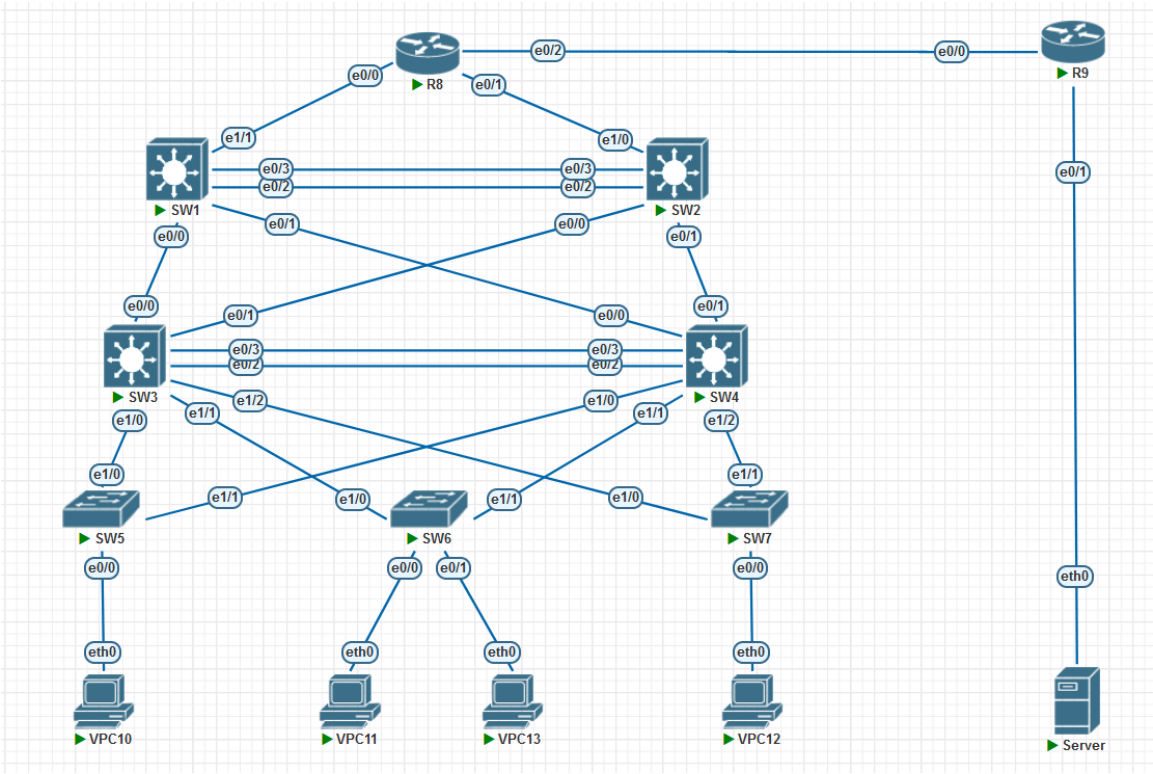
CCNA_Lab



SW3 physical interfaces trunk configuration, then build a channel to set trunk.

Switch>enable

Switch#configure terminal

Switch(config)#hostname SW3

SW3(config)#interface range ethernet 0/2 - 3 , ethernet 1/0 - 2

SW3(config-if-range)#switchport trunk encapsulation dot1q

SW3(config-if-range)#switchport mode trunk

SW3(config-if-range)#switchport nonegotiate

SW3(config-if-range)#exit

Logical interface trunk need be set too

SW3(config)#interface range ethernet 0/2 - 3

SW3(config-if-range)#channel-group 34 mode on

SW3(config-if-range)#exit

SW3(config)#interface port-channel 34

SW3(config-if)#switchport trunk encapsulation dot1q

SW3(config-if)#switchport mode trunk

SW3(config-if)#switchport nonegotiate

SW4 physical interfaces trunk configuration, then build a channel to set trunk.

Switch>en

Switch#conf t

Switch(config)#hostname SW4

SW4(config)#interface range ethernet 0/2 - 3, ethernet 1/0 - 2

SW4(config-if-range)#switchport trunk encapsulation dot1q

SW4(config-if-range)#switchport mode trunk

SW4(config-if-range)#switchport nonegotiate

SW4(config-if-range)#exit

Logical interface trunk need be set too

SW4(config)#interface range ethernet 0/2 - 3

SW4(config-if-range)#channel-group 34 mode on

SW4(config-if-range)#exit

SW4(config)#interface port-channel 34

SW4(config-if)#switchport trunk encapsulation dot1q

SW4(config-if)#switchport mode trunk

SW4(config-if)#switchport nonegotiate

SW4(config-if)#exit

SW5

Switch>en

Switch#conf t

Switch(config)#hostname SW5

SW5(config)#interface range ethernet 1/0 - 1

SW5(config-if-range)#switchport trunk encapsulation dot1q

SW5(config-if-range)#switchport mode trunk

SW5(config-if-range)#switchport nonegotiate

SW5(config-if-range)#exit

SW6

Switch>en

Switch#conf t

Switch(config)#hostname SW6

SW6(config)#interface range ethernet 1/0 - 1

SW6(config-if-range)#switchport trunk encapsulation dot1q

SW6(config-if-range)#switchport mode trunk

SW6(config-if-range)#switchport nonegotiate

SW6(config-if-range)#exit

SW7

Switch>en

Switch#conf t

Switch(config)#hostname SW7

SW7(config)#interface range ethernet 1/0 - 1

SW7(config-if-range)#switchport trunk encapsulation dot1q

SW7(config-if-range)#switchport mode trunk

SW7(config-if-range)#switchport nonegotiate

SW7(config-if-range)#exit

Check

SW3#show interfaces trunk

```
SW3#show interfaces trunk

Port        Mode             Encapsulation  Status        Native vlan
Et1/0       on               802.1q         trunking      1
Et1/1       on               802.1q         trunking      1
Et1/2       on               802.1q         trunking      1
Po34        on               802.1q         trunking      1
```

SW3#show etherchannel summary

```
SW3#show etherchannel summary
Flags:  D - down        P - bundled in port-channel
        I - stand-alone s - suspended
        H - Hot-standby (LACP only)
        R - Layer3      S - Layer2
        U - in use      N - not in use, no aggregation
        f - failed to allocate aggregator

        M - not in use, minimum links not met
        m - not in use, port not aggregated due to minimum links not met
        u - unsuitable for bundling
        w - waiting to be aggregated
        d - default port

        A - formed by Auto LAG


Number of channel-groups in use: 1
Number of aggregators:           1

Group  Port-channel  Protocol    Ports
------+-------------+-----------+-----------------------------------------------
34     Po34(SU)         -        Et0/2(P)    Et0/3(P)
```

SW3 SW4 SW5 SW6 SW7

SW3(config)#vlan 10

SW3(config-vlan)#vlan 20

SW3(config-vlan)#vlan 30

SW3(config-vlan)#vlan 40

spanning-tree

SW3(config)#spanning-tree mode mst

SW3(config)#spanning-tree mst configuration

SW3(config-mst)#name wen

SW3(config-mst)#revision 34567

SW3(config-mst)#instance 1 vlan 10, 20

SW3(config-mst)#instance 2 vlan 30, 40

SW3(config-mst)#end

SW3#show run | section span

```
SW3#show run | se
SW3#show run | section sp
SW3#show run | section sp
SW3#show run | section span
SW3#show run | section span
spanning-tree mode mst
spanning-tree extend system-id
spanning-tree mst configuration
 name wen
 revision 34567
 instance 1 vlan 10, 20
 instance 2 vlan 30, 40
```

SW3

SW3(config)#spanning-tree mst 1 root primary

SW3(config)#spanning-tree mst 2 root secondary

SW4

SW4(config)#spanning-tree mst 1 root secondary

SW4(config)#spanning-tree mst 2 root primary

```
SW3#show spanning-tree mst 1

##### MST1    vlans mapped:   10,20
Bridge        address aabb.cc00.3000  priority      24577 (24576 sysid 1)
Root          this switch for MST1

Interface        Role Sts Cost      Prio.Nbr Type
---------------- ---- --- --------- -------- --------------------------------
Et1/0            Desg FWD 2000000   128.5    Shr
Et1/1            Desg FWD 2000000   128.6    Shr
Et1/2            Desg FWD 2000000   128.7    Shr
Po34             Desg FWD 1000000   128.65   Shr
```

```
SW7#show spanning-tree mst 2

##### MST2    vlans mapped:   30,40
Bridge        address aabb.cc00.0700  priority      32770 (32768 sysid 2)
Root          address aabb.cc00.0400  priority      24578 (24576 sysid 2)
              port    Et1/1           cost          2000000   rem hops 19

Interface        Role Sts Cost      Prio.Nbr Type
---------------- ---- --- --------- -------- --------------------------------
Et1/0            Altn BLK 2000000   128.5    P2p
Et1/1            Root FWD 2000000   128.6    P2p
```

SW5 set access interfaces

SW5(config)#interface ethernet 0/0

SW5(config-if)#switchport mode access

SW5(config-if)#switchport access vlan 10

SW5(config-if)#spanning-tree portfast edge

SW6 set access interfaces

SW6#conf t

SW6(config)#interface ethernet 0/0

SW6(config-if)#switchport mode access

SW6(config-if)#switchport access vlan 20

SW6(config-if)#spanning-tree portfast edge

SW6(config-if)#exit

SW6(config)#interface ethernet 0/1

SW6(config-if)#switchport mode access

SW6(config-if)#switchport access vlan 40

SW6(config-if)#spanning-tree portfast edge

SW6(config-if)#exit

SW7 set access interfaces

SW7#conf t

SW7(config)#interface ethernet 0/0

SW7(config-if)#switchport mode access

SW7(config-if)#switchport access vlan 30

SW7(config-if)#spanning-tree portfast edge

SW7(config-if)#exit

VPC10

```
VPCS> ip 172.16.10.1 255.255.255.0 172.16.10.254
Checking for duplicate address...
PC1 : 172.16.10.1 255.255.255.0 gateway 172.16.10.254
```

VPC11

```
VPCS> ip 172.16.20.1 255.255.255.0 172.16.20.254
Checking for duplicate address...
PC1 : 172.16.20.1 255.255.255.0 gateway 172.16.20.254
```

VPC12

```
VPCS> ip 172.16.30.1 255.255.255.0 172.16.30.254
Checking for duplicate address...
PC1 : 172.16.30.1 255.255.255.0 gateway 172.16.30.254
```

VPC13

```
VPCS> ip 172.16.40.1 255.255.255.0 172.16.40.254
Checking for duplicate address...
PC1 : 172.16.40.1 255.255.255.0 gateway 172.16.40.254
```

SW3, set virtual gateways(vrrp)

SW3#conf t

SW3(config)#interface vlan 10

SW3(config-if)#ip address 172.16.10.3 255.255.255.0

SW3(config-if)#vrrp 10 ip 172.16.10.254

SW3(config-if)#vrrp 10 priority 105

SW3(config-if)#no shutdown

SW3(config-if)#exit

SW3(config)#interface vlan 20

SW3(config-if)#ip address 172.16.20.3 255.255.255.0

SW3(config-if)#no shutdown

SW3(config-if)#vrrp 20 ip 172.16.20.254

SW3(config-if)#vrrp 20 priority 105

SW3(config-if)#no shutdown

SW3(config-if)#exit

SW3(config)#interface vlan 30

SW3(config-if)#ip address 172.16.30.3 255.255.255.0

SW3(config-if)#no shutdown

SW3(config-if)#vrrp 30 ip 172.16.30.254

SW3(config-if)#exit

SW3(config)#interface vlan 40

SW3(config-if)#ip address 172.16.40.3 255.255.255.0

SW3(config-if)#vrrp 40 ip 172.16.40.254

SW3(config-if)#no shutdown

SW3(config-if)#exit

SW3(config)#no ip cef

SW4, set virtual gateways(vrrp)

SW4#conf t

SW4(config)#no ip cef

SW4(config)#interface vlan 10

SW4(config-if)#ip address 172.16.10.4 255.255.255.0

SW4(config-if)#no shutdown

SW4(config-if)#vrrp 10 ip 172.16.10.254

SW4(config-if)#exit

SW4(config)#interface vlan 20

SW4(config-if)#no shutdown

SW4(config-if)#ip address 172.16.20.4 255.255.255.0

SW4(config-if)#vrrp 20 ip 172.16.20.254

SW4(config-if)#exit

SW4(config)#interface vlan 30

SW4(config-if)#ip address 172.16.30.4 255.255.255.0

SW4(config-if)#vrrp 30 ip 172.16.30.254

SW4(config-if)#vrrp 30 priority 105

SW4(config-if)#no shutdown

SW4(config-if)#exit

SW4(config)#interface vlan 40

SW4(config-if)#ip address 172.16.40.4 255.255.255.0

SW4(config-if)#vrrp 40 ip 172.16.40.254

SW4(config-if)#vrrp 40 priority 105

SW4(config-if)#no shutdown

SW4(config-if)#exit

SW1

```
Switch>en
Switch#conf t
Switch(config)#hostname SW1
SW1(config)#no ip cef
SW1(config)#interface ethernet 0/2
SW1(config-if)#no switchport
SW1(config-if)#no shutdown
SW1(config-if)#ip address 172.16.12.1 255.255.255.0
SW1(config-if)#no shutdown
SW1(config-if)#exit
SW1(config)#interface ethernet 0/3
SW1(config-if)#no switchport
SW1(config-if)#no shutdown
SW1(config-if)#ip address 172.16.21.1 255.255.255.0
SW1(config-if)#no shutdown
SW1(config-if)#exit
SW1(config)#interface ethernet 0/0
SW1(config-if)#no switchport
SW1(config-if)#ip address 172.16.13.1 255.255.255.0
SW1(config-if)#no shutdown
SW1(config-if)#exit
SW1(config)#interface ethernet 0/1
SW1(config-if)#no switchport
SW1(config-if)#no shutdown
SW1(config-if)#ip address 172.16.14.1 255.255.255.0
SW1(config-if)#exit
SW1(config)#interface ethernet 1/1
SW1(config-if)#no switchport
```

```
SW1(config-if)#ip address 172.16.100.1 255.255.255.0
SW1(config-if)#no shutdown
SW1(config-if)#exit
SW1(config)#end
```

SW2

```
Switch>en
Switch#conf t
Switch(config)#hostname SW2
SW2(config)#no ip cef
SW2(config)#interface ethernet 0/2
SW2(config-if)#no shutdown
SW2(config-if)#no switchport
SW2(config-if)#ip address 172.16.12.2 255.255.255.0
SW2(config-if)#exit
SW2(config)#interface ethernet 0/3
SW2(config-if)#no shutdown
SW2(config-if)#no switchport
SW2(config-if)#ip address 172.16.21.2 255.255.255.0
SW2(config-if)#no shutdown
SW2(config-if)#exit
SW2(config)#interface ethernet 0/0
SW2(config-if)#no shutdown
SW2(config-if)#no switchport
SW2(config-if)#ip address 172.16.23.2 255.255.255.0
SW2(config-if)#exit
SW2(config)#interface ethernet 0/1
SW2(config-if)#no switchport
SW2(config-if)#no shutdown
```

SW2(config-if)#ip address 172.16.24.2 255.255.255.0

SW2(config-if)#no shutdown

SW2(config-if)#no switchport

SW2(config-if)#exit

SW2(config)#interface ethernet 1/0

SW2(config-if)#no switchport

SW2(config-if)#ip address 172.16.200.2 255.255.255.0

SW2(config-if)#no shutdown

SW2(config-if)#exit

SW2(config)#end

```
SW2#show ip interface brief
Interface              IP-Address      OK? Method Status                Protocol
Ethernet0/0            172.16.23.2     YES manual up                    up
Ethernet0/1            172.16.24.2     YES manual up                    up
Ethernet0/2            172.16.12.2     YES manual up                    up
Ethernet0/3            172.16.21.2     YES manual up                    up
Ethernet1/0            172.16.200.2    YES manual up                    up
Ethernet1/1            unassigned      YES unset  up                    up
Ethernet1/2            unassigned      YES unset  up                    up
Ethernet1/3            unassigned      YES unset  up                    up
```

SW3

SW3(config)#interface ethernet 0/0

SW3(config-if)#no shutdown

SW3(config-if)#no switchport

SW3(config-if)#ip address 172.16.13.3 255.255.255.0

SW3(config-if)#exit

SW3(config)#interface ethernet 0/1

SW3(config-if)#no switchport

SW3(config-if)#no shutdown

SW3(config-if)#ip address 172.16.23.3 255.255.255.0

SW3(config-if)#exit

SW3(config)#end

```
SW3#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
```

```
SW3#ping 172.16.23.2
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 172.16.23.2, timeout is 2 seconds:
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 1/1/1 ms
```

SW4

SW4#conf t

SW4(config)#interface ethernet 0/0

SW4(config-if)#no shutdown

SW4(config-if)#no switchport

SW4(config-if)#ip address 172.16.14.4 255.255.255.0

SW4(config-if)#exit

SW4(config)#interface ethernet 0/1

SW4(config-if)#no switchport

SW4(config-if)#no shutdown

SW4(config-if)#ip address 172.16.24.4 255.255.255.0

SW4(config-if)#end

```
SW4#ping 172.16.14.1
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 172.16.14.1, timeout is 2 seconds:
.!!!!
Success rate is 80 percent (4/5), round-trip min/avg/max = 1/1/1 ms
SW4#ping 172.16.24.2
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 172.16.24.2, timeout is 2 seconds:
.!!!!
Success rate is 80 percent (4/5), round-trip min/avg/max = 1/1/2 ms
```

R8

Router>en

Router#conf t

Router(config)#interface ethernet 0/0

Router(config-if)#no shutdown

Router(config-if)#ip address 172.16.100.8 255.255.255.0

Router(config-if)#exit

Router(config)#interface ethernet 0/1

Router(config-if)#no shutdown

Router(config-if)#ip address 172.16.200.8 255.255.255.0

Router(config-if)#end

Router#conf t

Router(config)#hostname R8

R8(config)#end

```
R8#ping 172.16.100.1
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 172.16.100.1, timeout is 2 seconds:
.!!!!
Success rate is 80 percent (4/5), round-trip min/avg/max = 1/1/1 ms
R8#ping 172.16.200.2
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 172.16.200.2, timeout is 2 seconds:
.!!!!
Success rate is 80 percent (4/5), round-trip min/avg/max = 1/1/1 ms
```

R8#conf t

R8(config)#interface ethernet 0/2

R8(config-if)#no shutdown

R8(config-if)#ip address 89.1.1.8 255.255.255.0

R9

Router>en

Router#conf t

Router(config)#hostname R9

R9(config)#interface ethernet 0/0

R9(config-if)#no shutdown

R9(config-if)#ip address 89.1.1.9 255.255.255.0

R9(config-if)#exit

R9(config)#interface ethernet 0/1

R9(config-if)#no shutdown

R9(config-if)#ip address 192.168.1.9 255.255.255.0

R9(config-if)#end

```
R9#show ip interface brief
Interface                  IP-Address      OK? Method Status                Protocol
Ethernet0/0                89.1.1.9        YES manual up                    up
Ethernet0/1                192.168.1.9     YES manual up                    up
Ethernet0/2                unassigned      YES unset  administratively down down
Ethernet0/3                unassigned      YES unset  administratively down down
```

```
R9#ping 89.1.1.8
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 89.1.1.8, timeout is 2 seconds:
.!!!!
Success rate is 80 percent (4/5), round-trip min/avg/max = 1/1/1 ms
```

Server

```
VPCS> ip 192.168.1.100 255.255.255.0 192.168.1.9
Checking for duplicate address...
PC1 : 192.168.1.100 255.255.255.0 gateway 192.168.1.9
```

Check

```
R9#ping 192.168.1.100
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 192.168.1.100, timeout is 2 seconds:
.!!!!
Success rate is 80 percent (4/5), round-trip min/avg/max = 1/1/1 ms
```

```
R9#show ip route
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, p - overrides from PfR

Gateway of last resort is not set

      89.0.0.0/8 is variably subnetted, 2 subnets, 2 masks
C        89.1.1.0/24 is directly connected, Ethernet0/0
L        89.1.1.9/32 is directly connected, Ethernet0/0
      192.168.1.0/24 is variably subnetted, 2 subnets, 2 masks
C        192.168.1.0/24 is directly connected, Ethernet0/1
L        192.168.1.9/32 is directly connected, Ethernet0/1
```

Static route configuration 静态默认

R8>en

R8#conf t

R8(config)#ip route 0.0.0.0 0.0.0.0 ethernet 0/2 89.1.1.9

R8(config)#end

R8#show ip route

S* 0.0.0.0/0 [1/0] via 89.1.1.9, Ethernet0/2

R8#conf t

R8(config)#router ospf 110

R8(config-router)#router-id 8.8.8.8

R8(config-router)#network 172.16.100.8 0.0.0.0 area 0

R8(config-router)#network 172.16.200.8 0.0.0.0 area 0

R8(config-router)#default-information originate

default-information originate 下放默认

SW1 全局宣告

SW1#conf t

SW1(config)#router ospf 110

SW1(config-router)#router-id 1.1.1.1

SW1(config-router)#network 0.0.0.0 255.255.255.255 area 0

SW2 全局宣告

SW2#conf t

SW2(config)#router ospf 110

SW2(config-router)#router-id 2.2.2.2

SW2(config-router)#network 0.0.0.0 255.255.255.255 area 0

SW3

SW3#conf t

SW3(config)#router ospf 110

SW3(config-router)#router-id 3.3.3.3

SW3(config-router)#network 0.0.0.0 255.255.255.255 area 0

SW3(config-router)#passive-interface vlan 10

SW3(config-router)#passive-interface vlan 20

SW3(config-router)#passive-interface vlan 30

SW3(config-router)#passive-interface vlan 40

SW4

SW4>en

SW4#conf t

SW4(config)#router ospf 110

SW4(config-router)#router-id 4.4.4.4

SW4(config-router)#network 0.0.0.0 255.255.255.255 area 0

SW4(config-router)#passive-interface vlan 10

SW4(config-router)#passive-interface vlan 20

SW4(config-router)#passive-interface vlan 30

SW4(config-router)#passive-interface vlan 40

R8

```
R8#show ip route ospf
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, p - overrides from PfR

Gateway of last resort is 89.1.1.9 to network 0.0.0.0

      172.16.0.0/16 is variably subnetted, 14 subnets, 2 masks
O        172.16.10.0/24 [110/21] via 172.16.200.2, 00:07:24, Ethernet0/1
                        [110/21] via 172.16.100.1, 00:07:24, Ethernet0/0
O        172.16.12.0/24 [110/20] via 172.16.200.2, 00:09:16, Ethernet0/1
                        [110/20] via 172.16.100.1, 00:12:40, Ethernet0/0
O        172.16.13.0/24 [110/20] via 172.16.100.1, 00:12:40, Ethernet0/0
O        172.16.14.0/24 [110/20] via 172.16.100.1, 00:12:40, Ethernet0/0
O        172.16.20.0/24 [110/21] via 172.16.200.2, 00:07:24, Ethernet0/1
                        [110/21] via 172.16.100.1, 00:07:24, Ethernet0/0
O        172.16.21.0/24 [110/20] via 172.16.200.2, 00:09:16, Ethernet0/1
                        [110/20] via 172.16.100.1, 00:12:40, Ethernet0/0
O        172.16.23.0/24 [110/20] via 172.16.200.2, 00:09:26, Ethernet0/1
O        172.16.24.0/24 [110/20] via 172.16.200.2, 00:09:26, Ethernet0/1
O        172.16.30.0/24 [110/21] via 172.16.200.2, 00:07:24, Ethernet0/1
                        [110/21] via 172.16.100.1, 00:07:24, Ethernet0/0
O        172.16.40.0/24 [110/21] via 172.16.200.2, 00:07:24, Ethernet0/1
                        [110/21] via 172.16.100.1, 00:07:24, Ethernet0/0
```

```
R8#show ip ospf neighbor

Neighbor ID     Pri   State           Dead Time   Address         Interface
2.2.2.2           1   FULL/BDR        00:00:35    172.16.200.2    Ethernet0/1
1.1.1.1           1   FULL/BDR        00:00:36    172.16.100.1    Ethernet0/0
```

QIUWEN

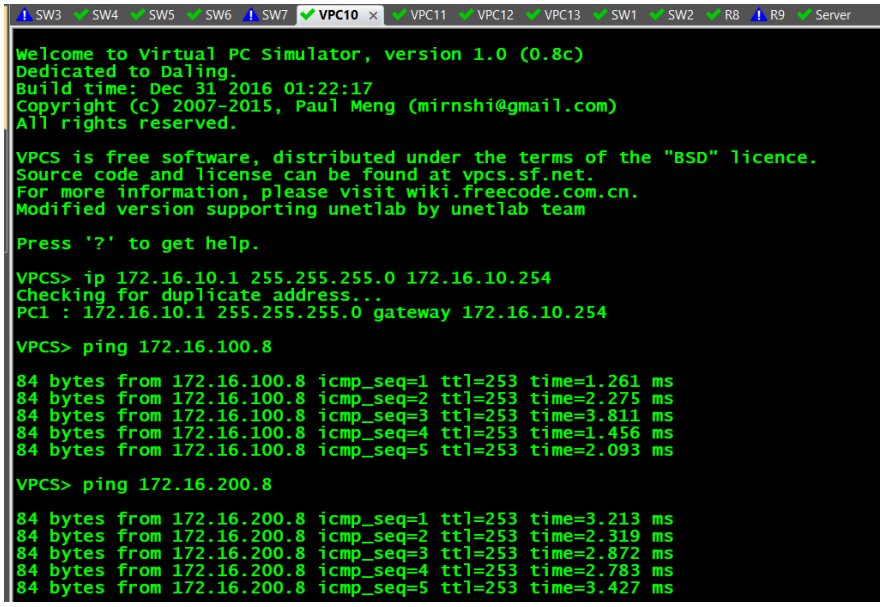
```
SW1#show ip ospf neighbor

Neighbor ID     Pri   State           Dead Time   Address         Interface
8.8.8.8           1   FULL/DR         00:00:37    172.16.100.8    Ethernet1/1
2.2.2.2           1   FULL/BDR        00:00:39    172.16.21.2     Ethernet0/3
2.2.2.2           1   FULL/BDR        00:00:39    172.16.12.2     Ethernet0/2
4.4.4.4           1   FULL/BDR        00:00:33    172.16.14.4     Ethernet0/1
3.3.3.3           1   FULL/BDR        00:00:35    172.16.13.3     Ethernet0/0
```

```
SW2#show ip ospf neighbor

Neighbor ID     Pri   State           Dead Time   Address         Interface
8.8.8.8           1   FULL/DR         00:00:39    172.16.200.8    Ethernet1/0
1.1.1.1           1   FULL/DR         00:00:39    172.16.21.1     Ethernet0/3
1.1.1.1           1   FULL/DR         00:00:35    172.16.12.1     Ethernet0/2
4.4.4.4           1   FULL/BDR        00:00:36    172.16.24.4     Ethernet0/1
3.3.3.3           1   FULL/BDR        00:00:33    172.16.23.3     Ethernet0/0
```

```
SW4#show ip ospf neighbor

Neighbor ID     Pri   State           Dead Time   Address         Interface
2.2.2.2           1   FULL/DR         00:00:35    172.16.24.2     Ethernet0/1
1.1.1.1           1   FULL/DR         00:00:37    172.16.14.1     Ethernet0/0
```

```
SW4#show run | section ospf
router ospf 110
 router-id 4.4.4.4
 passive-interface Vlan10
 passive-interface Vlan20
 passive-interface Vlan30
 passive-interface Vlan40
 network 0.0.0.0 255.255.255.255 area 0
```

```
R8#show ip route ospf
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, p - overrides from PfR

Gateway of last resort is 89.1.1.9 to network 0.0.0.0

      172.16.0.0/16 is variably subnetted, 14 subnets, 2 masks
O        172.16.10.0/24 [110/21] via 172.16.200.2, 00:16:06, Ethernet0/1
                        [110/21] via 172.16.100.1, 00:16:06, Ethernet0/0
O        172.16.12.0/24 [110/20] via 172.16.200.2, 00:17:58, Ethernet0/1
                        [110/20] via 172.16.100.1, 00:21:22, Ethernet0/0
O        172.16.13.0/24 [110/20] via 172.16.100.1, 00:21:22, Ethernet0/0
O        172.16.14.0/24 [110/20] via 172.16.100.1, 00:21:22, Ethernet0/0
O        172.16.20.0/24 [110/21] via 172.16.200.2, 00:16:06, Ethernet0/1
                        [110/21] via 172.16.100.1, 00:16:06, Ethernet0/0
O        172.16.21.0/24 [110/20] via 172.16.200.2, 00:17:58, Ethernet0/1
                        [110/20] via 172.16.100.1, 00:21:22, Ethernet0/0
O        172.16.23.0/24 [110/20] via 172.16.200.2, 00:18:08, Ethernet0/1
O        172.16.24.0/24 [110/20] via 172.16.200.2, 00:18:08, Ethernet0/1
O        172.16.30.0/24 [110/21] via 172.16.200.2, 00:16:06, Ethernet0/1
                        [110/21] via 172.16.100.1, 00:16:06, Ethernet0/0
O        172.16.40.0/24 [110/21] via 172.16.200.2, 00:16:06, Ethernet0/1
                        [110/21] via 172.16.100.1, 00:16:06, Ethernet0/0
```



Ping border is successful

NAT/PAT

R8#conf t

R8(config)#access-list 10 permit 172.16.0.0 0.0.255.255

R8(config)#interface range ethernet 0/0 - 1

R8(config-if-range)#ip nat inside

R8(config-if-range)#exit

R8(config)#interface ethernet 0/2

R8(config-if)#ip nat outside

R8(config-if)#exit

R8(config)#ip nat inside source list 10 interface ethernet 0/2 overload

Result