

Development Document

Document Name: BLE2Mqtt API

Revision History

Specification		Sect.	Update Description	By
Rev	Date			
1.0	2020-09-18		New version release	Bruce
1.1	2020-12-30		Format optimize	Bruce
1.2	2021-09-13		Fixed ble and gateway interface	aux
1.3	2021-11-04		Add scan configuration	
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1.5	2022-05-30		Add handle in write/notify	Bruce
1.6	2022-08-25		Format optimize	Bruce
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1.8	2022-12-12		Add Device list	

Approvals

Organization	Name	Title	Date

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1. Introduction

1.1 Purpose& Description

This document mainly explains how the gateway connect to the mqtt broker and ble api information for the gateway – mqtt broker communication.

1.2 Equipment requirements



DSGW-030



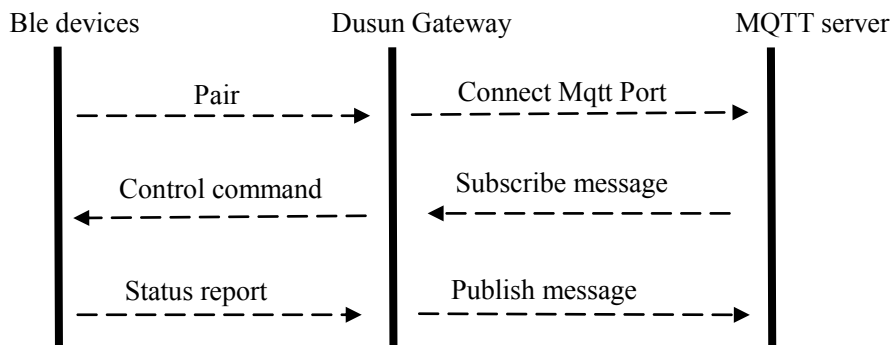
DSGW-040



PC

1. DUSUN gateway DSGW-030 or DSGW-040
2. PC

1.3 Docking block diagram



2. Build mqtt service

1. Download and install the mosquito program from <https://mosquitto.org/download/>
2. Create a mqtt server by the command **mosquitto -p 1888 -v**

```
C:\Program Files\mosquitto>mosquitto -p 1888 -v
1574938934: mosquitto version 1.6.7 starting
1574938934: Using default config.
1574938934: Opening ipv6 listen socket on port 1888.
1574938934: Opening ipv4 listen socket on port 1888.
```

3. Find out the ip address of your server, mine is 192.168.1.2. As it's the local ip, make sure the gateway and server in same LAN.

```
C:\Users\Administrator>ipconfig

Windows IP Configuration

Ethernet adapter Npcap Loopback Adapter:

    Connection-specific DNS Suffix  . : 
    Link-local IPv6 Address . . . . . : fe80::4dc6:3cfa:4274:ca3a%13
    Autoconfiguration IPv4 Address. . . : 169.254.202.58
    Subnet Mask . . . . . : 255.255.0.0
    Default Gateway . . . . . : 

Ethernet adapter ????:

    Connection-specific DNS Suffix  . : 
    Link-local IPv6 Address . . . . . : fe80::b152:ad1:6d02:666a%11
    IPv4 Address. . . . . : 192.168.1.2
    Subnet Mask . . . . . : 255.255.255.0
    Default Gateway . . . . . : 192.168.1.1

Ethernet adapter VMware Network Adapter VMnet8:

    Connection-specific DNS Suffix  . : localdomain
    Link-local IPv6 Address . . . . . : fe80::15df:4cf9:2df6:951f%12
    IPv4 Address. . . . . : 192.168.61.1
    Subnet Mask . . . . . : 255.255.255.0
    Default Gateway . . . . . : 

C:\Users\Administrator>
```

3. Configure the gateway

3.1 DSGW-030 configuration

1. Connect the gateway an your PC with one router, shown in figure 1.



Figure 1

2. Log into the router to check the gateway's IP address.

In my case, I use the program **Advanced IP Scanner** to help me find it. The IP address in red rectangle is my gateway's IP address, shown in figure 2.

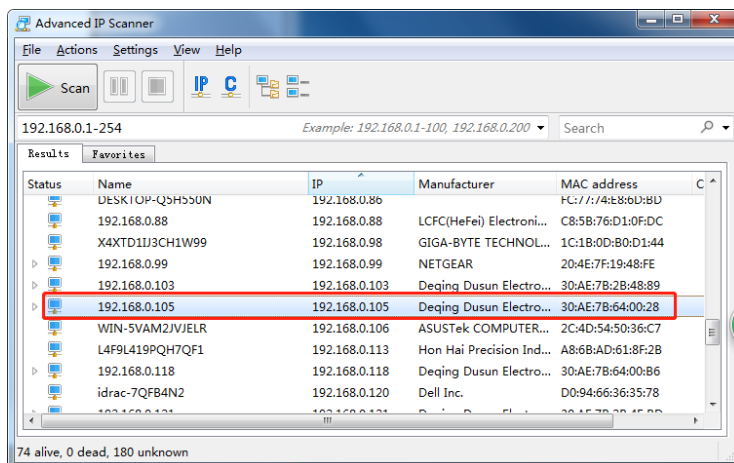


Figure 2

3. Open a web browser on PC, Input Gateway IP Address; Enter the username and Password (default Username: root, Password: root), login to the gateway, the process is shown in figure 3.

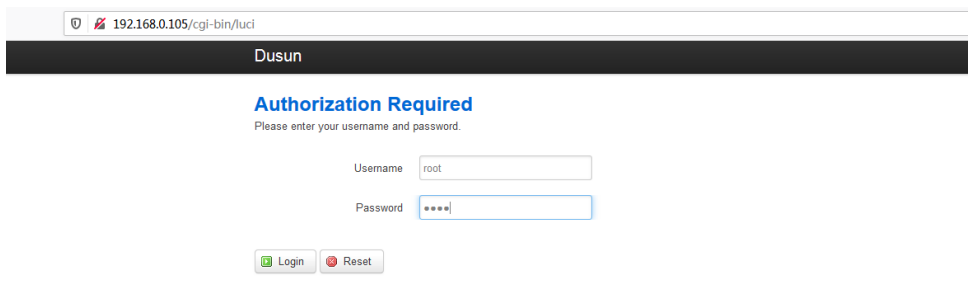
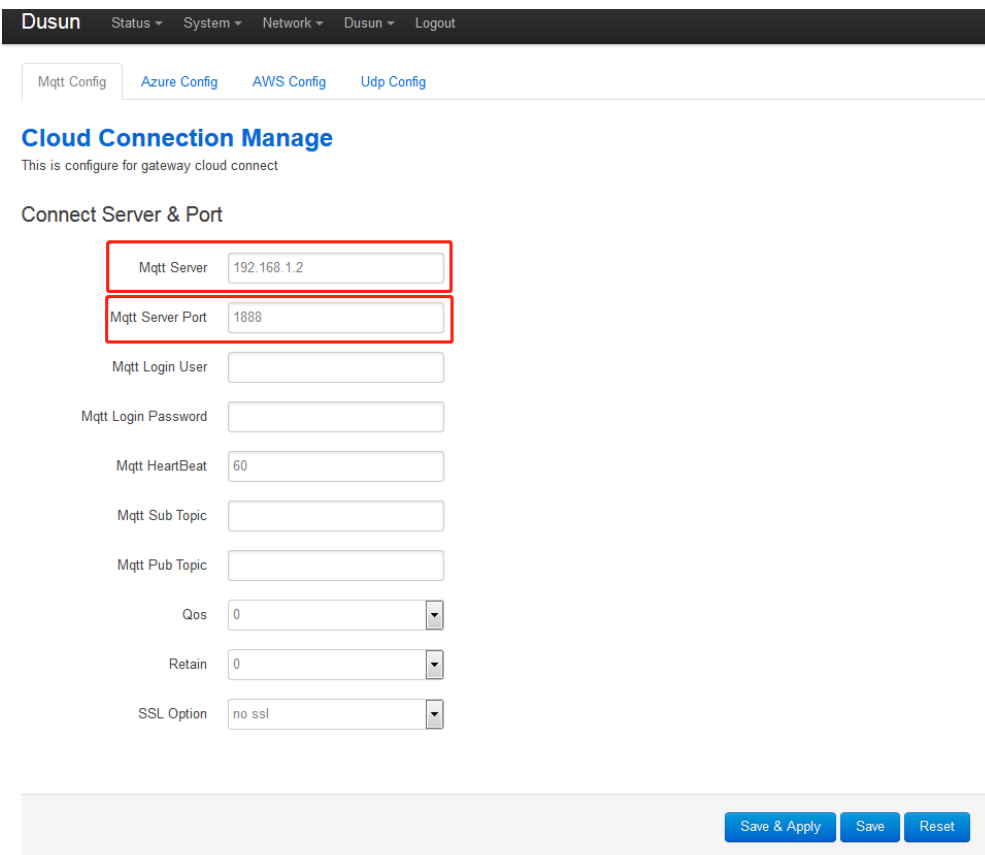
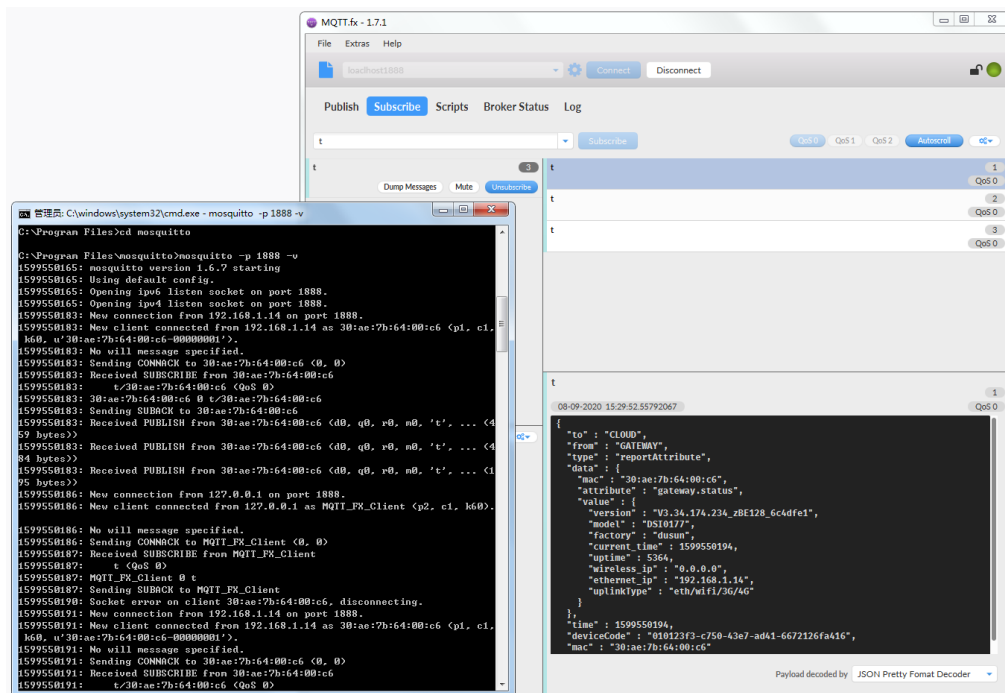


Figure 3

4. Set the mqtt configuration in the gateway website. In this case, the IP of my PC is 192.168.1.2. Thus, it's configured shown below



5. Check the connection using mqtt.fx



6. Mqtt topic

The gateway publish the messages to topic 't' and subscribe from topic 't/mac'.

For example, if gateway's mac is 30:ae:7b:64:00:c6, then it subscribes from the topic 't/30:ae:7b:64:00:c6' and publishes data to topic 't'. if you need set other topic, you need set the same topic in the Gateway web and mqtt server.

Cloud Connection Manage

This is configure for gateway cloud connect

Connect Server & Port

Mqtt Server	<input type="text" value="192.168.1.2"/>
Mqtt Server Port	<input type="text" value="1883"/>
Mqtt Login User	<input type="text" value="30:ae:7b:64:00:c6-00000001"/>
Mqtt Login Password	<input type="text" value="30:ae:7b:64:00:c6-00000001"/>
Mqtt HeartBeat	<input type="text" value="60"/>
Mqtt Sub Topic	<input type="text"/>
Mqtt Pub Topic	<input type="text"/>
Qos	<input type="text" value="0"/>
Retain	<input type="text" value="0"/>
SSL Option	<input type="text" value="no ssl"/>

Save & Apply

Save

Reset

3.2 DSGW-040 configuration

1. Connect the gateway and your PC with one router, shown in figure 4.

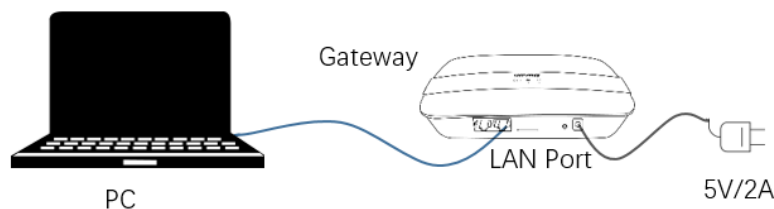


Figure 4

2. Open a web browser on PC, Input Gateway IP Address : 192.168.66.1 ; Enter the username and Password (default Username: root, Password: root), login to the gateway, the process is shown in figure 5.

杭州市大关路 189 号万通中心 A 幢 8 楼,310004

Tel:86-571-86769027/8 8810480

Website: www.dusuniot.com

www.dusunremotes.com

Floor 8, building A, Wantong center,

Hangzhou 310004, china

www.dusunlock.com

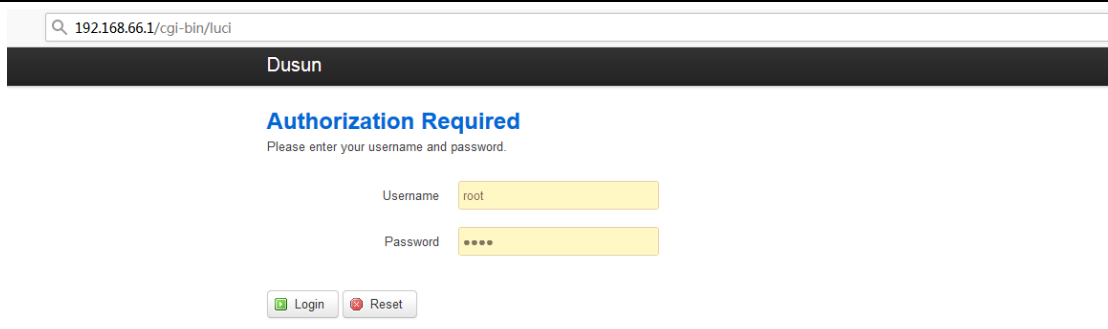


Figure 5

1. Set the mqtt configuration like the DSGW-030.

4. Gateway MQTT API

4.1 Gateway Register

Gateway send to cloud:

```
{
  "to": "CLOUD",
  "from": "GATEWAY",
  "type": "registerReq",
  "data": {
    "mac": "30:ae:7b:e1:e2:95",
    "license": "dusun",
    "factory": "dusun"
  },
  "time": 1631504383,
  "deviceCode": "",
  "mac": "30:ae:7b:e1:e2:95"
}
```

Field	Description	
to	Receiver of the message	
from	Sender of message	
type	Message type	
mac	MAC address of the gateway	
time	32-bit Unix epoch	
deviceCode	Gateway Current Device Code	
data	Data	
	mac	MAC address of the gateway
	license	Fixed as dusun
	factory	Fixed as dusun

Cloud response to Gateway:

杭州市大关路 189 号万通中心 A 幢 8 楼,310004

Tel:86-571-86769027/8 8810480

Website: www.dusuniot.com

www.dusunremotes.com

Floor 8, building A, Wantong center,

Hangzhou 310004, china

www.dusunlock.com


```
{
  "data": {
    "code": 0,
    "deviceCode": "01000664-8df0-497a-9389-cdfe2b2252a4",
    "mac": "30:ae:7b:e1:e2:95"
  },
  "deviceCode": "deviceCode",
  "from": "CLOUD",
  "mac": "30:ae:7b:e1:e2:95",
  "messageId": 0,
  "time": 1631504383,
  "to": "GATEWAY",
  "type": "registerResp"
}
```

Field	Description	
from	Sender of message	
to	Receiver of the message	
mac	MAC address of the gateway	
time	32-bit Unix epoch	
type	Message type	
deviceCode	Not used.	
data	Data	
	code	0: Register Success
	deviceCode	Device code reponse from cloud
	mac	MAC address of the gateway
	timestamp	timestamp

4.2 Gateway Status Query

Cloud send to gateway:

```
{
  "data": {
    "arguments": {
      "attribute": "gateway.status",
      "value": {},
      "mac": "30:ae:7b:16:ff:ff"
    },
    "id": "gatewayid",
    "command": "getAttribute"
  },
  "deviceCode": "xxxx",
  "time": 1558421069,
}
```

```

"mac": "30:ae:7b:16:ff:ff",
"to": "GATEWAY",
"from": "CLOUD",
"type": "cmd"
}

```

Field	Description		
to	Receiver of the message		
from	Sender of message		
type	Message type		
mac	MAC address of the gateway		
time	32-bit Unix epoch		
deviceCode	Gateway Current Device Code		
data	Data		
	command	Command Type	
	id	Command UUID	
	arguments	Arguments	
		attribute	Attribute of cmd
		mac	Mac of gateway
		value	Empty Json

Gateway response to Cloud:

```

{
  "to": "CLOUD",
  "from": "GATEWAY",
  "type": "reportAttribute",
  "data": {
    "mac": "30:ae:7b:e1:e2:95",
    "attribute": "gateway.status",
    "value": {
      "version": "V4.4.242.3380801_z4G_remotecare4u_a9566bc",
      "model": "DSI0134",
      "factory": "dusun",
      "current_time": 1631510451,
      "uptime": 11311,
      "wireless_ip": "0.0.0.0",
      "ethernet_ip": "192.168.100.100",
      "uplinkType": "eth"
    }
  },
  "time": 1631510451,
  "deviceCode": "01000664-8df0-497a-9389-cdfe2b2252a4",
  "mac": "30:ae:7b:e1:e2:95"
}

```

}

Field	Description		
from	Sender of message		
to	Receiver of the message		
mac	MAC address of the gateway		
time	32-bit Unix epoch		
type	Message type		
deviceCode	Not used.		
data	Data		
	mac	MAC address of the gateway	
	attribute	Attribute of this command	
	value	Reponse value	
		version	Software version
		model	Gateway model
		factory	Fixed dusun
		current_time	Gateway timestamp
		uptime	Gateway run time
		wireless_ip	Gateway wireless ip
		ethernet_ip	Gateway Ethernet ip
		uplinkType	Gateway network mode

4.3 Gateway Status Report

Gateway report to Cloud:

```
{
  "to": "CLOUD",
  "from": "GATEWAY",
  "type": "reportAttribute",
  "data": {
    "mac": "30:ae:7b:e1:e2:95",
    "attribute": "gateway.status",
    "value": {
      "version": "V4.4.242.3380801_z4G_remotecare4u_a9566bc",
      "model": "DSI0134",
      "factory": "dusun",
      "current_time": 1631510451,
      "uptime": 11311,
      "wireless_ip": "0.0.0.0",
      "ethernet_ip": "192.168.100.100",
      "uplinkType": "eth"
    }
  }
}
```

```

    }
  },
  "time": 1631510451,
  "deviceCode": "01000664-8df0-497a-9389-cdfe2b2252a4",
  "mac": "30:ae:7b:e1:e2:95"
}

```

Field	Description		
from	Sender of message		
to	Receiver of the message		
mac	MAC address of the gateway		
time	32-bit Unix epoch		
type	Message type		
deviceCode	Not used.		
data	Data		
	mac	MAC address of the gateway	
	attribute	Attribute of this command	
	value	Reponse value	
		version	Software version
		model	Gateway model
		factory	Fixed dusun
		current_time	Gateway timestamp
		uptime	Gateway run time
		wireless_ip	Gateway wireless ip
		ethernet_ip	Gateway Ethernet ip
		uplinkType	Gateway network mode

4.4 Gateway Wifi List Query

Cloud send to gateway:

```

{
  "data": {
    "arguments": {
      "attribute": "gateway.wifi_list",
      "value": {},
      "mac": "30:ae:7b:16:ff:ff"
    },
    "id": "162236900961263616",
    "command": "getAttribute"
  },
  "deviceCode": "xxxx",
  "time": 1558421069,
}

```

```

"mac": "30:ae:7b:16:ff:ff",
"to": "GATEWAY",
"from": "CLOUD",
"type": "cmd"
}

```

Field	Description		
to	Receiver of the message		
from	Sender of message		
type	Message type		
mac	MAC address of the gateway		
time	32-bit Unix epoch		
deviceCode	Gateway Current Device Code		
data	Data		
	command	Command Type	
	id	Command UUID	
	arguments	Arguments	
		attribute	Attribute of cmd
		mac	Mac of gateway
		value	Empty Json

Gateway response to Cloud:

```

{
  "to": "CLOUD",
  "from": "GATEWAY",
  "type": "reportAttribute",
  "data": {
    "mac": "30:ae:7b:e1:e2:95",
    "attribute": "gateway.wifi_list",
    "value": {
      "wifi_list": [{
        "channel": 0,
        "ssid": "AAAAAA",
        "bssid": "1C:60:DE:4E:85:C",
        "security": "NONEWPAPSKWPA2PSK",
        "crypto": "AES",
        "rssi": "-32"
      }, {
        "channel": 0,
        "ssid": "zzs",
        "bssid": "D0:C7:C0:BA:5E:C",
        "security": "NONEWPA2PSKWPA2PSK",

```

```

        "crypto": "AES",
        "rssi": "-48"
    }, {
        "channel": 0,
        "ssid": " 3 `a 3 和我的 - ",
        "bssid": "1E:60:DE:6E:85:C",
        "security": "NONE",
        "crypto": "NONE",
        "rssi": "-30"
    }, {
        "channel": 0,
        "ssid": "Dusun-0B64",
        "bssid": "30:AE:7B:64:0B:6",
        "security": "NONEWPA2PSK",
        "crypto": "AES",
        "rssi": "-70"
    }
  ]
}
},
"time": 1631512545,
"deviceCode": "01000664-8df0-497a-9389-cdfe2b2252a4",
"mac": "30:ae:7b:e1:e2:95"
}

```

Field	Description		
from	Sender of message		
to	Receiver of the message		
mac	MAC address of the gateway		
time	32-bit Unix epoch		
type	Message type		
deviceCode	Not used.		
data	Data		
	mac	MAC address of the gateway	
	attribute	Attribute of this command	
	value	Reponse value, wifi list	
		channel	Software version
		Ssid	Gateway model
		Bssid	Fixed dusun
		security	Gateway timestamp
		crypto	Gateway run time
		rssi	Gateway wireless ip

4.5 Gateway Wifi Setting

Cloud send to gateway:

```
{
  "data": {
    "arguments": {
      "attribute": "gateway.wifi_settings",
      "mac": "30:ae:7b:e1:e2:95",
      "value": {
        "enabled": 1,
        "ssid": "AAAAAA",
        "password": "d1123456",
        "mode": "sta",
        "encryption": "psk+psk2"
      }
    },
    "command": "setAttribute",
    "id": "54391197-afab-4163-8eb3-78dfdb9c184b"
  },
  "deviceCode": "db4a7b00-08f4-49e3-9ace-ac59ce035737",
  "from": "CLOUD",
  "mac": "30:ae:7b:e1:e2:95",
  "time": 1552526478,
  "to": "GATEWAY",
  "type": "cmd"
}
```

Field	Description		
to	Receiver of the message		
from	Sender of message		
type	Message type		
mac	MAC address of the gateway		
time	32-bit Unix epoch		
deviceCode	Gateway Current Device Code		
data	Data		
	command	Command Type	
	id	Command UUID	
	arguments	Arguments	
		attribute	Attribute of cmd
		mac	Mac of gateawy
		value	Wifi setting arguments

			enabled	Open/close
			ssid	ssid
			password	password
			mode	sta
			encryption	Encryption

Gateway Response to Cloud:

```
{
  "to": "CLOUD",
  "from": "GATEWAY",
  "type": "cmdResult",
  "data": {
    "id": "54391197-afab-4163-8eb3-78dfdb9c184b",
    "code": 0
  },
  "time": 1631513802,
  "deviceCode": "01000664-8df0-497a-9389-cdfe2b2252a4",
  "mac": "30:ae:7b:e1:e2:95"
}
```

Field	Description	
to	Receiver of the message	
from	Sender of message	
type	Message type	
mac	MAC address of the gateway	
time	32-bit Unix epoch	
deviceCode	Gateway Current Device Code	
data	Data	
	code	0 command success
	id	Command UUID

4.6 Gateway Server Address Setting

Cloud send to gateway:

```
{
  "data": {
    "arguments": {
      "attribute": "gateway.change_server",
      "mac": "30:ae:7b:e1:e2:95",
      "value": {
```



```

        "server": "192.168.0.5",
        "port": 1883,
    }
},
"command": "setAttribute",
"id": "54391197-afab-4163-8eb3-78dfdb9c184b"
},
"deviceCode": "db4a7b00-08f4-49e3-9ace-ac59ce035737",
"from": "CLOUD",
"mac": "30:ae:7b:e1:e2:95",
"time": 1552526478,
"to": "GATEWAY",
"type": "cmd"
}

```

Field	Description		
to	Receiver of the message		
from	Sender of message		
type	Message type		
mac	MAC address of the gateway		
time	32-bit Unix epoch		
deviceCode	Gateway Current Device Code		
data	Data		
	command	Command Type	
	id	Command UUID	
	arguments	Arguments	
		attribute	Attribute of cmd
		mac	Mac of gateway
		value	Wifi setting arguments
		server	Server address
		port	Server port

Gateway Response to Cloud:

```

{
  "to": "CLOUD",
  "from": "GATEWAY",
  "type": "cmdResult",
  "data": {
    "id": "54391197-afab-4163-8eb3-78dfdb9c184b",
    "code": 0
  }
},

```

```
"time": 1631513802,  
"deviceCode": "01000664-8df0-497a-9389-cdfe2b2252a4",  
"mac": "30:ae:7b:e1:e2:95"  
}
```

Field	Description	
to	Receiver of the message	
from	Sender of message	
type	Message type	
mac	MAC address of the gateway	
time	32-bit Unix epoch	
deviceCode	Gateway Current Device Code	
data	Data	
	code	0 command success
	id	Command UUID

4.7 Gateway HearBeat Report

Gateway report to Cloud:

```
{  
  "to": "CLOUD",  
  "from": "GATEWAY",  
  "type": "reportAttribute",  
  "data": {  
    "mac": "30:ae:7b:e1:d4:e0",  
    "attribute": "gateway.heartbeat",  
    "value": {  
      "current_time": 1631582293,  
      "data": ""  
    }  
  },  
  "time": 1631582293,  
  "deviceCode": "",  
  "mac": "30:ae:7b:e1:d4:e0"  
}
```

Field	Description
from	Sender of message
to	Receiver of the message
mac	MAC address of the gateway
time	32-bit Unix epoch
type	Message type

deviceCode	Not used.		
data	Data		
	mac	MAC address of the gateway	
	attribute	Attribute of this command	
	value	Reponse value	
		version	Software version
		model	Gateway model
		factory	Fixed dusun
		current_time	Gateway timestamp
		uptime	Gateway run time
		wireless_ip	Gateway wireless ip
		ethernet_ip	Gateway Ethernet ip
		uplinkType	Gateway network mode

4.8 Gateway Remote Upgrade

Cloud send to gateway

```
{
  "data": {
    "arguments": {
      "attribute": "gateway.upgrade_firmware",
      "ep": 1,
      "value": {
        "md5sum": "900950e1d884cfad6fc7db3e150f8e47",
        "url":
"http://saascloud.oss-cn-shanghai.aliyuncs.com/fireware/V4.3.234.3250301_z4G_e4dac
15_dsi0134-1626780554380-805879.bin"
      },
      "mac": "30:ae:7b:e1:e2:95"
    },
    "id": "468811507489124352",
    "command": "setAttribute"
  },
  "deviceCode": "01000664-8df0-497a-9389-cdfe2b2252a4",
  "from": "CLOUD",
  "mac": "30:ae:7b:e1:e2:95",
  "messageId": 51946,
  "time": 1631514151,
  "to": "GATEWAY",
  "type": "cmd"
}
```

Field	Description			
to	Receiver of the message			
from	Sender of message			
type	Message type			
mac	MAC address of the gateway			
time	32-bit Unix epoch			
deviceCode	Gateway Current Device Code			
data	Data			
	command	Command Type		
	id	Command UUID		
	arguments	Arguments		
		attribute	Attribute of cmd	
		mac	Mac of gateawy	
		value	Wifi setting arguments	
			url	Firmware download address
			Md5	Firmware md5 checksum

Gateway Response to Cloud:

```
{
  "to": "CLOUD",
  "from": "GATEWAY",
  "type": "cmdResult",
  "data": {
    "id": "54391197-afab-4163-8eb3-78dfdb9c184b",
    "code": 0
  },
  "time": 1631513802,
  "deviceCode": "01000664-8df0-497a-9389-cdfe2b2252a4",
  "mac": "30:ae:7b:e1:e2:95"
}
```

Field	Description	
to	Receiver of the message	
from	Sender of message	
type	Message type	
mac	MAC address of the gateway	
time	32-bit Unix epoch	
deviceCode	Gateway Current Device Code	
data	Data	
	code	99 command waiting to execute 109 download failed

		108 checksum failed 97 start upgrade 98 upgrade success
	id	Command UUID

4.9 Gateway Remote Reboot

Cloud send to gateway

```
{
  "data": {
    "arguments": {
      "attribute": "gateway.reboot",
      "ep": 1,
      "value": {
        "reboot_delay": 0
      },
      "mac": "30:ae:7b:e1:e2:95"
    },
    "id": "468812705852108800",
    "command": "setAttribute"
  },
  "deviceCode": "01000664-8df0-497a-9389-cdfe2b2252a4",
  "from": "CLOUD",
  "mac": "30:ae:7b:e1:e2:95",
  "messageId": 51946,
  "time": 1631514437,
  "to": "GATEWAY",
  "type": "cmd"
}
```

Field	Description	
to	Receiver of the message	
from	Sender of message	
type	Message type	
mac	MAC address of the gateway	
time	32-bit Unix epoch	
deviceCode	Gateway Current Device Code	
data	Data	
	command	Command Type
	id	Command UUID
	arguments	Arguments
	attribute	Attribute of cmd

		mac	Mac of gateway
		value	Wifi setting arguments
		reboot_delay	延迟时间, 现在没用

Gateway Response to Cloud:

```
{
  "to": "CLOUD",
  "from": "GATEWAY",
  "type": "cmdResult",
  "data": {
    "id": "54391197-afab-4163-8eb3-78dfdb9c184b",
    "code": 0
  },
  "time": 1631513802,
  "deviceCode": "01000664-8df0-497a-9389-cdfe2b2252a4",
  "mac": "30:ae:7b:e1:e2:95"
}
```

Field	Description	
to	Receiver of the message	
from	Sender of message	
type	Message type	
mac	MAC address of the gateway	
time	32-bit Unix epoch	
deviceCode	Gateway Current Device Code	
data	Data	
	code	0 command success
	id	Command UUID

5. BLE MQTT API

5.1 Ble Add WhiteList

Cloud send to gateway

```
{
  "mac": "30:ae:7b:64:0b:6c",
  "type": "cmd",
  "time": 1630727298,
  "from": "CLOUD",
  "deviceCode": "db4a7b00-08f4-49e3-9ace-ac59ce035737",
  "data": {
    "command": "setAttribute",
    "arguments": {
      "mac": "30:ae:7b:2b:33:41",
      "value": {
        "mac": "30:ae:7b:2b:33:41",
        "key": "",
        "security": 0
      },
      "attribute": "mod.whitelist_add",
      "ep": 1
    },
    "id": "5c25b2f4-53cb-43a1-bfb7-f7e7487eb73d"
  },
  "to": "BLE"
}
```

Field	Description		
to	Receiver of the message		
from	Sender of message		
type	Message type		
mac	MAC address of the gateway		
time	32-bit Unix epoch		
deviceCode	Gateway Current Device Code		
data	Data		
	command	Command Type	
	id	Command UUID	
	arguments	Arguments	
		attribute	Attribute of cmd
		mac	Mac of gateway
		value	Whitelist add arguments

			mac	Device mac address
			security	0 none security, key will not use 1 security bind, key will use
			key	Null string : direct bind, don't use key Non null string: bind key

Gateway Response to Cloud:

```
{
  "to": "CLOUD",
  "from": "GATEWAY",
  "type": "cmdResult",
  "data": {
    "id": "54391197-afab-4163-8eb3-78dfdb9c184b",
    "code": 0
  },
  "time": 1631513802,
  "deviceCode": "01000664-8df0-497a-9389-cdfe2b2252a4",
  "mac": "30:ae:7b:e1:e2:95"
}
```

Field	Description	
to	Receiver of the message	
from	Sender of message	
type	Message type	
mac	MAC address of the gateway	
time	32-bit Unix epoch	
deviceCode	Gateway Current Device Code	
data	Data	
	code	0 command success
	id	Command UUID

Sample message for connection status, refer to section 5.8

```
{
  "from" : "BLE",
  "to" : "GATEWAY",
  "type" : "reportAttribute",
  "deviceCode" : "db4a7b00-08f4-49e3-9ace-ac59ce035737",
  "mac" : "30:ae:7b:64:11:ea",
  "time" : 1653891694,
  "data" : {
    "attribute" : "mod.ble.connected",

```



```
"mac" : "C7:29:D2:B3:F0:FB",
"value" : {
  "mac" : "C7:29:D2:B3:F0:FB"
}
}
```

```
{
  "from" : "BLE",
  "to" : "GATEWAY",
  "type" : "reportAttribute",
  "deviceCode" : "db4a7b00-08f4-49e3-9ace-ac59ce035737",
  "mac" : "30:ae:7b:64:11:ea",
  "time" : 1653891694,
  "data" : {
    "attribute" : "BLE_connect_status",
    "mac" : "C7:29:D2:B3:F0:FB",
    "value" : {
      "connect_id" : 1,
      "mac" : "C7:29:D2:B3:F0:FB"
    }
  }
}
```

5.2 Ble Delete WhiteList

Cloud send to gateway

```
{
  "mac": "30:ae:7b:64:0b:6c",
  "type": "cmd",
  "time": 1630727647,
  "from": "CLOUD",
  "deviceCode": "db4a7b00-08f4-49e3-9ace-ac59ce035737",
  "data": {
    "command": "setAttribute",
    "arguments": {
      "mac": "30:ae:7b:2b:33:41",
      "value": {
        "mac": "30:ae:7b:2b:33:41"
      },
      "attribute": "mod.whitelist_del",
      "ep": 1
    },
  },
}
```

```

        "id": "829bc6b0-67e5-4085-8b4a-e15a37f58004\u000a"
    },
    "to": "BLE"
}

```

Field	Description			
to	Receiver of the message			
from	Sender of message			
type	Message type			
mac	MAC address of the gateway			
time	32-bit Unix epoch			
deviceCode	Gateway Current Device Code			
data	Data			
	command	Command Type		
	id	Command UUID		
	arguments	Arguments		
		attribute	Attribute of cmd	
		mac	Mac of gateway	
		value	Whitelist delete arguments	
			mac	Device mac address

Gateway Response to Cloud:

```

{
  "to": "CLOUD",
  "from": "GATEWAY",
  "type": "cmdResult",
  "data": {
    "id": "54391197-afab-4163-8eb3-78dfdb9c184b",
    "code": 0
  },
  "time": 1631513802,
  "deviceCode": "01000664-8df0-497a-9389-cdfe2b2252a4",
  "mac": "30:ae:7b:e1:e2:95"
}

```

Field	Description		
to	Receiver of the message		
from	Sender of message		
type	Message type		
mac	MAC address of the gateway		
time	32-bit Unix epoch		
deviceCode	Gateway Current Device Code		
data	Data		
	code	0 command success	
	id	Command UUID	

5.2 Ble Query WhiteList

Cloud send to gateway

```
{
  "mac": "30:ae:7b:64:0b:6c",
  "type": "cmd",
  "time": 1630727759,
  "from": "CLOUD",
  "deviceCode": "db4a7b00-08f4-49e3-9ace-ac59ce035737",
  "data": {
    "command": "getAttribute",
    "arguments": {
      "mac": "00:01:02:03:04:05:06",
      "value": {},
      "attribute": "mod.whitelist_get",
      "ep": 1
    },
    "id": "18ad47f8-2236-493c-90b6-46c8b9731a40"
  },
  "to": "BLE"
}
```

Field	Description		
to	Receiver of the message		
from	Sender of message		
type	Message type		
mac	MAC address of the gateway		
time	32-bit Unix epoch		
deviceCode	Gateway Current Device Code		
data	Data		
	command	Command Type	
	id	Command UUID	
	arguments	Arguments	
		attribute	Attribute of cmd
		mac	Mac of gateway
		value	Query arguments

Gateway Response to Cloud:

```
{
  "to": "CLOUD",
  "from": "GATEWAY",
  "type": "cmdResult",
```

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www.dusunremotes.com

Floor 8, building A, Wantong center,

Hangzhou 310004, china

www.dusunlock.com

```
"data": {  
  "id": "54391197-afab-4163-8eb3-78dfdb9c184b",  
  "code": 0  
},  
"time": 1631513802,  
"deviceCode": "01000664-8df0-497a-9389-cdfe2b2252a4",  
"mac": "30:ae:7b:e1:e2:95"  
}
```

Field	Description	
to	Receiver of the message	
from	Sender of message	
type	Message type	
mac	MAC address of the gateway	
time	32-bit Unix epoch	
deviceCode	Gateway Current Device Code	
data	Data	
	code	0 command success
	id	Command UUID

Gateway Report to Cloud

```
{  
  "deviceCode": "01012348-64f6-4b11-876d-cb70778a230c",  
  "from": "BLE",  
  "to": "GATEWAY",  
  "mac": "30:ae:7b:64:0b:6c",  
  "type": "reportAttribute",  
  "time": 1630728151,  
  "data": {  
    "attribute": "mod.whitelist",  
    "mac": "30:ae:7b:64:0b:6c",  
    "value": [{  
      "mac": "F8:30:02:26:44:61",  
      "security": 0  
    }, {  
      "mac": "60:77:71:C3:53:C7",  
      "security": 1  
    }, {  
      "mac": "2C:AB:33:C3:72:BF",  
      "security": 0  
    }  
  ]  
}
```

}

Field	Description		
from	Sender of message		
to	Receiver of the message		
mac	MAC address of the gateway		
time	32-bit Unix epoch		
type	Message type		
deviceCode	Not used.		
data	Data		
	mac	MAC address of the gateway	
	attribute	Attribute of this command	
	value	Report value	
		mac	Device mac address
		security	0 none security, key will not use 1 security bind, key will use
		key	Null string : direct bind, don't use key Non null string: bind key

5.3 Ble Device Inspect

Cloud send to gateway

```
{
  "mac": "30:ae:7b:64:0b:6c",
  "type": "cmd",
  "time": 1630728326,
  "from": "CLOUD",
  "deviceCode": "db4a7b00-08f4-49e3-9ace-ac59ce035737",
  "data": {
    "command": "getAttribute",
    "arguments": {
      "mac": "F8:30:02:26:44:61",
      "value": {
        "mac": "F8:30:02:26:44:61"
      },
      "attribute": "mod.ble.inspect",
      "ep": 1
    },
    "id": "f0b8814f-3df6-4cb8-8df2-8274e3fbc639\u000a"
  },
}
```

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Website: www.dusuniot.com

www.dusunremotes.com

Floor 8, building A, Wantong center,

Hangzhou 310004, china

www.dusunlock.com

```
"to": "BLE"
}
```

Field	Description	
to	Receiver of the message	
from	Sender of message	
type	Message type	
mac	MAC address of the gateway	
time	32-bit Unix epoch	
deviceCode	Gateway Current Device Code	
data	Data	
	command	Command Type
	id	Command UUID
	arguments	Arguments
	attribute	Attribute of cmd
	mac	Mac of gateway
	value	Insepect arguments
	mac	Device mac address

Gateway Response to Cloud:

```
{
  "to": "CLOUD",
  "from": "GATEWAY",
  "type": "cmdResult",
  "data": {
    "id": "54391197-afab-4163-8eb3-78dfdb9c184b",
    "code": 0
  },
  "time": 1631513802,
  "deviceCode": "01000664-8df0-497a-9389-cdfe2b2252a4",
  "mac": "30:ae:7b:e1:e2:95"
}
```

Field	Description	
to	Receiver of the message	
from	Sender of message	
type	Message type	
mac	MAC address of the gateway	
time	32-bit Unix epoch	
deviceCode	Gateway Current Device Code	
data	Data	
	code	0 command success
	id	Command UUID

Gateway Report to Cloud:

```
{
  "from": "BLE",
  "to": "GATEWAY",
  "deviceCode": "01012348-64f6-4b11-876d-cb70778a230c",
  "mac": "30:ae:7b:64:0b:6c",
  "type": "reportAttribute",
  "time": 1630728326,
  "data": {
    "attribute": "mod.ble.inspect",
    "mac": "F8:30:02:26:44:61",
    "value": {
      "services": [{
        "servicename": "Generic Access",
        "uuid": "1800",
        "characteristics": [{
          "uuid": "2A00",
          "handle": 3,
          "properties": "Read",
          "len": 0,
          "value": "",
          "hexvalue": ""
        }], {
          "uuid": "2A04",
          "handle": 11,
          "properties": "Read",
          "len": 0,
          "value": "",
          "hexvalue": ""
        }
      ]
    }, {
      "servicename": "Generic Attribute",
      "uuid": "1801",
      "characteristics": [{
        "uuid": "2A05",
        "handle": 14,
        "properties": "Indicate",
        "len": 0,
        "value": "",
        "hexvalue": ""
      }
    ]
  }, {
    "servicename": "Device Information",
```

```
"uuid": "180A",
"characteristics": [{
  "uuid": "2A23",
  "handle": 18,
  "properties": "Read",
  "len": 0,
  "value": "",
  "hexvalue": ""
}], {
  "uuid": "2A50",
  "handle": 34,
  "properties": "Read",
  "len": 0,
  "value": "",
  "hexvalue": ""
}]
}, {
  "servicename": "Unknown Service",
  "uuid": "CDEACB80-5235-4C07-8846-93A37EE6B86D",
  "characteristics": [{
    "uuid": "CDEACB84-5235-4C07-8846-93A37EE6B86D",
    "handle": 37,
    "properties": "Read,Write",
    "len": 0,
    "value": "",
    "hexvalue": ""
  }], {
    "uuid": "CDEACB81-5235-4C07-8846-93A37EE6B86D",
    "handle": 46,
    "properties": "Notify",
    "len": 0,
    "value": "",
    "hexvalue": ""
  }
}]
}, {
  "servicename": "Unknown Service",
  "uuid": "F000FFC0-0451-4000-B000-000000000000",
  "characteristics": [{
    "uuid": "F000FFC1-0451-4000-B000-000000000000",
    "handle": 51,
    "properties": "WriteNoRes,Write,Notify",
    "len": 0,
    "value": "",
```



```

        "hexvalue": ""
    }, {
        "uuid": "F000FFC2-0451-4000-B000-000000000000",
        "handle": 55,
        "properties": "WriteNoRes,Write,Notify",
        "len": 0,
        "value": "",
        "hexvalue": ""
    }
}
}
}
}

```

Field	Description		
from	Sender of message		
to	Receiver of the message		
mac	MAC address of the gateway		
time	32-bit Unix epoch		
type	Message type		
deviceCode	Not used.		
data	Data		
	mac	MAC address of the gateway	
	attribute	Attribute of this command	
	value	Report value	
		Servicename	Service Name
		uuid	Service or characteristics uuid
		handle	handle
		properties	Characteristics properties
		len	Now not used
		value	Now not used
		hexvalue	Now not used

5.4 Ble Characteristic Write

Cloud send to gateway

```

{
  "mac": "30:ae:7b:64:0b:6c",
  "type": "cmd",
  "time": 1630732013,
  "from": "CLOUD",

```

```

"deviceCode": "db4a7b00-08f4-49e3-9ace-ac59ce035737",
"data": {
  "command": "setAttribute",
  "arguments": {
    "mac": "F8:30:02:26:44:61",
    "value": {
      "mac": "F8:30:02:26:44:61",
      "service": "1800",
      "data": "0101",
      "characteristic": "2A02",
      "handle": 33
    },
    "attribute": "mod.ble.attr.set",
    "ep": 1
  },
  "id": "83a8adc2-c454-47b2-9126-15ff77afc7b0\u000a"
},
"to": "BLE"
}

```

Field	Description		
to	Receiver of the message		
from	Sender of message		
type	Message type		
mac	MAC address of the gateway		
time	32-bit Unix epoch		
deviceCode	Gateway Current Device Code		
data	Data		
	command	Command Type	
	id	Command UUID	
	arguments	Arguments	
	attribute	Attribute of cmd	
	mac	Mac of gateway	
	value	Insepect arguments	
		mac	Device mac address
		service	Service
		characteristic	characteristic
		data	Data to write
		handle	Characteristic handle

Gateway Response to Cloud:

```
{
  "to": "CLOUD",
  "from": "GATEWAY",
  "type": "cmdResult",
  "data": {
    "id": "54391197-afab-4163-8eb3-78dfdb9c184b",
    "code": 0
  },
  "time": 1631513802,
  "deviceCode": "01000664-8df0-497a-9389-cdfe2b2252a4",
  "mac": "30:ae:7b:e1:e2:95"
}
```

Field	Description	
to	Receiver of the message	
from	Sender of message	
type	Message type	
mac	MAC address of the gateway	
time	32-bit Unix epoch	
deviceCode	Gateway Current Device Code	
data	Data	
	code	0 command success
	id	Command UUID

5.5 Ble Characteristic Read

Cloud send to gateway

```
{
  "mac": "30:ae:7b:64:0b:6c",
  "type": "cmd",
  "time": 1630732168,
  "from": "CLOUD",
  "deviceCode": "db4a7b00-08f4-49e3-9ace-ac59ce035737",
  "data": {
    "command": "getAttribute",
    "arguments": {
      "mac": "F8:30:02:26:44:61",
      "value": {
        "mac": "F8:30:02:26:44:61",
        "service": "1800",
        "characteristic": "2A02"
      }
    }
  }
}
```

```

    },
    "attribute": "mod.ble.attr.get",
    "ep": 1
  },
  "id": "ad8cf84d-7853-4892-bf7c-9a75f84c4ec0\u000a"
},
"to": "BLE"
}

```

Field	Description			
to	Receiver of the message			
from	Sender of message			
type	Message type			
mac	MAC address of the gateway			
time	32-bit Unix epoch			
deviceCode	Gateway Current Device Code			
data	Data			
	command	Command Type		
	id	Command UUID		
	arguments	Arguments		
		attribute	Attribute of cmd	
		mac	Mac of gateway	
		value	Insepect arguments	
			mac	Device mac address
			service	Service
			characteristic	characteristic

Gateway Response to Cloud:

```

{
  "to": "CLOUD",
  "from": "GATEWAY",
  "type": "cmdResult",
  "data": {
    "id": "54391197-afab-4163-8eb3-78dfdb9c184b",
    "code": 0
  },
  "time": 1631513802,
  "deviceCode": "01000664-8df0-497a-9389-cdfe2b2252a4",
  "mac": "30:ae:7b:e1:e2:95"
}

```

Field	Description	
to	Receiver of the message	
from	Sender of message	
type	Message type	
mac	MAC address of the gateway	
time	32-bit Unix epoch	
deviceCode	Gateway Current Device Code	
data	Data	
	code	0 command success
	id	Command UUID

Gateway Report:

```
{
  "from": "BLE",
  "deviceCode": "01012348-64f6-4b11-876d-cb70778a230c",
  "to": "GATEWAY",
  "data": {
    "value": {
      "service": "2A00",
      "characteristic": "2A00",
      "data": "4D79204F78696D657446572"
    },
    "attribute": "mod.ble.attr",
    "mac": "F8:30:02:26:44:61"
  },
  "mac": "30:ae:7b:64:0b:6c",
  "type": "reportAttribute",
  "time": 1630732169
}
```

Field	Description	
from	Sender of message	
to	Receiver of the message	
mac	MAC address of the gateway	
time	32-bit Unix epoch	
type	Message type	
deviceCode	Not used.	
data	Data	
	mac	MAC address of the gateway
	attribute	Attribute of this command
	value	Report value
	service	Service uuid
	characteristic	characteristics uuid
	data	Characteristic data

5.6 Ble Characteristic Config Notify/Indicate

Cloud send to gateway

```
{
  "mac": "30:ae:7b:64:0b:6c",
  "type": "cmd",
  "time": 1630732831,
  "from": "CLOUD",
  "deviceCode": "db4a7b00-08f4-49e3-9ace-ac59ce035737",
  "data": {
    "command": "setAttribute",
    "arguments": {
      "mac": "F8:30:02:26:44:61",
      "value": {
        "mac": "F8:30:02:26:44:61",
        "service": "1800",
        "mode": 1, //1->Notify, 2->indicate
        "characteristic": "2A02",
        "handle": 33
      },
      "attribute": "mod.ble.attr.notify",
      "ep": 1
    },
    "id": "ba20f037-0b08-4439-aa66-fda232c171a4"
  },
  "to": "BLE"
}
```

Field	Description
to	Receiver of the message
from	Sender of message
type	Message type
mac	MAC address of the gateway
time	32-bit Unix epoch
deviceCode	Gateway Current Device Code
data	Data
	command Command Type
	id Command UUID
	arguments Arguments
	attribute Attribute of cmd
	mac Mac of gateway
	value Insepect arguments

			mac	Device mac address
			service	Service
			characteristic	characteristic
			mode	1 notify enable 2 indicate enable
			handle	Characteristic handle

Gateway Response to Cloud:

```
{
  "to": "CLOUD",
  "from": "GATEWAY",
  "type": "cmdResult",
  "data": {
    "id": "54391197-afab-4163-8eb3-78dfdb9c184b",
    "code": 0
  },
  "time": 1631513802,
  "deviceCode": "01000664-8df0-497a-9389-cdfe2b2252a4",
  "mac": "30:ae:7b:e1:e2:95"
}
```

Field	Description	
to	Receiver of the message	
from	Sender of message	
type	Message type	
mac	MAC address of the gateway	
time	32-bit Unix epoch	
deviceCode	Gateway Current Device Code	
data	Data	
	code	0 command success
	id	Command UUID

5.7 Ble Characteristic Report

Gateway Report:

```
{
  "from": "BLE",
  "deviceCode": "01012348-64f6-4b11-876d-cb70778a230c",
  "to": "GATEWAY",
  "data": {
    "value": {
```

```

        "service": "2A00",
        "characteristic": "2A00",
        "data": "4D79204F78696D65746572"
    },
    "attribute": "mod.ble.attr",
    "mac": "F8:30:02:26:44:61"
},
"mac": "30:ae:7b:64:0b:6c",
"type": "reportAttribute",
"time": 1630732169
}

```

Field	Description		
from	Sender of message		
to	Receiver of the message		
mac	MAC address of the gateway		
time	32-bit Unix epoch		
type	Message type		
deviceCode	Not used.		
data	Data		
	mac	MAC address of the gateway	
	attribute	Attribute of this command	
	value	Report value	
		service	Service uuid
		characteristic	characteristics uuid
		data	Characteristic data

5.8 Ble Device Connected Report

Gateway Report:

```

{
  "type": "reportAttribute",
  "from": "BLE",
  "to": "GATEWAY",
  "time": 1630732311,
  "mac": "30:ae:7b:64:0b:6c",
  "deviceCode": "01012348-64f6-4b11-876d-cb70778a230c",
  "data": {
    "attribute": "mod.ble.connected",
    "mac": "F8:30:02:26:44:61",
    "value": {
      "mac": "F8:30:02:26:44:61"
    }
  }
}

```

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Floor 8, building A, Wantong center,

Hangzhou 310004, china

www.dusunlock.com


```
}  
}
```

Field	Description	
from	Sender of message	
to	Receiver of the message	
mac	MAC address of the gateway	
time	32-bit Unix epoch	
type	Message type	
deviceCode	Not used.	
data	Data	
	mac	MAC address of the gateway
	attribute	Attribute of this command
	value	Report value
	mac	Device mac

5.9 Ble Device Disconnected Report

Gateway Report:

```
{  
  "type": "reportAttribute",  
  "from": "BLE",  
  "to": "GATEWAY",  
  "time": 1630732327,  
  "mac": "30:ae:7b:64:0b:6c",  
  "deviceCode": "01012348-64f6-4b11-876d-cb70778a230c",  
  "data": {  
    "attribute": "mod.ble.disconnected",  
    "mac": "F8:30:02:26:44:61",  
    "value": {  
      "mac": "F8:30:02:26:44:61"  
    }  
  }  
}
```

Field	Description	
from	Sender of message	
to	Receiver of the message	
mac	MAC address of the gateway	
time	32-bit Unix epoch	
type	Message type	
deviceCode	Not used.	
data	Data	
	mac	MAC address of the gateway

	attribute	Attribute of this command	
	value	Report value	
		mac	Device mac

5.10 Set ble scan parameters

Cloud send to gateway

```
{
  "data" : {
    "id" : "xxxx",
    "arguments" : {
      "mac" : "01020304050607",
      "value" : {
        "interval" : "30000",
        "f_mac" : "C",
        "f_rssi" : "-90"
      },
      "attribute" : "mod.ble.interval",
      "ep" : "0"
    },
    "command" : "setAttribute"
  },
  "deviceCode" : "010006a3-05eb-4879-800158d00026c5444",
  "from" : "CLOUD",
  "mac" : "30:ae:7b:64:11:ea",
  "time" : 1554182805,
  "to" : "BLE",
  "type" : "cmd"
}
```

Field	Description		
to	Receiver of the message		
from	Sender of message		
type	Message type		
mac	MAC address of the gateway		
time	32-bit Unix epoch		
deviceCode	Gateway Current Device Code		
data	Data		
	command	Command Type	
	id	Command UUID	
	arguments	Arguments	
		attribute	Attribute of cmd
		mac	Fixed value

		value		
			f_mac	Mac address filter, can be empty
			f_rssi	RSSI filter, can be empty
			interval	Upload interval for ble package

Gateway Response to Cloud:

```
{
  "deviceCode" : "dusungw\n",
  "from" : "BLE",
  "to" : "GATEWAY",
  "mac" : "30:ae:7b:64:11:ea",
  "data" : {
    "id" : "xxxx",
    "code" : 0
  },
  "type" : "cmdResult",
  "time" : 1636014654
}
```

Field	Description	
to	Receiver of the message	
from	Sender of message	
type	Message type	
mac	MAC address of the gateway	
time	32-bit Unix epoch	
deviceCode	Gateway Current Device Code	
data	Data	
	code	0 command success
	id	Command UUID

5.11 BLE Get Connected Devices List

Cloud send to gateway

```
{
  "mac": "30:ae:7b:64:0b:6c",
  "type": "cmd",
  "time": 1630732168,
  "from": "CLOUD",
  "deviceCode": "db4a7b00-08f4-49e3-9ace-ac59ce035737",
  "data": {
    "command": "getAttribute",
    "arguments": {
      "mac": "F8:30:02:26:44:61",
      "value": {}
    }
  }
}
```

```

    "attribute": "mod.device_list_conned",
    "ep": 1
  },
  "id": "ba20f037-0b08-4439-aa66-fda232c171a4"
},
"to": "BLE"
}

```

Field	Description
to	Receiver of the message
from	Sender of message
type	Message type
mac	MAC address of the gateway
time	32-bit Unix epoch
deviceCode	Gateway Current Device Code
data	Data
	command Command Type
	id Command UUID
	arguments Arguments
	attribute Attribute of cmd
	mac Fixed value
	value empty

Gateway Response to Cloud:

```

{
  "deviceCode" : "dusungw\n",
  "from" : "BLE",
  "to" : "GATEWAY",
  "mac" : "30:ae:7b:64:0b:6c",
  "data" : {
    "id" : "xxxx",
    "code" : 0
  },
  "type" : "cmdResult",
  "time" : 1636014654
}

```

Field	Description
to	Receiver of the message
from	Sender of message
type	Message type
mac	MAC address of the gateway
time	32-bit Unix epoch
deviceCode	Gateway Current Device Code

data	Data	
	code	0 command success
	id	Command UUID

6 Error code

Code	Meaning
100	Command success
101	No device found
102	Device has not been connected
103	Service not found
104	Characteristic not found
105	Attribute wrong
106	Command format wrong
108	Download failed
109	Checksum failed
97	Start upgrade
98	Upgrade success
99	Wait to execute