開發 ALEXA SKILL 流程

摘要

此文件提供 Alexa skill using AWS IoT 的完整流程

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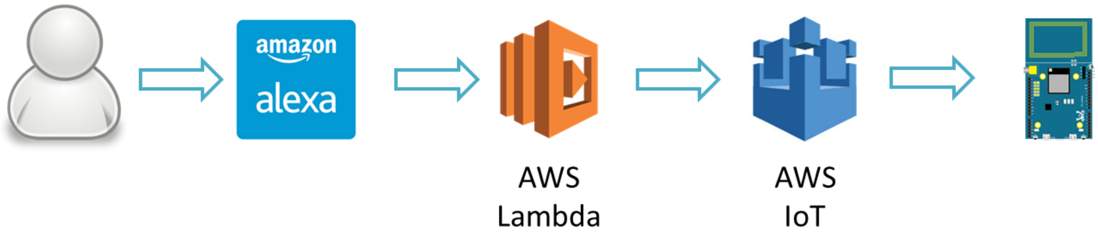
目錄

一、Overview

為開發 ”使用 Alexa echo 操作 [my device]” 功能，amazon doc 提供了經由 OAuth2.0 協定來做連結，由於此 solution 較為複雜，以下改藉使用 AWS IoT 來完成此功能

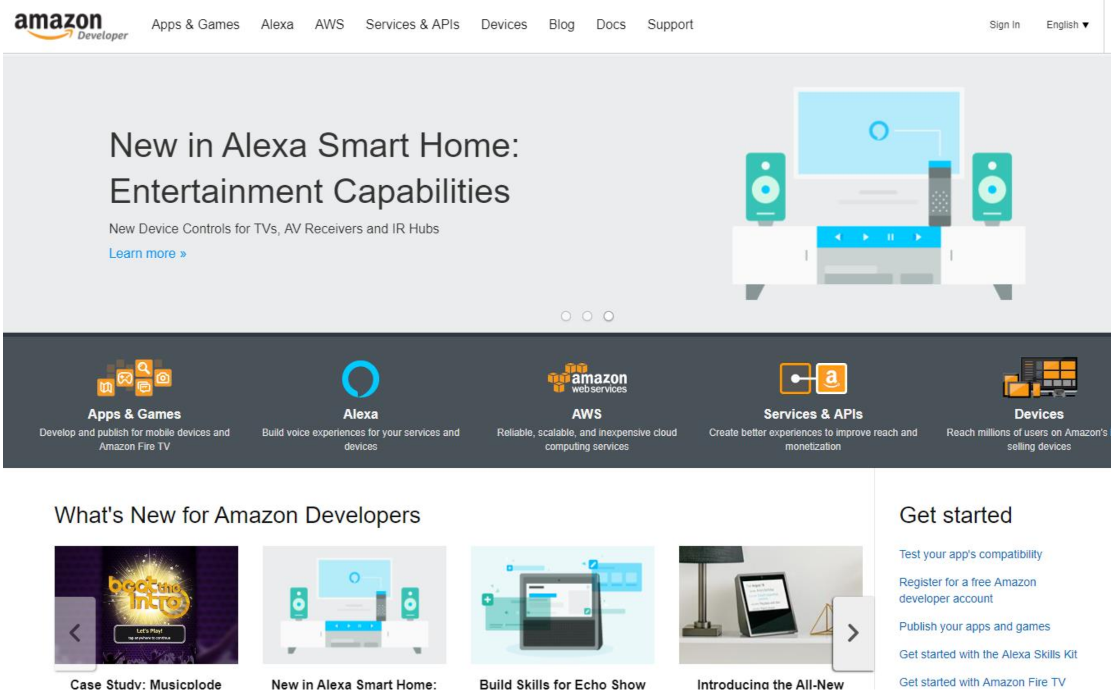


Alexa skill using AWS IoT flow (圖片來源: https://www.amebaiot.com/ameba-arduino-amazon-alexa/)

欲使用 AWS Lambda 及 AWS IoT 須先登入 AWS console，欲新增 skill 則要登入 Amazon Developer portal

二、在 Developer Portal 新增一個 Alexa Skill

1. 登入 developer portal https://developer.amazon.com/ ，點選右上角“Sign In”



New in Alexa Smart Home: Entertainment Capabilities

New Device Controls for TVs, AV Receivers and IR Hubs

Learn more »

Apps & Games Develop and publish for mobile devices and Amazon Fire TV

Alexa Build voice experiences for your services and devices

AWS Reliable, scalable, and inexpensive cloud computing services

Services & APIs Create better experiences to improve reach and monetization

Devices Reach millions of users on Amazon's selling devices

What's New for Amazon Developers

Case Study: Musicplode

New in Alexa Smart Home:

Build Skills for Echo Show

Introducing the All-New

Get started

Test your app's compatibility

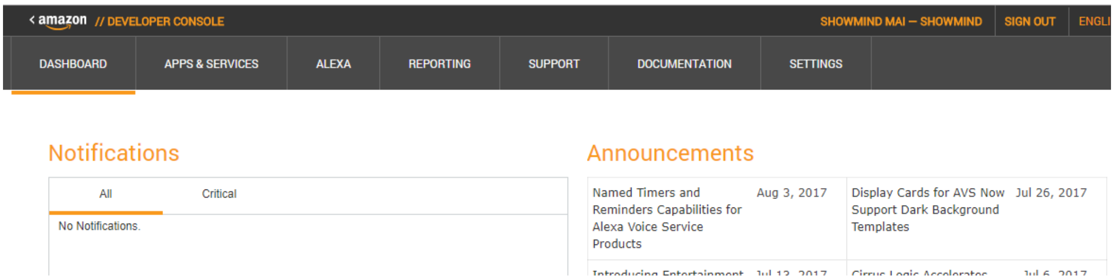
Register for a free Amazon developer account

Publish your apps and games

Get started with the Alexa Skills Kit

Get started with Amazon Fire TV

2. 接著輸入帳密登入，若無帳號則新創一個，其創帳流程不贅述
3. 登入後在上方點選“ALEXA”



Notifications

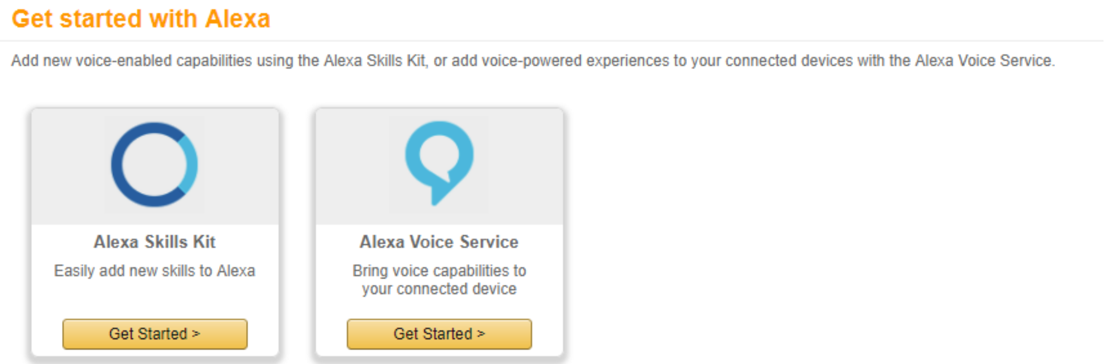
All Critical

No Notifications.

Announcements

Named Timers and Reminders Capabilities for Alexa Voice Service Products	Aug 3, 2017	Display Cards for AVS Now Support Dark Background Templates	Jul 26, 2017
Introducing Entertainment	Jul 13, 2017	Cirrus Logic Accelerates	Jul 6, 2017

4. 按“Alexa Skills Kit”下方的“Get Started >”



Get started with Alexa

Add new voice-enabled capabilities using the Alexa Skills Kit, or add voice-powered experiences to your connected devices with the Alexa Voice Service.

Alexa Skills Kit

Easily add new skills to Alexa

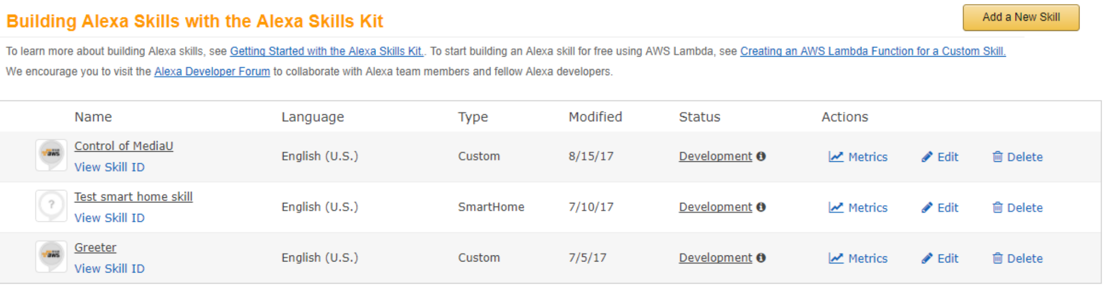
Get Started >

Alexa Voice Service

Bring voice capabilities to your connected device

Get Started >

5. 點右上 “Add a New Skill”，下方是先前已建立的 skill，若尚未新增則無



Building Alexa Skills with the Alexa Skills Kit

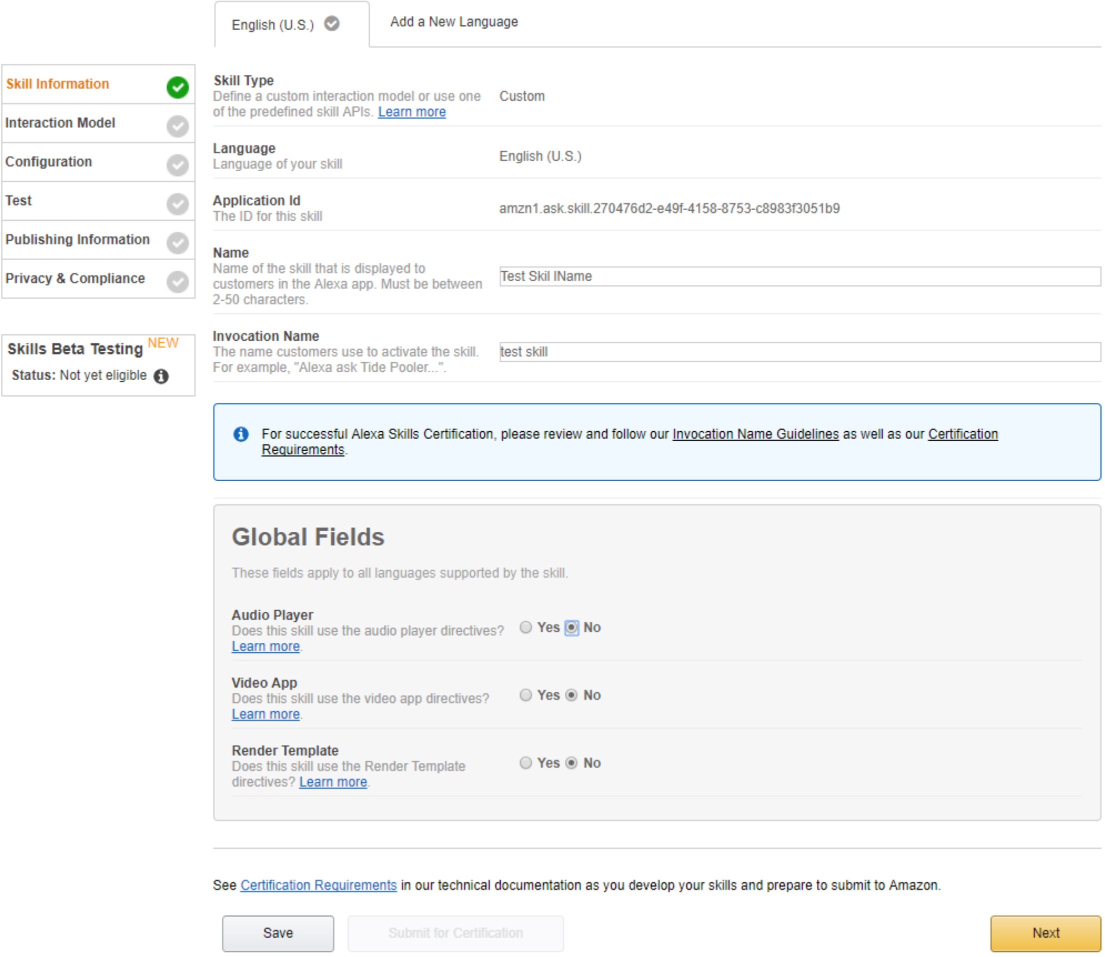
To learn more about building Alexa skills, see Getting Started with the Alexa Skills Kit. To start building an Alexa skill for free using AWS Lambda, see Creating an AWS Lambda Function for a Custom Skill.

We encourage you to visit the Alexa Developer Forum to collaborate with Alexa team members and fellow Alexa developers.

Name	Language	Type	Modified	Status	Actions		
Control of MediaU View Skill ID	English (U.S.)	Custom	8/15/17	Development	Metrics	Edit	Delete
Test smart home skill View Skill ID	English (U.S.)	SmartHome	7/10/17	Development	Metrics	Edit	Delete
Greeter View Skill ID	English (U.S.)	Custom	7/5/17	Development	Metrics	Edit	Delete

6. Navigation pane: Skill Information

- Skill Type 選擇 “Custom Interaction Model”
- Language 選擇 “English (U.S.)”
- Name 之後 publish 後會顯示給一般使用者，亦可先暫時取名發布前再更改，此範例填上 Test Skill Name
- Invocation Name 為啟動該 skill 的名字，此範例填上 Test Skill
- Global Fields 中，若將 Audio Player 點選 yes，則可直接使用 alexa 內建的 audio intent，此範例皆選 “No”
- 設定好後按最下方 “Save”，然後按右下方 “Next”



Status: Not yet eligible

Skill Type
Define a custom interaction model or use one of the predefined skill APIs. Learn more: Custom

Language
Language of your skill: English (U.S.)

Application Id
The ID for this skill: amzn1.ask.skill.270476d2-e49f-4158-8753-c8983f3051b9

Name
Name of the skill that is displayed to customers in the Alexa app. Must be between 2-50 characters.: Test Skil lName

Invocation Name
The name customers use to activate the skill. For example, "Alexa ask Tide Pooler...".: test skill

For successful Alexa Skills Certification, please review and follow our Invocation Name Guidelines as well as our Certification Requirements.

Global Fields

These fields apply to all languages supported by the skill.

Audio Player
Does this skill use the audio player directives? Learn more. ○ Yes ● No

Video App
Does this skill use the video app directives? Learn more. ○ Yes ● No

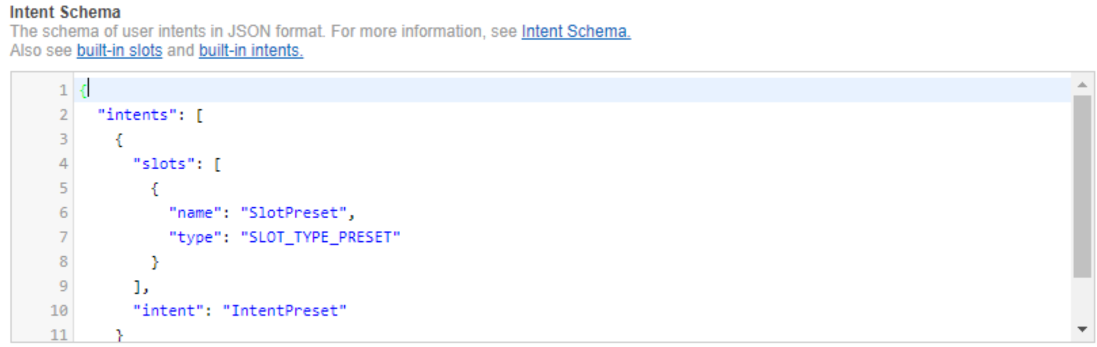
Render Template
Does this skill use the Render Template directives? Learn more. ○ Yes ● No

See Certification Requirements in our technical documentation as you develop your skills and prepare to submit to Amazon.

7. Navigation pane: Interaction Model

- ◆ Intent 為該 skill 能執行的動作，在 Intent Schema 欄裡以 JSON format 寫入，並可新增多項 Intent，此範例在欄內填入：

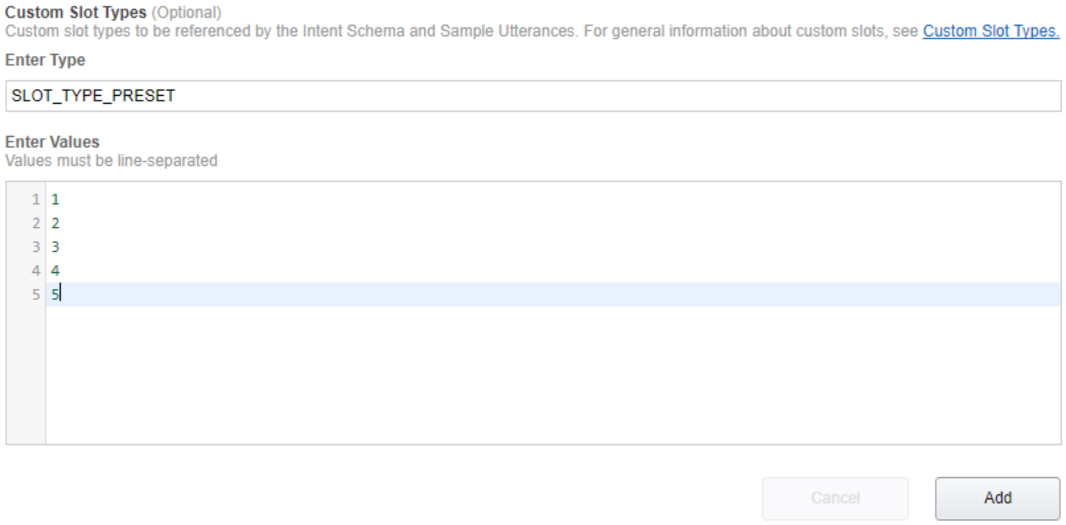
```
{
  "intents": [
    {
      "slots": [
        {
          "name": "SlotPreset",
          "type": "SLOT_TYPE_PRESET"
        }
      ],
      "intent": "IntentPreset"
    }
  ]
}
```



Intent Schema
The schema of user intents in JSON format. For more information, see Intent Schema.
Also see built-in slots and built-in intents.

```
{
  "intents": [
    {
      "slots": [
        {
          "name": "SlotPreset",
          "type": "SLOT_TYPE_PRESET"
        }
      ],
      "intent": "IntentPreset"
    }
```

- ◆ Custom Slot Types 中，Enter Type 填 SLOT_TYPE_PRESET，Enter Values 欄內填入 1 2 3 4 5 (須分行)，輸入完後按 “Add”



Custom Slot Types (Optional)
Custom slot types to be referenced by the Intent Schema and Sample Utterances. For general information about custom slots, see Custom Slot Types.

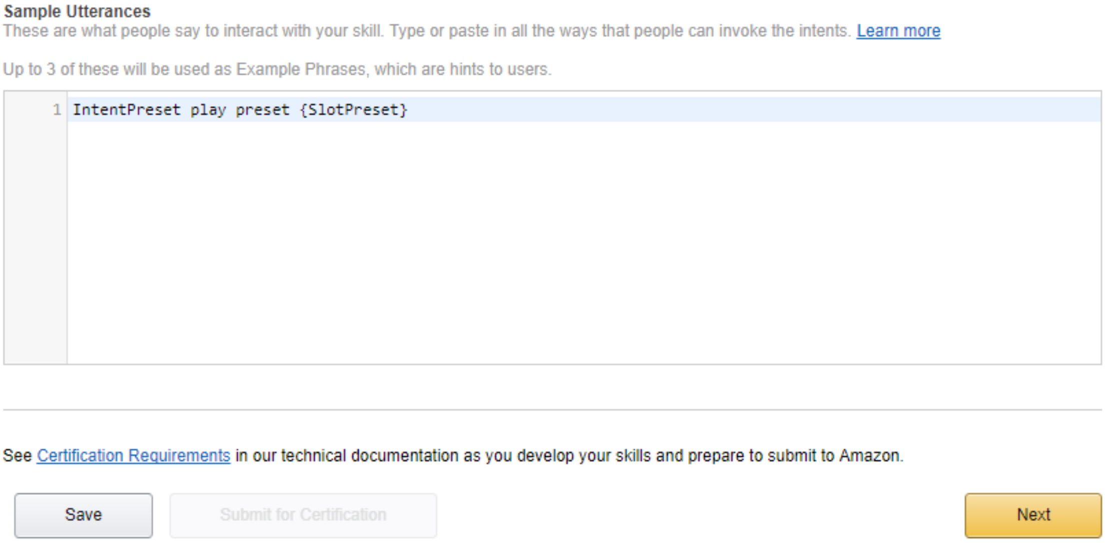
Enter Type

SLOT_TYPE_PRESET

Enter Values
Values must be line-separated

```
1
2
3
4
5
```

◆ Sample Utterances 為使用者該如何說話來啟動 skill intent，詳細寫法可參考 “Learn more”，此範例填入 “IntentPreset play preset {SlotPreset}”，然後點 “Save” 及 “Next”



Sample Utterances
These are what people say to interact with your skill. Type or paste in all the ways that people can invoke the intents. Learn more

Up to 3 of these will be used as Example Phrases, which are hints to users.

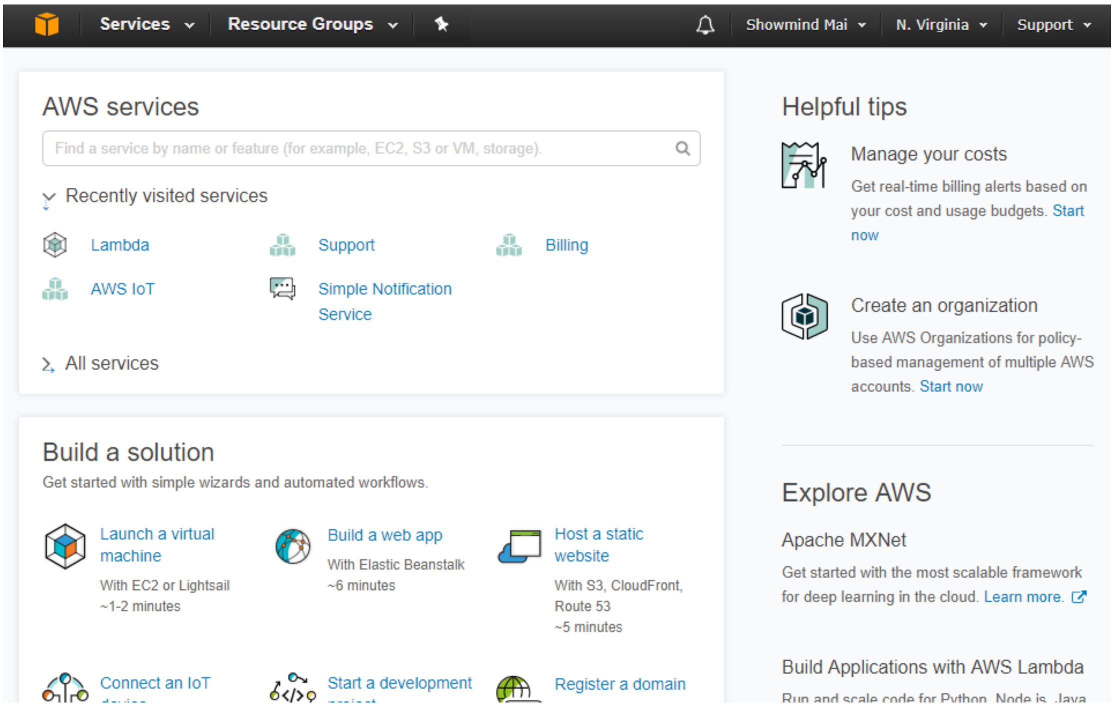
```
IntentPreset play preset {SlotPreset}
```

See Certification Requirements in our technical documentation as you develop your skills and prepare to submit to Amazon.

8. 此時 Navigation pane 是 Configuration，必須先撰寫 Lambda Function 作為此 skill 之 endpoind，故先暫停 skill 設定

三、新增 Lambda Function

1. 登入 AWS Console: https://aws.amazon.com/tw/console/ ，此服務須付費，新帳號有一年部份免費方案，而一般個人使用下不太會有大量付費的情形發生，但還是須注意一下
2. 若無帳號一樣請先註冊，在此亦不贅述，要注意的是 amazon 需要使用者提供信用卡後才能開始使用 AWS 各項功能
3. 成功登入後畫面長這樣，右上角 Support 左方可選擇 Region，其會影響速度及收費方式，此範例為預設的“N. Virginia”



AWS services

Find a service by name or feature (for example, EC2, S3 or VM, storage).

Recently visited services

Lambda
Support
Billing
AWS IoT
Simple Notification Service

All services

Build a solution

Get started with simple wizards and automated workflows.

Launch a virtual machine
With EC2 or Lightsail
~1-2 minutes

Build a web app
With Elastic Beanstalk
~6 minutes

Host a static website
With S3, CloudFront, Route 53
~5 minutes

Connect an IoT

Start a development

Register a domain

Helpful tips

Manage your costs
Get real-time billing alerts based on your cost and usage budgets. Start now

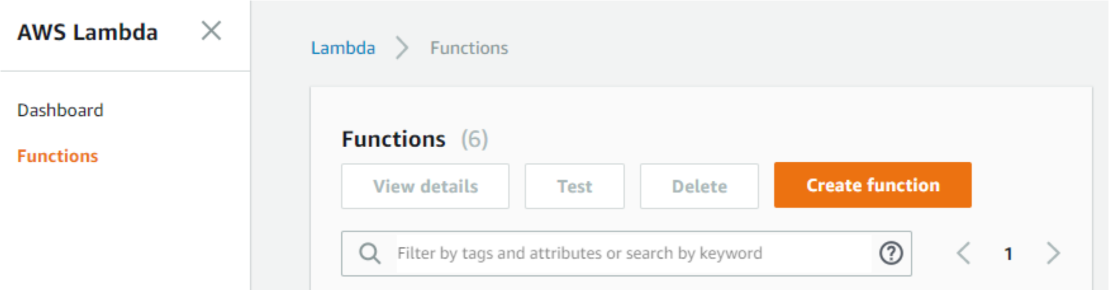
Create an organization
Use AWS Organizations for policy-based management of multiple AWS accounts. Start now

Explore AWS

Apache MXNet
Get started with the most scalable framework for deep learning in the cloud. Learn more.

Build Applications with AWS Lambda

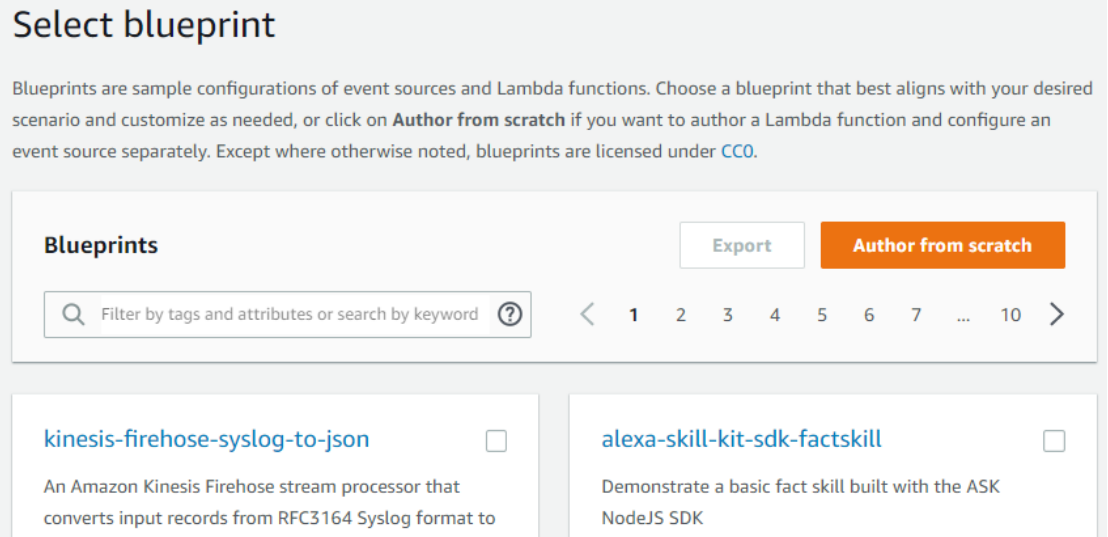
4. 點選左上角 Services，下拉可看到 AWS 所有服務，找出“Lambda”並點選之
5. Navigation pane 選 Function，接著點擊右方“Create function”



Functions (6)

Filter by tags and attributes or search by keyword

6. Select blueprint 可選擇 AWS 所提供的各種 sample，此範例直接略過，按 “Author from scratch”



Select blueprint

Blueprints are sample configurations of event sources and Lambda functions. Choose a blueprint that best aligns with your desired scenario and customize as needed, or click on **Author from scratch** if you want to author a Lambda function and configure an event source separately. Except where otherwise noted, blueprints are licensed under CC0.

Blueprints

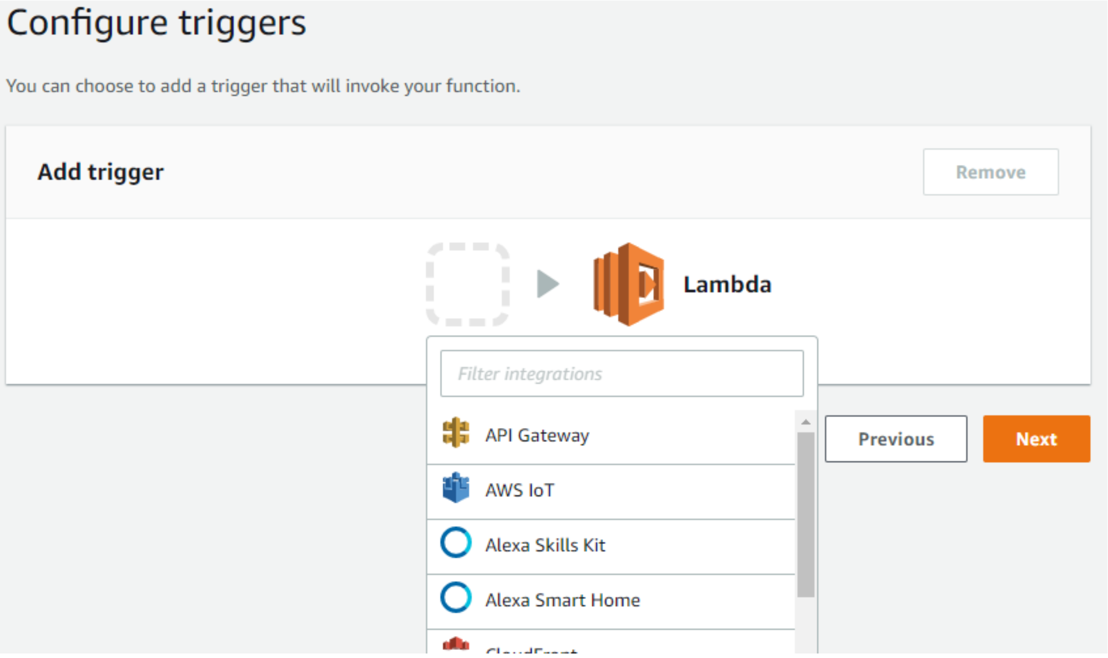
kinesis-firehose-syslog-to-json □

An Amazon Kinesis Firehose stream processor that converts input records from RFC3164 Syslog format to

alexa-skill-kit-sdk-factskill □

Demonstrate a basic fact skill built with the ASK NodeJS SDK

7. Configure triggers 按虛線空白處，然後點選 “Alexa Skill Kit”，接著按 “Next”



Configure triggers

You can choose to add a trigger that will invoke your function.

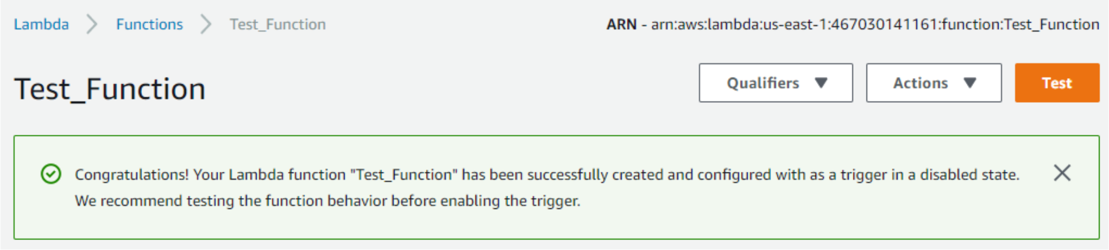
Add trigger

8. 在 Configure function 做該函數各種設定，沒提到的保留預設值
    - Name 用來識別此 lambda function，此範例寫 Test_Function
    - Description 描述該 function 內容
    - Runtime 選 “Node.js 4.3”，如有需求之後可切換語言
    - Code entry type 選 “Edit code inline”
    - 將原本 sample code 刪除，並貼上此程式碼：http://dev.mediayou.net/sample_code/lambda.txt，此 code 要填入 IoT endpoint URL，待稍後設定好 IoT 再回來修改
    - Role 選 “Create a custom role”，彈出新分頁帶到 AWS IAM 的服務
9. 建立 IAM role
    - IAM Role 欄位選擇 “Create a new IAM Role”
    - Role Name 填入該名稱，此範例寫 test_lambda_role
    - 打開 view Policy Document，接著按右方 Edit，跳出小視窗按 “OK”
    - 接著在編輯區可看到預設的 policy，由於還需要使用 IoT 的權限，故將其修改如下：

```
{
   "Version": "2012-10-17",
   "Statement": [
      {
         "Effect": "Allow",
         "Action": [
            "logs:CreateLogGroup",
            "logs:CreateLogStream",
            "logs:PutLogEvents"
         ],
         "Resource": "arn:aws:logs:*:*:*"
      },
      {
         "Effect": "Allow",
         "Action": [
            "iot:*"
         ],
         "Resource": "arn:aws:iot:*:*:*"
      }
   ]
```

- 然後按右下角 “Allow”，自動回到 lambda 設定頁面

10. 此時 Existing Role 欄位已經是稍早設定好的 role，Tags 及 Advanced setting 保留預設值，確認無誤後按 “Next”
11. Review 頁面直接按右下 “Create function”
12. 到此已建立完成一個 lambda function，注意右上角字串
    ARN - arn:aws:lambda:us-east-1:467030141161:function:Test_Function
    這是這個 Lambda function 的 endpoint，將會用來填入 Alexa skill 的設定頁面



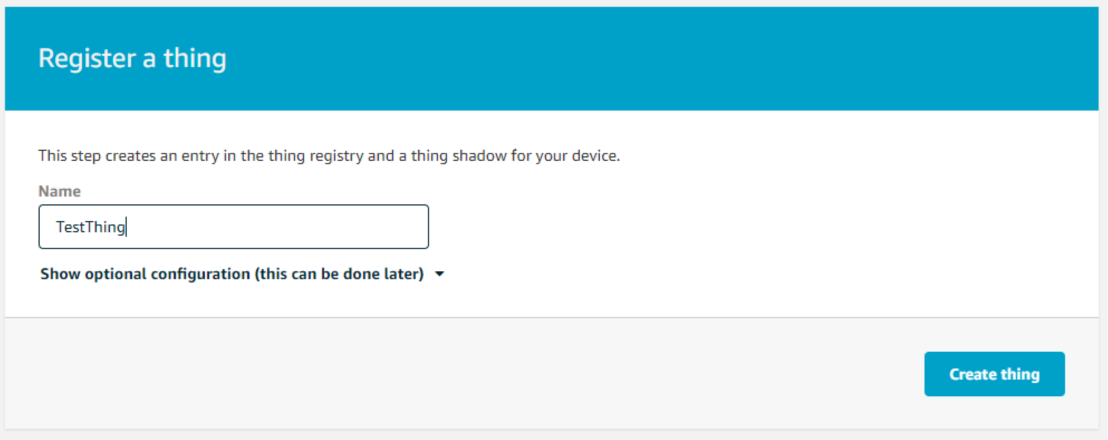
ARN - arn:aws:lambda:us-east-1:467030141161:function:Test_Function

Test_Function

Congratulations! Your Lambda function "Test_Function" has been successfully created and configured with as a trigger in a disabled state. We recommend testing the function behavior before enabling the trigger.

四、新增 AWS IoT Thing

1. 點左上角 Services，找到 AWS IoT
2. 想了解更多可先點選官方提供的 tutorial，接著開始時在 Name 填入 thing name ，此範例填 “TestThing”，然後按 “Create thing”



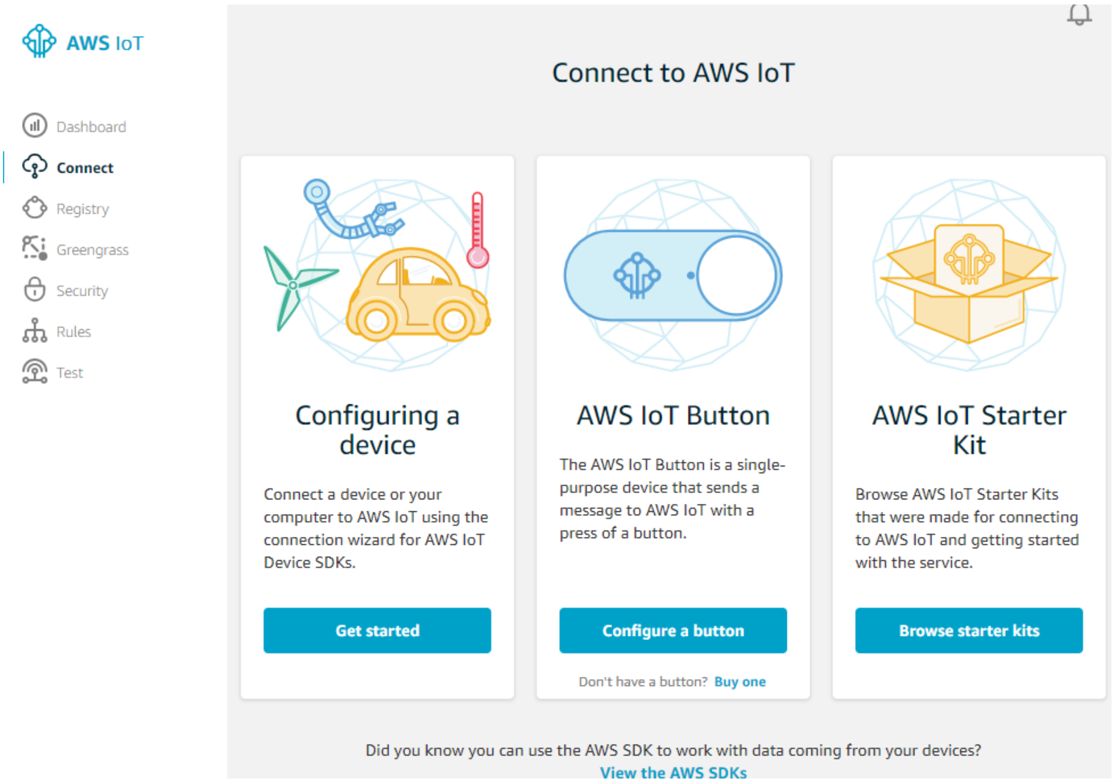
Register a thing

This step creates an entry in the thing registry and a thing shadow for your device.

Name

TestThing

3. Create 完後點畫面左邊的左箭頭回到有 Navigation pane 的頁面
4. Navigation pane 點選 “Connect”，接著點選 Configuring a device 下方的 “Get started”



Connect to AWS IoT

Configuring a device

Connect a device or your computer to AWS IoT using the connection wizard for AWS IoT Device SDKs.

AWS IoT Button

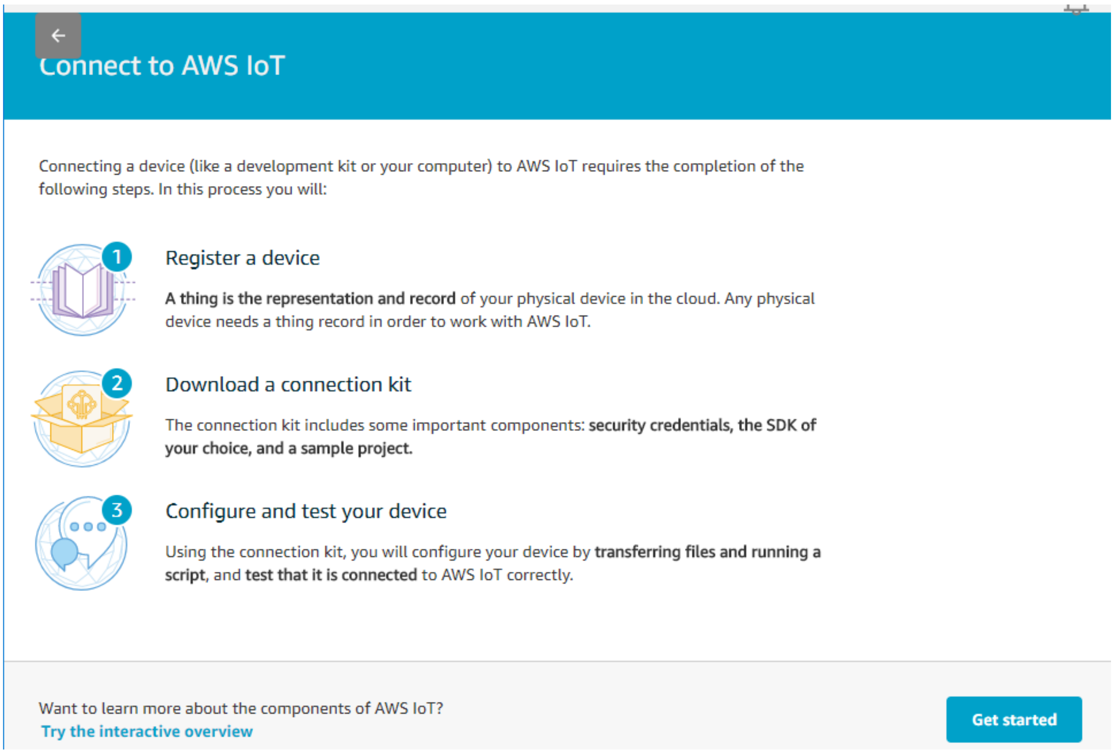
The AWS IoT Button is a single-purpose device that sends a message to AWS IoT with a press of a button.

AWS IoT Starter Kit

Browse AWS IoT Starter Kits that were made for connecting to AWS IoT and getting started with the service.

Did you know you can use the AWS SDK to work with data coming from your devices? View the AWS SDKs

5. 接著此頁再按一次“Get started”



Connect to AWS IoT

Connecting a device (like a development kit or your computer) to AWS IoT requires the completion of the following steps. In this process you will:

1 Register a device

A thing is the representation and record of your physical device in the cloud. Any physical device needs a thing record in order to work with AWS IoT.

2 Download a connection kit

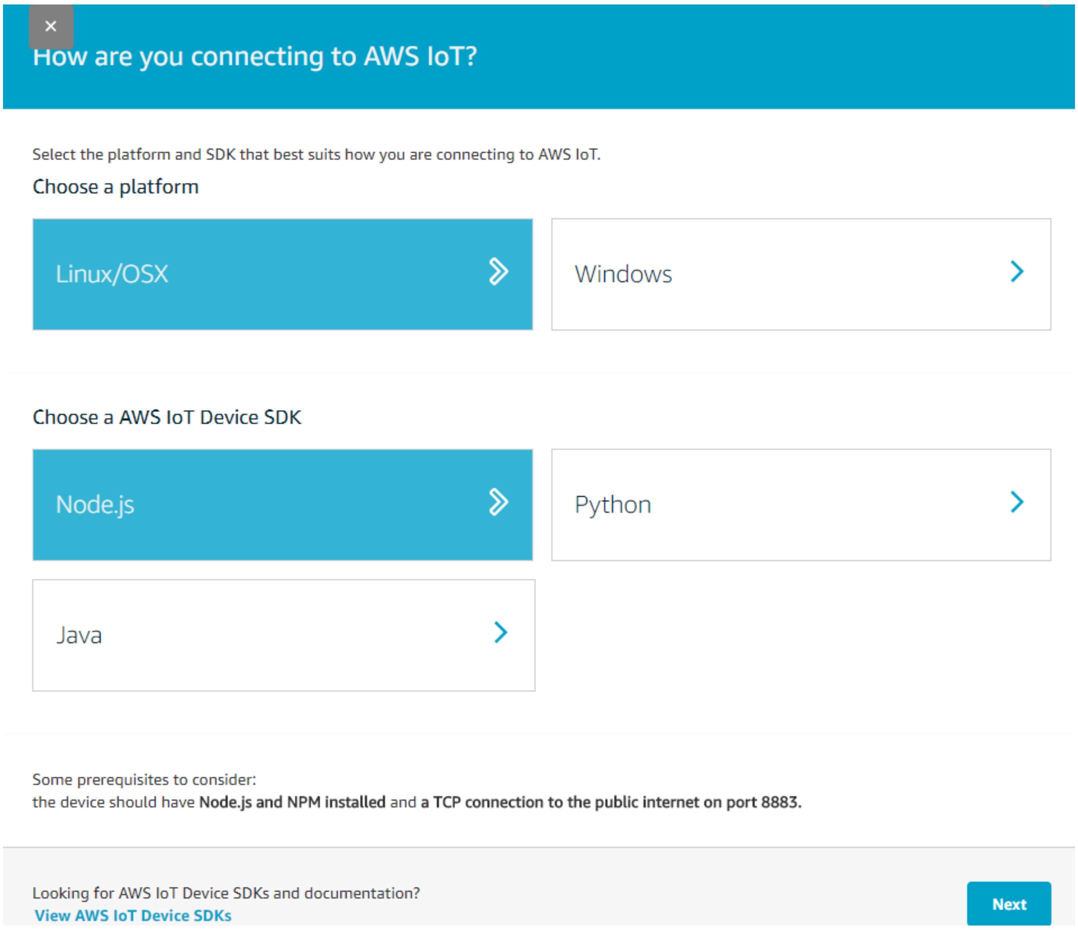
The connection kit includes some important components: **security credentials, the SDK of your choice, and a sample project.**

3 Configure and test your device

Using the connection kit, you will configure your device by **transferring files and running a script**, and **test that it is connected** to AWS IoT correctly.

Want to learn more about the components of AWS IoT?
Try the interactive overview

6. 選擇開發的 platform 及 SDK，此範例選“Linux/OSX”及“Node.js”，然後點“Next”



How are you connecting to AWS IoT?

Select the platform and SDK that best suits how you are connecting to AWS IoT.

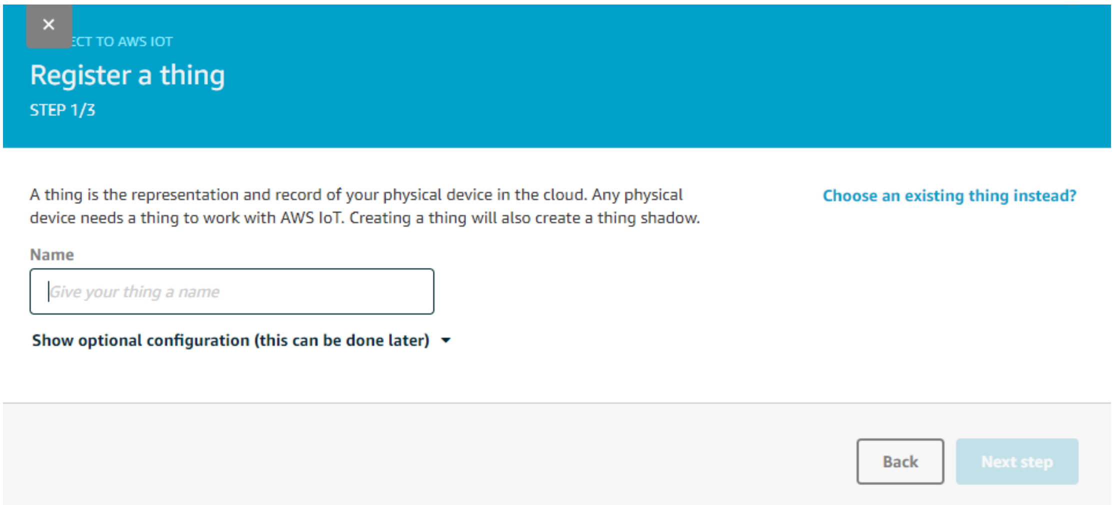
Choose a platform

Choose a AWS IoT Device SDK

Some prerequisites to consider:
the device should have **Node.js and NPM installed** and **a TCP connection to the public internet on port 8883.**

Looking for AWS IoT Device SDKs and documentation?
View AWS IoT Device SDKs

7. 點右上角 “Choose an existing thing instead?”，並選擇稍早 register 的 “TestThing”，然後按 “Next step”



Register a thing

STEP 1/3

A thing is the representation and record of your physical device in the cloud. Any physical device needs a thing to work with AWS IoT. Creating a thing will also create a thing shadow.

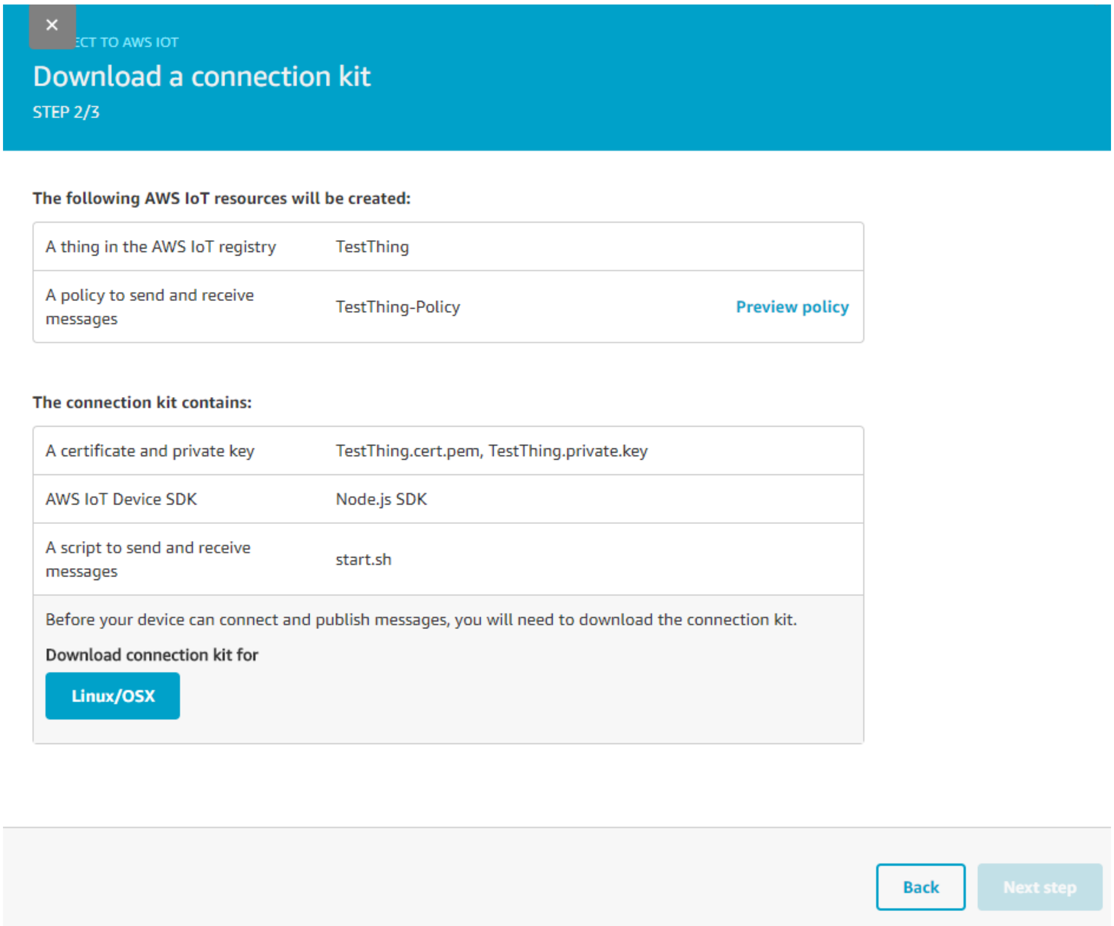
Choose an existing thing instead?

Name

Give your thing a name

Show optional configuration (this can be done later) ▾

8. AWT IoT 會自動生成 Policy 如圖的上方，若想自行建立 policy 亦可另外新增並可修改 policy 內容，再 attach 取代原本的即可，此範例沿用自動生成的，接著點 “Linux/OSX” 來 download SDK，然後按 “Next step”



Download a connection kit

STEP 2/3

The following AWS IoT resources will be created:

A thing in the AWS IoT registry	TestThing	
A policy to send and receive messages	TestThing-Policy	Preview policy

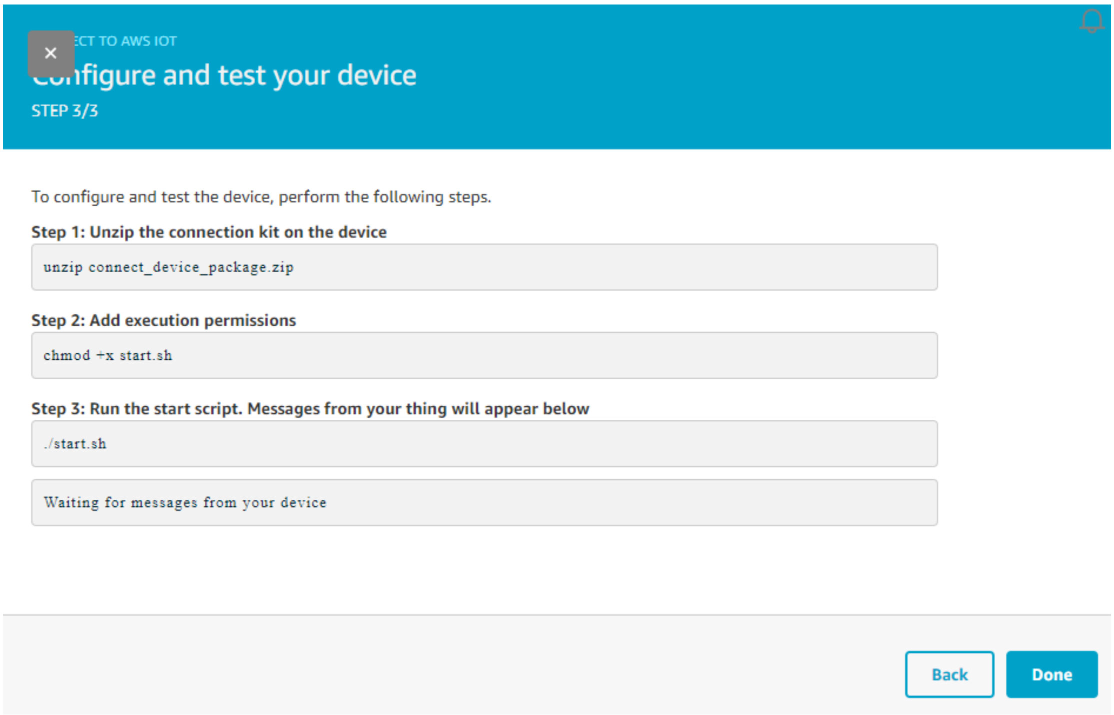
The connection kit contains:

A certificate and private key	TestThing.cert.pem, TestThing.private.key
AWS IoT Device SDK	Node.js SDK
A script to send and receive messages	start.sh

Before your device can connect and publish messages, you will need to download the connection kit.

Download connection kit for

9. 接著跳出下圖流程，按此流程操作



Configure and test your device

STEP 3/3

To configure and test the device, perform the following steps.

Step 1: Unzip the connection kit on the device

```
unzip connect_device_package.zip
```

Step 2: Add execution permissions

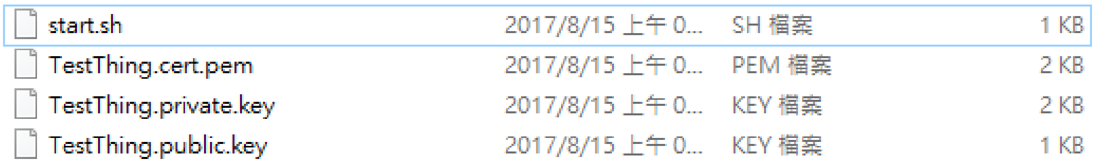
```
chmod +x start.sh
```

Step 3: Run the start script. Messages from your thing will appear below

```
./start.sh
```

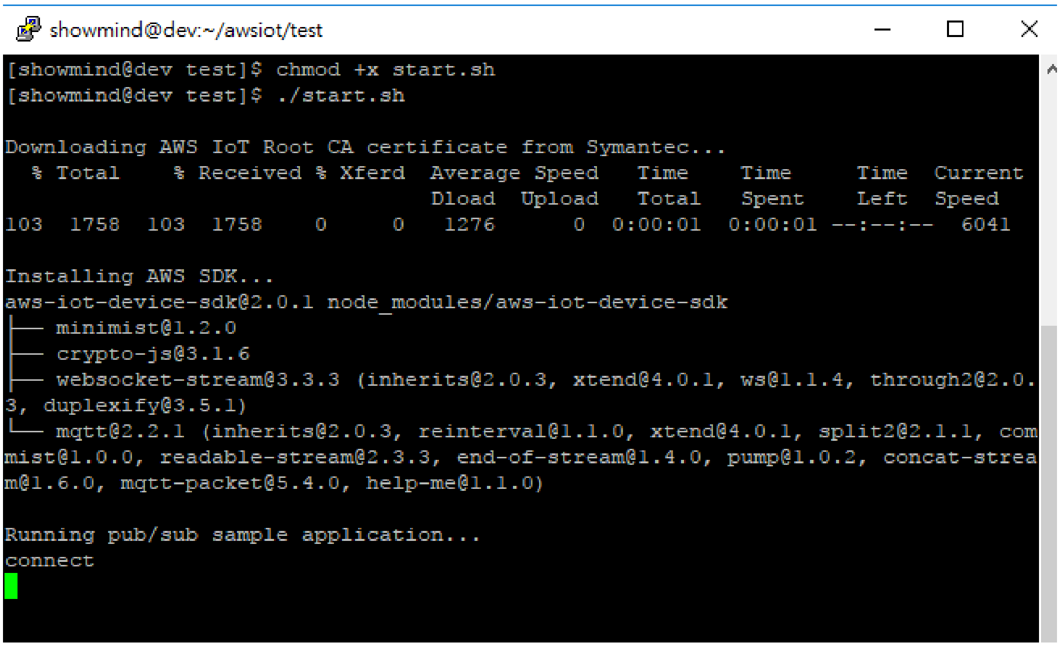
```
Waiting for messages from your device
```

10. 首先 unzip connect_device_package.zip，會有下列檔案，將其 copy 到開發者的 linux server



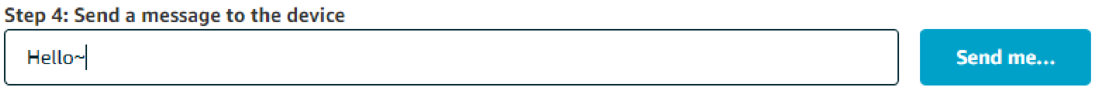
start.sh	2017/8/15 上午 0...	SH 檔案	1 KB
TestThing.cert.pem	2017/8/15 上午 0...	PEM 檔案	2 KB
TestThing.private.key	2017/8/15 上午 0...	KEY 檔案	2 KB
TestThing.public.key	2017/8/15 上午 0...	KEY 檔案	1 KB

11. 執行上圖的 step2, 3，開始 download root CA 以及安裝 AWS JS SDK，並執行 sample code，直到最後顯示 connect

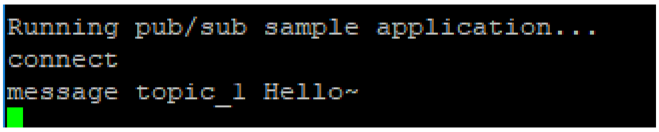


```
[showmind@dev test]$ chmod +x start.sh
[showmind@dev test]$ ./start.sh

Downloading AWS IoT Root CA certificate from Symantec...
  % Total    % Received % Xferd  Average Speed   Time    Time     Time  Current
                                 Dload  Upload   Total   Spent    Left  Speed
103  1758  103  1758    0     0   1276      0  0:00:01  0:00:01 --:--:--  6041

Installing AWS SDK...
aws-iot-device-sdk@2.0.1 node_modules/aws-iot-device-sdk
├── minimist@1.2.0
├── crypto-js@3.1.6
├── websocket-stream@3.3.3 (inherits@2.0.3, xtend@4.0.1, ws@1.1.4, through2@2.0.
3, duplexify@3.5.1)
└── mqtt@2.2.1 (inherits@2.0.3, reinterval@1.1.0, xtend@4.0.1, split2@2.1.1, com
mist@1.0.0, readable-stream@2.3.3, end-of-stream@1.4.0, pump@1.0.2, concat-strea
m@1.6.0, mqtt-packet@5.4.0, help-me@1.1.0)

Running pub/sub sample application...
connect
```

12. 回到 AWS IoT 頁面，可發現多一個 step 4，在下方欄位輸入文字然後點 “Send me...”，若該文字在 terminal 顯示則表示連接成功


Step 4: Send a message to the device

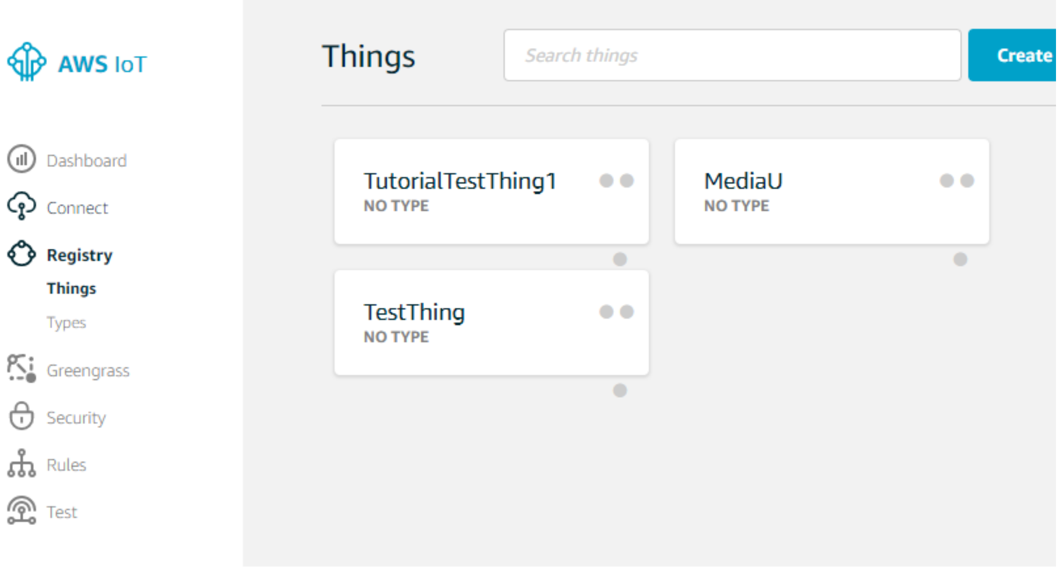
Hello~


```
Running pub/sub sample application...
connect
message topic_1 Hello~
```

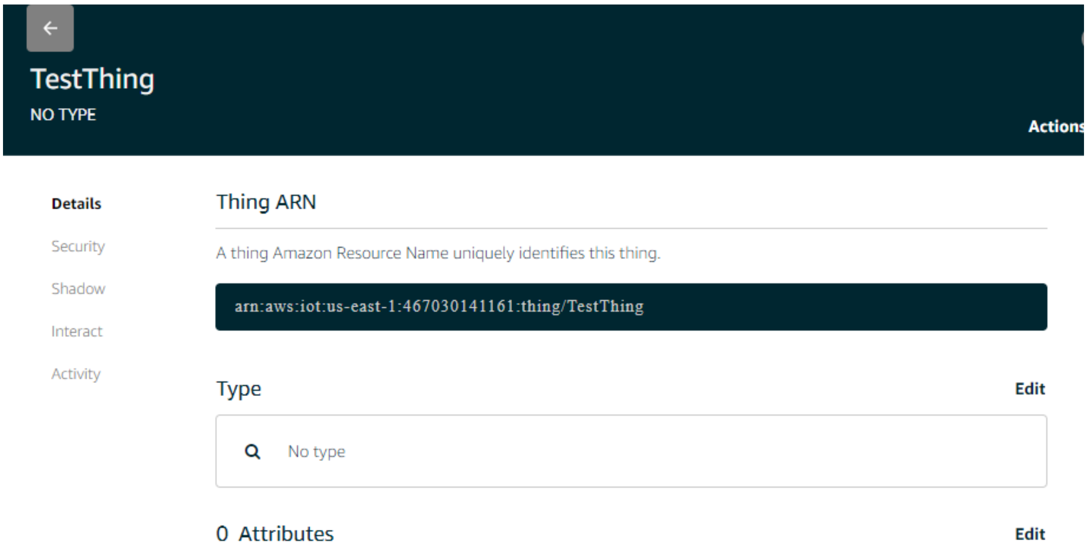
13. 點 “Done”，完成此 connect 設定

五、連接 Lambda function 與 IoT thing

1. 在 AWS IoT 頁面，navigation pane 點 thing，並於中間點選稍早建立的“TestThing”



2. 左邊點 “Interact”



Thing ARN

A thing Amazon Resource Name uniquely identifies this thing.

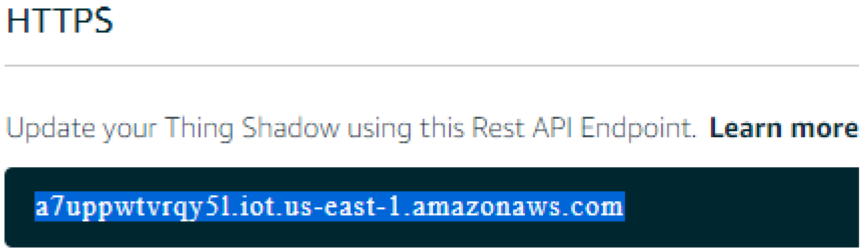
arn:aws:iot:us-east-1:467030141161:thing/TestThing

Type

No type

0 Attributes

3. 於頁面上方，copy 此 thing 的 Rest API Endpoint

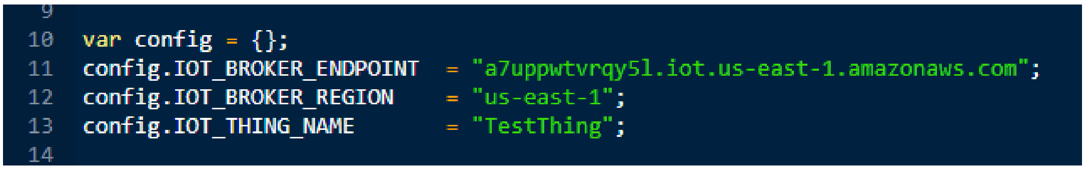


HTTPS

Update your Thing Shadow using this Rest API Endpoint. Learn more

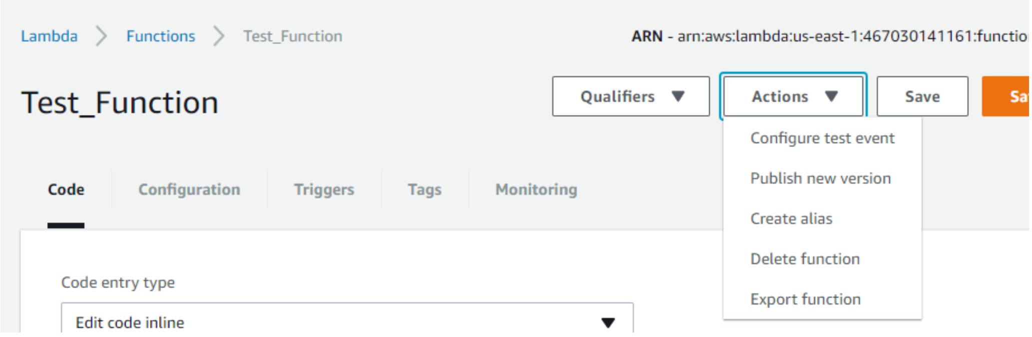
a7uppwtvrqy51.iot.us-east-1.amazonaws.com

4. 點左上角 Services，回到 Lambda 頁面，此時會發現 History 有紀錄近期使用的服務，因此不用在眾多服務中尋找
5. 打開稍早建立的 Test_Function，在 sample code 最上方更改 IoT configuration，貼上剛建好的 Thing IoT endpoint 以及 thing name



```

var config = {};
config.IOT_BROKER_ENDPOINT   = "a7uppwtvrqy5l.iot.us-east-1.amazonaws.com";
config.IOT_BROKER_REGION     = "us-east-1";
config.IOT_THING_NAME        = "TestThing";

```

6. 下拉 “Actions”，點 “Configure test event”

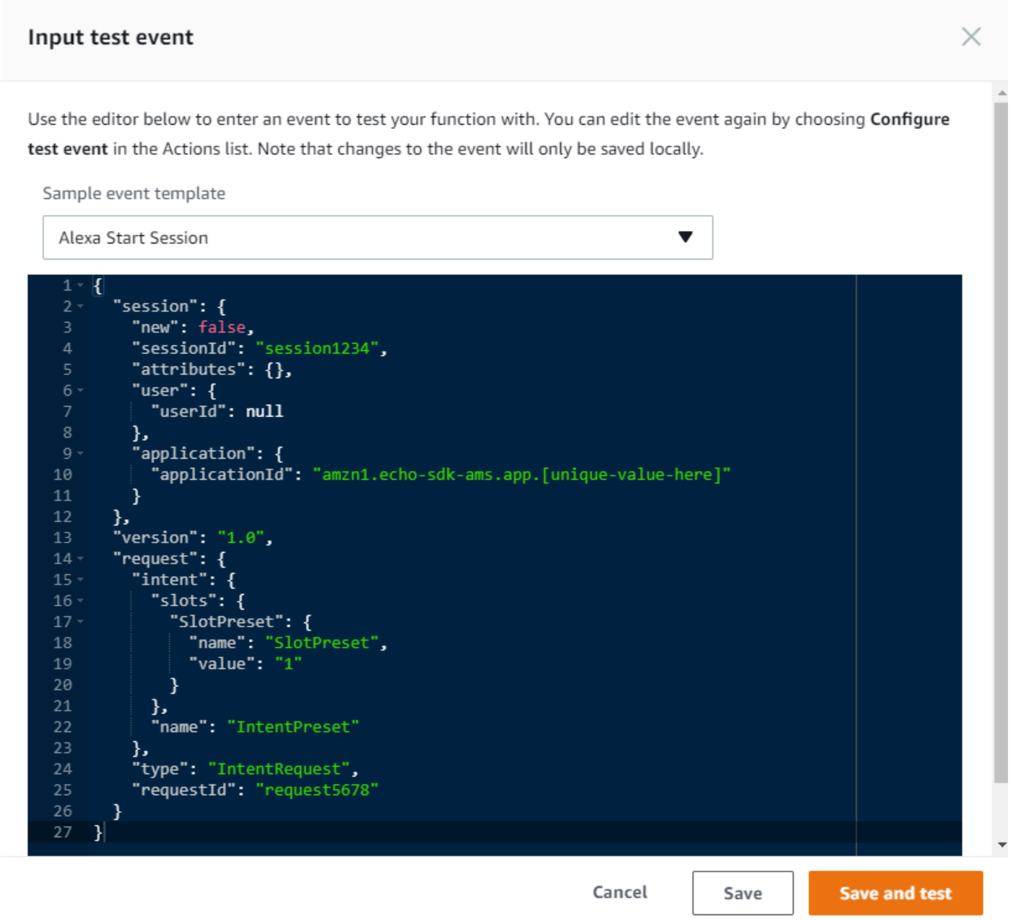


ARN - arn:aws:lambda:us-east-1:467030141161:functio

Test_Function

Code entry type: Edit code inline

7. 此時可以選擇合適的 template 並且修改成自己想要的 test event，此範例可直接 copy 以下程式碼：
http://dev.mediayou.net/sample_code/test_event.txt



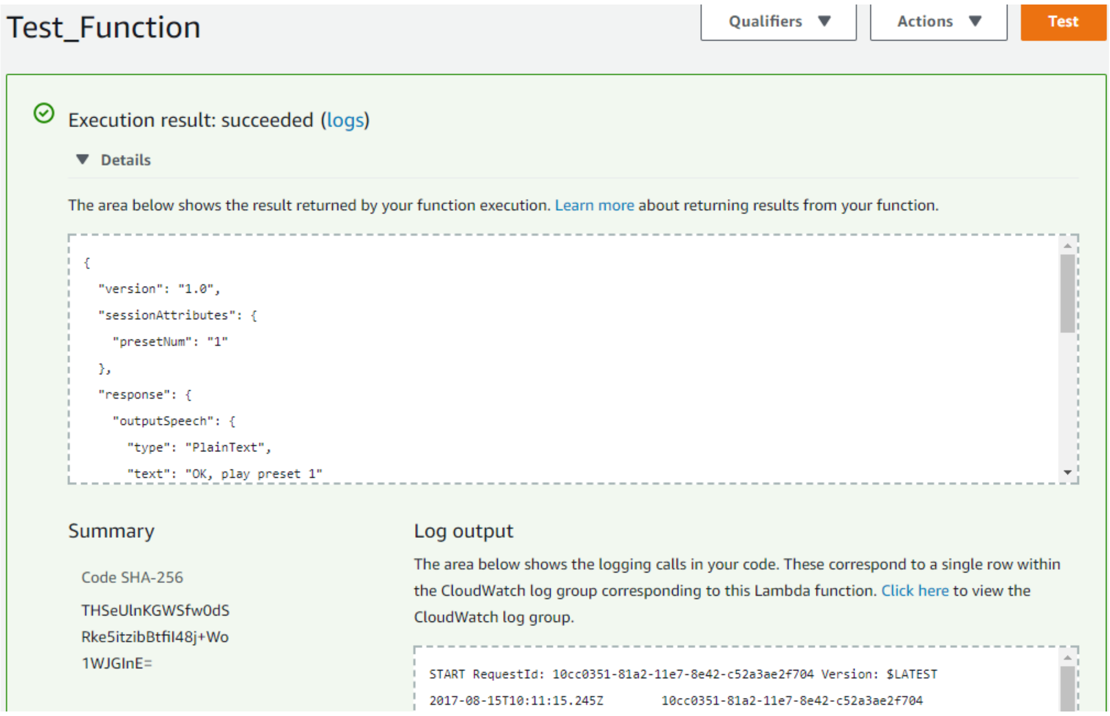
Input test event

Use the editor below to enter an event to test your function with. You can edit the event again by choosing **Configure test event** in the Actions list. Note that changes to the event will only be saved locally.

Sample event template: Alexa Start Session

```
{
  "session": {
    "new": false,
    "sessionId": "session1234",
    "attributes": {},
    "user": {
      "userId": null
    },
    "application": {
      "applicationId": "amzn1.echo-sdk-ams.app.[unique-value-here]"
    }
  },
  "version": "1.0",
  "request": {
    "intent": {
      "slots": {
        "SlotPreset": {
          "name": "SlotPreset",
          "value": "1"
        }
      },
      "name": "IntentPreset"
    },
    "type": "IntentRequest",
    "requestId": "request5678"
  }
}
```

8. 按下 “Save and test”，測試結果 log 會顯示在上方，點開 Details 可看更多詳細的測試結果



Execution result: succeeded (logs)

▼ Details

The area below shows the result returned by your function execution. Learn more about returning results from your function.

```
{
  "version": "1.0",
  "sessionAttributes": {
    "presetNum": "1"
  },
  "response": {
    "outputSpeech": {
      "type": "PlainText",
      "text": "OK, play preset 1"
```

Summary

Code SHA-256

THSeUlnKGWSfw0dS
Rke5itzibBtfil48j+Wo
1WJGInE=

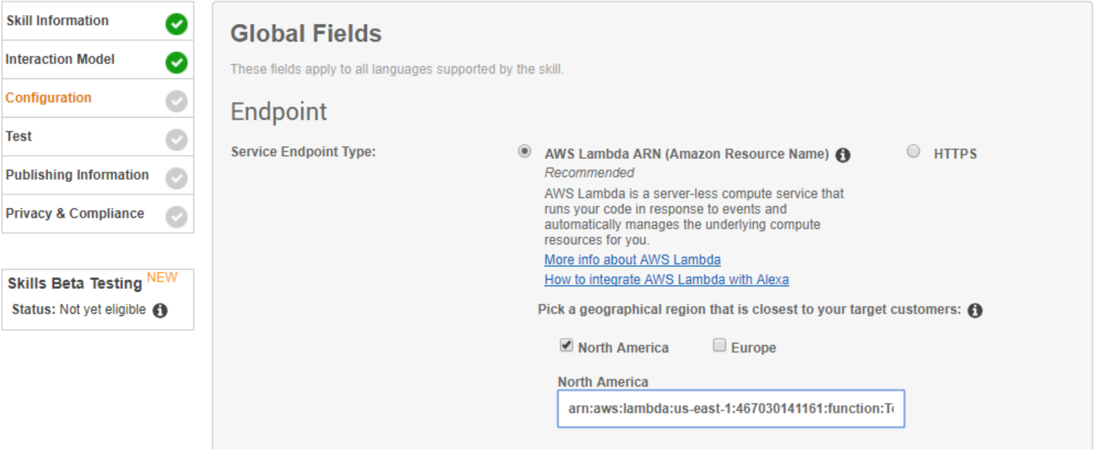
Log output

The area below shows the logging calls in your code. These correspond to a single row within the CloudWatch log group corresponding to this Lambda function. Click here to view the CloudWatch log group.

```
START RequestId: 10cc0351-81a2-11e7-8e42-c52a3ae2f704 Version: $LATEST
2017-08-15T10:11:15.245Z        10cc0351-81a2-11e7-8e42-c52a3ae2f704
```

六、在 Developer Portal 新增一個 Alexa Skill (cont.)

1. 回到 developer portal: https://developer.amazon.com/home.html
2. 依序點選 “ALEXA”、“Alexa Skill Kit”，選擇稍早新增的 skill
3. Navigation pane: Configuration
   - Service Endpoint Type 選擇 “AWS Lambda ARN”
   - region 選 “North America”
   - 下方空格填入稍早建好的 lambda function 的 ARN
   - 按 “Save” 及 “Next”



- Skill Information ✓
- Interaction Model ✓
- Configuration
- Test
- Publishing Information
- Privacy & Compliance

Skills Beta Testing NEW

Status: Not yet eligible

Global Fields

These fields apply to all languages supported by the skill.

Endpoint

Service Endpoint Type: ● AWS Lambda ARN (Amazon Resource Name) ○ HTTPS

Recommended

AWS Lambda is a server-less compute service that runs your code in response to events and automatically manages the underlying compute resources for you.

More info about AWS Lambda

How to integrate AWS Lambda with Alexa

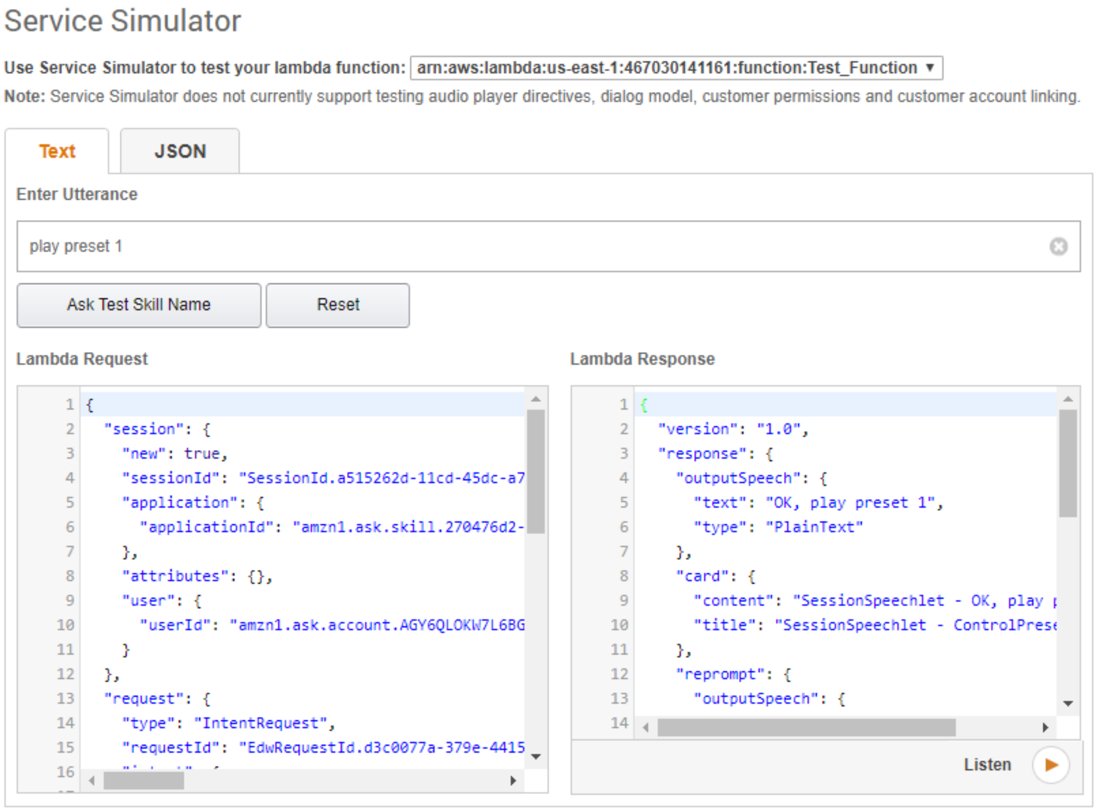
Pick a geographical region that is closest to your target customers:

☑ North America □ Europe

North America

arn:aws:lambda:us-east-1:467030141161:function:T

4. Navigation pane: Test
   - 上方選項維持 default，中間 Service Simulator 中 Enter Utterance 填入 “play preset 1”
   - 按 “Ask Test Skill Name”
   - 接著會輸出 JSON format result，可以點右下角 Listen 聽模擬 Alexa echo 回應的句子



Service Simulator

Use Service Simulator to test your lambda function: arn:aws:lambda:us-east-1:467030141161:function:Test_Function ▾

Note: Service Simulator does not currently support testing audio player directives, dialog model, customer permissions and customer account linking.

Enter Utterance

play preset 1

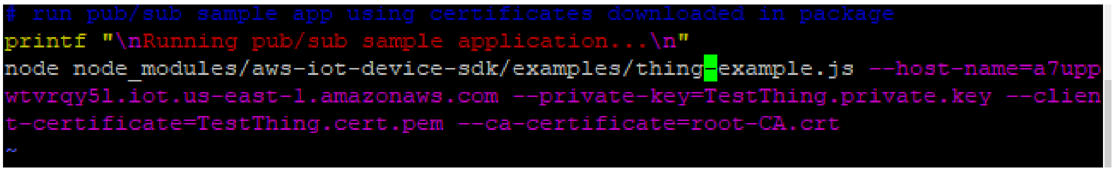
Lambda Request

```
{
  "session": {
    "new": true,
    "sessionId": "SessionId.a515262d-11cd-45dc-a7
    "application": {
      "applicationId": "amzn1.ask.skill.270476d2-
    },
    "attributes": {},
    "user": {
      "userId": "amzn1.ask.account.AGY6QLOKW7L6BG
    }
  },
  "request": {
    "type": "IntentRequest",
    "requestId": "EdwRequestId.d3c0077a-379e-4415
```

Lambda Response

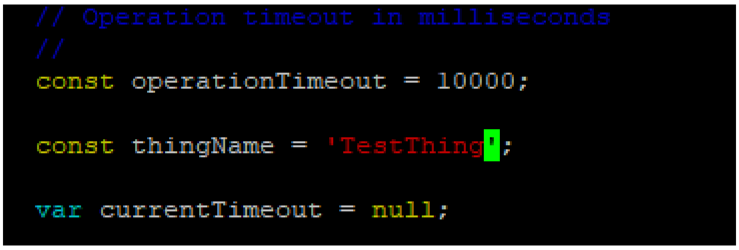
```
{
  "version": "1.0",
  "response": {
    "outputSpeech": {
      "text": "OK, play preset 1",
      "type": "PlainText"
    },
    "card": {
      "content": "SessionSpeechlet - OK, play p
      "title": "SessionSpeechlet - ControlPrese
    },
    "reprompt": {
      "outputSpeech": {
```

5. navigation pane 尚有兩個選項是要發布時候填選，測試階段可先不理會
6. 打開 terminal，修改 start.sh，將最後一行
   “node node_modules/aws-iot-device-sdk/examples/device-example.js…”
   改為
   “node node_modules/aws-iot-device-sdk/examples/thing-example.js…”



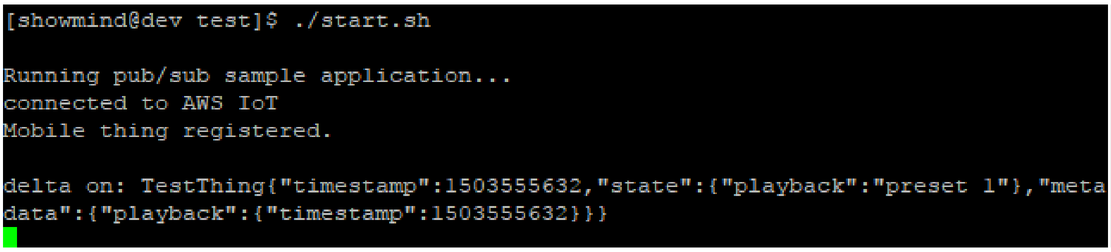
```
# run pub/sub sample app using certificates downloaded in package
printf "\nRunning pub/sub sample application...\n"
node node_modules/aws-iot-device-sdk/examples/thing-example.js --host-name=a7upp
wtvrqy5l.iot.us-east-1.amazonaws.com --private-key=TestThing.private.key --clien
t-certificate=TestThing.cert.pem --ca-certificate=root-CA.crt
~
```

7. 打開 node_modules/aws-iot-device-sdk/examples/thing-example.js，向下找到 const thingName = ‘RGBLedLamp’，將其修改成稍早建立的 thing name



```
// Operation timeout in milliseconds
//
const operationTimeout = 10000;

const thingName = 'TestThing';

var currentTimeout = null;
```

8. 輸入 “./start.sh” 執行之
9. 重複做步驟 4，按下 “Ask Test Skill Name”，觀察 terminal 跳出的訊息



```
[showmind@dev test]$ ./start.sh

Running pub/sub sample application...
connected to AWS IoT
Mobile thing registered.

delta on: TestThing{"timestamp":1503555632,"state":{"playback":"preset 1"},"meta
data":{"playback":{"timestamp":1503555632}}}
```

10. 如果出現上圖訊息，則表示 skill, lambda function, AWS IoT, terminal (your device) 皆連上了，之後亦可使用設定好的 alexa echo device 來測試此 skill