AD\ANTECH Enabling an Intelligent Planet

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Date	2021/7/8	SR#	1-4582346031			
Category	■FAQ □SOP Related OS N/A					
Abstract	How to use SimpleMQT	T to send data to	AWS IoT Core with modifiable			
Abstract	topic?					
Keyword	MQTT, AWS					
Related	ADAM 2000 ECU 1152 ECU 1251 ECU 1051					
Product	ADAM-3600, ECU-1152, ECU-1251, ECU-1051					

Problem Description:

This document shows how to use SimpleMQTT to send data to AWS IoT Core with modifiable topic.

Answer:

About AWS information, please reference the developer guide on the website. <u>https://docs.aws.amazon.com/zh_tw/iot/latest/developerguide/iot-gs.html</u>

1. Enter IoT core

User needs to have AWS account and login in. Plesae refer to the website of AWS: <u>https://aws.amazon.com/?nc1=h_ls</u>

Sign in or create new account on the top.

$\leftrightarrow \rightarrow G$	A https://a	iws.amazon.c	:om/?nc1=	h_ls					陶 🕁 🌒
aws	Products	Solutions	Pricing	Documentation	Learn	Partner Network	AWS Marketplace	Explore More	Contact Sales Support + English + My Account + Sign In to the Comole

Click "Services" on the top and choose "IoT Core" on the page.

Services /	Resource Groups 🗸 🦒
History Console Home	Find a service by name or feature (for example, EC2, S3 or VM, storage). Group A-Z
IoT Core Billing	Compute Robotics Analytics Business Applications EC2 AWS RoboMaker Athena Alexa for Business Lightsail C ECR EMR Amazon Chine C ECR ECR Editations VorkMail ECS Blockchain Kinesis End User Computing Lambda Jatab OuckSight C Port Spaces Bath Bath Ausa for Business VorkSpaces Elastic Beanstalk Ground Station MSK VorkSpaces Serverless Application Repository For und Station MSK VorkLink
	Storage Management & Governance AWS Organizations Escurity, Identity, & Compliance IAM Internet Of Things S3 AWS Organizations IAM IoT Core FS CoudWatch Resource Access Manager IoT Core FSX AWS Auto Scaling Cognito Amazon FreeRTOS S3 Glacier CloudTrail Secrets Manager IoT - Colck Storage Gateway CloudTrail GuardDuby IoT Analytics AWS Backup Config Inspector IoT Device Defender

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2. Create policies

Secure \rightarrow Policies \rightarrow Create a policy

aws Services	✓ Resource Groups ✓ ★
Workor Moritor Mange Greengrass Certificates Certificates Certificates Cate Role Aliases Authoritores Authoritores Certend Role Aliases Certend Role Aliases Cate	Visit Visit Vi
Keyin policy na Name: Action Resour	ame, add statements and click "Create". (policy name) : * rce ARN: *
Abitemplates Job templates Tunnels • Fleet Hub • Greengrass • Secure Cettificats CAs Role Aliates Role Aliates	Q. Search for services, features, marketplace products, and dec [Att+5] Create a policy Create a policy Create a policy to define a set of authorized actions. You can authorize actions on one or more resources (things, topics, topic filters). To learn more about for policies go to the AWS lot Policies documentation page. Name Contract Add statements Add statements Policy statements define the types of actions that can be performed by a resource. Advanced mode
Authorizers Defend Act Test Device Advisor MQTT test client Software Settings Learn Learn	Action Besource ARN Action Before Bef
Feature spotlight Documentation	Add statement

 Regist a "Things" which name should match with the client ID in EdgeLink studio. Select "management" → "things" → "create things".

The thing name is used as the default MQTT client ID if not setting anything in EdgeLink.



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Thing name
Enter a unique nume containing only: letters, numbers, hyphens, colons, or underscores. A thing name can't contain any spaces.
Additional configurations You can use these configurations to add detail that can help you to organize, manage, and search your things.
► Thing type - optional
Searchable thing attributes - optional
Thing groups - optional
Billing group - optional
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.



Create a certificate for the thing.

	AWS IoT > Things > Create things >	Create single thing	
	Step 1 C Specify thing properties A Step 2 - optional Y South and device certificate B	Configure device certificate - optional info device requires a certificate to connect to XWS IoT. You can choose how you to register a certificate for your device now, or ou can create and register a certificate for your device later. Your device wort be able to connect to XWS IoT until it has an circle certificate with an appropriate policy.	
	Step 3 - optional Attach policies to certificate	Device certificate	
	l	Auto-generate a new certificate (recommended) Generate a certificate, public key, and private key using AWS IoT's certificate authority.	
		Use any certificate Use a certificate upone 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	
Attach the policy.			
	> Create single thing		
	Attach policies to AWS IOT policies grant or deny ac the device.	D certificate - optional Info cess to AWS IoT resources. Attaching policies to the device certificate applies this access to	
	Policies (1/4) Select up to 10 policies to attach to	o this certificate.	
	Q Filter policies	< 1 > @	
	Name		
	fuyu_test_Core-policy	/	
	CU1051		
	AEtest_Core-policy		
	AE_Luke_Test_Core-p	olicy	
		Cancel Previous Create thing	

Download the certificates. Note! This is the only chance to download the certificates.

	Device certificate		
	You can activate the certificate nov AWS IoT.	, or later. The certificate must be active for	or a device to connect to
	Device certificate	Deactivate certificate	M Download
	4554e8bf5f1te.pem.crt	Deactivate certificate	Downtoad
	Key files The key files are unique to this cert Download them now and save then	ificate and can't be downloaded after you n in a secure place.	leave this page.
	▲ This is the only time yo	u can download the key files for thi	s certificate.
\mathbf{N}	Public key file 4554e8bf5f1d778326a07b3	0a9e1e3-public.pem.key	Download Key downloaded
	Private key file 4554e8bf5f1d778326a07b3	a9e1e3-private.pem.key	Download Key downloaded
	Root CA certificates		
	Download the root CA certificate fi you're using. You can also downloa	e that corresponds to the type of data en d the root CA certificates later.	dpoint and cipher suite
	Amazon trust services endpoir	ıt	Download
	RSA 2048 bit key: Amazon Ro	ot CA 1	
	Amazon trust services endpoir	ıt	M Download
	ECC 256 bit key: Amazon Root	CA 3	
	If you don't see the root CA ce root CA certificates. These roo guides. Learn more 🔀	rtificate that you need here, AWS lo t CA certificates and others are avail	T supports additional lable in our developer
			Done

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Check the setting. In "secure" \rightarrow "certificates" \rightarrow "policies" will have the policy you created. And the "things" content the thing name you created.

 Onboard Manage Fleet Hub Greengrass 	
Aanage AWS IoT > Certificates > 451 58 CERTIFICATE Liedet Hub CERTIFICATE 45 Streengrass 45: Oct	
Fleet Hub CERTIFICATE 45 ACTIVE	
reengrass 45, Oct	
eengrass 0ct	
ACTIVE	
cure Database Thin	200
rtificates Details	igs
icies Details Policies Policies	
Policier	
Things	IRTU
le Aliases Things ECU1051	
uthorizers Non-compliance	
Non-compliance	
befend befend	

4. Go to "setting" and copy the "endpoint", paste it into the EdgeLink setting.

<u> </u>	
Things Types	AWS IoT > Settings
Thing groups Billing groups Jobs	Logging now supports JSON logs and fine-grained control. Upgrade Upgrading, logging has four levels of log verbosity and roles can be specific at the account- level.
Job templates Tunnels	Settings Info
▶ Fleet Hub	Durin data and mint an
Greengrass	Your devices can use your account's device data endpoint to connect to AWS.
Secure	
Defend	endpoint.
▶ Act	Endpoint
▶ Test	u asyxrgir48jgrb-ats.iot.us-west-z.amazonaws.com
Software Settings Learn Feature spotlight	Domain configurations You can create domain configurations to simplify tasks such as migrating devices to AWS IoT Core, migrating application infrastructure to AWS IoT Core and maintaining brand identity. Actions Create domain configuration
Documentation 🖸	Name Domain name Status Service type Date updated
New console experience Tell us what you think	No domain configurations You don't have any domain configurations.

- 5. Setup the EdgeLink project.
- (1) This example is using simpleMQTT.
- (2) Enable the function.
- (3) Host: endpoint
- (4) Port: 8883
- (5) Protocol: mqtts/tls
- (6) Certificate: mutual authentication. Verify host.

CA file: AmazonRootCA1.pem

Client certificate file: *.certificate.pem.crt

Client key file: *.private.pem.key

- (7) Client ID: can be anything, but unique.
- (8) User name/ password: leave it empty.
- (9) Topic: can be anything.
- (10) Select given tags to upload.

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(11) Click "apply" to complete the setting.



Results:

In "test" \rightarrow "MQTT test client" \rightarrow "subscribe to a topic", here shows the received data.



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Use 3rd party MQTT client (ex: Paho, MQTTbox) to verify.

Setting in MQTTbox. Protocol: mqtts/tls Host: endpoint:8883/tcp CA file: AmazonRootCA1.pem

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Client certificate file: *.certificate.pem.crt

Client key file: *.private.pem.key

E Menu	s		Client Settings He
MQTT Client Name	MQTT Client ld	Append timestamp to MQTT client id?	Broker is MQTT v3.1.1 compliant?
AWS	489f59ee-9739-48e6-bdc0-175c1f1t	✓ Yes	✓ Yes
Protocol	Host	Clean Session?	Auto connect on app launch?
mqtts / tis	• Its.iot.us-west-2.amazonaws.com:8883/tcp	🖉 Yes	✓ Yes
SSL / TLS Version	SSL / TLS Certificate Type		
Auto	▼ Self signed certificates ▼		
CA file	Client certificate file	Client key file	Client key passphrase
選擇檔案 未選擇任何檔案	選擇檔案 未選擇任何檔案	選擇檔案 未選擇任何檔案	
AmazonRootCA1.pem	4554e8bf5f1d778326a07b3e46f23550c5806e certificate.pem.crt	5623@####################################	5623ce3c713faf9fb920a9e1e3-
Username	Password	Reschedule Pings?	Queue outgoing QoS zero messages?
Username	Password	✓ Yes	✓ Yes
Reconnect Period (milliseconds)	Connect Timeout (milliseconds)	KeepAlive (seconds)	
1000	30000	10	
Will - Topic	Will - Qo S	Will - Retain	Will - Payload
Will - Topic	0 - Almost Once	- No	

Subscribe the topic according to the EdgeLink setting.

Topic/Payload Schema: SimpleMQ	TTT -	Topic/Payload Sch	ema: SimpleMQTT 🔻
Data Topic: iRTU		Data Topic:	iRTUabc
MQTTBox MQTTBox Edit Help E Menu all Connected Add publisher	Add subscriber		
ANG - mitts://a37/rgir48jgfb-ats.iot.us-west-2.amazonaus.com:8883/tpp Topic to publish CoS 0 - Almost Once Retain Payload Type Strings / JSON / XML / Characters e.g: ('hello':'world')	<pre>* # ("d":[{"tag":"#SYS_UPTIME","vali 4)],"ts":"2021-07-08T01:03:16+00 gos : 0, retain : false, cmd : publish,</pre>	Jup:::16147.8 ("d":[J00"} 6];"t dup::false, topi c: R Raw payload : 1 c: R B3435838983958580 d: 12 45849544952554656 39582 4945485545485 5545 5445 5545	
Payload Publish	("d" [{"tag"."#SYS_UPTIME", "vali 8)],"ts"."2021-07-08T01:02:51+00 qos:0, retain: false, cmd: publish, c: IRTU, messageld: , length: 84, 23341003458911233411697103345 84737769344434118971081171013 56125934434116115345834504800 68448495848505853494348484848	ie":16122.3 {"d":[j00"} 9])"t dup : false, topi qos : Raw payload : 1 c :: Ris 83435838938958580 d :: 12 4544950504551 39588 3445485545485 55454	("tag":"#SYS_UPTIME","value":18497.2 s":"2021-07-08T01:42:26+0000") 0, retain : false, cmd : publish, dup : false, topi Tuabc, messageld :, length: 87, Raw payloa 233410034589112334116971033458343583898 58084737769344434118971081171013458495 756450571293434118115345845045650494548 485684484958525058505443484848484834125