

同一個Continent (台灣的清華大學)

3/19 00:11

```
$ traceroute www.nthu.edu.tw
traceroute to www.nthu.edu.tw (140.114.69.135), 64 hops max, 52 byte
packets
 1 www.asusnetwork.net (192.168.2.1) 19.007 ms 0.938 ms 0.998 ms
 2 h254.s98.ts.hinet.net (168.95.98.254) 3.875 ms 6.639 ms 4.509 ms
 3 168.95.22.102 (168.95.22.102) 4.278 ms 7.000 ms 3.783 ms
 4 220-128-11-222.hinet-ip.hinet.net (220.128.11.222) 4.058 ms
    220-128-11-250.hinet-ip.hinet.net (220.128.11.250) 2.766 ms 17.874
ms
 5 220-128-9-98.hinet-ip.hinet.net (220.128.9.98) 10.431 ms 9.938 ms
    tyfo-3011.hinet.net (220.128.8.94) 14.916 ms
 6 sczs-3201.hinet.net (220.128.9.21) 9.536 ms
    sczs-3201.hinet.net (220.128.8.25) 6.045 ms
    sczs-3201.hinet.net (220.128.9.21) 11.767 ms
 7 ty-fo-c76r2.router.hinet.net (220.128.8.245) 8.629 ms 11.212 ms
8.791 ms
 8 211-20-113-69.hinet-ip.hinet.net (211.20.113.69) 12.504 ms 6.521 ms
12.325 ms
 9 140.114.1.129 (140.114.1.129) 13.465 ms 6.426 ms 9.486 ms
10 c7609-1-c7609c.nthu.edu.tw (140.114.1.182) 6.051 ms 7.238 ms
17.504 ms
```

(a)

Average: 10.26ms

Std: 6.2981

(b-1)

of routers: 9

(c)

of ISP: 5

largest delay是不是發生在換ISP時? YES

3/20 09:45

```
$ traceroute www.nthu.edu.tw
traceroute to www.nthu.edu.tw (140.114.69.135), 64 hops max, 52 byte
packets
 1 www.asusnetwork.net (192.168.2.1) 998.697 ms 29.066 ms 23.889 ms
 2 h254.s98.ts.hinet.net (168.95.98.254) 14.797 ms 44.519 ms 6.234 ms
 3 168.95.22.102 (168.95.22.102) 5.343 ms 6.606 ms 7.548 ms
 4 220-128-11-250.hinet-ip.hinet.net (220.128.11.250) 16.181 ms * *
 5 tyfo-3011.hinet.net (220.128.8.94) 14.117 ms
    tyfo-3012.hinet.net (220.128.9.94) 14.789 ms
    tyfo-3011.hinet.net (220.128.8.94) 9.809 ms
 6 sczs-3201.hinet.net (220.128.9.21) 18.060 ms
    sczs-3201.hinet.net (220.128.8.25) 9.273 ms 5.759 ms
 7 ty-fo-c76r2.router.hinet.net (220.128.8.245) 3.812 ms
    220-128-8-253.hinet-ip.hinet.net (220.128.8.253) 4.781 ms 5.976 ms
 8 211-20-113-69.hinet-ip.hinet.net (211.20.113.69) 8.565 ms 10.900 ms
7.780 ms
 9 140.114.1.129 (140.114.1.129) 4.538 ms 8.547 ms 7.285 ms
10 c7609-1-c7609c.nthu.edu.tw (140.114.1.182) 3.819 ms 8.238 ms 8.096
ms
```

(a)

Average: 6.716ms
Std: 2.5113
(b-1)
of routers: 9
(c)
of ISP: 5
largest delay是不是發生在換ISP時? YES

3/21 00:16

\$ traceroute www.nthu.edu.tw

traceroute to www.nthu.edu.tw (140.114.69.135), 64 hops max, 52 byte packets

```
 1  www.asusnetwork.net (192.168.2.1)  2.193 ms  0.941 ms  2.877 ms
 2  h254.s98.ts.hinet.net (168.95.98.254)  13.787 ms  6.330 ms  3.638 ms
 3  168.95.22.102 (168.95.22.102)  8.027 ms  7.446 ms  3.850 ms
 4  220-128-11-250.hinet-ip.hinet.net (220.128.11.250)  4.288 ms  7.019 ms
    220-128-11-222.hinet-ip.hinet.net (220.128.11.222)  4.800 ms
 5  tyfo-3012.hinet.net (220.128.9.94)  6.713 ms
    tyfo-3011.hinet.net (220.128.8.94)  5.721 ms
    220-128-9-98.hinet-ip.hinet.net (220.128.9.98)  9.956 ms
 6  sczs-3201.hinet.net (220.128.8.25)  4.065 ms
    sczs-3201.hinet.net (220.128.9.21)  3.611 ms  8.420 ms
 7  ty-fo-c76r2.router.hinet.net (220.128.8.245)  9.659 ms
    220-128-8-253.hinet-ip.hinet.net (220.128.8.253)  6.233 ms
    ty-fo-c76r2.router.hinet.net (220.128.8.245)  6.058 ms
 8  211-20-113-69.hinet-ip.hinet.net (211.20.113.69)  6.841 ms  4.865 ms
    7.227 ms
 9  140.114.1.129 (140.114.1.129)  5.776 ms  6.497 ms  6.567 ms
10  c7609-1-c7609c.nthu.edu.tw (140.114.1.182)  14.175 ms  4.945 ms
    8.573 ms
```

(a)
Average: 9.231ms
Std: 4.65005
(b-1)
of routers: 9
(c)
of ISP: 5
largest delay是不是發生在換ISP時? YES

(b-2)
Does path change? NO

不同Continent (美國的MIT)

3/19 00:11

\$ traceroute www.mit.edu

traceroute to e9566.dscb.akamaiedge.net (104.116.5.218), 64 hops max, 52 byte packets

```
 1  www.asusnetwork.net (192.168.2.1)  26.783 ms  4.281 ms  4.280 ms
 2  h254.s98.ts.hinet.net (168.95.98.254)  6.546 ms  2.747 ms  9.408 ms
 3  168.95.22.102 (168.95.22.102)  7.144 ms  11.369 ms  5.324 ms
 4  220-128-11-222.hinet-ip.hinet.net (220.128.11.222)  9.985 ms
```

```
220-128-11-250.hinet-ip.hinet.net (220.128.11.250) 47.789 ms 92.227
ms
5  tpd-3011.hinet.net (220.128.1.110) 33.861 ms
  tpd-3012.hinet.net (220.128.4.82) 9.371 ms
  tpd-3011.hinet.net (220.128.3.22) 8.435 ms
6  tpd-3301.hinet.net (220.128.2.49) 19.146 ms 6.016 ms 3.346 ms
7  a104-116-5-218.deploy.static.akamaitechnologies.com (104.116.5.218)
4.847 ms 3.403 ms 15.852 ms
```

(a)

Average: 8.034ms

Std: 6.8089

(b-1)

of routers: 6

(c)

of ISP: 4

largest delay是不是發生在換ISP時? YES

3/20 09:45

\$ traceroute www.mit.edu

traceroute to e9566.dscb.akamaiedge.net (104.116.5.218), 64 hops max, 52
byte packets

```
1  www.asusnetwork.net (192.168.2.1) 1.330 ms 0.922 ms 0.817 ms
2  h254.s98.ts.hinet.net (168.95.98.254) 4.893 ms 1.568 ms 3.954 ms
3  168.95.22.102 (168.95.22.102) 4.472 ms 4.388 ms 4.018 ms
4  220-128-11-250.hinet-ip.hinet.net (220.128.11.250) 10.672 ms 6.267
ms
  220-128-11-222.hinet-ip.hinet.net (220.128.11.222) 4.947 ms
5  tpd-3011.hinet.net (220.128.1.110) 9.882 ms 8.360 ms
  tpd-3012.hinet.net (220.128.2.170) 9.420 ms
6  tpd-3301.hinet.net (220.128.3.149) 4.560 ms 4.966 ms 3.980 ms
7  a104-116-5-218.deploy.static.akamaitechnologies.com (104.116.5.218)
4.768 ms 4.688 ms 3.853 ms
```

(a)

Average: 4.43633ms

Std: 0.50676

(b-1)

of routers: 6

(c)

of ISP: 4

largest delay是不是發生在換ISP時? YES

3/21 00:16

\$ traceroute www.mit.edu

traceroute to e9566.dscb.akamaiedge.net (104.124.246.60), 64 hops max, 52
byte packets

```
1  www.asusnetwork.net (192.168.2.1) 1.434 ms 12.971 ms 5.425 ms
2  h254.s98.ts.hinet.net (168.95.98.254) 9.343 ms 3.557 ms 12.357 ms
3  168.95.22.102 (168.95.22.102) 11.032 ms 9.357 ms 13.932 ms
4  220-128-11-222.hinet-ip.hinet.net (220.128.11.222) 5.482 ms 4.982
ms 14.853 ms
5  pcpc-3202.hinet.net (220.128.5.130) 13.764 ms
  tpd-3011.hinet.net (220.128.3.22) 14.525 ms
  tpd-3011.hinet.net (220.128.1.110) 13.725 ms
6  220-128-10-177.hinet-ip.hinet.net (220.128.10.177) 7.386 ms
```

```
220-128-10-253.hinet-ip.hinet.net (220.128.10.253) 19.112 ms
220-128-10-177.hinet-ip.hinet.net (220.128.10.177) 17.841 ms
7 203-75-228-65.hinet-ip.hinet.net (203.75.228.65) 6.298 ms
203-75-228-5.hinet-ip.hinet.net (203.75.228.5) 5.939 ms
203-75-228-193.hinet-ip.hinet.net (203.75.228.193) 6.069 ms
8 r1010-asr.tpix.net.tw (223.26.65.20) 11.775 ms 14.280 ms 6.705 ms
9 202.133.244.58 (202.133.244.58) 68.465 ms 21.691 ms 22.522 ms
10 a104-124-246-60.deploy.static.akamaitechnologies.com (104.124.246.60)
10.000 ms 12.606 ms 13.422 ms
```

(a)

Average: 12.0093ms

Std: 1.78732

(b-1)

of routers: 9

(c)

of ISP: 7

largest delay是不是發生在換ISP時? YES

(b-2)

Does path change? YES