Spring Cloud로 개발하는 마이크로서비스 애플리케이션

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목차

Part II

Section 16.

애플리케이션 배포

Docker Container

- Design Deployment
- Configuration server
- Eureka Discovery
- API Gateway
- MariaDB
- Kafka
- Zipkin
- Monitoring
- Microservices
- Multiple Environments

Running Microservices

- IntelliJ IDEA
- Exported JAR file
- Docker Container

IntelliJ IDEA
+
Local

JAR file
+
Local

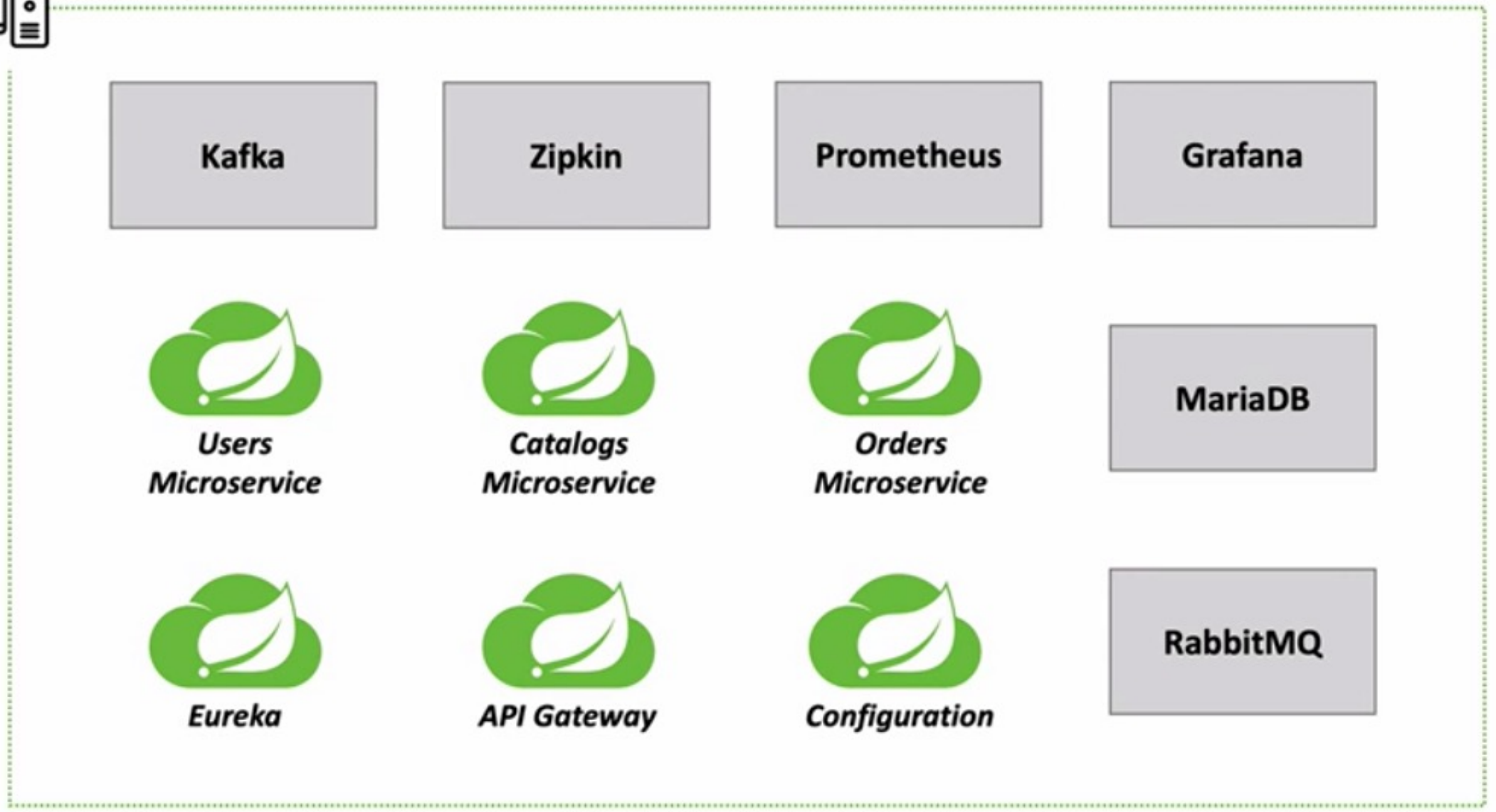
Docker
+
Local

Docker
+
AWS EC2

Docker
+
Docker Swarm Mode
+
AWS EC2

Docker
+
Kubernetes
+
AWS EC2

Running Microservices in Local



Create Bridge Network

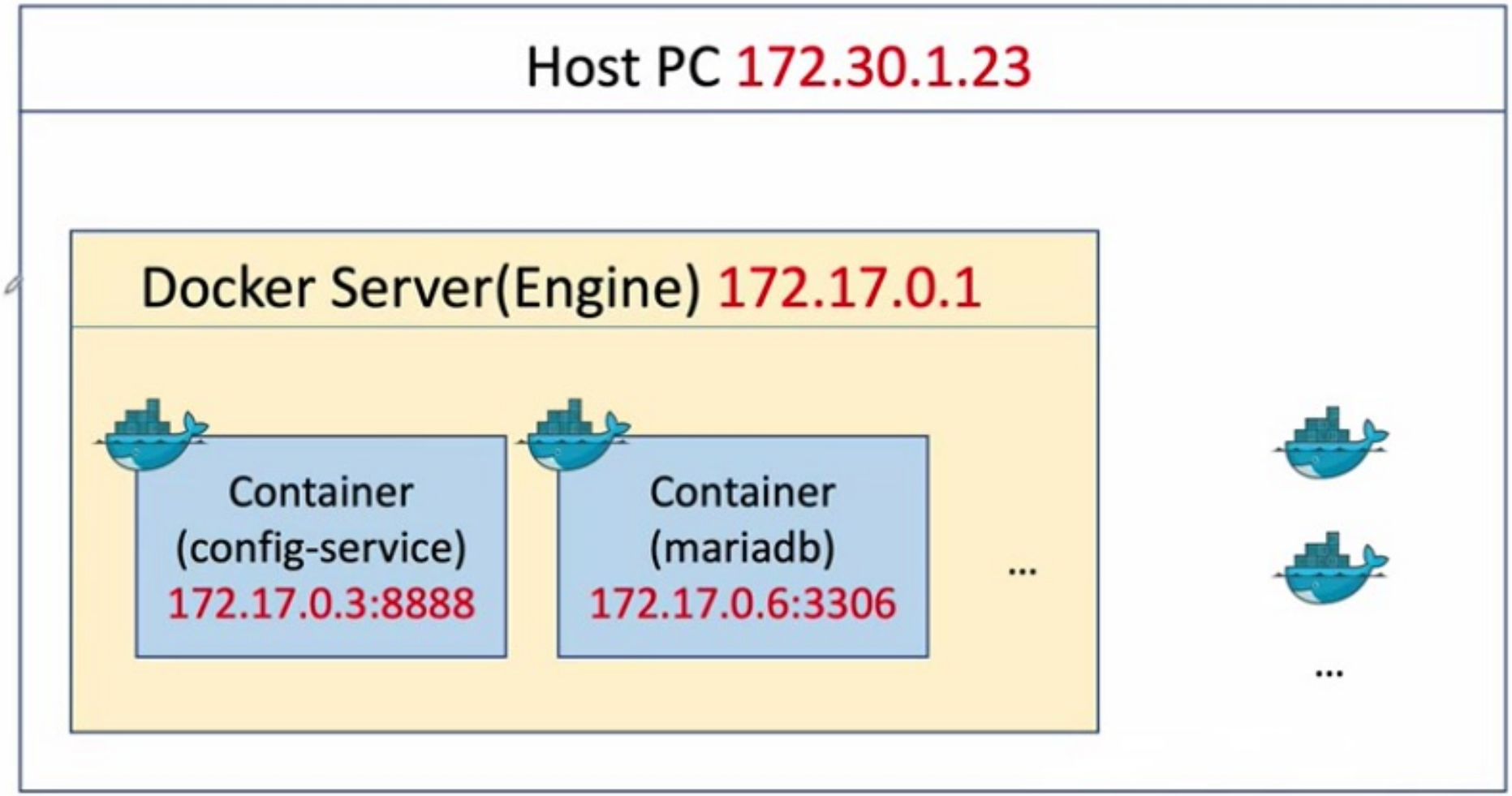
- ***Bridge network***
  - $ docker network create --driver bridge [브릿지 이름]
- ***Host network***
  - 네트워크를 호스트로 설정하면 호스트의 네트워크 환경을 그대로 사용
  - 포트 포워딩 없이 내부 어플리케이션 사용
- ***None network***
  - 네트워크를 사용하지 않음
  - lo 네트워크만 사용, 외부와 단절

$ docker network create ***ecommerce-network***

$ docker network ls

```
docker network ls
NETWORK ID     NAME                DRIVER    SCOPE
2879c2a94c9f   bridge              bridge    local
22e70794e399   ecommerce-network   bridge    local
de014ae20e46   host                host      local
2624444d0133   none                null      local
```

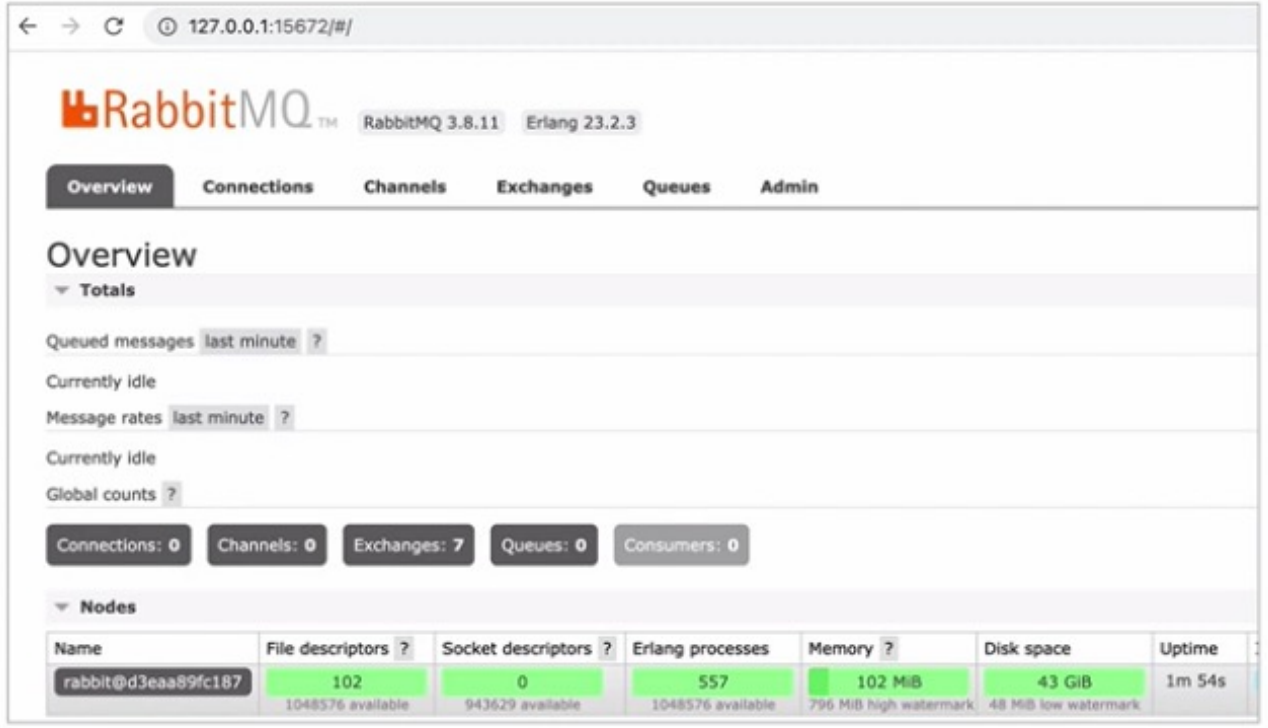
Create Bridge Network



Run RabbitMQ

```
$ docker run -d --name rabbitmq --network ecommerce-network \
        -p 15672:15672 -p 5672:5672 -p 15671:15671 -p 5671:5671 -p 4369:4369 \
        -e RABBITMQ_DEFAULT_USER=guest \
        -e RABBITMQ_DEFAULT_PASS=guest rabbitmq:management
```

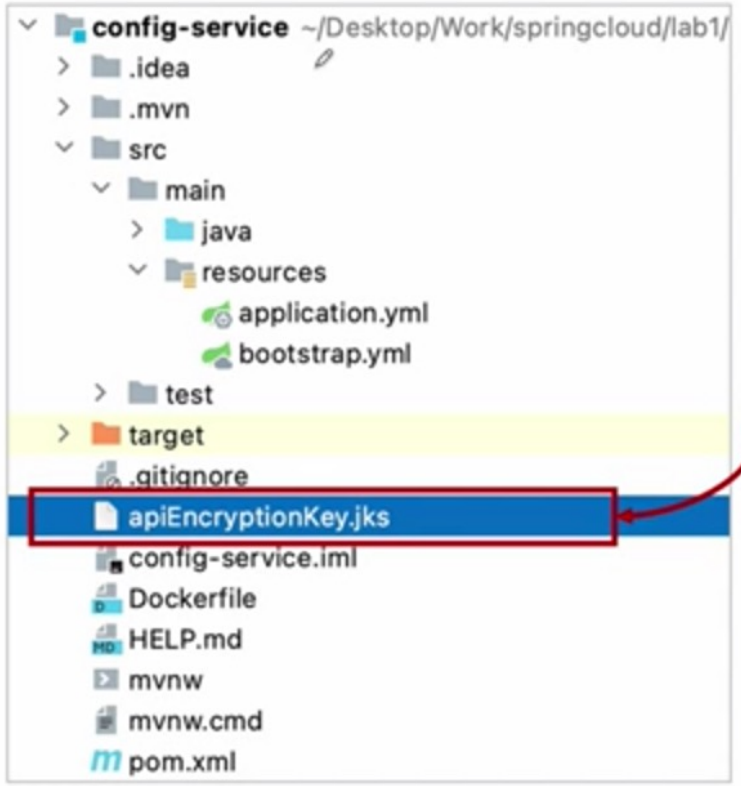
```
Starting RabbitMQ 3.8.11 on Erlang 23.2.3
Copyright (c) 2007-2020 VMware, Inc. or its affiliates.
Licensed under the MPL 2.0. Website: https://rabbitmq.com

 ##  ##      RabbitMQ 3.8.11
 ##  ##
 ##########  Copyright (c) 2007-2020 VMware, Inc. or its affiliates.
 ######  ##
 ##########  Licensed under the MPL 2.0. Website: https://rabbitmq.com

 Doc guides: https://rabbitmq.com/documentation.html
 Support:    https://rabbitmq.com/contact.html
 Tutorials:  https://rabbitmq.com/getstarted.html
 Monitoring: https://rabbitmq.com/monitoring.html
```



Create Config Server Docker Image

```
FROM openjdk:17-ea-11-jdk-slim
VOLUME /tmp
COPY apiEncryptionKey.jks apiEncryptionKey.jks
COPY target/config-service-1.0.jar ConfigService.jar
ENTRYPOINT ["java", "-jar", "ConfigService.jar"]
```

```
<groupId>com.example</groupId>
<artifactId>config-service</artifactId>
<!--    <version>0.0.1-SNAPSHOT</version>-->
<version>1.0</version>
<name>config-service</name>
```



- ***copy to docker container***

Create Config Server Docker Image

```
encrypt:
#  key: abcdefghijklmnopqrstuvwxyz0123456789
  key-store:
#    location: file://${user.home}/Desktop/Work/keystore/apiEncryptionKey.jks
    location: file:/apiEncryptionKey.jks
    password: test1234
    alias: apiEncryptionKey
```

- ***change the path***

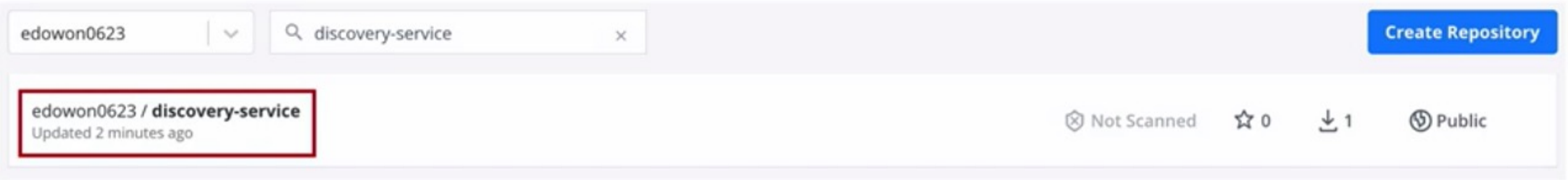
$ mvn clean compile package –DskipTests=true

```
[INFO] --- maven-surefire-plugin:2.22.2:test (default-test) @ config-service ---
[INFO] Tests are skipped.
[INFO]
[INFO] --- maven-jar-plugin:3.2.0:jar (default-jar) @ config-service ---
[INFO] Building jar: /Users/dowonlee/Desktop/Work/springcloud/lab1/config-service/target/config-service-1.0.jar
[INFO]
[INFO] --- spring-boot-maven-plugin:2.4.2:repackage (repackage) @ config-service ---
[INFO] Replacing main artifact with repackaged archive
[INFO] ------------------------------------------------------------------------
[INFO] BUILD SUCCESS
[INFO] ------------------------------------------------------------------------
[INFO] Total time:  3.616 s
[INFO] Finished at: 2021-03-08T09:05:27+09:00
[INFO] ------------------------------------------------------------------------
```

Build Eureka Discovery Docker Image

```
FROM openjdk:17-ea-11-jdk-slim
VOLUME /tmp
COPY target/discoveryservice-1.0.jar DiscoveryService.jar
ENTRYPOINT ["java", "-jar", "DiscoveryService.jar"]
```

- docker build --tag= edowon0623/discovery-service .
- docker push edowon0623/discovery-service



Run Eureka Discovery

```
$ docker run -d -p 8761:8761 --network ecommerce-network \
        -e "spring.cloud.config.uri=http://config-service:8888" \
        --name discovery-service edowon0623/discovery-service
```

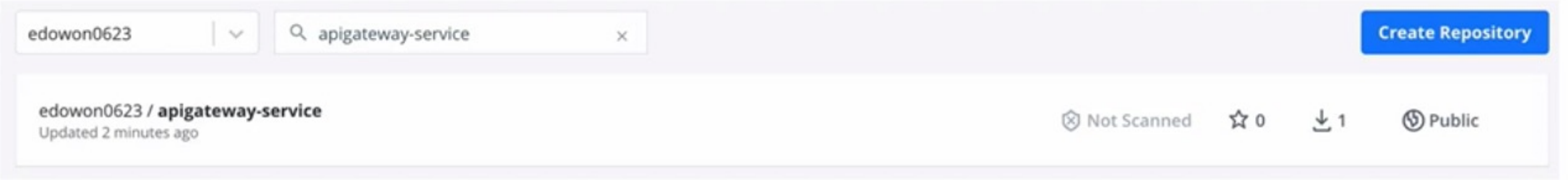
```
$ docker logs discovery-service
```

```
INFO 1 --- [      Thread-10] o.s.c.n.e.server.EurekaServerBootstrap   : isAws returned false
INFO 1 --- [      Thread-10] o.s.c.n.e.server.EurekaServerBootstrap   : Initialized server context
INFO 1 --- [      Thread-10] c.n.e.r.PeerAwareInstanceRegistryImpl    : Got 1 instances from neighboring DS node
INFO 1 --- [      Thread-10] c.n.e.r.PeerAwareInstanceRegistryImpl    : Renew threshold is: 1
INFO 1 --- [      Thread-10] c.n.e.r.PeerAwareInstanceRegistryImpl    : Changing status to UP
INFO 1 --- [      Thread-10] e.s.EurekaServerInitializerConfiguration : Started Eureka Server
INFO 1 --- [         main] o.s.b.w.embedded.tomcat.TomcatWebServer  : Tomcat started on port(s): 8010 (http) with context path ''
INFO 1 --- [         main] .s.c.n.e.s.EurekaAutoServiceRegistration : Updating port to 8010
```

Build ApiGateway Service Docker Image

```
FROM openjdk:17-ea-11-jdk-slim
VOLUME /tmp
COPY target/apigateway-1.0.jar ApiGateway.jar
ENTRYPOINT ["java", "-jar", "ApiGateway.jar"]
```

- docker build --tag=edowon0623/apigateway-service .
- docker push edowon0623/apigateway-service



Run ApiGateway Service

```yaml
spring:
  cloud:
    config:
      uri: http://127.0.0.1:8888
      name: ecommerce
```

```yaml
eureka:
  client:
    register-with-eureka: true
    fetch-registry: true
    service-url:
      defaultZone: http://localhost:8761/eureka
```

```
$ docker run -d -p 8000:8000 --network ecommerce-network \
        -e "spring.cloud.config.uri=http://config-service:8888" \
        -e "spring.rabbitmq.host=rabbitmq" \
        -e "eureka.client.serviceUrl.defaultZone=http://discovery-service:8761/eureka/" \
        --name apigateway-service \
        edowon0623/apigateway-service
```

Build, Run MariaDB

```
FROM mariadb
ENV MYSQL_ROOT_PASSWORD test1357
ENV MYSQL_DATABASE mydb
COPY ./mysql /var/lib/mysql
EXPOSE 3306
ENTRYPOINT ["mysqld"]
```

```
mysql.server start
Starting MariaDB
.210308 23:25:30 mysqld_safe Logging to '/usr/local/var/mysql/DOWONui-MacBookPro.local.err'.
210308 23:25:30 mysqld_safe Starting mariadbd daemon with databases from /usr/local/var/mysql
 SUCCESS!
```

```
C:₩Work₩mariadb-10.5.8-winx64>.₩bin₩mariadb-install-db.exe --datadir=C:₩Work₩mariadb-10.5.8-winx64₩data --service=mariaDB --port=3306 --password=test1357
Running bootstrap
2021-02-21 12:45:55 0 [Note] C:₩Work₩mariadb-10.5.8-winx64₩bin₩mysqld.exe (mysqld 10.5.8-MariaDB) starting as process 24056 ...
Removing default user
Setting root password
Creating my.ini file
Registering service 'mariaDB'
Creation of the database was successful

C:₩Work₩mariadb-10.5.8-winx64>
```

$ docker build -t edowon0623/my_mariadb -f Dockerfile_mariadb .

$ docker run -d -p 3306:3306 **--network ecommerce-network** --name mariadb edowon0623/my_mariadb

Run Kafka Server

- ***Zookeeper + Kafka Standalone***
  - docker-compose로 실행
  - git clone https://github.com/wurstmeister/kafka-docker
  - docker-compose-single-broker.yml 수정

$ docker-compose -f docker-compose-single-broker.yml up -d

```yaml
version: '2'
services:
  zookeeper:
    image: wurstmeister/zookeeper
    ports:
      - "2181:2181"
    networks:
      my-network:
        ipv4_address: 172.18.0.100
  kafka:
    # build: .
    image: wurstmeister/kafka
    ports:
      - "9092:9092"
    environment:
      KAFKA_ADVERTISED_HOST_NAME: 172.18.0.101
      KAFKA_CREATE_TOPICS: "test:1:1"
      KAFKA_ZOOKEEPER_CONNECT: zookeeper:2181
    volumes:
      - /var/run/docker.sock:/var/run/docker.sock
    depends_on:
      - zookeeper
    networks:
      my-network:
        ipv4_address: 172.18.0.101

networks:
  my-network:
    name: ecommerce-network
```

Run Zipkin

- https://zipkin.io/pages/quickstart

```
$ docker run -d -p 9411:9411 \
        --network ecommerce-network \
        --name zipkin \
        openzipkin/zipkin
```