

ESL solution introduction

(Connecting your ESL to IOT cloud promptly)

Outline

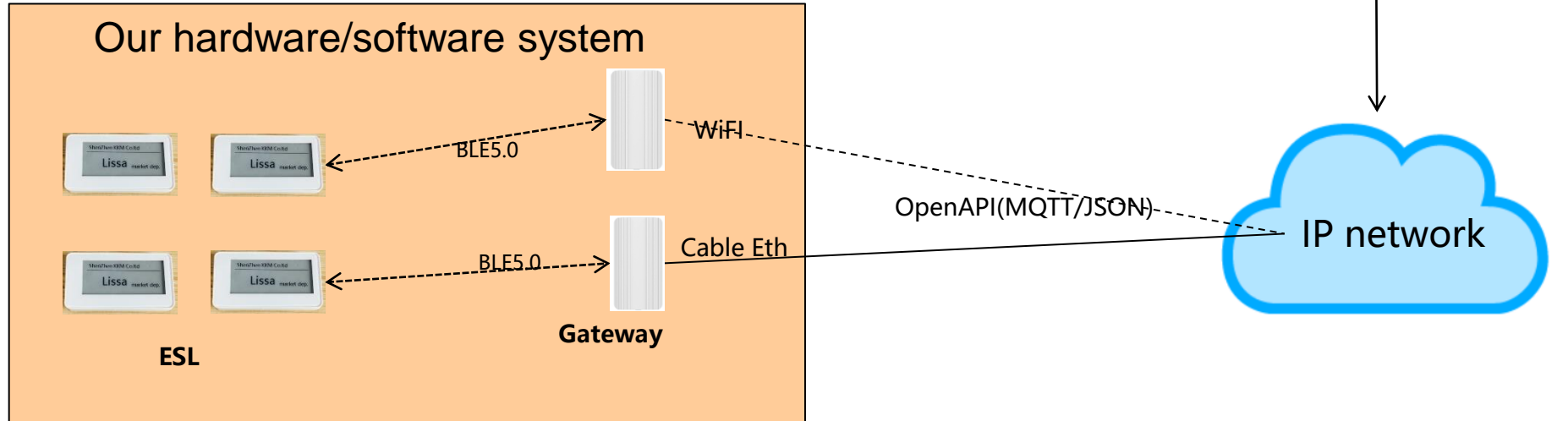
➤ Introduction

- ✓ Architecture
- ✓ ESL and Gateway

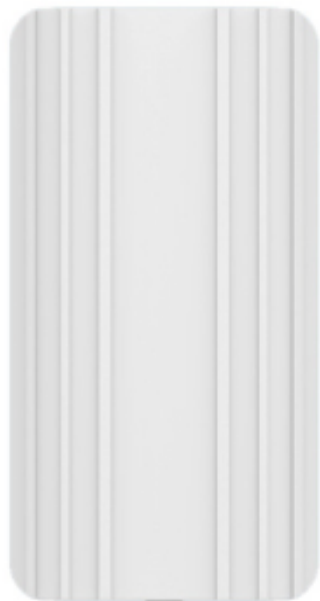
➤ Solution Feature

Software/hardware Architecture

ESL/Gateway using **MQTT/JSON open API** for third part to easy integrate it.

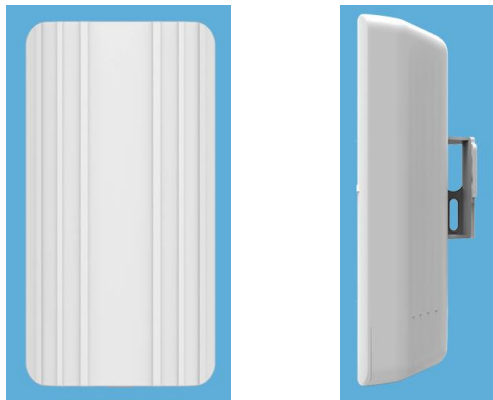


ESL Gateway



- **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	<ul style="list-style-type: none">• 802.3af PoE• DC 5V
Manage ESL number	> 200 ESL
Wireless distance	<ul style="list-style-type: none">• BLE5.0: > 200 meters• BLE4.0/4.1/4.2 > 100 meters (depends on environment)
Transmitting way	<ul style="list-style-type: none">• ETH RJ45• WiFi• WiFi hoppen• USB (For 3G/4G dongle)
Transmitting protocol	<ul style="list-style-type: none">• MQTT
Installation way	<ul style="list-style-type: none">• Screw
Waterproof/Dustproof	<ul style="list-style-type: none">• IP54
Size	<ul style="list-style-type: none">• 173*90*
Material	<ul style="list-style-type: none">• 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	<ul style="list-style-type: none">• Outdoor around 100 meters• Indoor around 30-50 meters (depends on environment)
Transmitting protocol	<ul style="list-style-type: none">• BLE4.1/BLE5.0
Installation way	<ul style="list-style-type: none">• 3M or Pylons
Material	<ul style="list-style-type: none">• ABS

KESL029C ESL Specifications



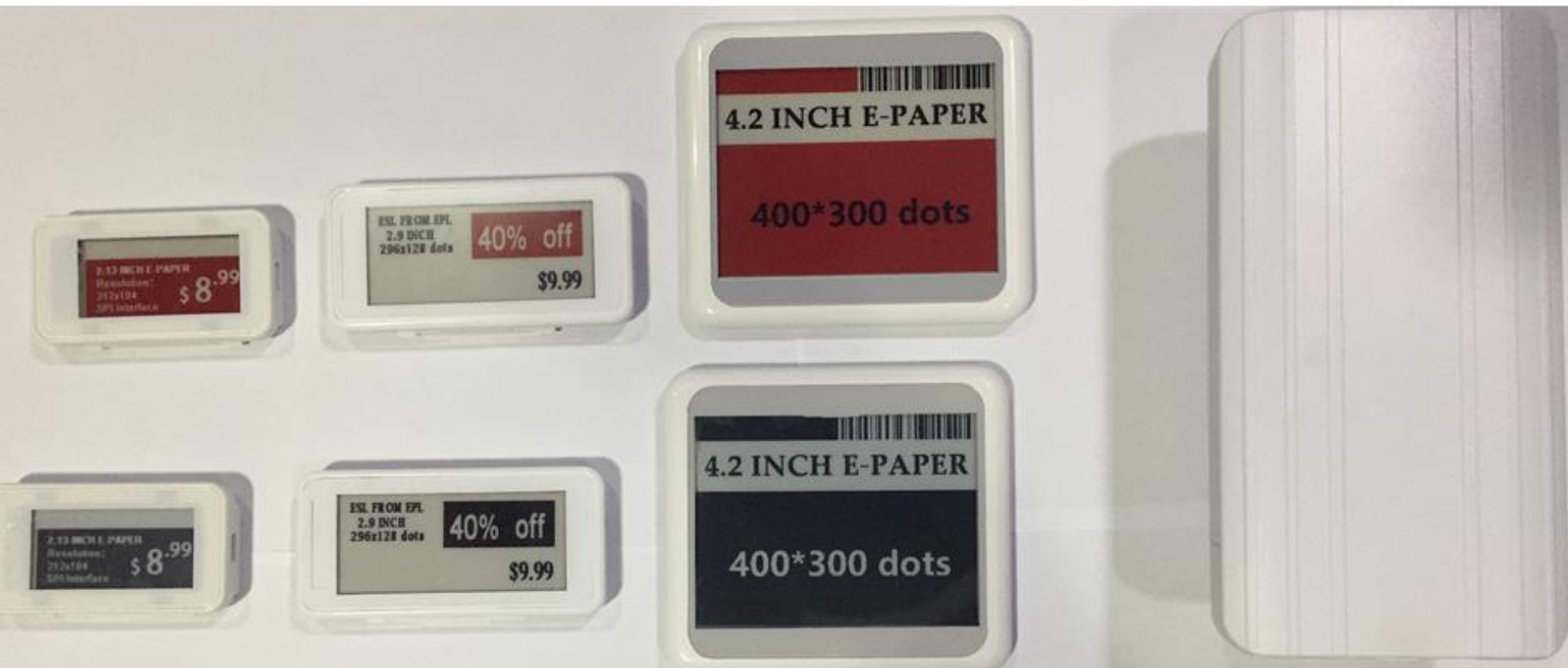
Item	Description
Screen Size	2.9Inch
Pixels	296*128
Total Size	74*40*12mm
Power	2 * CR2450 Battery
Work time	> 4 Years
Power consumption	Standby: < 25uA Refresh picture: < 15mA
Wireless distance	• Outdoor around 100 meters • Indoor around 30-50 meters (depends on environment)
Transmitting protocol	• 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

➤ Solution Feature

- ✓ Opening Platform Design
- ✓ Self-organized deployed
- ✓ OpenAPI for third part to integration
- ✓ Security: Two-way authentication
- ✓ Web portal Configuration UI

1. 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.**

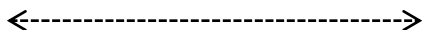
All the interface are opening for third part.

- 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;

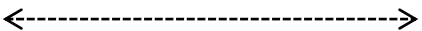


Humidity sensor

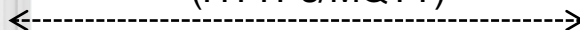
1. Opening authentication algorithm



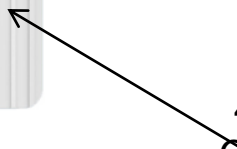
2. Opening downdata/upload data interface



3. Opening JSON API (HTTPs/MQTT)

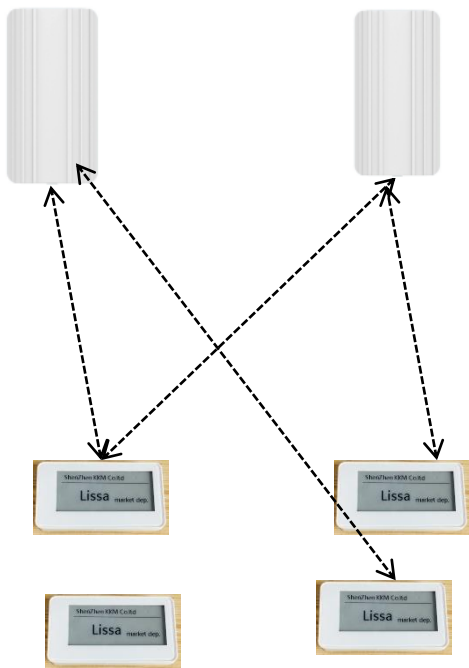


4. Opening source code on Openwrt, you can extend the service/message on BLE GW



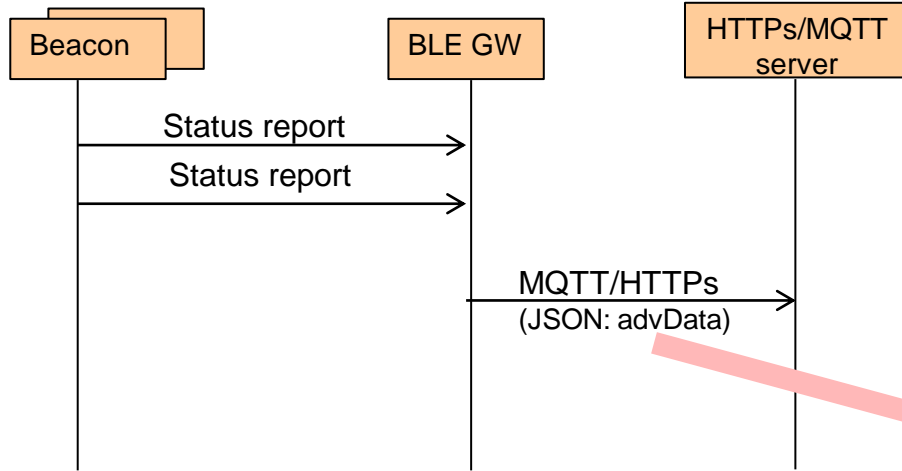
iBeacon for navigation/promotion

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.

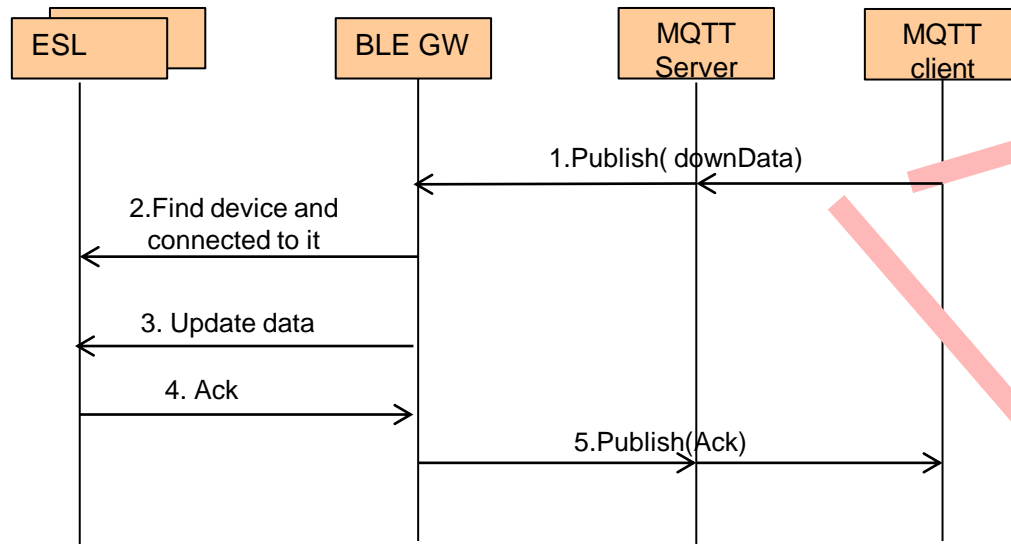
3. Open API Example: ESL monitor



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>

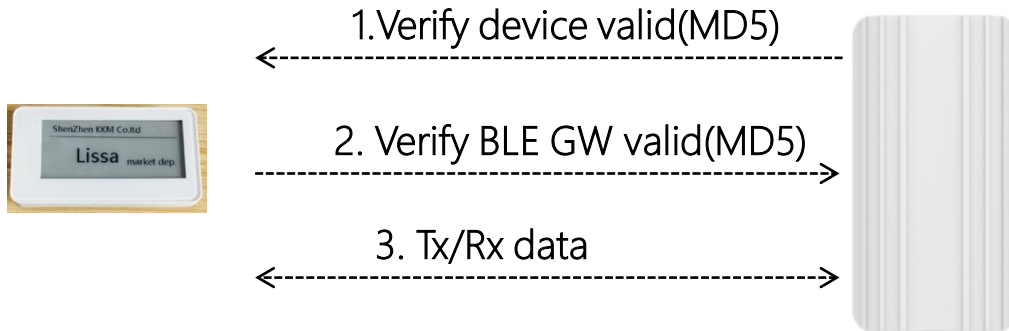
3. Convert the BIN formatted image to the demo of the MQTT JSON message, based on the C language implementation, developed using Visual Studio 2010.

<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

[Admin](#) [Status](#) [Network](#) [Service](#) [Others](#) [Logout](#)

MAC	66:E8:65:02:85:47
NetWorkMode	repeater
Eth WAN IP	N/A
WLAN WAN IP	192.168.3.198

 **AP CONFIGURATION**

AP SSID	<input type="text" value="blegw_66E865E28547"/>
AP LAN IP	<input type="text" value="192.168.8.1"/>
AP Password	<input type="password" value="....."/> 

Thanks

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