

# **1. Introduction**

All of Infinite's devices that support the MQTT protocol, are capable to connect to any local or remote MQTT Broker. Amazon Web Services is a subsidiary of Amazon providing on-demand cloud computing platforms and APIs to individuals, companies, and governments, on a metered pay-as-you-go basis.

This document is a brief how-to guide for all device communications between Infinite's devices and the AWS which supports MQTT connectivity.

# 2. AWS Console

After creating an AWS account, navigate to the AWS Management Console page and click Connect an IoT device.

WS Manage	ment Console	
AWS services		
▼ Recently visited services	CloudWatch	() IAM
<ul> <li>All services</li> </ul>		
Build a solution Get started with simple wizards and automa Launch a virtual machine With EC2 2-3 minutes	tted workflows. Build a web app With Etastic Beanstalk 6 minutes	Build using virtual servers With Lightsail 1-2 minutes
Build a solution Get started with simple witards and automa Launch a virtual machine With EC2 2-3 minutes	ted workflows. Build a web app With Etastic Beanstalk 6 minutes	Build using virtual servers With Lightsail 1-2 minutes

Open the Manage tab and click Things.



## Click Create things.

AWS IoT	×	AWS IoT > Manage > Things				
Monitor Activity		Things (10) total An Unit thing is a representation and record of your physical device in the cloud. A physical device needs a thing record in order to work with AWS tot.	C Advanced search Run aggreg	ations Edit	Delete	Create things
Manage		Q. Filter things by: norme, type, group, billing, or searchable attribute.			1	1 > ©
Overview Things		Name	<ul> <li>Thing type</li> </ul>			V



### Create a single thing.



## Give the Thing a name.

Thing name	
Test_Unit	
Enter a unique name containing only: letters, numbers, hyphens, colons, or underscor	es. 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, u shadow using either HTTPs or MQTT topics.	sdate, or delete the state information of this thing's
No shadow	
O Named shadow	
Create multiple shadows with different names to manage access to properties, an your devices properties.	d logically group
<ul> <li>Unnamed shadow (classic)</li> </ul>	
A thing can have only one unnamed shadow.	



Auto-generate a new certificate. (AWS requires TLS communications)

Conf	figure device certificate - <i>optional</i> տ
device ou can o ctive ce	requires a certificate to connect to AWS IoT. You can choose how you to register a certificate for your device now, or create and register a certificate for your device later. Your device won't be able to connect to AWS IoT until it has an ertificate with an appropriate policy.
Devi	ice certificate
0	Auto-generate a new certificate (recommended) Generate a certificate, public key, and private key using AWS IoT's certificate authority.
0	Use my certificate Use a certificate signed by your own certificate authority.
0	Upload CSR Register your CA and use your own certificates on one or many devices.
0	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

Create a policy to attach to the certificate.

Attach policies to certificate - optic AWS IOT policies grant or deny access to AWS IoT resources. Attaching the device.	policies to the dev	ice certificate app	lies this access to
Policies (1) Select up to 10 policies to attach to this certificate.		C Cre	ate policy 🛽
Q Filter policies		<	1 > ©
Name			
nbiot			
	Cancel	Previous	Create thing

Name the policy and click advanced mode to define the types of actions that can be performed by our device.



1 10 2 "Version": "2012-10-17", 3 "Statement": [		
4 { 5 "Effect": "", 6 "Action": "".		
7 "Resource": ""		
9 j 10 j		
Add statement		

Delete the pre-existing statements and paste the following ones.

```
{
   "Version": "2012-10-17",
   "Statement": [
      {
        "Effect": "Allow",
        "Action": "iot:*",
        "Resource": "*"
      }
  ]
}
```

This policy is for testing purposes (it allows all communications to and from the device) and should be adjusted for your requirements.

Click refresh and choose the policy you just created and click Create thing.



Attach policies to certificate - option	nal Info
AWS IoT policies grant or deny access to AWS IoT resources. Attaching p the device.	policies to the device certificate applies this access to
Policies (1/2) Select up to 10 policies to attach to this certificate.	C Create policy
Q Filter policies	< 1 > ©
Name	
D nbiot	
Open_Comm	
	Cancel Previous Create thing

In the windows that pops up you can download the certificates that were created.

Download certificates and	keys	×
Download certificate and key files to AWS.	o install on your device so that it	can connect to
Device certificate You can activate the certificate now, or lat AWS IoT.	ter. The certificate must be active for a	a device to connect to
Device certificate	Deactivate certificate	☑ Download
3e18ee0b1d5te.pem.crt		
Key files The key files are unique to this certificate Download them now and save them in a s	and can't be downloaded after you le ecure place. download the key files for this o	ave this page.
Public key file		Download
3e18ee0b1d5b2bbdbbd17c5512d	1954-public.pem.key	
Private key file		I Download
3e18ee0b1d5b2bbdbbd17c512d9	954-private.pem.key	
Root CA certificates	/	
Download the root CA certificate file that you're using. You can also download the n	corresponds to the type of data endp oot CA certificates later.	oint and cipher suite
Amazon trust services endpoint		☑ Download
RSA 2048 bit key: Amazon Root CA	1	
Amazon trust services endpoint		☑ Download
ECC 256 bit key: Amazon Root CA 3		
If you don't see the root CA certifica root CA certificates. These root CA c guides. Learn more 🖸	te that you need here, AWS IoT errificates and others are available	supports additional ole in our developer



Done

# **3. Device Configuration with WA Manager**

In the Edit Device window in WA Manager, tick the Use SSL box.

eral Analog In	puts Counter	s SDI-12 MODBUS	Data Transmission MOTT Parameter	ers SSL Parameters
ti,	S/N: 1	Type: ADS-300	Autonomous NB-IoT Node	Firmware Version 1.2
Unit Identific	ation			
Device name	ADS-300			Unit ID 0
NB-lot Identi	fication & Par	rameters		
NB-lot Identi Use SSL RTC Correction	fication & Par	rameters PSM Mode sages] 0	○ On ● Off UTC Time □ Off:	Phone
NB-lot Identi Use SSL 🗹 RTC Correcti	fication & Par	rameters PSM Mode sages] 0	On මOff UTC Time ☐ Off:	Phone set0
NB-lot Identi Use SSL 🗹 RTC Correcti	fication & Par	rameters PSM Mode sages] 0	On ●Off UTC Time □ Off:	Phone set0
NB-lot Identi Use SSL RTC Correcti	fication & Par	rameters PSM Mode sages] 0	On ⊛Off UTC Time ☐ Off:	Phone set0
NB-lot Identi Use SSL RTC Correcti	fication & Par	rameters PSM Mode sages] 0	○ On	Phone set 0

Next, we configure the MQTT parameters.

Although AWS supports MQTT connectivity, it is not a pure MQTT Broker and so it has some limitations regarding its MQTT parameters.

For the Broker IP, the Device data endpoint must be used that can be found in the AWS IoT Settings tab.





For the Client ID, the ARN (Amazon Resource Name) must be used that can be found in the Things tab.

est_Uni	Info			
Thing <mark>d</mark> eta	ls			
Name				
Tes <mark>t_U</mark> nit				
ARN				
🗇 arn:aws:iot	us-west-2:2426838	00334:thing/Te	st_Unit	



GPRS Connec	tion Settings	
User name		
Password		
APN String	iot.1nce.net	
IP Version	4 ~	
TCP Paramete	ers	
Broker IP	est-2.amazonaws.com	
Port	8883	
MQTT Param	eters	
Client ID	arn:aws:iot:us-west-2:xxxxxxxxt:thing/Test	
User Name	username	
Password	password	
Topic	ADS-300/TILT	

Lastly, in the SSL Parameters tab, we copy and paste the three files needed for the TLS communication: Server Certificate (CA), Device Certificate and Device Private Key.



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ntiguration 1 of 1	? 😣	اے (
eral Analog Inputs Counters SDI-12 MODBUS Data Transmission MQTT Parameters SSL Parameters		
SSL		
		*
Server Certificate	0	ш
BEGIN CERTIFICATE		
MIIDmzCCAoOgAwlBAgIUPKJH52uipAbg+0thhmJtfXp1/70wDQYJKoZlhvcNAQEL		
BQAwXTELMAkGA1UEBhMCZ3IxCzAJBgNVBAgMAnRoMQ4wDAYDVQQHDAV0aGVzczEM		
MAoGA1UECgwDaW5mMQowCAYDVQQLDAFhMRcwFQYDVQQDDA45MS4xMzguMjA0LjEy		
MDAeFw0yMTA2MjUxMzIwNDdaFw0yNjA2MjUxMzIwNDdaMF0xCzAJBgNVBAYTAmdy		
MUSWCQYDVQQIDAJUaDEOMAWGATUEBWWFdGhIC3MXDDAKBGNVBAOMA2IuZjEKMAgG		
Device Certificate		
REGIN CERTIFICATE		
MIDWTCCAkGgAwiBAgIURsKg5r5aKH7Pf5Og3iVYZegnJUcwDQYJKoZIhvcNAQEL		
BQAwTTFLMEkGA1UECwxCQW1hem9ulFdIYiBTZXJ2aWNIcyBPPUFtYXpvbi5jb20g		
SW5jLiBMPVNIYXR0bGUgU1Q9V2FzaGluZ3RvbiBDPVVTMB4XDTlxMDYyNTA4NDEw		
MFoXDTQ5MTIzMTIzNTk1OVowHjEcMBoGA1UEAwwTQVdTIElvVCBDZXJ0aWZpY2F0		
ZTCCASIwDQYJKoZIhvcNAQEBBQADggEPADCCAQoCggEBAMbfhfACaMR1DJFUWgz4		
TX2HSAS6DHXKZKSSSUOHKTHMUWWWWWHONDHTSVZ6ETJJJGTSSPUU9KGSUUGga		
Device Private Key		
BEGIN RSA PRIVATE KEY		
MIIEpQIBAAKCAQEAxt+F8AJoxHUMkVRaDPh/FkdlBIFsfGRkqAXm6geRMcy7A00c		
g41sWVPdW/MESJOMiMZjdl8O70oZJQ4YiB1HSefxWWRLtqjsPAYzQOo9tyHqEqxo		
kZjbO0kmkStL0GwL3EkJs/mdL2/t4SOmL4kCSQmDPgh+F7wZyvGm7XHc9sd9LXR2		
pu7P/471R/Ythuot+SAJxo2woDLeWUIn9rew4KkNT5WSKepO2wTGZdwvgyvx7vkE		
5VPaKmFTT30ANAY+yMsWyqaq3KkQySQ3W5t29tJMu4n2cB5wo+8V2SyMgHt1ZFoB		
+ AC L2VKGZEZEFZ300M0F7EFSQU9ZUUBMH0DFWIDAQABA0IBAQDDdAdU3WIUU000A		

The Server Certificate is the Amazon trust services that you previously downloaded, the Device Certificate is the file you downloaded and the Device Private Key is the private key file. These files should be first opened with Notepad++ and their contents should be copy and pasted in the above tab. All files must be PEM formatted.

Your device can now securely connect to the AWS and send your encrypted telemetry data safely.

### **Disclaimer:**

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