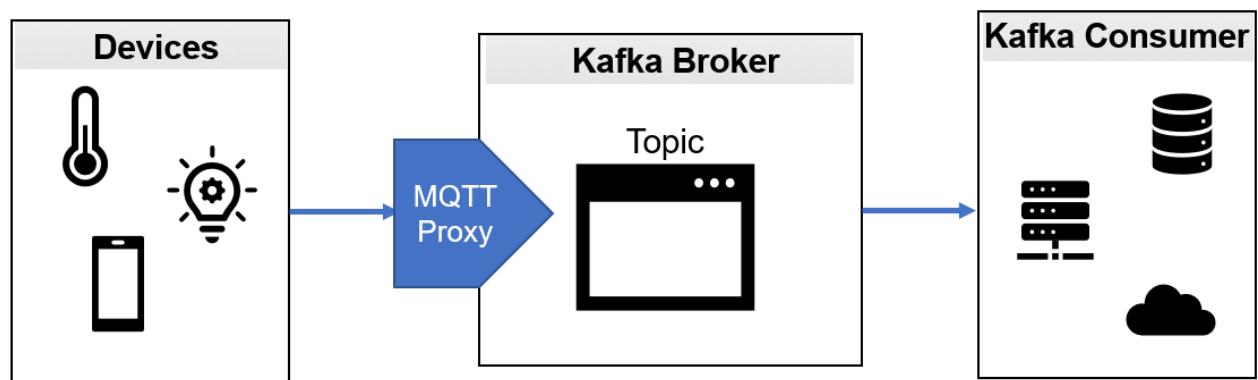


MANUAL DE PROGRAMADOR

Kakfa IOT



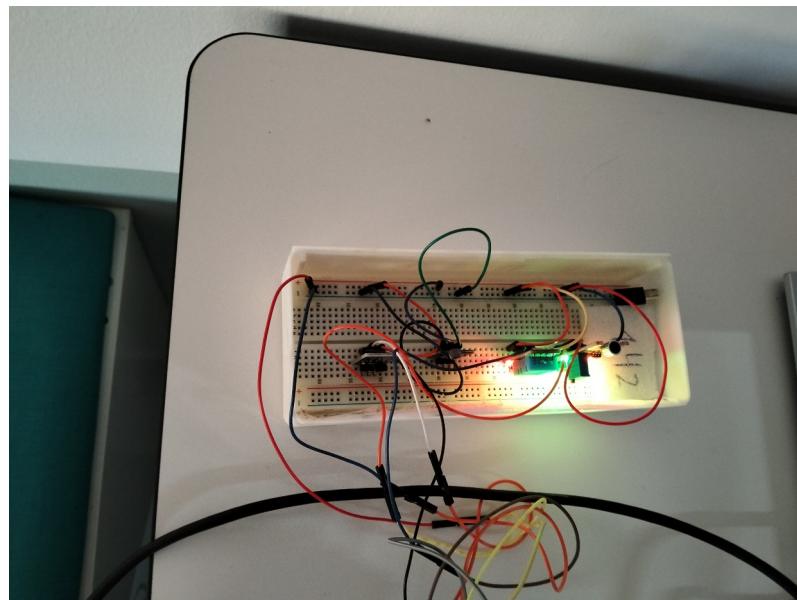
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MANUAL DE PROGRAMADOR

1 Node-RED: conexión de Raspberry PI, Arduino y configuración de Node-RED para captar datos meteorológicos.

Se montó un Arduino que tiene cargado el programa que recoge mediciones meteorológicas de Temperatura, Humedad, Luminosidad y Ruido.

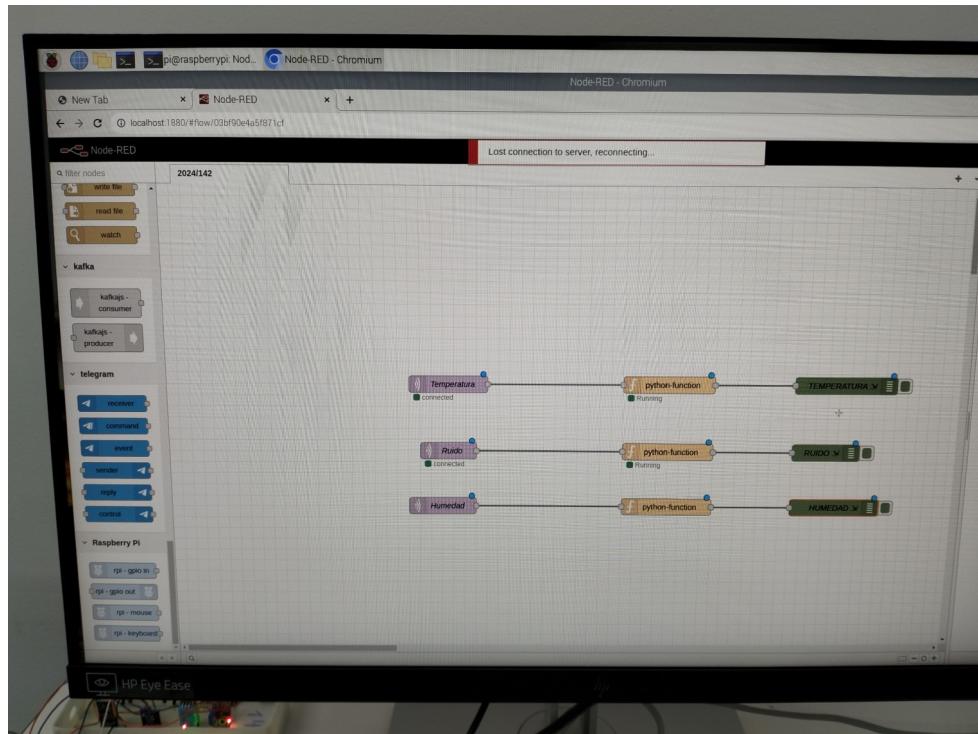


Se montó una RaspberryPI para la captación de los datos metereológicos. Esta:

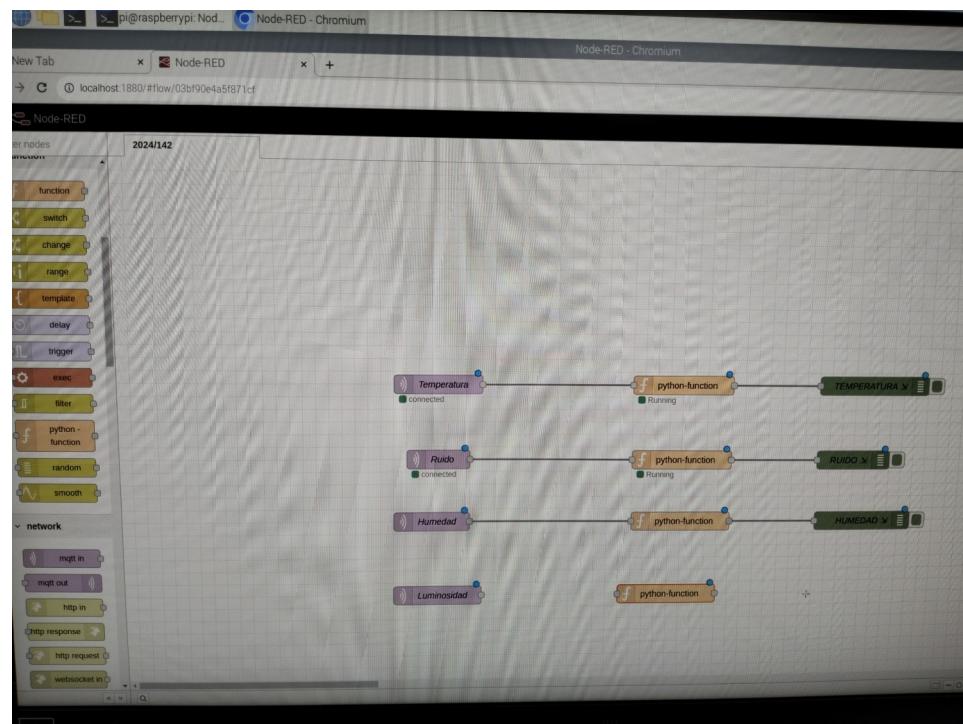
- está conectada al PC,
- y a la que está conectada el Arduino



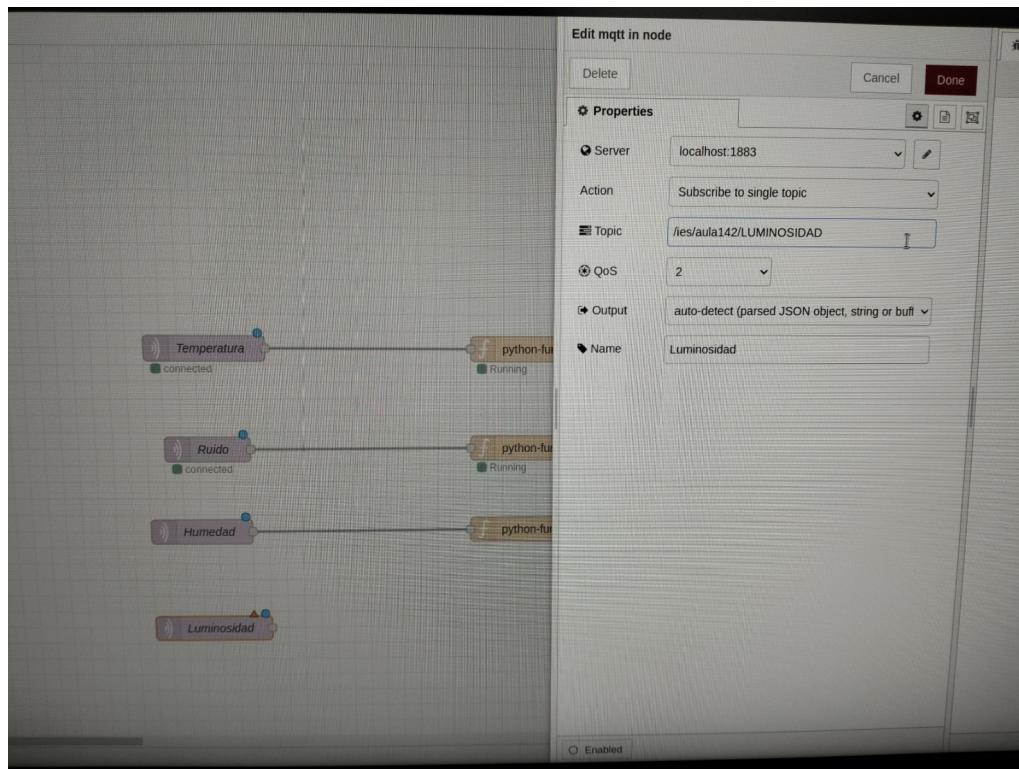
Programo el programa de Node-RED. Aquí creo 3 Productores Mosquito , 3 funciones python y 3 Debugs.



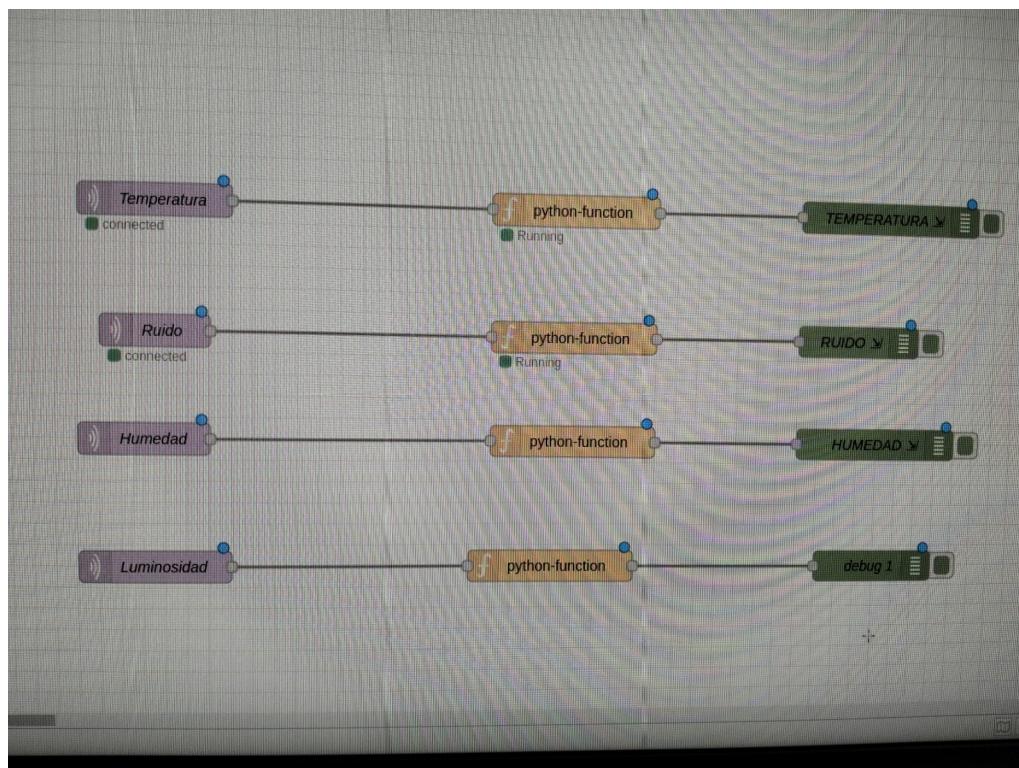
Se agrega un nuevo productor Mosquitto, arrastrando desde panel izquierdo la caja mqtt:



Aquí se muestra sólo caja de Mosquito, para mostrar el detalle de cómo se configuró.



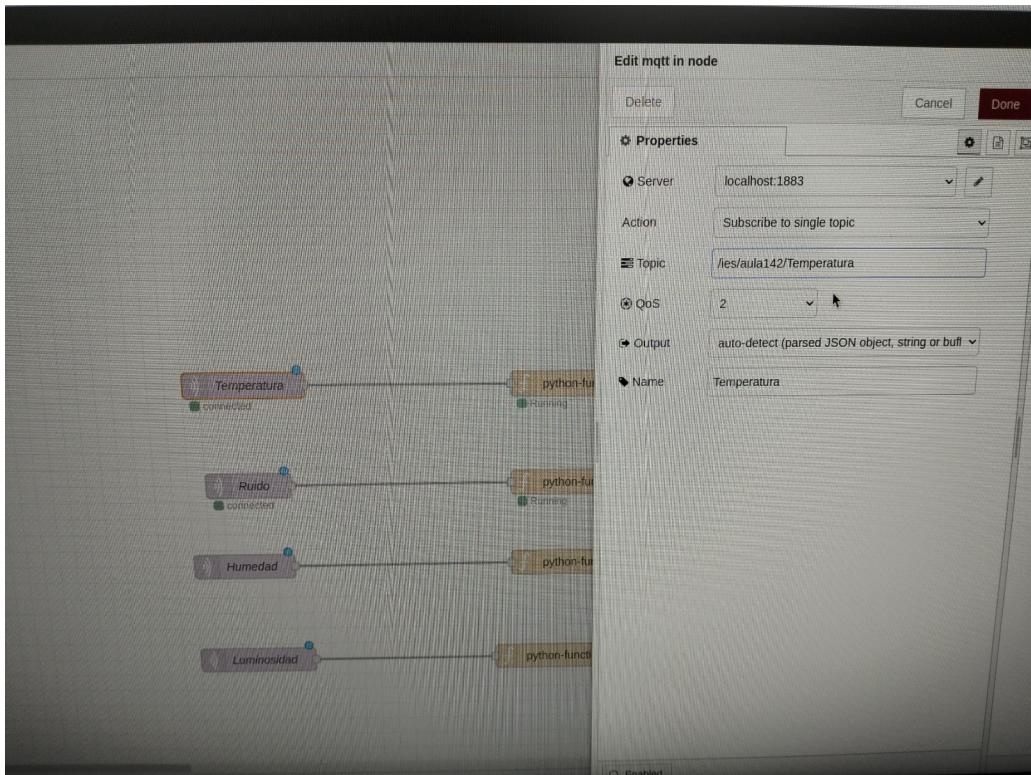
Se agrega una caja función Python.
Y por ultimo se argrega una caja debug.



EDITAR CÓDIGO

En los nodos de input de mosquitto:

- en server ya viene: localhost:1883
- en action seleccionar: Subscribe to a single action
- en topic, en este caso_: /ies/aula142/Temperatura
- en Name: Temperatura



2 Crear los topics en el servidor – en los nodos del clúster.

Conectarse al clúster de HDFS.

Abrir Powershell y conectarse por SSH a la IP del cluster, comando:

```
ssh usuario@172.17.10.13
```

Introducir la contraseña:

```
usuario
```

Listar lo que hay en clúster con ls

1. Para listar los ficheros y directorios del cluster utilizamos: ls

```
usuario@ceserver2: ~
logout
Connection to 172.17.10.33 closed.
PS C:\Users\ASUS> ssh usuario@172.17.10.34
The authenticity of host '172.17.10.34 (172.17.10.34)' can't be established.
ECDSA key fingerprint is SHA256:TT72eXgcBwIVErMz0Ylbx+LKhwd/c6P3nM3w95+0r6I.
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanent added '172.17.10.34' (ECDSA) to the list of known hosts.
usuario@172.17.10.34's password: 
Welcome to Ubuntu 20.04.6 LTS (GNU/Linux 5.4.0-152-generic x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:    https://landscape.canonical.com
 * Support:       https://ubuntu.com/advantage

System information as of mié 21 feb 2024 16:15:20 UTC

System load:  0.0          Processes:           122
Usage of /:   15.9% of 47.93GB  Users logged in:      1
Memory usage: 6%
Swap usage:   0%
IPv4 address for ens18: 172.17.10.34

* Strictly confined Kubernetes makes edge and IoT secure. Learn how MicroK8s
just raised the bar for easy, resilient and secure K8s cluster deployment.

https://ubuntu.com/engage/secure-kubernetes-at-the-edge

El mantenimiento de seguridad expandido para Applications está desactivado

Se pueden aplicar 62 actualizaciones de forma inmediata.
Para ver estas actualizaciones adicionales, ejecute: apt list --upgradable

Active ESM Apps para recibir futuras actualizaciones de seguridad adicionales.
Vea https://ubuntu.com/esm o ejecute «sudo pro status»

New release '22.04.3 LTS' available.
Run 'do-release-upgrade' to upgrade to it.

*** System restart required ***
Last login: Wed Feb 21 15:03:57 2024 from 172.17.32.123
usuario@ceserver2:~$ ls
kafka_2.13-3.1.0 kafka.server21Fran.out  kafka.server21.out  zookeeper  zookeeper.server2.out
usuario@ceserver2:~$
```

Para entrar en la carpeta de Kafka utilizamos cd , y vemos el server properties al que tenemos que llamar en comando de lanzar Kafka, que es: server-21.properties

```
Seleccionar usuario@ceserver2: ~/kafka_2.13-3.1.0/config
usuario@ceserver2:~/zookeeper$ cd ..
usuario@ceserver2: $ cd kafka_2.13-3.1.0
usuario@ceserver2:~/kafka_2.13-3.1.0$ ls
bin config libs LICENSE licenses logs NOTICE site-docs
usuario@ceserver2:~/kafka_2.13-3.1.0$ cd bin
usuario@ceserver2:~/kafka_2.13-3.1.0/bin$ ls
connect-distributed.sh      kafka-dump-log.sh          kafka-storage.sh
connect-mirror-maker.sh     kafka-features.sh        kafka-streams-application-reset.sh
connect-standalone.sh       kafka-get-offsets.sh    kafka-topics.sh
kafka-acls.sh               kafka-leader-election.sh kafka-transactions.sh
kafka-broker-api-versions.sh kafka-log-dir.sh       kafka-verifiable-consumer.sh
kafka-cluster.sh            kafka-metadata-shell.sh kafka-verifiable-producer.sh
kafka-configs.sh             kafka-mirror-maker.sh  trogrodor.sh
kafka-console-consumer.sh   kafka-producer-perf-test.sh windows
kafka-console-producer.sh   kafka-reassign-partitions.sh zookeeper-security-migration.sh
kafka-consumer-groups.sh   kafka-replica-verification.sh zookeeper-server-start.sh
kafka-consumer-perf-test.sh kafka-run-class.sh      zookeeper-server-stop.sh
kafka-delegation-tokens.sh kafka-server-start.sh    zookeeper-shell.sh
kafka-delete-records.sh    kafka-server-stop.sh
usuario@ceserver2:~/kafka_2.13-3.1.0/bin$ cd ..
usuario@ceserver2:~/kafka_2.13-3.1.0$ cd config
usuario@ceserver2:~/kafka_2.13-3.1.0/config$ ñls

Command 'ñls' not found, did you mean:

  command 'ols' from deb speech-tools (1:2.5.0-8build1)
  command 'als' from deb atool (0.39.0-10)
  command 'bls' from deb bacula-sd (9.4.2-2ubuntus5)
  command 'ils' from deb sleuthkit (4.6.7-1build1)
  command 'ls' from deb coreutils (8.30-3ubuntu2)
  command 'jls' from deb sleuthkit (4.6.7-1build1)
  command 'fls' from deb sleuthkit (4.6.7-1build1)
  command 'hls' from deb hfsutils (3.2.6-14)

Try: sudo apt install <deb name>

usuario@ceserver2:~/kafka_2.13-3.1.0/config$ ls
connect-console-sink.properties  connect-log4j.properties    log4j.properties      trogrodor.conf
connect-console-source.properties connect-mirror-maker.properties producer.properties  zookeeper.properties
connect-distributed.properties   connect-standalone.properties  server-21.properties
connect-file-sink.properties    consumer.properties        server.properties
connect-file-source.properties  kraft                      tools-log4j.properties
usuario@ceserver2:~/kafka_2.13-3.1.0/config$
```

Lanzar kafka como demonio:

Inicializamos Kafka llamando al server-21.properties.
Lo inicializamos como demonio, pasándole el parámetro: -daemon

```

usuario@ceserver2: ~/kafka_2.13-3.1.0/bin
    at org.apache.zookeeper.ClientCnxnSocketNIO.doIO(ClientCnxnSocketNIO.java:77)
    at org.apache.zookeeper.ClientCnxnSocketNIO.doTransport(ClientCnxnSocketNIO.java:350)
    at org.apache.zookeeper.ClientCnxn$SendThread.run(ClientCnxn.java:1290)
[2024-02-21 16:29:22,744] INFO Session: 0x2004e5178470001 closed (org.apache.zookeeper.ZooKeeper)
[2024-02-21 16:29:22,745] INFO [ZooKeeperClient Kafka server] Closed. (kafka.zookeeper.ZooKeeperClient)
[2024-02-21 16:29:22,746] INFO [ThrottledChannelReaper-Fetch]: Shutting down (kafka.server.ClientQuotaManager$ThrottledChannelReaper)
[2024-02-21 16:29:22,744] INFO EventThread shut down for session: 0x2004e5178470001 (org.apache.zookeeper.ClientCnxn)
[2024-02-21 16:29:23,334] INFO [ThrottledChannelReaper-Fetch]: Stopped (kafka.server.ClientQuotaManager$ThrottledChannelReaper)
[2024-02-21 16:29:23,334] INFO [ThrottledChannelReaper-Fetch]: Shutdown completed (kafka.server.ClientQuotaManager$ThrottledChannelReaper)
[2024-02-21 16:29:23,335] INFO [ThrottledChannelReaper-Producer]: Shutting down (kafka.server.ClientQuotaManager$ThrottledChannelReaper)
[2024-02-21 16:29:24,334] INFO [ThrottledChannelReaper-Producer]: Stopped (kafka.server.ClientQuotaManager$ThrottledChannelReaper)
[2024-02-21 16:29:24,335] INFO [ThrottledChannelReaper-Producer]: Shutdown completed (kafka.server.ClientQuotaManager$ThrottledChannelReaper)
[2024-02-21 16:29:24,335] INFO [ThrottledChannelReaper-Request]: Shutting down (kafka.server.ClientQuotaManager$ThrottledChannelReaper)
[2024-02-21 16:29:25,335] INFO [ThrottledChannelReaper-Request]: Stopped (kafka.server.ClientQuotaManager$ThrottledChannelReaper)
[2024-02-21 16:29:25,335] INFO [ThrottledChannelReaper-Request]: Shutdown completed (kafka.server.ClientQuotaManager$ThrottledChannelReaper)
[2024-02-21 16:29:25,335] INFO [ThrottledChannelReaper-ControllerMutation]: Shutting down (kafka.server.ClientQuotaManager$ThrottledChannelReaper)
[2024-02-21 16:29:26,335] INFO [ThrottledChannelReaper-ControllerMutation]: Stopped (kafka.server.ClientQuotaManager$ThrottledChannelReaper)
[2024-02-21 16:29:26,335] INFO [ThrottledChannelReaper-ControllerMutation]: Shutdown completed (kafka.server.ClientQuotaManager$ThrottledChannelReaper)
[2024-02-21 16:29:26,336] INFO [SocketServer listenerType=ZK_BROKER, nodeId=21] Shutting down socket server (kafka.network.SocketServer)
[2024-02-21 16:29:26,357] INFO [SocketServer listenerType=ZK_BROKER, nodeId=21] Shutdown completed (kafka.network.SocketServer)
[2024-02-21 16:29:26,358] INFO Metrics scheduler closed (org.apache.kafka.common.metrics.Metrics)
[2024-02-21 16:29:26,358] INFO Closing reporter org.apache.kafka.common.metrics.JmxReporter (org.apache.kafka.common.metrics.Metrics)
[2024-02-21 16:29:26,358] INFO Metrics reporters closed (org.apache.kafka.common.metrics.Metrics)
[2024-02-21 16:29:26,363] INFO Broker and topic stats closed (kafka.server.BrokerTopicStats)
[2024-02-21 16:29:26,363] INFO App info kafka.server for 21 unregistered (org.apache.kafka.common.utils.AppInfoParser)
[2024-02-21 16:29:26,364] INFO [KafkaServer id=21] shut down completed (kafka.server.KafkaServer)
usuario@ceserver2:~/kafka_2.13-3.1.0/bin$ kafka-server-start.sh -daemon ../config/server-21.properties ↵
usuario@ceserver2:~/kafka_2.13-3.1.0/bin$
```

Comprobamos si Kafka está corriendo:

ps aux | grep kafka

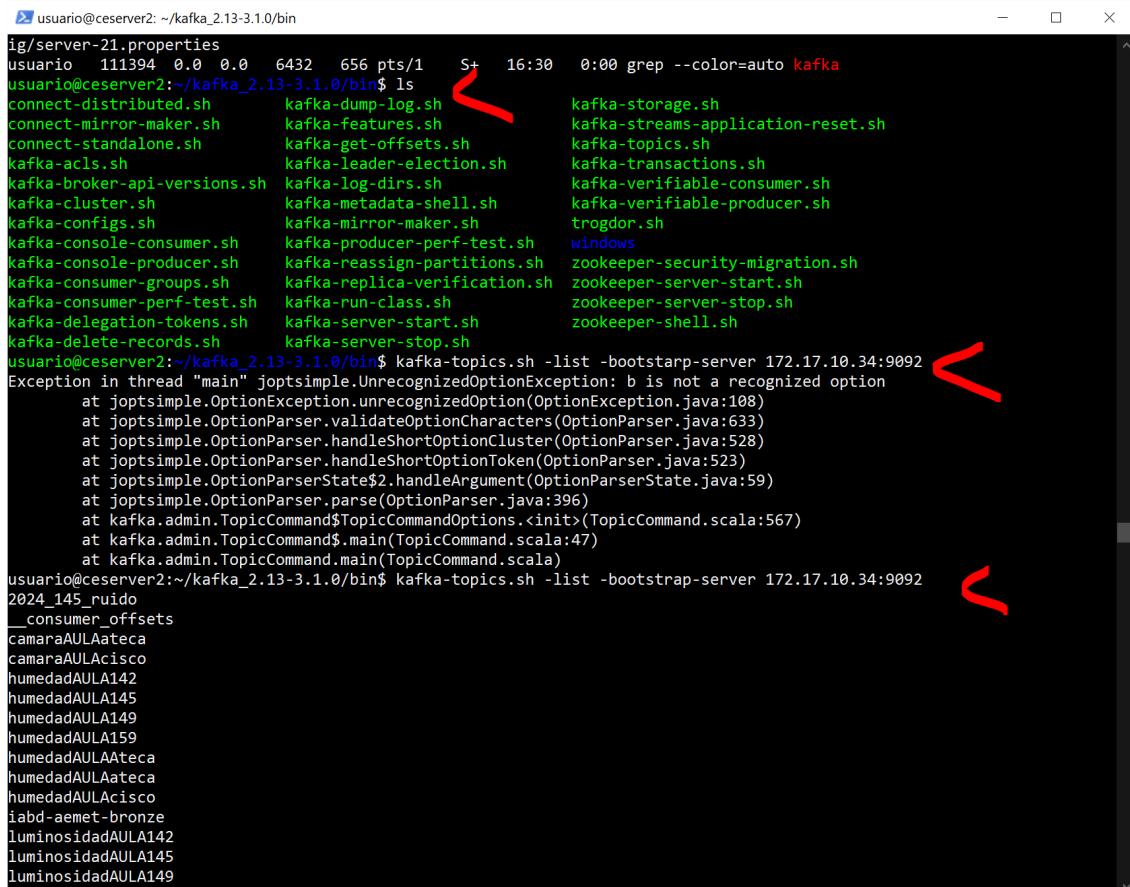
```

usuario@ceserver2: ~/kafka_2.13-3.1.0/bin
ottledChannelReaper)
[2024-02-21 16:29:25,335] INFO [ThrottledChannelReaper-ControllerMutation]: Shutting down (kafka.server.ClientQuotaManager$ThrottledChannelReaper)
[2024-02-21 16:29:26,335] INFO [ThrottledChannelReaper-ControllerMutation]: Stopped (kafka.server.ClientQuotaManager$ThrottledChannelReaper)
[2024-02-21 16:29:26,335] INFO [ThrottledChannelReaper-ControllerMutation]: Shutdown completed (kafka.server.ClientQuotaManager$ThrottledChannelReaper)
[2024-02-21 16:29:26,336] INFO [SocketServer listenerType=ZK_BROKER, nodeId=21] Shutting down socket server (kafka.network.SocketServer)
[2024-02-21 16:29:26,357] INFO [SocketServer listenerType=ZK_BROKER, nodeId=21] Shutdown completed (kafka.network.SocketServer)
[2024-02-21 16:29:26,358] INFO Metrics scheduler closed (org.apache.kafka.common.metrics.Metrics)
[2024-02-21 16:29:26,358] INFO Closing reporter org.apache.kafka.common.metrics.JmxReporter (org.apache.kafka.common.metrics.Metrics)
[2024-02-21 16:29:26,358] INFO Metrics reporters closed (org.apache.kafka.common.metrics.Metrics)
[2024-02-21 16:29:26,363] INFO Broker and topic stats closed (kafka.server.BrokerTopicStats)
[2024-02-21 16:29:26,363] INFO App info kafka.server for 21 unregistered (org.apache.kafka.common.utils.AppInfoParser)
[2024-02-21 16:29:26,364] INFO [KafkaServer id=21] shut down completed (kafka.server.KafkaServer)
usuario@ceserver2:~/kafka_2.13-3.1.0/bin$ kafka-server-start.sh -daemon ../config/server-21.properties
usuario@ceserver2:~/kafka_2.13-3.1.0/bin$ ps aux | grep kafka
usuario 109691 0.1 1.4 2637588 114892 pts/0 S+ 15:12 0:06 java -Xmx512M -Xms512M -server -XX:+UseG1GC -XX:MaxGC
PauseMillis=20 -XX:+InitiatingHeapOccupancyPercent=35 -XX:+ExplicitGCInvokesConcurrent -XX:MaxInlineLevel=15 -Djava.awt.h
eadless=true -Xlog:gc*=file:/home/usuario/kafka_2.13-3.1.0/bin/..logs/zookeeper-gc.log:time,tags:filecount=10,filesize=
100M -Dcom.sun.management.jmxremote -Dcom.sun.management.jmxremote.authenticate=false -Dcom.sun.management.jmxremote.ssl
=false -Dkafka.logs.dir=/home/usuario/kafka_2.13-3.1.0/bin/..logs -Dlog4j.configurationFile=../../config/log4j.properti
es -cp /home/usuario/kafka_2.13-3.1.0/bin/..libs/activation-1.1.1.jar:/home/usuario/kafka_2.13-3.1.0/bin/..libs/aopall
iance-repackaged-2.6.1.jar:/home/usuario/kafka_2.13-3.1.0/bin/..libs/argparse4j-0.7.0.jar:/home/usuario/kafka_2.13-3.1.
0/bin/..libs/audience-annotations-0.5.0.jar:/home/usuario/kafka_2.13-3.1.0/bin/..libs/commons-cli-1.4.jar:/home/usuari
o/kafka_2.13-3.1.0/bin/..libs/commons-lang3-3.8.1.jar:/home/usuario/kafka_2.13-3.1.0/bin/..libs/connect-api-3.1.0.jar
:/home/usuario/kafka_2.13-3.1.0/bin/..libs/connect-basic-auth-extension-3.1.0.jar:/home/usuario/kafka_2.13-3.1.0/bin/..
libs/connect-file-3.1.0.jar:/home/usuario/kafka_2.13-3.1.0/bin/..libs/connect-mirror-3.1.0.jar:/home/usuario/kafka_2.13-3
.1.0/bin/..libs/connect-mirror-client-3.1.0.jar:/home/usuario/kafka_2.13-3.1.0/bin/..libs/connect-runtime-3.1.0.jar:/ho
me/usuario/kafka_2.13-3.1.0/bin/..libs/connect-transforms-3.1.0.jar:/home/usuario/kafka_2.13-3.1.0/bin/..libs/connect-tra
nsforms-3.1.0.jar:/home/usuario/kafka_2.13-3.1.0/bin/..libs/hk2-api-2.6.1.jar:/home/usuario/kafka_2.13-3.1.0/bin/..lib
s/hk2-locator-2.6.1.jar:/home/usuario/kafka_2.13-3.1.0/bin/..libs/hk2-utils-2.6.1.jar:/home/usuario/kafka_2.13-3.1.0/bi
n/..libs/jackson-annotations-2.12.3.jar:/home/usuario/kafka_2.13-3.1.0/bin/..libs/jackson-core-2.12.3.jar:/home/usuari
o/kafka_2.13-3.1.0/bin/..libs/jackson-databind-2.12.3.jar:/home/usuario/kafka_2.13-3.1.0/bin/..libs/jackson-dataformat
-csv-2.12.3.jar:/home/usuario/kafka_2.13-3.1.0/bin/..libs/jackson-datatype-jdk8-2.12.3.jar:/home/usuario/kafka_2.13-3
.1.0/bin/..libs/jackson-jaxrs-base-2.12.3.jar:/home/usuario/kafka_2.13-3.1.0/bin/..libs/jackson-jaxrs-json-provider-2.12
.3.jar:/home/usuario/kafka_2.13-3.1.0/bin/..libs/jackson-module-jaxb-annotations-2.12.3.jar:/home/usuario/kafka_2.13-3
.1.0/bin/..libs/jackson-module-scala-2.13-2.12.3.jar:/home/usuario/kafka_2.13-3.1.0/bin/..libs/jakarta.activation-api-1
.2.1.jar:/home/usuario/kafka_2.13-3.1.0/bin/..libs/jakarta.annotation-api-1.3.5.jar:/home/usuario/kafka_2.13-3.1.0/bin/
..libs/jakarta.inject-2.6.1.jar:/home/usuario/kafka_2.13-3.1.0/bin/..libs/jakarta.validation-api-2.0.2.jar:/home/usuario
```

Listar topics:

Para ver los topics que hay creados en Kafka, en Powershell, dentro de carpeta Kafka, ejecutar:

```
kafka-topics.sh -list -bootstrap-server 172.17.10.34:9092
```



```
ig/server-21.properties
usuario 111394 0.0 0.0 6432 656 pts/1 S+ 16:30 0:00 grep --color=auto kafka
usuario@ceserver2:~/kafka_2.13-3.1.0/bin$ ls
connect-distributed.sh kafka-dump-log.sh kafka-storage.sh
connect-mirror-maker.sh kafka-features.sh kafka-streams-application-reset.sh
connect-standalone.sh kafka-get-offsets.sh kafka-topics.sh
kafka-acls.sh kafka-leader-election.sh kafka-transactions.sh
kafka-broker-api-versions.sh kafka-log-dir.sh kafka-verifiable-consumer.sh
kafka-cluster.sh kafka-metadata-shell.sh kafka-verifiable-producer.sh
kafka-configs.sh kafka-mirror-maker.sh trogrodor.sh
kafka-console-consumer.sh kafka-producer-perf-test.sh windows
kafka-console-producer.sh kafka-reassign-partitions.sh zookeeper-security-migration.sh
kafka-consumer-groups.sh kafka-replica-validation.sh zookeeper-server-start.sh
kafka-consumer-perf-test.sh kafka-run-class.sh zookeeper-server-stop.sh
kafka-delegation-tokens.sh kafka-server-start.sh zookeeper-shell.sh
kafka-delete-records.sh kafka-server-stop.sh
usuario@ceserver2:~/kafka_2.13-3.1.0/bin$ kafka-topics.sh -list -bootstrap-server 172.17.10.34:9092
Exception in thread "main" joptsimple.UnrecognizedOptionException: b is not a recognized option
    at joptsimple.OptionException.unrecognizedOption(OptionException.java:108)
    at joptsimple.OptionParser.validateOptionCharacters(OptionParser.java:633)
    at joptsimple.OptionParser.handleShortOptionCluster(OptionParser.java:528)
    at joptsimple.OptionParser.handleShortOptionToken(OptionParser.java:523)
    at joptsimple.OptionParserState$2.handleArgument(OptionParserState.java:59)
    at joptsimple.OptionParser.parse(OptionParser.java:396)
    at kafka.admin.TopicCommand$TopicCommandOptions.<init>(TopicCommand.scala:567)
    at kafka.admin.TopicCommand$.main(TopicCommand.scala:47)
    at kafka.admin.TopicCommand.main(TopicCommand.scala)
usuario@ceserver2:~/kafka_2.13-3.1.0/bin$ kafka-topics.sh -list -bootstrap-server 172.17.10.34:9092
2024_145_ruido
__consumer_offsets
camaraAULAateca
camaraAULAcisco
humedadAULA142
humedadAULA145
humedadAULA149
humedadAULA159
humedadAULAAteca
humedadAULAateca
humedadAULAcisco
iabd-aemet-bronze
luminosidadAULA142
luminosidadAULA145
luminosidadAULA149
```

INCISO: Ver los alias de las IPs

Podemos utilizar los alias en vez de escribir las Ips completas.

Para ver los alias de las IpPs ejecutar:

```
cat /etc/hosts
```

```
usuario@ceserver2: ~/kafka_2.13-3.1.0
luminosidadAULA145
luminosidadAULA149
luminosidadAULaateca
luminosidadAULAcisco
miTopic
miTopic2
ruidoAULA142
ruidoAULA145
ruidoAULA149
ruidoAULaateca
ruidoAULAcisco
temperaturaAULA142
temperaturaAULA145
temperaturaAULA149
temperaturaAULaateca
temperaturaAULAcisco
usuario@ceserver2:~/kafka_2.13-3.1.0/bin$ cat /etc host
cat: /etc: Is a directory
cat: host: No such file or directory
usuario@ceserver2:~/kafka_2.13-3.1.0/bin$ cat /etc/host
cat: /etc/host: No such file or directory
usuario@ceserver2:~/kafka_2.13-3.1.0/bin$ cd ..
usuario@ceserver2:~/kafka_2.13-3.1.0$ cat /etc/hosts <
127.0.0.1 localhost
127.0.1.1 ceserver2

172.17.32.240 raspberrypi

172.17.10.30 CEPrueba
172.17.10.31 Worker1
172.17.10.32 Worker2

172.17.10.33 ceserver1
172.17.10.34 ceserver2
172.17.10.35 ceserver3
172.17.10.36 nodoFrontera
# The following lines are desirable for IPv6 capable hosts
::1      ip6-localhost ip6-loopback
fe00::0 ip6-localnet
ff00::0 ip6-mcastprefix
ff02::1 ip6-allnodes
ff02::2 ip6-allrouters
usuario@ceserver2:~/kafka_2.13-3.1.0$
```

Crear topic

Para crear un topic:

En Powershell ejecutar comando para crear topic, con factor de replicación 3 y partición 1:

```
kafka-topics.sh --create --topic 2024_142_RUIDO --replication-factor 3 --partitions 1 --bootstrap-server ceserver2:9092
```

```

usuario@ceserver2: ~/kafka_2.13-3.1.0/bin
  at org.apache.kafka.clients.admin.KafkaAdminClient.createInternal(KafkaAdminClient.java:538)
  at org.apache.kafka.clients.admin.KafkaAdminClient.createInternal(KafkaAdminClient.java:470)
  at org.apache.kafka.clients.admin.Admin.create(Admin.java:133)
  at kafka.admin.TopicCommand$TopicService$.createAdminClient(TopicCommand.scala:205)
  at kafka.admin.TopicCommand$TopicService$.apply(TopicCommand.scala:209)
  at kafka.admin.TopicCommand$.main(TopicCommand.scala:50)
  at kafka.admin.TopicCommand.main(TopicCommand.scala)
Caused by: org.apache.kafka.common.config.ConfigException: No resolvable bootstrap urls given in bootstrap.servers
  at org.apache.kafka.clients.ClientUtils.parseAndValidateAddresses(ClientUtils.java:89)
  at org.apache.kafka.clients.ClientUtils.parseAndValidateAddresses(ClientUtils.java:48)
  at org.apache.kafka.clients.admin.KafkaAdminClient.createInternal(KafkaAdminClient.java:490)
... 6 more
usuario@ceserver2:~/kafka_2.13-3.1.0/bin$ cat /etc/hosts
127.0.0.1 localhost
127.0.1.1 ceserver2

172.17.32.240 raspberrypi

172.17.10.30 CEPrueba
172.17.10.31 Worker1
172.17.10.32 Worker2

172.17.10.33 ceserver1
172.17.10.34 ceserver2
172.17.10.35 ceserver3
172.17.10.36 nodoFrontera
# The following lines are desirable for IPv6 capable hosts
::1      ip6-localhost ip6-loopback
fe00::0  ip6-localnet
ff00::0  ip6-mcastprefix
ff02::1  ip6-allnodes
ff02::2  ip6-allrouters
usuario@ceserver2:~/kafka_2.13-3.1.0/bin$ kafka-topics.sh --create --replication-factor 3 --partitions 1 --topic 2024_142_RUIDO --bootstrap-server ceserver2:9092
WARNING: Due to limitations in metric names, topics with a period ('.') or underscore ('_') could collide. To avoid issues it is best to use either, but not both.
Created topic 2024_142_RUIDO.
usuario@ceserver2:~/kafka_2.13-3.1.0/bin$
```

Desde inicio de nuevo – resumen

Listar topics.
Y crear topic

```

usuario@ceserver2: ~/kafka_2.13-3.1.0/bin
usuario@ceserver2:~/kafka_2.13-3.1.0/bin$ kafka-topics.sh -list -bootstrap-server 172.17.10.34:9092
^[[D2024_145_ruido
__consumer_offsets
camaraAULAateca
camaraAULAcisco
humedadAULA142
humedadAULA145
humedadAULA149
humedadAULA159
humedadAULAAteca
humedadAULAateca
humedadAULAcisco
iabd-aemet-bronze
luminosidadAULA142
luminosidadAULA145
luminosidadAULA149
luminosidadAULAateca
luminosidadAULAcisco
miTopic
miTopic2
ruidoAULA142
ruidoAULA145
ruidoAULA149
ruidoAULAateca
ruidoAULAcisco
temperaturaAULA142
temperaturaAULA145
temperaturaAULA149
temperaturaAULAateca
temperaturaAULAcisco
^[[Dusuario@ceserver2:~/kafka_2.13-3.1.0/bin$
usuario@ceserver2:~/kafka_2.13-3.1.0/bin$ kafka-topics.sh --create ceserver2:7059 --replication-factor 3 --partitions 1 --topic 2024_142_RUIDO --bootstrap-server:7059
Exception in thread "main" joptsimple.UnrecognizedOptionException: bootstrap-server:7059 is not a recognized option
  at joptsimple.OptionException.unrecognizedOption(OptionException.java:108)
  at joptsimple.OptionParser.handleLongOptionToken(OptionParser.java:510)
  at joptsimple.OptionParserState$2.handleArgument(OptionParserState.java:56)
```

```

usuario@ceserver2: ~/kafka_2.13-3.1.0/bin
usuario@ceserver2:~/kafka_2.13-3.1.0/bin$ kafka-topics.sh -list -bootstrap-server 172.17.10.34:9092
^[[D2024_145_ruido
__consumer_offsets
camaraAULAAteca
camaraAULAcisco
humedadAULA142
humedadAULA145
humedadAULA149
humedadAULA159
humedadAULAAtateca
humedadAULAAteca
humedadAULAcisco
iabd-aemet-bronze
luminosidadAULA142
luminosidadAULA145
luminosidadAULA149
luminosidadAULAAtateca
luminosidadAULAcisco
miTopic
miTopic2
ruidoAULA142
ruidoAULA145
ruidoAULA149
ruidoAULAAtateca
ruidoAULAcisco
temperaturaAULA142
temperaturaAULA145
temperaturaAULA149
temperaturaAULAAtateca
temperaturaAULAcisco
^[[Dusuar1o@ceserver2:~/kafka_2.13-3.1.0/bin$ 
usuario@ceserver2:~/kafka_2.13-3.1.0/bin$ kafka-topics.sh --create ceserver2:7059 --replication-factor 3 --partitions 1
--topic 2024_142_RUIDO --bootstrap-server:7059
Exception in thread "main" joptsimple.OptionException.unrecognizedOptionException: bootstrap-server:7059 is not a recognized option
    at joptsimple.OptionException.unrecognizedOption(OptionException.java:108)
    at joptsimple.OptionParser.handleLongOptionToken(OptionParser.java:510)
    at joptsimple.OptionParserState$2.handleArgument(OptionParserState.java:56)

```

Listar IPs y alias.

Crear topic

```

usuario@ceserver2: ~/kafka_2.13-3.1.0/bin
    at org.apache.kafka.clients.ClientUtils.parseAndValidateAddresses(ClientUtils.java:48)
    at org.apache.kafka.clients.admin.KafkaAdminClient.createInternal(KafkaAdminClient.java:490)
    ... 6 more
usuario@ceserver2:~/kafka_2.13-3.1.0/bin$ cat /etc/hosts
127.0.0.1 localhost
127.0.1.1 ceserver2
<
172.17.32.240 raspberrypi
✓

172.17.10.30 CEPrueba
172.17.10.31 Worker1
172.17.10.32 Worker2

172.17.10.33 ceserver1
172.17.10.34 ceserver2
172.17.10.35 ceserver3
172.17.10.36 nodoFrontera
# The following lines are desirable for IPv6 capable hosts
::1      ip6-localhost ip6-loopback
fe00::0 ip6-localnet
ff00::0 ip6-mcastprefix
ff02::1 ip6-allnodes
ff02::2 ip6-allrouters
✓
usuario@ceserver2:~/kafka_2.13-3.1.0/bin$ kafka-topics.sh --create --replication-factor 3 --partitions 1 --topic 2024_14
2_RUIDO --bootstrap-server ceserver2:9092
WARNING: Due to limitations in metric names, topics with a period ('.') or underscore '_' could collide. To avoid iss
ues it is best to use either, but not both.
Created topic 2024_142_RUIDO.
usuario@ceserver2:~/kafka_2.13-3.1.0/bin$ 
```

Crear topics

```
usuario@ceserver2: ~/kafka_2.13-3.1.0/bin
humedadAULA159
humedadAULAAteca
humedadAULAAteca
humedadAULAcisco
iabd-aemet-bronze
luminosidadAULA142
luminosidadAULA145
luminosidadAULA149
luminosidadAULAAteca
luminosidadAULAcisco
miTopic
miTopic2
ruidoAULA142
ruidoAULA145
ruidoAULA149
ruidoAULAAteca
ruidoAULAcisco
temperaturaAULA142
temperaturaAULA145
temperaturaAULA149
temperaturaAULAAteca
temperaturaAULAcisco
usuario@ceserver2:~/kafka_2.13-3.1.0/bin$ kafka-topics.sh --create --replication-factor 3 --partitions 1 --topic 2024_142_LUMINOSIDAD --bootstrap-server ceserver2:9092
WARNING: Due to limitations in metric names, topics with a period ('.') or underscore ('_') could collide. To avoid issues it is best to use either, but not both.
Created topic 2024_142_LUMINOSIDAD.
usuario@ceserver2:~/kafka_2.13-3.1.0/bin$ kafka-topics.sh --create --replication-factor 3 --partitions 1 --topic 2024_142_HUMEDAD --bootstrap-server ceserver2:9092
WARNING: Due to limitations in metric names, topics with a period ('.') or underscore ('_') could collide. To avoid issues it is best to use either, but not both.
Created topic 2024_142_HUMEDAD.
usuario@ceserver2:~/kafka_2.13-3.1.0/bin$ kafka-topics.sh --create --replication-factor 3 --partitions 1 --topic 2024_142_TEMPERATURA --bootstrap-server ceserver2:9092
WARNING: Due to limitations in metric names, topics with a period ('.') or underscore ('_') could collide. To avoid issues it is best to use either, but not both.
Created topic 2024_142_TEMPERATURA.
usuario@ceserver2:~/kafka_2.13-3.1.0/bin$
```

Listar topics

```
usuario@ceserver2: ~/kafka_2.13-3.1.0/bin
usuario@ceserver2:~/kafka_2.13-3.1.0/bin$ kafka-topics.sh -list -bootstrap-server 172.17.10.34:9092
2024_142_HUMEDAD
2024_142_LUMINOSIDAD
2024_142_RUIDO
2024_142_TEMPERATURA
2024_149_humedad
2024_149_luminosidad
2024_149_ruido
2024_149_temperatura
__consumer_offsets
camaraAULAAteca
camaraAULAcisco
humedadAULA142
humedadAULA145
humedadAULA149
humedadAULA159
humedadAULAAteca
humedadAULAAteca
humedadAULAcisco
iabd-aemet-bronze
luminosidadAULA142
luminosidadAULA145
luminosidadAULA149
luminosidadAULAAteca
luminosidadAULAcisco
miTopic
miTopic2
ruidoAULA142
ruidoAULA145
ruidoAULA149
ruidoAULAAteca
ruidoAULAcisco
temperaturaAULA142
temperaturaAULA145
temperaturaAULA149
temperaturaAULAAteca
temperaturaAULAcisco
usuario@ceserver2:~/kafka_2.13-3.1.0/bin$
```

3 Crear consumidores.

Aquí el código de un consumidor.

Ver el resto de scripts en GitHub el directorio: MarekKub/[IOT_clase_Albarregas/2](#) consumers/

Código de : consumer-temperatura.py

```
from hdfs import InsecureClient
from kafka import KafkaConsumer
from json import loads
import csv
import os
from datetime import datetime

# Configuración para guardar el CSV en HDFS

# Datos de conexión
HDFS_HOSTNAME = '172.17.10.30'

HDFSCLI_PORT = 9870

HDFSCLI_CONNECTION_STRING = f'http://{{HDFS_HOSTNAME}}:{{HDFSCLI_PORT}}'

hdfs_client = InsecureClient(HDFSCLI_CONNECTION_STRING)

variable_datetime_now = datetime.now()
t = variable_datetime_now.strftime("%H:%M:%S")
ft= variable_datetime_now.strftime("%m/%d/%Y %H:%M")
ft = ft.replace("/", "-").replace(":", "_")

topic = '2024_142_TEMPERATURA'

# Configuración del consumidor Kafka
consumer = KafkaConsumer(
    topic,
    auto_offset_reset='earliest',
    enable_auto_commit=True,
    value_deserializer=lambda msg: loads(msg.decode('utf-8')),
    bootstrap_servers=['ceserver2:9092'])

# Contador de filas
row_count = 0
```

```

# Recuperar tiempo actual
variable_datetime_now = datetime.now()

ftt = variable_datetime_now.strftime("%d-%m-%Y %H_%M")
ft= variable_datetime_now.strftime("%d-%m-%Y %H")

# Nombre del archivo CSV
csv_filename = f'{topic}_{ft}.csv'

# Verificar si el archivo CSV ya existe, si no, crearlo con el encabezado
if not os.path.exists(csv_filename):
    with open(csv_filename, mode='w', newline='') as file:
        writer = csv.writer(file)
        writer.writerow(['fecha','valor']) # Ajusta las columnas según tus datos

for msg in consumer:
    data = msg.value
    # Escribir los datos en el archivo CSV
    with open(csv_filename, mode='a', newline='') as file:
        writer = csv.writer(file)
        writer.writerow(data[1] , [data.payload]) # Ajusta las columnas según tus datos ponemos data
    para confirmar los datos de entradas entran en el csv

    # Incrementar el contador de filas
    row_count += 1

    # Si alcanzamos 60 filas, subir el archivo CSV a HDFS y reiniciar el contador
    # Las filas se cuentan con len
    if row_count == 60:

        # guardamos el datetime.now() para poder usarlo para borrar fichero
        # Y formatear tiempo
        hdfs_client.write("/Pro_IOT/142/", csv_filename) # Ejecutar comando para subir el archivo a
HDFS

        # Borrar datos del CSV -> borrar el csv
        os.remove(csv_filename)

    row_count = 0 # Reiniciar contador de filas

```