

### 1-1 測試是否可以上網(從樹莓派輸入指令)

```
E94111122@raspberrypi:~ $ ping 8.8.8.8
PING 8.8.8.8 (8.8.8.8) 56(84) bytes of data.
64 bytes from 8.8.8.8: icmp_seq=1 ttl=112 time=19.5 ms
64 bytes from 8.8.8.8: icmp_seq=2 ttl=112 time=15.1 ms
64 bytes from 8.8.8.8: icmp_seq=3 ttl=112 time=21.1 ms
64 bytes from 8.8.8.8: icmp_seq=4 ttl=112 time=26.2 ms
64 bytes from 8.8.8.8: icmp_seq=5 ttl=112 time=10.8 ms
64 bytes from 8.8.8.8: icmp_seq=6 ttl=112 time=10.8 ms
64 bytes from 8.8.8.8: icmp_seq=7 ttl=112 time=12.4 ms
64 bytes from 8.8.8.8: icmp_seq=8 ttl=112 time=17.7 ms
64 bytes from 8.8.8.8: icmp_seq=9 ttl=112 time=18.6 ms
64 bytes from 8.8.8.8: icmp_seq=10 ttl=112 time=10.2 ms
64 bytes from 8.8.8.8: icmp_seq=11 ttl=112 time=44.8 ms
64 bytes from 8.8.8.8: icmp_seq=12 ttl=112 time=19.0 ms
64 bytes from 8.8.8.8: icmp_seq=13 ttl=112 time=30.1 ms
^C
--- 8.8.8.8 ping statistics ---
13 packets transmitted, 13 received, 0% packet loss, time 12020ms
rtt min/avg/max/mdev = 10.244/19.714/44.750/9.223 ms
E94111122@raspberrypi:~ $
```

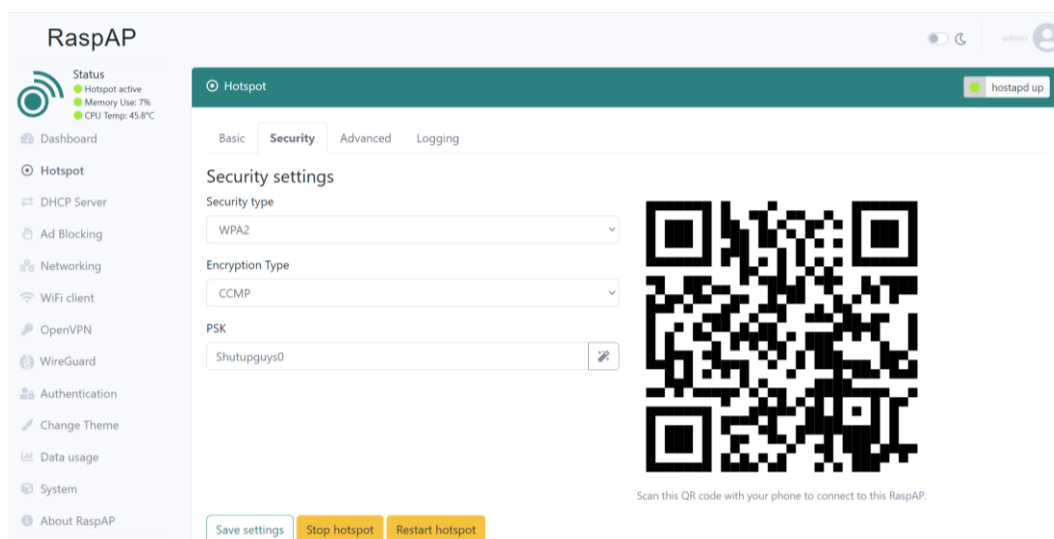
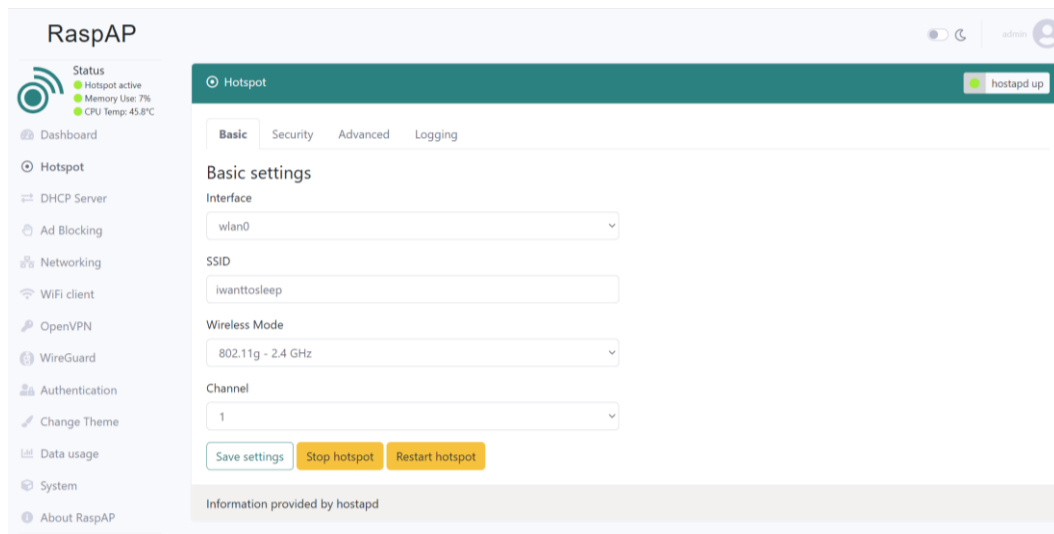
### 1-2 查看隨便一個網址(e.g. google.com, apple.com, etc.)的 ip

```
E94111122@raspberrypi:~ $ ping youtube.com
PING youtube.com (142.251.42.238) 56(84) bytes of data.
64 bytes from tsa01s11-in-f14.1e100.net (142.251.42.238): icmp_seq=1 ttl=111 time=28.8 ms
64 bytes from tsa01s11-in-f14.1e100.net (142.251.42.238): icmp_seq=2 ttl=111 time=11.1 ms
64 bytes from tsa01s11-in-f14.1e100.net (142.251.42.238): icmp_seq=3 ttl=111 time=50.1 ms
64 bytes from tsa01s11-in-f14.1e100.net (142.251.42.238): icmp_seq=4 ttl=111 time=17.3 ms
64 bytes from tsa01s11-in-f14.1e100.net (142.251.42.238): icmp_seq=5 ttl=111 time=31.0 ms
64 bytes from tsa01s11-in-f14.1e100.net (142.251.42.238): icmp_seq=6 ttl=111 time=11.6 ms
64 bytes from tsa01s11-in-f14.1e100.net (142.251.42.238): icmp_seq=7 ttl=111 time=25.4 ms
64 bytes from tsa01s11-in-f14.1e100.net (142.251.42.238): icmp_seq=8 ttl=111 time=62.6 ms
64 bytes from tsa01s11-in-f14.1e100.net (142.251.42.238): icmp_seq=9 ttl=111 time=137 ms
64 bytes from tsa01s11-in-f14.1e100.net (142.251.42.238): icmp_seq=10 ttl=111 time=23.2 ms
64 bytes from tsa01s11-in-f14.1e100.net (142.251.42.238): icmp_seq=11 ttl=111 time=11.1 ms
64 bytes from tsa01s11-in-f14.1e100.net (142.251.42.238): icmp_seq=12 ttl=111 time=11.4 ms
^C
--- youtube.com ping statistics ---
13 packets transmitted, 12 received, 7.69231% packet loss, time 12017ms
rtt min/avg/max/mdev = 11.092/35.075/137.181/34.488 ms
E94111122@raspberrypi:~ $
```

### 1-3 查看到那個網頁的路徑

```
E94111122@raspberrypi:~ $ traceroute youtube.com
traceroute to youtube.com (142.251.42.238), 30 hops max, 60 byte packets
 1 DESKTOP-L471V5G.mshome.net (192.168.137.1) 4.830 ms * *
 2 * * *
 3 192.168.1.1 (192.168.1.1) 4.173 ms 54.500 ms 54.559 ms
 4 140.116.122.253 (140.116.122.253) 54.608 ms 60.098 ms 60.163 ms
 5 140.116.243.33 (140.116.243.33) 67.884 ms 67.919 ms 89.236 ms
 6 140.116.243.193 (140.116.243.193) 59.843 ms 9.336 ms 6.796 ms
 7 140.116.243.177 (140.116.243.177) 8.311 ms 17.886 ms 24.674 ms
 8 192.192.61.146 (192.192.61.146) 12.178 ms 15.168 ms 15.518 ms
 9 192.192.61.32 (192.192.61.32) 24.435 ms 24.726 ms 192.192.61.24 (192.192.61.24) 41.568 ms
10 192.192.61.184 (192.192.61.184) 46.600 ms 192.192.61.188 (192.192.61.188) 41.625 ms 46.664 ms
11 192.192.61.203 (192.192.61.203) 41.318 ms 46.627 ms 50.109 ms
12 72.14.202.60 (72.14.202.60) 11.709 ms 21.852 ms 21.597 ms
13 * * *
14 142.251.77.86 (142.251.77.86) 28.047 ms 28.095 ms 142.251.226.170 (142.251.226.170) 21.315 ms
15 108.170.244.139 (108.170.244.139) 12.649 ms 209.85.142.121 (209.85.142.121) 10.852 ms 10.596 ms
16 tsa01s11-in-f14.1e100.net (142.251.42.238) 12.058 ms 12.106 ms 16.747 ms
E94111122@raspberrypi:~ $
```

2-1 更改 Hotspot 名稱&密碼(要 Save settings, Restart hotspot) , 安全起見不要設定的太簡單, 但自己要能記住。



2-2 測試是否可以上網(從電腦輸入指令)

```
Microsoft Windows [版本 10.0.19044.2251]  
(c) Microsoft Corporation. 著作權所有，並保留一切權利。
```

```
C:\Users\天才閻芷嫻>ping 8.8.8.8
```

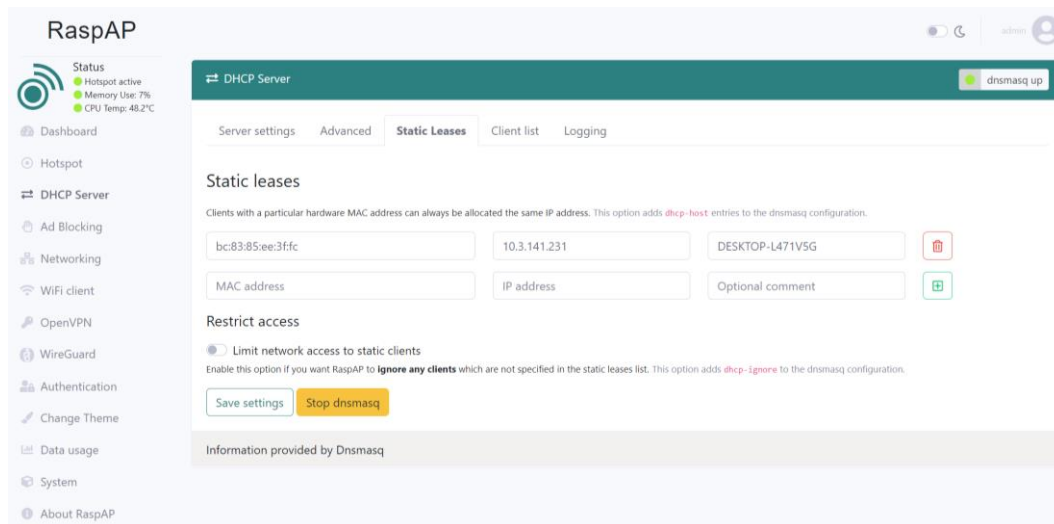
```
Ping 8.8.8.8 (使用 32 位元組的資料):  
回覆自 8.8.8.8: 位元組=32 時間=16ms TTL=113  
回覆自 8.8.8.8: 位元組=32 時間=11ms TTL=113  
回覆自 8.8.8.8: 位元組=32 時間=12ms TTL=113  
回覆自 8.8.8.8: 位元組=32 時間=12ms TTL=113
```

```
8.8.8.8 的 Ping 統計資料:  
封包: 已傳送 = 4, 已收到 = 4, 已遺失 = 0 (0% 遺失),  
大約的來回時間 (毫秒):  
最小值 = 11ms, 最大值 = 16ms, 平均 = 12ms
```

2-3 將手機連上 AP，測試是否可以連到手機

```
E94111122@raspberrypi:~ $ ping 10.3.141.161  
PING 10.3.141.161 (10.3.141.161) 56(84) bytes of data.  
64 bytes from 10.3.141.161: icmp_seq=1 ttl=64 time=3.35 ms  
64 bytes from 10.3.141.161: icmp_seq=2 ttl=64 time=92.5 ms  
64 bytes from 10.3.141.161: icmp_seq=3 ttl=64 time=12.4 ms  
64 bytes from 10.3.141.161: icmp_seq=4 ttl=64 time=34.7 ms  
64 bytes from 10.3.141.161: icmp_seq=5 ttl=64 time=159 ms  
64 bytes from 10.3.141.161: icmp_seq=6 ttl=64 time=79.5 ms  
64 bytes from 10.3.141.161: icmp_seq=7 ttl=64 time=106 ms  
64 bytes from 10.3.141.161: icmp_seq=8 ttl=64 time=24.0 ms  
64 bytes from 10.3.141.161: icmp_seq=9 ttl=64 time=5.76 ms  
64 bytes from 10.3.141.161: icmp_seq=10 ttl=64 time=66.8 ms  
64 bytes from 10.3.141.161: icmp_seq=11 ttl=64 time=89.8 ms  
64 bytes from 10.3.141.161: icmp_seq=12 ttl=64 time=54.2 ms  
64 bytes from 10.3.141.161: icmp_seq=13 ttl=64 time=32.9 ms  
64 bytes from 10.3.141.161: icmp_seq=14 ttl=64 time=55.3 ms  
64 bytes from 10.3.141.161: icmp_seq=15 ttl=64 time=91.7 ms  
64 bytes from 10.3.141.161: icmp_seq=16 ttl=64 time=100 ms  
64 bytes from 10.3.141.161: icmp_seq=17 ttl=64 time=22.2 ms  
64 bytes from 10.3.141.161: icmp_seq=18 ttl=64 time=43.1 ms  
64 bytes from 10.3.141.161: icmp_seq=19 ttl=64 time=168 ms  
^C  
--- 10.3.141.161 ping statistics ---  
19 packets transmitted, 19 received, 0% packet loss, time 18027ms  
rtt min/avg/max/mdev = 3.354/65.381/168.130/46.451 ms  
E94111122@raspberrypi:~ $
```

2-4 給電腦設定一個固定 IP:10.3.141.xx(與原本 DHCP 配發的 IP 相同即可)



2-5 查看從此電腦(10.3.141.xx)到 google.com 的路徑為何

命令提示字元

Microsoft Windows [版本 10.0.19044.2251]  
(c) Microsoft Corporation. 著作權所有，並保留一切權利。

C:\Users\天才閻芷姍>tracert google.com

在上限 30 個躍點上

追蹤 google.com [142.251.42.238] 的路由:

1	1 ms	2 ms	1 ms	10.3.141.1
2	4 ms	5 ms	9 ms	140.116.122.253
3	20 ms	2 ms	2 ms	140.116.243.33
4	3 ms	2 ms	4 ms	140.116.243.193
5	18 ms	4 ms	7 ms	140.116.243.177
6	6 ms	15 ms	9 ms	192.192.61.146
7	7 ms	16 ms	9 ms	192.192.61.32
8	12 ms	8 ms	12 ms	192.192.61.188
9	19 ms	18 ms	16 ms	192.192.61.203
10	10 ms	10 ms	17 ms	72.14.202.60
11	17 ms	33 ms	9 ms	209.85.254.217
12	14 ms	12 ms	22 ms	209.85.242.125
13	10 ms	15 ms	8 ms	tsa01s11-in-f14.1e100.net [142.251.42.238]

追蹤完成。