

AWS IoT Core Client

The “AWS IoT Core Client” library allows for the exchange of messages via the “AWS IoT Core” Amazon Service.

The library “AWS IoT Core Client” is now part of the product [IoT Libraries SL](#) and is no longer available as single product.

Product description

The “AWS IoT Core” service is a managing cloud platform from Amazon in which connected devices can work together easily and safely with cloud applications and other devices. The “AWS IoT Core Client” library provides function blocks for sending and receiving messages. Communication is encrypted and takes place by means of the MQTT protocol. In the AES environment, messages are typically transmitted in JSON format. The “JSON Utilities” library can be used for parsing and creating JSON files (<https://store.codesys.com/json-utilities.html>).

The following function blocks are included in the library:

- `AWSIoTClient`: Function block for establishing a connection to “AWS IoT Core”
- `AWSIoTPublish`: Function block for publishing messages (Publish)
- `AWSIoTSubscribe`: Function block for subscribing to a topic (Subscribe)
- `AWSIoTGetDeviceShadow`: Function block for reading the “Device Shadow”
- `AWSIoTUpdateDeviceShadow`: Function block for refreshing the “Device Shadow” data
- `AWSIoTSubscribeDeviceShadow`: Function block for subscribing to “Device Shadow” changes

Supported functions

- Publishing and subscription of messages based on MQTT V3.1.1
- TLS encryption
- Authentication via client certificate
- Support of “Quality of Service”: 0 and 1 (QoS0, QoS1)
- Data type “Topics”: `WSTRING`
- Maximum size of a topic: 1024
- The maximum package size and payload size can be configured by means of a parameter list.
- Multitasking and multicore support
- Support of “Last Will” messages (QoS0, QoS1)
- Support of wildcards (# and +)

The sample project “`AWS_IoT_Core_Client_Example.project`” is installed in the target directory. The application `AWSDDeviceShadow` demonstrates the reading and writing of the “Device Shadow”. The application `AWSPubSub` demonstrates how messages can be published and subscribed to by means of the included function blocks. The application `AWS_JSON_DeviceShadow` demonstrates how a device shadow can be updated via the `JSONBuilder` functionality.

Installation of a client certificate

Devices for “AWS IoT Core” are authenticated by means of client certificates. The client certificate can be created and downloaded with a Certificate Signing Request (CSR) in the AWS Management Console. Then the certificate can be installed on the corresponding device.

To perform the subsequent steps, the CODESYS package “CODESYS Security Agent” and “OpenSSL” must be installed on the PC.

Download links:

- CODESYS Security Agent: <https://store.codesys.com/codesys-security-agent.html>
- OpenSSL: <https://www.openssl.org>

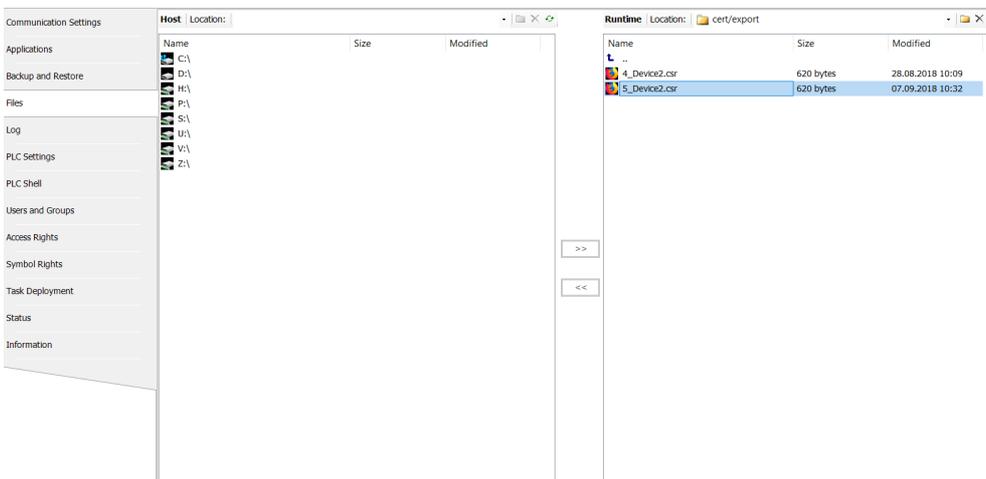
Steps for creating and importing a client certificate:

1. Create a device in "AWS IoT Core" (see <https://docs.aws.amazon.com/iot/latest/developerguide/register-device.html>).
2. Open the application AWSPubSub in the sample project.
3. Set the end point to the input `AWSIoTClient.sHostname` (for example, `xxxxxxxxxxxxx.iot.yyyyyyy.amazonaws.com`).
4. Set the device names (name of thing) to the input `AWSIoTClient.sClient`.
5. Download and start the project.
6. Open the PLC shell (Device -> PLC-Shell).
7. Specify `cert-getapplist`. -> A component with the specified device name and a number is displayed.
8. Specify `cert-creatcsr <number>` and use the number from step 7. The creation of the CSR file can take several seconds. A corresponding message is displayed in the device log (Device -> Log) after it has been created.

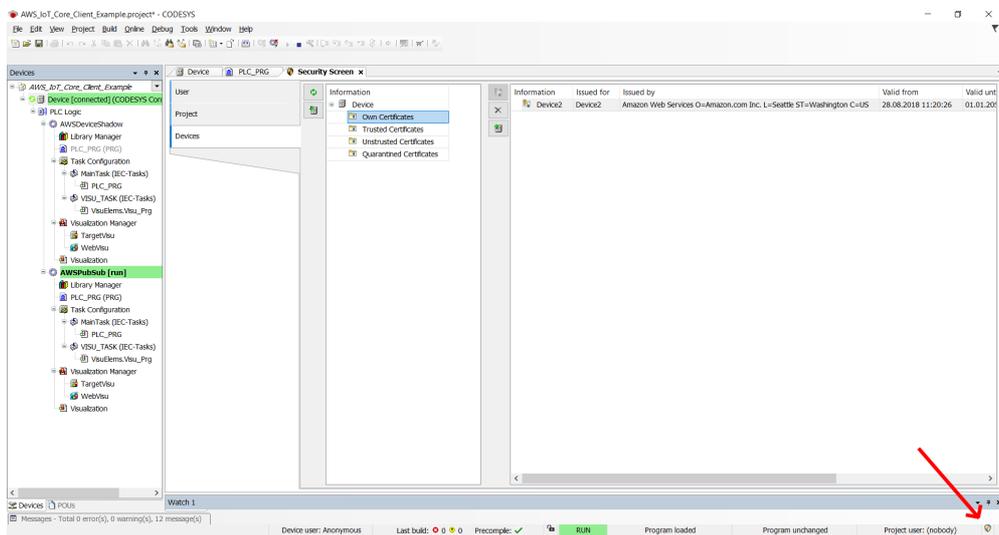
```
cert-getapplist
-----
Nr.      ComponentName      CommonName      CertAvailable  DateNotBefore      DateNotAfter      Thumbprint
-----
0      CmpOPCUAServer      OPCUAServer@LangRoNB      FALSE      --      --      --
1      CmpSecureChannel      LANGRONB      FALSE      --      --      --
2      CmpApp      LANGRONB      FALSE      --      --      --
3      CmpWebServer      LangRoNB      FALSE      --      --      --
4      Device2      Device2      TRUE      2018-8-28T9:20:26.0      2049-12-31T23:59:59.0      --
5      Device2      Device3      FALSE      --      --      --
-----

----
cert-creatcsr 5
Create CSR for application with given index. Check logger to see when finished.
```

9. Open (Device -> Files) and copy the CSR file from the `cert/export` directory to the local file system.



10. Currently, the format of the exported CSR file is not yet supported by AWS. Until the problem is solved, the file must be converted via OpenSSL. Execute the following command in order to convert the format: `openssl.exe req -in YOUR.csr -inform der -out YOUR.crt`
11. A certificate can now be created in the AWS Management Console ("Create with CSR") with the `YOUR.crt` file. (see <https://docs.aws.amazon.com/iot/latest/developerguide/create-device-certificate.html>)
12. Download the certificate and root certificate.
13. Security Screen -> Install the devices and certificate in "Own Certificates". Install the root certificate in "Trusted Certificates".



14. Menu bar: Online -> Reset Cold. Start the project.

15. The output `AWSIoTClient.xConnectedToBroker` should be set to `TRUE`. -> The connection has been established.

General information

Supplier:

CODESYS GmbH
 Memminger Strasse 151
 87439 Kempten
 Germany

Support:

<https://support.codesys.com>

Item:

AWS IoT Core Client

Item number:

2111000029

Sales:

CODESYS Store

<https://store.codesys.com>

Included in delivery:

CODESYS package with library, sample project, product data sheet (en, de), and CHM help

System requirements and restrictions

| | |
|--|---|
| Programming system | CODESYS Development System V3.5.14.0 or later |
| Runtime system | CODESYS Control V3.5.14.0 or later |
| Supported platforms and devices | Note: Use the "Device Reader" project for locating the functions in the CODESYS Store free of charge. |
| Additional requirements | AWS Account (AWS IoT Core) |
| Restrictions | |
| Licensing | Workstation license |
| Required Accessories | CODESYS Key for CODESYS < 3.5.14.0 |

Note: Not all CODESYS features are available in all territories. For more information on geographic restrictions, please contact sales@codesys.com.

Note: Technical specifications are subject to change. Errors and omissions excepted. The content of the current online version of this document applies.