

準備材料：

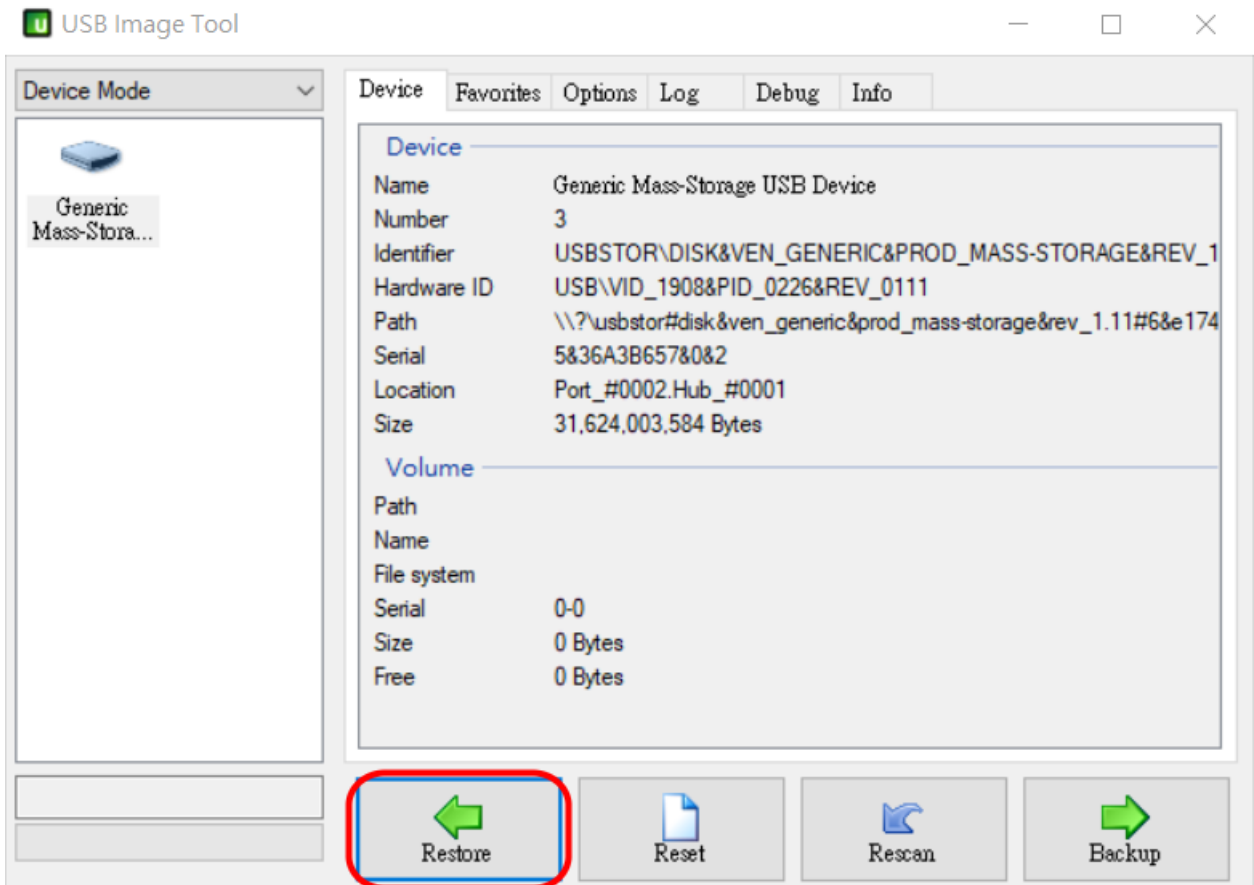
1. Raspberry Pi 3



2. 32GB microSD 記憶卡
3. 鍵盤、滑鼠、hdmi 螢幕
4. node-red-contrib-CHT
5. wifi hotspot
6. 連上 wifi hotspot 的電腦

步驟：

1. 請上 [https://downloads.raspberrypi.org/raspbian\\_latest](https://downloads.raspberrypi.org/raspbian_latest) 下載最新版的 raspbian 映像檔
2. 使用 USB Image Tool ([www.azofreeware.com/2014/09/usb-image-tool-portable.html](http://www.azofreeware.com/2014/09/usb-image-tool-portable.html))將映像檔燒錄至 microSD 卡中

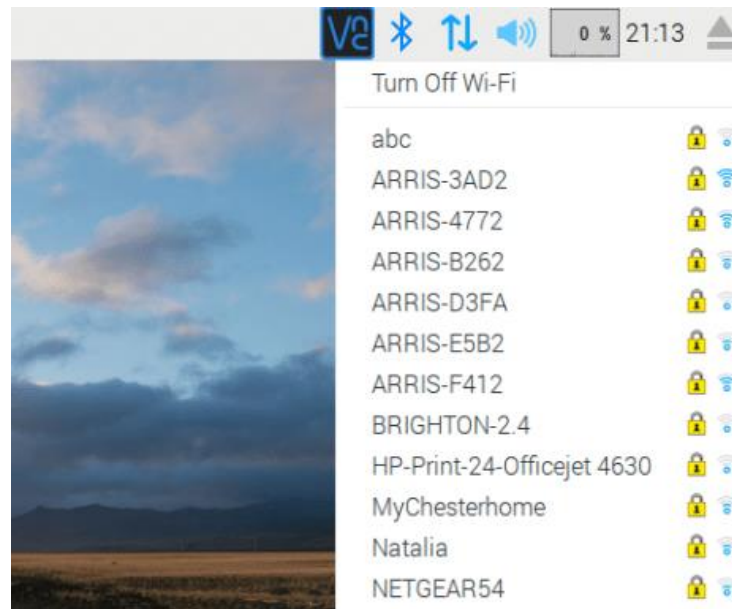


3. Raspberry Pi 3 先接上 microSD、鍵盤、滑鼠和 hdmi 螢幕，最後接上電源

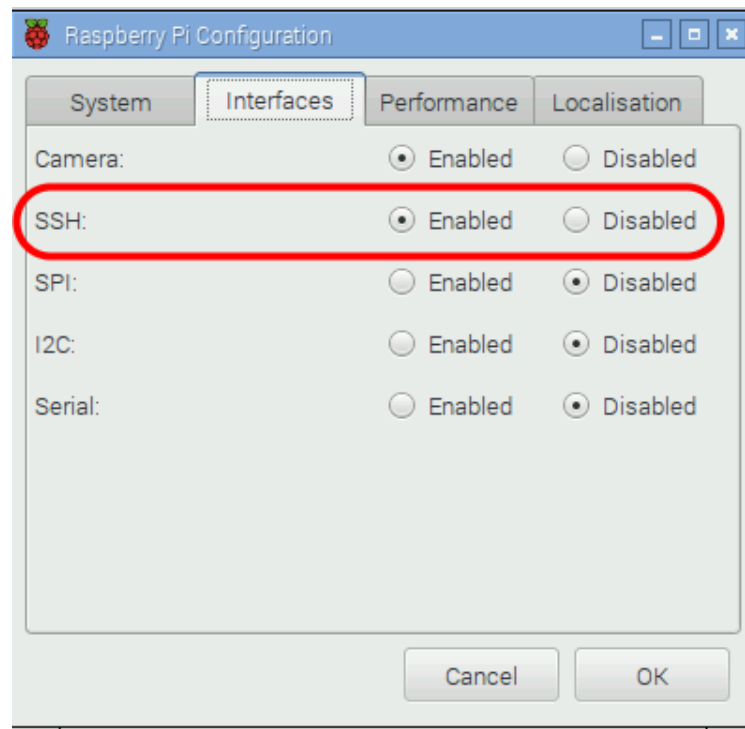


4. Raspberry Pi 3 接上電源開機後，連上 wifi，並開啟 ssh

### Wifi Connection



### SSH



5. 透過 Linux 作業系統 scp 上傳 node-red-contrib-CHT.zip 檔案到 Raspberry Pi 3 上並解壓縮：  
(username: pi, password: raspberry)

在 Linux 下：

```
scp node-red-contrib-CHT.zip pi@<ip address>:~
```

在 Raspberry Pi 3 的根目錄下：

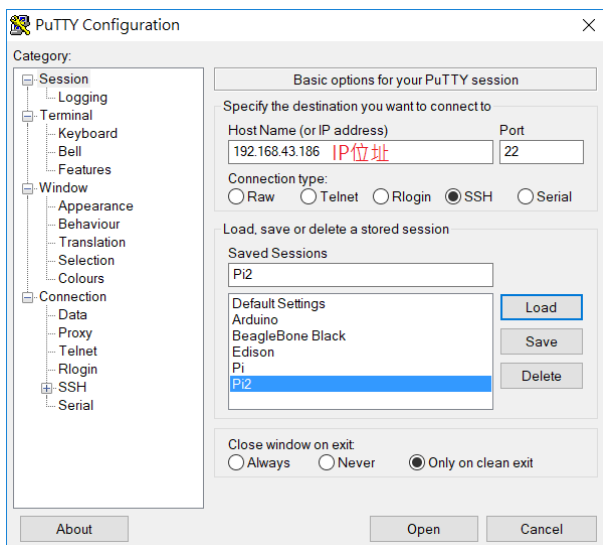
```
unzip node-red-contrib-CHT.zip
```

6. 使用連上 wifi hotspot 的電腦 ssh 進入 Raspberry Pi 3：(username: pi, password: raspberry)

- A. Linux 作業系統使用 ssh 指令：

```
ssh pi@<ip address>
```

- B. Windows 作業系統使用 Putty：



7. 在 Raspberry Pi 3 上安裝 NodeRed：

請參考 <https://nodered.org/docs/hardware/raspberrypi>

8. ssh 進到 node-red-contrib-CHT 資料夾，輸入 `sudo npm link` 指令

9. 到根目錄的 NodeRED 資料夾底下：

```
cd ~/.node-red
```

輸入 `sudo npm link node-red-contrib-CHT` 指令

10. 安裝依賴套件：

```
sudo npm install is-utf8
```

```
sudo npm install mqtt
```

11. 啟動 NodeRED

```
node-red-start
```

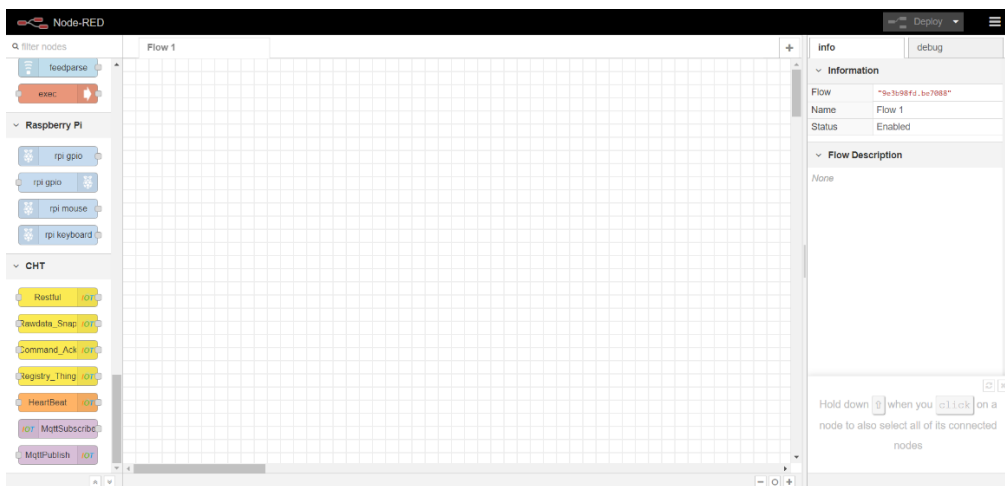
```
Node-RED console
Use node-red-stop to stop Node-RED
Use node-red-start to start Node-RED again
Use node-red-log to view the recent log output
Use sudo systemctl enable nodered.service to autostart Node-RED at every boot
Use sudo systemctl disable nodered.service to disable autostart on boot

To find more nodes and example flows - go to http://flows.nodered.org

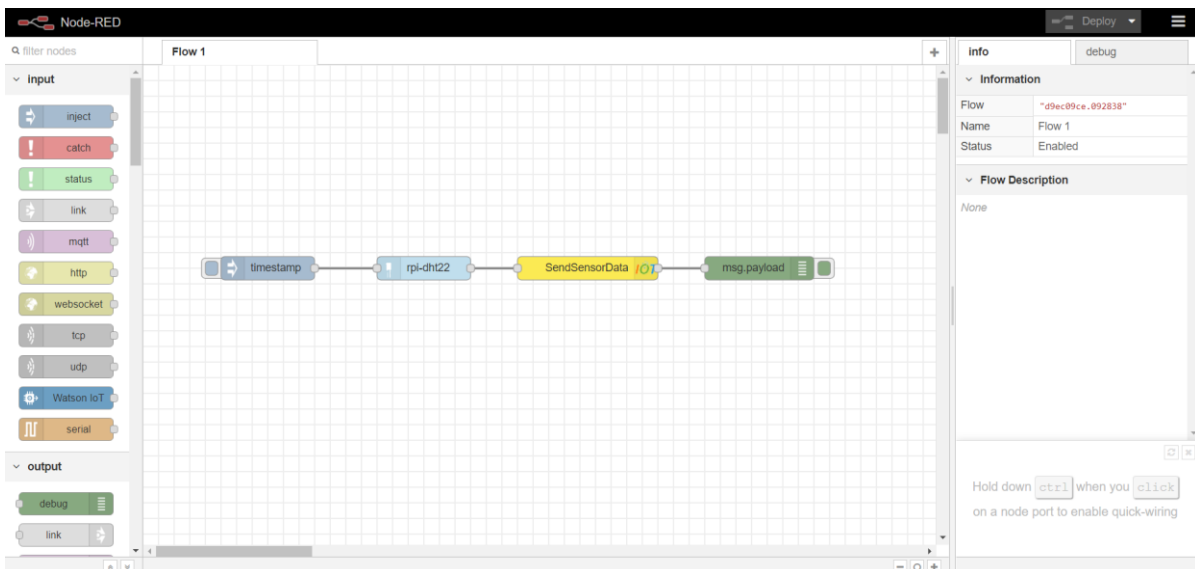
Starting as a systemd service.
Started Node-RED graphical event wiring tool..
13 Mar 02:12:38 - [info]
Welcome to Node-RED
=====
13 Mar 02:12:38 - [info] Node-RED version: v0.17.4
13 Mar 02:12:38 - [info] Node.js version: v4.8.2
13 Mar 02:12:38 - [info] Linux 4.9.59-v7+ arm LE
13 Mar 02:12:38 - [info] Palette editor disabled : npm command not found
13 Mar 02:12:38 - [info] Loading palette nodes
13 Mar 02:12:44 - [info] Settings file : /home/pi/.node-red/settings.js
13 Mar 02:12:44 - [info] User directory : /home/pi/.node-red
13 Mar 02:12:44 - [info] Flows file : /home/pi/.node-red/flows_raspberrypi.js
13 Mar 02:12:44 - [info] Creating new flow file
13 Mar 02:12:44 - [info] Starting flows
13 Mar 02:12:44 - [info] Started flows
13 Mar 02:12:44 - [info] Server now running at http://127.0.0.1:1880/
```

進入<ip address>:1880 即可開始使用中華電信 NodeRED

### 12. 成功在 Raspberry Pi 3 上安裝 NodeRED 開發元件



### 13. 可從左側拖曳中華電信 NodeRED 元件到中央程式設計區



14. 點擊 2 下中華電信 NodeRED 元件可以設定元件參數，填入 APIKey, Device ID, Sensor ID 和遇執行  
的操作

The image shows a NodeRED workflow in 'Flow 1'. The workflow consists of three nodes connected in a sequence: a 'timestamp' node, an 'rpi-dht22' node, and a 'Rawdata\_Snapshot' node. The 'Rawdata\_Snapshot' node is currently selected, and its configuration panel is open on the right side of the interface.

The configuration panel for the 'Rawdata\_Snapshot' node includes the following fields and options:

- Delete** (button)
- Cancel** (button)
- Done** (button)
- node properties** (expanded section)
  - Name**: Name (optional)
  - APIkey**: PK3BYE0KFKUZWUR5Z
  - Device ID**: 5387806458
  - Sensor ID**: sensor01
  - Operation**: Send Sensor Data (dropdown menu)
- Save to Database**: True (dropdown menu)
- Time**: Time (optional)

Below the 'node properties' section, there is a collapsed section for **node settings**.