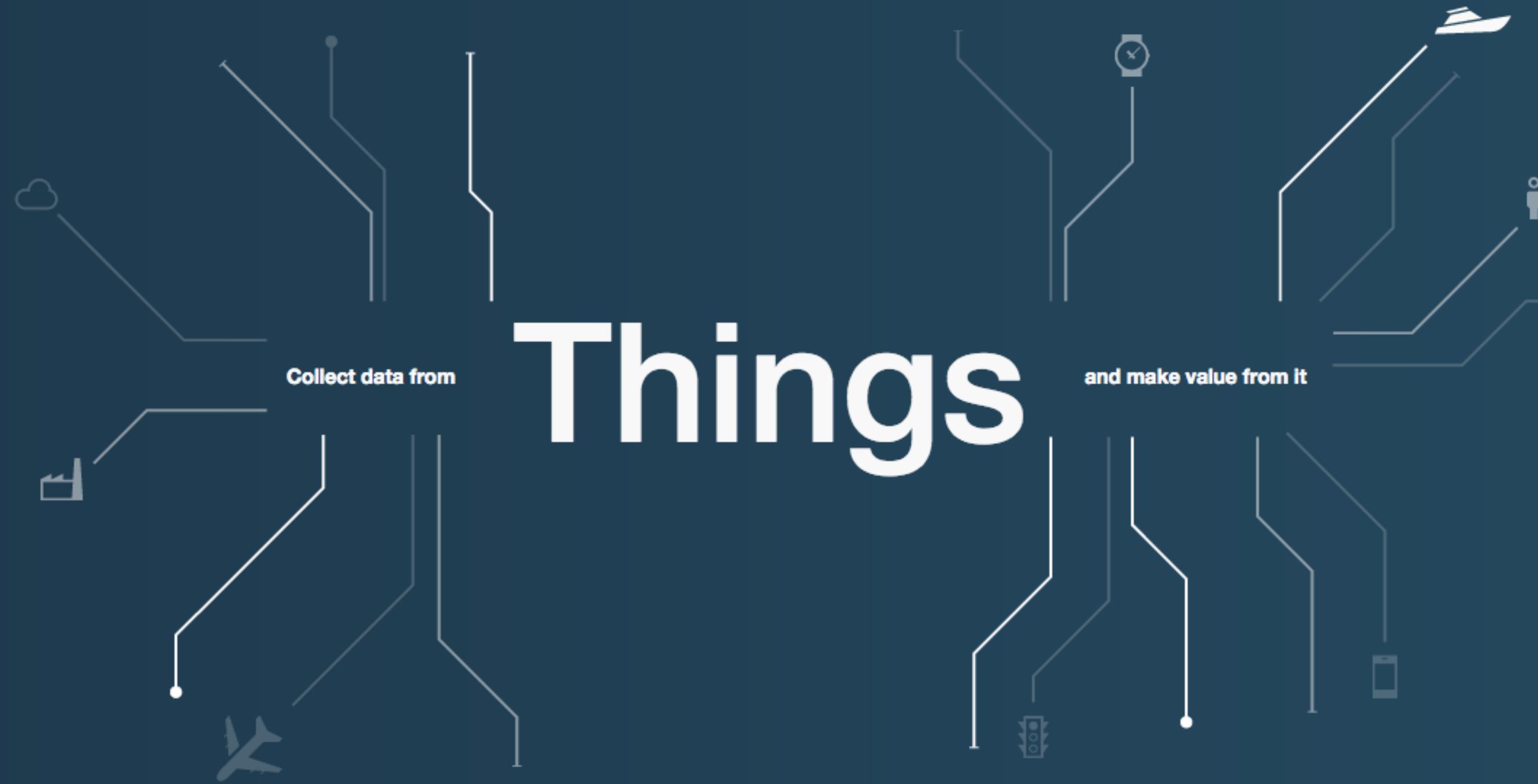


# Chiang Mai Maker Club

Nat Weerawan

# Introduction to IBM Bluemix & IoT Foundation

[Learn More](#)

The screenshot shows a table with columns: Connection Status, Error Status, Device Type/Category, Other Metadata, Device ID, Last Event, Message Rate, Date Added, and Added By. The data includes:

Connection Status	Error Status	Device Type/Category	Other Metadata	Device ID	Last Event	Message Rate	Date Added	Added By
Connected	No Errors	Android	Surley-devices	80fb30a7e6	21 days ago	-	13 March 2015	someuser@ibm...
Connected	No Errors	Intel-galileo-1	Surley-devices	intel-galileo-1	3 months ago	Every 949 milliseconds	8 December 2014	someuser@ibm...
Connected	No Errors	Intel-galileo-2	Surley-devices	intel-galileo-2	Just now	Every 1.3 seconds	13 March 2015	someuser@ibm...

## Powerful web dashboard

Flexible, scalable and easy to use

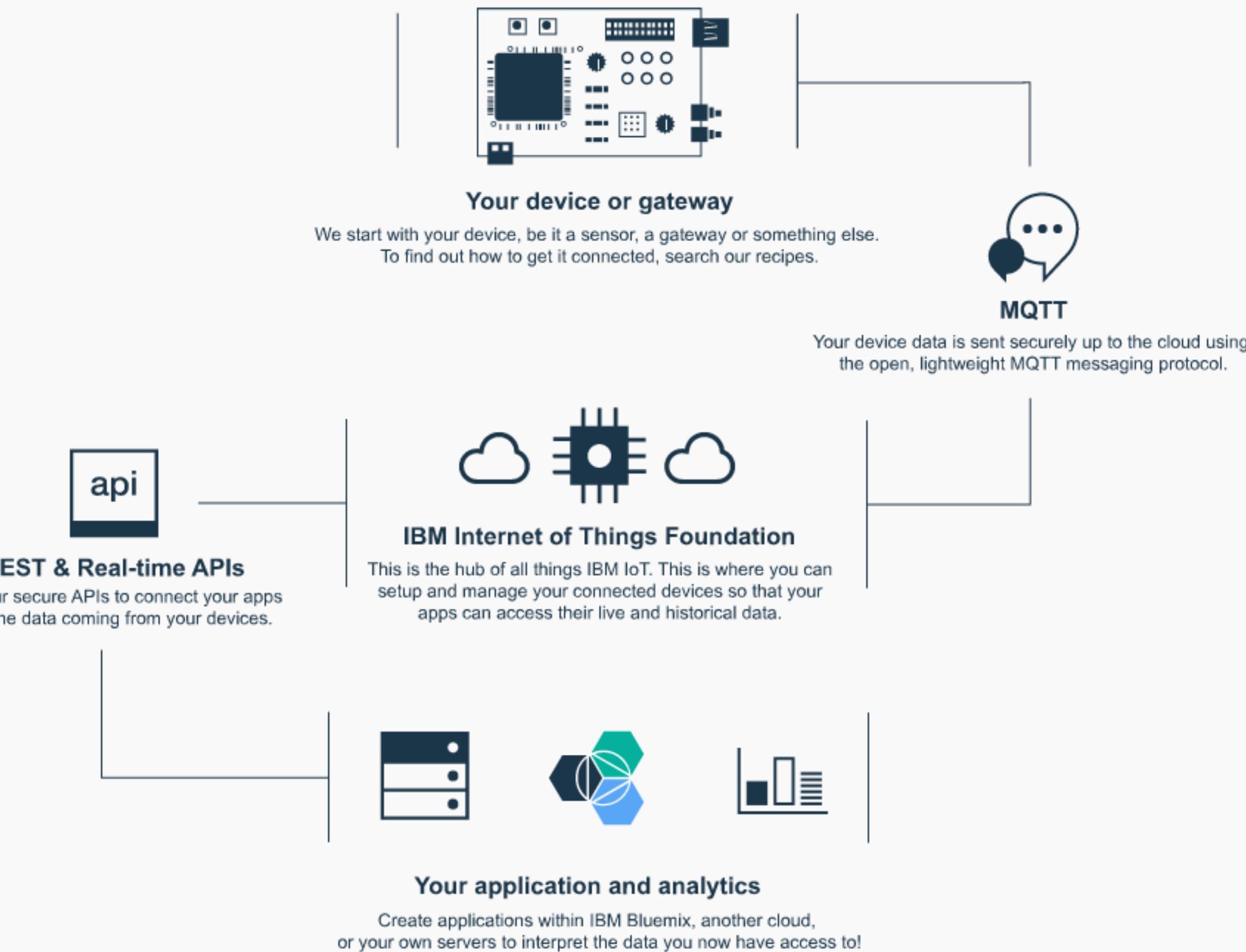
We provide a clean and simple UI where you can simply and easily add and manage your devices, control access to your IoT service, and monitor your usage. See at a glance the things you are interested in.

# Architecture

# Understand things?

---

Connect your device, send data to our cloud, set up and manage your devices, use APIs to connect apps to your device data.



## And one last thing

---

Want to find out more about how we can provide a solution? Try some of the links below.

<https://internetofthings.ibmcloud.com/#/>

# How to getting started

# IBM Bluemix

The Digital Innovation Platform

[GET STARTED FREE](#)

## IBM Containers

Announcing high performance containers for enterprise workloads.

[Learn more](#)[BUILD](#)[EXTEND](#)[SCALE](#)[INTEGRATE](#)[FEATURED](#)

## Build your apps, your way.

Use a combination of the most prominent open-source compute technologies to power your apps. Then, let Bluemix handle the rest.

### Instant Runtimes

App-centric runtime environments based on Cloud Foundry.

[Check out runtimes on Bluemix](#)

### IBM Containers

Portable and consistent delivery of your app without having to manage an OS.

[Check out containers on Bluemix](#)

### Virtual Machines

Get the most flexibility and control over your environment with VMs.



POWERED

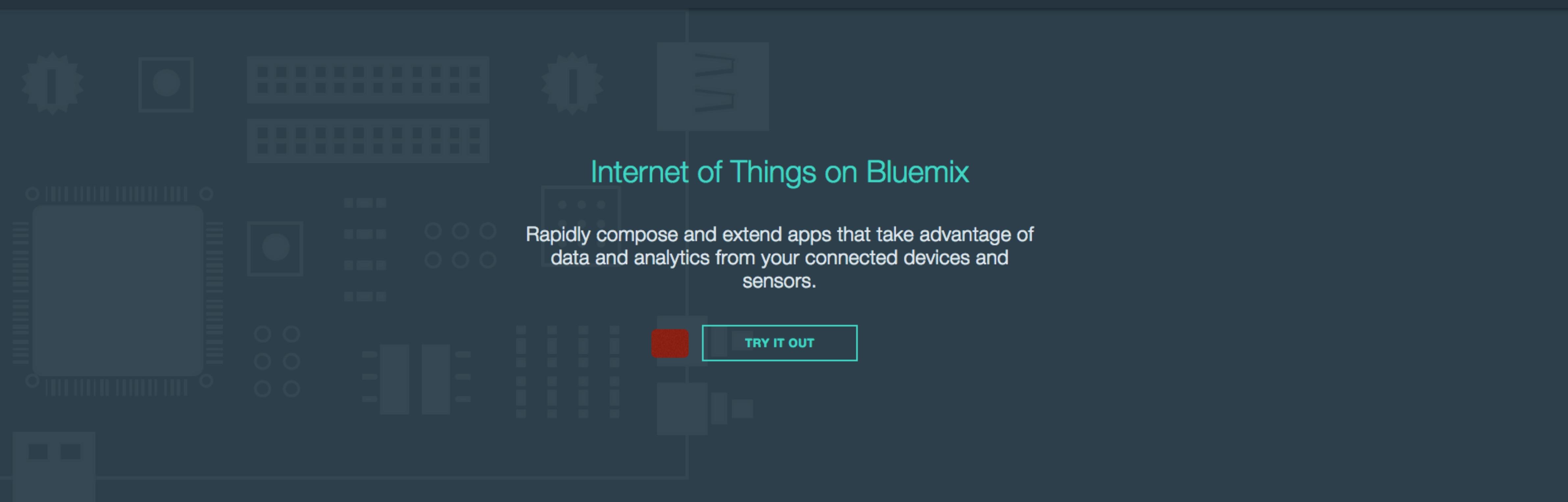
[Check out VMs on Bluemix](#)

## Use an API or Service.

<https://console.ng.bluemix.net>

**Solutions:**

Pre-built services to assemble apps faster.

[iOS](#)[Watson](#)[Integration](#)[Data Management](#)[Security](#)[MobileFirst Platform](#)[Hybrid Cloud](#)[DevOps](#)[Big Data](#)[Internet of Things](#)[Open Architecture](#)[Web and Application](#)[Business Analytics](#)

## Internet of Things on Bluemix

Rapidly compose and extend apps that take advantage of data and analytics from your connected devices and sensors.

[TRY IT OUT](#)[CASE STUDIES](#)[UNDERSTAND IT](#)[TRY IT OUT](#)[GETTING STARTED](#)

## Build powerful business solutions

[SilverHook® Powerboats](#)[Sogeti High Tech](#)

CASE STUDIES

UNDERSTAND IT

TRY IT OUT

GETTING STARTED



## Try it out now with our cool sample app

See live visualizations of your phone's sensor data.



### What you need

A smartphone connected to the Internet



### How it works

Use the sensor data from your phone to control the object

First...

Give your smartphone a unique name and a 4-digit code. We'll generate a URL for you to open in your phone's browser.

**GO PLAY!**

## Excited? Play with the code we used

Launch our app live in Bluemix and make it your own. We don't mind, honest!



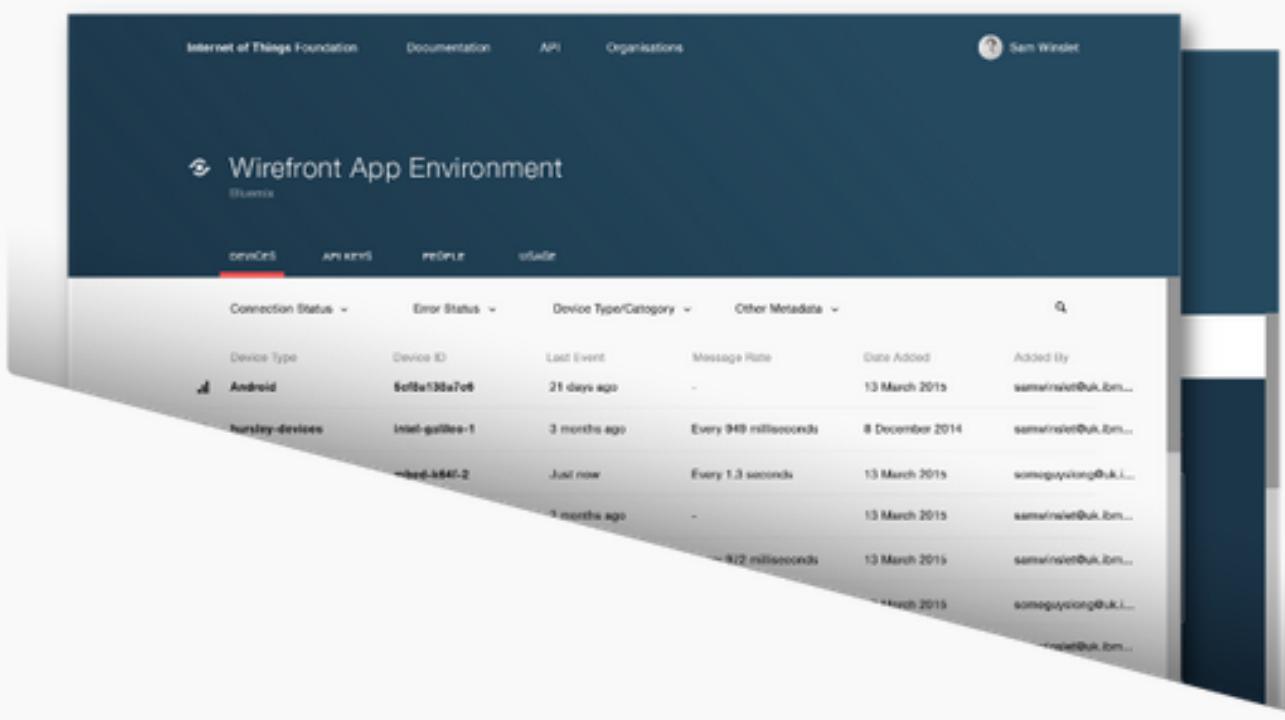
### IBM Internet of Things

This service is the hub of all things IBM IoT. It is where you can set up and manage your connected devices so that your apps can access their live and historical data.

```
$ git clone https://github.com/ibm-messaging/iot-python.git
$ cd iot-python/samples/bluemixZoneDemo
$ cf push <app_name> -m 32M -b https://github.com/heroku/heroku-buildpack-python.git
--no-start
$ cf create-service iotf-service iotf-service-bronze iotdemo-iotf
$ cf create-service cloudantNoSQLDB Shared iotdemo-cloudant
$ cf bind-service <app_name> iotdemo-iotf
$ cf bind-service <app_name> iotdemo-cloudant
$ cf push <app_name> -c "python server.py"
<!--
To use these commands you'll need the bluemix command line interface - see
https://www.ng.bluemix.net/docs/#cli/cli.html#cli
This will get your own private version of the application running in Bluemix. If you
need more information view the README.md in github..
-->
```



What they can do?



## Powerful web dashboard

### Flexible, scalable and easy to use

We provide a clean and simple UI where you can simply and easily add and manage your devices, control access to your IoT service, and monitor your usage. See at a glance the things you are interested in.

1

## What can we do for you?

---

We are a fully managed, cloud-hosted service that is designed to simplify and derive the value from your IoT devices.



2

## Device Registration

Register and connect any device to our service using our dashboard UI or APIs. To get you up and running fast, we have verified instructions or 'recipes' for connecting devices, sensors, and gateways.



4

## Responsive, scalable connectivity

We use the industry-standard MQTT protocol (OASIS ratified) to connect devices and applications. MQTT is designed for efficient exchange of data to and from devices in real-time.



3

## Secure Communication

Securely receive data from and send commands to your devices. Do this using MQTT with TLS to secure all communication between your devices and our service.



5

## Storage and access to data

As well as having access to real-time data coming from your devices, you can opt to store data for a period of your choice, allowing you to have access to historical and real-time data for your devices.

# Quickstart

IBM Internet of Things Foundation   Quickstart   Service Status   Documentation

## Quickstart

No sign-up required to see how easy it is to connect your device to IoT Foundation and view live sensor data

Device ID eg. 580b0c07ac01   Go

 Got a physical device?

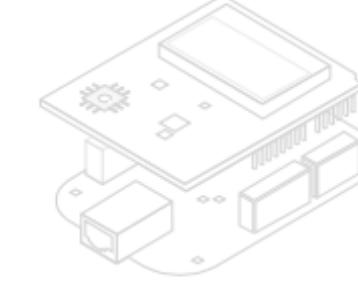
We have a partner program for IoT along with a set of verified instructions, or 'recipes', for connecting devices, sensors, and gateways.

[VIEW RECIPES](#)

 Get your device (or simulate one)

 Follow a recipe to get it connected

 View live data from your device

## Don't have a device?

You don't need to have a physical device to see Quickstart in action. Try it out by using our simulator.

[FIND OUT MORE](#)

IBM Internet of Things Foundation   Terms of Use   Recipes   API  
[!\[\]\(033fe5f5081358ba9d3a6cd9390b0c6c\_img.jpg\)](#)

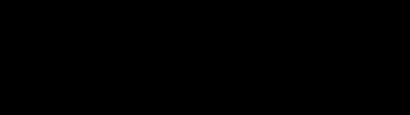
Support   Documentation   Status  
[Privacy](#)   [Answers](#)   [Quickstart](#)

```

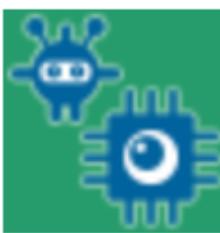
11 const char* ssid   = "CMMC.52";
12 const char* pass   = "guestnetwork";
13
14 MqttWrapper *mqtt;
15 WiFiHelper *wifi;
16
17
18 void hook_prepare_data(JsonObject** root)
19{
20    JsonObject& data = (*root)->at("d");
21
22    data["myName"] = "NAT";
23    data["adc"] = analogRead(A0);
24}
25
26
27 void hook_publish_data(char* data)
28{
29    Serial.print("PUBLISH: ->");
30    Serial.println(data);
31}
32
33 void init_hardware()
34{
35    Serial.begin(115200);
36    pinMode(0, INPUT_PULLUP);
37    delay(10);

```



Sensor	Reading	Sparkline
adc	851	
counter	15	
heap	29744	
seconds	94	

No sign-up required



# Connect to Quickstart

You have a different type of device? We might not have a recipe for it, but you can still connect to the IBM Internet of Things Foundation. Follow the steps to enable your device as an Internet of Things Foundation client and connect to the Internet of Things Foundation Quickstart service.

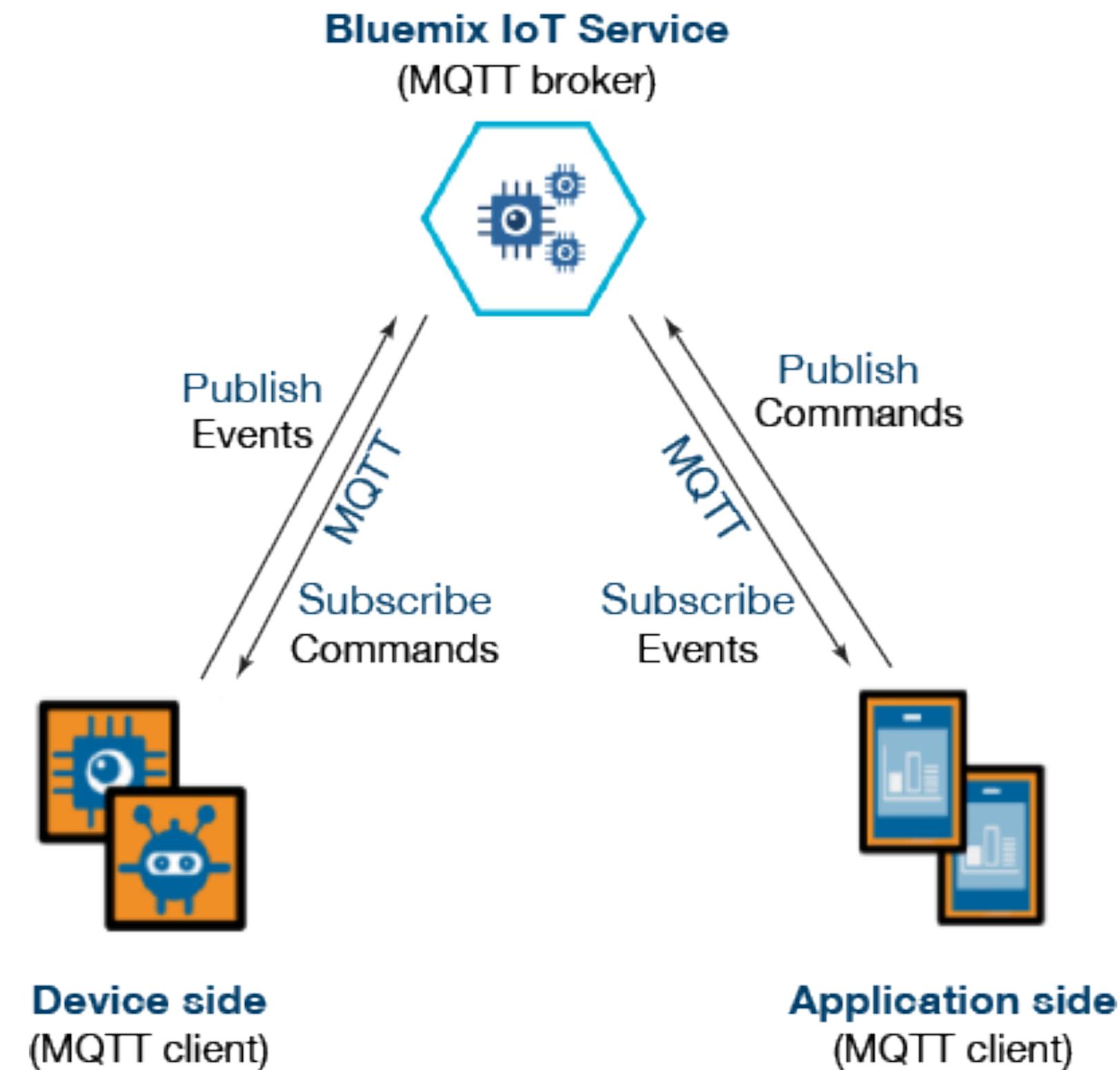
## Clients must...

- 1 Speak MQTT. MQTT 3.1 is the minimum level required, however some clients support richer functionality.
- 2 Connect to [quickstart.messaging.internetofthings.ibmcloud.com](https://quickstart.messaging.internetofthings.ibmcloud.com) at port **1883**
- 3 Supply a **client-id** of the form **d:quickstart:<type-id>:<device-id>**, where:
  - o **type-id** is an identifier you provide, for example “acme-thing”. (If you have a number of similar devices; perhaps all those running the same code, you should use the same type-id for all of them)
  - o **device-id** is a 12 hexadecimal character MAC address in lower case, without delimiting characters. For example, **a36d7c91bf9e**.
- 4 Publish to topic **iot-2/evt/status/fmt/json**.
- 5 The message payload should be encoded in JSON, and contain some defined elements. The payload must not exceed the Quickstart limit of 4096 bytes.
- 6 It must contain a single top-level property called "d". This property may contain an arbitrary

```
11 const char* ssid = "CMCC_2G";
12 const char* pass = "guestnetwork";
13
14 MQTTWrapper *mqtt;
15 WiFiHelper *wifi;
16
17
18 void hook_prepare_data(JsonObject** root)
19 {
20     JsonObject& data = (*root)->at("d");
21
22     data["myName"] = "NAT";
23     data["adc"] = analogRead(A0);
24 }
25
26
27 void hook_publish_data(char* data)
28 {
29     Serial.print("PUBLISH: ->");
30     Serial.println(data);
31 }
32
33 void init_hardware()
34 {
35     Serial.begin(115200);
36     pinMode(0, INPUT_PULLUP);
37     delay(10);
```

# RECAP

- username / password
- clientId
- topic
  - - publish
  - - subscribe



ONE LAST THING

## And one last thing

Want to find out more about how we can provide a solution? Try some of the links below.

### IBM IoT Recipes

#### Have a device you want to connect?

We have a partner program for IoT, along with a set of verified instructions or 'recipes' for connecting devices, sensors, and gateways.

### IBM IoT Docs

#### Want more detail? Take a look at our reference documentation.

Search our documentation and reference material for the answers to your technical questions.

### IBM IoT Answers

#### Can't find what you are looking for? Ask us and someone will get back to you.

Go to our forum and get an answer from a member of our team.

## Let's get started



### Internet of Things

IBM's Internet of Things Foundation is where you can set up and manage your connected devices. IBM's Bluemix platform is the place to quickly and easily create applications that can use real-time and historical data from your connected devices.

To make this simpler for you we have an Internet of Things service in IBM Bluemix, so get started using the free tier of our service.

[SIGN UP](#)

We don't bite (honest!)

[IBM Internet of Things Foundation](#)



[Terms of Use](#)

[Support](#)

[Privacy](#)

[Recipes](#)

[Documentation](#)

[Answers](#)

[API](#)

[Status](#)

[Quickstart](#)

## Register For IBM Bluemix Trial

 IBM id  
Already have one?

Primary Email Address (Required)

Create Password (Required)

Use 8 characters as a minimum

First Name (Required)

Country Or Region Of Residence (Required)

Country Or Region Of Residence

Security Question (Required)

Please enter a security question that only you can answer.

Please keep me informed of products, services and offerings from IBM companies worldwide.

By Email

By Telephone Or Postal Mail

Re-enter Primary Email Address (Required)

Re-enter Password (Required)

Use 8 characters as a minimum

Last Name (Required)

Phone Number (Required)

(XXX) - XXX - XXXX



IBM Bluemix™

[Learn More](#)

Develop your apps: from concept to live in minutes. Scale your app: from your tenth to millionth user. Leverage cloud services: for your next big idea.

Security Answer (Required)

Answer to the Security Question

[Register](#)

I accept IBM's [Privacy Statement](#)  
and [Terms and Conditions](#).



## And one last thing

Want to find out more about how we can provide a solution? Try some of the links below.

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[Privacy](#)

[Recipes](#)

[Documentation](#)

[Answers](#)

[API](#)

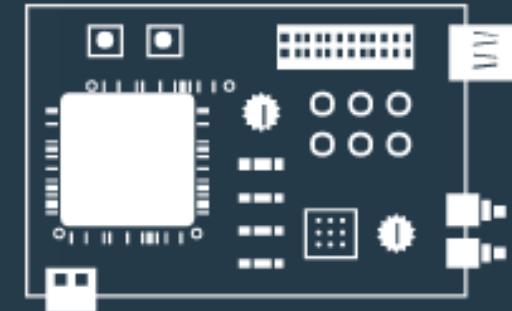
[Status](#)

[Quickstart](#)

Let's GO!

[CASE STUDIES](#)[UNDERSTAND IT](#)[TRY IT OUT](#)[GETTING STARTED](#)

## How it all fits together



### Your device or gateway

We start with your device, be it a sensor, a gateway or something else. To find out how to get it connected, search our recipes.



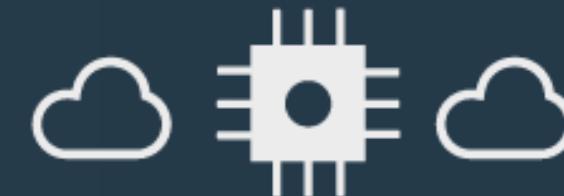
### MQTT

Your device data is sent securely up to the cloud using the open, lightweight MQTT messaging protocol.



### REST & Real-time APIs

Use our secure APIs to connect your apps with the data coming from your devices.



### IBM Internet of Things Foundation

This is the hub of all things IBM IoT. This is where you can setup and manage your connected devices so that your apps can access their live and historical data.



### Your application and analytics

Create applications within IBM Bluemix, another cloud, or your own servers to interpret the data you now have access to!

Blog - Bluemix Dev https://internetofthings.ibmcloud.com/get-access... Catalog - IBM Bluemix IBM Internet of Things Foundation cmmakerclub/esp8266-meetup cmmakerclub/cmmakerclub.github.io

IBM Bluemix DASHBOARD SOLUTIONS CATALOG PRICING DOCS COMMUNITY REGION: US South > 🔍 ⚙️

Type here to search

**Starters** // Choose a package of sample code and services, or start from scratch

**Boilerplates**

Get started with a new app, now

Internet of Things Foundation Starter **View More**

Java Cache Web Starter **IBM**

Java Cloudant Web Starter **IBM**

Java DB Web Starter **IBM**

Mobile Cloud **IBM**

MobileFirst Services Starter **IBM**

iOS 8

Node.js Cache Web Starter **IBM**

Node.js Cloudant DB Web Starter **IBM**

Personality Insights Java Web Starter **IBM**

Personality Insights Node.js Web Starter **IBM**

Node-RED Starter **Community**

Ruby Sinatra **Community**

Vaadin Rich Web Starter **Community**

**Runtimes**

Run an app in the language of your choice

Liberty for Java™ **IBM**

SDK for Node.js™ **IBM**

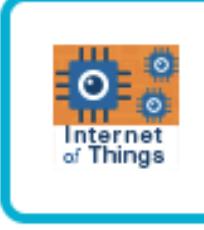
Go **Community**

PHP **Community**

Python **Community**

Ruby **Community**

[Back to All Categories](#)



Internet of Things Foundation Starter  
IBM

Get started with an Internet of Things Foundation application using Node-RED in Bluemix. Try the sample flow with a simulator and customize it for your own devices.

VERSION  
0.4.19

TYPE  
Boilerplate

[VIEW DOCS](#)



SDK for Node.js™



Cloudant NoSQL DB

This runtime hosts the Node-RED application that runs the flow including Internet of Things Foundation nodes. We use Node-RED so you can quickly get started with Internet of Things Foundation in Bluemix. Powered by SDK for Node.js™

[VIEW DOCS](#)

Pick a plan

Plan	Features	Price
✓ Default	Run one or more apps free for 30 days (375 GB-hours free).	\$0.0735 USD/GB-Hour

Monthly prices shown are for country or region: Thailand

 This is a service plan for the IBM Bluemix Platform runtime.

[TERMS](#)

Create an app:

Name:

Host:

Domain:

Selected Plans:

SDK for Node.js™

Cloudant NoSQL DB

[CREATE](#)

[Back to Dashboard...](#)

cmmc

[Overview](#)[SDK for Node.js™](#)[Files and Logs](#)[Environment Variables](#)[Start Coding >](#)**SERVICES**[Cloudant NoSQL DB](#) Your application is staging. <http://cmmc.mybluemix.net>

Getting Started with:

**Internet of Things**

Create Internet of Things apps with Node-Red visual editor and the Internet of Things service.

## Start coding with Internet of Things

- 1 After your application has started, click on the **Routes URL** or enter the following URL in a browser:

<http://<yourhost>.mybluemix.net>

The Node-RED for Internet of Things landing page displays.

- 2 Click [Go to your Node-RED flow editor](#). You will see a ready-made flow that can process temperature readings from a simulated device.

## Customizing your Node-RED instance

- s Before you begin, install the Cloud Foundry command line interface.

 [Download CF Command Line Interface](#)

- 1 Download and extract your starter code to set up your development environment.

 [Download Starter Code](#)

- 2 Change to your new directory.

```
$ cd directory_name
```



[Back to Dashboard...](#)

cmmc

Routes: [cmmc.mybluemix.net](http://cmmc.mybluemix.net)

ADD GIT



cmmc

Overview

SDK for Node.js™

Files and Logs

Environment Variables

Start Coding

SERVICES

Cloudant NoSQL DB



SDK FOR NODE.JS™

INSTANCES:

1

MEMORY QUOTA:

512

AVAILABLE MEMORY:

511.500 GB

(MB per Instance)

SAVE

RESET



ADD A SERVICE OR API



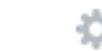
BIND A SERVICE OR API



Cloudant NoSQL DB

cmmc-cloudantNoSQ...  
Shared

Show Credentials



APP HEALTH

Your application is staging.



ENABLE APP FOR MOBILE

ACTIVITY LOG

6/26/15 11:35 PM nat.wrw@gmail.com started cmmc app

6/26/15 11:35 PM nat.wrw@gmail.com updated cmmc app  
• changed routes

6/26/15 11:35 PM nat.wrw@gmail.com created cmmc app

Estimate the cost of this app





## Category

- Watson
- Mobile
- DevOps
- Web and Application
- Integration
- Data Management
- Big Data
- Security
- Business Analytics
- Internet of Things

## Support

- IBM
- Third Party
- Community
- Beta

## Services // The building blocks of any great app

## Watson

Build cognitive apps that help enhance, scale, and accelerate human expertise

AlchemyAPI  
IBMConcept Expansion  
IBM BETAConcept Insights  
IBM BETALanguage Identification  
IBM BETAMachine Translation  
IBM BETAPersonality Insights  
IBMQuestion and Answer  
IBM BETARelationship Extraction  
IBM BETASpeech To Text  
IBM BETAText to Speech  
IBM BETATradeoff Analytics  
IBMVisual Recognition  
IBM BETACognitive Commerce™  
Third PartyCognitive Graph  
Third PartyCognitive Insights™  
Third Party

## Mobile

Quickly get started with your next app

Advanced Mobile Access  
IBMCloudant NoSQL DB  
IBMMobile Application Security  
IBMMobile Data  
IBMMobile Quality Assurance  
IBMPresence Insights  
IBM

Add a service or API to app: lotjs02





nat.wrw@gmai...



IoT

Add a service or API to app: IoTjs02



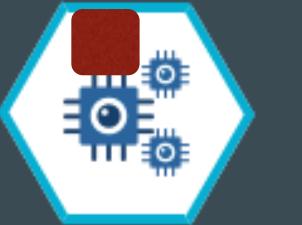
#### Category

- Watson
- Mobile
- DevOps
- Web and Application
- Integration
- Data Management
- Big Data
- Security
- Business Analytics
- Internet of Things

Services // The building blocks of any great app

## Internet of Things

A new generation of applications



Internet of Things  
IBM



flowthings.io  
Third Party

#### Support

- IBM
- Third Party
- Community
- Beta



Looking for more?

Check out the Bluemix Labs Catalog to try out experimental runtimes and services.

[Bluemix Labs Catalog](#)

[Back to Services](#)
Add a service or API to app: **iotjs02**

## Internet of Things

IBM

PUBLISH DATE  
6/24/2015TYPE  
ServiceLOCATION  
US South[VIEW DOCS](#)

The IBM Internet of Things service lets your apps communicate with and consume data collected by your connected devices, sensors, and gateways. Our recipes make it super easy to get devices connected to our Internet of Things cloud. Your apps can then use our real-time and REST APIs to communicate with your devices and consume the data you've set them up to collect.

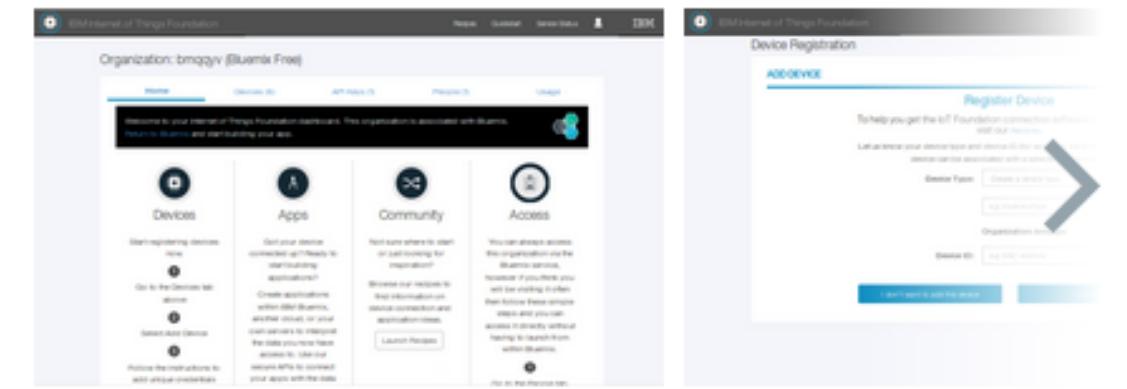
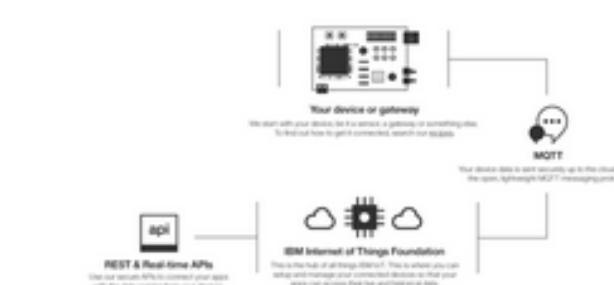
- Connect your devices securely to the cloud**

Before your apps can get to work, you need to get your devices connected up! We have a set of verified instructions, or 'recipes', for connecting devices, sensors and gateways from a variety of partners and individuals.

- Build an app that talks to your devices**

Communications between your devices and the cloud happen via the open, lightweight MQTT protocol. For example you might have a sensor that collects and sends humidity readings every minute. Our REST and real-time APIs allow you to quickly pull that device data into your apps for further analysis.

## How it works



## Pick a plan

Monthly prices shown are for country or region: Thailand

Plan	Features	Price
✓ Free	Includes up to 20 active devices, 100 MB of data traffic and 1 GB of storage Maximum of 20 active devices Maximum of 100 MB data exchanged Maximum of 1 GB data storage (with 30 day expiry) Maximum of 10 application bindings	Free
<small>i</small> The Free service plan for Internet of Things Foundation includes up to 20 active devices, 100 MB of data traffic and 1 GB of online data storage per month.		
Bronze	Includes up to 100 active devices, 100 MB of data traffic and 1 GB of storage Charge per device thereafter Charge per MB data exchanged thereafter Charge per GB data stored online thereafter	\$21.00 USD/Instance \$0.21 USD/Active Device \$0.0105 USD/Megabytes Exchanged \$1.05 USD/Gigabyte Month
Silver	Includes up to 3,000 active devices, 100 MB of data traffic and 1 GB of storage Charge per device thereafter Charge per MB data exchanged thereafter Charge per GB data stored online thereafter	\$126.00 USD/Instance \$0.042 USD/Active Device \$0.0105 USD/Megabytes Exchanged \$1.05 USD/Gigabyte Month
Gold	Includes up to 15,000 active devices, 100 MB of data traffic and 1 GB of storage Charge per device thereafter	\$472.50 USD/Instance \$0.0315 USD/Active Device

## Add Service

App:

iotjs02 iotjs02.mybluemix.net

Service name:

Internet of Things-fm

Selected Plan:

Free

**CREATE**

[Back to Dashboard...](#)

iotjs02

Routes: [iotjs02.mybluemix.net](#)

iotjs02

[Overview >](#)[SDK for Node.js™](#)[Files and Logs](#)[Environment Variables](#)[Start Coding](#)**SERVICES**[Internet of Things](#)

SDK FOR NODE.JS™

INSTANCES:

1

MEMORY QUOTA:

256

AVAILABLE MEMORY:

512.000 GB

(MB per Instance)

[SAVE](#)[RESET](#)**APP HEALTH**

Stopped

[START](#)[ADD A SERVICE OR API](#)[BIND A SERVICE OR API](#)**Internet of Things**Internet of Things-nt  
iotf-service-free[Show Credentials](#)[Docs](#)[ENABLE APP FOR MOBILE](#)

Loading

[Estimate the cost of this app](#)

[Back to Dashboard...](#)

iotjs02

Routes: [iotjs02.mybluemix.net](#)

ADD GIT

iotjs02

[Overview >](#)

SDK for Node.js™

Files and Logs

Environment Variables

Start Coding

**SERVICES**

Internet of Things

	INSTANCES:	MEMORY QUOTA:	AVAILABLE MEMORY:
SDK FOR NODE.JS™	1	256	512.000 GB
(MB per Instance)			

[SAVE](#) [RESET](#)

[+ ADD A SERVICE OR API](#) [+ BIND A SERVICE OR API](#)

**Internet of Things**  
Internet of Things-nt  
iotf-service-free

Show Credentials Docs

## Instantiating Credentials

```
{  
  "iotf-service": [  
    {  
      "name": "Internet of Things-nt",  
      "label": "iotf-service",  
      "plan": "iotf-service-free",  
      "credentials": {  
        "iotCreden": [  
          "mqtt_host": "r6crrd.messaging.internetofthings.  
          "mqtt_u_port": 1883,  
          "mqtt_s_port": 8883,  
          "base_uri": "https://internetofthings.ibm.com"  
        ]  
      }  
    }  
  ]  
}
```

[ENABLE APP FOR MOBILE](#)

**APP HEALTH**[\(i\) Stopped](#)[START](#)**ACTIVITY LOG**

6/1/15 nat.wrw@gmail.com  
1:46 PM stopped iotjs02 app

[Estimate the cost of this app](#)



# Organization ID: r6crrd

Bluemix Free ([go to Bluemix service](#))

[INFO](#)[DEVICES](#)[API KEYS](#)[PEOPLE](#)[USAGE](#)[DEVICES](#)

Start registering devices now.

1

Go to the Devices tab above

2

Select Add Device

3

Follow the instructions to add unique credentials onto your device to ensure your device is securely connected.

You can see all of your registered devices, along with their status and recent messages, in the Devices tab.

[APPS](#)

Got your device connected up? Ready to start building applications?

Create applications within IBM Bluemix, another cloud, or your own servers to interpret the data you now have access to. Use our secure APIs to connect your apps with the data coming from your devices.

1

Go to the API Keys tab above

2

Select New API Key

[COMMUNITY](#)

Not sure where to start or just looking for inspiration?

Browse our recipes to find information on device connection and application ideas.

[Launch Recipes](#)

# Organization ID: r6crrd

Bluemix Free ([go to Bluemix service](#))

[INFO](#)[DEVICES](#)[API KEYS](#)[PEOPLE](#)[USAGE](#)[+ Add Device](#)[- Remove Device\(s\)](#)

<input type="checkbox"/>	Device Type	Device ID	Last Event	Message Rate	Date Added	Added By		
<input type="checkbox"/>	◆ actuator	7c4008afe6c7	↓↑ 2 days ago	[+]	-	Tuesday, May 19, 2015	nat.wrw@gmail.com	
<input type="checkbox"/>	◆ esp8266	18fe34a44a7b	↓↑ 2 days ago	[+]	-	Wednesday, June 24, 2015	nat.wrw@gmail.com	
<input type="checkbox"/>	◆ esp8266	18fe34a6e923	↓↑ 3 hours ago	[+]	-	Thursday, June 25, 2015	nat.wrw@gmail.com	
<input type="checkbox"/>	◆ esp8266	18fe34a6eaa0	↓↑ 1 day ago	[+]	-	Thursday, June 25, 2015	nat.wrw@gmail.com	

# Organization ID: r6crrd

Bluemix Free ([go to Bluemix service](#))

[INFO](#)[DEVICES](#)[API KEYS](#)[PEOPLE](#)[USAGE](#)

STEP 1 OF 2: ENTER THE DEVICE DETAILS

To help you get the IoT Foundation connection software onto your device, visit our [Recipes](#).

Let us know your device type and device ID (for example, the MAC address), so the device can be associated with a selected organization.

Create a device type...

Device Type: eg. mydevicetype

Device ID: eg. MAC Address

I don't want to add this device

Continue

# Organization ID: r6crrd

Bluemix Free ([go to Bluemix service](#))

[INFO](#)[DEVICES](#)[API KEYS](#)[PEOPLE](#)[USAGE](#)[+ Add Device](#)[- Remove Device\(s\)](#)

<input type="checkbox"/>	Device Type	Device ID	Last Event	Message Rate	Date Added	Added By	
<input type="checkbox"/>	◆ actuator	7c4008afe6c7	↓↑ 2 days ago	-	Tuesday, May 19, 2015	nat.wrw@gmail.com	
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<input type="checkbox"/>	◆ esp8266	18fe34a6e923	↓↑ 3 hours ago	-	Thursday, June 25, 2015	nat.wrw@gmail.com	
<input type="checkbox"/>	◆ esp8266	18fe34a6eaa0	↓↑ 1 day ago	-	Thursday, June 25, 2015	nat.wrw@gmail.com	

# Organization ID: r6crrd

Bluemix Free (go to Bluemix service)

INFO

DEVICES

API KEYS

PEOPLE

USA



## Device Type

Device Type	Device ID	Last Seen	Timestamp	Added By	Action
actuator	7c4008afe6c7	↓↑ 1 day ago	Friday, June 26, 2015	nat.wrw@gmail.com	✖
esp8266	18fe34a44a7b	↓↑ 1 day ago	Wednesday, June 24, 2015	nat.wrw@gmail.com	✖
esp8266	18fe34a6e923	↓↑ 3 hours ago	Thursday, June 25, 2015	nat.wrw@gmail.com	✖

## Latest 10 Inbound Events

Click on a row to get more detailed message information.

Event Type	Event	Timestamp
Message published	dw.mini	Friday, June 26, 2015 8:29:00 PM
Message published	dw.mini	Friday, June 26, 2015 8:29:10 PM
Message published	dw.mini	Friday, June 26, 2015 8:29:12 PM
Message published	dw.mini	Friday, June 26, 2015 8:29:12 PM
Message published	dw.mini	Friday, June 26, 2015 8:29:14 PM
Message published	dw.mini	Friday, June 26, 2015 8:29:14 PM
Message published	dw.mini	Friday, June 26, 2015 8:29:16 PM
Message published	dw.mini	Friday, June 26, 2015 8:29:16 PM
Message published	dw.mini	Friday, June 26, 2015 8:29:18 PM
Message published	dw.mini	Friday, June 26, 2015 8:29:18 PM

esp8266

18fe34a6eaa0

↓↑

1 day ago

+

-

Thursday, June 25, 2015

nat.wrw@gmail.com



## View Payload



Friday, June 26, 2015 8:29:00 PM

```
{"evt_type":"dw.mini","timestamp":{},"evt": {"myName":"NAT","adc":864,"counter":119,"heap":28448,"seconds":244}}
```

# Organization ID: r6crrd

Bluemix Free ([go to Bluemix service](#))

[INFO](#)[DEVICES](#)[API KEYS](#)[PEOPLE](#)[USAGE](#)[New API Key](#)

Key	Comment	Options
a-r6crrd-3gsgqcadid	<input type="text" value="Add a comment..."/>	<a href="#">Revoke</a>
a-r6crrd-fnffhttgm1	<input type="text" value="Add a comment..."/>	<a href="#">Revoke</a>
a-r6crrd-xqeysctorr	Bound to Bluemix Application	<a href="#"></a> <a href="#">Revoke</a>

# Organization ID: r6crrd

Bluemix Free (go to Bluemix service)

INFO

DEVICES

API KEYS

PEOPLE

USA



+ New API Key

Key

Comment

OK, I've got it!

Options

a-r6crrd-3gsgqcadid

Add a comment...

Revoke

a-r6crrd-3hzz13prpb

Add a comment...

Revoke

a-r6crrd-924btqmlbx

Add a comment...

Revoke

a-r6crrd-fnffhtgm1

Add a comment...

Revoke

a-r6crrd-hxtqb31pl9

Add a comment...

Revoke

a-r6crrd-qukukncay

Add a comment...

Revoke

a-r6crrd-tzqhn4d0zl

Add a comment...

Revoke

a-r6crrd-xqeysctcrr

Bound to Bluemix Application



Revoke

a-r6crrd-y4evtiba1w

Add a comment...

Revoke

## New API Key

Here is your two-part, randomly generated API key. We strongly advise that you use this API key for only one application. If this API key is revoked, all applications using it will be disconnected from Internet of Things Foundation.

**Key:** a-r6crrd-g6x6g2xroq

**Auth Token:** 18A3+0aFx5j@D0ryLp



This is the only time that the Auth Token will be visible to you.  
Make sure you note it down now!

## Organization ID: r6crrd

Bluemix Free (go to Bluemix service)

INFO

DEVICES

API KEYS

PEOPLE

USA



+ New API Key

Key

Comment

OK, I've got it!

Options

a-r6crrd-3gsgqcadid

Add a comment...

Revoke

a-r6crrd-3hzz13prpb

Add a comment...

Revoke

a-r6crrd-924btqmlbx

Add a comment...

Revoke

a-r6crrd-fnffhtgm1

Add a comment...

Revoke

a-r6crrd-hxtqb31pl9

Add a comment...

Revoke

a-r6crrd-qukukncay

Add a comment...

Revoke

a-r6crrd-tzqhn4d0zl

Add a comment...

Revoke

a-r6crrd-xqeysctcrr

Bound to Bluemix Application



Revoke

a-r6crrd-y4evtiba1w

Add a comment...

Revoke

The screenshot shows the Arduino IDE interface with the title bar "mqtt\_bluemix\_test | Arduino 1.6.5". The main window displays a C++ code editor with the file "mqtt\_bluemix\_test" selected. The code implements a function `hook_configuration` that configures an MQTT client. It uses the WiFi library to get the MAC address and constructs a client ID by concatenating "a:r6crrd:" with the MAC address. It also sets the API KEY, username, and password. The code then formats a buffer with device type and event ID, and prints the topic to publish.

```
1 void hook_configuration(MqttWrapper::Config config)
2 {
3     uint8_t mac[6];
4     WiFi.macAddress(mac);
5     String macAddr;
6     for (int i = 0; i < 6; ++i)
7     {
8         macAddr += String(mac[i], 16);
9     }
10
11    // a:org_id:device_id
12    *(config.clientId) = String("a:r6crrd:") + macAddr;
13
14    // API-KEY
15    *(config.username) = String("a-r6crrd-3gsgqcadid");
16    *(config.password) = String("KD@");
17
18    char buf[100];
19    const char* device_type = "esp8266";
20    const char* event_id = "dw.mini";
21
22    sprintf(buf, "iot-2/type/%s/id/%s/evt/%s/fmt/json", device_type, macAddr.c_str(), event_id);
23
24    *(config.topicPub) = String(buf);
25
26    Serial.println(".");
27    Serial.println(macAddr);
28 }
```

READ-THE-DOCS

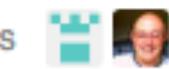


branch: master

[iotf-rtd / docs / messaging / applications.rst](#)

durera on May 1 Update app key format examples

2 contributors



158 lines (96 sloc) | 5.213 kB

[Raw](#) [Blame](#) [History](#)

## MQTT Connectivity for Applications

An Application must authenticate using a client ID in the following format:

```
a:org_id:app_id
```

- We do not impose any rules on the **app\_id** component of the client ID
- When connecting to the QuickStart service no authentication is required
- An Application does not need to be registered before it can connect

### MQTT client identifier

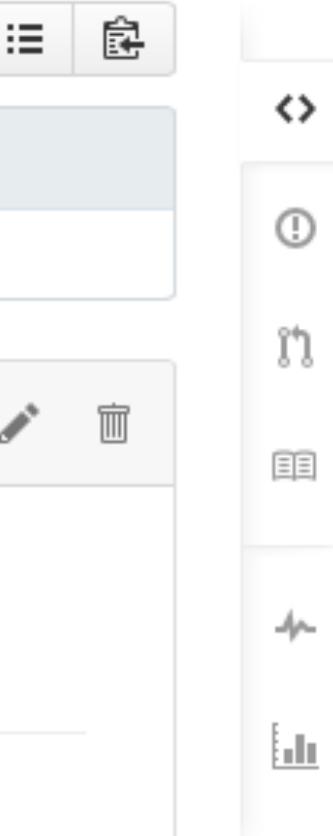
- Supply a client id of the form **a:org\_id:app\_id**
- **a** indicates the client is an application
- **org\_id** is your unique organization ID, assigned when you sign up with the service. It will be a 6 character alphanumeric string.
- **app\_id** is a user-defined unique string identifier for this client.

#### Note

Only one MQTT client can connect using any given client ID. As soon as a secnd client in your organization connects using an **app\_id** that you have already connected the first client will be disconnected.

### MQTT authentication

Applications require an API Key to connect into an Organization. When an API Key is registered a token will be



# Quickstart demo!