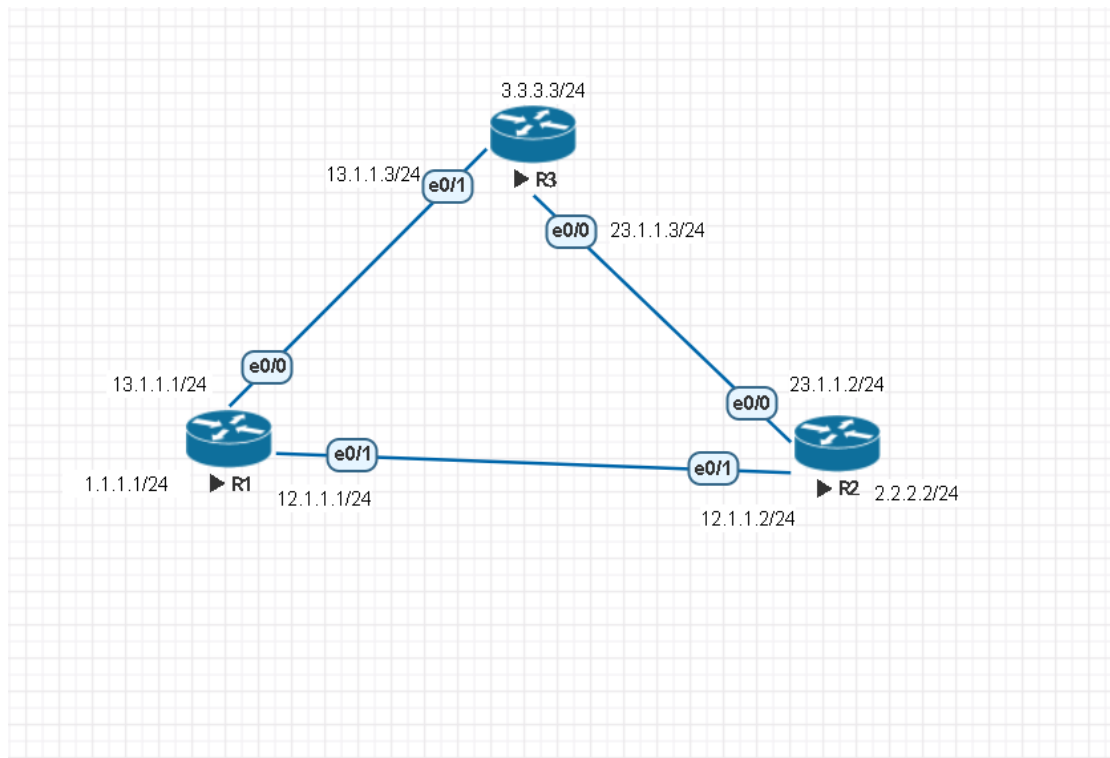


Cisco 期中 資工三 110810504 陳昱誠



1-1 使用 static routing 讓全網可通

```
R1
r1(config-if)#
*Dec 31 22:25:15.056: %LINK-3-UPDOWN: Interface Ethernet0/1, changed state to up
*Dec 31 22:25:16.060: %LINEPROTO-5-UPDOWN: Line protocol on Interface Ethernet0/1, changed state to up
r1(config-if)#int lo 0
r1(config-if)#
*Dec 31 22:26:53.756: %LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback0, changed state to up
r1(config-if)#ip addr 1.1.1.1 255.255.255.0
r1(config-if)#no shut
r1(config-if)#do show ip int brief
Interface                IP-Address      OK? Method Status      Prot
ocol
Ethernet0/0               13.1.1.1        YES manual up          up
Ethernet0/1               12.1.1.1        YES manual up          up
Ethernet0/2               unassigned      YES unset   administratively down down
Ethernet0/3               unassigned      YES unset   administratively down down
Loopback0                 1.1.1.1         YES manual up          up
r1(config-if)#
```

設定 R1 ip

```
R2
r2(config-if)#ip addr 23.1.1.2 255.255.255.0
r2(config-if)#no shut down
^
% Invalid input detected at '^' marker.

r2(config-if)#no shut
r2(config-if)#
*Dec 31 22:32:44.429: %LINK-3-UPDOWN: Interface Ethernet0/0, changed state to up
*Dec 31 22:32:45.436: %LINEPROTO-5-UPDOWN: Line protocol on Interface Ethernet0/0, changed state to up
r2(config-if)#do show ip int brief
Interface                IP-Address      OK? Method Status      Prot
ocol
Ethernet0/0              23.1.1.2        YES manual up          up
Ethernet0/1              12.1.1.2        YES manual up          up
Ethernet0/2              unassigned      YES unset  administratively down down
Ethernet0/3              unassigned      YES unset  administratively down down
Loopback0                2.2.2.2         YES manual up          up
r2(config-if)#
```

設定 R2 ip

```
R3
*Dec 31 22:34:02.422: %LINK-3-UPDOWN: Interface Ethernet0/0, changed state to up
*Dec 31 22:34:03.430: %LINEPROTO-5-UPDOWN: Line protocol on Interface Ethernet0/0, changed state to up
r3(config-if)#int e0/1
r3(config-if)#ip addr 13.1.1.3 255.255.255.0
r3(config-if)#no shut
r3(config-if)#
*Dec 31 22:34:23.919: %LINK-3-UPDOWN: Interface Ethernet0/1, changed state to up
*Dec 31 22:34:24.925: %LINEPROTO-5-UPDOWN: Line protocol on Interface Ethernet0/1, changed state to up
r3(config-if)#do show ip int brief
Interface                IP-Address      OK? Method Status      Prot
ocol
Ethernet0/0              23.1.1.3        YES manual up          up
Ethernet0/1              13.1.1.3        YES manual up          up
Ethernet0/2              unassigned      YES unset  administratively down down
Ethernet0/3              unassigned      YES unset  administratively down down
Loopback0                3.3.3.3         YES manual up          up
r3(config-if)#
```

設定 R3 ip

```
R1
Press RETURN to get started.

r1>pin 12.1.1.2
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 12.1.1.2, timeout is 2 seconds:
.!!!!
Success rate is 80 percent (4/5), round-trip min/avg/max = 1/1/1 ms
r1>pin 13.1.1.3
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 13.1.1.3, timeout is 2 seconds:
.!!!!
Success rate is 80 percent (4/5), round-trip min/avg/max = 1/1/1 ms
r1>
```

R1 可通 R2 跟 R3

1-2 使用 RIP 讓全網可通

```
R1
.!!!!
Success rate is 80 percent (4/5), round-trip min/avg/max = 1/1/1 ms
r1>en
r1#conf t
Enter configuration commands, one per line. End with CNTL/Z.
r1(config)#router rip
r1(config-router)#version 2
r1(config-router)#no auto-summary
r1(config-router)#network 12.1.1.0
r1(config-router)#network 13.1.1.0
r1(config-router)#network 1.1.1.0
r1(config-router)#do show ip route rip
Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP
        D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
        N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
        E1 - OSPF external type 1, E2 - OSPF external type 2
        i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 - IS-IS level-2
        ia - IS-IS inter area, * - candidate default, U - per-user static route
        o - ODR, P - periodic downloaded static route, H - NHRP, l - LISP
        a - application route
        + - replicated route, % - next hop override

Gateway of last resort is not set
```

設定 R1 的 rip

```
R3
r3(config-router)#no auto-summary
r3(config-router)#network 13.1.1.0
r3(config-router)#network 23.1.1.0
r3(config-router)#network 3.3.3.0
r3(config-router)#do show ip route rip
Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP
        D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
        N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
        E1 - OSPF external type 1, E2 - OSPF external type 2
        i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 - IS-IS level-2
        ia - IS-IS inter area, * - candidate default, U - per-user static route
        o - ODR, P - periodic downloaded static route, H - NHRP, l - LISP
        a - application route
        + - replicated route, % - next hop override

Gateway of last resort is not set

    1.0.0.0/24 is subnetted, 1 subnets
R       1.1.1.0 [120/1] via 13.1.1.1, 00:00:21, Ethernet0/1
    2.0.0.0/24 is subnetted, 1 subnets
R       2.2.2.0 [120/2] via 13.1.1.1, 00:00:21, Ethernet0/1
    12.0.0.0/24 is subnetted, 1 subnets
R       12.1.1.0 [120/1] via 13.1.1.1, 00:00:21, Ethernet0/1
r3(config-router)#
```

設定 R3 的 rip

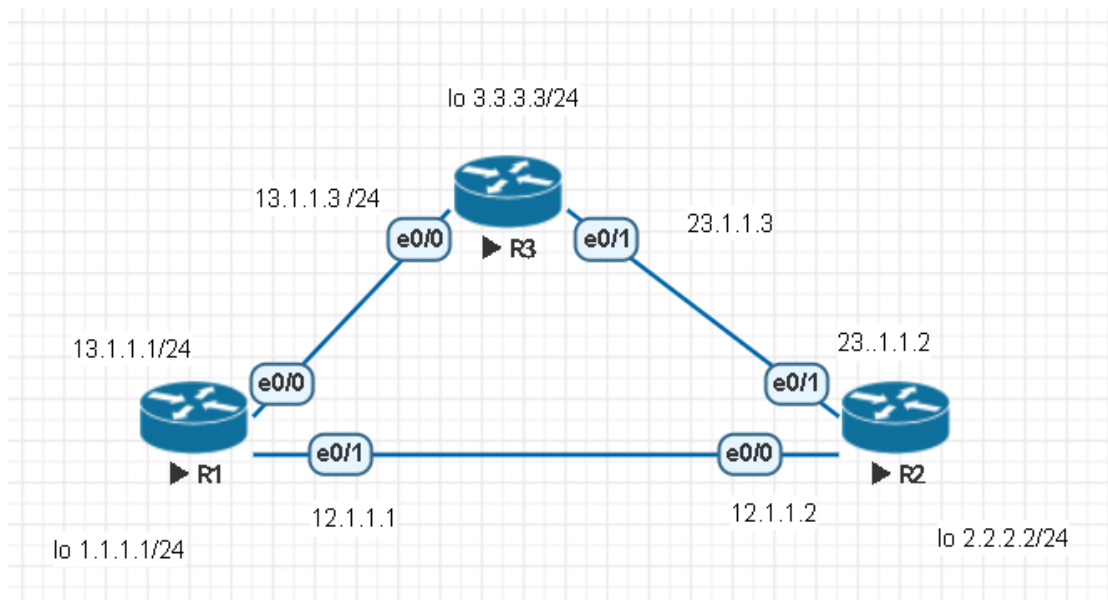
```
r2
r2(config-router)#do show ip route rip
Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2
       i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 - IS-IS level-2
       ia - IS-IS inter area, * - candidate default, U - per-user static route
       o - ODR, P - periodic downloaded static route, H - NHRP, l - LISP
       a - application route
       + - replicated route, % - next hop override

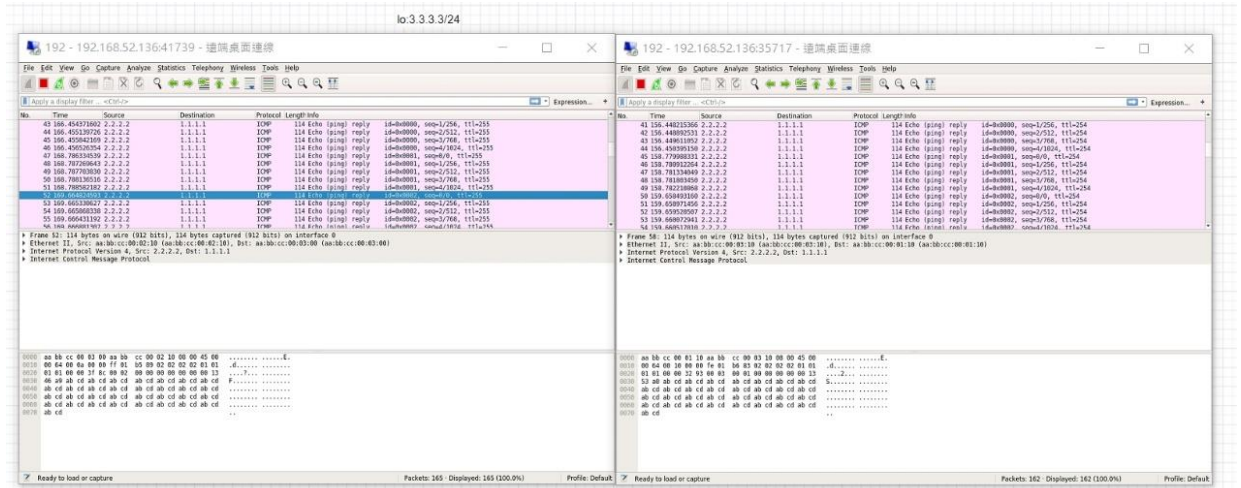
Gateway of last resort is not set

    1.0.0.0/24 is subnetted, 1 subnets
R       1.1.1.0 [120/1] via 12.1.1.1, 00:00:25, Ethernet0/1
    13.0.0.0/24 is subnetted, 1 subnets
R       13.1.1.0 [120/1] via 12.1.1.1, 00:00:25, Ethernet0/1
r2(config-router)#do ping 1.1.1.1 source 2.2.2.2
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 1.1.1.1, timeout is 2 seconds:
Packet sent with a source address of 2.2.2.2
!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 1/1/1 ms
r2(config-router)#
```

設定 R2 的 rip，pin 1.1.1.1 有回應，RIP 設定成功!

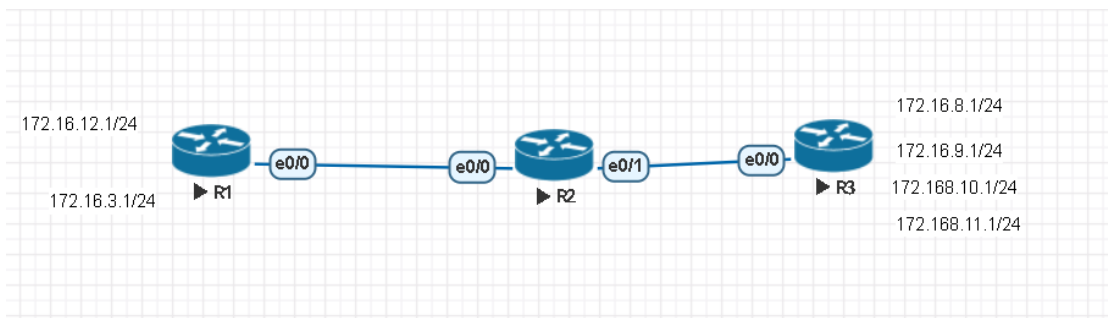
2.R1 直達 R2，R2 走 R3 回 R1





達成目標

3. 使 R2 可 pin 左及右的全部 ip 位置



```
R1>show ip eigrp topology
EIGRP-IPv4 Topology Table for AS(10)/ID(12.1.1.1)
Codes: P - Passive, A - Active, U - Update, Q - Query, R - Reply,
       r - reply Status, s - sia Status

P 172.16.8.0/22, 1 successors, FD is 435200
   via 12.1.1.2 (435200/409600), Ethernet0/0
P 172.16.13.0/24, 1 successors, FD is 128256
   via Connected, Loopback0
P 172.16.12.0/23, 1 successors, FD is 128256
   via Summary (128256/0), Null0
P 172.16.12.0/24, 1 successors, FD is 128256
   via Connected, Loopback0
P 23.1.1.0/24, 1 successors, FD is 307200
   via 12.1.1.2 (307200/281600), Ethernet0/0
P 12.1.1.0/24, 1 successors, FD is 281600
   via Connected, Ethernet0/0

R1>
```

```
R2>ping 172.16.8.1
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 172.16.8.1, timeout is 2 seconds:
!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 1/1/1 ms
R2>ping 172.16.9.1
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 172.16.9.1, timeout is 2 seconds:
!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 1/1/1 ms
R2>ping 172.16.10.1
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 172.16.10.1, timeout is 2 seconds:
!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 1/1/1 ms
R2>ping 172.16.11.1
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 172.16.11.1, timeout is 2 seconds:
!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 1/1/1 ms
R2>ping 172.16.12.1
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 172.16.12.1, timeout is 2 seconds:
!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 1/1/1 ms
R2>ping 172.16.13.1
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 172.16.13.1, timeout is 2 seconds:
!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 1/1/1 ms
R2>
```

```
R2>show ip eigrp topology
EIGRP-IPv4 Topology Table for AS(10)/ID(23.1.1.12)
Codes: P - Passive, A - Active, U - Update, Q - Query, R - Reply,
       r - reply Status, s - sia Status

P 172.16.8.0/22, 1 successors, FD is 409600
   via 23.1.1.3 (409600/128256), Ethernet0/1
P 172.16.12.0/23, 1 successors, FD is 409600
   via 12.1.1.1 (409600/128256), Ethernet0/0
P 23.1.1.0/24, 1 successors, FD is 281600
   via Connected, Ethernet0/1
P 12.1.1.0/24, 1 successors, FD is 281600
   via Connected, Ethernet0/0

R2>
```

```

R3>show ip eigrp topology
EIGRP-IPv4 Topology Table for AS(10)/ID(23.1.1.3)
Codes: P - Passive, A - Active, U - Update, Q - Query, R - Reply,
       r - reply Status, s - sia Status

P 172.16.8.0/22, 1 successors, FD is 128256
    via Summary (128256/0), Null0
P 172.16.8.0/24, 1 successors, FD is 128256
    via Connected, Loopback0
P 172.16.10.0/24, 1 successors, FD is 128256
    via Connected, Loopback0
P 172.16.12.0/23, 1 successors, FD is 435200
    via 23.1.1.12 (435200/409600), Ethernet0/0
P 23.1.1.0/24, 1 successors, FD is 281600
    via Connected, Ethernet0/0
P 172.16.11.0/24, 1 successors, FD is 128256
    via Connected, Loopback0
P 172.16.9.0/24, 1 successors, FD is 128256
    via Connected, Loopback0
P 12.1.1.0/24, 1 successors, FD is 307200
    via 23.1.1.12 (307200/281600), Ethernet0/0

```

```

R2>ping 172.16.8.1
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 172.16.8.1, timeout is 2 seconds:
!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 1/1/1 ms
R2>ping 172.16.9.1
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 172.16.9.1, timeout is 2 seconds:
!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 1/1/1 ms
R2>ping 172.16.10.1
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 172.16.10.1, timeout is 2 seconds:
!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 1/1/1 ms
R2>ping 172.16.11.1
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 172.16.11.1, timeout is 2 seconds:
!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 1/1/1 ms
R2>ping 172.16.12.1
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 172.16.12.1, timeout is 2 seconds:
!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 1/1/1 ms
R2>ping 172.16.13.1
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 172.16.13.1, timeout is 2 seconds:
!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 1/1/1 ms
R2>

```

R2 可 pin 左右全部