

AWS IOT CUSTOM (MQTT) AND DEVICE CONFIGURATION GUIDE

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1. General information

Firmware version: 03.27.10.Rev.520

Hardware revision: Any

Configurator: 1.7.30_E.AWS_R.5

Notes: This guide does not contain any information how to store received MQTT packets in the AWS. Refer to this [link](#).

2. AWS IoT core configuration

2.1. Setting up AWS IoT core

When logged in the AWS console, click on *Services* on the top left hand side screen, to access IoT core.

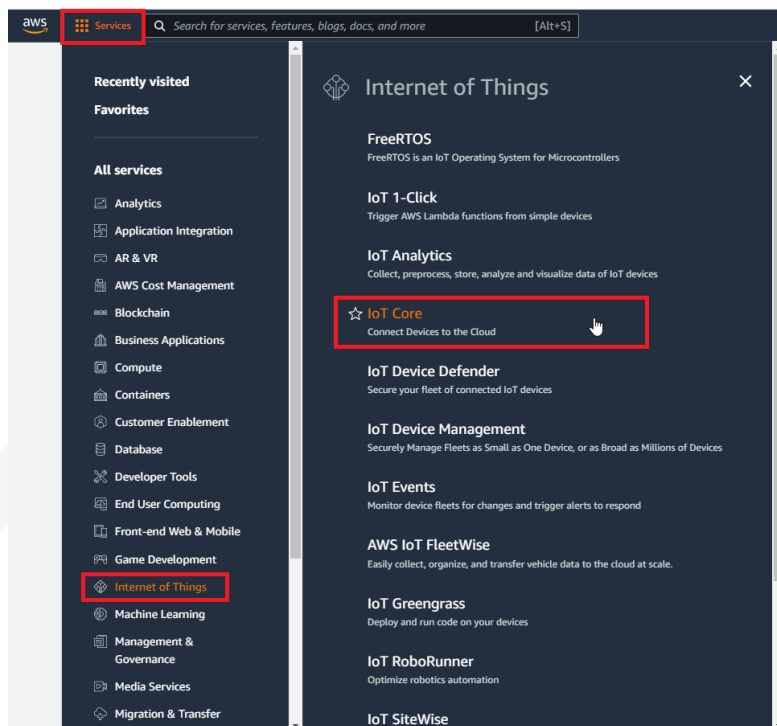


Figure 1. Accessing AWS IoT core from AWS console

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After accessing AWS IoT core, select *Manage* on the sidebar on the left side, then select *Things (Manage->Things)*. And click on *Create things*.

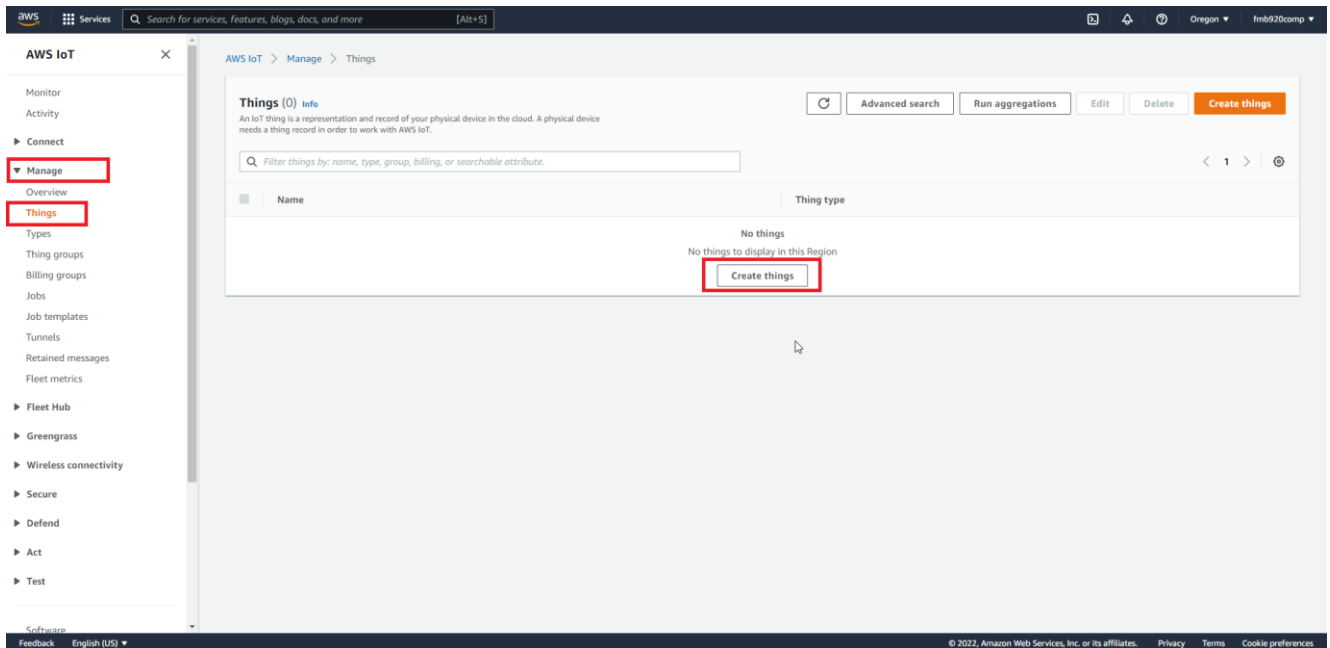


Figure 2. Accessing Things

Afterwards for select *Create single thing* and click *Next*.

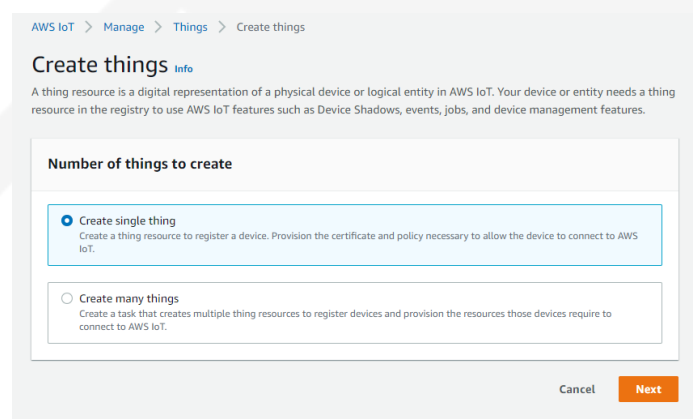


Figure 3. Creating single thing

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After creating single thing, enter *Thing's name* and in the *Device Shadow tab* select *Unnamed shadow (classic)*. Then click *Next*.

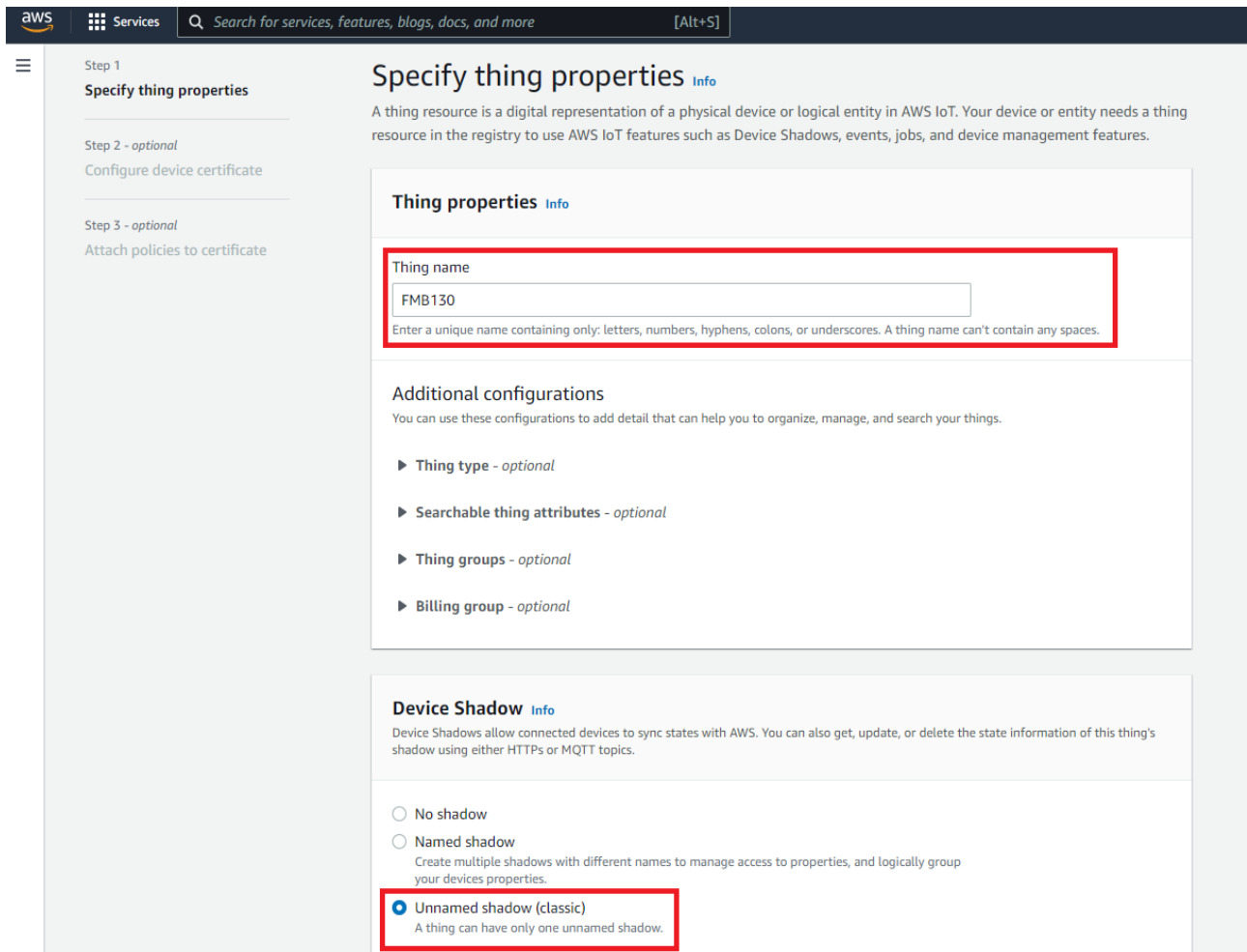
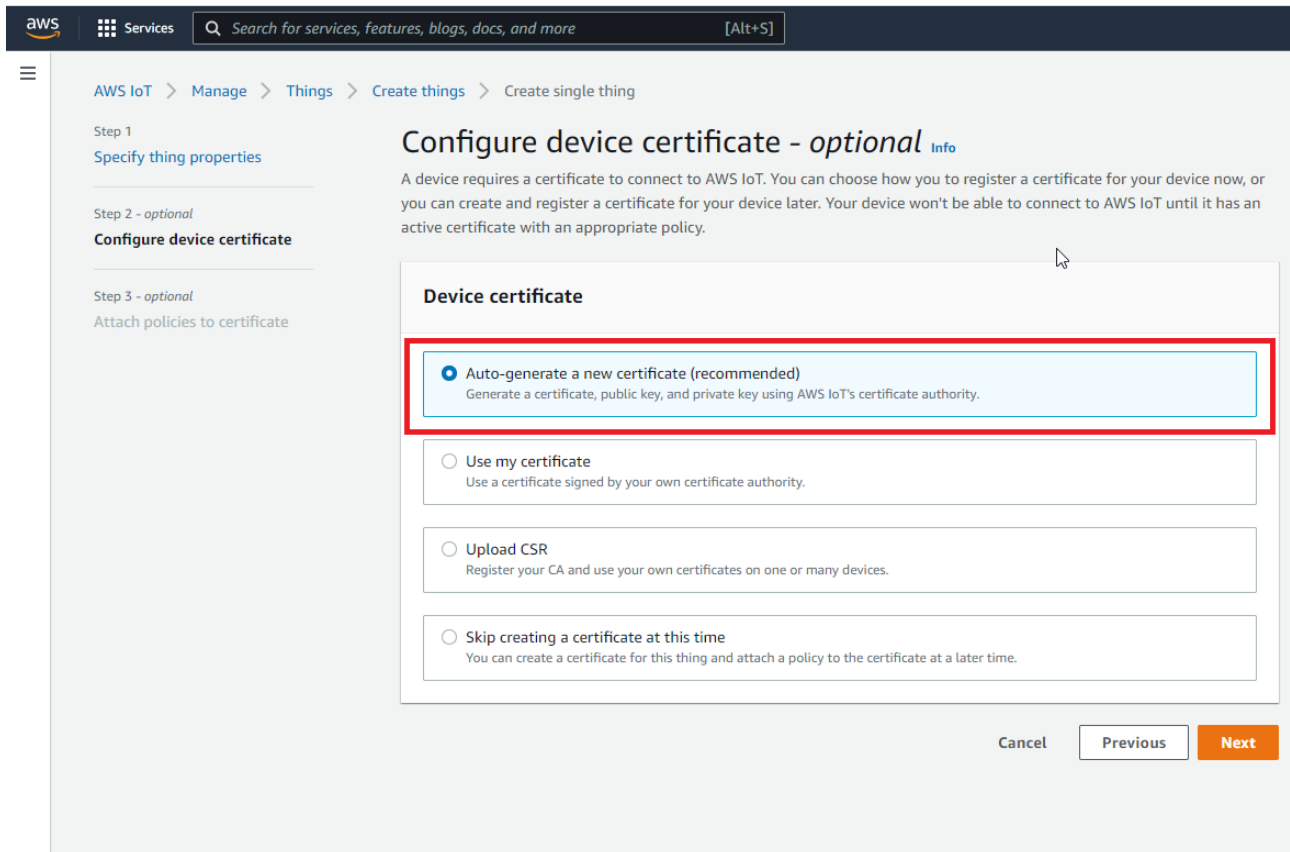


Figure 4. Specifying thing properties

Then when selecting *Device certificate*, select *Auto-generate a new certificate* and click *Next*.



Configure device certificate - optional [Info](#)

A device requires a certificate to connect to AWS IoT. You can choose how you to register a certificate for your device now, or you can create and register a certificate for your device later. Your device won't be able to connect to AWS IoT until it has an active certificate with an appropriate policy.

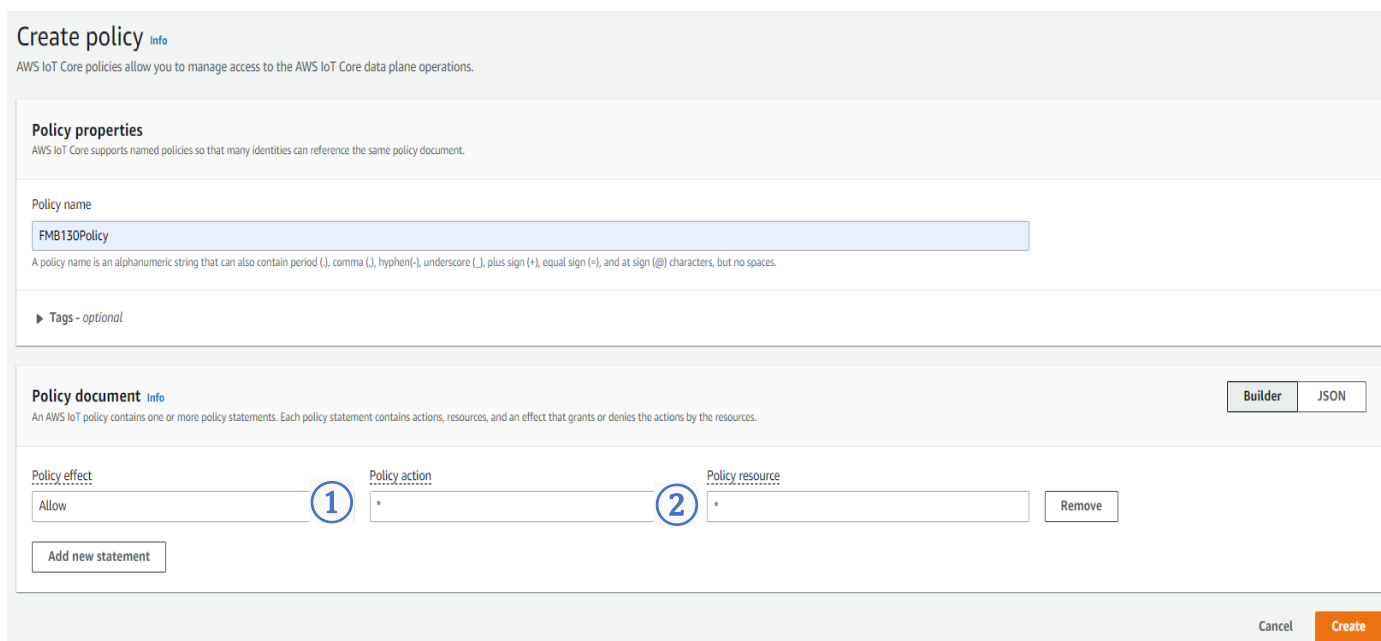
Device certificate

- ☒ **Auto-generate a new certificate (recommended)**
Generate a certificate, public key, and private key using AWS IoT's certificate authority.
- ☐ **Use my certificate**
Use a certificate signed by your own certificate authority.
- ☐ **Upload CSR**
Register your CA and use your own certificates on one or many devices.
- ☐ **Skip creating a certificate at this time**
You can create a certificate for this thing and attach a policy to the certificate at a later time.

Cancel Previous **Next**

Figure 5. Selecting Certificate

After this select *Create policy* to create it and attach it to *Certificate*. In the Create Policy window, enter *Policy name*. In the **Policy document (1)** tab for **Policy Action (2)** select * and for Policy resource enter *.



Create policy [Info](#)

AWS IoT Core policies allow you to manage access to the AWS IoT Core data plane operations.

Policy properties

AWS IoT Core supports named policies so that many identities can reference the same policy document.

Policy name

FMB130Policy

A policy name is an alphanumeric string that can also contain period (.), comma (,), hyphen(-), underscore (_), plus sign (+), equal sign (=), and at sign (@) characters, but no spaces.

Tags - optional

Policy document [Info](#)

An AWS IoT policy contains one or more policy statements. Each policy statement contains actions, resources, and an effect that grants or denies the actions by the resources.

Builder JSON

Policy effect	Policy action	Policy resource	
Allow	*	*	Remove

Add new statement

Cancel Create

Figure 6. Creating policy for certificate

After creating policy, return to *Certificate* tab (Separate tab after pressing *Create policy* should've popped out). Then select the created policy to attach it to the certificate and thing. After that click *Create thing*.

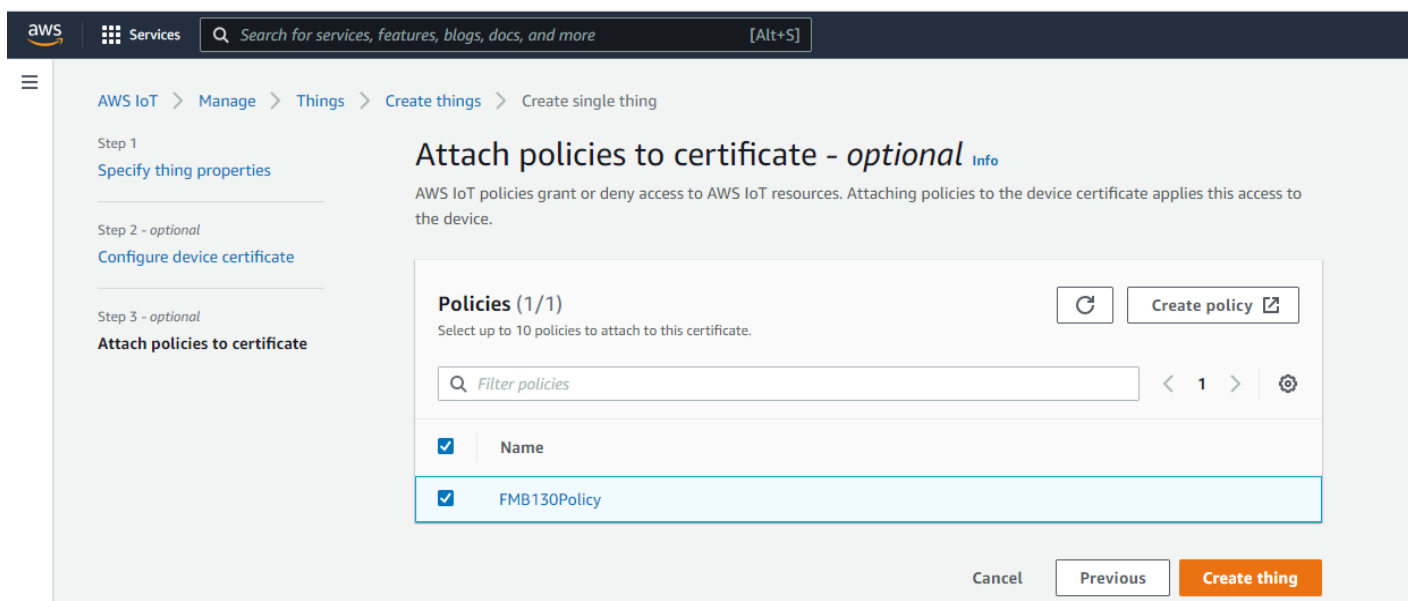


Figure 7. Attaching created certificate and creating thing

Then window with Certificate files and key files download options should pop out. It's recommended to download all files, because later some of them will not be available for download. The files that are required for usage with FMX devices are: **Device certificate (1), private key(2), and Amazon Root CA 1 file(3)**, but it's recommended to download them all and store them in secured place.

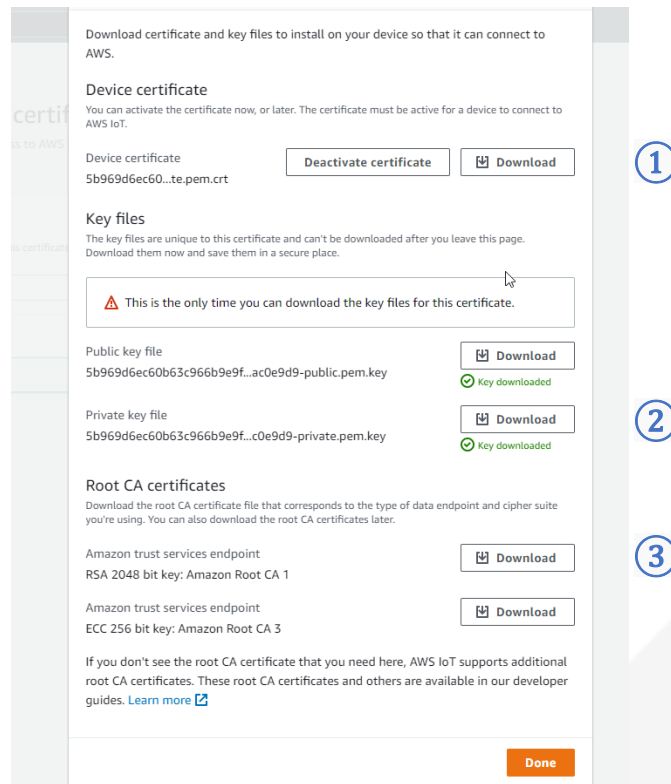


Figure 8. Certificate files download window

2.2. Finding decive data endpoint (server domain)

To receive server domain (in AWS endpoint) click on the side bar on the left *Settings*.

Or click on the side bar on left side *Things*, select the created thing, after it click *Interact->View Settings*. Whole path - (*Things->*YourThingName*->Interact->ViewSettings*). Page containing endpoint will open. **Copy the whole endpoint address.**

Port for accessing this endpoint is **8883**.

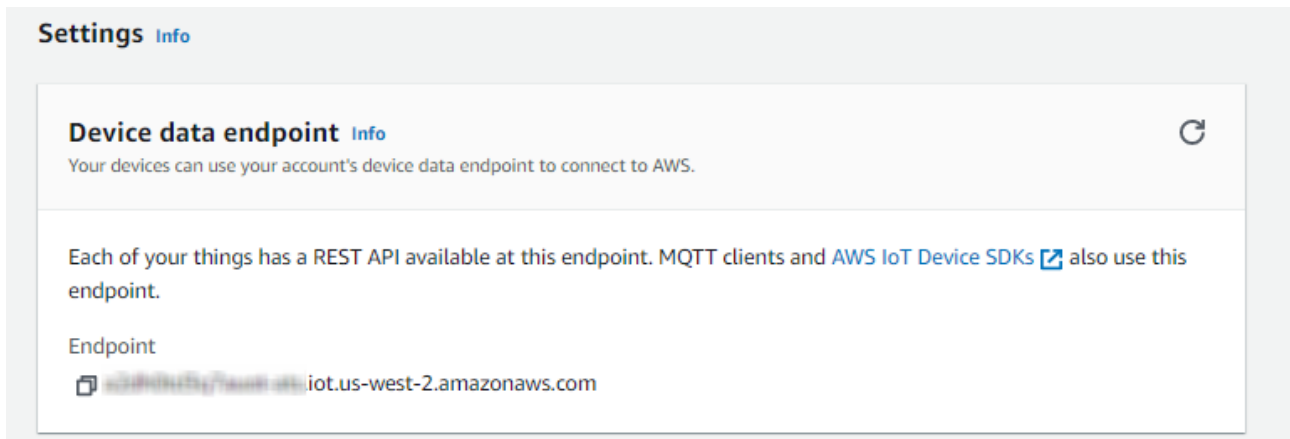


Figure 9. Device data endpoint

3. Configuring the device

3.1. Security and certificates

Find *Certificate file* ending with extension pem.crt *Private key file* and *AmazonRootCA1 file* (no need to change filenames). These file should have been downloaded when creating *Thing* in AWS IoT Core.

Name	Date modified	Type	Size
5b969d6ec60b63c966b9e9f9bf79ae916b03448d6c7711617e85026d8ac0e9d9-certificate.pem.crt	2022-02-07 11:34	Security Certificate	2 KB
5b969d6ec60b63c966b9e9f9bf79ae916b03448d6c7711617e85026d8ac0e9d9-private.pem.key	2022-02-07 11:34	KEY File	2 KB
AmazonRootCA1.pem	2022-02-07 11:34	PEM File	2 KB

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Upload the mentioned files in the *Security tab* in the Teltonika Configurator.

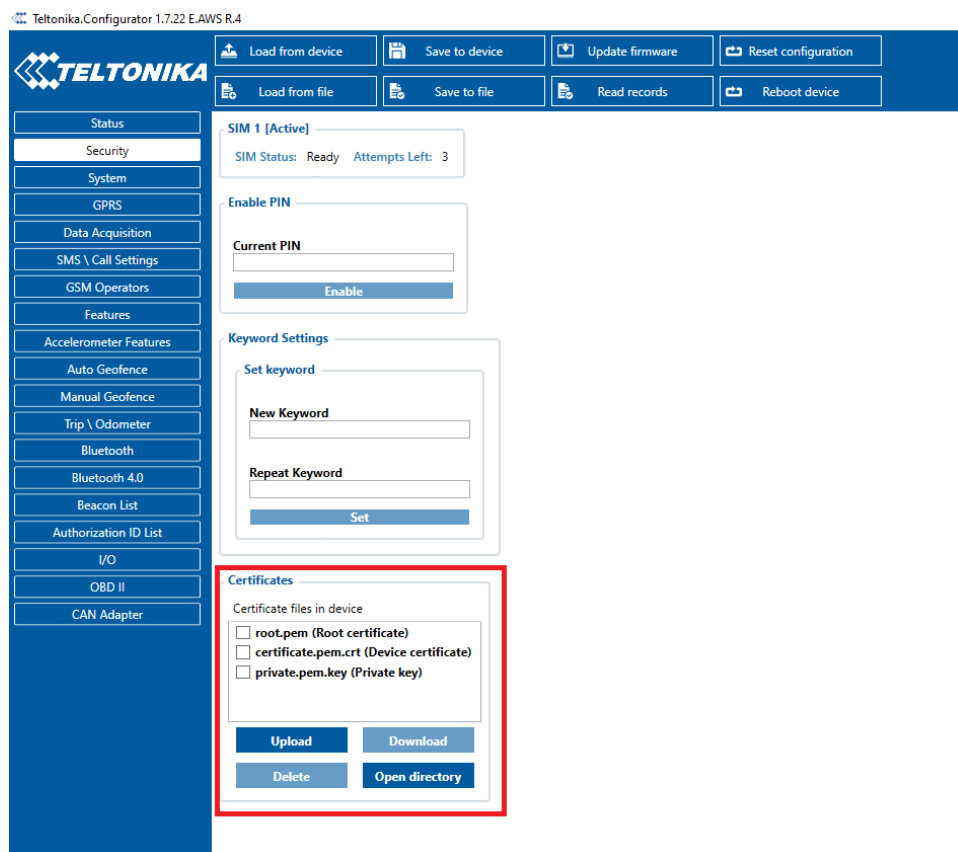


Figure 10. Uploading certificates

After uploading certificates, go to *System tab* and in Data protocol section select - *Codec JSON*.

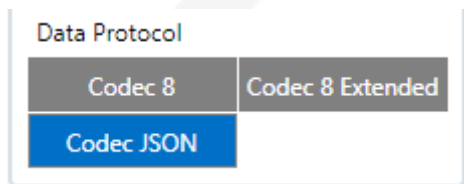


Figure 11. Selecting Data protocol

3.2. Device GPRS configuration for AWS IoT Custom MQTT settings

In the **GPRS tab**, under **Server Settings** select:

1. Domain – **Endpoint** from the AWS, Port: **8883**
2. Protocol – **MQTT**
3. TLS Encryption – **TLS/DTLS**

In the **MQTT Settings** section select:

1. MQTT Client Type – **AWS IoT Custom**
2. Device ID – enter device **IMEI** (optional)
3. Leave Data and Command Topics unchanged.

Save the configuration to the device.

GPRS Settings

GPRS Context

Disable	Enable
---------	--------

APN: banga

APN Username:

APN Password:

GPRS Authentication

Normal(PAP)	Secured(CHAP)
-------------	---------------

Auto APN Search

Auto APN Search

Disable	Enable
---------	--------

Transfer APN File

APN File Upload / Download

Upload

Server Settings

Domain: 1

Port: 1 8883

Protocol

TCP	UDP
MQTT	

TLS Encryption 3

None	TLS/DTLS
------	----------

Second Server Settings

Backup Server Mode

Disable	Backup
Duplicate	EGTS

Backup Server Domain:

Backup Server Port: 0

Backup Server Protocol

TCP	UDP
MQTT	

TLS Encryption

None	TLS/DTLS
------	----------

Records Settings

Open Link Timeout (s): 300

Response Timeout (s): 30

Network Ping Timeout (s): 0

Sort By

Newest	Oldest
--------	--------

ACK Type

TCP/IP	AVL
--------	-----

FOTA WEB Settings

Status

Disable	Enable
---------	--------

Domain: fm.teltonika.lt

Port: 5000

Period (min): 720

MQTT Settings

MQTT Client Type 1

AWS IoT Shadow	AWS IoT Custom
Azure IoT	

Device ID 2: 358480085331785

Data Topic: %imei%/data

Commands Topic: %imei%/commands

Figure 12. GPRS settings for MQTT AWS IoT Custom

4. Checking received data and sending commands in the AWS IoT core

The data received from the device can be found in the **MQTT test client**, which can be found in the bottom of sidebar on the left.

To see incoming data, subscribe to topic - ***Devicelmei*/data** . Or subscribe to **#** to see all incoming outgoing data in the Topics.

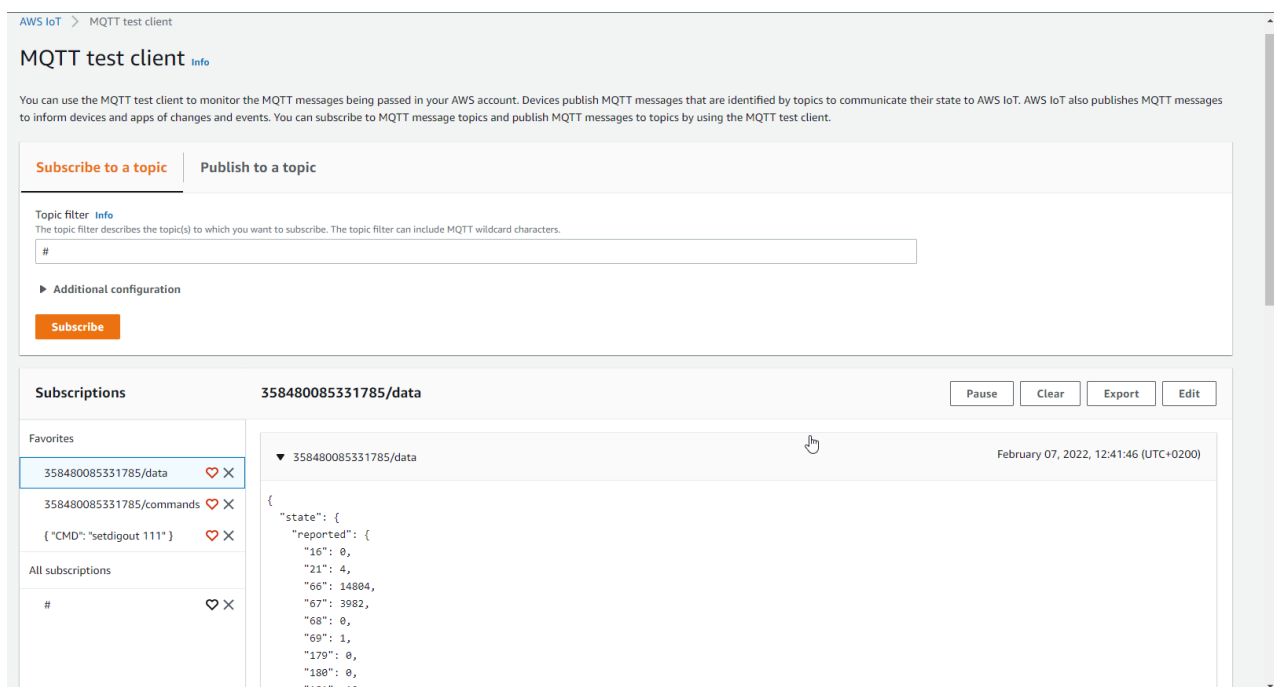


Figure 13. Subscribing to data topic

Incoming data is received in JSON format, for e.g.:

```
{
  "format": "json",
  "topic": "358480085331785/data",
  "timestamp": 1644227812734,
  "payload": {
    "state": {
      "reported": {
        "16": 0,
        "21": 4,
        "66": 14547,
        "67": 4019,
        "68": 144,
        "69": 1,
        "179": 0,
        "180": 0,
        "181": 9,
        "182": 6,
        "200": 0,
        "239": 1,
        "240": 0,
        "241": 24602,
        "380": 0,
        "ts": 1644227810000,
        "pr": 1,
        "latlng": "54.700450,25.259818",
        "alt": 128,
        "ang": 0,
        "sat": 15,
        "sp": 0,
        "evt": 0
      }
    }
  }
}
```

Figure 14. Received data format

To send SMS/GPRS commands to the device, in the same MQTT test client window select *Publish to a topic*. Enter topic name - ****DeviceIMEI*/commands*** . In the Message payload enter wanted GPRS/SMS command in following format and press *Publish*:

{ "CMD": "<Command>" }

Subscribe to a topic

Publish to a topic

Topic name

The topic name identifies the message. The message payload will be published to this topic with a Quality of Service (QoS) of 0.

Q 358480085331785/commands

Message payload

{ "CMD": "setdigout 111" }

Additional configuration

Publish

Subscriptions

358480085331785/commands

Pause

Clear

Export

Edit

Favorites

358480085331785/data

358480085331785/commands

{ "CMD": "setdigout 111" }

All subscriptions

#

▼ 358480085331785/commands

February 07, 2022, 12:43:37 (UTC+0200)

{ "CMD": "setdigout 111" }

Figure 15. Sending Comand in AWS IoT Core

The response to the command will be shown in the **Data topic**:

Subscriptions

358480085331785/data

Pause

Clear

Export

Edit

Favorites

358480085331785/data

358480085331785/commands

{ "CMD": "setdigout 111" }

All subscriptions

▼ 358480085331785/data

February 07, 2022, 12:43:41 (UTC+0200)

{ "RSP": "DOUT1:1 Timeout:INFINITY DOUT2:1 Timeout:INFINITY DOUT3:1 Timeout:INFINITY " }

Figure 16. Response to a command in the data topic, the command was published in command topic

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