Device Provisioning AWS

Requirement libraries to run python code.

1.python-whois

pip install python-whois

2.pyopenssl

pip install pip install pyopenssl

3.AWSIoTPythonSDK

pip install AWSIoTPythonSDK

4.boto3

pip install boto3

Code Explanation:

This section explains the python code create_register_x509.py

- This python code generates x509 certificate for communication with AWSIOT mqtt.
- A default AWS Root CA certificate is already created as template for our devices which is used for signing of newly generated device certificates. These files should be present in the same folder while running the python code.

  These files are named as deviceRootCA.key, deviceRootCA.csr, deviceRootCA.pem and AmazonRootCA1.pem
- Inputs of the python function to generate x509 certificate.
  cn=Comman_name(AWS Thingsname)
  c=country(eg:EU)
  st=state(eg:Hamburg)
  l=location(city eg:Hamburg)
  o=organization name
  ou=organization Unit
  emailAddress=email
  exp_days=Validation period of certificate in days
- Output of the python code

  commonname +.key(Used for further Mqtt Communication)
  commonname +.csr
  commonname +.crt(Used for further Mqtt Communication)

"deviceROOT" + commonname+.crt(Used just for authentification)

- To verify if the certificate is validated following steps to be followed.
  - Login to aws iot
  - Go to IOT Core service as shown in the Figure 1.

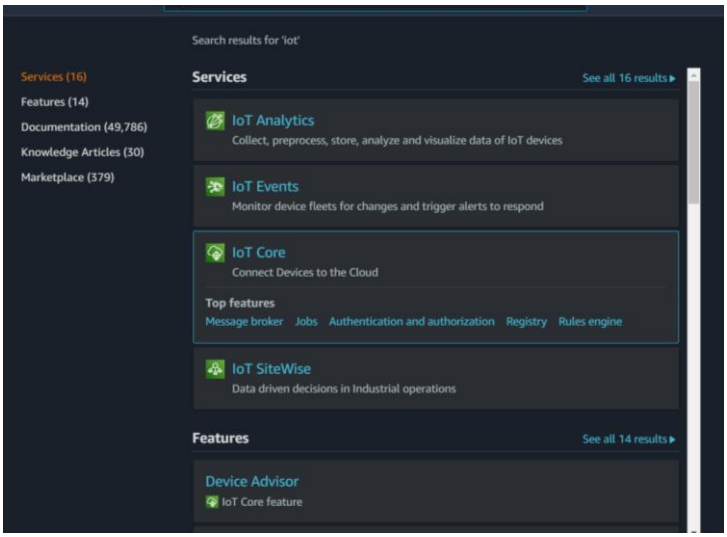

Figure 1 Open IOT Core

  - Check Manage things, a new thing with the common name provided in this code will be available as shown in Figure 2.

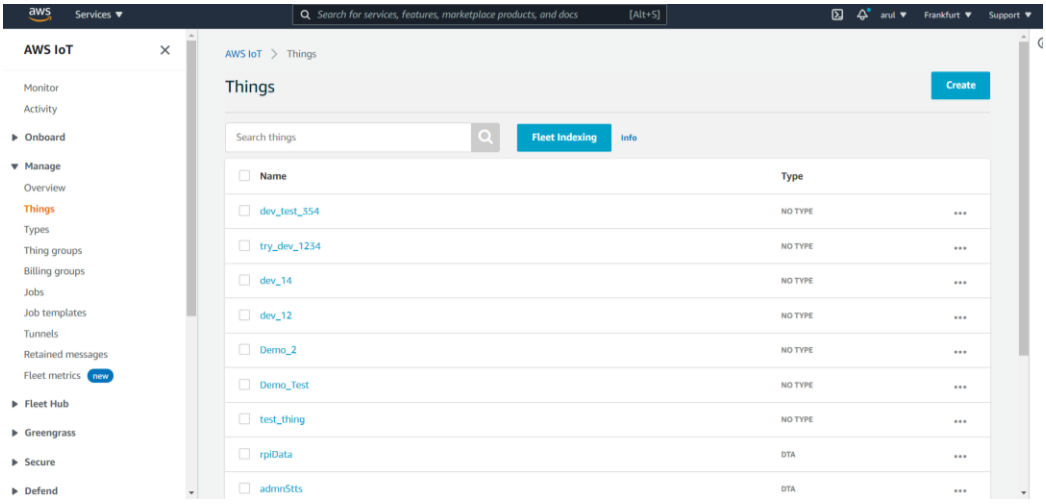

Figure 2 Check the created things

  - Verify the activation of your thing by clicking the thing you have create and click security. You see the certificated generated for the thing as shown in Figure 3.

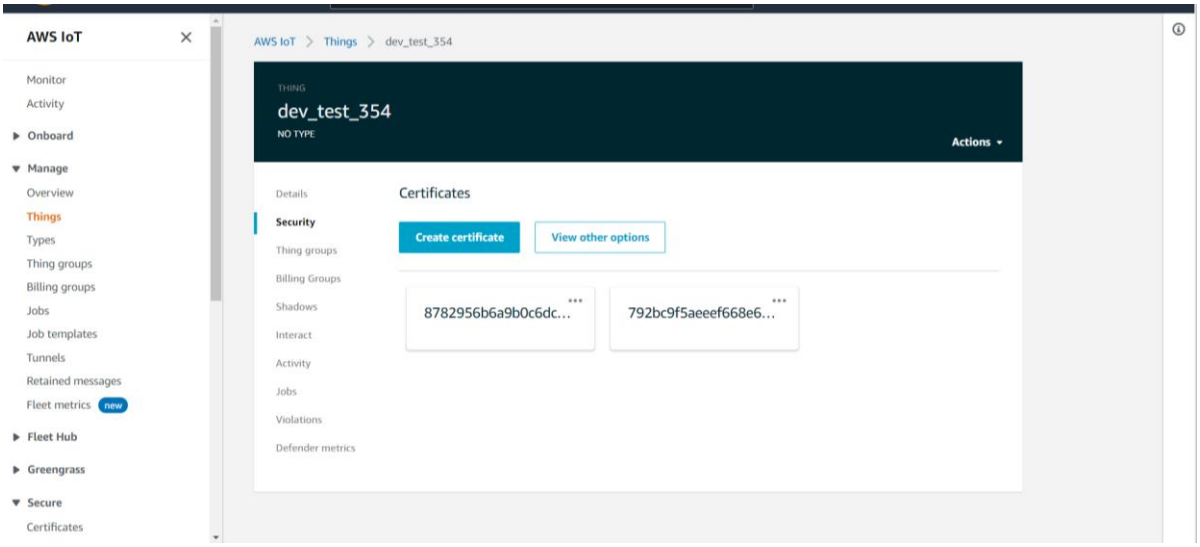

Figure 3 Generated Certificates

- Next step is to test the mqtt communication.

MQTT Test of Generated certificate

1. There are many ways to test the generated certificate. Node-red, paho-mqtt, awsiotsdk etc.
2. To test the certificate a python file test_certificate.py is provided.
   Input
   - Client name,
   - Amazon root CA path
   - Device private key (Generated key)
   - Device certificate path (Generated certificate)
   - Topic name
3. If the generated file is working, we can see the test message by subscribing to the topic name in aws iot test.To check this following steps to be done
   - Login to console.aws
   - Go to IOT Core service as shown in Figure 2.
   - Click on Test button from side pane to test the mqtt client
   - Subscribe to Topic name given, You must see the test message
     test_message={

     "test":"hello"

     }
     Once you run the python code. As shown in the Figure 4 below.

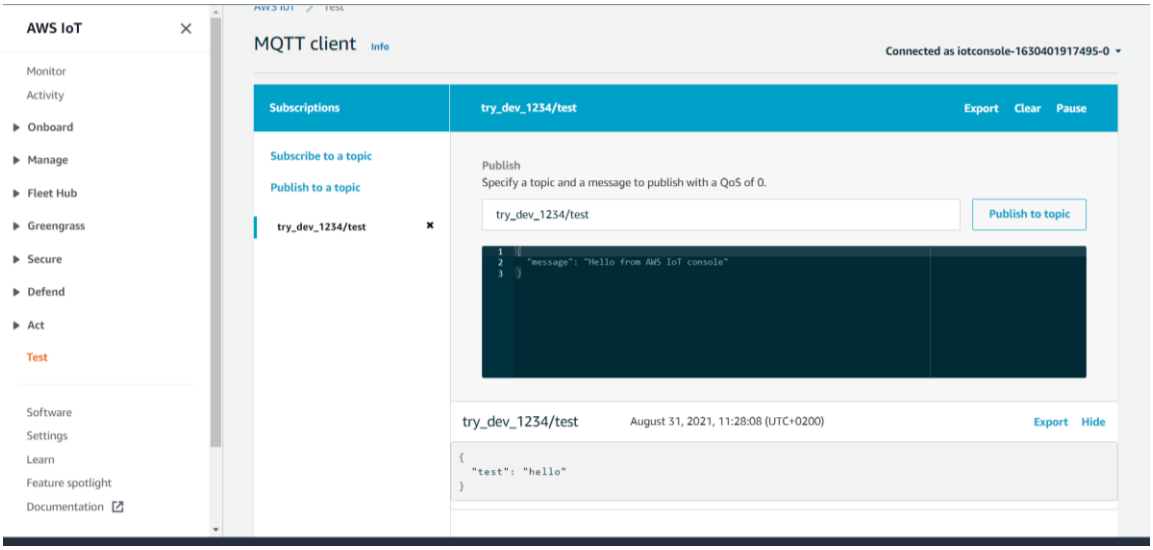

Figure 4 AWS Mqtt Test