

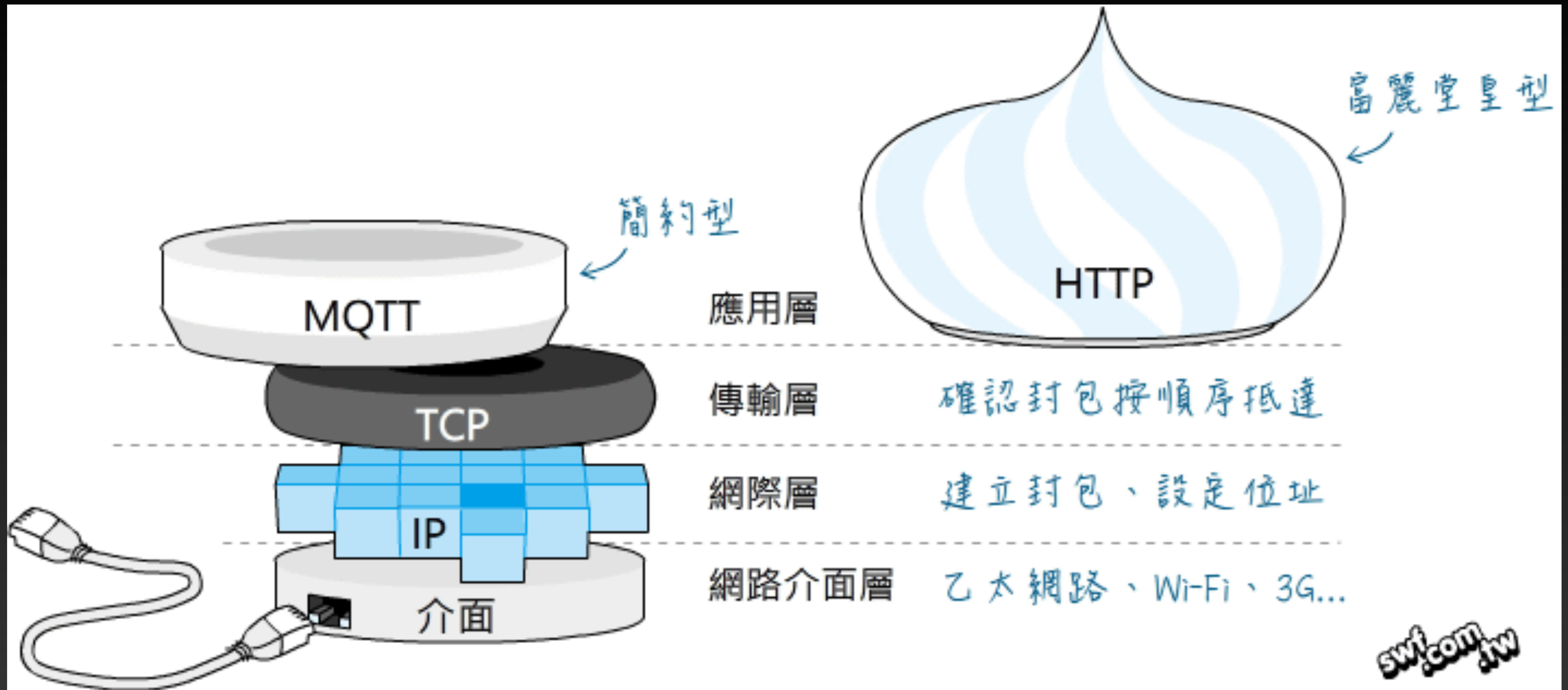
JavaScript 物聯網實作

Node-RED 與 MQTT

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認識 MQTT



HTTP請求
的指令

POST /data HTTP/1.1/r/n

Host: 192.168.1.25/r/n

User-Agent: Mozilla/5.0 (Linux; Android 7.0)

AppleWebKit/537.36 (KHTML, Like Gecko)

Chrome/55.0.2883.91 Mobile Safari/537.36/r/n

Content-Type: application/x-www-form-urlencoded/r/n

Accept-Language: zh-TW,zh,en-US,en;q=0.5/r/n

Accept-Encoding: gzip, deflate/r/n

:

Content-Length: 7/r/n

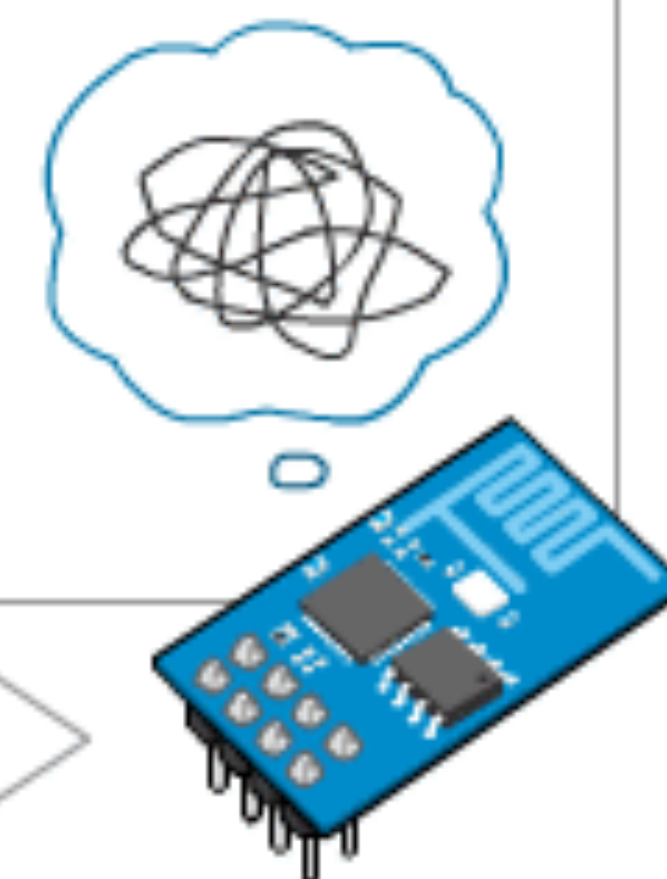
/r/n

HTTP請求
的標頭

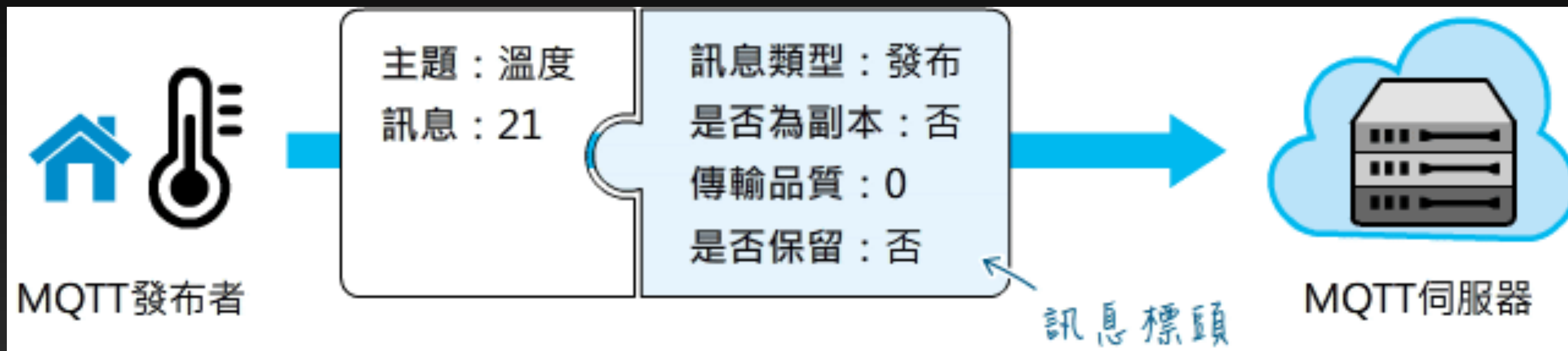
訊息本體
(payload)

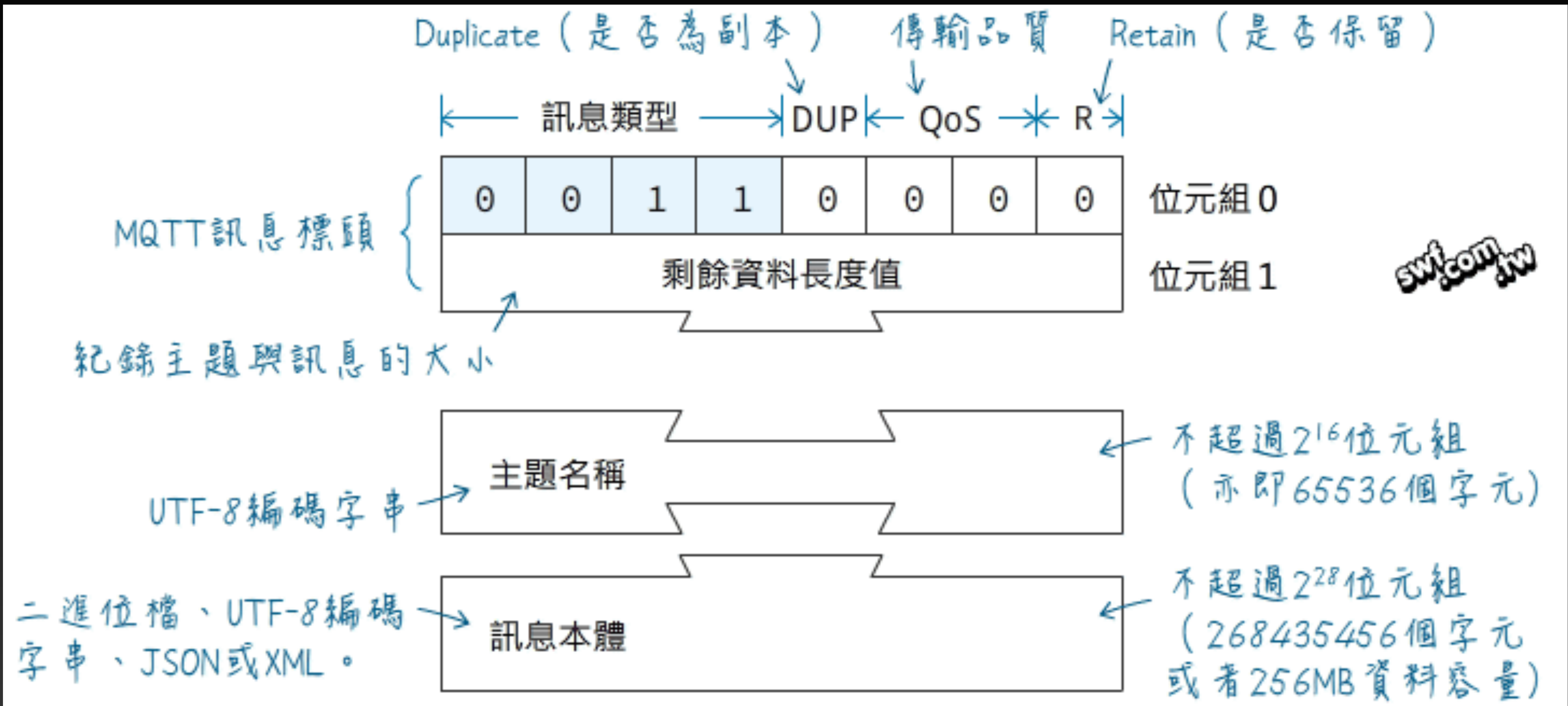
temp=21

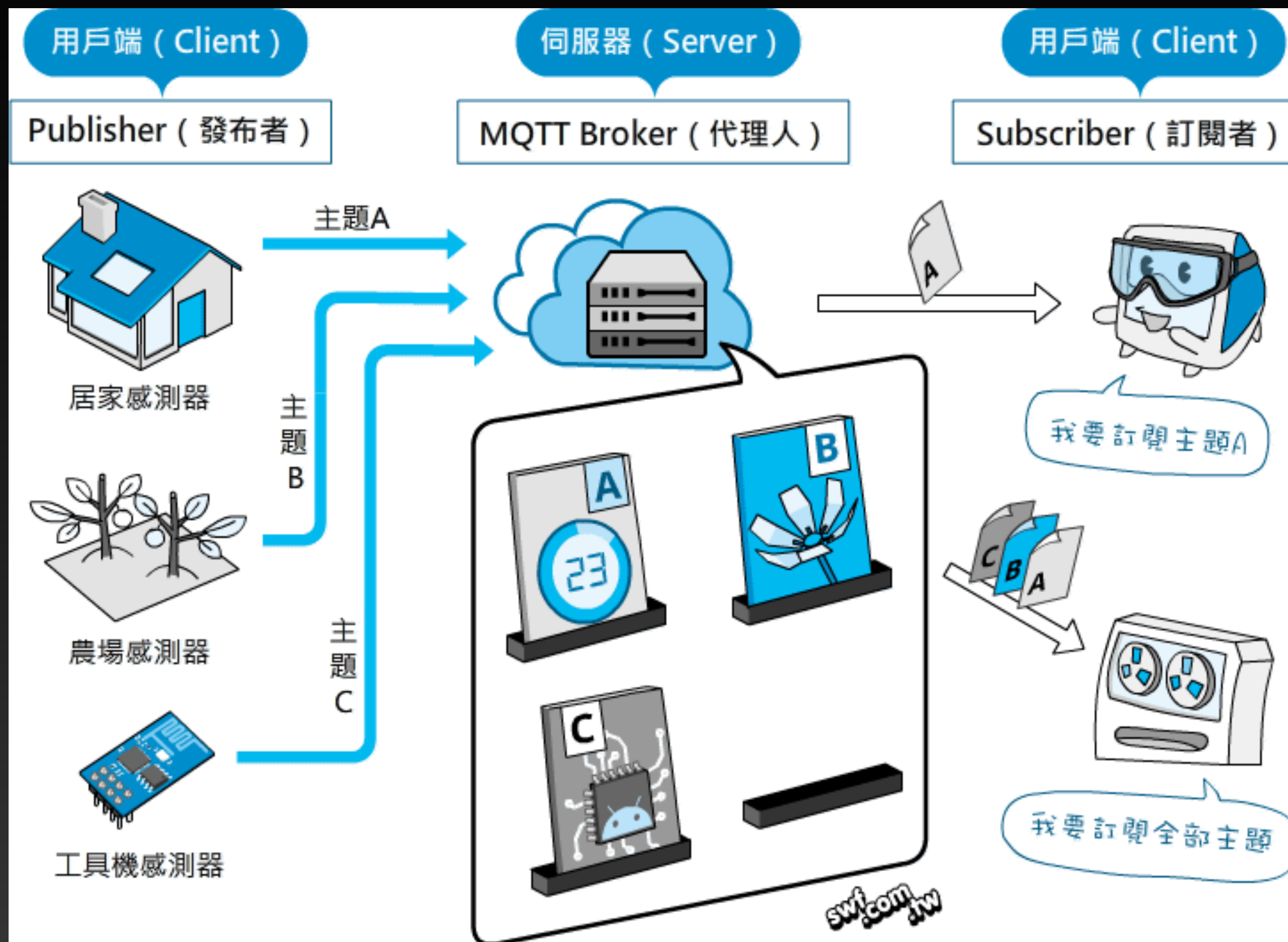
swf.com.tw

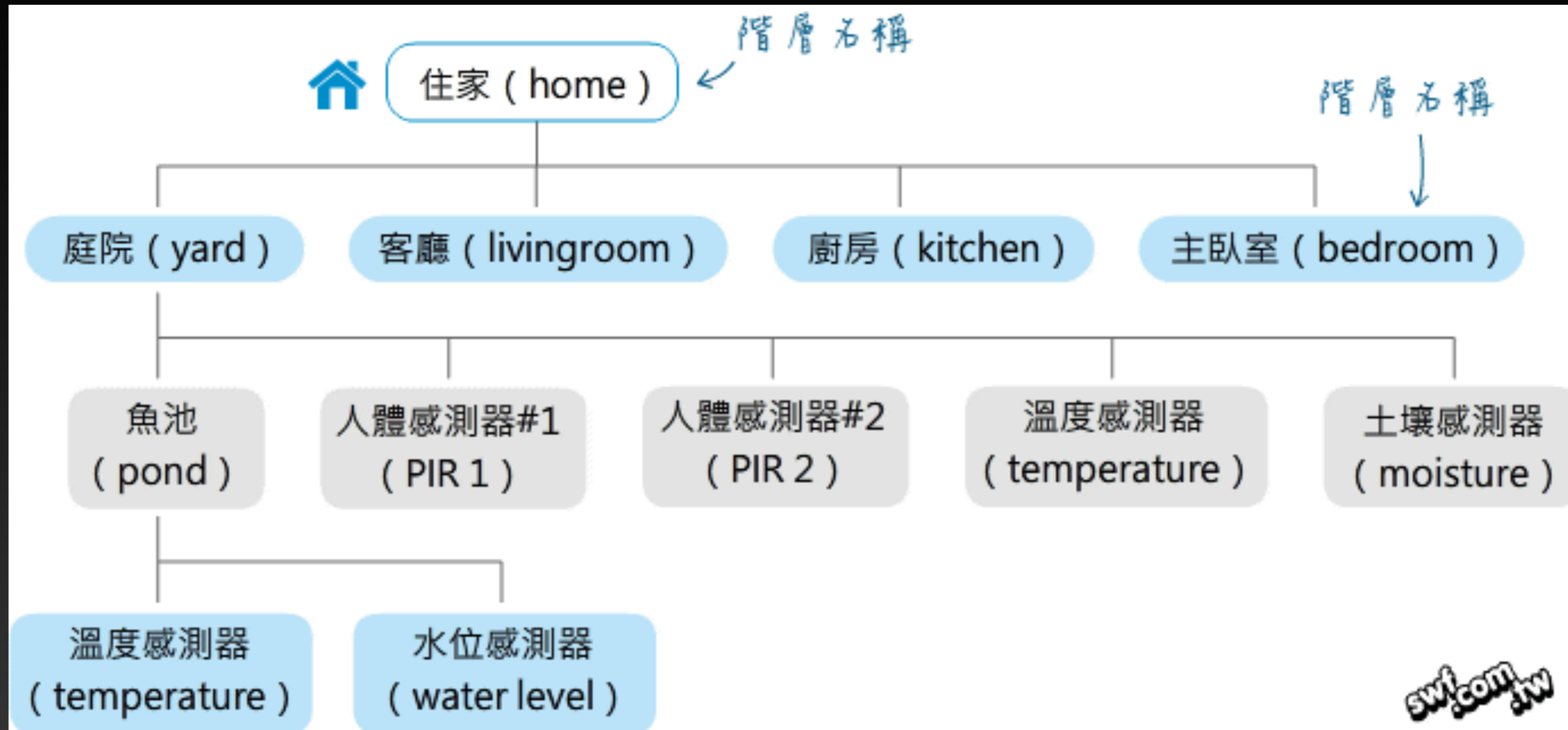


<http://swf.com.tw/?p=1002>









主題階層分隔字元



住家 / 庭院 / 人體感測器1



可用中文命名，但不建議。



不可包含#和+字元。

- 輕量、可靠的二進制通訊協定
- MQTT 協定的訊息內容很精簡，非常適合用於處理器資源及網路頻寬有限的物聯網裝置
- MQTT 的標頭採用數字編碼，整個長度只佔 2 位元組，等同兩個字元，後面跟著訊息的主題（topic）和內容（payload）
- MQTT 是一種基於「發布/訂閱」機制的訊息傳輸協定
- 代理人（broker）是個伺服器軟體，向伺服器發送主題的一方是發布者（publisher），從伺服器獲取主題的一方則是訂閱者（subscriber）
- MQTT 主題名稱是 UTF-8（萬國碼）編碼的字串，主題名稱也支援類似檔案路徑的階層式命名方式

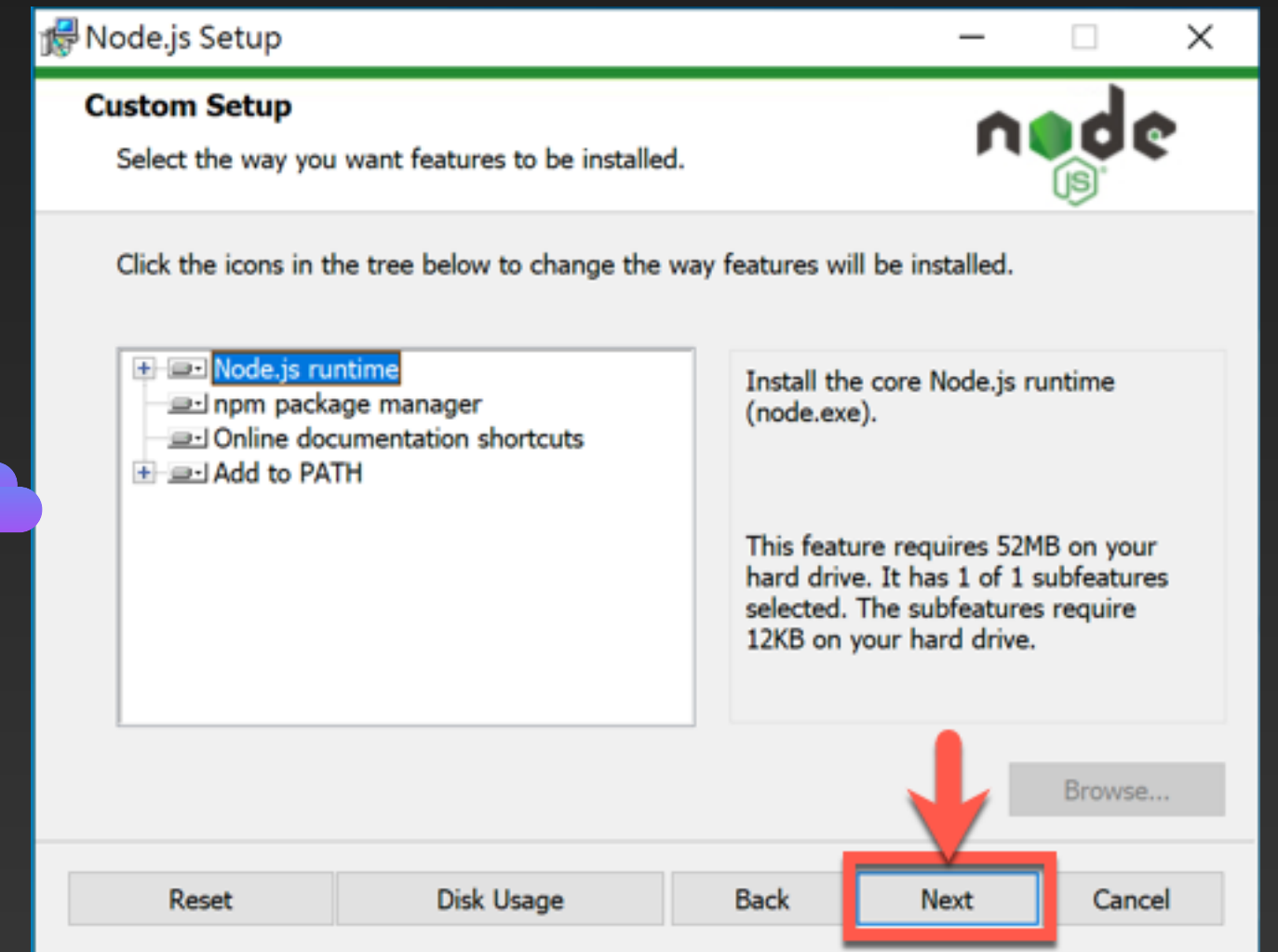
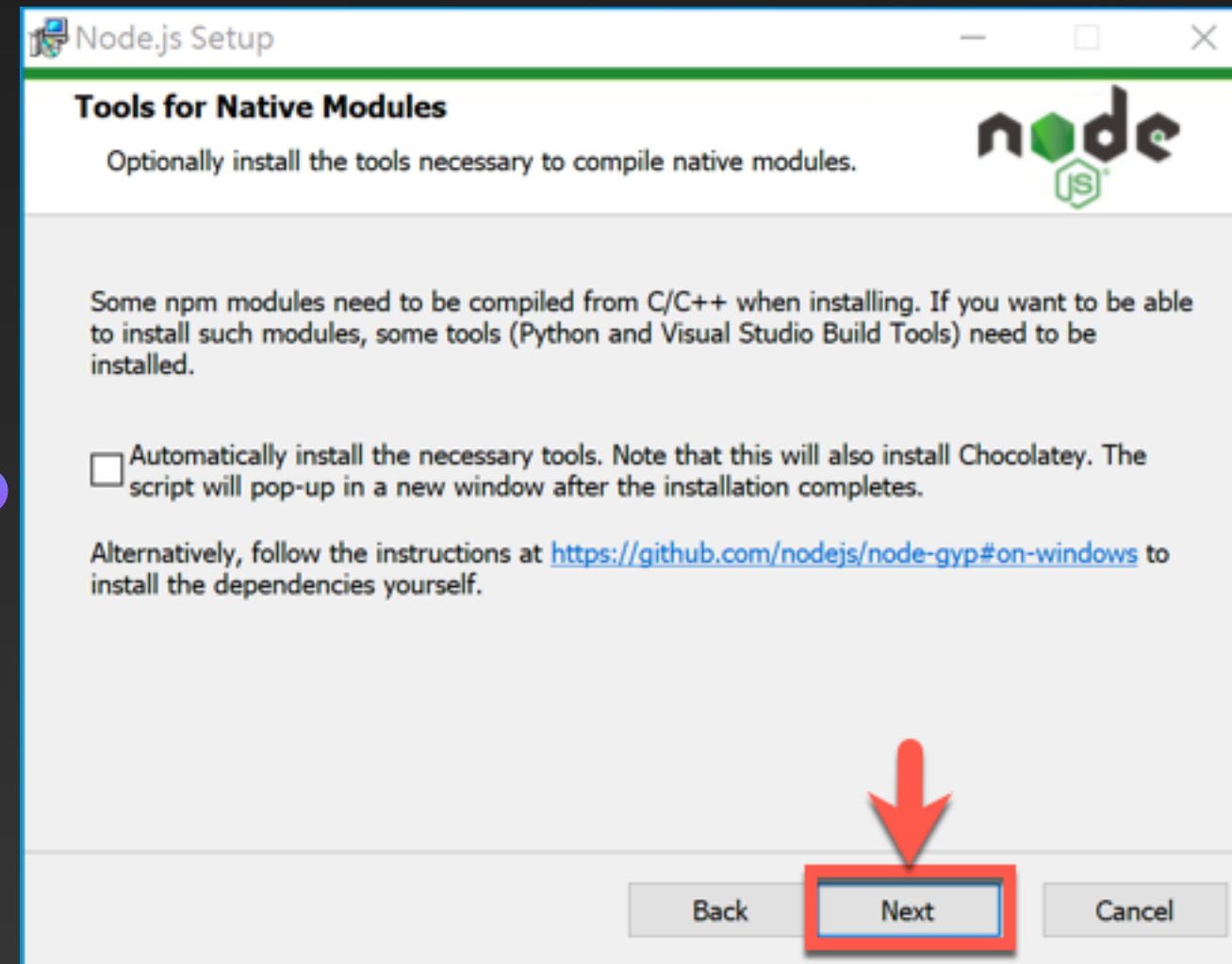
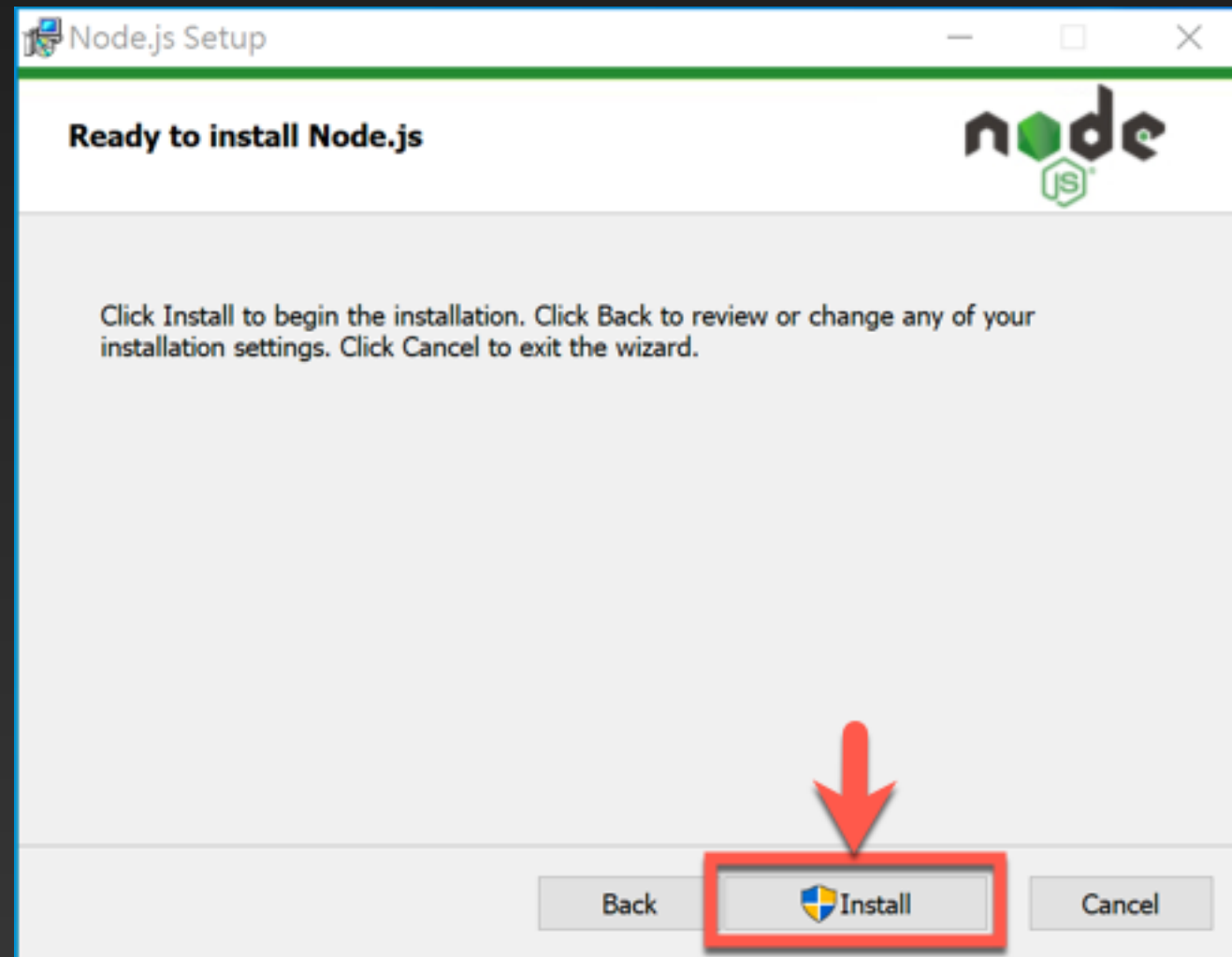
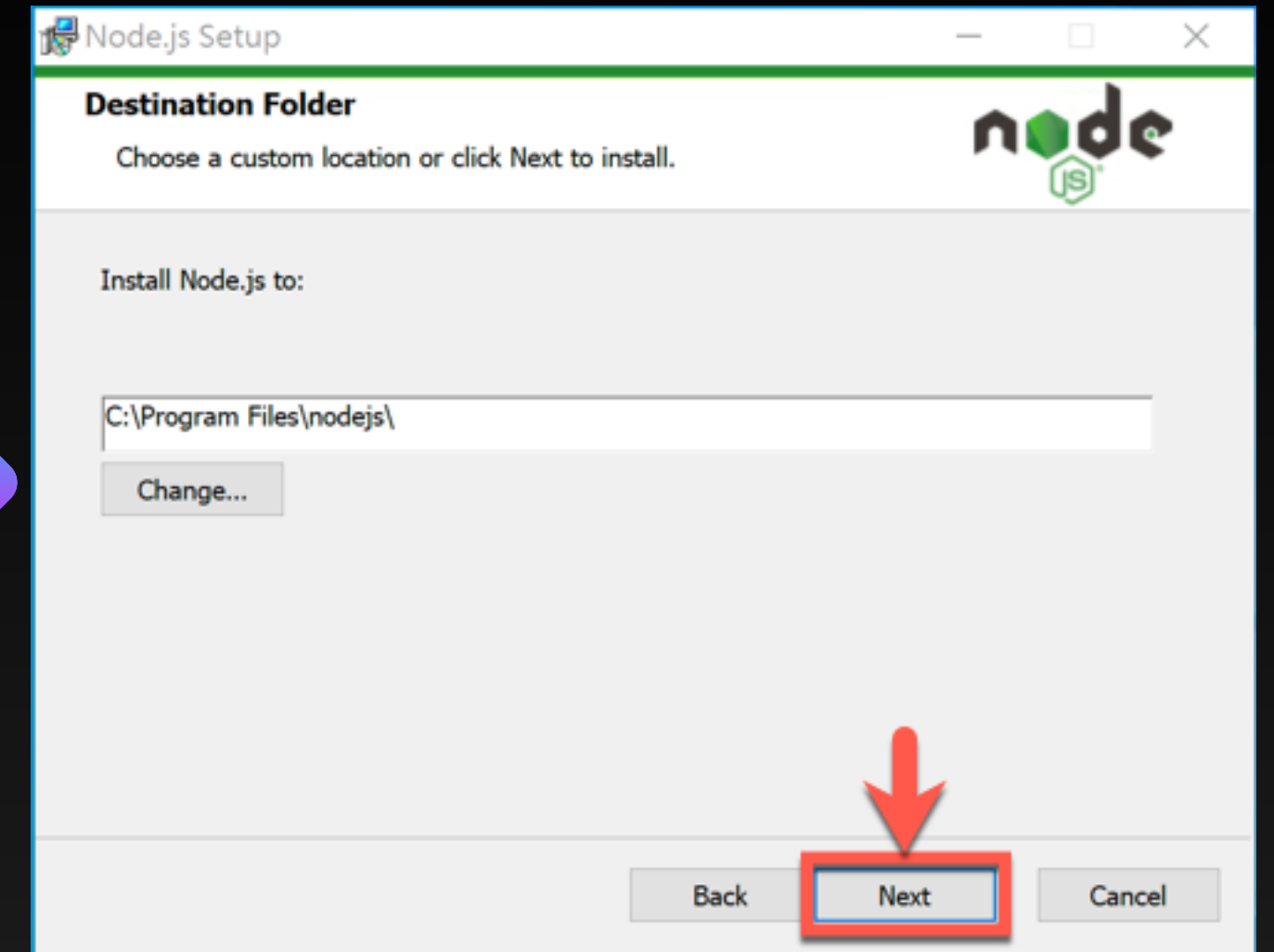
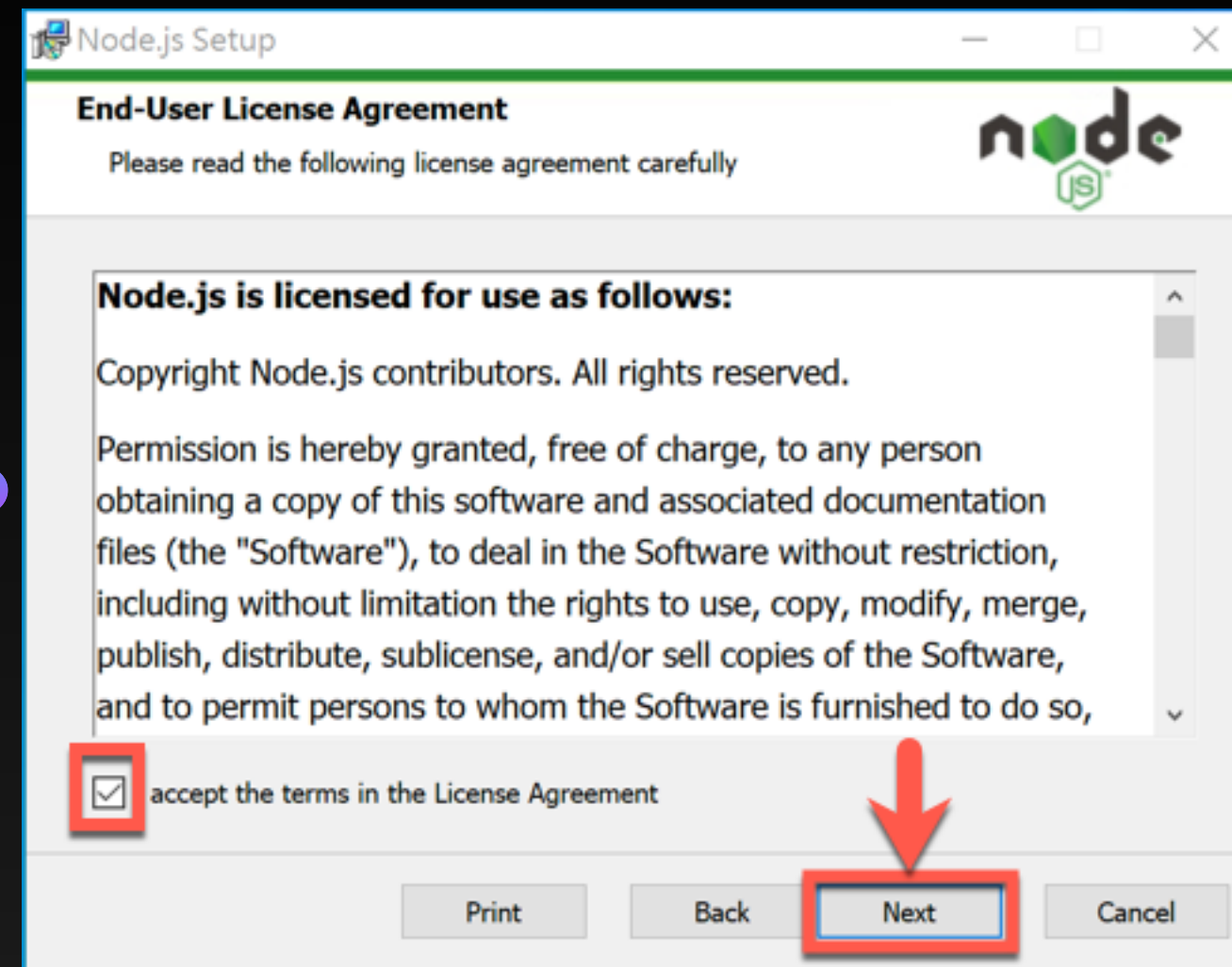
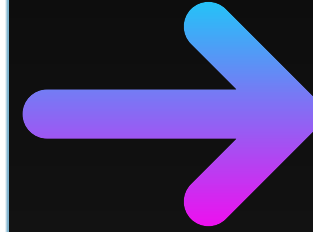
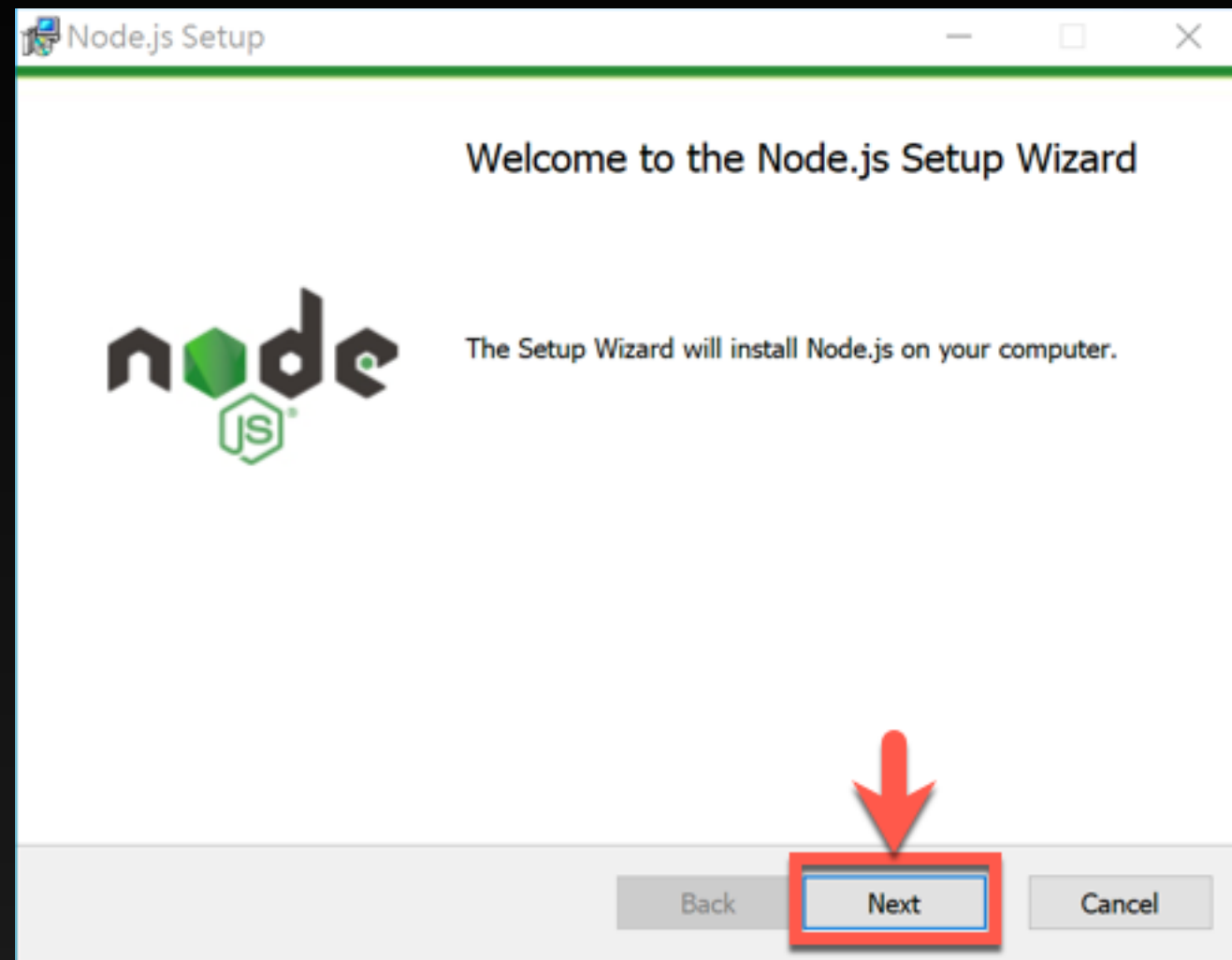
安裝 Node-RED

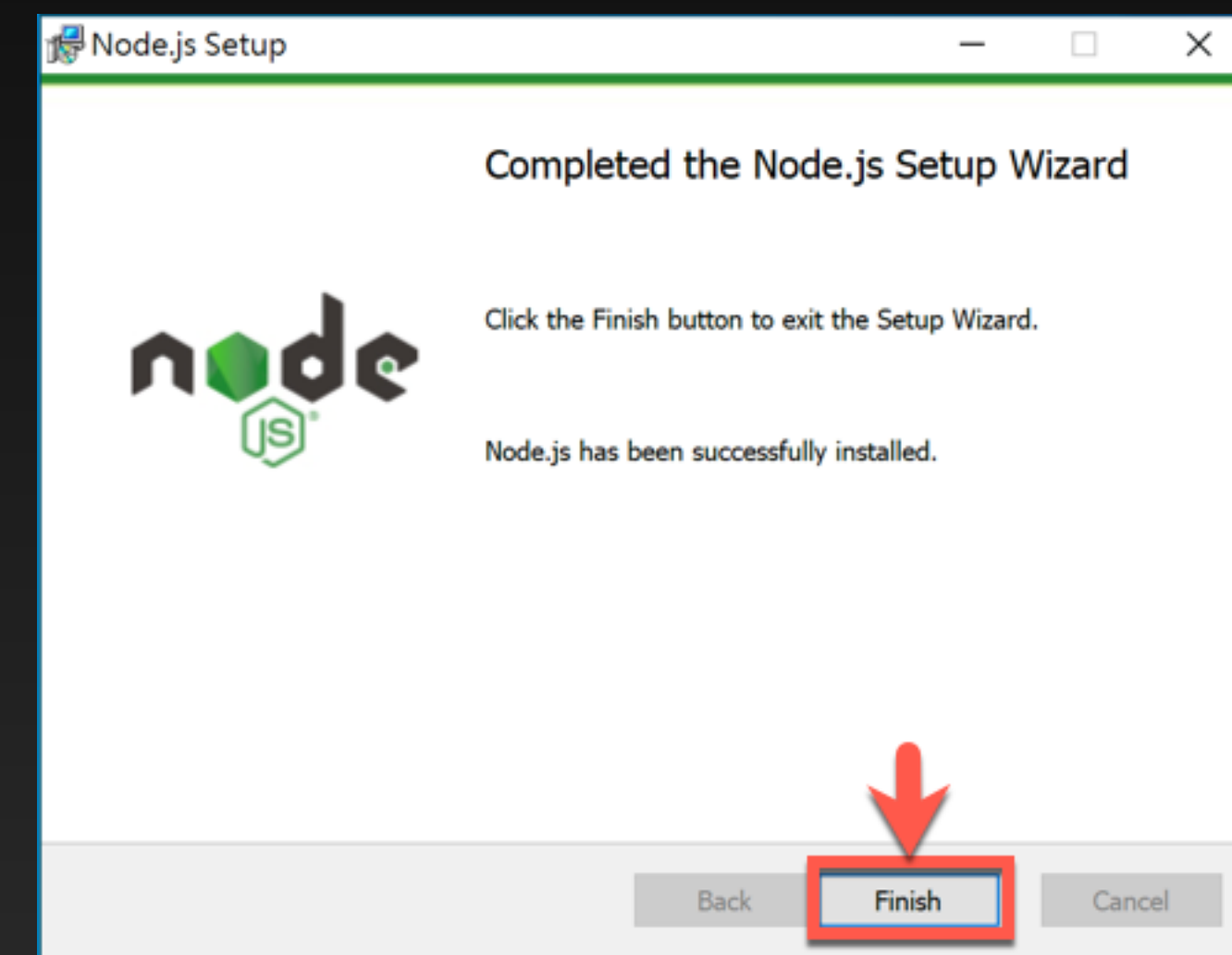
安裝 Node.js

The screenshot shows the Node.js website with the following content:

- Header:** Node.js logo and navigation links: HOME, ABOUT, DOWNLOADS, DOCS, GET INVOLVED, SECURITY, NEWS.
- Intro:** Node.js® is a JavaScript runtime built on [Chrome's V8 JavaScript engine](#).
- Download for macOS (x64):**
 - 12.16.3 LTS** (Recommended For Most Users) - Labeled **穩定版本** (Stable Version).
 - 14.2.0 Current** (Latest Features) - Labeled **最新版本** (Latest Version).
- Links:** Other Downloads | Changelog | API Docs (for both versions).
- Text:** Or have a look at the [Long Term Support \(LTS\) schedule](#).
- Text:** Sign up for [Node.js Everywhere](#), the official Node.js Monthly Newsletter.
- Footer:** OpenJS Foundation logo, copyright notice, and links: Report Node.js issue | Report website issue | Get Help.
- Footer:** Node.js is a trademark of Joyent, Inc. and is used with its permission. Please review the Trademark Guidelines of the OpenJS Foundation. Node.js Project Licensing Information.
- Footer:** Thank you drifkin for being a Node.js contributor 4 contributions.

<https://nodejs.org/en/>





安裝 Node-RED

- 安裝 Node.js 完成後，打開終端機
- 輸入 `npm install -g node-red` 就可以完成 Node-RED 的安裝
- 如果是 Mac 前面要加上 `sudo`
- 安裝完成後，只要繼續輸入 `node-red`，就會啟動 Node-RED

Node.js command prompt

Your environment has been set up for using Node.js 12.17.0 (x64) and npm.

C:\Users\Brian Wang>npm install -g node-red

npm WARN deprecated request@2.88.0: request has been deprecated, see <https://github.com/request/request/issues/3142>

C:\Users\Brian Wang\AppData\Roaming\npm\node-red-pi -> C:\Users\Brian Wang\AppData\Roaming\npm\node_modules\node-red\bin\node-red-pi

C:\Users\Brian Wang\AppData\Roaming\npm\node-red -> C:\Users\Brian Wang\AppData\Roaming\npm\node_modules\node-red\red.js

> bcrypt@3.0.6 install C:\Users\Brian Wang\AppData\Roaming\npm\node_modules\node-red\node_modules\bcrypt

> node-pre-gyp install --fallback-to-build

node-pre-gyp WARN Using request for node-pre-gyp https download

[bcrypt] Success: "C:\Users\Brian Wang\AppData\Roaming\npm\node_modules\node-red\node_modules\bcrypt\lib\binding\bcrypt_lib.node" is installed via remote

+ node-red@1.0.6

added 330 packages from 339 contributors in 46.36s

C:\Users\Brian Wang>

安裝 Aedes MQTT Boker

安裝 Aedes MQTT Boker

- 打開終端機
- 輸入 `npm install node-red-contrib-aedes`
- 如果是 Mac 前面要加上 `sudo`
- <https://flows.nodered.org/node/node-red-contrib-aedes>

選擇 node-red

Your environment has been set up for using Node.js 15.2.1 (x64) and npm.

C:\Users\Brian Wang>npm install node-red-contrib-aedes

added 72 packages, and audited 72 packages in 10s

6 packages are looking for funding
run `npm fund` for details

found 0 vulnerabilities

啟動 Node-RED

- 打開終端機輸入 `node-red` 就會啟動 Node-RED
- 打開瀏覽器，網址列輸入 `http://127.0.0.1:1880/`，就可以打開 Node-RED
- 左邊是一些功能流程的節點，每個節點都有各自的功能
- 中間的區域就是透過這些節點組成流程圖

```
node-red
C:\Users\Brian Wang>node-red
27 May 21:19:26 - [info]

Welcome to Node-RED
=====

27 May 21:19:26 - [info] Node-RED version: v1.0.6
27 May 21:19:26 - [info] Node.js version: v12.17.0
27 May 21:19:26 - [info] Windows_NT 10.0.18362 x64 LE
27 May 21:19:27 - [info] Loading palette nodes
27 May 21:19:28 - [info] Settings file : C:\Users\Brian Wang\.node-red\settings.js
27 May 21:19:28 - [info] Context store : 'default' [module=memory]
27 May 21:19:28 - [info] User directory : C:\Users\Brian Wang\.node-red
27 May 21:19:28 - [warn] Projects disabled : editorTheme.projects.enabled=false
27 May 21:19:28 - [info] Flows file : C:\Users\Brian Wang\.node-red\flows_DESKTOP-9TIQAEg.json
27 May 21:19:28 - [info] Creating new flow file
27 May 21:19:28 - [warn]

-----
Your flow credentials file is encrypted using a system-generated key.

If the system-generated key is lost for any reason, your credentials
file will not be recoverable, you will have to delete it and re-enter
your credentials.

You should set your own key using the 'credentialSecret' option in
your settings file. Node-RED will then re-encrypt your credentials
file using your chosen key the next time you deploy a change.
-----

27 May 21:19:28 - [info] Server now running at http://127.0.0.1:1880/
27 May 21:19:28 - [info] Starting flows
27 May 21:19:28 - [info] Started flows
```

Node-RED

127.0.0.1:1880/#flow/be2808c7.681ff8

Node-RED

部署

過濾節點

流程1

共通

inject

debug

complete

catch

status

link in

link out

comment

功能

網絡

序列

解析

存儲

信息

信息

流程	"be2808c7.681ff8"
名稱	流程1
狀態	啟用

描述

按住↑的同時點擊節點會選中所有被連接的節點。

實作 MQTT

Node-RED

部署

過濾節點

流程1

共通

inject

debug

complete

catch

status

link in

link out

comment

功能

function

switch

change

range

template

delay

trigger

exec

rbe

網絡

MQTT boker 代理人

Aedes MQTT broker

MQTT publisher 發布者

時間戳

MQTT subscriber 訂閱者

mqtt

mqtt

msg.payload

msg.payload

已連接

信息

搜尋流程

流程

流程1

子流程

全局配置節點

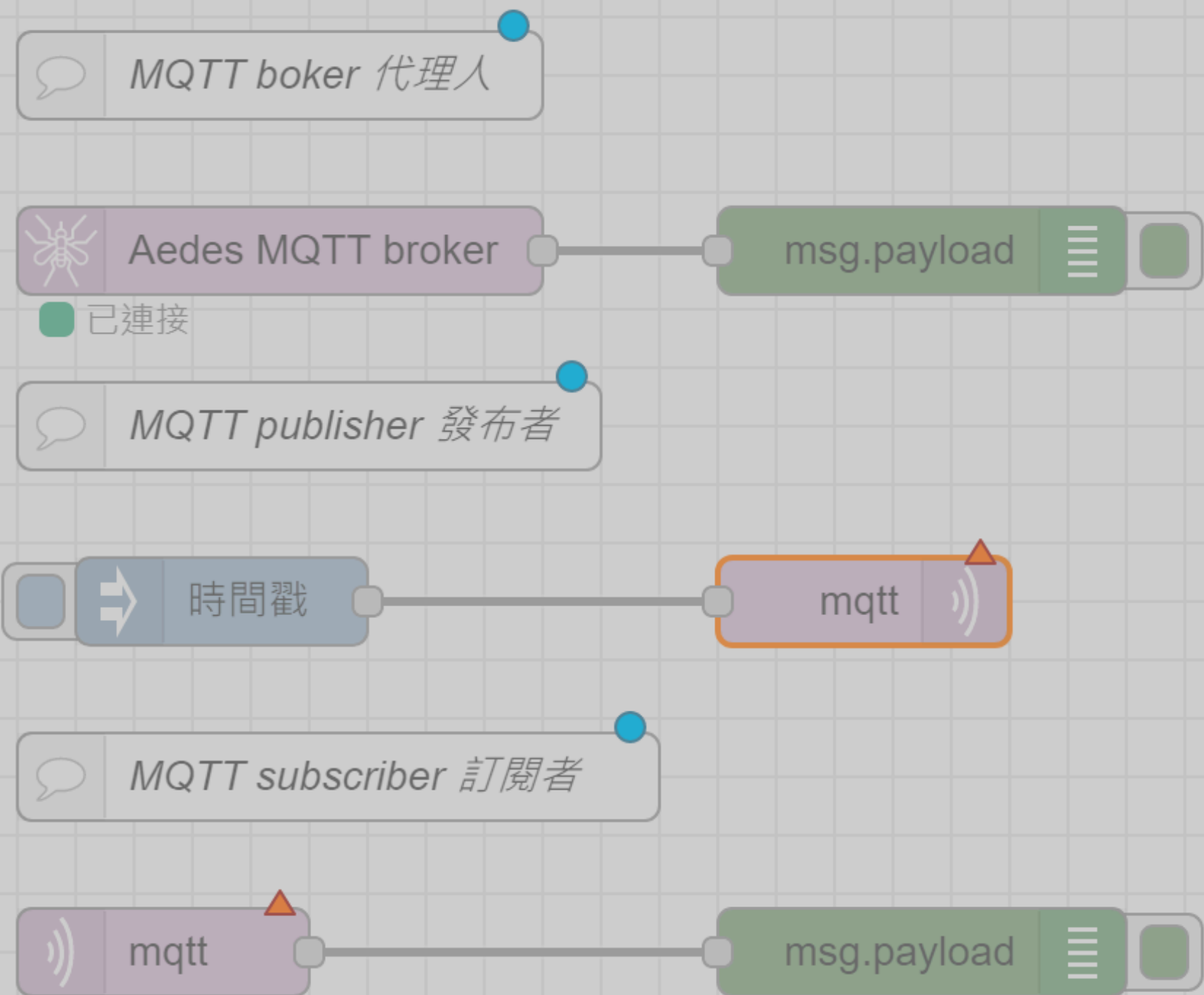
流程1

流程

be2808c7.681ff8

您可以用←↑↓→鍵來移動被選中的節點。按住↑可以更快地移動節點。

流程1



編輯 mqtt out 節點 > 添加新的 mqtt-broker 配置

取消

添加

屬性

名稱

名稱

連接

安全

消息

服務端

localhost

埠

1883

☐ 使用安全連接 (SSL/TLS)

使用者端ID

留白則自動隨機生成

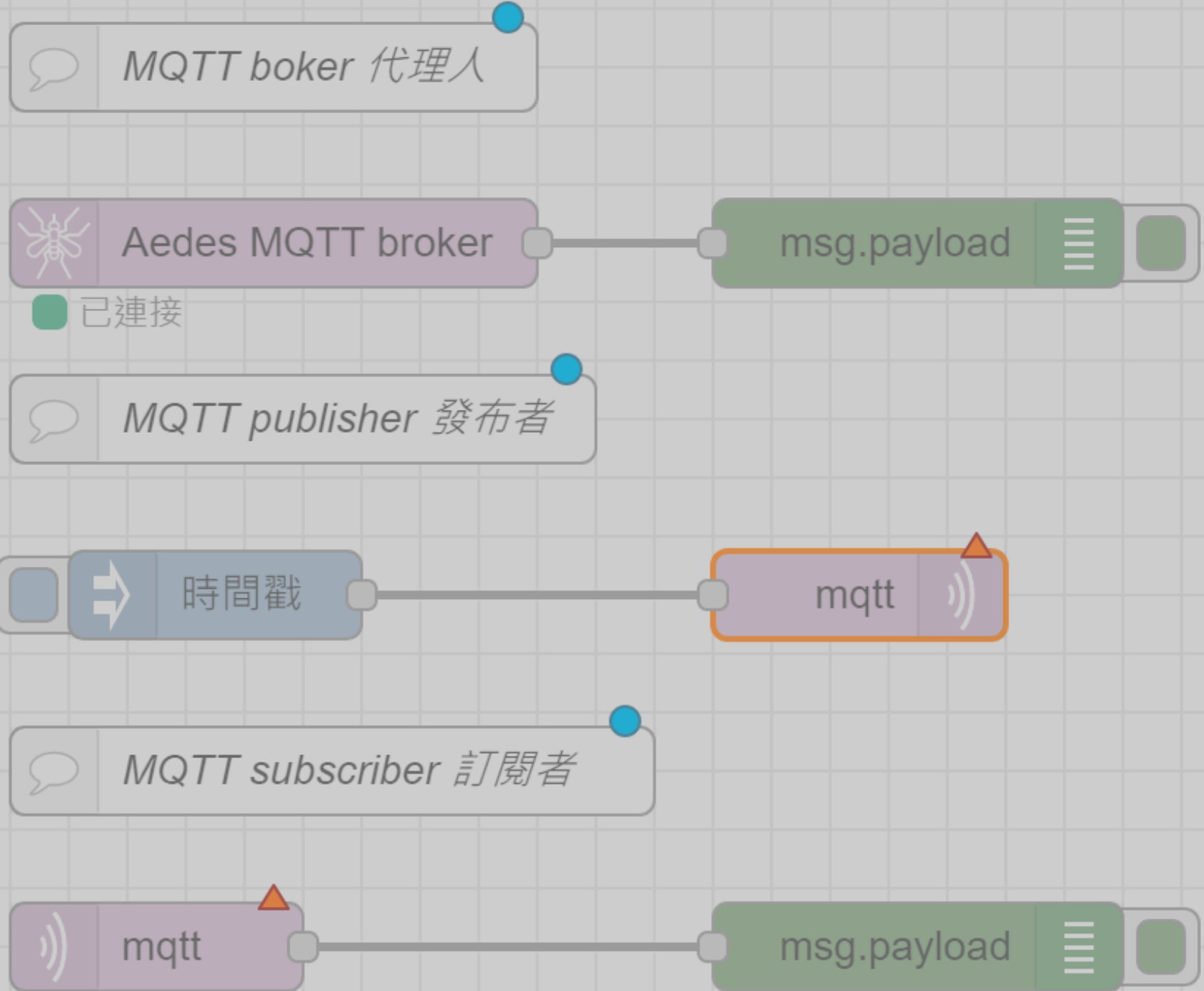
Keepalive計時(秒)

60

☒ 使用新的會話

☐ 使用舊式MQTT 3.1支援

流程1



編輯 mqtt out 節點

刪除 取消 完成

屬性

服務端 localhost:1883

主題 test

QoS 保留

名稱 名稱

提示: 若希望通過msg屬性對topic(資訊), qos及retain(保留)進行設置, 則將上述項留白

流程1

MQTT boker 代理人

Aedes MQTT broker

connected 1

msg.payload

MQTT publisher 發布者

時間戳

test

已連接

MQTT subscriber 訂閱者

test

已連接

msg.payload

除錯窗口

所有節點

2020/11/23 下午12:59:45 node:
a55c746e.d37518
test : msg.payload : string[13]
"1606107585731"

講義、範例程式下載：

- <http://ycwang812.at.tw>

Repositories > UCH

- <https://github.com/ycwang812/UCH>

