1

嵌入式系統

Lab 01: Raspberry Pi 安裝

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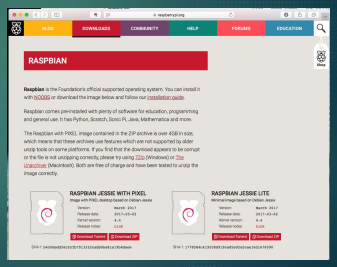
2

Raspberry Pi 安裝

3

下載作業系統

- 下載 RASPBIAN JESSIE WITH PIXEL
- https://www.raspberrypi.org/downloads/raspbian/



4

SD 卡格式化

- 下載 SDFormatter: https://www.sdcard.org/cht/downloads/formatter_4/

5

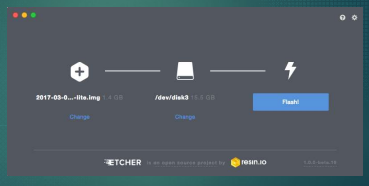
燒錄 SD 卡 (Windows)

- 下載 Win32DiskImager
- https://sourceforge.net/projects/win32diskimager/

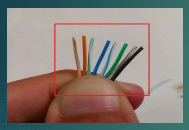
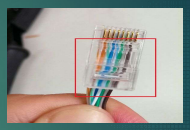
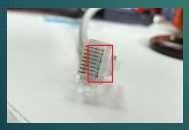
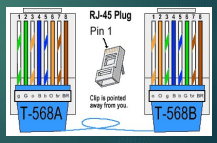
6

燒錄 SD 卡 (Mac)

- 下載 Etchers: http://etcher.io

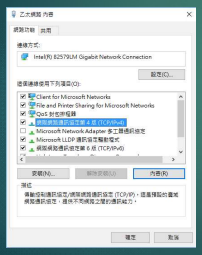
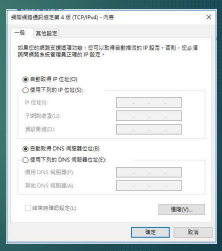


製作網路線 7

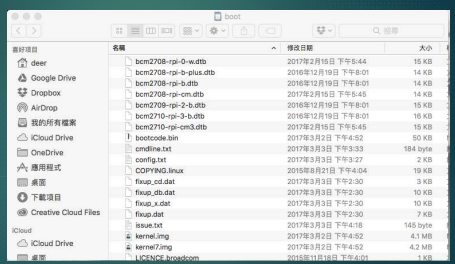





插入 USB LAN 8

- 設定 USB 網卡為自動取得 IP

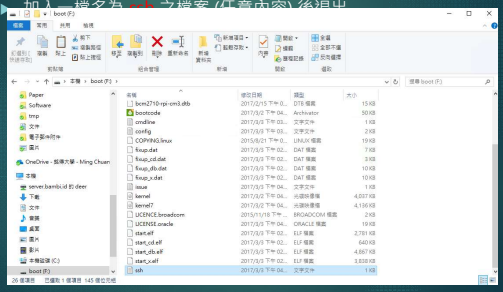



PC 插入 SD 卡編輯 9



修改 SD 卡 10

- 加入一檔名為 ssh 之檔案 (任意內容) 後退出

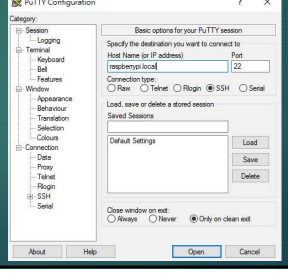


SD 卡插入 RPi 2 開機 11

- God bless you

使用 Putty 連線至 RPi 2 12

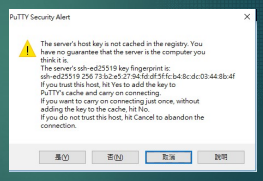
- 下載 putty, 連線至 *raspberrypi.local*
- http://www.chiark.greenend.org.uk/~sgtatham/putty/latest.html



Putty /SSH

13

- 接受憑證

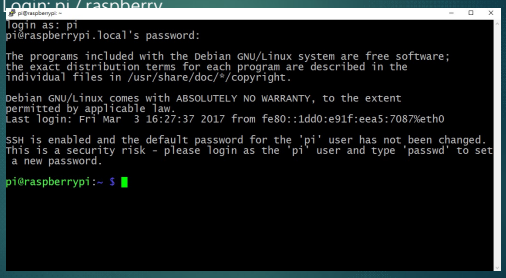


沒改密碼前禁止連上 Internet

Putty /SSH

14

- Login: pi / raspberry



CHECK POINT 1

17

修改預設密碼

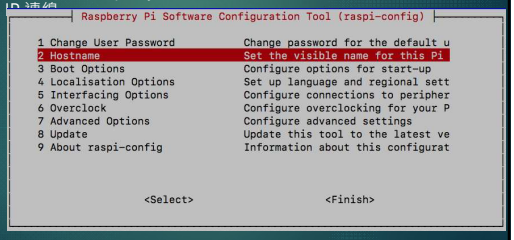
15

```
pi@raspberrypi:~ $ passwd
Changing password for pi.
(current) UNIX password:
Enter new UNIX password:
Retype new UNIX password:
passwd: password updated successfully
pi@raspberrypi:~ $
```

RPi2 改 hostname

18

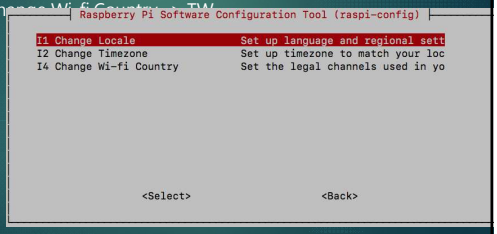
- sudo raspi-config, 選 2
- 改 hostname 後, putty 可直接用 *hostname.local* 而不用 IP 連線



RPi2 改時區/Wifi

19

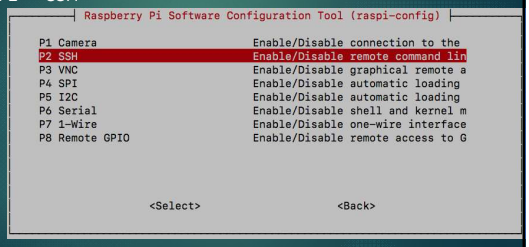
- 4. Localisation Options
- I2 Change Timezone -> Asia/Taipei
- I3 Change Wi-fi Country -> TW



RPi2 enable SSH

20

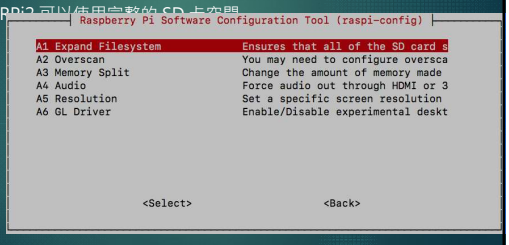
- 5. Interfacing Option
- P2 -> SSH



RPi2 expand file system

21

- 7. Advanced Options
- A1 Expand File System
- 讓 RPi2 可以使用完整的 SD 卡空間



關機

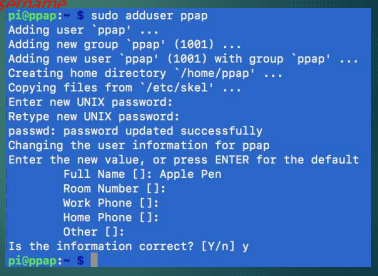
22

- 關機
- sudo shutdown now
- 重開機
- sudo shutdown now –r
- Putty 以新設定的 hostname 連線至 *hostname.local*

RPi2 加入帳號

23

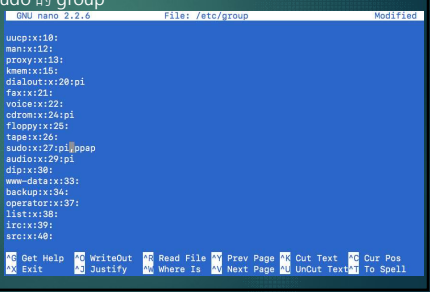
- sudo adduser *username*



將帳號加入 sudoer

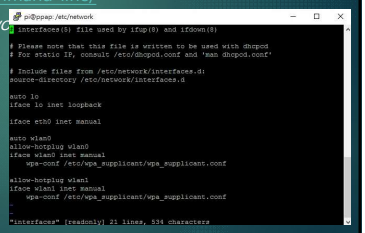
24

- cd /etc ; sudo vi /etc/group
- 將帳號加入 sudo 的 group



設定 WiFi 25

- 參考 https://www.raspberrypi.com.tw/2152/setting-up-wifi-with-the-command-line/
- *sudo nano /etc/netwo*
- 加入 auto wlan0



設定 WiFi – 802.1x_MCU 26

- *sudo nano /etc/wpa_supplicant/wpa_supplicant.conf*
- 加入
- network={
- ssid="802.1x_MCU"
- scan_ssid=1
- proto=WPA
- key_mgmt=WPA-EAP
- pairwise=CCMP
- eap=PEAP
- identity="SchoolID"
- password="Password"
- phase2="auth=MSCHAPV2D"
- }

設定 WiFi – CSIE513 27

- sudo nano /etc/wpa_supplicant/wpa_supplicant.conf
- 加入
- network={
  scan_ssid=1
- ssid="csie513"
  psk="51351513"
  proto=RSN
  key_mgmt=WPA-PSK
  pairwise=CCMP
  auth_alg=OPEN
  }

啟動 WiFi 28

- 參考 https://www.raspberrypi.com.tw/2152/setting-up-wifi-with-the-command-line/
- sudo ifdown wlan0
- sudo ifup wlan0
- sudo kill -9 $(ps -ef | grep wpa | awk '{print $2}')
- sudo wpa_supplicant -B -i wlan0 -c /etc/wpa_supplicant/wpa_supplicant.conf
- 或
- 重開機
- *sudo shutdown now -r*

在家 LAN DHCP上網 29

- 刪除 cmdline.txt 中 IP 設定, 修改 /etc/network/interfaces
- # /etc/network/interfaces
- auto lo
- iface lo inet loopback
- iface eth0 inet dhcp
- auto eth0
- auto wlan0
- 連線:
- putty 可直接用 *hostname.local* 而不用 IP 連線

網路連線測試及更新系統 30

- 參考 https://www.raspberrypi.org/documentation/raspbian/updating.md
- sudo apt-get update
- sudo apt-get dist-upgrade

31

CHECK POINT 2

終端機必備的多工良伴tmux

32

- 簡易說明 http://blog.chh.tw/posts/tmux-terminal-multiplexer/

- Ctrl-b + c：建立新的視窗；
- Ctrl-b + d：卸載目前的 client；
- Ctrl-b + l：與先前選擇的視窗間切換；
- Ctrl-b + n：移動到下個視窗；
- Ctrl-b + p：移動到上個視窗；
- Ctrl-b + &：刪除目前的視窗；
- Ctrl-b + ,：重新命名目前的視窗；
- Ctrl-b + %：將目前的視窗分離到兩個區塊；
- Ctrl-b + q：顯示各分割區塊的號碼（用來切換到不同的區塊）
- Ctrl-b + o：切換到下個區塊；
- Ctrl-b + ?：列出所有快捷鍵的說明；
- Ctrl-b + w：列出目前 clinet 的視窗，可以用數字鍵切換；

RPi 2 安裝 VNC server

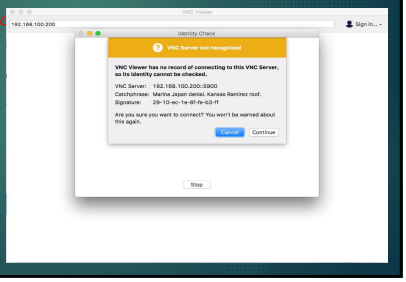
33

- *sudo raspi-config*
- 5. Interfacing Option
- P3 -> VNC
- 7. Advanced Option
- A5 -> Resolution -> DMT Mode 16 1024x768

Windows 安裝 vnc viewer

34

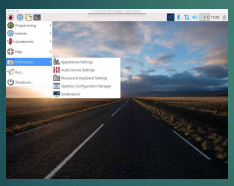
- https://www.realvnc.com/download/viewer *並註冊一個 VNC 帳號 *
- 利用 IP 位址或 /n



設定 VNC Server

35

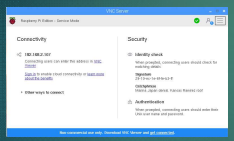
- 選右上角 VNC, 登入帳號



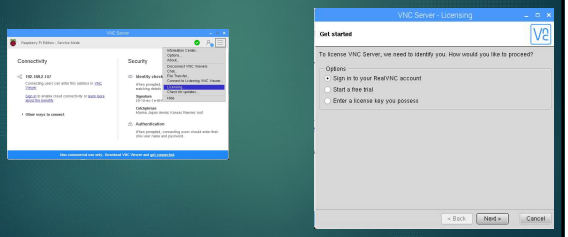
設定 VNC Server

36

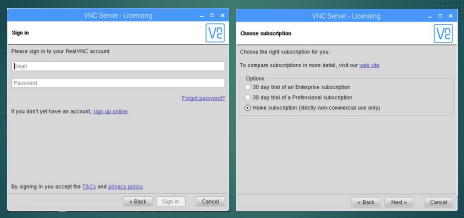
- 選左上角 Menu



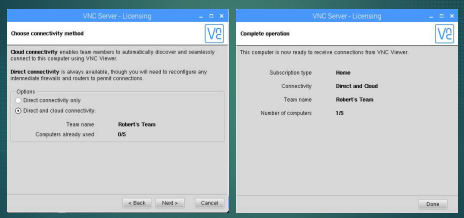
設定 VNC Server 37



設定 VNC Server 38

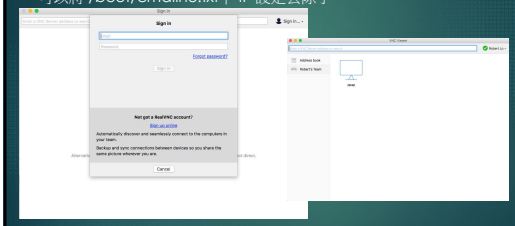


設定 VNC Server 39



PC 設定 VNC Viewer 登入 40

以後無論 RPi2 連 WiFi 用什麼 IP, 都可以直接找到並登入,
可以將 /boot/cmdline.txt中 IP 設定去除了



41

CHECK POINT 3