

Classification	UA-Series Chinese Function Wizard FAQ-CNV-08						
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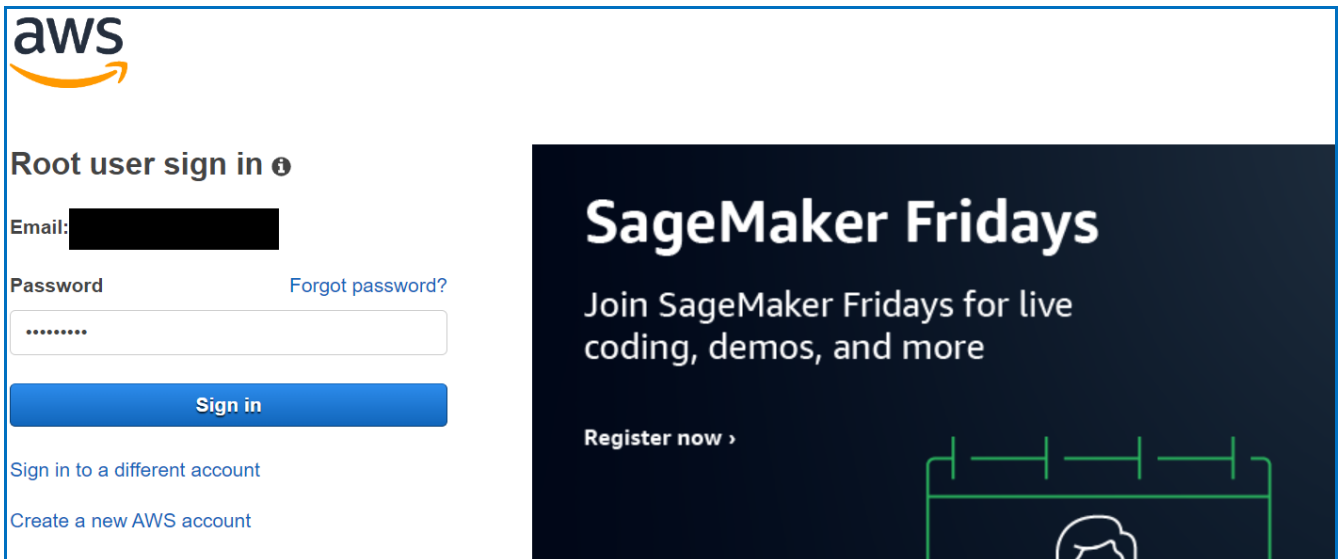
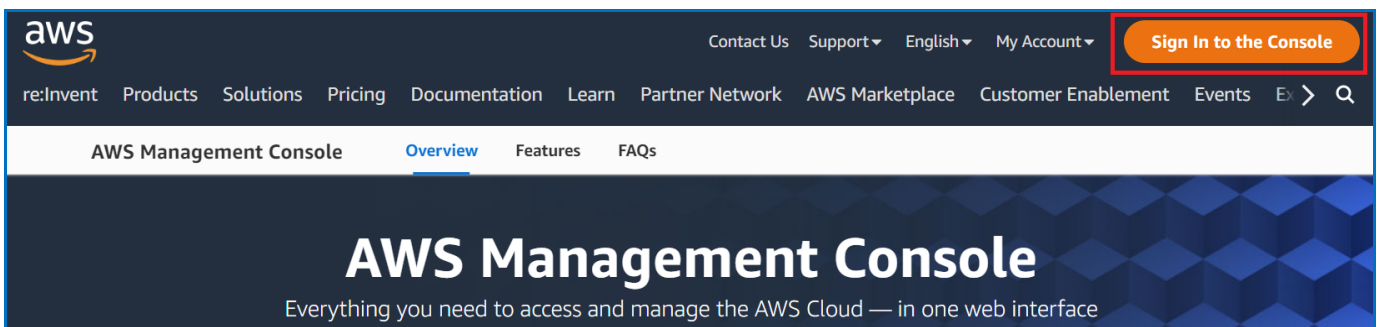
FAQ-CNV-08: UA 系列 Web UI 功能專區 - 模組轉換傳輸類別 - 專案精靈 UA 系列產品如何將資料上傳至 AWS 環境?

本篇介紹 UA 系列利用 MQTT 將 Modbus 資料上傳至 AWS。

設定 AWS 環境

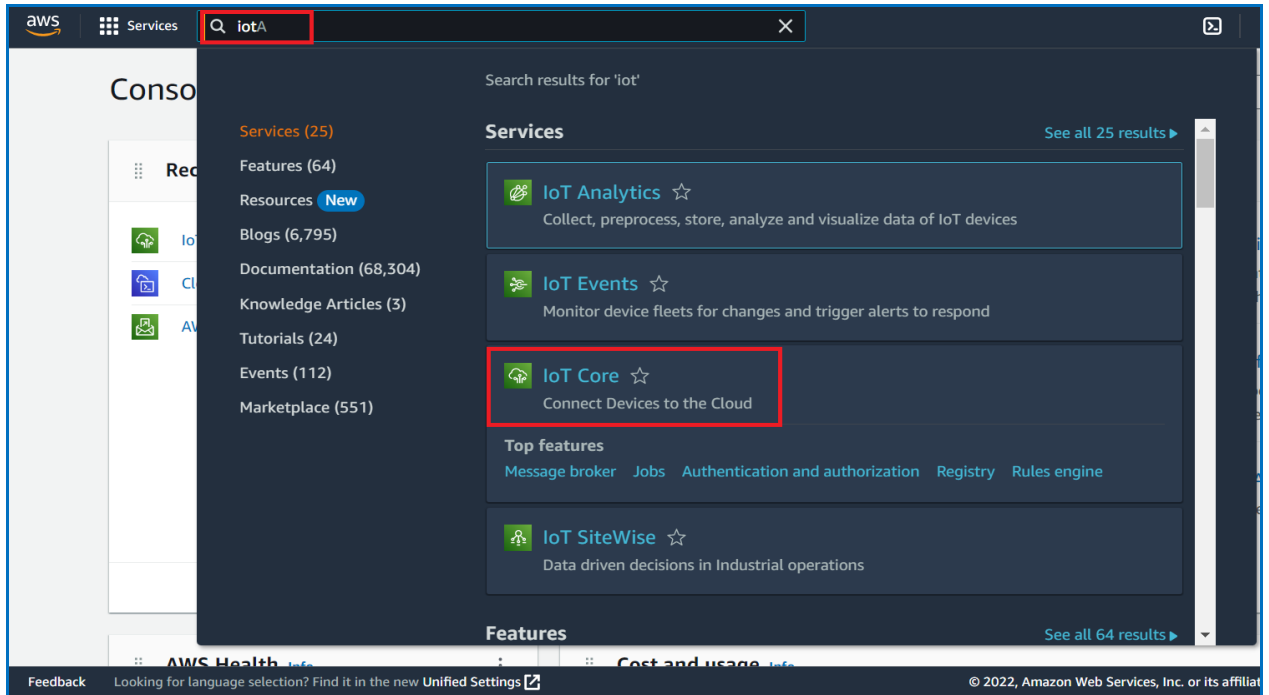
1. 登入 AWS 及 AWS IOT

使用 Browser 至 AWS 網站登入



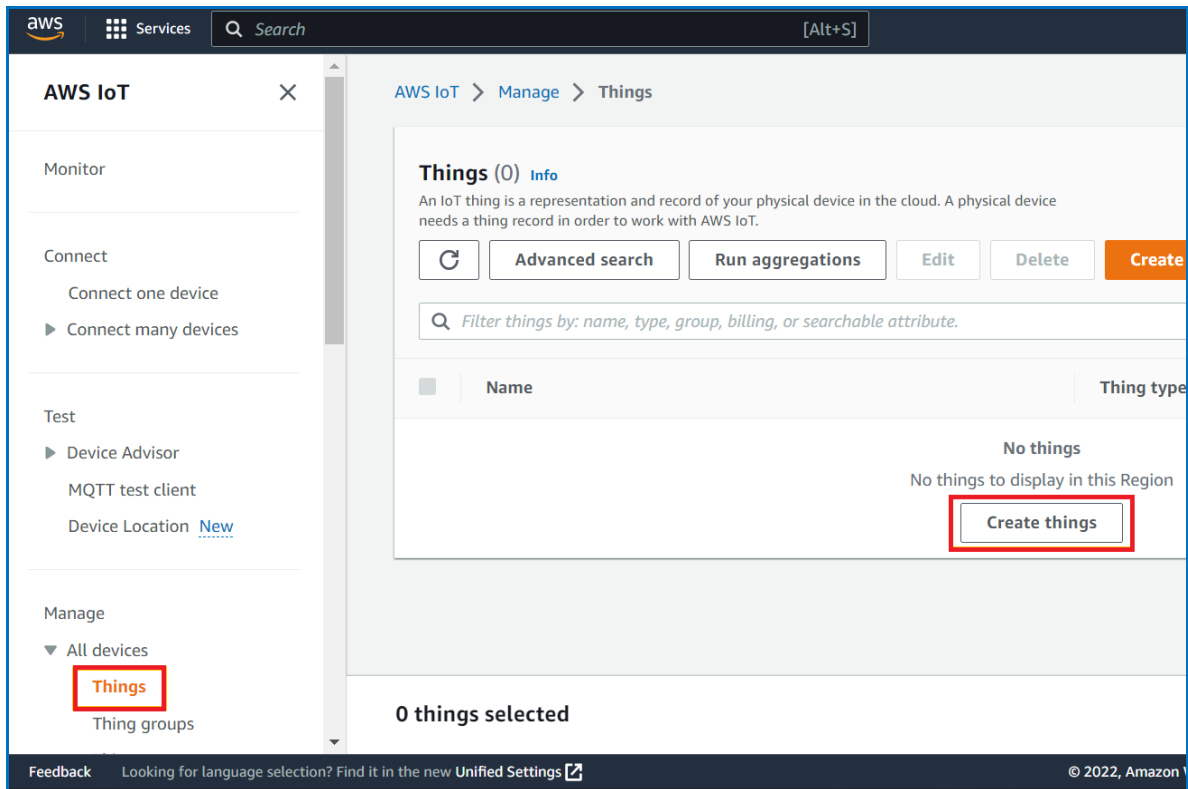
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在 AWS Service 的搜尋服務中填入 `iot`，選擇 IoT Core 服務

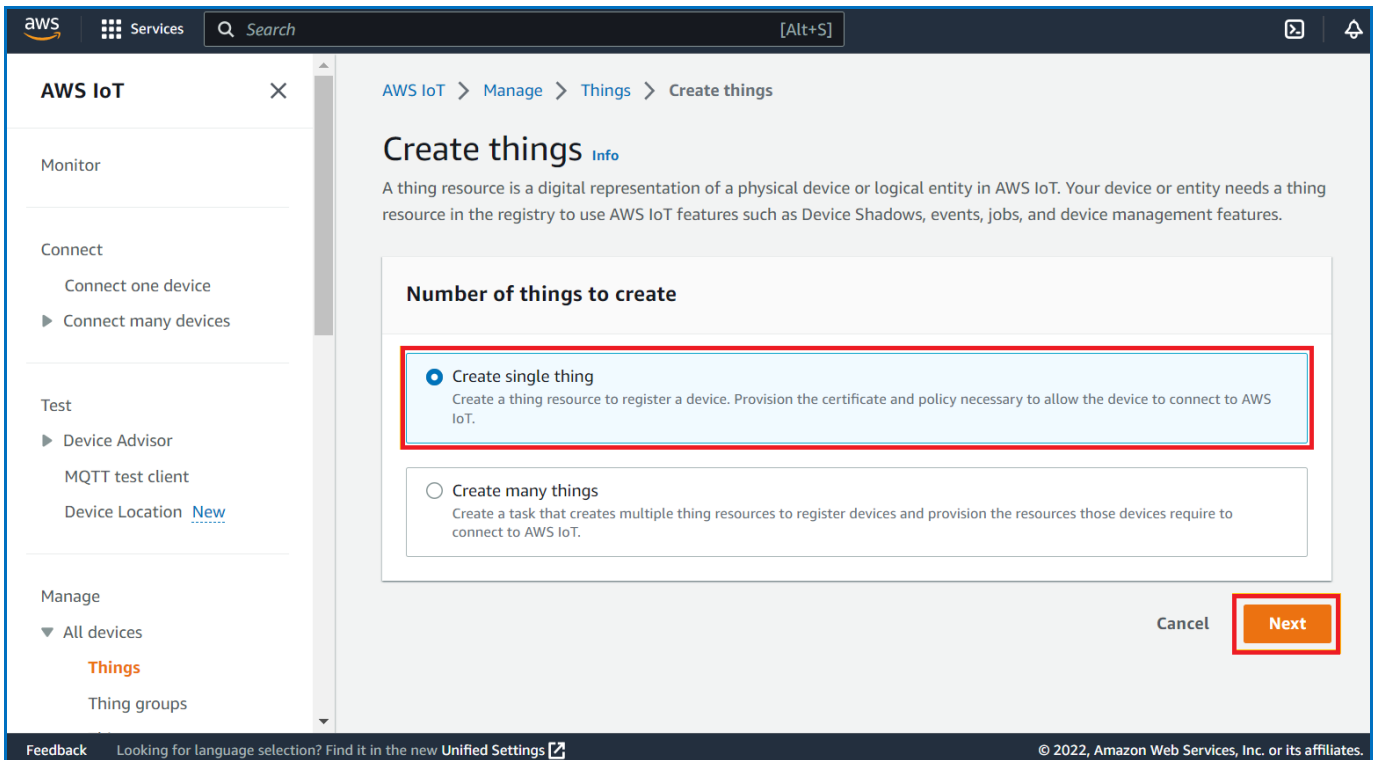


2. 註冊裝置

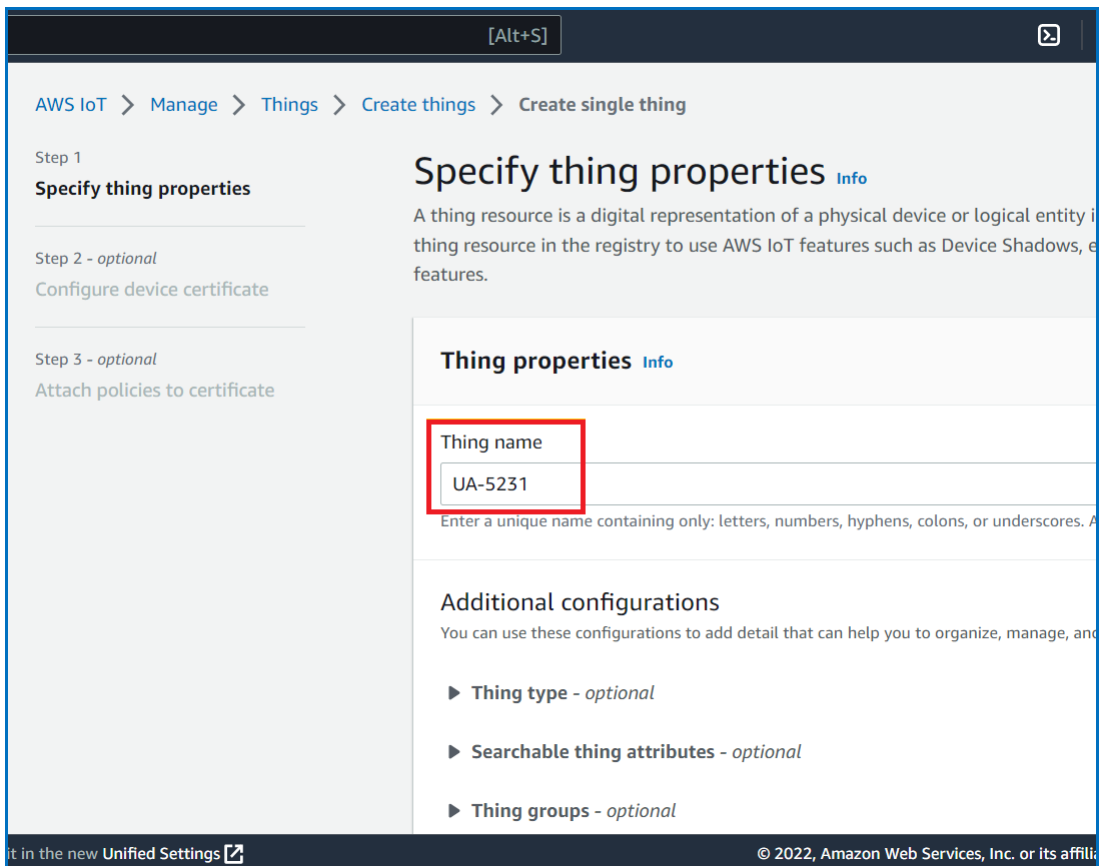
在 AWS IoT Service 上選擇左邊 `Manage -> Things`，點 `Create things` 註冊要建立的物聯網裝置



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在 Thing name 欄位填入裝置名稱，例如: UA-5231。



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然後至頁面最下方選擇 **Next**。

Device Shadow [Info](#)

Device Shadows allow connected devices to sync states with AWS. You can also get, update, or delete the state information of this thing's shadow using either HTTPs or MQTT topics.

- No shadow**
- Named shadow**
Create multiple shadows with different names to manage access to properties, and logically group your devices properties.
- Unnamed shadow (classic)**
A thing can have only one unnamed shadow.

Cancel Next

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啟用憑證並連結至裝置

AWS IoT > Manage > Things > Create things > Create single thing

Step 1
Specify thing properties

Step 2 - optional
Configure device certificate

Step 3 - optional
Attach policies to certificate

Attach policies to certificate - *optional* [Info](#)

AWS IoT policies grant or deny access to AWS IoT resources. Attaching policies to the device certificate applies this access to the device.

Policies (0)

Select up to 10 policies to attach to this certificate.

< 1 >

<input type="checkbox"/>	Name
No policies No policies could be found in us-east-1.	

Cancel Previous Create thing

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將所有 Certificate 相關檔案下載至本機電腦留存，再點選 Done 完成。

Download certificates and keys ✕

Download certificate and key files to install on your device so that it can connect to AWS.

Device certificate


You can activate the certificate now, or later. The certificate must be active for a device to connect to AWS IoT.

Device certificate
63f0cdd1883...te.pem.crt

[Deactivate certificate](#) [Download](#)

Key files

The key files are unique to this certificate and can't be downloaded after you leave this page. Download them now and save them in a secure place.

 This is the only time you can download the key files for this certificate.

Public key file
63f0cdd188303490f986216...2e9d7fd-public.pem.key

[Download](#)

Private key file
63f0cdd188303490f986216...e9d7fd-private.pem.key

[Download](#)

Root CA certificates


Download the root CA certificate file that corresponds to the type of data endpoint and cipher suite you're using. You can also download the root CA certificates later.

Amazon trust services endpoint
RSA 2048 bit key: Amazon Root CA 1

[Download](#)

Amazon trust services endpoint
ECC 256 bit key: Amazon Root CA 3

[Download](#)

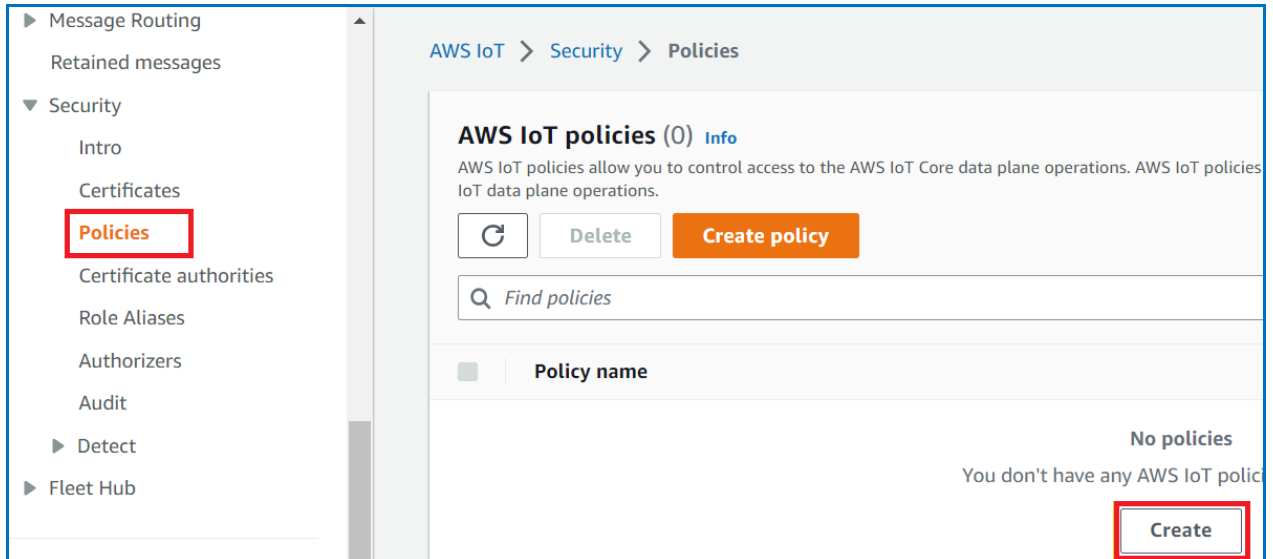
If you don't see the root CA certificate that you need here, AWS IoT supports additional root CA certificates. These root CA certificates and others are available in our developer guides. [Learn more](#) 

[Done](#)

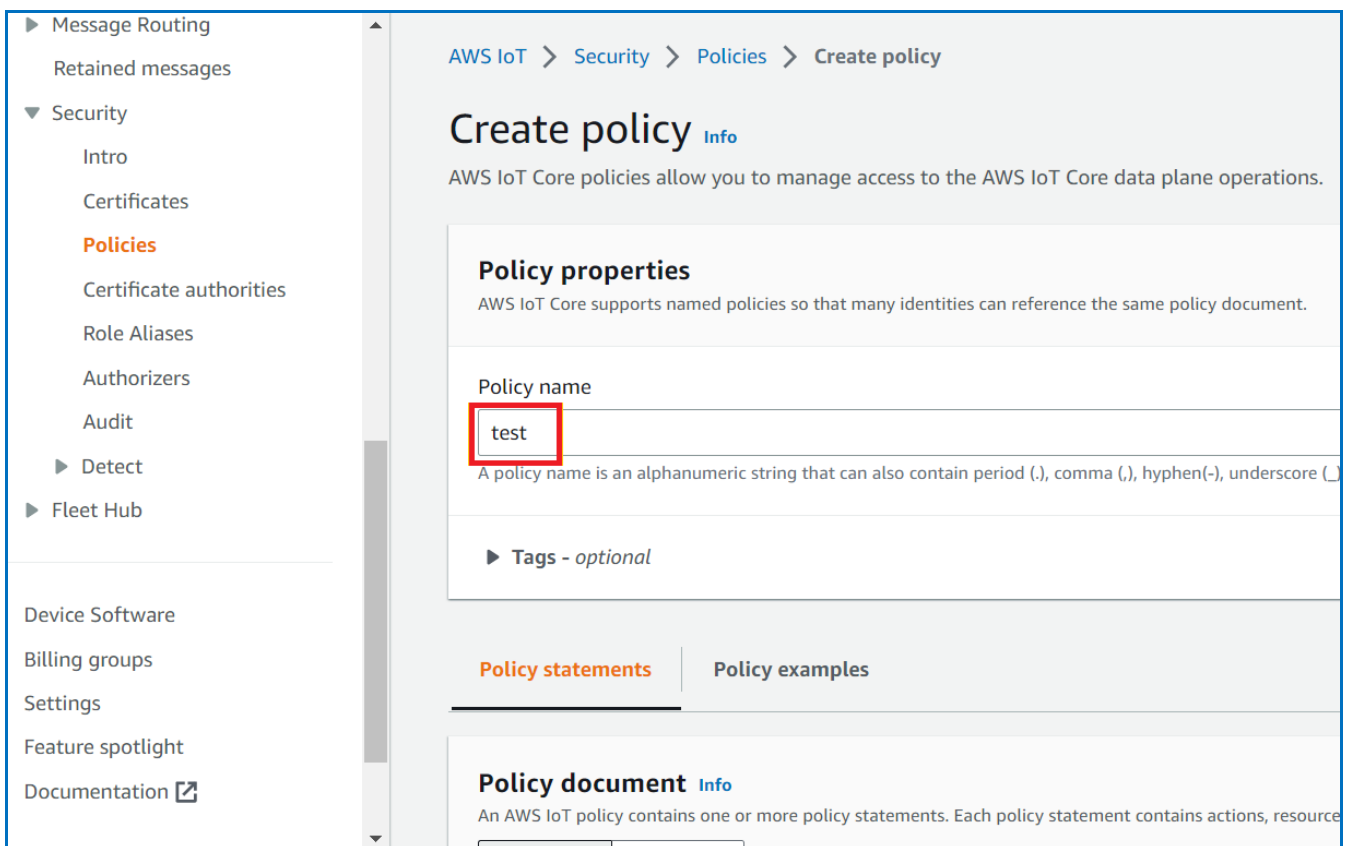
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3. 建立 AWS IoT Policy 並連結至憑證

點選 Security -> Policies 建立一個 Policy



設定存取權限與裝置來源。可參考下圖，設為不做任何限制。



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► Tags - optional

Policy statements | Policy examples

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**

完成後，可查看 Policies 清單。

Successfully created policy test. [View policy](#)

AWS IoT > Security > Policies

AWS IoT policies (1) [Info](#)
 AWS IoT policies allow you to control access to the AWS IoT Core data plane operations. AWS IoT policies are separate and different from IAM policies. AWS IoT policies apply only to AWS IoT data plane operations.

Refresh | Delete | **Create policy**

Find policies < 1 > ⚙️

<input type="checkbox"/>	Policy name
<input type="checkbox"/>	test

點選 Security -> Certificates 建立一個 “Attach policies”

Security

- Intro
- Certificates**
- Policies
- Certificate authorities
- Role Aliases
- Authorizers
- Audit
- Detect
- Fleet Hub

Subject: CN=AWS IoT Certificate
 Expires: December 01, 2022, 16:27:47 (UTC+0800)
 Issuer: OU=Amazon Web Services O=Amazon.com Inc. L=Seattle ST=Washington C=US

Policies | Things | Noncompliance

Policies (0) [Info](#) Refresh Detach policies **Attach policies**

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

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選擇 policy

Attach policies to the certificate ✕
63f0cdd188303490f986216c9c69b93505c9bd2b54bb74e971a83848e2e9d7fd.

Policies
Choose policies to attach to this certificate. The certificate can have up to 10 policies attached to it.

↕
↻

test ✕

Cancel
Attach policies

完成設定

arn:aws:iot:us-east-1:834573312232:cert/63f0cdd188303490f986216c9c69b93505c9bd2b54bb74e971a83848e2e9d7fd

Subject
CN=AWS IoT Certificate

Issuer
OU=Amazon Web Services O=Amazon.com Inc. L=Seattle ST=Washington C=US

Valid
December 01, 2022, 16:27:47 (UTC+0800)

Expires
January 01, 2050, 07:59:59 (UTC+0800)

Policies

Things

Noncompliance

Policies (1) Info

AWS IoT policies allow you to control access to the AWS IoT Core data plane operations. ↻ Detach policies

<input type="checkbox"/>	Name
<input type="checkbox"/>	test

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UA 系列產品 MQTT 設定

請先確認您的 UA 產品已能連線到 router 及網際網路並確認已上電

● 建立 MQTT 連線

請參考 UA 系列功能專區建立一個 Modbus 轉 MQTT 專案 (或依照客戶需求的專案選項)

The screenshot shows the web interface for the UA-2200/5200 IIoT Communication Server. The 'Function Wizard' dropdown menu is open, listing various communication conversion options. The option '(Master) Modbus RTU / MQTT' is highlighted with a red box.

The screenshot shows the 'Modbus TCP Module List' configuration page. The breadcrumb trail is: Module Setting > MQTT Certificate > MQTT Broker Setting > Enable Converting Module > Save Project > Run the project. The page shows a table for adding modules, with the first row highlighted by a dashed blue box. The table has columns for 'No.', '*Module Name / Nickname', and 'Edit'. Below the table are 'Copy' and 'Remove' buttons, and a 'Save' button at the bottom.

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1. 設定 Modbus 模組

2. 設定 MQTT Certificate

(a) 將 AWS IoT 下載的 AmazonRootCA3.pem 從 Trusted Certificate(信任憑證)上傳至 UA

MQTT Client

Remove the File

Trusted Certificate	<input type="button" value="Remove"/>
Certificate	<input type="button" value="Remove"/>
Private Key	<input type="button" value="Remove"/>

Upload the file to the controller

Trusted Certificate	<input type="button" value="Select File"/> AmazonRootCA3.pem	<input type="button" value="Upload"/>
Certificate	<input type="button" value="Select File"/>	<input type="button" value="Upload"/>
Private Key	<input type="button" value="Select File"/>	<input type="button" value="Upload"/>

(b) 將 AWS IoT 下載的 xxxxxxxxxx-certificate.pem.crt 從 Certificate(憑證)上傳至 UA

MQTT Client

Remove the File

Trusted Certificate	<input type="button" value="Remove"/>
Certificate	<input type="button" value="Remove"/>
Private Key	<input type="button" value="Remove"/>

Upload the file to the controller

Trusted Certificate	<input type="button" value="Select File"/>	<input type="button" value="Upload"/> Success.
Certificate	<input type="button" value="Select File"/> xxxxxxxxxx-certificate.pem.crt	<input type="button" value="Upload"/>
Private Key	<input type="button" value="Select File"/>	<input type="button" value="Upload"/>

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(c) 將 AWS IoT 下載的 xxxxxxxxx-private.pem.key 從 Private Key (私鑰)上傳至 UA

MQTT Client

Remove the File

Trusted Certificate	<input type="button" value="Remove"/>
Certificate	<input type="button" value="Remove"/>
Private Key	<input type="button" value="Remove"/>

Upload the file to the controller

Trusted Certificate	<input type="button" value="Select File"/>	<input type="button" value="Upload"/>	Success.
Certificate	<input type="button" value="Select File"/>	<input type="button" value="Upload"/>	Success.
Private Key	<input type="button" value="Select File"/> 8e2e9d7fd-private.pem.key	<input type="button" value="Upload"/>	

3. MQTT Broker Setting

(a) 從 MQTT Connect 新增一個 Remote Broker 設定

Module Setting > MQTT Certificate > MQTT Broker Setting > Enable Converting Module > Save Project >

Run the project

System Setting Module Setting IoT Platform Setting Convert Setting Advanced Setting Logger Setting

I/O Status File Setting

IoT Platform Setting > Remote Broker

MQTT Connection

Local Broker

Remote Broker

MQTT Group Connection

Microsoft Azure Platform

OPC UA Connection

Local Server

Remote Broker List

Remove	Broker Name	IP / Domain	Port
<input type="checkbox"/>	Name1		
<input type="checkbox"/>	AWS	127.0.0.1	1883

 < 1 / 1 >

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System Setting Module Setting **IoT Platform Setting** Convert Setting Advanced Setting

I/O Status File Setting

IoT Platform Setting Remote Broker **Broker Content Settings**

MQTT Connection

- Local Broker
- Remote Broker**
- MQTT Group Connection
- Microsoft Azure Platform

OPC UA Connection

- Local Server

Broker Content Settings

Broker Name	AWS
IP / Domain	a[redacted]us-east-
Port	8883
Keep Alive Time(second)	60
SSL/TLS	<input checked="" type="checkbox"/> Enabled
Trusted Certificate	AmazonRootCA3.pem
Certificate	63f0cdd188303490f986216c!
Private Key	63f0cdd188303490f986216c!
Anonymous Login	<input checked="" type="checkbox"/> Enabled

(b) Broker Content Settings IP / Domain 欄位填 AWS IoT 的 Settings 頁面，Endpoint 欄位

Retained messages

- ▼ Security
 - Intro
 - Certificates
 - Policies
 - Certificate authorities
 - Role Aliases
 - Authorizers
 - Audit
 - ▶ Detect
 - ▶ Fleet Hub
- Device Software
- Billing groups
- Settings**
- Feature spotlight
- Documentation

AWS IoT > Settings

Settings [Info](#)

Device data endpoint [Info](#)

Your devices can use your account's device data endpoint to connect to AWS.

Each of your things has a REST API available at this endpoint. MQTT clients and AWS IoT endpoint.

Endpoint

Domain configurations

You can create domain configurations to simplify tasks such as migrating devices to AWS IoT Core, migr AWS IoT Core and maintaining brand identity.

[Actions](#) ▼ [Create domain configuration](#)

	Name	Domain name	Status	Service type
--	------	-------------	--------	--------------

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(c) Broker Content Settings Port:8883

(d) Broker Content Settings SSL/TLS: 設為勾選

Trusted Certificate、Certificate、Private Key 依序選擇先前上傳的檔案

(e) Anonymous Login:設為勾選

4. Enable Converting Module

完成 Broker 設定後，選擇要轉換的 Modbus 裝置 Tag 點。(Message QoS 設為 0 或 1)

MQTT Client Setting

No.	<input type="text" value="1"/>
Module Name	<input type="text" value="simulate"/>
Scan Rate(ms)	<input type="text" value="1000"/>
Dead Band	<input type="text" value="0"/>
Will Topic	<input type="text"/>
Will	<input type="text"/>
MQTT Connection	<input type="checkbox"/> Broker (Local) <input checked="" type="checkbox"/> AWS (Remote)

Publish & Subscribe

Details

Name	Subscribe Topic	Subscribe QoS	Publish Topic	Publish QoS	Retain	Enabled
<input type="text" value="Tag0"/>	/MTCP_No.1_simulate/Holding_Registers/Tag0/Subscribe	1 ▼	/MTCP_No.1_simulate/Holding_Registers/Tag0/Publish	1 ▼	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<input type="text" value="Tag1"/>	/MTCP_No.1_simulate/Holding_Registers/Tag1/Subscribe	1 ▼	/MTCP_No.1_simulate/Holding_Registers/Tag1/Publish	1 ▼	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<input type="text" value="Tag2"/>	/MTCP_No.1_simulate/Holding_Registers/Tag2/Subscribe	1 ▼	/MTCP_No.1_simulate/Holding_Registers/Tag2/Publish	1 ▼	<input type="checkbox"/>	<input checked="" type="checkbox"/>

5. 儲存專案並執行

前述步驟完成後，依 Wizard 流程儲存專案並執行。

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測試

- 請在 AWS IoT 服務頁面上點選 MQTT test client 後，使用 “**Subscribe to a topic**” 來檢視資料是否已成功上傳。

AWS IoT. AWS IoT also publishes MQTT messages to inform devices and apps of changes to the MQTT test client.

Subscribe to a topic | Publish to a topic

Topic filter [Info](#)
The topic filter describes the topic(s) to which you want to subscribe. The topic filter can include

#

▼ **Additional configuration**

Number of messages to keep
The MQTT test client keeps this many of the most recent messages published to a topic that matches the topic filter.

10

Quality of service
When subscribing to a topic, quality of service 0 will be chosen by default.

Quality of Service 0 - Message will be delivered at most once

Quality of Service 1 - Message will be delivered at least once

MQTT payload display

Auto-format JSON payloads (improves readability)

Display payloads as strings (more accurate)

Display raw payloads (displays binary data as hexadecimal values)

Subscribe

Subscriptions # Pause Clear Export Edit

#	Topic	Message ID	Timestamp
▼	/MTCNo.1_simulate/Holding_Registers/Tag1/Publish	289	December 01, 2022, 17:29:10 (UTC+0800)
▶	Properties		
▼	/MTCNo.1_simulate/Holding_Registers/Tag1/Publish	287	December 01, 2022, 17:29:10 (UTC+0800)
▶	Properties		

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2. 請在 AWS IoT 服務頁面上點選 MQTT test client 後，使用 Publish to a topic 來檢視 UA 是否已成功接收資料。

The screenshot shows the AWS IoT console interface for publishing a message to a topic. The left sidebar contains navigation options like Monitor, Connect, Test, and Manage. The main content area is titled 'Publish to a topic' and includes the following fields and options:

- Topic name:** /MTCP_No.1_simulate/Holding_Registers/Tag2/Subscribe
- Message payload:** 296
- Additional configuration:**
 - Retain message on this topic
 - Quality of Service:** Quality of Service (QoS) 0 will be chosen by default.
 - Quality of Service 0 - Message will be delivered at most once
 - Quality of Service 1 - Message will be delivered at least once
- MQTT 5 properties:** Add MQTT 5 properties by choosing a property type and adding a value. (Add property button)
- User properties:** Add user properties in the MQTT header. (Add user property button)

This screenshot shows the 'Subscriptions' section of the AWS IoT console. At the top, there is a 'User properties' section with an 'Add user property' button and a 'Publish' button highlighted with a red box. Below this is a table of subscriptions:

Subscriptions	#
#	<ul style="list-style-type: none"> ▼ /MTCP_No.1_simulate/Holding_Registers/Tag2/Publish 296 ▶ Properties
#	<ul style="list-style-type: none"> ▼ /MTCP_No.1_simulate/Holding_Registers/Tag2/Subscribe 296 ▶ Properties