HOME

IQ Home - Eco System

SIMPLY, WITHOUT WIRES...

New Generation of IQ Home Gateways

Manage your gateway over MQTT protocol

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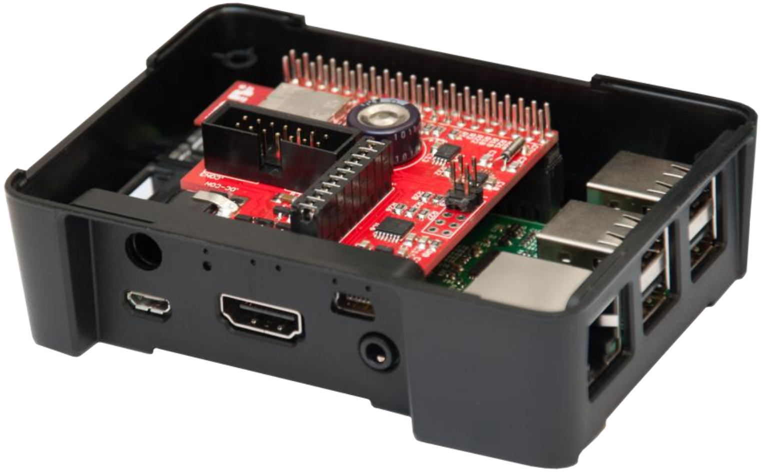
www.iqhome.org

Universal IQRF Gateway

http://www.iqhome.org/products/uni-gw

Why use this gateway?

- ✓ Ready to use Gateway
- ✓ Easy way to integrate other alliance member's sensors
- ✓ Based on Raspberry Pi B+
- ✓ RTC on board in case of power outage
- ✓ Supports SIM type and SMT IQRF modules
- ✓ Compatible with CK-USB-4A programmer
- ✓ IQRF IDE UDP communication support
- ✓ MQTT Support
- ✓ Custom extension board support
- ✓ On board EEPROM



Universal Gateway

IQRF® | Alliance

http://www.iqhome.org/products/uni-gw

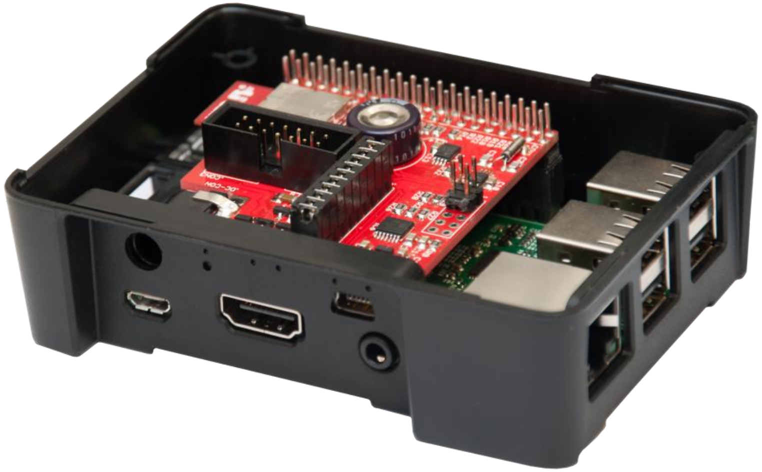
✓Supported Cloud solutions:

MQTT.ORG

amazon web services™

IBM Bluemix™

Microsoft Azure



Mosquitto

An Open Source MQTT v3.1 Broker

Upcoming new features:

- ✓ JSON Message Payload
- ✓ Scheduler functionality:
- ✓ Automated periodically data collection
  - CRON style expression
  - Second based
- ✓FRC automatic extra result collection
  - Extra result is collected automatically
  - after FRC commands
- ✓ Message queues
  - Automatic DPA Timeout management
  - Timing of the IQRF network managed
  - by the Gateway

Robust system:

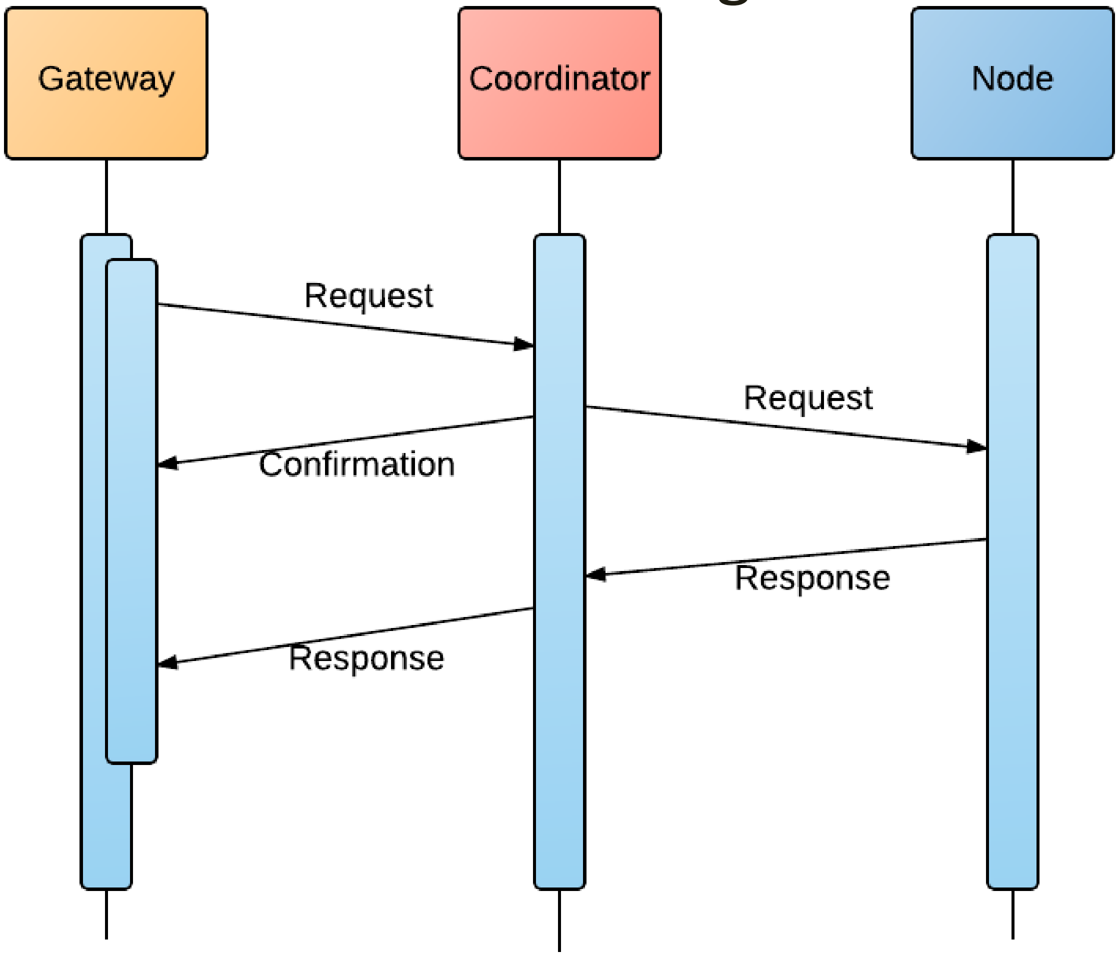
- ✓ Protected EEPROM storage
  - Configuration files
  - Certificates and keys
  - RAID 1 style solution
- ✓ Protected FALSH storage
  - Base system
  - Scripts, user programs and data files
  - RAID 1 style solution
- ✓ Real Time Clock Calendar
  - Integrated into the Kernel
  - Energy backup with super capacitor

Remote configurable:

- ✓ Remote Configuration management
- ✓ Remote scripting
- ✓ All remote features available via JSON commands
  - Modify configuration files
  - Create-Modify-Run scripts
  - Download log
  - Pause scheduler with timeout
  - and force resume

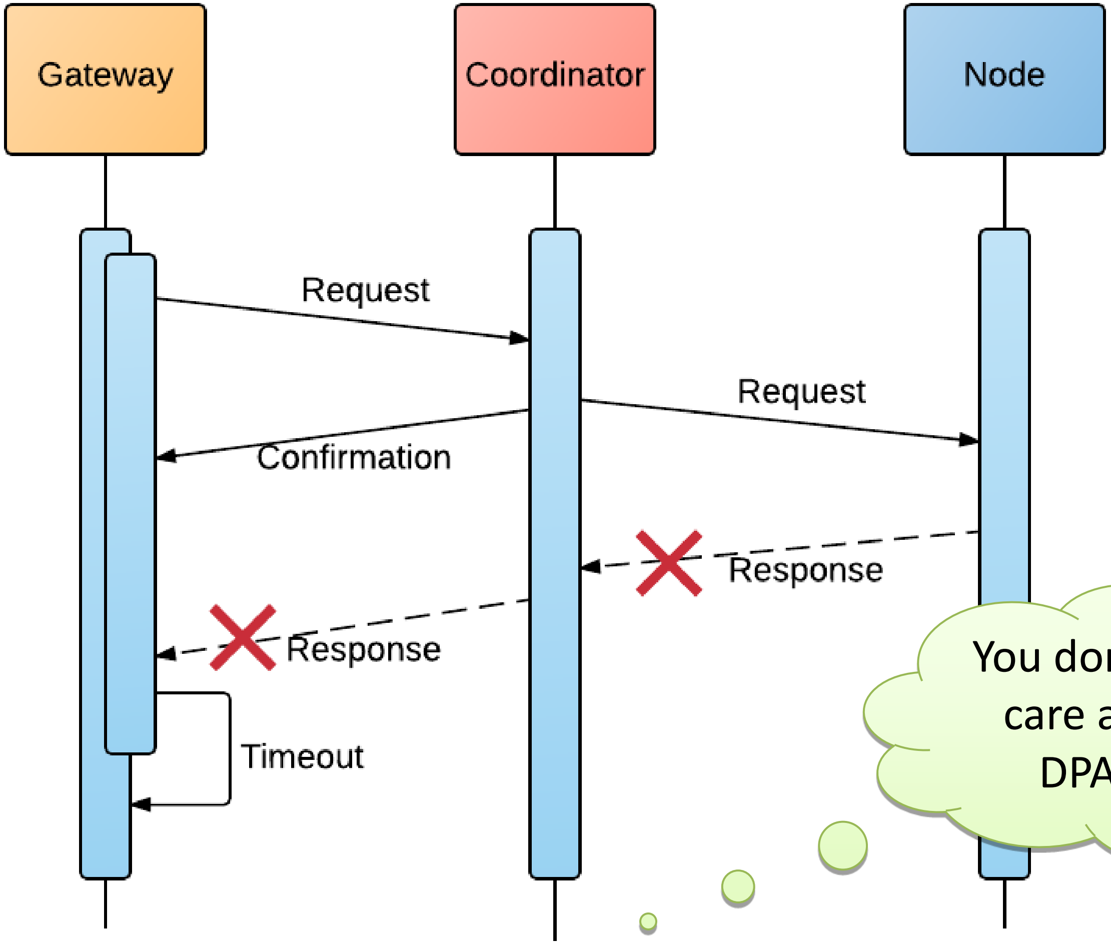
Universal Gateway

- ✓ Automatic DPA Timeout management



Universal Gateway

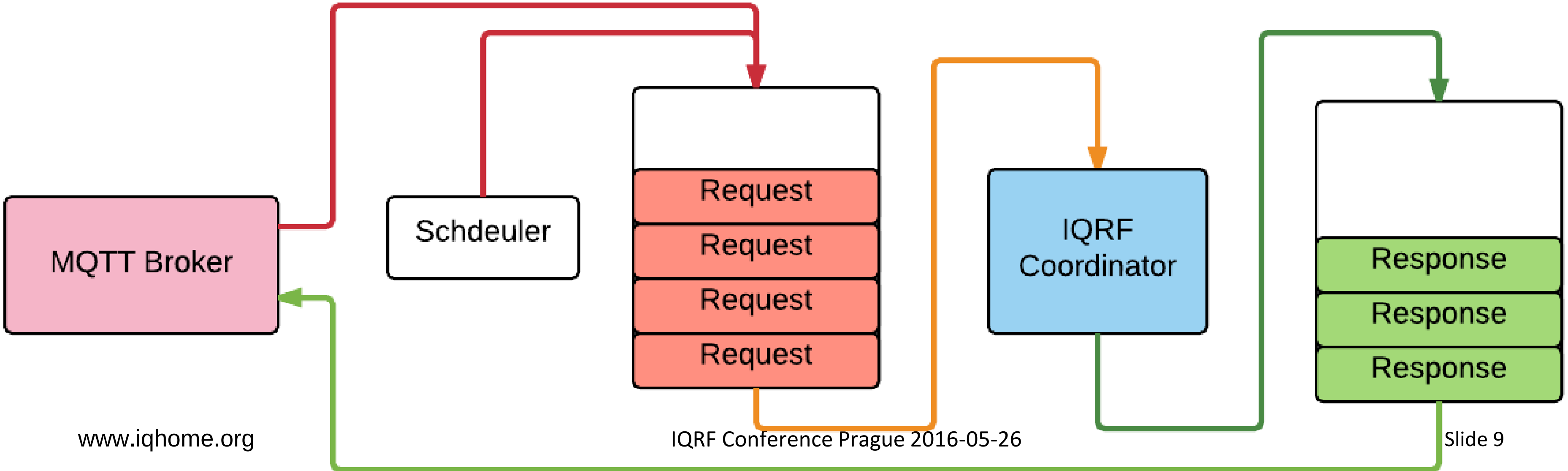
✓ Automatic DPA Timeout management



You don't need to care about the DPA timing

Message queue system

- ✓ Request message queue
  - Managing concurrent DPA request
  - Scheduled request sequence in specific time
- ✓ Response message queue
  - Keep collected data at network outage
  - Resync collected data if the network communication is reestablished

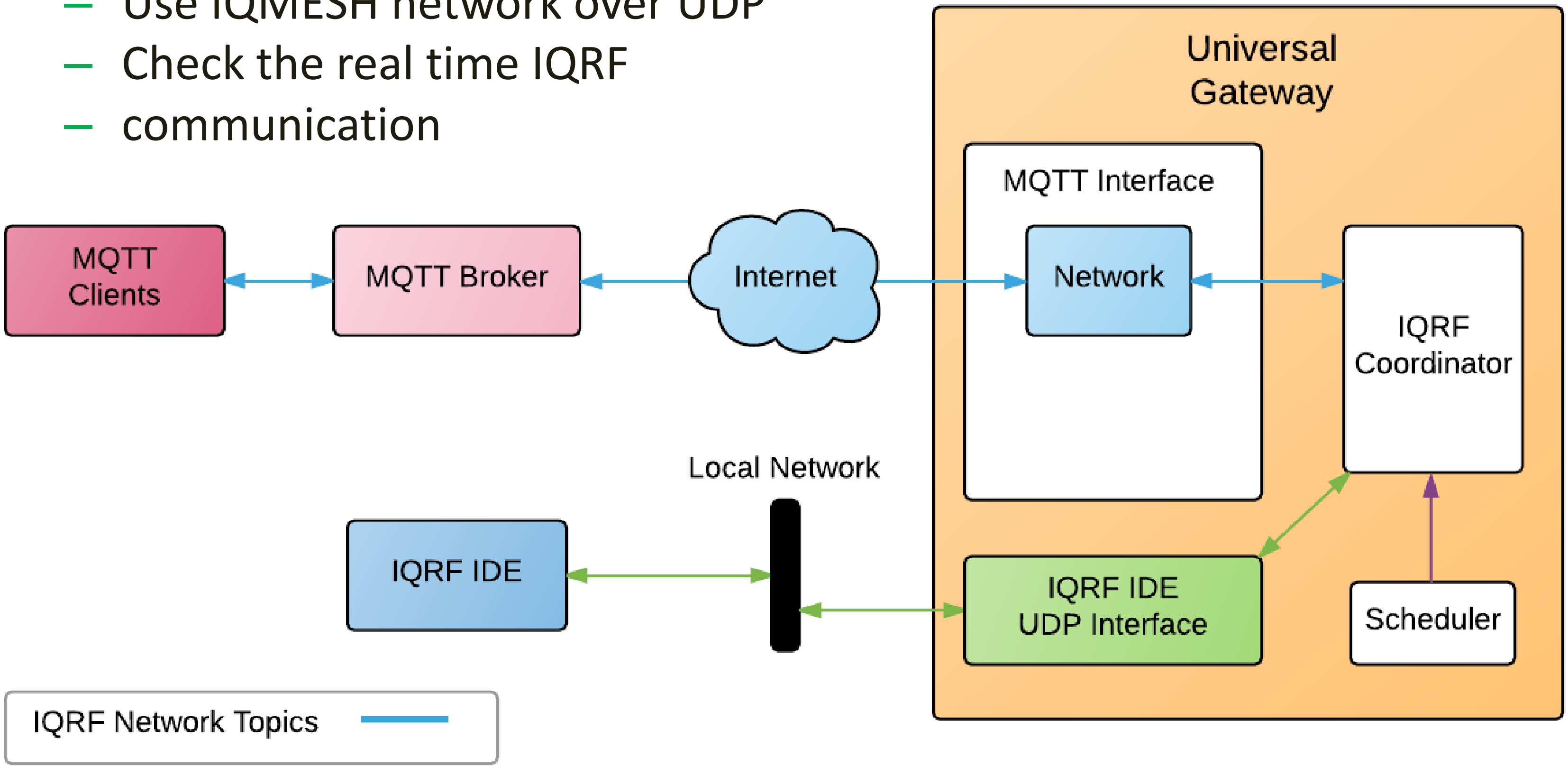


IQRF IDE Connection

Manage the gateways with the IQRF IDE

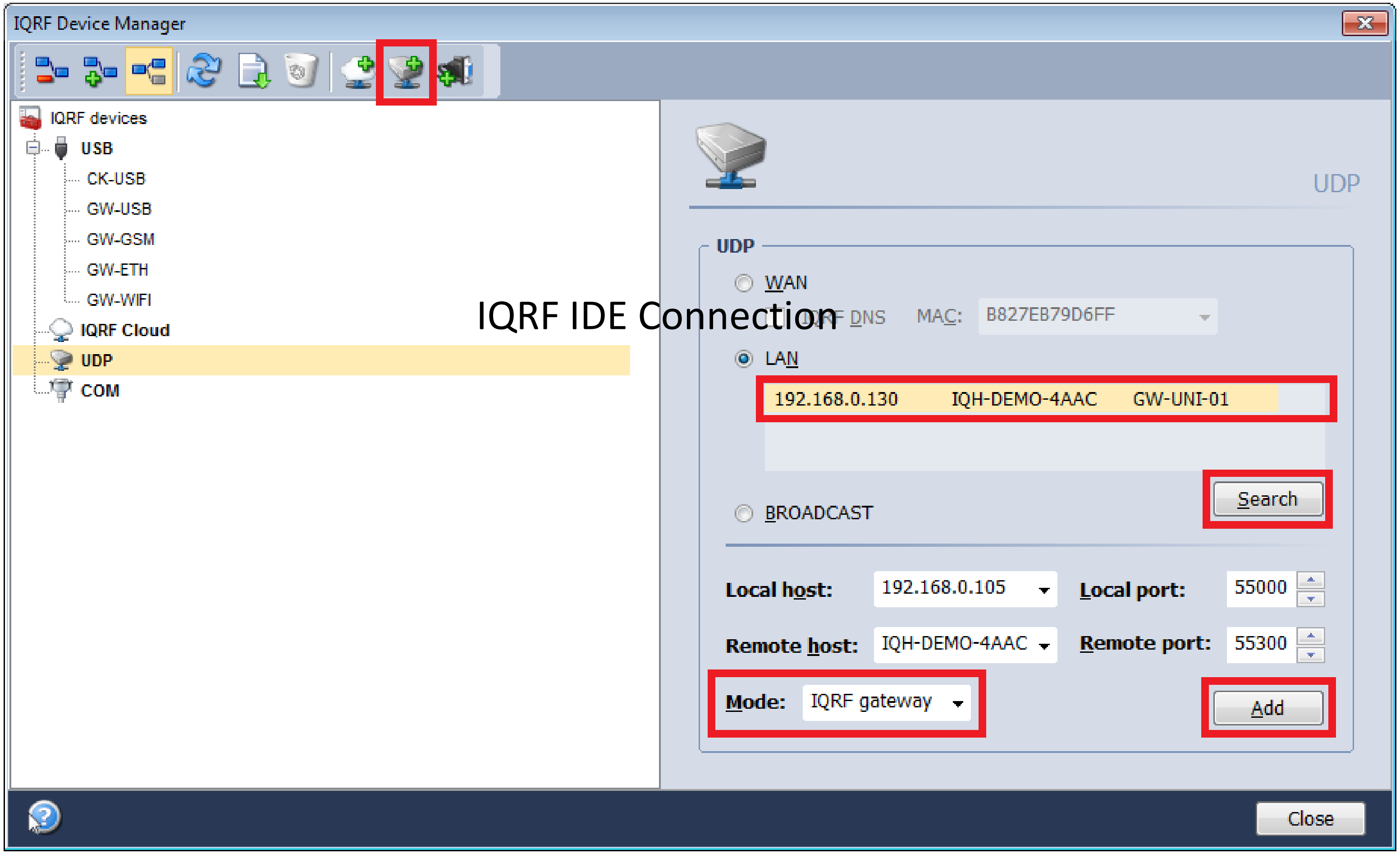
✓ Local UDP connection

- Use IQMESH network over UDP
- Check the real time IQRF
- communication



IQRF IDE Connection

✓Creating local UDP connection - Step by Step guide



IQRF Device Manager

- IQRF devices
  - USB
    - CK-USB
    - GW-USB
    - GW-GSM
    - GW-ETH
    - GW-WIFI
  - IQRF Cloud
  - UDP
  - COM

IQRF IDE Connection

UDP

UDP

○ WAN

IQRF DNS MAC: B827EB79D6FF

● LAN

192.168.0.130 IQH-DEMO-4AAC GW-UNI-01

○ BROADCAST

Local host: 192.168.0.105

Local port: 55000

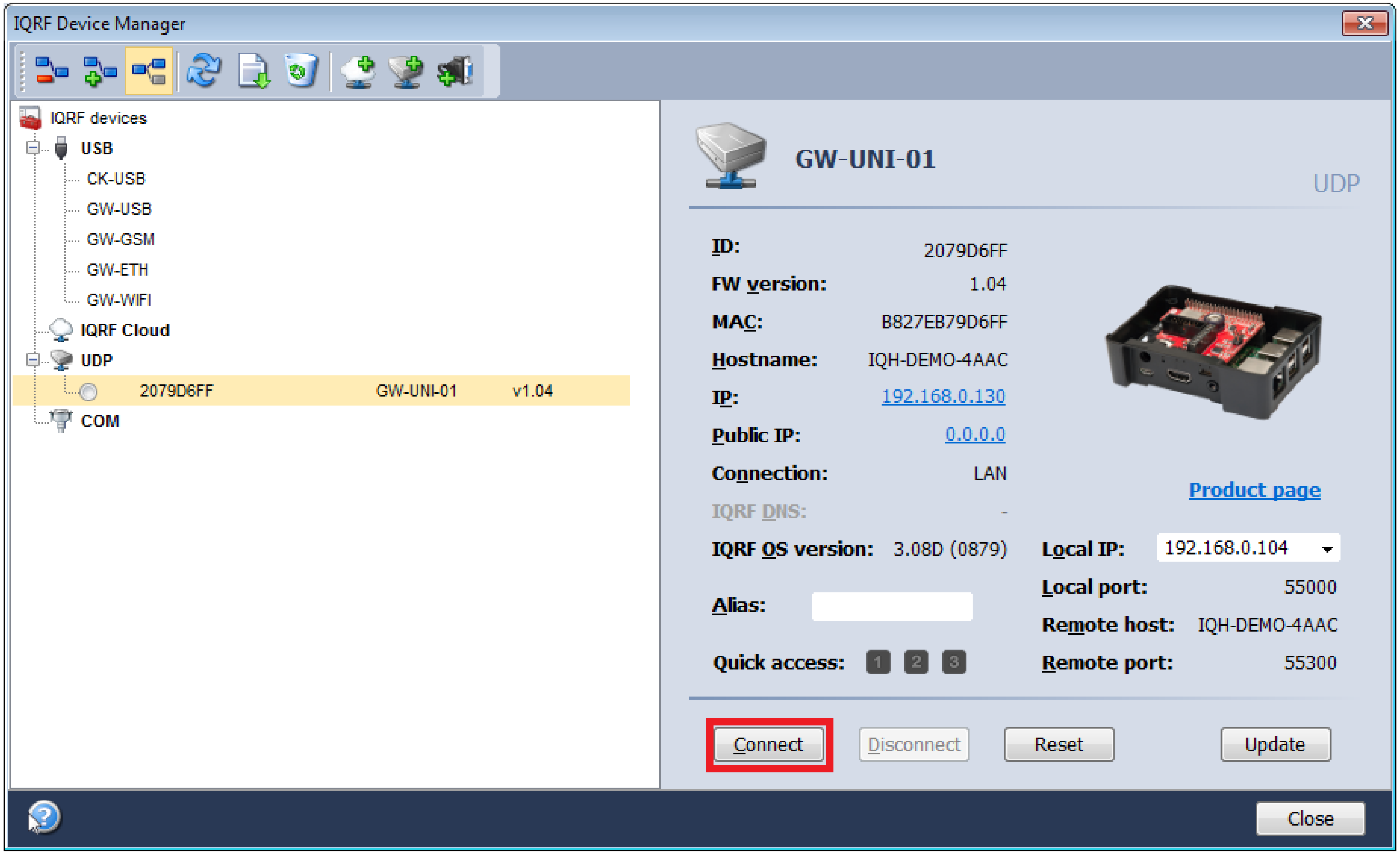
Remote host: IQH-DEMO-4AAC

Remote port: 55300

Mode: IQRF gateway

IQRF IDE Connection

✓Creating local UDP connection - Step by Step guide



2079D6FF GW-UNI-01 v1.04

GW-UNI-01

UDP

ID: 2079D6FF

FW version: 1.04

MAC: B827EB79D6FF

Hostname: IQH-DEMO-4AAC

IP: 192.168.0.130

Public IP: 0.0.0.0

Connection: LAN

IQRF DNS: -

IQRF OS version: 3.08D (0879)

Alias:

Quick access: 1 2 3

Local IP: 192.168.0.104

Local port: 55000

Remote host: IQH-DEMO-4AAC

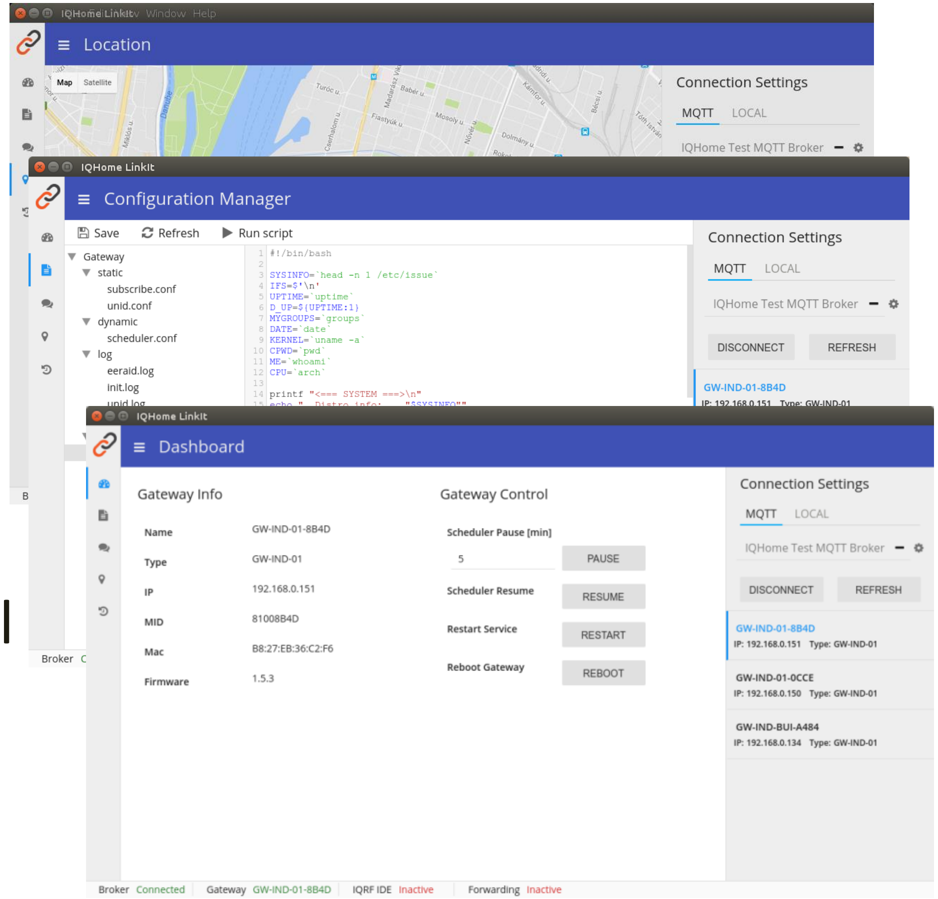
Remote port: 55300

IQ Home Link It!

Monitor and mange the gateway remotely!

IQ Home - Link It!

- ✓ Monitor your gateway over MQTT protocol
- ✓ Configure your gateway over MQTT protocol
- ✓ Run Scripts remotely
- ✓ Connect IQRF IDE to Universal Gateway over MQTT



```
#!/bin/bash

SYSINFO=`head -n 1 /etc/issue`
IFS=$'\n'
UPTIME=`uptime`
D_UP=${UPTIME:1}
MYGROUPS=`groups`
DATE=`date`
KERNEL=`uname -a`
CPWD=`pwd`
ME=`whoami`
CPU=`arch`

printf "<=== SYSTEM ===>\n"
```

Gateway Info

Name	GW-IND-01-8B4D
Type	GW-IND-01
IP	192.168.0.151
MID	81008B4D
Mac	B8:27:EB:36:C2:F6
Firmware	1.5.3

Gateway Control

Scheduler Pause [min] 5

Scheduler Resume

Restart Service

Reboot Gateway

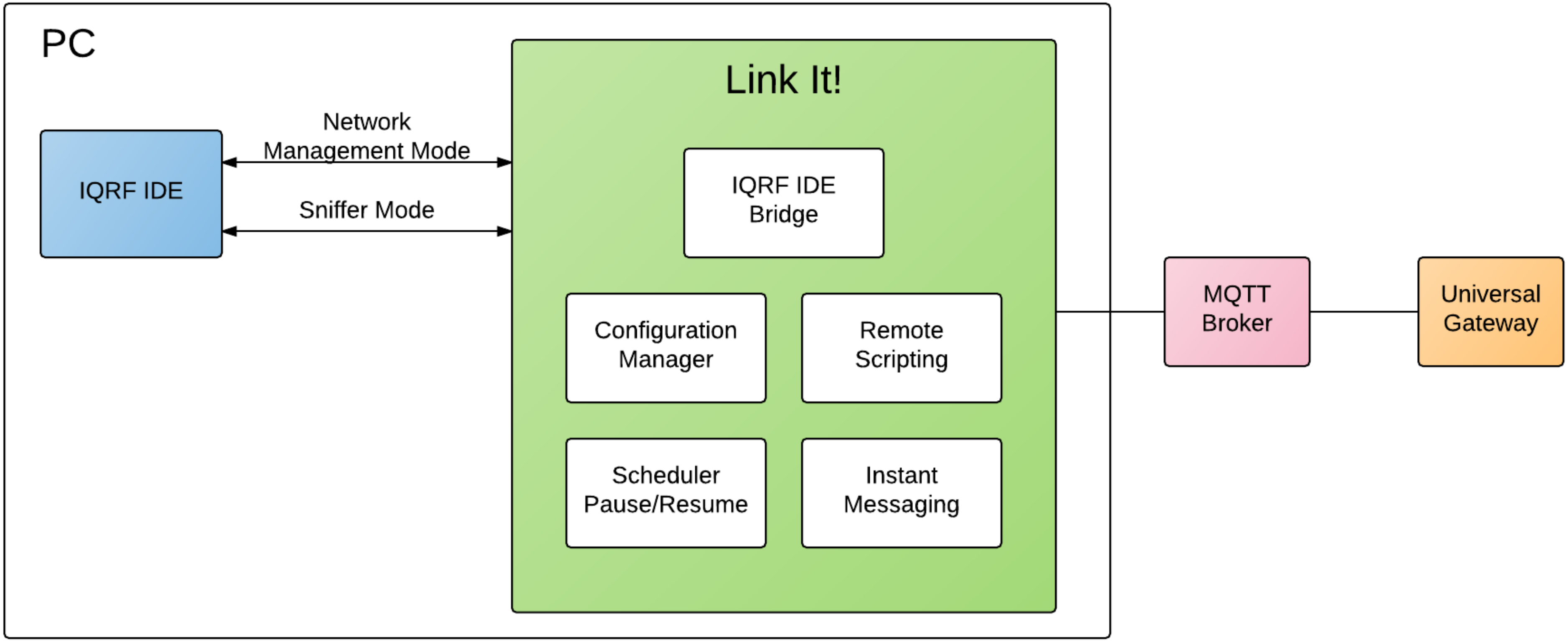
GW-IND-01-8B4D
IP: 192.168.0.151 Type: GW-IND-01

GW-IND-01-0CCE
IP: 192.168.0.150 Type: GW-IND-01

GW-IND-BUI-A484
IP: 192.168.0.134 Type: GW-IND-01

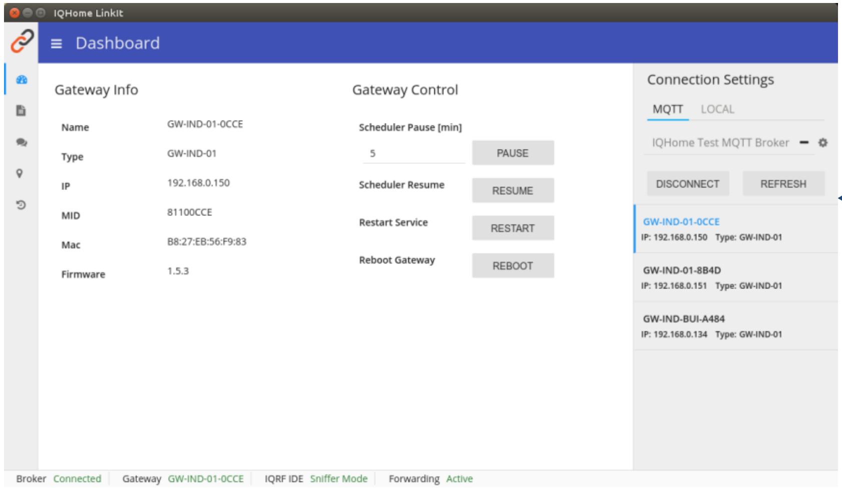
Broker Connected | Gateway GW-IND-01-8B4D | IQRF IDE Inactive | Forwarding Inactive

How the IQ Home Link It solution works:



Use together **IQ Home - Link It!** and **IQRF IDE**

- ✓ Monitor your IQRF traffic with IQRF IDE remotely
  - Sniffer mode
- ✓ Configure your IQ MESH network with IQRF IDE remotely
  - Network management mode



IQHome LinkIt

Dashboard

Gateway Info

Name	GW-IND-01-0CCE
Type	GW-IND-01
IP	192.168.0.150
MID	81100CCE
Mac	B8:27:EB:56:F9:83
Firmware	1.5.3

Gateway Control

Scheduler Pause [min]: 5

Connection Settings

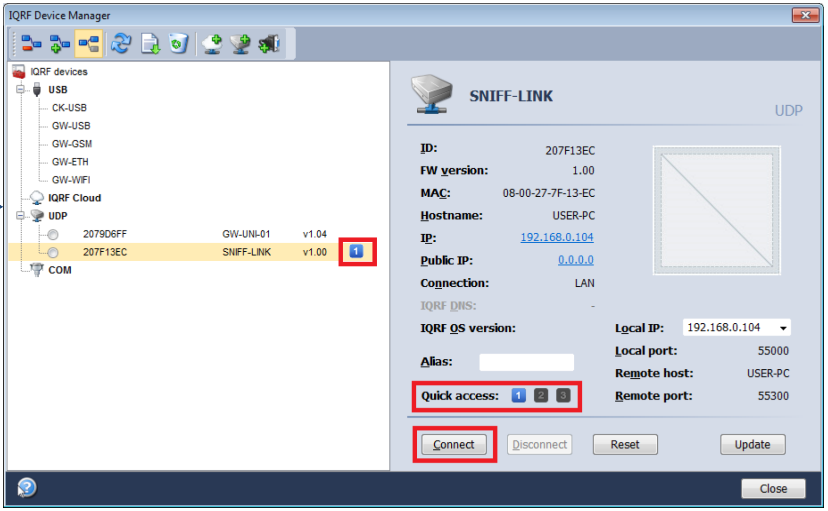
IQHome Test MQTT Broker

GW-IND-01-0CCE
IP: 192.168.0.150 Type: GW-IND-01

GW-IND-01-8B4D
IP: 192.168.0.151 Type: GW-IND-01

GW-IND-BUI-A484
IP: 192.168.0.134 Type: GW-IND-01

Broker Connected | Gateway GW-IND-01-0CCE | IQRF IDE Sniffer Mode | Forwarding Active



IQRF Device Manager

IQRF devices
- USB
  - CK-USB
  - GW-USB
  - GW-GSM
  - GW-ETH
  - GW-WIFI
- IQRF Cloud
- UDP
  - 2079D6FF GW-UNI-01 v1.04
  - 207F13EC SNIFF-LINK v1.00 1
- COM

SNIFF-LINK UDP

ID:	207F13EC
FW version:	1.00
MAC:	08-00-27-7F-13-EC
Hostname:	USER-PC
IP:	192.168.0.104
Public IP:	0.0.0.0
Connection:	LAN
IQRF DNS:	-
IQRF OS version:	
Alias:	

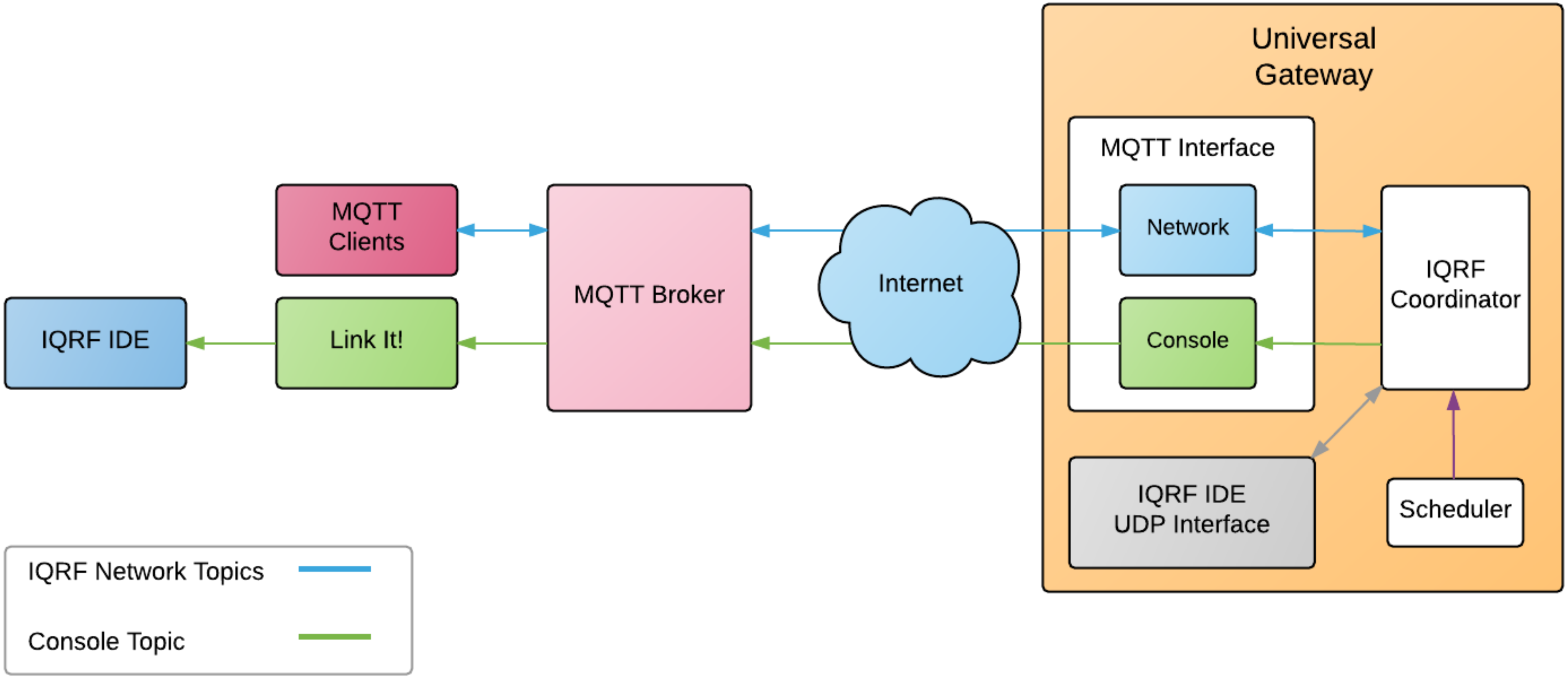
Local IP:	192.168.0.104
Local port:	55000
Remote host:	USER-PC
Remote port:	55300

Quick access: 1 2 3

Use together **IQ Home - Link It!** and **IQRF IDE**

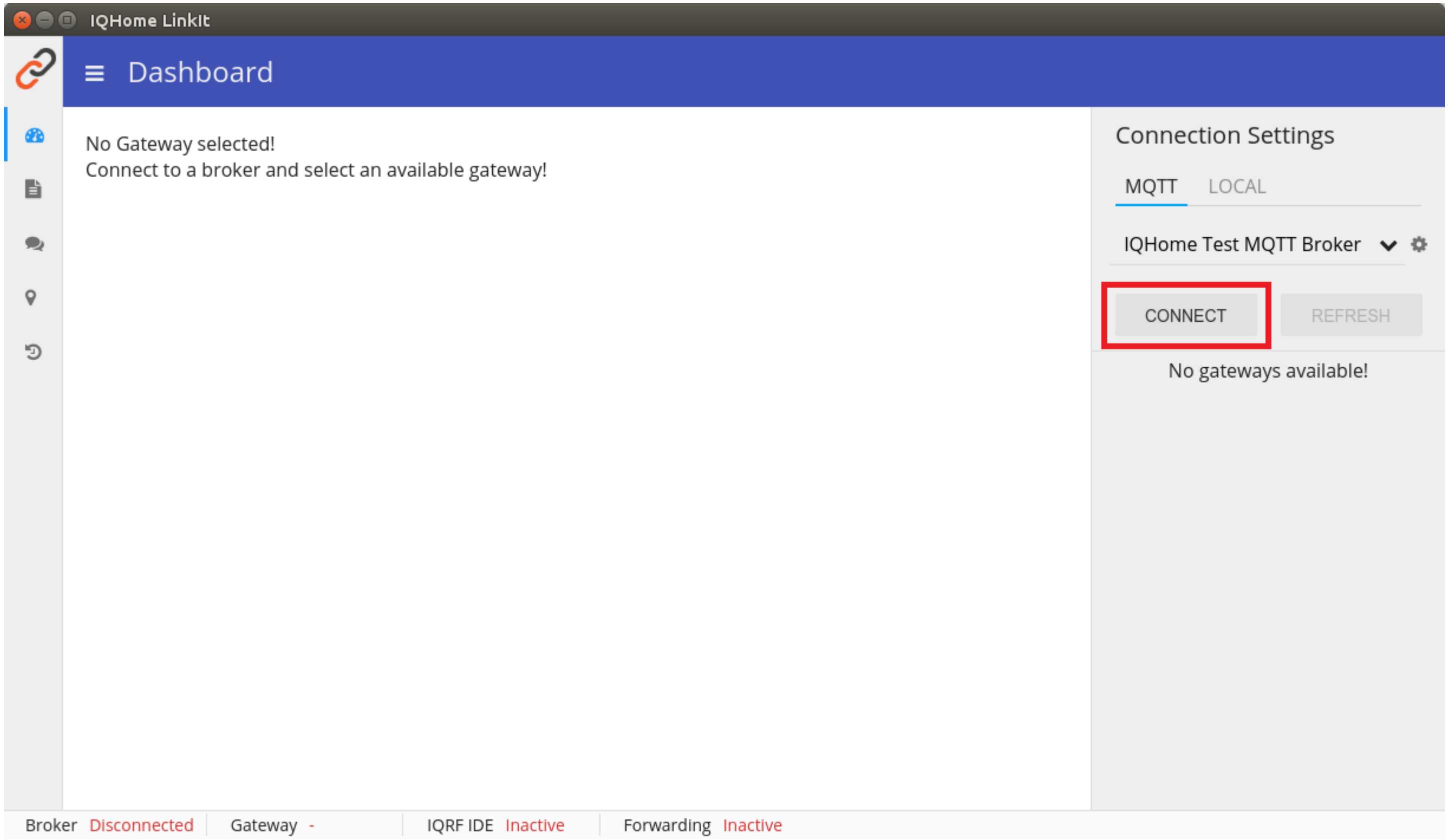
✓ Monitor your IQRF traffic with IQRF IDE remotely

- Sniffer mode



IQ Home Link It!

- Debug IQRF based applications over MQTT
  - Sniffer Mode



No Gateway selected!
Connect to a broker and select an available gateway!

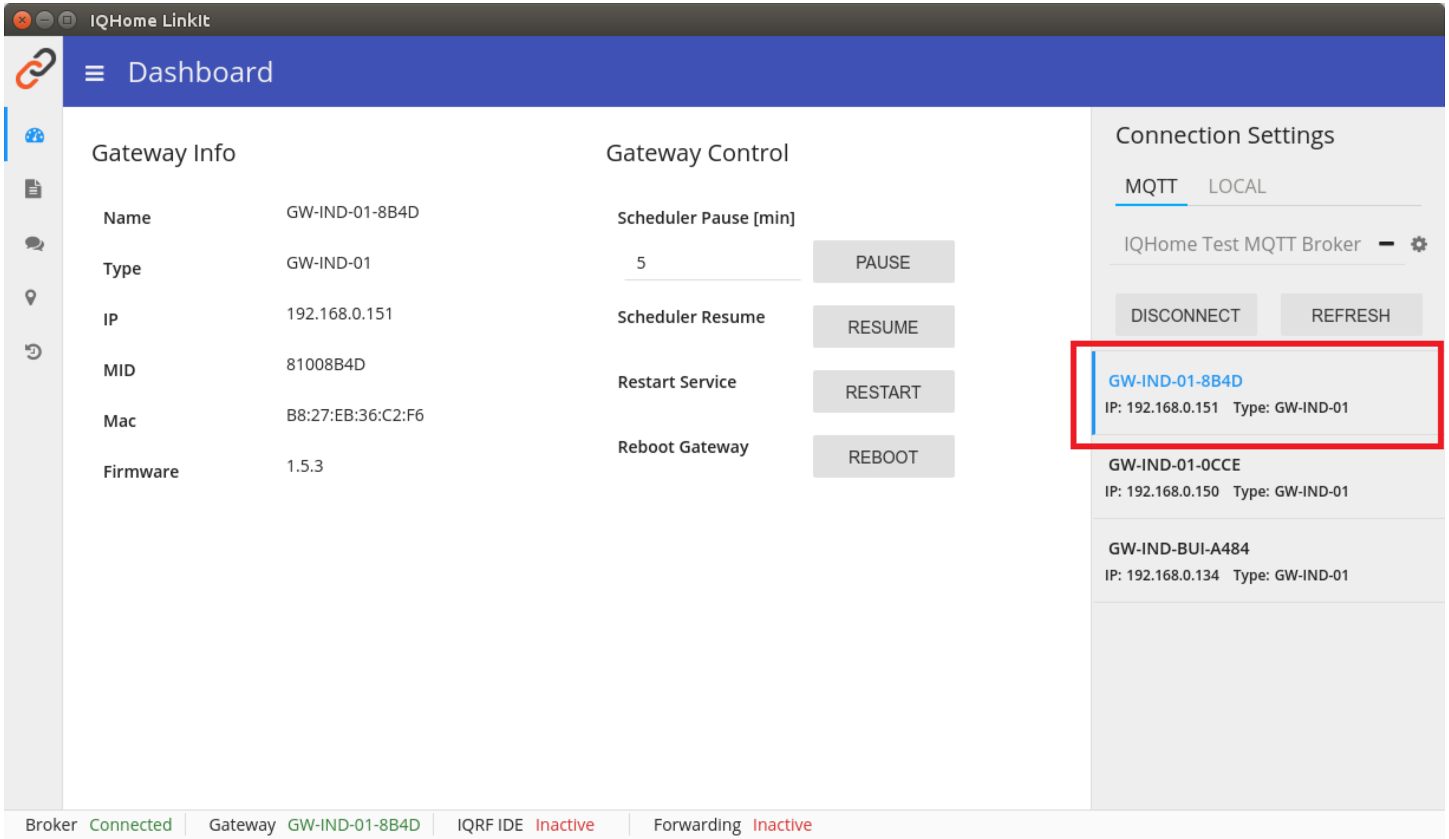
No gateways available!

Broker Disconnected | Gateway - | IQRF IDE Inactive | Forwarding Inactive

IQ Home Link It!

✓Creating remote IQRF IDE connection with IQ Home Link It!

– Sniffer Mode



IQHome LinkIt

Dashboard

Gateway Info

Name	GW-IND-01-8B4D
Type	GW-IND-01
IP	192.168.0.151
MID	81008B4D
Mac	B8:27:EB:36:C2:F6
Firmware	1.5.3

Gateway Control

Scheduler Pause [min]: 5 PAUSE

Scheduler Resume: RESUME

Restart Service: RESTART

Reboot Gateway: REBOOT

Connection Settings

IQHome Test MQTT Broker

GW-IND-01-8B4D
IP: 192.168.0.151 Type: GW-IND-01

GW-IND-01-0CCE
IP: 192.168.0.150 Type: GW-IND-01

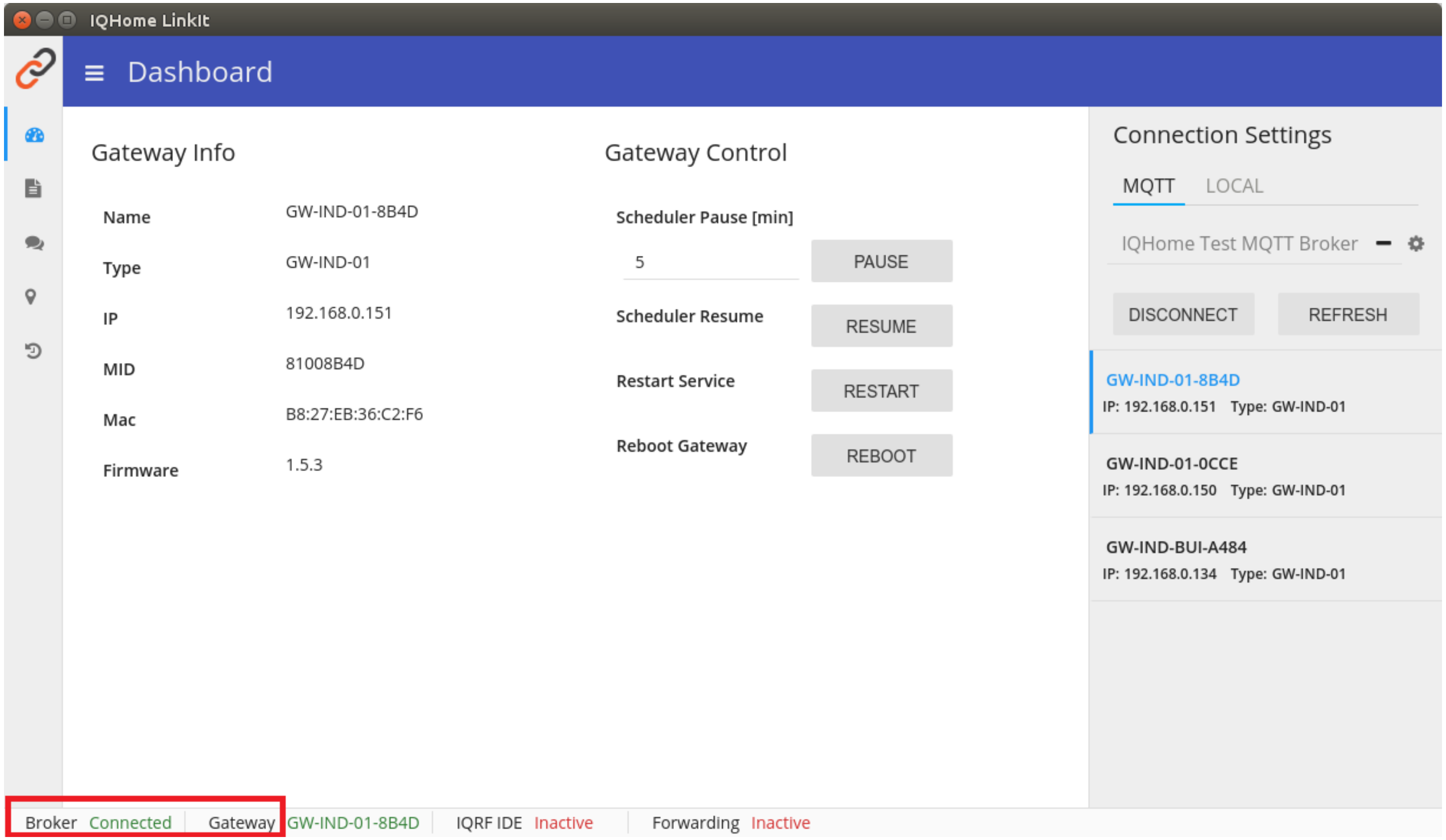
GW-IND-BUI-A484
IP: 192.168.0.134 Type: GW-IND-01

Broker Connected | Gateway GW-IND-01-8B4D | IQRF IDE Inactive | Forwarding Inactive

IQ Home Link It!

✓Creating remote IQRF IDE connection with IQ Home Link It!

- Sniffer Mode



IQHome LinkIt

Dashboard

Gateway Info

Name	GW-IND-01-8B4D
Type	GW-IND-01
IP	192.168.0.151
MID	81008B4D
Mac	B8:27:EB:36:C2:F6
Firmware	1.5.3

Gateway Control

Scheduler Pause [min]

5 PAUSE

Scheduler Resume RESUME

Restart Service RESTART

Reboot Gateway REBOOT

Connection Settings

MQTT LOCAL

IQHome Test MQTT Broker

DISCONNECT REFRESH

GW-IND-01-8B4D
IP: 192.168.0.151 Type: GW-IND-01

GW-IND-01-0CCE
IP: 192.168.0.150 Type: GW-IND-01

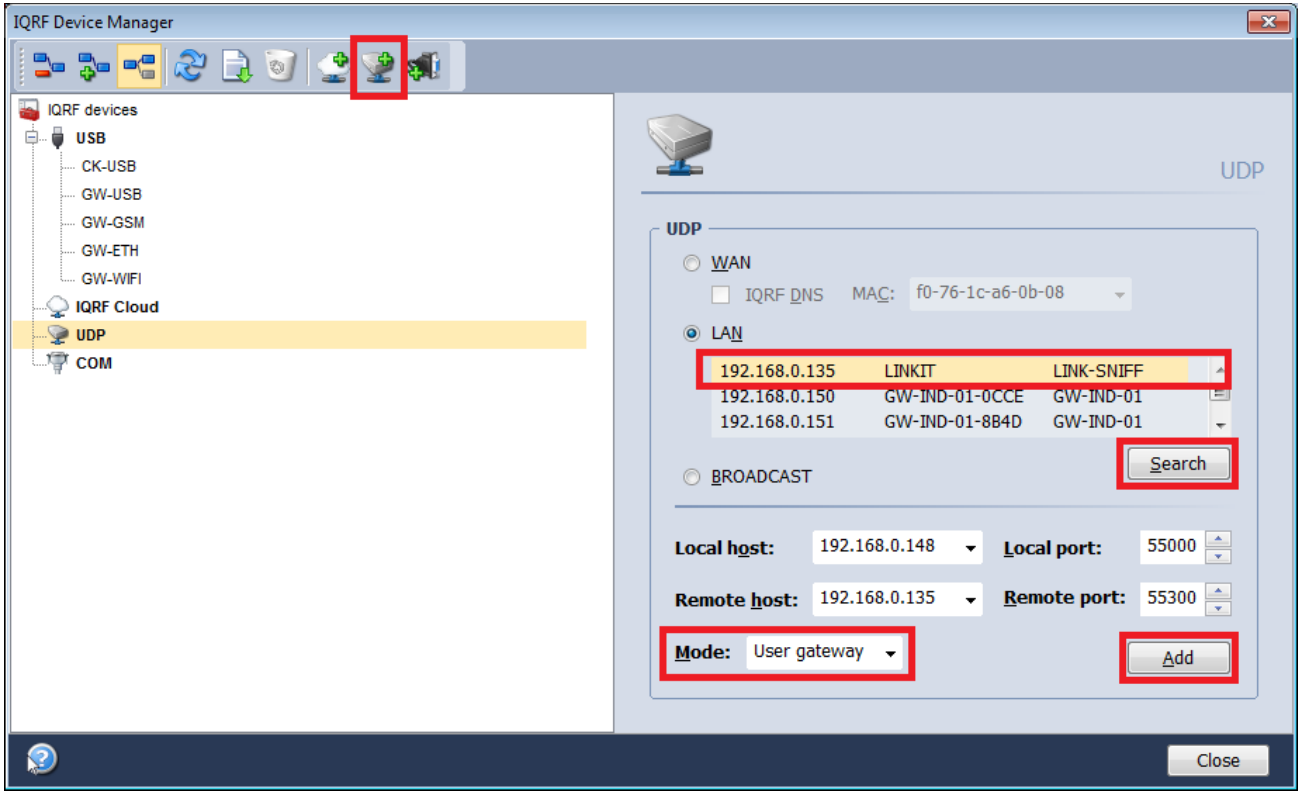
GW-IND-BUI-A484
IP: 192.168.0.134 Type: GW-IND-01

Broker Connected | Gateway GW-IND-01-8B4D | IQRF IDE Inactive | Forwarding Inactive

IQ Home Link It!

Alliance

✓Creating remote IQRF IDE connection with IQ Home Link It!
   – Sniffer Mode



UDP

○ WAN

□ IQRF DNS   MAC: f0-76-1c-a6-0b-08

● LAN

```
192.168.0.135   LINKIT             LINK-SNIFF
192.168.0.150   GW-IND-01-0CCE     GW-IND-01
192.168.0.151   GW-IND-01-8B4D     GW-IND-01
```

○ BROADCAST

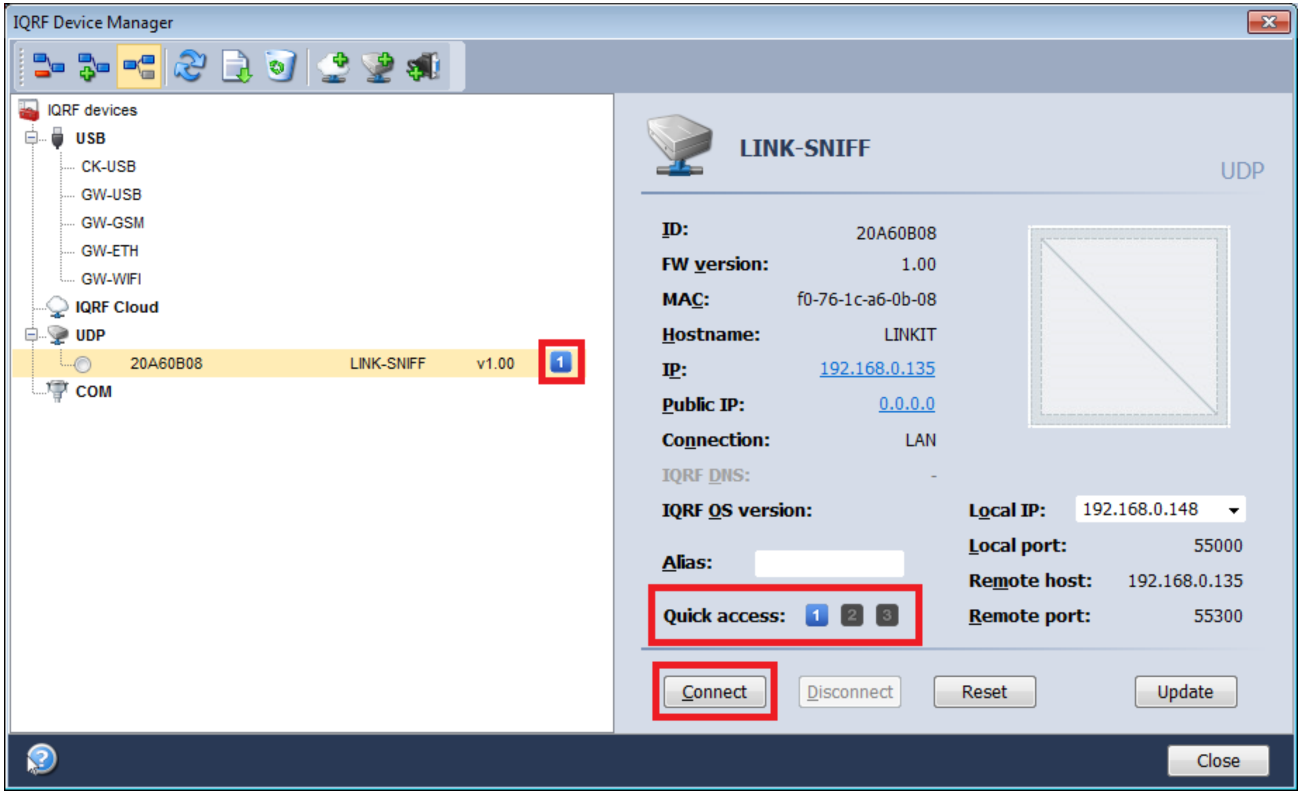
Local host: 192.168.0.148   Local port: 55000

Remote host: 192.168.0.135   Remote port: 55300

Mode: User gateway

IQ Home Link It!

- ✓Creating remote IQRF IDE connection with IQ Home Link It!
  - Sniffer Mode



20A60B08	LINK-SNIFF	v1.00

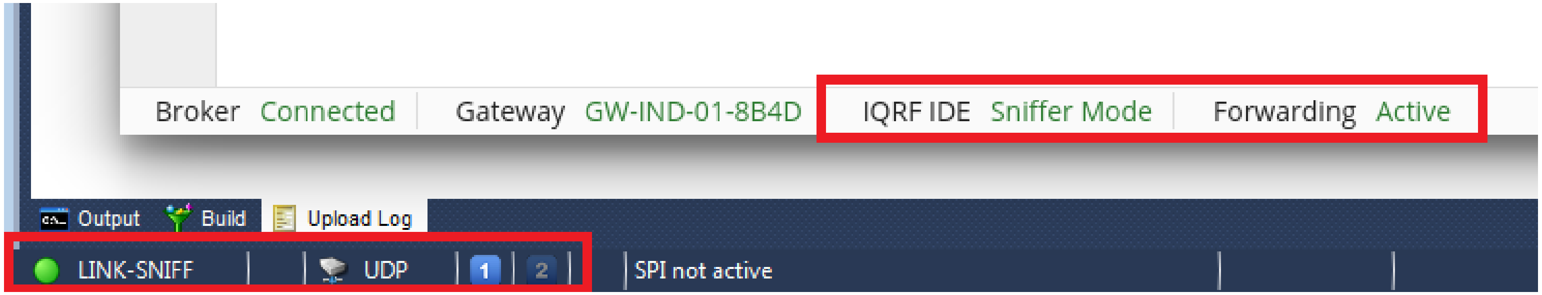
LINK-SNIFF

ID: 20A60B08
FW version: 1.00
MAC: f0-76-1c-a6-0b-08
Hostname: LINKIT
IP: 192.168.0.135
Public IP: 0.0.0.0
Connection: LAN
IQRF DNS: -
IQRF OS version:
Alias:
Quick access: 1 2 3

Local IP: 192.168.0.148
Local port: 55000
Remote host: 192.168.0.135
Remote port: 55300

IQ Home Link It!

- ✓Creating remote IQRF IDE connection with IQ Home Link It!
  - Sniffer Mode



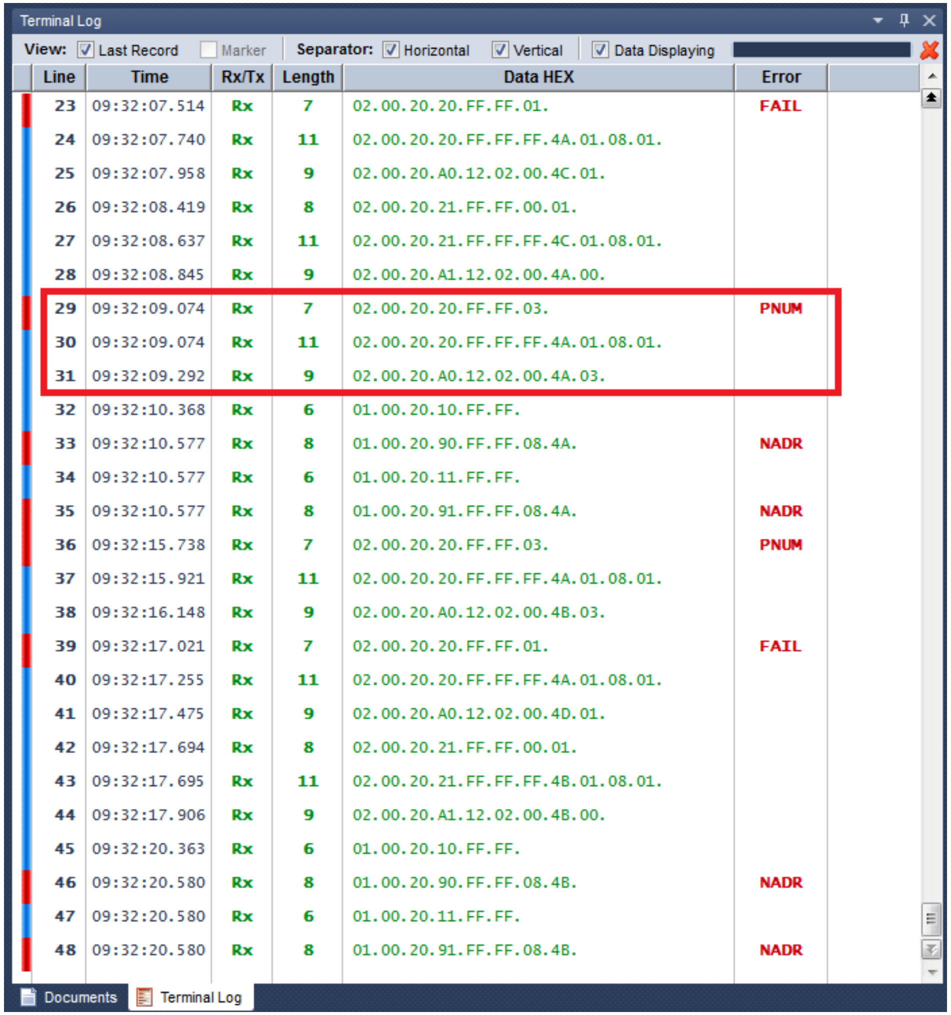
Broker Connected | Gateway GW-IND-01-8B4D | IQRF IDE Sniffer Mode | Forwarding Active

Output | Build | Upload Log

● LINK-SNIFF | UDP | 1 | 2 | SPI not active

IQ Home Link It!

✓You can check the IQRF traffic in the IDE.



Terminal Log

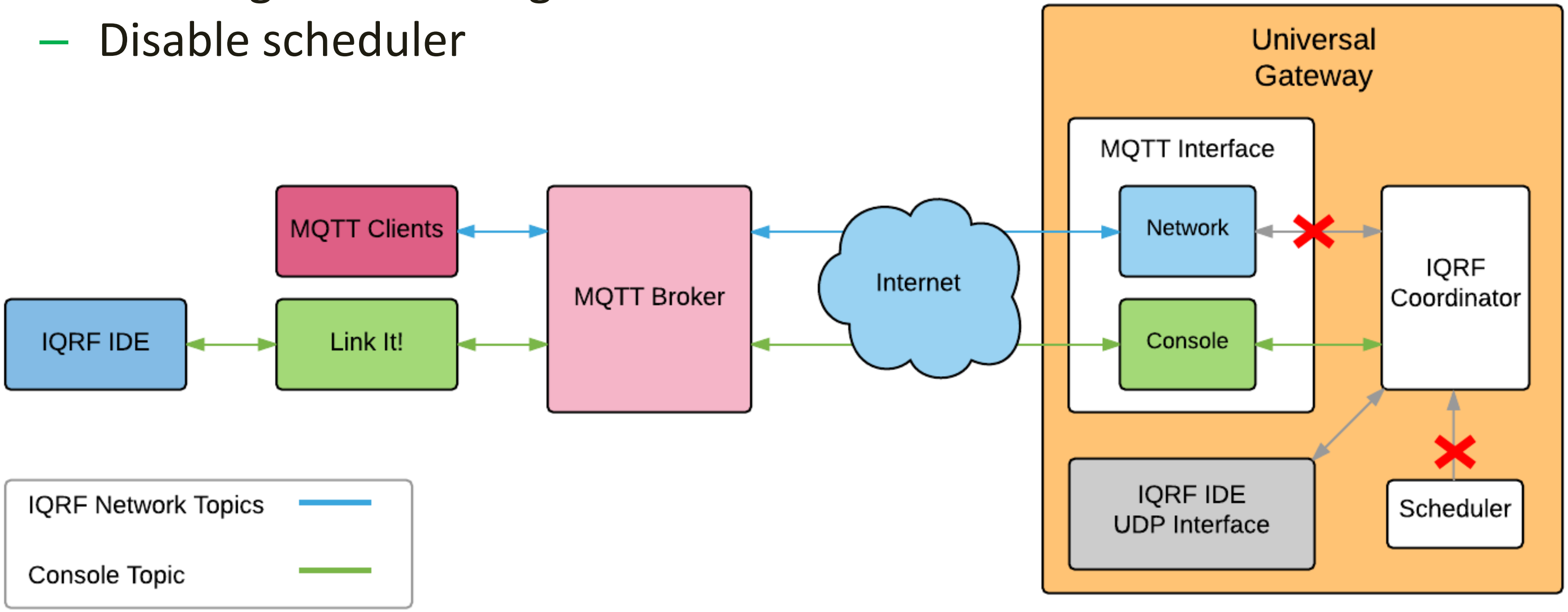
View: ☑ Last Record ☐ Marker Separator: ☑ Horizontal ☑ Vertical ☑ Data Displaying

Line	Time	Rx/Tx	Length	Data HEX	Error
23	09:32:07.514	Rx	7	02.00.20.20.FF.FF.01.	FAIL
24	09:32:07.740	Rx	11	02.00.20.20.FF.FF.FF.4A.01.08.01.	
25	09:32:07.958	Rx	9	02.00.20.A0.12.02.00.4C.01.	
26	09:32:08.419	Rx	8	02.00.20.21.FF.FF.00.01.	
27	09:32:08.637	Rx	11	02.00.20.21.FF.FF.FF.4C.01.08.01.	
28	09:32:08.845	Rx	9	02.00.20.A1.12.02.00.4A.00.	
29	09:32:09.074	Rx	7	02.00.20.20.FF.FF.03.	PNUM
30	09:32:09.074	Rx	11	02.00.20.20.FF.FF.FF.4A.01.08.01.	
31	09:32:09.292	Rx	9	02.00.20.A0.12.02.00.4A.03.	
32	09:32:10.368	Rx	6	01.00.20.10.FF.FF.	
33	09:32:10.577	Rx	8	01.00.20.90.FF.FF.08.4A.	NADR
34	09:32:10.577	Rx	6	01.00.20.11.FF.FF.	
35	09:32:10.577	Rx	8	01.00.20.91.FF.FF.08.4A.	NADR
36	09:32:15.738	Rx	7	02.00.20.20.FF.FF.03.	PNUM
37	09:32:15.921	Rx	11	02.00.20.20.FF.FF.FF.4A.01.08.01.	
38	09:32:16.148	Rx	9	02.00.20.A0.12.02.00.4B.03.	
39	09:32:17.021	Rx	7	02.00.20.20.FF.FF.01.	FAIL
40	09:32:17.255	Rx	11	02.00.20.20.FF.FF.FF.4A.01.08.01.	
41	09:32:17.475	Rx	9	02.00.20.A0.12.02.00.4D.01.	
42	09:32:17.694	Rx	8	02.00.20.21.FF.FF.00.01.	
43	09:32:17.695	Rx	11	02.00.20.21.FF.FF.FF.4B.01.08.01.	
44	09:32:17.906	Rx	9	02.00.20.A1.12.02.00.4B.00.	
45	09:32:20.363	Rx	6	01.00.20.10.FF.FF.	
46	09:32:20.580	Rx	8	01.00.20.90.FF.FF.08.4B.	NADR
47	09:32:20.580	Rx	6	01.00.20.11.FF.FF.	
48	09:32:20.580	Rx	8	01.00.20.91.FF.FF.08.4B.	NADR

Use together **IQ Home - Link It!** and **IQRF IDE**

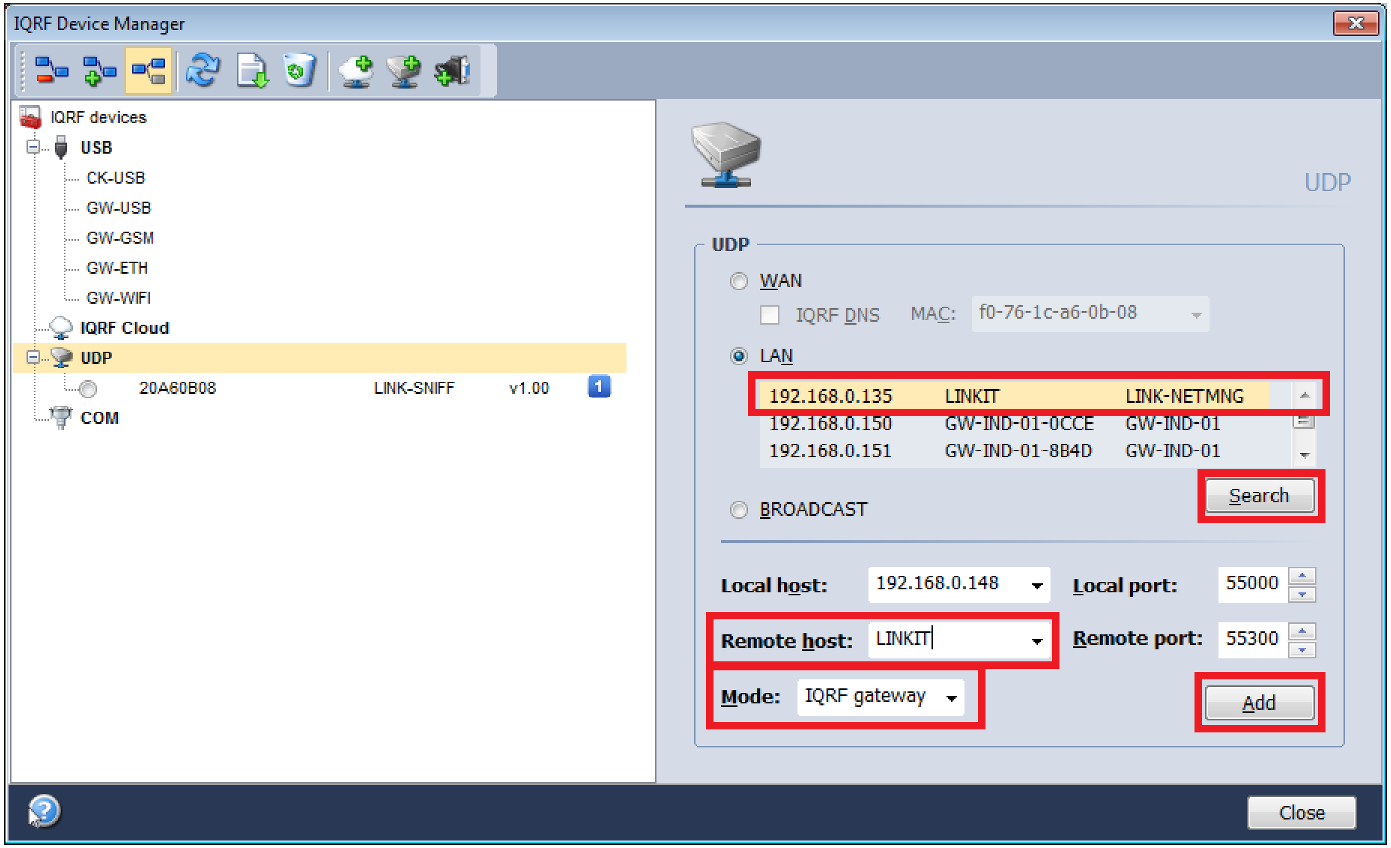
✓ Configure your IQ MESH network with IQRF IDE remotely

- Link It! - Network Management Mode
- Exclusive access to IQRF coordinator
- Blocking network target of MQTT Interface
- Disable scheduler



IQ Home Link It!

- ✓ Creating remote IQRF IDE connection with IQ Home Link It!
  - Network Management Made



IQRF Device Manager

IQRF devices
- USB
  - CK-USB
  - GW-USB
  - GW-GSM
  - GW-ETH
  - GW-WIFI
- IQRF Cloud
- UDP
  - 20A60B08 LINK-SNIFF v1.00 1
- COM

UDP

UDP

○ WAN

□ IQRF DNS MAC: f0-76-1c-a6-0b-08

● LAN

192.168.0.135	LINKIT	LINK-NETMNG
192.168.0.150	GW-IND-01-0CCE	GW-IND-01
192.168.0.151	GW-IND-01-8B4D	GW-IND-01

○ BROADCAST

Local host: 192.168.0.148 Local port: 55000

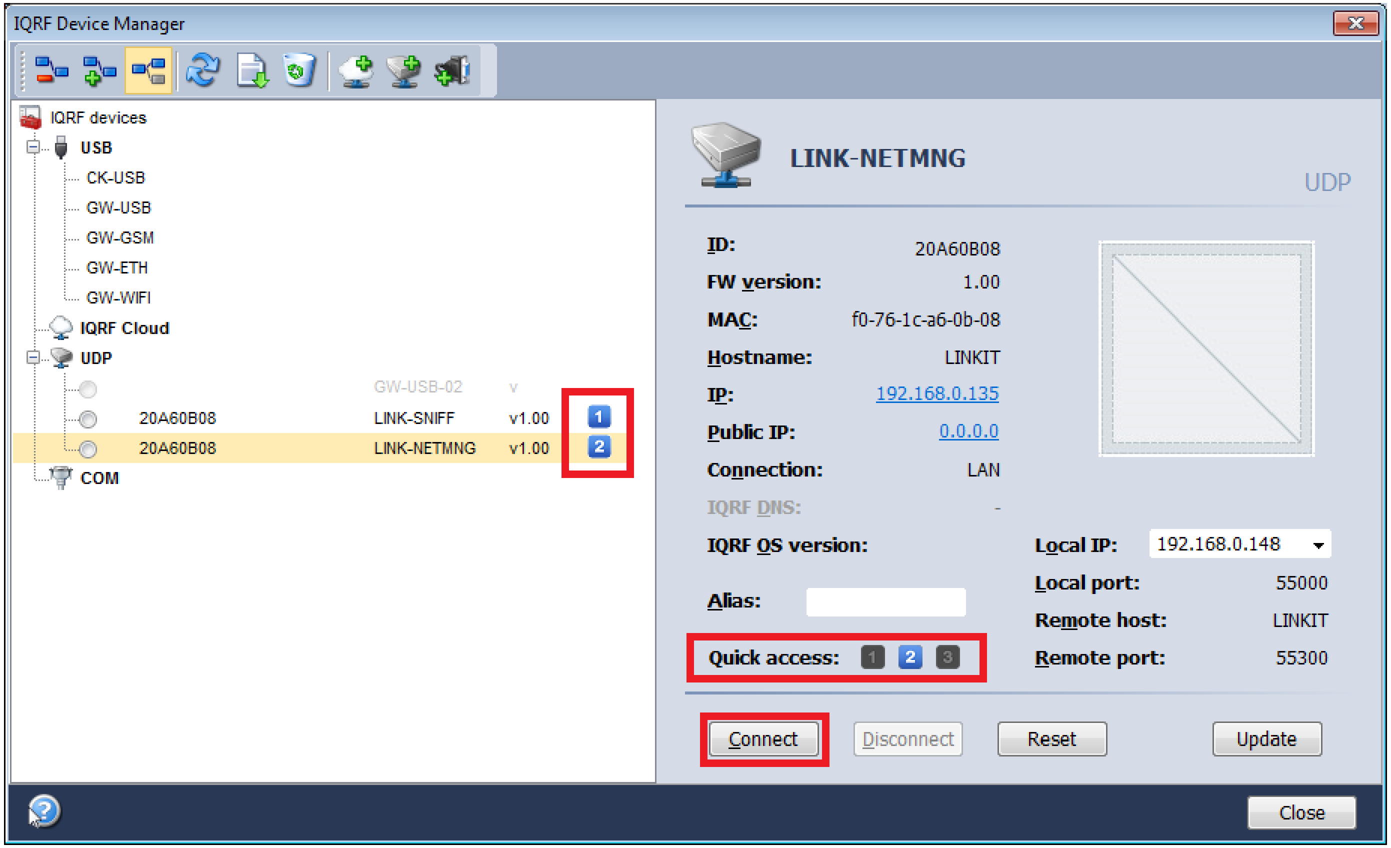
Remote host: LINKIT Remote port: 55300

Mode: IQRF gateway

IQ Home Link It!

✓ Creating remote IQRF IDE connection with IQ Home Link It!

- Network Management Made



IQRF Device Manager

IQRF devices
- USB
  - CK-USB
  - GW-USB
  - GW-GSM
  - GW-ETH
  - GW-WIFI
- IQRF Cloud
- UDP
  - GW-USB-02 v
  - 20A60B08 LINK-SNIFF v1.00 1
  - 20A60B08 LINK-NETMNG v1.00 2
- COM

LINK-NETMNG

UDP

ID: 20A60B08

FW version: 1.00

MAC: f0-76-1c-a6-0b-08

Hostname: LINKIT

IP: 192.168.0.135

Public IP: 0.0.0.0

Connection: LAN

IQRF DNS: -

IQRF OS version:

Alias:

Quick access: 1 2 3

Local IP: 192.168.0.148

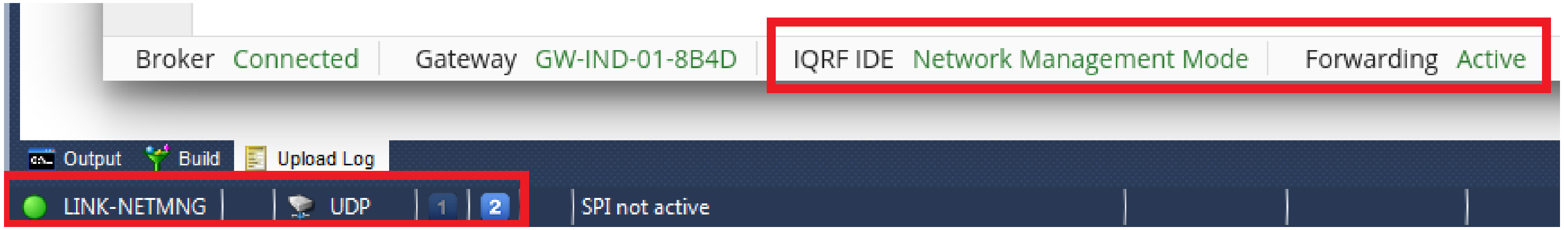
Local port: 55000

Remote host: LINKIT

Remote port: 55300

IQ Home Link It!

- ✓Creating remote IQRF IDE connection with IQ Home Link It!
  - Network Management Made



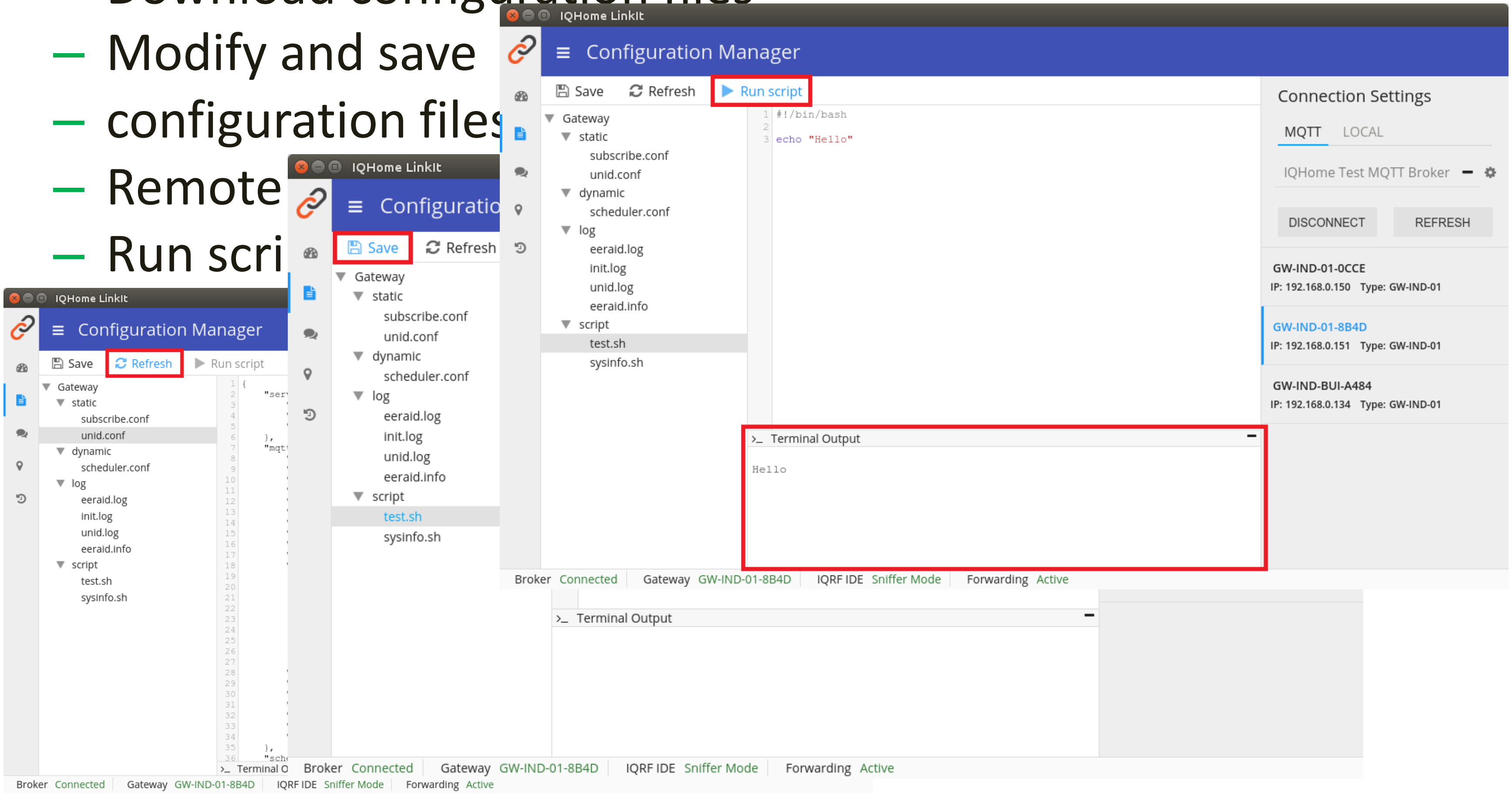
Broker Connected | Gateway GW-IND-01-8B4D | IQRF IDE Network Management Mode | Forwarding Active

● LINK-NETMNG | UDP | 1 | 2 | SPI not active

IQ Home Link It!

✓Configure your gateway remotely with IQ Home Link It!

- Download configuration files
- Modify and save
- configuration files
- Remote
- Run scri



```
#!/bin/bash

echo "Hello"
```

Terminal Output

```
Hello
```

GW-IND-01-0CCE
IP: 192.168.0.150 Type: GW-IND-01

GW-IND-01-8B4D
IP: 192.168.0.151 Type: GW-IND-01

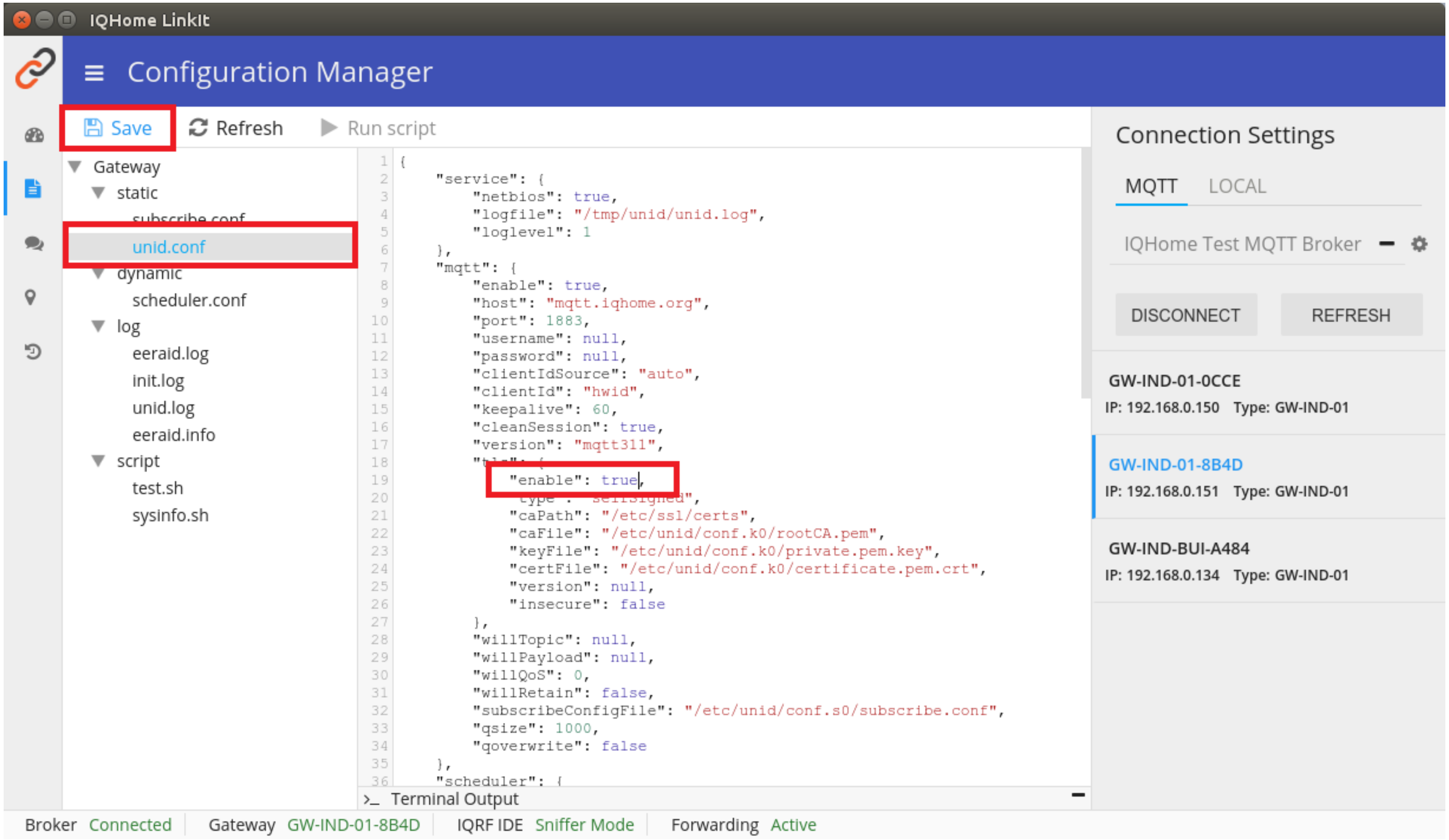
GW-IND-BUI-A484
IP: 192.168.0.134 Type: GW-IND-01

Broker Connected | Gateway GW-IND-01-8B4D | IQRF IDE Sniffer Mode | Forwarding Active

IQ Home Link It!

✓Configure your gateway remotely with IQ Home Link It!

– Modify and save configuration files



```
{
    "service": {
        "netbios": true,
        "logfile": "/tmp/unid/unid.log",
        "loglevel": 1
    },
    "mqtt": {
        "enable": true,
        "host": "mqtt.iqhome.org",
        "port": 1883,
        "username": null,
        "password": null,
        "clientIdSource": "auto",
        "clientId": "hwid",
        "keepalive": 60,
        "cleanSession": true,
        "version": "mqtt311",
        "tls": {
            "enable": true,
            "type": "selfsigned",
            "caPath": "/etc/ssl/certs",
            "caFile": "/etc/unid/conf.k0/rootCA.pem",
            "keyFile": "/etc/unid/conf.k0/private.pem.key",
            "certFile": "/etc/unid/conf.k0/certificate.pem.crt",
            "version": null,
            "insecure": false
        },
        "willTopic": null,
        "willPayload": null,
        "willQoS": 0,
        "willRetain": false,
        "subscribeConfigFile": "/etc/unid/conf.s0/subscribe.conf",
        "qsize": 1000,
        "qoverwrite": false
    },
    "scheduler": {
```

GW-IND-01-0CCE
IP: 192.168.0.150 Type: GW-IND-01

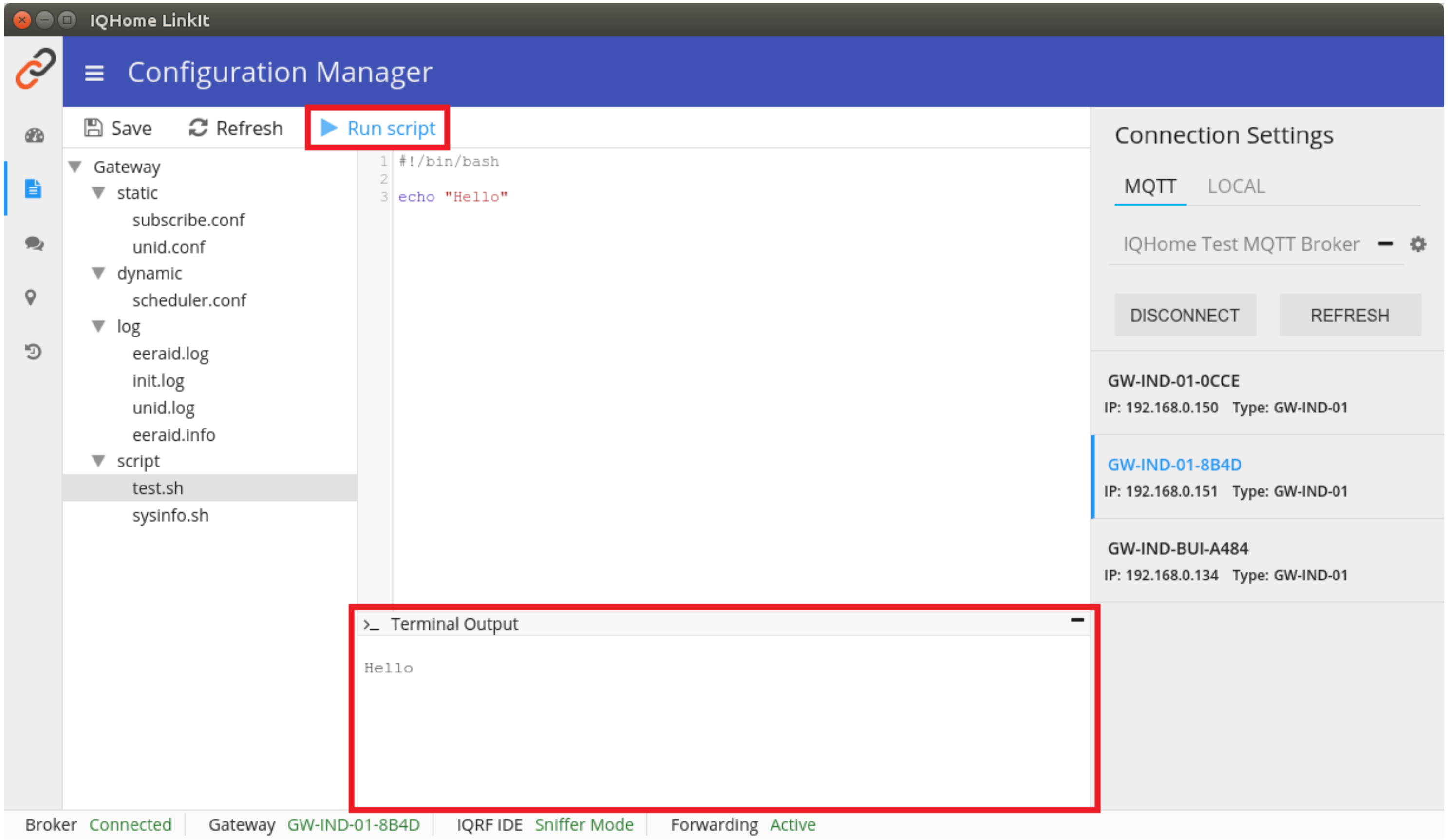
GW-IND-01-8B4D
IP: 192.168.0.151 Type: GW-IND-01

GW-IND-BUI-A484
IP: 192.168.0.134 Type: GW-IND-01

Broker Connected | Gateway GW-IND-01-8B4D | IQRF IDE Sniffer Mode | Forwarding Active

IQ Home Link It!

- ✓ Remote Scripting
- ✓ Run scripts
- ✓ Add/Modify scripts



- ▼ Gateway
  - ▼ static
    - subscribe.conf
    - unid.conf
  - ▼ dynamic
    - scheduler.conf
  - ▼ log
    - eeraid.log
    - init.log
    - unid.log
    - eeraid.info
  - ▼ script
    - test.sh
    - sysinfo.sh

```
#!/bin/bash

echo "Hello"
```

```
Hello
```

GW-IND-01-0CCE
IP: 192.168.0.150 Type: GW-IND-01

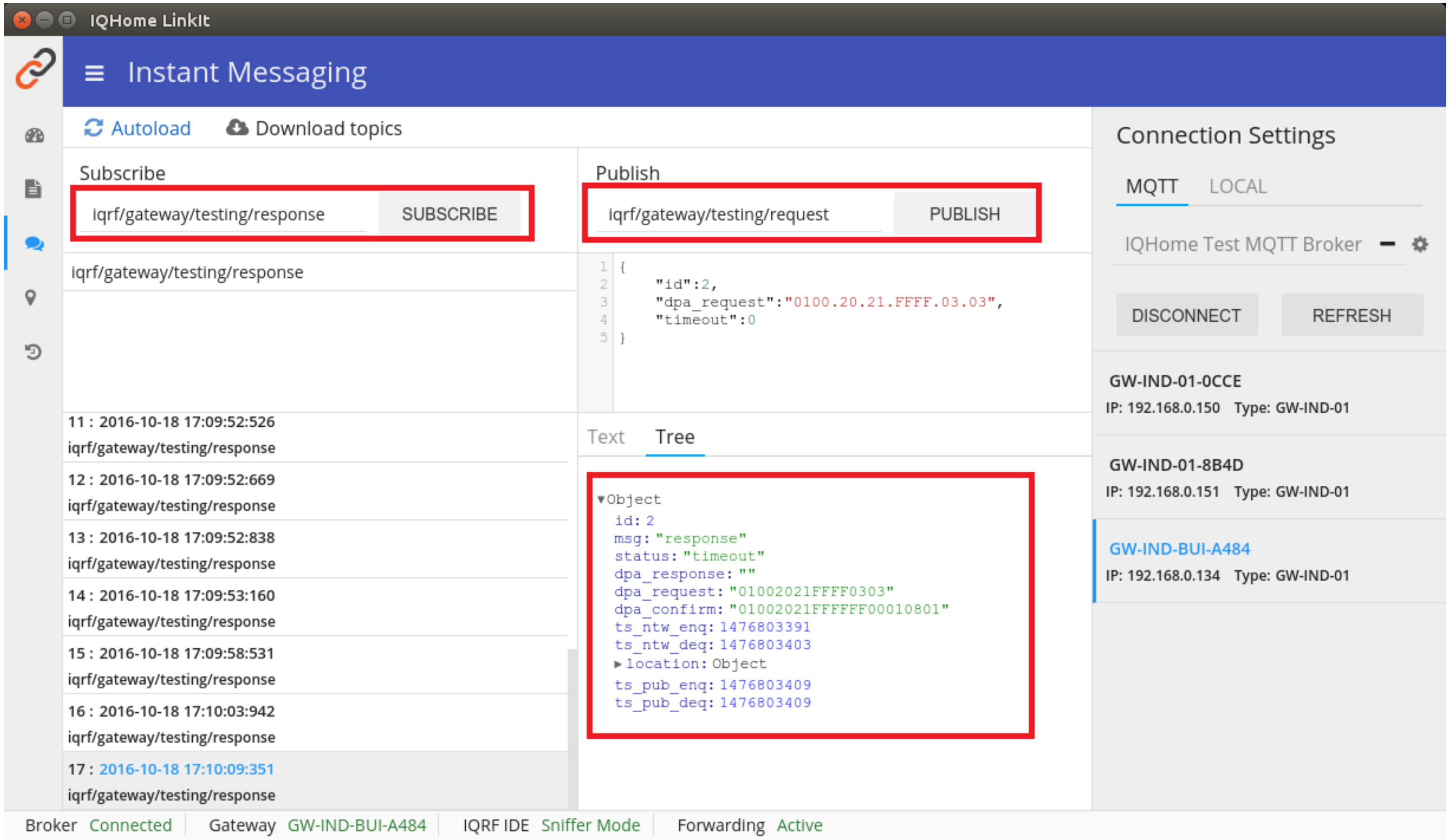
GW-IND-01-8B4D
IP: 192.168.0.151 Type: GW-IND-01

GW-IND-BUI-A484
IP: 192.168.0.134 Type: GW-IND-01

Broker Connected | Gateway GW-IND-01-8B4D | IQRF IDE Sniffer Mode | Forwarding Active

IQ Home Link It!

- ✓ Instant Messaging
- ✓ Load gateway topics



Connection Settings

IQHome Test MQTT Broker

Subscribe

iqrf/gateway/testing/response

iqrf/gateway/testing/response

```
11 : 2016-10-18 17:09:52:526
iqrf/gateway/testing/response
12 : 2016-10-18 17:09:52:669
iqrf/gateway/testing/response
13 : 2016-10-18 17:09:52:838
iqrf/gateway/testing/response
14 : 2016-10-18 17:09:53:160
iqrf/gateway/testing/response
15 : 2016-10-18 17:09:58:531
iqrf/gateway/testing/response
16 : 2016-10-18 17:10:03:942
iqrf/gateway/testing/response
17 : 2016-10-18 17:10:09:351
iqrf/gateway/testing/response
```

Publish

iqrf/gateway/testing/request

```
{
    "id":2,
    "dpa_request":"0100.20.21.FFFF.03.03",
    "timeout":0
}
```

```
▼Object
  id: 2
  msg: "response"
  status: "timeout"
  dpa_response: ""
  dpa_request: "01002021FFFF0303"
  dpa_confirm: "01002021FFFFFF00010801"
  ts_ntw_enq: 1476803391
  ts_ntw_deq: 1476803403
  ▶location: Object
  ts_pub_enq: 1476803409
  ts_pub_deq: 1476803409
```

GW-IND-01-0CCE
IP: 192.168.0.150 Type: GW-IND-01

GW-IND-01-8B4D
IP: 192.168.0.151 Type: GW-IND-01

GW-IND-BUI-A484
IP: 192.168.0.134 Type: GW-IND-01

Broker Connected | Gateway GW-IND-BUI-A484 | IQRF IDE Sniffer Mode | Forwarding Active

JSON examples

All of the IQ Home Link It! features available throw JSON format data packets.

✓ JSON format message payload

```
Request topic: iqrf/gateway/demo/network/request/shutter
{
    "id": 12312,
    "dpa_request": "0200.20.20.FFFF.03",
    "timeout": 1
}
Response topic: iqrf/gateway/81004AAC/network/response/shutter
{
  "id": 12312,
  "dpa_request": "02002020FFFF03",
  "dpa_confirm": "02002020FFFFFF00010801",
  "dpa_response": "020020A01202004C03",
  "status": "ok",
  "ts_ntw_enq": 1463991207,
  "ts_ntw_deq": 1463991207,
  "ts_pub_enq": 1463991207,
  "ts_pub_deq": 1463991207
}
```

JSON examples

All of the IQ Home Link It! features available throw JSON format data packets.

- ✓ JSON format message payload (timout example)

```
Request topic: iqrf/gateway/demo/network/request/shutter
{
    "id": 12312,
    "dpa_request": "0200.20.20.FFFF.03",
    "timeout": 1
}
Response topic: iqrf/gateway/81004AAC/network/response/shutter
{
  "id": 12313,
  "dpa_request": "02002020FFFF03",
  "dpa_confirm": "02002020FFFFFF4B010801",
  "dpa_response": "",
  "status": "timeout",
  "ts_ntw_enq": 1463991417,
  "ts_ntw_deq": 1463991417,
  "ts_pub_enq": 1463991418,
  "ts_pub_deq": 1463991418
}
```

JSON examples

All of the IQ Home Link It! features available throw JSON format data packets.

✓ Scheduler

```
{
  "scheduler": [
    {
      "cron_expr": "*/10 * * * * *",
      "request": {
        "id": 4,
        "dpa_request": "0100.20.10.FFFF",
        "timeout": 1
      },
      "target": "network",
      "response": true,
      "publish": "iqrf/gateway/demo/network/response/temperature",
      "pub_qos": 1,
      "retain": false
    }
  ]
}
```

JSON examples

All of the IQ Home Link It! features available throw JSON format data packets.

✓ Upload new scheduler configuration

```
Update files
{
    "id": 159,
    "command": "filemanager",
    "option": "upload",
    "folders": [
        {
            "name": "dynamic",
            "files": [
                {
                    "name": "scheduler.conf",
                    "action": "update",
                    "content": "<Content of scheduler.conf>"
                }
            ]
        }
    ]
}
```

JSON examples

All of the IQ Home Link It! features available throw JSON format data packets.

✓ Run script remotely

```
Run script
{
    "id": 149,
    "command": "script",
    "script": "sysinfo.sh"
    "arg": "",
}
```

JSON examples

All of the IQ Home Link It! features available throw JSON format data packets.

✓ Pause and resume scheduler

```
Pause
{
    "id": 176,
    "command": "scheduler",
    "option": "pause",
    "timeout": 300
}
Forced resume
{
    "id": 177,
    "command": "scheduler",
    "option": "resume"
}
```

Thank you!

www.iqhome.org