Streaming over Kafka

Prerequisites

- *Installed:* Curl
- *Installed:* Mosquitto (MQTT-client)
- *Installed:* Docker-CE
- *Installed:* Git
- *Installed:* java SDK 8
- *Installed:* maven (mvn)
- *Installed:* DSH UMP-client
- *Available:* tenant UID
- *Available:* docker registry credentials
- *Available:* API-Key

Goal

Learn to deploy an application on DSH that connects to DSH kafka.

Steps

1. Get tenant example
2. Build docker image
3. Push docker image to tenant's docker registry
4. Use UMP to deploy container on DSH
5. Use MQTT to contact container

Get tenant example

- Clone this repo from git: https://github.com/kpn-dsh/tenant-example
- It contains a fully working tenant example
  - in java
  - built with maven
  - builds docker image

Inspect

Dockerfile => UID

- Change your pwd (present working directory) to `tenant-example`
- Open the `Dockerfile` in your favorite text-editor
- Modify the `ENV id 1024` line according to the comment above it and save the modification

Inspect

pom.xml => tenant

- Open the `pom.xml` in your favorite text-editor
- Modify the tenant to your tenant

```
<tenant>dshdemo2</tenant>
```

- Modify version to something that contains your name: e.g.

```
<version>1.0.1-bruno-SNAPSHOT</version>
```

Build

```
mvn package
```

This will build the java binary and the docker image *locally*. Look in the output for the name of the docker image.

Push

Since every tenant has its own docker registry this will be reflected in the image tag name:

```
dataserviceshub-docker-$TENANT.jfrog.io/image:...
```

You need to be logged in to use this registry:

```
docker login dataserviceshub-docker-$TENANT.jfrog.io
```

Now you can push your image to the tenant's docker registry:

```
docker push \
  dataserviceshub-docker-$TENANT.jfrog.io/tenant-example:...
```

Deploying

The docker image has now been built and safely stored in the docker registry.
Next step: deploying a container on the DSH.

UMP

- is an angular-/ electron-based application
- connects to DSH over MQTT
- can be used to manage/ request resources (*CPUs*, *Memory*, *VHosts* and *Volumes*)
- can deploy services/ applications to DSH

Download

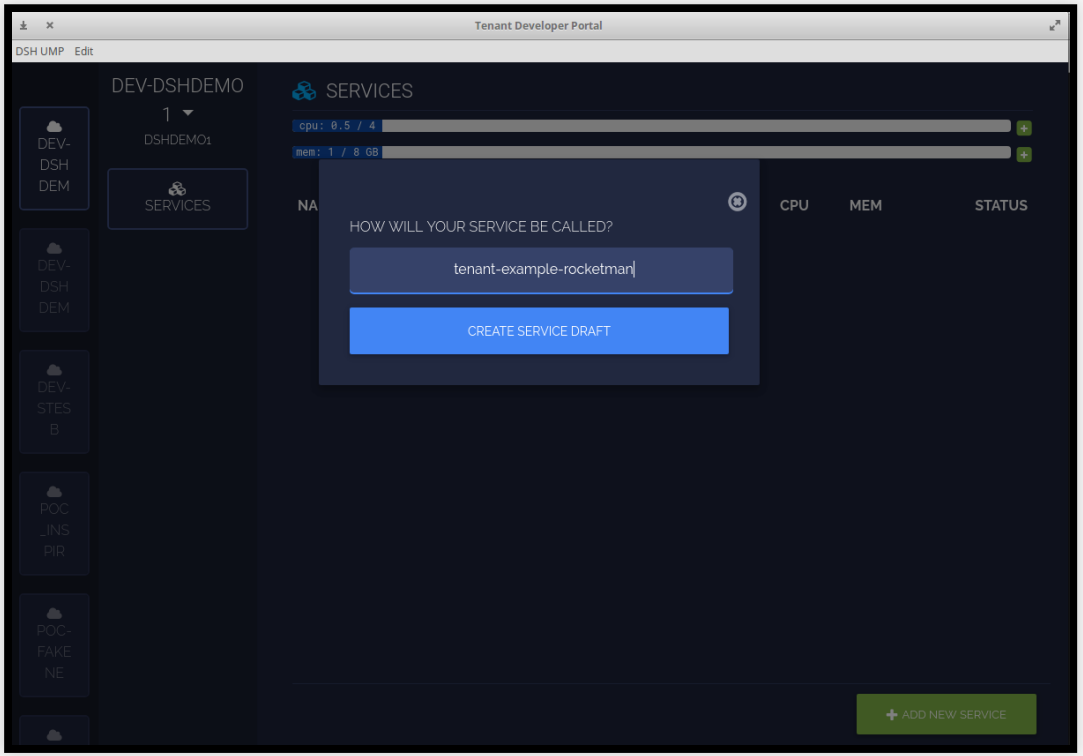
- Linux: https://s3.eu-central-1.amazonaws.com/dsh-ump/auto-update/dsh-ump-1.2.0-x86_64.AppImage
- macOS: https://s3.eu-central-1.amazonaws.com/dsh-ump/auto-update/DSH-UMP-1.2.0.dmg
- Windows: https://s3.eu-central-1.amazonaws.com/dsh-ump/auto-update/DSH-UMP+Setup+1.2.0.exe

Connect/Setup UMP

- Click + to add a new environment
- Fill in the requested values

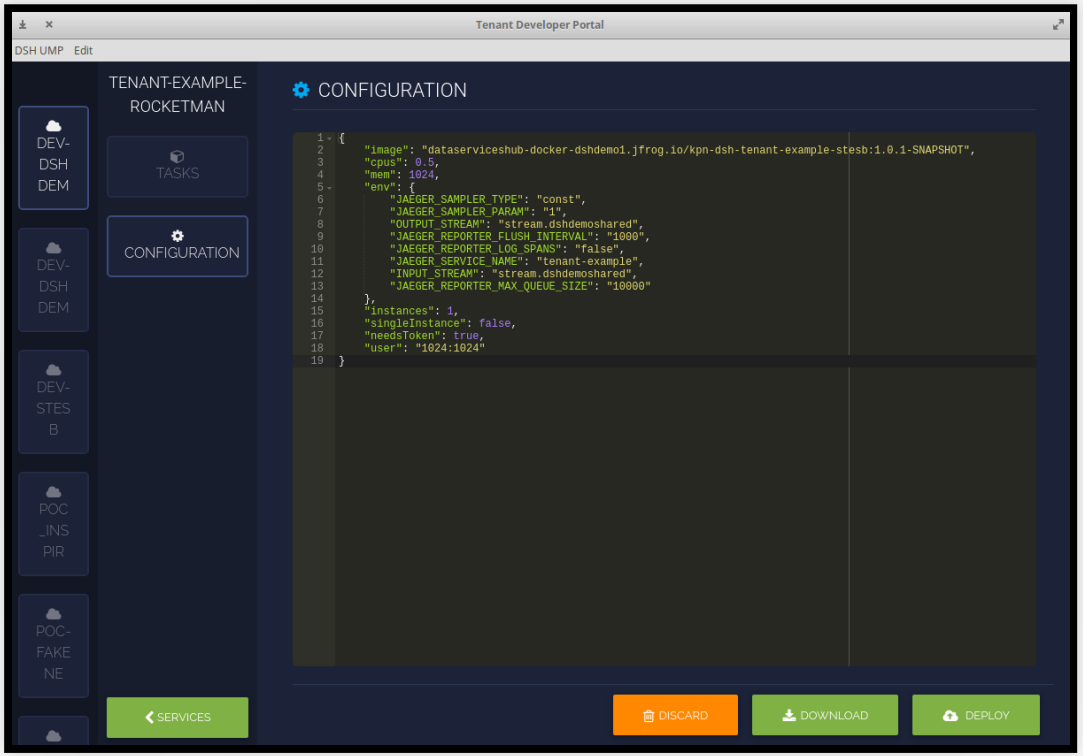
Deploy application

- Click on the *Add new service*-button
- and name it `tenant-example-<your_name>`


Tenant Developer Portal
DSH UMP
Edit
DEV-DSHDEMO
1
DSHDEMO1
SERVICES
DEV-DSH DEM
DEV-DSH DEM
DEV-STES B
POC _INS PIR
POC-FAKE NE
SERVICES
cpu: 0.5 / 4
mem: 1 / 8 GB
NA
CPU
MEM
STATUS
HOW WILL YOUR SERVICE BE CALLED?
tenant-example-rocketman
CREATE SERVICE DRAFT
ADD NEW SERVICE

Deploy application

- create AMP definition (see `tenant-example.json`)
- modify the name of the image
- modify the user if needed
- and click *deploy*


Tenant Developer Portal
DSH UMP
Edit
DEV-DSH DEM
DEV-DSH DEM
DEV-STES B
POC _INS PIR
POC-FAKE NE
TENANT-EXAMPLE-ROCKETMAN
TASKS
CONFIGURATION
SERVICES
CONFIGURATION
{
"image": "dataserviceshub-docker-dshdemo1.jfrog.io/kpn-dsh-tenant-example-stesb:1.0.1-SNAPSHOT",
"cpus": 0.5,
"mem": 1024,
"env": {
"JAEGER_SAMPLER_TYPE": "const",
"JAEGER_SAMPLER_PARAM": "1",
"OUTPUT_STREAM": "stream.dshdemoshared",
"JAEGER_REPORTER_FLUSH_INTERVAL": "1000",
"JAEGER_REPORTER_LOG_SPANS": "false",
"JAEGER_SERVICE_NAME": "tenant-example",
"INPUT_STREAM": "stream.dshdemoshared",
"JAEGER_REPORTER_MAX_QUEUE_SIZE": "10000"
},
"instances": 1,
"singleInstance": false,
"needsToken": true,
"user": "1024:1024"
}
DISCARD
DOWNLOAD
DEPLOY

Test application

The kpn-tenant-example listens to the `dshdemoshared` topics on the `command` key.
Two commands are supported:

- whoami
- restart

Responses to those commands are written on the `response` key.

Verify

You can set up an mqtt connection to verify:

```
mosquitto_sub -h mqtt.$PLATFORM.kpn-dsh.com -p 8883 \
-t "/tt/dshdemoshared/response/#" \
--capath /etc/ssl/certs/ -d -P "`cat mqtt-token.txt`" \
-u $THING_ID -v
```

On macOS use

```
mosquitto_sub -h mqtt.$PLATFORM.kpn-dsh.com -p 8883 \
-t "/tt/dshdemoshared/response/#"  \
--cafile /usr/local/etc/openssl/cert.pem -d \
-P "`cat mqtt-token.txt`" -u $THING_ID -v
```

Verify

```
mosquitto_pub -h mqtt.$PLATFORM.kpn-dsh.com -p 8883 \
-t "/tt/dshdemoshared/command/" \
--capath /etc/ssl/certs/ -d -P "`cat mqtt-token.txt`" \
-u $THING_ID -l
```

On macOS use

```
mosquitto_pub -h mqtt.$PLATFORM.kpn-dsh.com -p 8883 \
-t "/tt/dshdemoshared/command/" \
--cafile /usr/local/etc/openssl/cert.pem -d \
-P "`cat mqtt-token.txt`" -u $THING_ID -l
```

Type:

```
whoami
```

and see what's returned in the subscription.

Clean-up

- Remove your service after testing
- Select your service
- Select *configuration*
- Choose *destroy* and confirm

Thank you for participating.

End of Kafka Tutorial