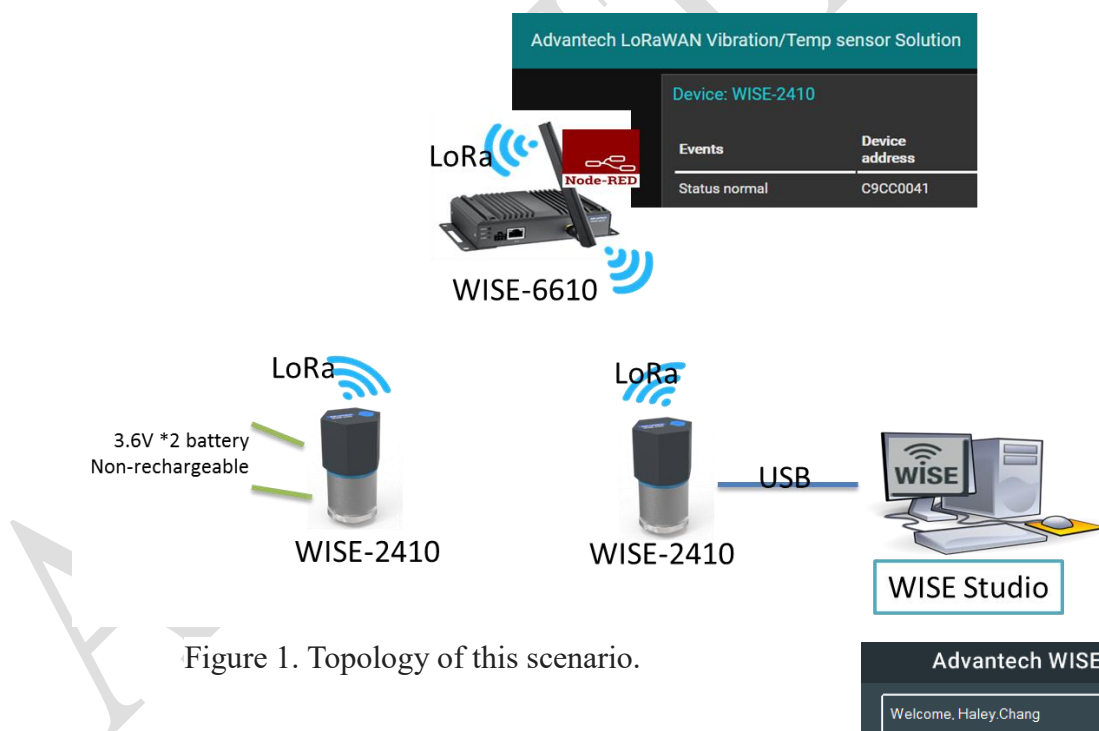


## Advantech AE Technical Share Document

<b>Date</b>	2021/7/7	<b>SR#</b>	1-3859001464
<b>Category</b>	<input type="checkbox"/> FAQ <input checked="" type="checkbox"/> SOP	<b>Related OS</b>	N/A
<b>Abstract</b>	How to connect WISE-2410 with WISE-6610?		
<b>Keyword</b>	WISE, LoRaWAN, vibration, build-in sensor		
<b>Related Product</b>	WISE-2410 series, WISE-6610		

### ■ Problem Description:

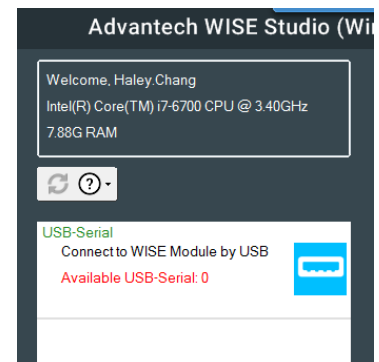
This document shows that how to connect WISE-2410 with WISE-6610, and receive data result will be shown on the Node-Red dashboard.



### ■ Brief Solution - Step by Step:

If you connect WISE-2410 with your computer and the WISE Studio shows it cannot recognize the com port, then please install the driver from the following link:

[https://support.advantech.com/support/DownloadSRDetail\\_New.aspx?SR\\_ID=1-13U9QTV&Doc\\_Source=Download](https://support.advantech.com/support/DownloadSRDetail_New.aspx?SR_ID=1-13U9QTV&Doc_Source=Download)

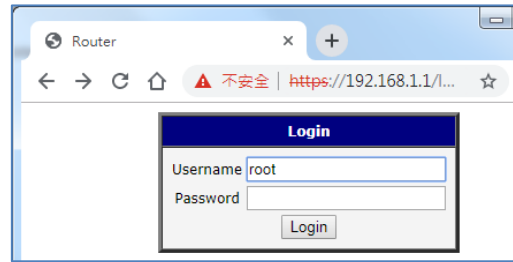


Step 1. Enter the WISE-6610 gateway.

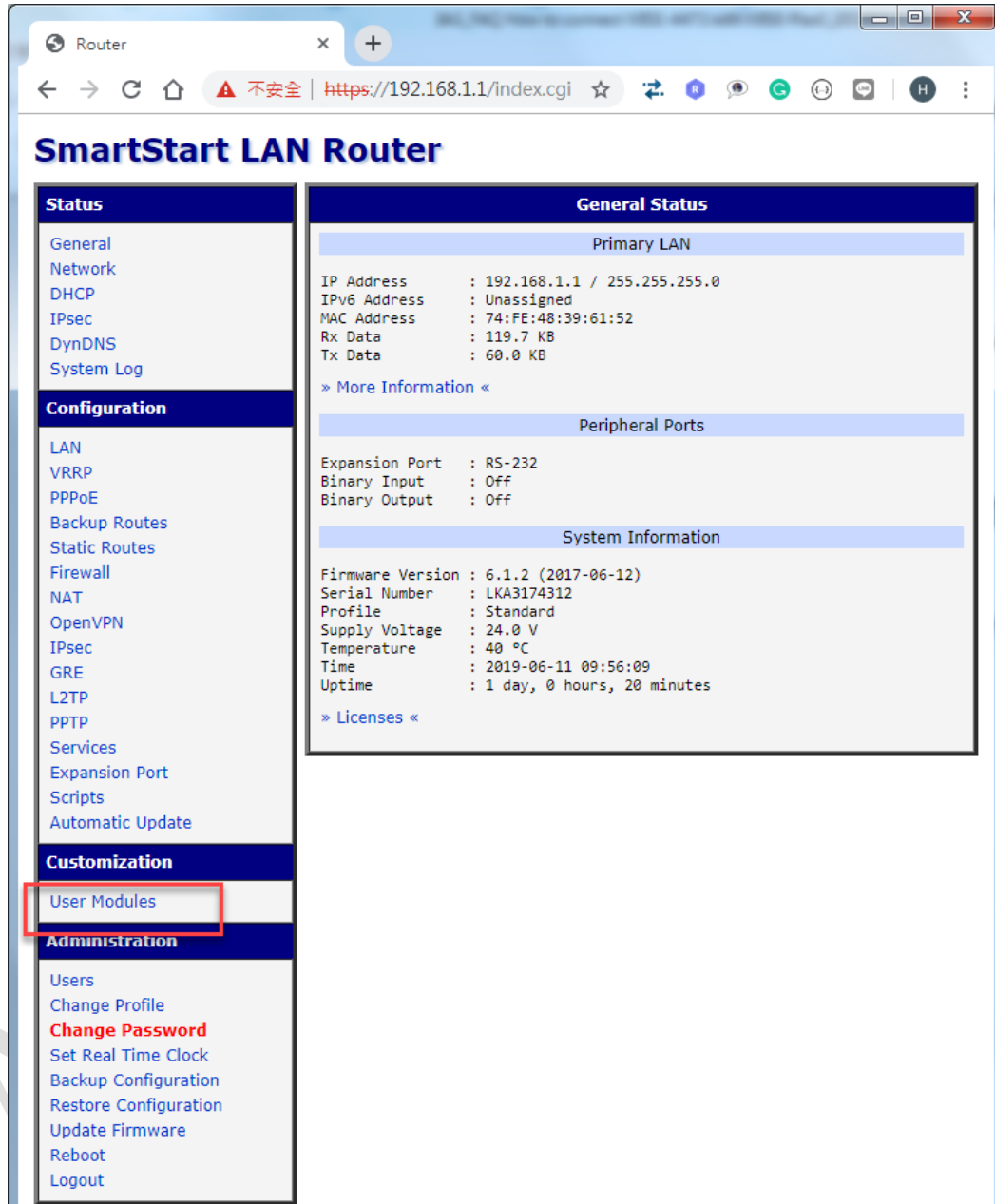
Default IP: 192.168.1.1

Account: root

Password: root



Step 2. Go to "user mode".



Step 3. If you need to upgrade the "LoRaWAN Gateway" function, DELETE first, then upload new file.

User Modules		
LoRaWAN Gateway	1.0.14 (20190531T032334Z)	Delete
Node-RED	1.0.1 alfa (2017-03-13)	Delete
New Module	選擇檔案	何檔案
		Add or Update

Step 4. Click “LoRaWAN Gateway” to enter the setting page.

Make sure all of these parameters are matching with the “RF module” setting on WISE-2410-Sxxx.

User Modules		
LoRaWAN Gateway	1.0.14 (20190531T032334Z)	Delete
Node-RED	1.0.1 alfa (2017-03-13)	Delete
New Module	選擇檔案	未選擇任何檔案
		Add or Update

LoRaWAN Gateway Settings					
LoRaWAN Radio Setting					
Model Name	WISE-6610-N100-A				
Radio Enable	On				
Radio 0 Main Frequency(KHz)	902700				
Radio 1 Main Frequency(KHz)	903400				
Channel 00	Enable	Radio Select	Offset(KHz)		
Channel 01	On	Radio 0	-400		
Channel 02	On	Radio 0	-200		
Channel 03	On	Radio 0	0		
Channel 04	On	Radio 1	200		
Channel 05	On	Radio 1	-300		
Channel 06	On	Radio 1	-100		
Channel 07	On	Radio 1	100		
Channel STD	Enable	Radio Select	Bandwidth	SF	Offset(KHz)
Channel FSK	On	Radio 0	500Khz	8	300
	Enable	Radio Select	Bandwidth	Datarate (bps)	Offset(KHz)
	Off	Radio 0	125Khz	50000	0
<input type="button" value="Quick Setup"/> Quick setting LoRaWAN Radio.					
LoRaWAN Gateway Setting					
LoRaWAN Gateway Identifier	AA555A0000000000				
Network server	IP address	Upstream Port	Downstream Port		
Backup server	127.0.0.1	1680	1680		
Backup Enable	Off	1680	1680		
Backup Database Interval	5				
<input type="button" value="Save"/>					

Or click on “quick setup” for default setting.

Channel STD On Radio

Channel FSK Off Radio

**Quick Setup** Quick setting LoRaWAN Radio.

LoRaWAN Gateway Identifier AA555A0000000000

After setup the LoRa frequency in WISE-6610, do the the “LoRaWAN Status” and copy-paste the frequency into the “RF” setting page of the WISE-2410.

WISE-2410

Configuration

Device Address: FF5495C0

Device EUI: 74FE48FFFF5495C0

Network Session Key: 00000000000000000000000000000000

Application Information

Application Session Key: 00000000000000000000000000000000

Application Port: 1

Message ACK

Frequency (KHz): 923200, 923400, 922200, 922400, 922600, 922800, 923000, 922000

Navigation

Router

LoRaWAN Radio

LoRaWAN Status

Network Server

MQTT

Storage

Application Server

LoRaWAN Gateway Settings

Basic Status

Data Record Time: 2021-07-07T16:43:54Z

Total Up Stream: 4242 Bytes

CRC OK packet: 280

CRC Bad packet: 35

NO CRC packet: 0

Channel	Radio Index	Enabled	Frequency(Hz)	Received(Bytes)
0	0	Enabled	923200000	412
1	0	Enabled	923400000	656
2	1	Enabled	922200000	608
3	1	Enabled	922400000	424
4	0	Enabled	922600000	612
5	0	Enabled	922800000	628
6	0	Enabled	923000000	436
7	1	Enabled	922000000	466
STD	1	Enabled	922100000	0
FSK	1	Enabled	921800000	0

Uplink Frame

Type	Devaddr/EUI	Freq	DR	RSSI	Fcnt	Data
Confirmed Data Up	FF5A5B1C	923.00MHz	SF10BW125	-57	22545	gBxbWv/AEVqB071EHOS
Confirmed Data Up	FE3FA4FA	923.20MHz	SF10BW125	-57	94	gPqP/6AXgAFFaDb2DIC
Confirmed Data Up	FF549AA6	922.80MHz	SF10BW125	-79	458	gKaaVP8AyqEBYhdXccNv
Confirmed Data Up	FF5487B3	923.40MHz	SF10BW125	-66	370	gLOHVp8AcgEBQXIFioE5I
Confirmed Data Up	FF548C95	923.00MHz	SF10BW125	-67	144	gJWVWp8AAJAABOUghM/cd
Confirmed Data Up	FF549A71	923.20MHz	SF10BW125	-57	430	gHGaVP8AyqEBYhdXccNv
Confirmed Data Up	FE0071A6	922.60MHz	SF10BW125	-53	94	gKZxaP8AyqEFYKXQeZD
Confirmed Data Up	FF5482FE	922.40MHz	SF10BW125	-63	413	gP6CVp8AnQEBnSAALQ
Confirmed Data Up	FF548F6F	922.80MHz	SF10BW125	-73	568	gG+PVP8AOAIB8Gr4DfyJ
Confirmed Data Up	FF548F7D	923.00MHz	SF10BW125	-67	491	gH2PVP8A6wEBUHu8LYC

Download Frame

Type	Devaddr/EUI	Freq	DR	Fcnt
Refresh				

It should match with each other.

Step 5. A new tab will pop-up after click on “network server” > “enable” > “network server (http)”.

Account: root

Password: root

Navigation	
<b>Router</b>	
1	<a href="#">LoRaWAN Radio</a>
2	<a href="#">Network Server</a>
3	• <a href="#">Settings</a>
	• <a href="#">Network Server(http)</a>
	• <a href="#">Network Server(https)</a>
	• <a href="#">Upload Database</a>
	• <a href="#">Download Database</a>
	• <a href="#">Factory Reset Database</a>
	<a href="#">MQTT</a>
	<a href="#">Application Server</a>
	<a href="#">Licenses</a>
	<a href="#">Return to Router</a>

<b>LoRaWAN Network Server Enable</b>	
On	Enable LoRaWAN network server.
<b>LoRaWAN Server Listen Port</b>	
1680	The LoRa network server listen port number ( 1 - 65535 ).
<b>LoRaWAN Network Server HTTP Port</b>	
8080	The LoRaWAN network server HTTP port number ( 1 - 65535 ).
<b>LoRaWAN Network Server HTTPS Port</b>	
8443	The LoRaWAN network server HTTPS port number ( 1 - 65535 ).
<b>LoRaWAN Web Username</b>	
root	The user name for the LoRaWAN network server.
<b>LoRaWAN Web Password</b>	
root	The password for the LoRaWAN network server.
<b>Auto ADR Count</b>	
50	The count used to Auto ADR function.
<b>LoRaWAN Network Server HTTPS Enable</b>	
Off	Enable HTTPS service.
<input type="button" value="Save"/>	

Server Admin

不安全 | 192.168.1.1:8080/admin#/dashboard

登入

http://192.168.1.1:8080

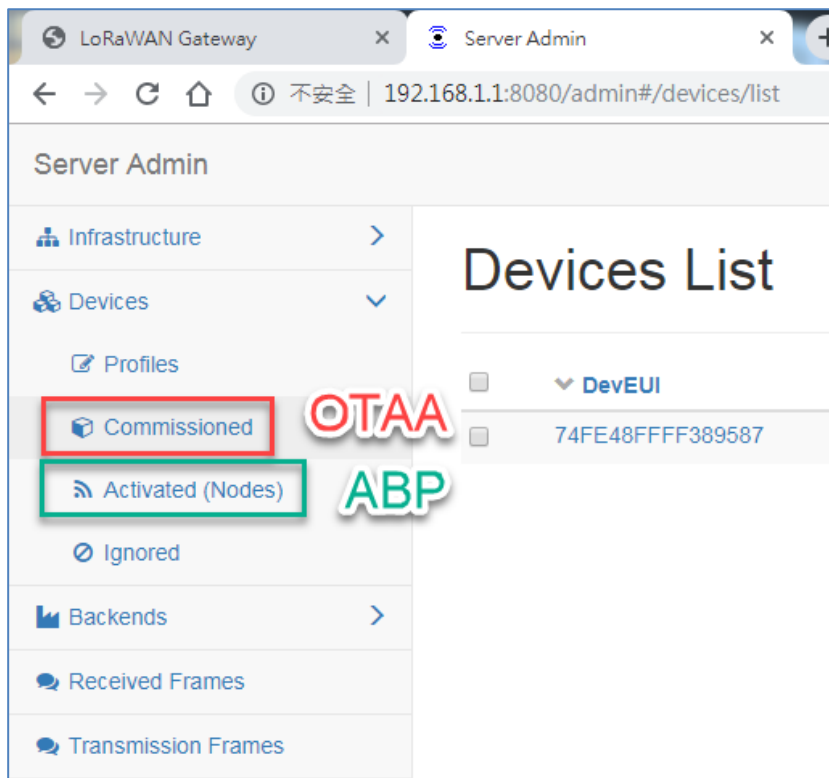
你與這個網站之間的連線不是私人連線

使用者名稱

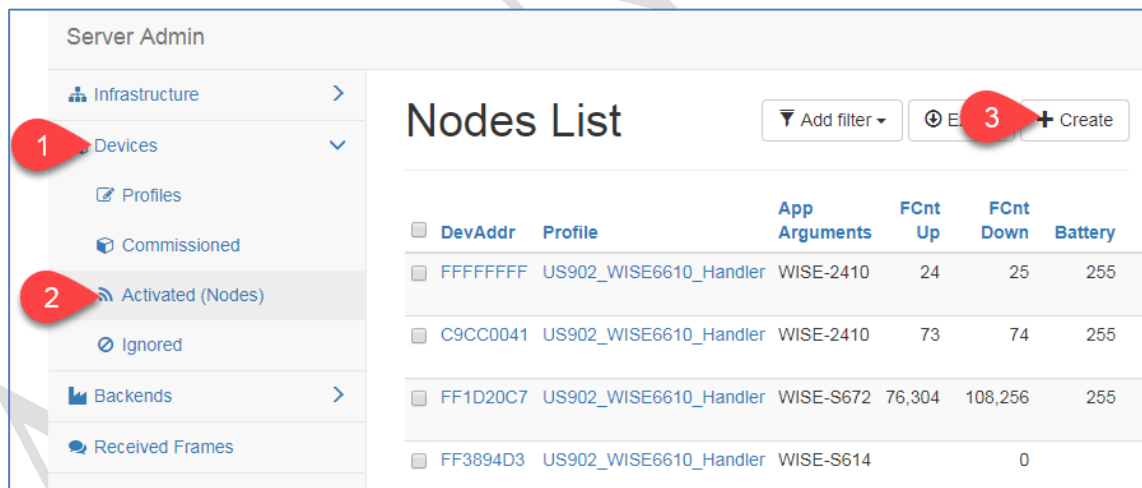
密碼

Step 6. Create an end node device according the OTAA or ABP method.

- If select “**commissioned**”, which means the node will use **OTAA** mode for connecting with a gateway.
- If select “**active nodes**”, which means the node will use **ABP** mode for connecting with a gateway.



Click on “create” in devices in “activated” because this demo is using ABP mode for connection.



Server Admin

Infrastructure

Gateways

Networks

Multicast Channels

Events

Devices

Profiles

Commissioned

Activated (Nodes)

Ignored

Backends

Received Frames

Transmission Frames

## Create new node

General

A

DevAddr \*

C9CC0041

B

Profile \*

US902\_WISE6610\_Handler

C

App Arguments

WISE-2410

D

NwksKey \*

0000000000000000000000000000000011

E

AppSKey \*

0000000000000000000000000000000011

FCnt Up

FCnt Down \*

0

F

Submit

- A. DevAddr: the device address of an end node.
  - Copy-pate from WISE-2410 “RF module” tab.
- B. Profile: select the model name of the WISE-6610 which used for Network Server role.
  - In this demo, a US version is used to connect with WISE-2410NA version.
- C. App Arguments: the I/O board of the end node.
  - In this demo, a WISE-2410 is used.
- D. NwkSKey: the network service key address of an end node.
  - Copy-pate from WISE-2410 “RF module” tab.
- E. AppSKey: the application service key of an end node.
  - Copy-pate from WISE-2410 “RF module” tab.
- F. Click on “save” to finish the setting.

Select “LoRaWAN” for RF operation mode setting on WISE-2410.

WISE-2410-NA

- Information
- Configuration**
- I/O Status
- Site Survey
- Advanced ▾

## Configuration

- Information
- RF Module**
- Time & Date
- Scheduling
- Control
- Firmware

### RF Module

Operation Region: US

RF Operation Mode: LoRaWAN

Activation Mode: ABP

Step 7. Enable “profile ADR” as “auto-adjust”.

Server Admin

Infrastructure

- Gateways
- Networks
- Multicast Channels
- Events

Devices

- Profiles
- Commissioned
- Activated (Nodes)
- Ignored
- Backends

## Edit profile #US902\_WISE6610\_Handler

General ADR

ADR Mode: Auto-Adjust

Set Power: Disabled

Set Data Rate: Maintain

Max Data Rate: Filter values

Set Channels: e.g. 0-2

Set RX1 DR Offset:

Step 8. Create a “network server” gateway. Copy-paste the MAC address from “LoRaWAN radio” > “LoRaWAN Gateway Identifier”. Then click on “submit”.

Server Admin

Infrastructure

- Gateways
- Networks
- Multicast Channels

## Gateways List

+ Create

MAC Group Description IP Address Dwell [%] Last Alive Status

Navigation

- Router
- LoRaWAN Radio
- Packet Forward
- LoRaWAN Status
- Network Server
- MQTT
- Application Server
- Licenses
- Return to Router

Model Name: WISE-6610-N100-A

Radio Enable: On

Radio 0 Main Frequency(KHz): 902700

Radio 1 Main Frequency(KHz): 903400

Channel 00: On Radio S

Channel 01: On Radio

Channel 02: On Radio

Channel 03: On Radio

Channel 04: On Radio

Channel 05: On Radio

Channel 06: On Radio

Channel 07: On Radio

Channel STD: On Radio S

Channel FSK: Off Radio S

Quick Setup: Quick setting LoRaWAN Radio.

LoRaWAN Gateway Identifier: 74FE48FFFE396152

IP address: 127.0.0.1 Upstream

Network server: 127.0.0.1 1680

Backup server: 127.0.0.1 1680

Backup Enable: Off

Backup Database Interval: 5

Save



Server Admin

Infrastructure

- Gateways
- Networks
- Multicast Channels
- Events

Devices

- Profiles
- Commissioned
- Activated (Nodes)
- Ignored

Backends

- Received Frames
- Transmission Frames

## Create new gateway

General

MAC \* 74FE48FFFE396152

Group

TX Chain \* 0

Antenna Gain (dBi) e.g. 6

Description

Location \*

Altitude

Submit

Step 9. Enable “time sync” for WISE-2410 RTC adjusting with WISE-6610 system time.

Navigation

Router

- LoRaWAN Radio
- Network Server
- MQTT
- Storage
- Application Server
- Settings
- Status
- Modbus Mapping Table
- Payload Engine
- Licenses
- Return to Router

Modbus TCP Server

On Enable the Modbus TCP Server.

Modbus TCP Server Port

502 The modbus TCP server port number ( 1 - 65535 ).

Modbus Timeout

2 The modbus TCP Timeout number ( 2 - 30 ).

Time Sync

On Enable time sync for WISE-4610 and WISE-2410 series

RESTful Server Setting

## Connection results:

- Click “application server” > “status”. Here shows the end nodes if packets are received by gateway from an end node.

Navigation

Router

- LoRaWAN Radio
- Network Server
- MQTT
- Application Server
- Status
- Modbus Mapping Table
- Payload Engine
- Licenses
- Return to Router

LoRaWAN Gateway Settings

Application Server Status

MQTT Status : Connected  
Node number : 3

Index	DevAddr	Description	Model	Received	Fcnt	Rssi	Action
1	C9CC0041		WISE2410	2019-08-13T10:26:54Z	45	-59	Delete Detail
2	FF1D20C7		WISE4610-5672	2019-08-05T19:02:05Z	10748	-75	Delete Detail
3	FFFFFFFF		WISE2410	2019-08-07T09:02:08Z	24	-74	Delete Detail

Application Log

Refresh Clear log

- The gateway will help to pre-parsing the data payload if the “app arguments” input

correctly.

**LoRaWAN Gateway Settings**

**Node Detail Data**

**DevAddr**

**Sensor**  
 Device

**PowerSrc**

**Battery Voltage**

Sensor	Range	Status	Event	SenVal	SenMaxVal	SenMinVal
TempHumi	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="26062"/>	<input type="text" value="0"/>	<input type="text" value="0"/>

Sensor	SenEvent	OAVelocity	Peakmg	RMSmg	Kurtosis	CrestFactor	Skewness	Deviation
X-Axis	<input type="text" value="0"/>	<input type="text" value="22"/>	<input type="text" value="31"/>	<input type="text" value="22"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>
Y-Axis	<input type="text" value="0"/>	<input type="text" value="19"/>	<input type="text" value="28"/>	<input type="text" value="20"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>
Z-Axis	<input type="text" value="0"/>	<input type="text" value="26"/>	<input type="text" value="33"/>	<input type="text" value="24"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>

- Received frames page shows the received results. The “FCnt” shows the frame sequence. If this sequence is in-continuously, means some of the packets were lost.

LoRaWAN Gateway    Server Admin    192.168.1.1:8080/admin#/rxframes/list

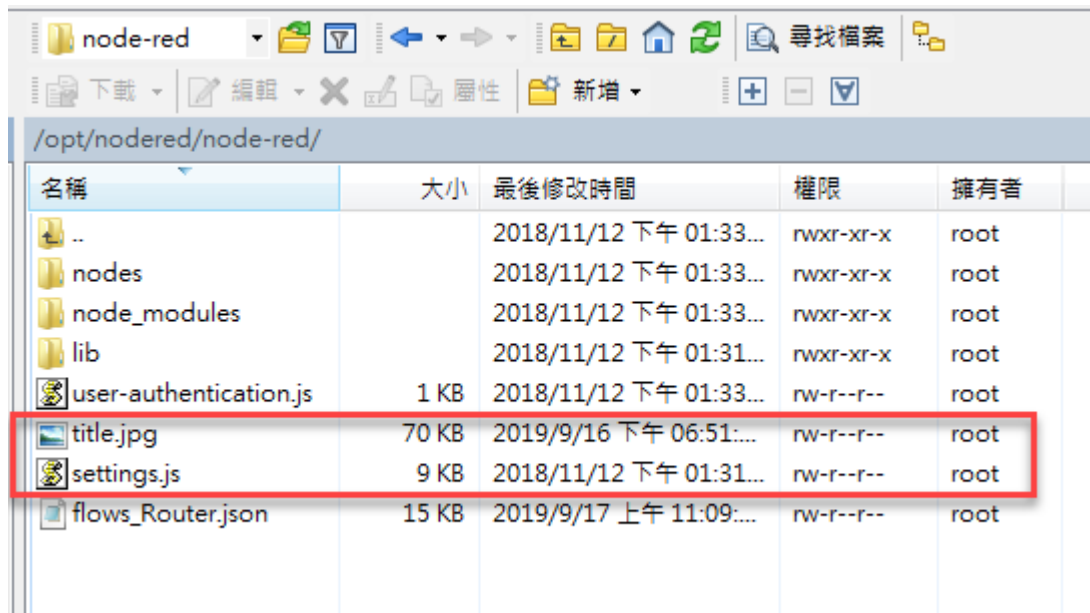
Server Admin  
 Infrastructure >  
 Devices >  
 Backends >  
**Received Frames**  
 Transmission Frames

### Received Frames

Received	Application	DevAddr	MAC	U/L RSSI	U/L SNR	FCnt	Confirm
<input type="checkbox"/> 2019-06-11T11:32:06Z	WISE6610_Handler	FF19D12F	AA555A0000000000	-69	9	211	✓
<input type="checkbox"/> 2019-06-11T11:32:04Z	WISE6610_Handler	FF19D12F	AA555A0000000000	-67	6.5	210	✓
<input type="checkbox"/> 2019-06-11T11:31:53Z	WISE6610_Handler	FF19D12F	AA555A0000000000	-65	5.2	209	✓
<input type="checkbox"/> 2019-06-11T11:30:38Z	WISE6610_Handler	FF19D12F	AA555A0000000000	-71	7.2	204	✓
<input type="checkbox"/> 2019-06-11T11:29:40Z	WISE6610_Handler	FF19D12F	AA555A0000000000	-71	8.8	200	✓

### Continue with setting up:

- Step 10. (optional) Connect WISE-6610 through “WinSCP” (FileZilla cannot connect with it). Modify the “setting.js” file of WISE-6610. So a user can **insert image** into dashboard. Put the “title.jpg” file under folder “opt/nodered/node-red/” of WISE-6610. Need to reboot Node-Red service if modify the setting.js file. If you don’t want an image, you can simply delete this node.



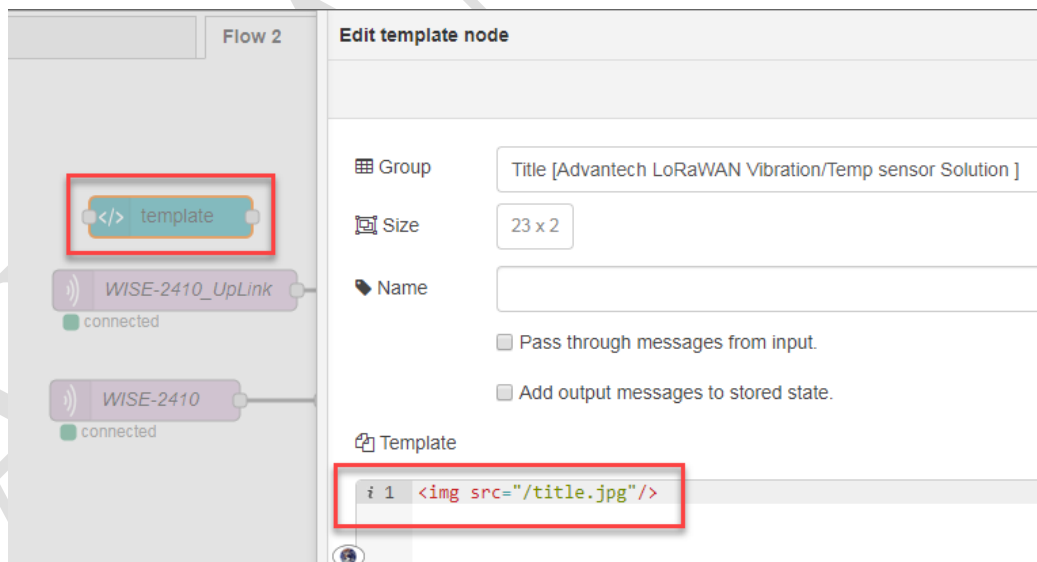
名稱	大小	最後修改時間	權限	擁有者
..		2018/11/12 下午 01:33...	rw-r--r--	root
nodes		2018/11/12 下午 01:33...	rw-r--r--	root
node_modules		2018/11/12 下午 01:33...	rw-r--r--	root
lib		2018/11/12 下午 01:31...	rw-r--r--	root
user-authentication.js	1 KB	2018/11/12 下午 01:33...	rw-r--r--	root
title.jpg	70 KB	2019/9/16 下午 06:51:...	rw-r--r--	root
settings.js	9 KB	2018/11/12 下午 01:31...	rw-r--r--	root
flows_Router.json	15 KB	2019/9/17 上午 11:09:...	rw-r--r--	root

Add a line "httpStatic: '/opt/nodered/node-red/',".

```

88 // When httpAdminRoot is used to move the UI to a different root path, the
89 // following property can be used to identify a directory of static content
90 // that should be served at http://localhost:1880/.
91 //httpStatic: '/home/nol/node-red-static/',
92 httpStatic: '/opt/nodered/node-red/',
93
94 // The maximum size of HTTP request that will be accepted by the runtime api.
95 // Default: 5mb
96 //apiMaxLength: '5mb',
97
98 // If you installed the optional node-red-dashboard you can set it's path
99 // relative to httpRoot
100 //ui: { path: "ui" },

```



Step 11. Enable the Node-Red function on WISE-6610.

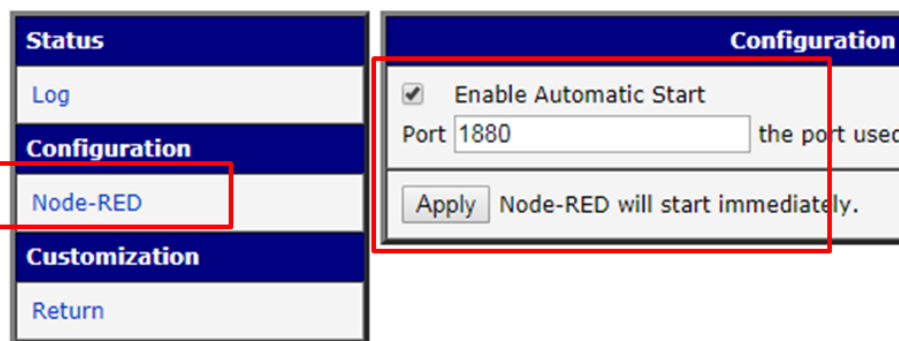
Go to "Customization / User Modules / Node-Red" webpage and enable automatic start function with the port number you prefer. Default port number 1880 is recommended.



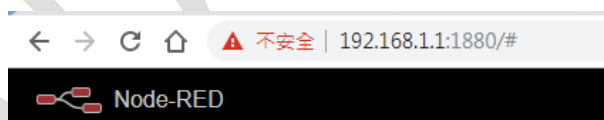
## SmartStart LAN Router



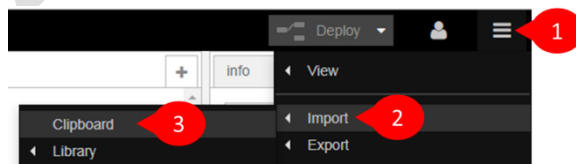
## Node-RED configuration



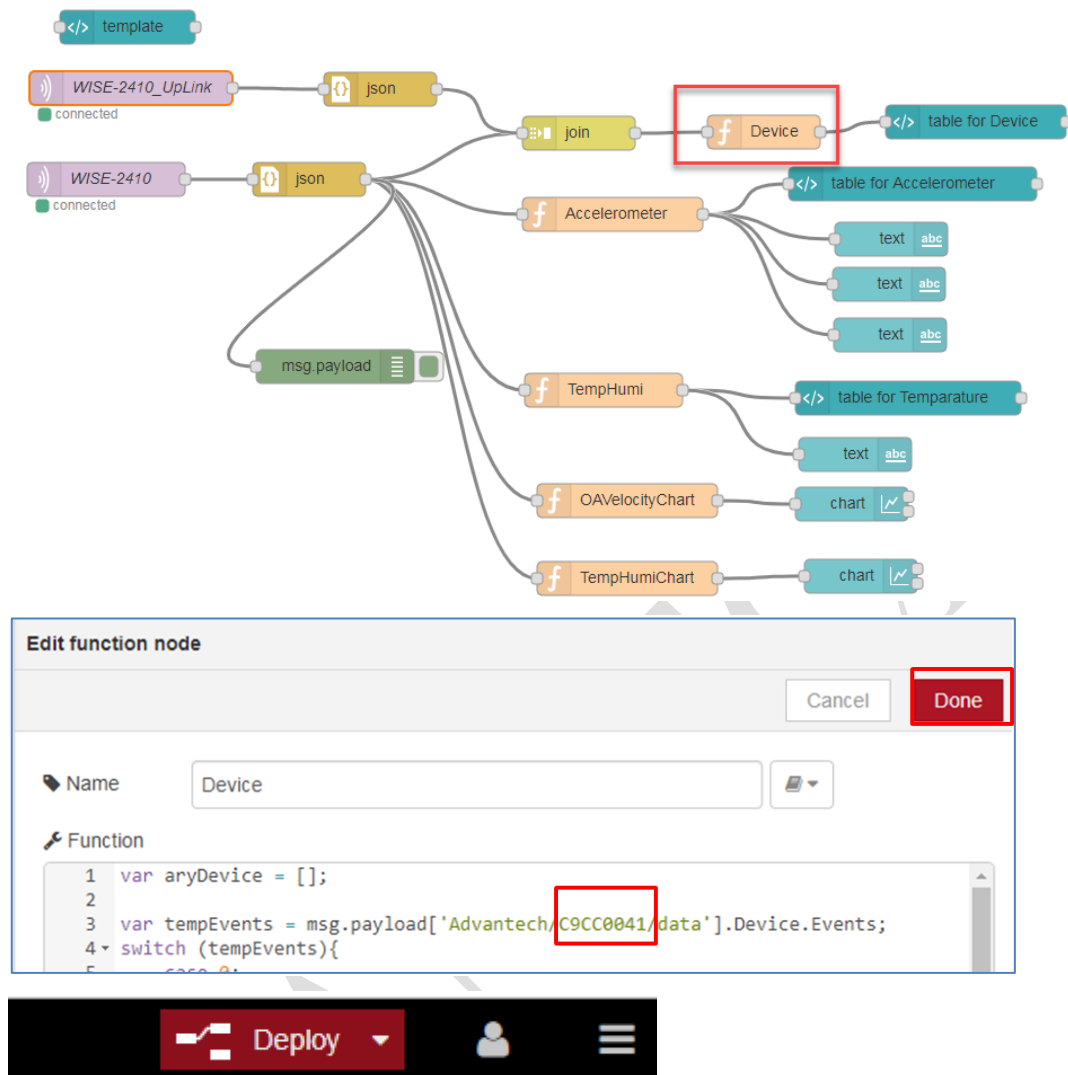
Step 12. Open a new tab on a browser. Type-in the IP address of the WISE-6610 and port number of the Node-Red.



Step 13. Copy-paste the texts from the notepad. (Attached with this FAQ file)



Step 14. Modify **all of the device MAC addresses** in "WISE-2410\_UpLink" node, and "Device" function into the MAC of yours. Then click on "deploy".



## Parsing results on dashboard:

Click “dashboard / open”. There will be the dashboard created by the program copy-pasted from the notepad.

