Kakfa + Spark Streaming + Docker WorkCount Example

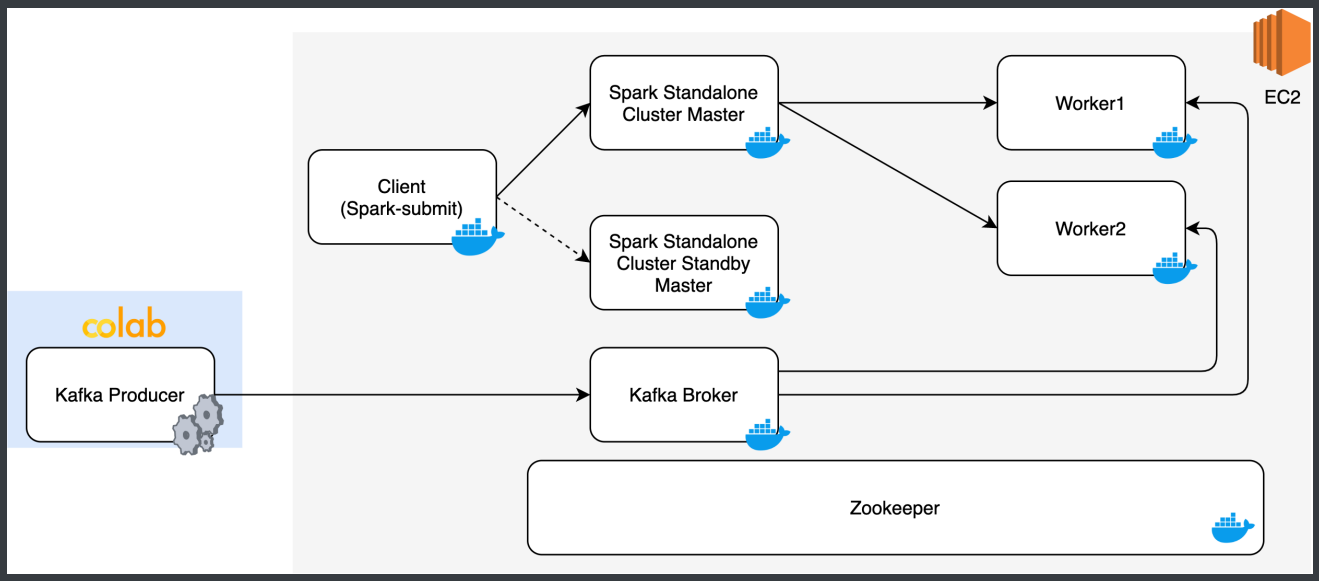
This tutorial includes:

1. how to install Docker on ubuntu?
2. how to write and build a Dockerfile?
3. how to commite a running container and create a deplicate one?
4. how to run Kafka, Zookeeper, and Spark in Docker container?
5. how to set up a high available spark cluster using zookeeper?
6. how to process dataflow generated by Kafka using Spark (demostrate using a simple wordcount example)?

Instruction Video

Environment

- EC2:
  - OS: Ubuntu 18.04
  - Size: t2.medium (2CPU, 4GB RAM)
  - Volumn: 16GB
  - Security Group:
    - Inbound: 22, 8079-8082, 9092
    - Outbound: all
- Spark-2.4.7-hadoop2.7
- Zookeeper
- Kafka



Step 1. Install Docker on EC2

```
sudo apt-get update && sudo apt-get install -y docker docker.io
# grant user root priviledge to run docker without sudo
sudo usermod -aG docker $USER
sudo reboot
```

Step 2. Build Docker Images

```
./buildImages.sh <your docker hub id>
```

Step 3. Configure Kafka advertised IP address in the configuration file

```
sed -i 's/<PUBLIC_IP>/replace here with your ec2 instance public IP/g' kafka-conf/server.properties

# for example
# sed -i 's/<PUBLIC_IP>/3.238.250.114/g' kafka-conf/server.properties
```

Step 4. Prepare volumes that containers will mount

Copy the kafka-conf and spark-conf folder into your ec2 instance.

Step 5. Install Containers in EC2 and Set up the cluster

```
./setup.sh <your docker hub id>
```

Web UI

- Spark Master: http://<public ip>:8080
- Spark Standby Master: http://<public ip>:8079
- Spark Worker1: http://<public ip>:8081
- Spark Worker2: http://<public ip>:8082