Practical Exercise: Working with Microgateway

Training Objective

In this section, you will learn how to import an API from WSO2 API Manager and create a Microgateway project.

Business Scenario

PizzaShack Limited needs to deploy their APIs using the **Microgateway** in a decentralized microservices manner.

High-Level Steps

- Prerequisites
- Create a Microgateway project
- Build and Run the Microgateway project
- Invoke API

Detailed Instructions

Prerequisites

1. Download the [Microgateway Toolkit and Runtime](#) according to your OS.
2. Export the public certificate of API Manager.

```
keytool -export -alias wso2carbon -file wso2carbon.crt -keystore
<API-M_HOME>/repository/resources/security/wso2carbon.jks
```

Default Password: wso2carbon

3. Import that certificate to Microgateway Toolkit and Runtime truststore.

```
keytool -import -trustcacerts -alias wso2carbon2 -file
wso2carbon.crt -keystore
<MGW_TOOLKIT_HOME>/lib/platform/bre/security/ballerinaTruststore.p12
```

```
keytool -import -trustcacerts -alias wso2carbon2 -file
wso2carbon.crt -keystore
<MGW_RUNTIME_HOME>/runtime/bre/security/ballerinaTruststore.p12
```

Default Password: ballerina

4. Change the REST API version to v1.2 and DCR version to v0.17 to be compatible with
   WSO2 API Manager 3.2.0.
   Open the <MGW_TOOLKIT_HOME>/conf/toolkit-config.toml file and change the
   restVersion to **"v1.2"** and **dcrVersion** to **"v0.17"**

5. Open the <MGW_RUNTIME_HOME>/conf/micro-gw.conf file. Add the alias used to
   import the certificate to the trust store.

```
[jwtTokenConfig]
issuer="https://localhost:9443/oauth2/token"
audience="http://org.wso2.apimgt/gateway"
certificateAlias="wso2carbon2"
```

Create Microgateway Project

1. Open a command prompt in the <MGW_TOOLKIT_HOME>/bin folder and execute the
   following command.

```
./micro-gw init pizzashack_project
```

2. Import the PizzaShack API from the API Manager.

```
./micro-gw import -a PizzaShack -v 1.0.0 pizzashack_project
```

You will be prompted for several inputs as given in the sample prompt below. You also
can use the default inputs if you need. Make sure the APIM instance should be running
to perform this command.

```
Enter Username:
admin
Enter Password for admin:

Enter APIM base URL [https://localhost:9443]:
```

```
You are using REST version - v0.15 of API Manager. (If you want to change this,
go to <MICROGW_HOME>/conf/toolkit-config.toml)
Enter Trust store location: [lib/platform/bre/security/ballerinaTruststore.p12]

Enter Trust store password: [ use default? ]

ID for API with name PizzaShack :
api_7b9a074b2cbda5002144c99c561c9dec013d743a1cd7543640494b283ca44b73
```

Build and Run the Microgateway Project

1. Build the created project using the following command.

    ```
    ./micro-gw build pizzashack_project
    ```

    The following sample response will be displayed in the terminal.

    ```
    Compiling source

            wso2/pizzashack_project:3.1.0

    Creating balos

            target/balo/pizzashack_project-2019r3-java8-3.1.0.balo

    Running tests

            wso2/pizzashack_project:3.1.0

            No tests found

    Generating executables

            target/bin/pizzashack_project.jar

    BUILD SUCCESSFUL

    Target:
    <wso2am-micro-gw-toolkit-macos-3.1.0>/bin/pizzashack_project/target/pizzashack_
    project.jar
    ```

2. Open a command prompt from the <MGW_RUNTIME_HOME>/bin folder and run the
   project using the following command.

```
gateway <path-to-MGW-executable-file>
```

Ex: gateway
<wso2am-micro-gw-toolkit-macos-3.1.0>/bin/pizzashack_project/target/pizzashack_project.jar

The following sample response will be displayed in the terminal.

```
JAVA_HOME: /Library/Java/JavaVirtualMachines/jdk1.8.0_251.jdk/Contents/Home
[ballerina/http] started HTTPS/WSS listener 0.0.0.0:9096
[ballerina/http] started HTTP/WS listener 0.0.0.0:9090
2020-09-04 13:48:34,634 INFO  [wso2/gateway/src/gateway/utils] - [APIGatewayListener]
[-] HTTP listener is active on port 9090
[ballerina/http] started HTTPS/WSS listener 0.0.0.0:9095
2020-09-04 13:48:34,636 INFO  [wso2/gateway/src/gateway/utils] - [APIGatewayListener]
[-] HTTPS listener is active on port 9095
```

Invoke API

1. Generate a new Access Token by login into the API Dev portal.
Here, you can use the previously generated PizzaShack application where the PizzaShack API
is subscribed.
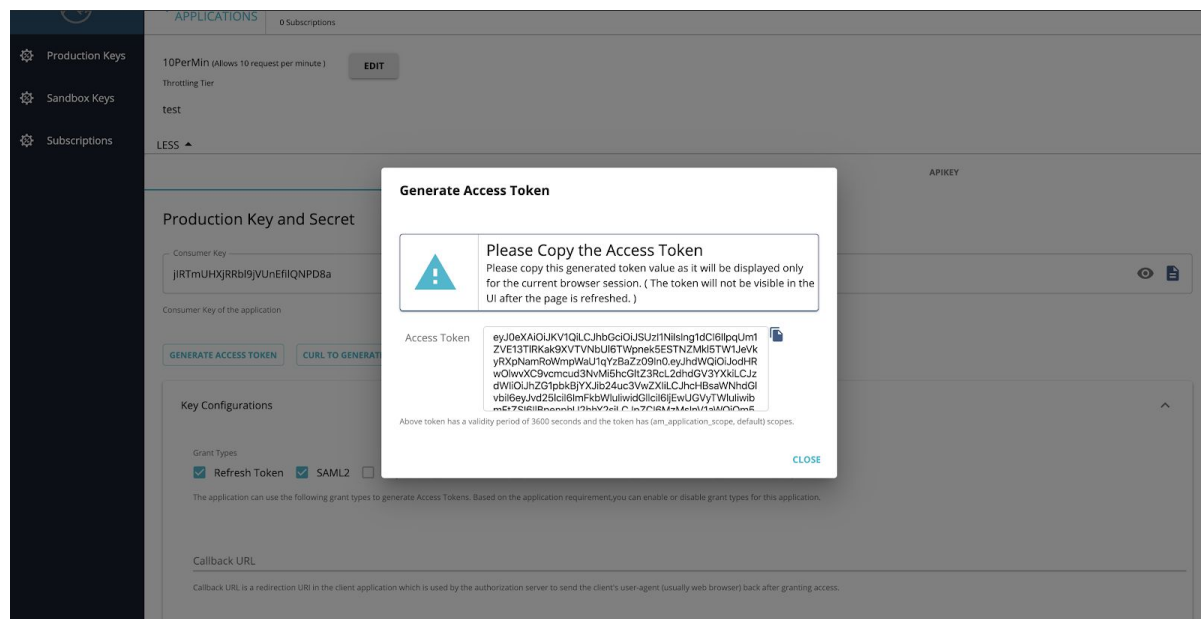
2. Invoke the API using the following command by replacing the <JWT-token> section with the token generated in the previous step.

```
curl -k -i -H "Authorization: Bearer <JWT-token>"
https://localhost:9095/pizzashack/1.0.0/menu
```

Expected Outcome

As a result of this exercise, an API created from WSO2 API Manager is imported and deployed and invoked using the WSO2 Microgateway.