

南昌大学实验报告

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实验日期：2019.5.12

课程名称：云计算

实验项目名称

Lab 6 Introduction to Cloud Computing -- Kafka

实验目的

- Understanding the concept of message passing
- Trying to follow up the procedure of a message broker that handles message from many tenants
- Repeating what others have done in the past sheds the light on your future

实验基础

<https://data-flair.training/blogs/kafka-docker/>

<https://blog.antlypls.com/blog/2015/10/05/getting-started-with-spark-streaming-using-docker/>

https://gerardnico.com/dit/kafka/stream_wordcount

https://gerardnico.com/dit/kafka/docker_single_node

实验步骤

1. 安装docker-compose

```
apt install docker-compose
```



```
git clone https://github.com/confluentinc/cp-docker-images.git
cd cp-docker-images/examples/kafka-single-node
cat docker-compose.yml
```

```
root@vps-sfo181022:~# git clone https://github.com/confluentinc/cp-docker-images.git
Cloning into 'cp-docker-images'...
remote: Enumerating objects: 15, done.
remote: Counting objects: 100% (15/15), done.
remote: Compressing objects: 100% (14/14), done.
remote: Total 9427 (delta 2), reused 5 (delta 1), pack-reused 9412
Receiving objects: 100% (9427/9427), 9.48 MiB | 6.22 MiB/s, done.
Resolving deltas: 100% (5483/5483), done.
root@vps-sfo181022:~#
root@vps-sfo181022:~/cp-docker-images/examples/kafka-single-node
remote: Enumerating objects: 15, done.
remote: Counting objects: 100% (15/15), done.
remote: Compressing objects: 100% (14/14), done.
remote: Total 9427 (delta 2), reused 5 (delta 1), pack-reused 9412
Receiving objects: 100% (9427/9427), 9.48 MiB | 6.22 MiB/s, done.
Resolving deltas: 100% (5483/5483), done.
root@vps-sfo181022:~/cp-docker-images/examples/kafka-single-node# cd cp-docker-images/examples/kafka-single-node
root@vps-sfo181022:~/cp-docker-images/examples/kafka-single-node# cat docker-compose.yml
---
version: '2'
services:
  zookeeper:
    image: confluentinc/cp-zookeeper:latest
    environment:
      ZOOKEEPER_CLIENT_PORT: 2181
      ZOOKEEPER_TICK_TIME: 2000
  kafka:
    # "-----"
    # An important note about accessing Kafka from clients on other machines:
    # -----
    #
    # The config used here exposes port 9092 for _external_ connections to the broker
    # i.e. those from _outside_ the docker network. This could be from the host machine
    # running docker, or maybe further afield if you've got a more complicated setup.
    # If the latter is true, you will need to change the value 'localhost' in
    # KAFKA_ADVERTISED_LISTENERS to one that is resolvable to the docker host from those
    # remote clients
    #
    # For connections _internal_ to the docker network, such as from other services
    # and components, use kafka:29092.
    #
    # See https://rmoff.net/2018/08/02/kafka-listeners-explained/ for details
    # "-----"
    image: confluentinc/cp-kafka:latest
    depends_on:
      - zookeeper
    ports:
      - 9092:9092
    environment:
      KAFKA_BROKER_ID: 1
      KAFKA_ZOOKEEPER_CONNECT: zookeeper:2181
      KAFKA_ADVERTISED_LISTENERS: PLAINTEXT://kafka:29092,PLAINTEXT_HOST://localhost:9092
      KAFKA_LISTENER_SECURITY_PROTOCOL_MAP: PLAINTEXT:PLAINTEXT,PLAINTEXT_HOST:PLAINTEXT
      KAFKA_INTER_BROKER_LISTENER_NAME: PLAINTEXT
      KAFKA_OFFSETS_TOPIC_REPLICATION_FACTOR: 1
root@vps-sfo181022:~/cp-docker-images/examples/kafka-single-node#
```

4. 修改docker-compose.yml

```
vim docker-compose.yml
```

```
---
version: '2'
services:
  zookeeper:
    image: confluentinc/cp-zookeeper:3.3.0
    network_mode: host
    environment:
      ZOOKEEPER_CLIENT_PORT: 32181
      ZOOKEEPER_TICK_TIME: 2000
    extra_hosts:
      - "moby:127.0.0.1"
      - "default:127.0.0.1"
  kafka:
    image: confluentinc/cp-kafka:3.3.0
```

```
network_mode: host
depends_on:
  - zookeeper
environment:
  KAFKA_BROKER_ID: 1
  KAFKA_ZOOKEEPER_CONNECT: localhost:32181
  KAFKA_ADVERTISED_LISTENERS: PLAINTEXT://localhost:29092
  KAFKA_OFFSETS_TOPIC_REPLICATION_FACTOR: 1
extra_hosts:
  - "moby:127.0.0.1"
  - "default:127.0.0.1"
```

```
root@vps-sfo181022: ~/cp-docker-images/examples/kafka-single-node
version: '2'
services:
  zookeeper:
    image: confluentinc/cp-zookeeper:3.3.0
    network_mode: host
    environment:
      ZOOKEEPER_CLIENT_PORT: 32181
      ZOOKEEPER_TICK_TIME: 2000
    extra_hosts:
      - "moby:127.0.0.1"
      - "default:127.0.0.1"
  kafka:
    image: confluentinc/cp-kafka:3.3.0
    network_mode: host
    depends_on:
      - zookeeper
    environment:
      KAFKA_BROKER_ID: 1
      KAFKA_ZOOKEEPER_CONNECT: localhost:32181
      KAFKA_ADVERTISED_LISTENERS: PLAINTEXT://localhost:29092
      KAFKA_OFFSETS_TOPIC_REPLICATION_FACTOR: 1
    extra_hosts:
      - "moby:127.0.0.1"
      - "default:127.0.0.1"

"docker-compose.yml" 25L, 634C 25,27 All
```

5. 开始服务

```
docker-compose up -d
```

```
root@vps-sfo181022:~/cp-docker-images/examples/kafka-single-node# docker-compose up -d
Pulling zookeeper (confluentinc/cp-zookeeper:3.3.0)...
3.3.0: Pulling from confluentinc/cp-zookeeper
ad74af05f5a2: Pull complete
d02e292e7b5e: Pull complete
8de7f5c81ab0: Pull complete
ed0b76dc2730: Pull complete
cfc44fa8a002: Pull complete
1e07e523d000: Pull complete
4462147ab37b: Pull complete
Digest: sha256:97b4f3fded09e8466f65ba722b684b3ac6f5a711de2e7723f9b1b699886ada15
Status: Downloaded newer image for confluentinc/cp-zookeeper:3.3.0
Pulling kafka (confluentinc/cp-kafka:3.3.0)...
3.3.0: Pulling from confluentinc/cp-kafka
ad74af05f5a2: Already exists
d02e292e7b5e: Already exists
8de7f5c81ab0: Already exists
ed0b76dc2730: Already exists
cfc44fa8a002: Already exists
f441b84ed9ba: Pull complete
d42bb38e2f0e: Pull complete
Digest: sha256:61373cf6eca980887164d6fede2552015db31a809c99d6c3d5dfc70867b6cd2d
Status: Downloaded newer image for confluentinc/cp-kafka:3.3.0
Creating kafkasinglenode_zookeeper_1 ...
Creating kafkasinglenode_zookeeper_1 ... done
Creating kafkasinglenode_kafka_1 ...
Creating kafkasinglenode_kafka_1 ... done
root@vps-sfo181022:~/cp-docker-images/examples/kafka-single-node#
```

服务状态

```
docker-compose ps
```

```
root@vps-sfo181022:~/cp-docker-images/examples/kafka-single-node# docker-compose ps
-----
Name                                Command                                State      Ports
-----
kafkasinglenode_kafka_1              /etc/confluent/docker/run            Exit 1
kafkasinglenode_zookeeper_1          /etc/confluent/docker/run            Exit 1
root@vps-sfo181022:~/cp-docker-images/examples/kafka-single-node#
```

实验数据或结果

结果同上

实验思考

参考资料