeper #############################

# Zookeeper connection string (see zookeeper docs for details).
# This is a comma separated host:port pairs, each corresponding to a zk
# server. e.g. "127.0.0.1:3000,127.0.0.1:3001,127.0.0.1:3002".
# You can also append an optional chroot string to the urls to specify the
# root directory for all kafka znodes.
zookeeper.connect=192.168.1.210:2181,192.168.1.210:2182,192.168.1.210:2183
```

Kafka Broker Instance 2 : server_2.properties

broker.id=1

listeners=PLAINTEXT://192.168.1.210:9093

log.dirs=/opt/kafka/data/kafka2

zookeeper.connect=192.168.1.210:2181,192.168.1.210:2182,192.168.1.210:2183

```
############################# Server Basics #############################

# The id of the broker. This must be set to a unique integer for each broker.
broker.id=1

############################# Socket Server Settings #############################

# The address the socket server listens on. It will get the value returned from
# java.net.InetAddress.getCanonicalHostName() if not configured.
#   FORMAT:
#     listeners = listener_name://host_name:port
#   EXAMPLE:
#     listeners = PLAINTEXT://your.host.name:9092
listeners=PLAINTEXT://192.168.1.210:9093
```

```
############################# Log Basics #############################

# A comma separated list of directories under which to store log files
log.dirs=/opt/kafka/data/kafka2

# The default number of log partitions per topic. More partitions allow greater
# parallelism for consumption, but this will also result in more files across
# the brokers.
num.partitions=1
```

```
############################# Zookeeper #############################

# Zookeeper connection string (see zookeeper docs for details).
# This is a comma separated host:port pairs, each corresponding to a zk
# server. e.g. "127.0.0.1:3000,127.0.0.1:3001,127.0.0.1:3002".
# You can also append an optional chroot string to the urls to specify the
# root directory for all kafka znodes.
zookeeper.connect=192.168.1.210:2181,192.168.1.210:2182,192.168.1.210:2183
```

Kafka Broker Instance 3: server_3.properties

broker.id=2

listeners=PLAINTEXT://192.168.1.210:9094

log.dirs=/opt/kafka/data/kafka3

zookeeper.connect=192.168.1.210:2181,192.168.1.210:2182,192.168.1.210:2183

```
############################# Server Basics #############################

# The id of the broker. This must be set to a unique integer for each broker.
broker.id=2

############################# Socket Server Settings #############################

# The address the socket server listens on. It will get the value returned from
# java.net.InetAddress.getCanonicalHostName() if not configured.
#   FORMAT:
#     listeners = listener_name://host_name:port
#   EXAMPLE:
#     listeners = PLAINTEXT://your.host.name:9092
listeners=PLAINTEXT://192.168.1.210:9094
```

```
############################# Log Basics #############################

# A comma separated list of directories under which to store log files
log.dirs=/opt/kafka/data/kafka3

# The default number of log partitions per topic. More partitions allow greater
# parallelism for consumption, but this will also result in more files across
# the brokers.
num.partitions=1
```

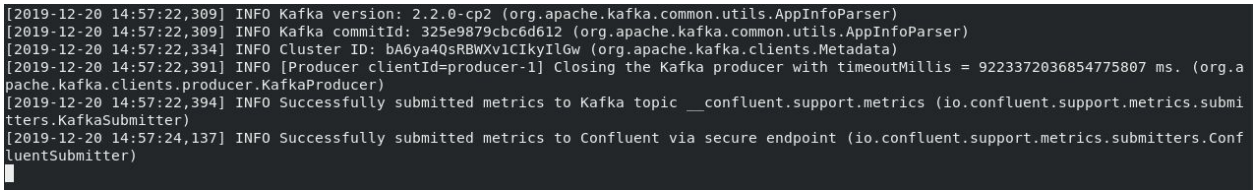
```
############################# Zookeeper #############################

# Zookeeper connection string (see zookeeper docs for details).
# This is a comma separated host:port pairs, each corresponding to a zk
# server. e.g. "127.0.0.1:3000,127.0.0.1:3001,127.0.0.1:3002".
# You can also append an optional chroot string to the urls to specify the
# root directory for all kafka znodes.
zookeeper.connect=192.168.1.210:2181,192.168.1.210:2182,192.168.1.210:2183
```

Running the Kafka Broker Instances

Node 1

Cd /opt/confluent1/confluent5.2.1/

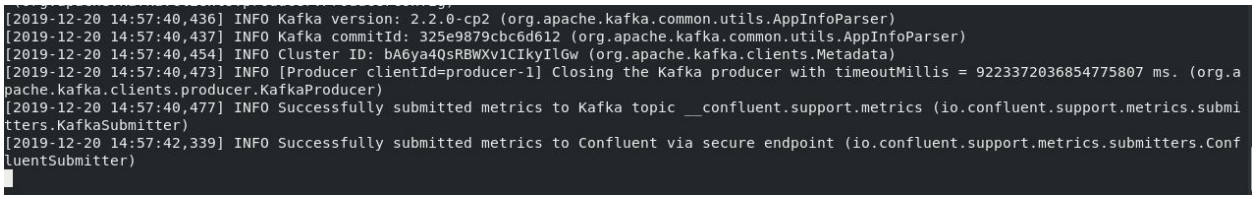
Kafka-server-start ./etc/kafka/server_1.properties



Node2

Cd /opt/confluent2/confluent5.2.1/

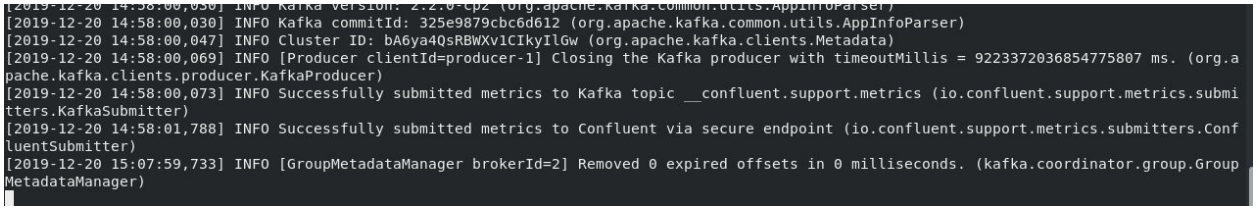
Kafka-server-start ./etc/kafka/server_2.properties



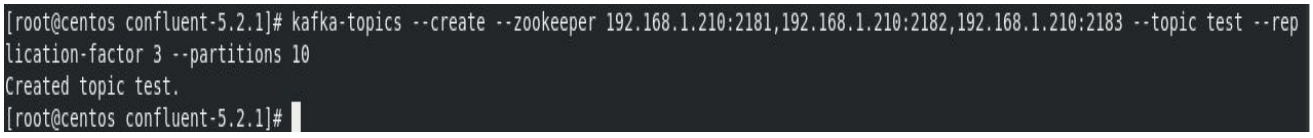
Node 3

Cd /opt/confluent3/confluent5.2.1/

Kafka-server-start ./etc/kafka/server_3.properties



Creating a new Topic



Listing the topic which are created in the zookeeper

Running the Kafka Producer

```
[root@centos confluent-5.2.1]# kafka-console-producer --broker-list 192.168.1.210:9092,192.168.1.210:9093,192.168.1.210:9093 --topic test
>haii
>these
>is for testing
>^C
```

Running the Kafka Consumer

```
[root@centos confluent-5.2.1]# kafka-console-consumer --bootstrap-server 192.168.1.210:9092 --topic test --from-beginning
haii
these
is for testing
```