ESL solution introduction

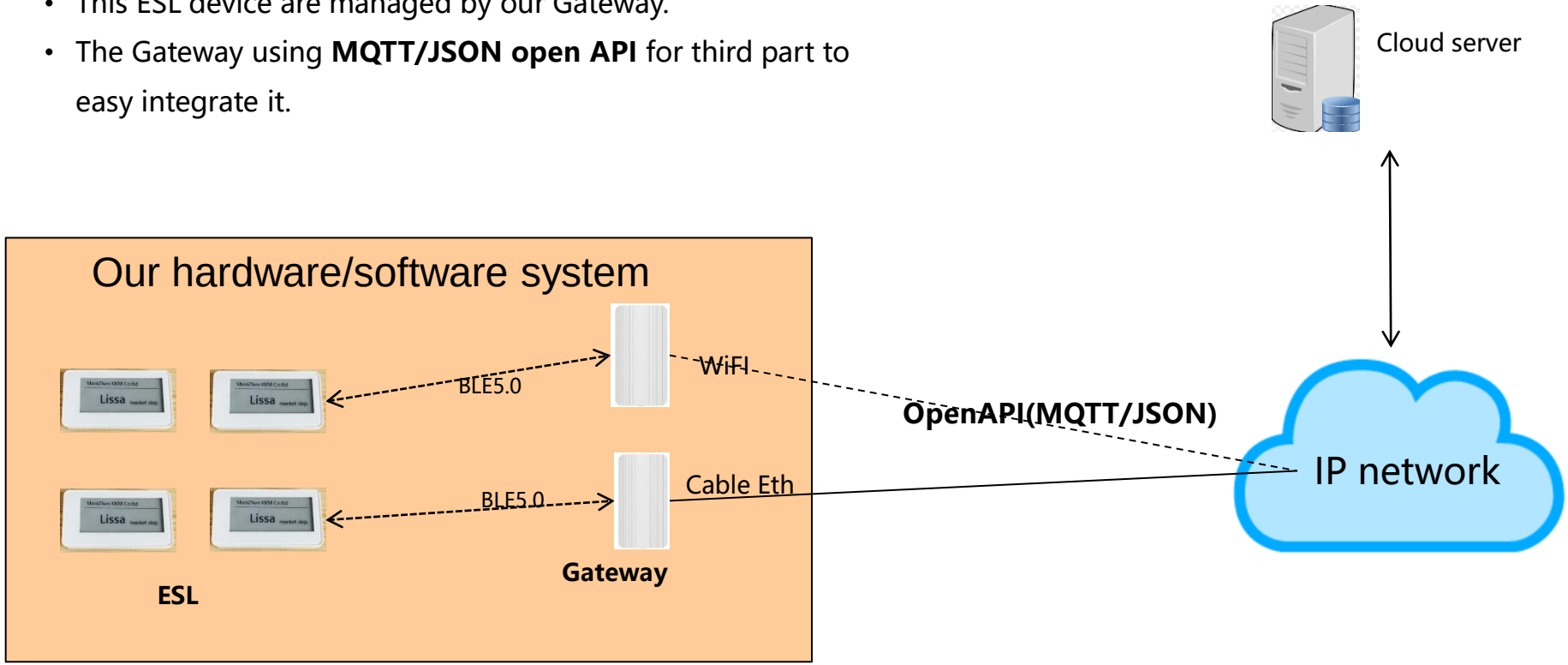
(Connecting your ESL to IOT cloud promptly)

Outline

- **Introduction**
  - ✓ **Architecture**
  - ✓ **ESL and Gateway device**
- **Solution Feature**

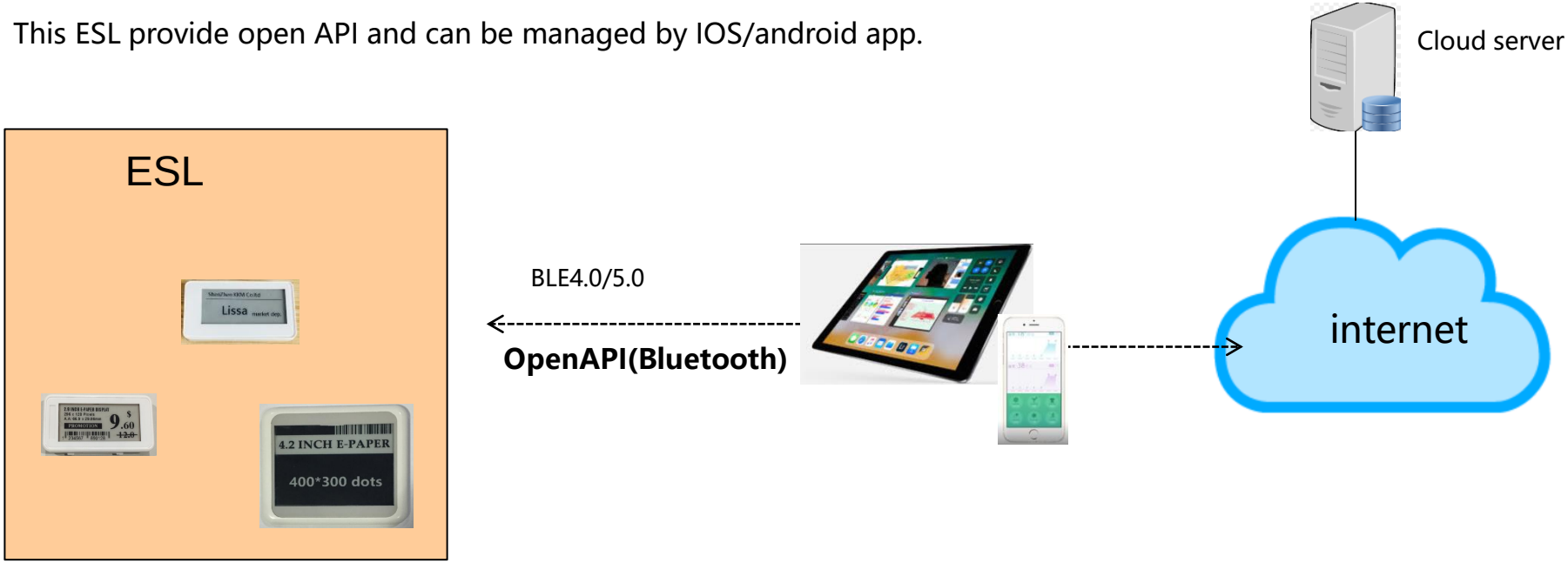
Software/hardware Architecture solution1

- This ESL device are managed by our Gateway.
- The Gateway using **MQTT/JSON open API** for third part to easy integrate it.

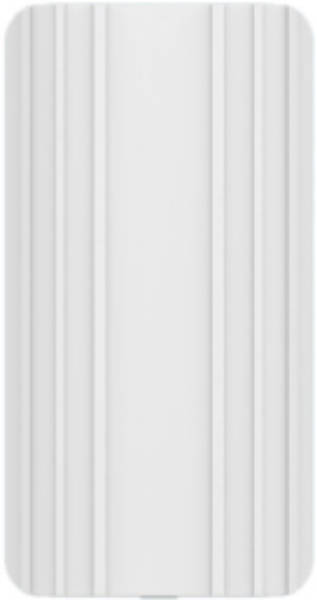


Software/hardware Architecture solution2

This ESL provide open API and can be managed by IOS/android app.

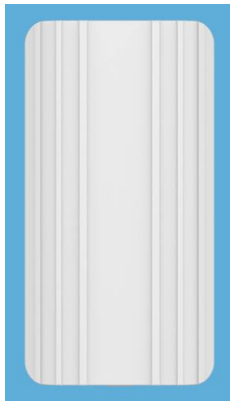


ESL Gateway



- Water proof-IP54/Sun proof （Industry only）
- BLE5.0 Long distance Feature （Industry only）
- BLE distance: > 200 meters in open space
- Self-organized for ESL device
- Open protocol: MQTT to cloud
- Configuration: Web portal
- Transmit: ETH/Wifi/Wifi-hopping
- Power: 5V DC and ETH PoE(802.3af)
- Base on latest OpenWrt 18.29
- BLE chip: TI CC2640R2F

ESL Gateway Specifications



Item	Description
Power	• 802.3af PoE • DC 5V
Manage ESL number	> 200 ESL
Wireless distance	• BLE5.0: > 200 meters • BLE4.0/4.1/4.2 > 100 meters (depends on environment)
Transmitting way	• ETH RJ45 • WiFi • WiFi hoppen • USB (For 3G/4G dongle)
Transmitting protocol	• MQTT
Installation way	• Screw
Waterproof/Dustproof	• IP54
Size	• 173*90*
Material	• ABS

KESL021C ESL Specifications

Item	Description
Screen Size	2.1Inch
Pixels	212*104
Total Size	74*40*12mm
Power	2 * CR2450 Battery
Work time	> 4 Years
Power consumption	Standby: < 25uA Refresh picture: < 15mA
Wireless distance	• Outdoor around 100 meters • Indoor around 30-50 meters (depends on environment)
Transmitting protocol	• BLE4.1/BLE5.0
Installation way	• 3M or Pylons
Material	• ABS

KESL029C ESL Specifications

Item	Description
Screen Size	2.9Inch
Pixels	296*128
Total Size	74*40*12mm
Power	2 * CR2450 Battery
Work time	> 4 Years
Power consumption	Standby: < 25uA Refresh picture: < 15mA
Wireless distance	• Outdoor around 100 meters • Indoor around 30-50 meters (depends on environment)
Transmitting protocol	• BLE4.1/BLE5.0
Installation way	• 3M or Pylons
Material	• ABS

KESL042C ESL Specifications

Item	Description
Screen Size	4.2Inch
Pixels	400*300
Total Size	• 103*92*8mm
Power	Li-Ion Battery 850mAh
Work time	> 2Years
Power consumption	Standby: < 25uA Refresh picture: < 25mA
Wireless distance	• Outdoor around 100 meters • Indoor around 30-50 meters (depends on environment)
Transmitting protocol	• BLE4.1/BLE5.0
Installation way	• 3M or Pylons
Material	• ABS

KKM ESL Family

Outline

- **Introduction**
- **Gateway Solution Feature**
  - ✓ **Opening Platform Design**
  - ✓ **Self-organized deployed**
  - ✓ **OpenAPI for third part to integration**
  - ✓ **Security: Two-way authentication**
  - ✓ **Web portal Configuration UI**
- **App Solution**

1. Gateway Opening Platform Design

ESL Gateway not only an ESL manager. It's an **open platform to make your ESL and other BLE sensor easily connect to cloud.**

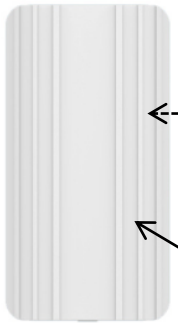
All the interface are opening for third part.

- Support third part ESL/BLE device connect to the cloud via BLE GW;
- Support third part MQTT server;
- Support your own firmware running on ESL Gateway;

iBeacon for navigation/promotion

1. Opening authentication algorithm

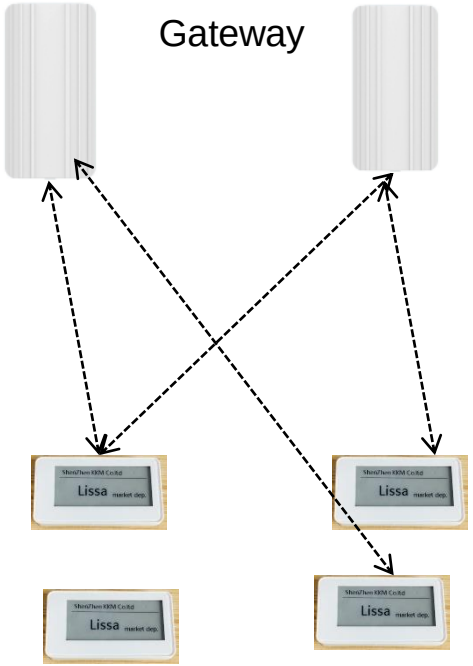
2. Opening downdata/upload data interface



3. Opening JSON API (HTTPs/MQTT)

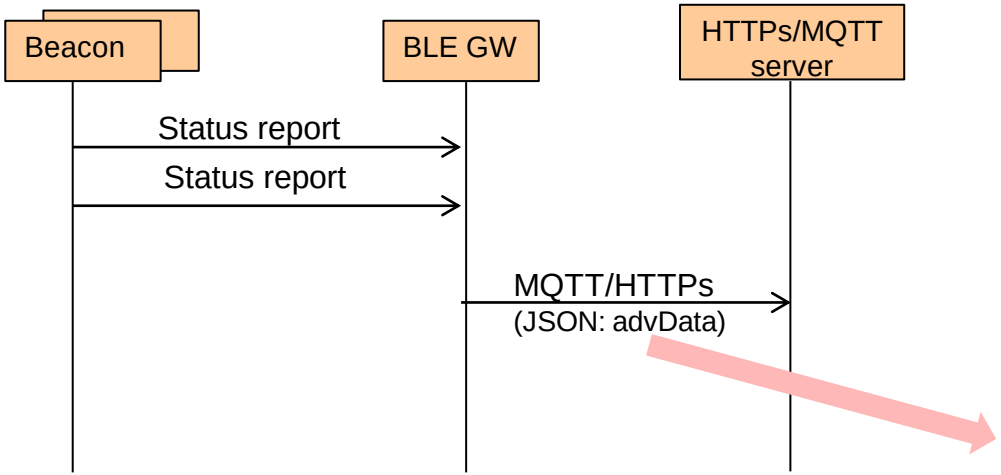
4. Opening source code on Openwrt, you can extend the service/message on BLE GW

2. Self-organized deployed



- Once you deployed the ESL(>1000pcs) and Gateway, the relationship between ESL and Gateway will **automatic setup within 3~5 minute**.
- Gateway supports **redundant configuration**, once one Gateway down, other Gateway(with in same coverage) will automatic take over ESL management within 10 seconds.
- Gateway support **pool load balance deployed**, the Customer Inventory System can select an light load Gateway to update price about ESL.

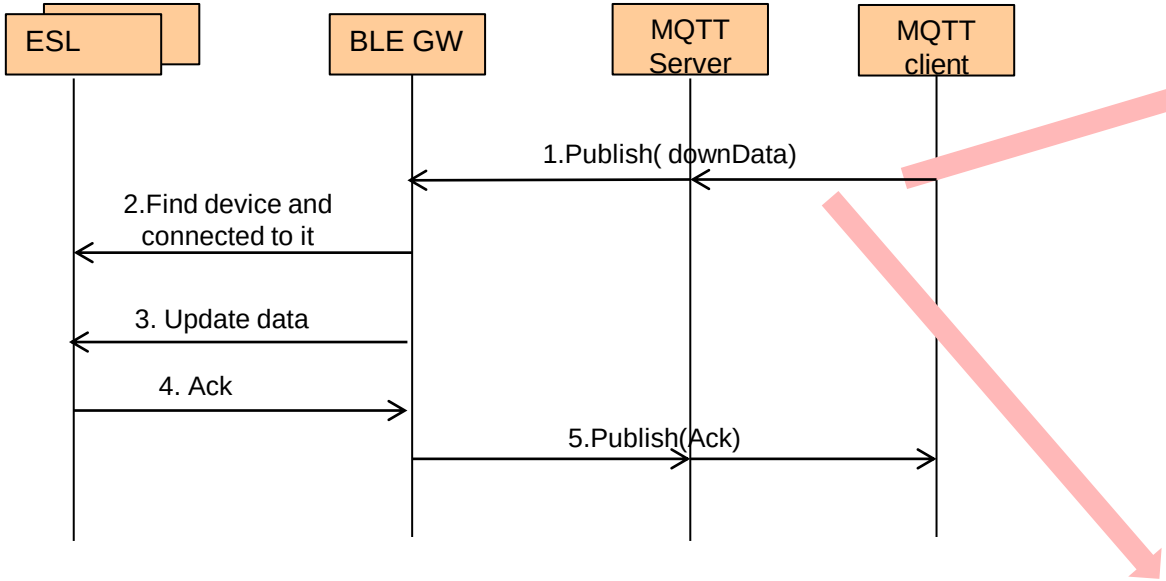
3. Open API Example: ESL monitor



advData packet example

```
{
  "msg": “advData",
  "gmac": "66E865E28547",
  "obj": [
   {
    "dmac": "B45D0196FFFF",
    "rssi": "-53",
    "data1": "0201060302E0FF03095446"
   },
   {
    "dmac": "8D0389AB78CC",
    "rssi": "-92",
    "data1": "020106030202180AFF4B4D028D0389AB78CC"
   },
  ],
  "seq": 5091
}
```

5. Open API Example: ESL update



Download HEX data to beacon

```
{
  "msg": "dData",
  "mac": "e44892f98100",
  "seq": 10444,
  "auth1": "00000000",
  "dType": "hex",
  "data": "01000005C61280"
}
```

modify the ESL status report period to 1000)

```
{
  "msg": "dData",
  "mac": "e44892f98100",
  "seq": 10444,
  "auth1": "password1",
  "dType": "json",
  "data": {
    "advPeriod": 1000,
    "txPwr": 5
  }
}
```

Support JSON data and hex data type to beacon

6. Open source code/SDK on Github

1. Gateway integration guidance and gateway installation and configuration guidance.
https://github.com/kkmhogen/ESLIntroduction.git

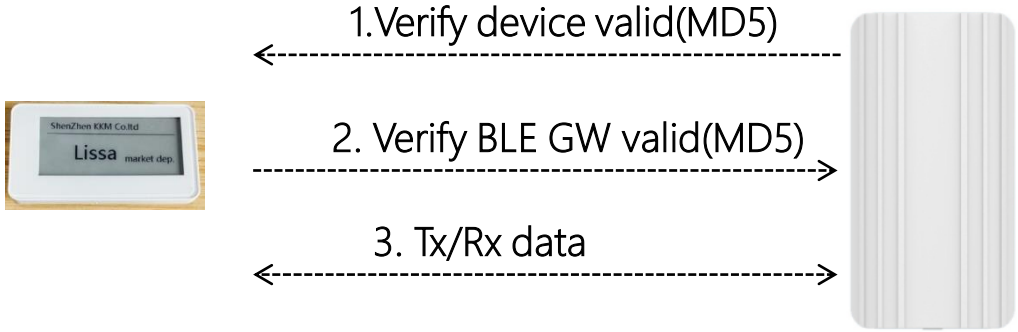
2. The client software Demo supports the connection of the MQTT server address and is based on the Java1.7 version.
https://github.com/kkmhogen/KGatewayClientDemo.git

3. Convert the BIN formatted image to the demo of the MQTT JSON message, based on the C language implementation, developed using Visual Studio 2010.
https://github.com/kkmhogen/ESLBin2Json.git

We will continue to update the resources to make your develop more easily.

4. Two-way authentication ensures device security

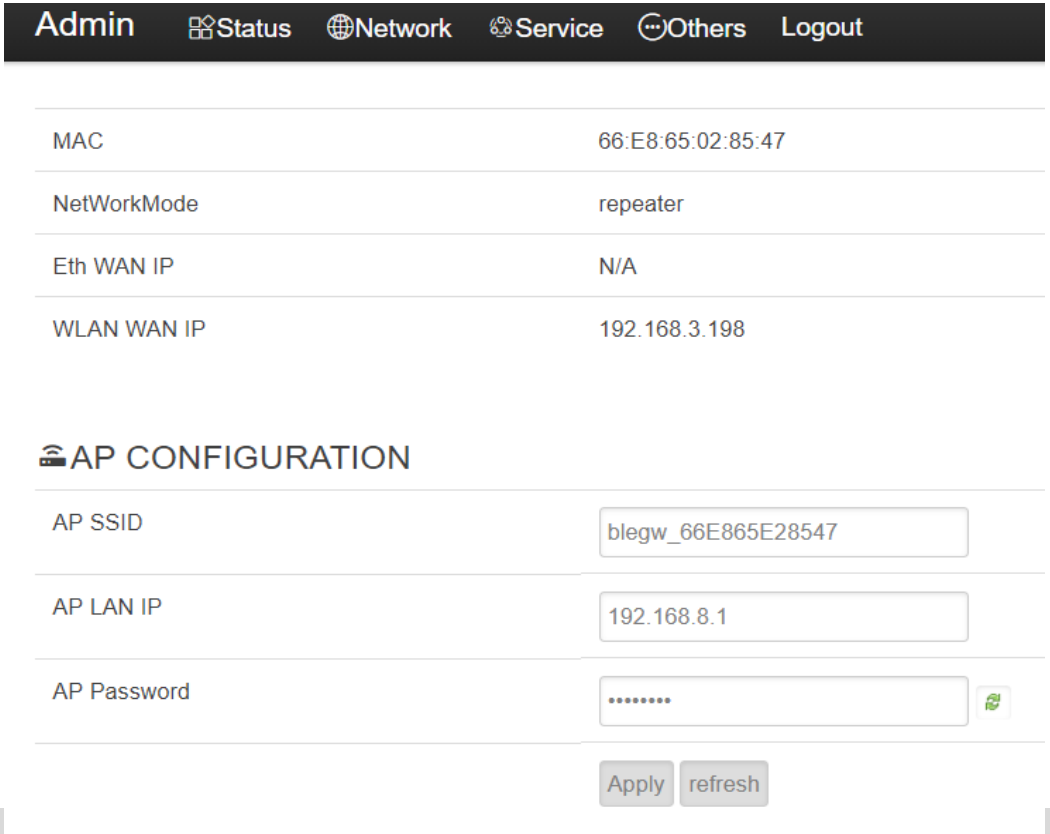
To ensure that the devices and gateways are not illegally connected. BLE Gateway and device using Bi-directional MD5 with random authentication.



5. Web portal Configuration

The Gateway Support Web portal configuration, for example: chrome explore

- No need to install app



Outline

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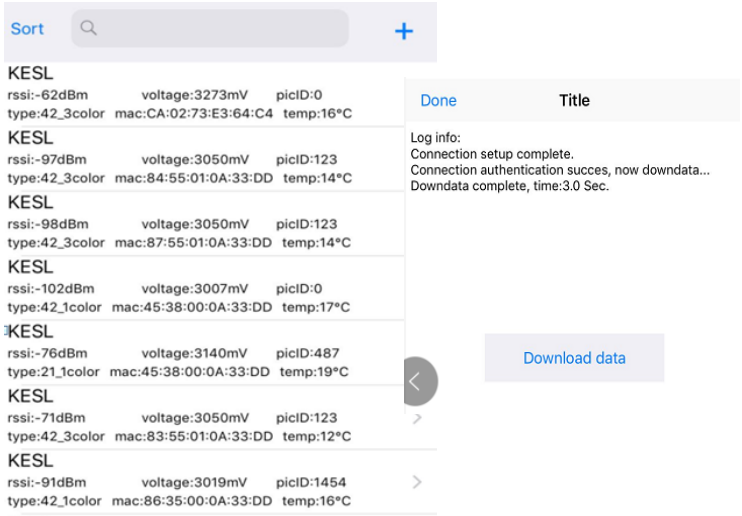
- Gateway Solution Feature
- App Solution

Connection the ESL using app

ESL Demo



- The ESL support bluetooth4.1 and bluetooth 5.0, You can use ipad and iphone to connect to ESL for updates.
- We can provide the bluetooth API for manage the ESL.
- We also provide IOS demo app for your quick development. Please noticed that the phone/iPad must support bluetoooth4.1 or bluetooth5.0.

Thanks

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