BÁO CÁO THỰC HÀNH

Môn học: Thực hành Quản trị mạng và hệ thống

Tên chủ đề: VLANs, Trunking và Định tuyến động

GVHD: Đỗ Hoàng Hiển

1. **THÔNG TIN CHUNG:**

Lớp: NT132.O11.ANTT.1

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Yêu cầu 1: Sử dụng lớp mạng 172.x.y.0/22, với x và y là 2 số cuối MSSV của 2 thành viên trong nhóm, để chia các mạng con và gắn IP cho các thiết bị theo yêu cầu bên dưới
Địa chỉ ip 172.77.5.0/22 nằm trong lớp mạng 172.77.4.0/22 nên ta lấy địa chỉ 172.77.4.0/22 để chia

Số host	Network	Subnet mask	Dải IP	Broadcast
200	172.77.4.0/24	255.255.255.0	172.77.4.1 - 172.77.4.254	172.77.4.25
32	172.77.5.0/26	255.255.255.192	172.77.5.1 - 172.77.5.62	172.77.5.63
30	172.77.5.64/27	255.255.255.224	172.77.5.65 - 172.77.5.94	172.77.5.95
7	172.77.5.96/28	255.255.255.240	172.77.5.97 - 172.77.5.110	172.77.5.111
10	172.77.5.112/28	255.255.255.240	172.77.5.113 - 172.77.5.126	172.77.5.127
2	172.77.5.128/30	255.255.255.252	172.77.5.129 - 172.77.5.130	172.77.5.131
2	172.77.5.132/30	255.255.255.252	172.77.5.133 - 172.77.5.134	172.77.5.135
2	172.77.5.136/30	255.255.255.252	172.77.5.137 - 172.77.5.138	172.77.5.139

Thiết bị	interface	IPv4	Subnet mask	Default Gateway
HN-R1	Gig0/1	172.77.5.129	255.255.255.252	
	Gig0/0.20	172.77.5.1	255.255.255.192	
	Gig0/0.21	172.77.5.97	255.255.255.240	
HN-S1	VLAN20	172.77.5.2	255.255.255.192	
	VLAN21	172.77.5.98	255.255.255.240	
HCM-R1	Gig0/1	172.77.5.130	255.255.255.252	
	Gig0/2	172.77.5.133	255.255.255.252	
	Gig0/0	172.77.5.137	255.255.255.252	
HCM-R2	Gig0/0	172.77.5.138	255.255.255.252	
	Gig0/1.10	172.77.5.113	255.255.255.240	
	Gig0/1.11	172.77.4.1	255.255.255.0	
HCM-S1	VLAN10	172.77.5.114	255.255.255.240	
HCM-S2	VLAN11	172.77.4.2	255.255.255.0	
CT-R1	Gig0/2	172.77.5.134	255.255.255.252	
	Gig0/0.30	172.77.5.65	255.255.255.224	
CT-S1	VLAN30	172.77.5.66	255.255.255.224	
HN-PC-A	NIC	172.77.5.62	255.255.255.192	172.77.5.1
HN-PC-B	NIC	172.77.5.110	255.255.255.240	172.77.5.97
HCM-ServerA	NIC	172.77.5.126	255.255.255.240	172.77.5.113
HCM-PC-A	NIC	172.77.4.254	255.255.255.0	172.77.4.1
CT-PC-A	NIC	172.77.5.94	255.255.255.224	172.77.5.65

Yêu cầu 2: Thực hiện cấu hình VLAN và Trunking cho các thiết bị theo yêu cầu bên dưới.

Kiểm tra bằng lệnh show vlan brief và lệnh show int trunk sau khi đã cấu hình:
HN-S1:

```
HN-S1>show vlan

VLAN Name                                Status    Ports
---- ----------------------------------- --------- -------------------------------
1    default                             active    Fa0/1, Fa0/2, Fa0/3, Fa0/4
                                                   Fa0/5, Fa0/7, Fa0/8, Fa0/9
                                                   Fa0/10, Fa0/12, Fa0/13, Fa0/14
                                                   Fa0/15, Fa0/16, Fa0/17, Fa0/18
                                                   Fa0/19, Fa0/20, Fa0/21, Fa0/22
                                                   Fa0/23, Fa0/24, Gig0/2
20   VLAN20                              active    Fa0/6
21   VLAN21                              active    Fa0/11
1002 fddi-default                        active
1003 token-ring-default                  active
1004 fddinet-default                     active
1005 trnet-default                       active
```

```
HN-S1>
HN-S1>show int trunk
Port        Mode         Encapsulation  Status        Native vlan
Gig0/1      on           802.1q         trunking      1

Port        Vlans allowed on trunk
Gig0/1      1-1005

Port        Vlans allowed and active in management domain
Gig0/1      1,20,21

Port        Vlans in spanning tree forwarding state and not pruned
Gig0/1      1,20,21

HN-S1>
```

HCM-S1:

```
HCM-S1>show vlan brief

VLAN Name                                Status    Ports
---- ----------------------------------- --------- -------------------------------
1    default                             active    Fa0/1, Fa0/2, Fa0/3, Fa0/4
                                                   Fa0/5, Fa0/7, Fa0/8, Fa0/9
                                                   Fa0/10, Fa0/11, Fa0/12, Fa0/13
                                                   Fa0/14, Fa0/15, Fa0/16, Fa0/17
                                                   Fa0/18, Fa0/19, Fa0/20, Fa0/21
                                                   Fa0/22, Fa0/23, Fa0/24
10   VLAN10                              active    Fa0/6
11   VLAN0011                            active
1002 fddi-default                        active
1003 token-ring-default                  active
1004 fddinet-default                     active
1005 trnet-default                       active
HCM-S1>
```

```
HCM-S1>show int trunk
Port        Mode         Encapsulation  Status        Native vlan
Gig0/1      on           802.1q         trunking      1
Gig0/2      on           802.1q         trunking      1

Port        Vlans allowed on trunk
Gig0/1      1-1005
Gig0/2      1-1005

Port        Vlans allowed and active in management domain
Gig0/1      1,10,11
Gig0/2      1,10,11

Port        Vlans in spanning tree forwarding state and not pruned
Gig0/1      1,10,11
Gig0/2      1,10,11
```

HCM-S2:

```
HCM-S2>show vlan brief

VLAN Name                             Status    Ports
---- -------------------------------- --------- -------------------------------
1    default                          active    Fa0/1, Fa0/2, Fa0/3, Fa0/4
                                                Fa0/5, Fa0/7, Fa0/8, Fa0/9
                                                Fa0/10, Fa0/11, Fa0/12, Fa0/13
                                                Fa0/14, Fa0/15, Fa0/16, Fa0/17
                                                Fa0/18, Fa0/19, Fa0/20, Fa0/21
                                                Fa0/22, Fa0/23, Fa0/24, Gig0/1
10   VLAN0010                         active
11   VLAN11                           active    Fa0/6
1002 fddi-default                     active
1003 token-ring-default               active
1004 fddinet-default                  active
1005 trnet-default                    active
```

```
HCM-S2>show int trunk
Port        Mode         Encapsulation  Status        Native vlan
Gig0/2      on           802.1q         trunking      1

Port        Vlans allowed on trunk
Gig0/2      1-1005

Port        Vlans allowed and active in management domain
Gig0/2      1,10,11

Port        Vlans in spanning tree forwarding state and not pruned
Gig0/2      1,10,11
```

CT-S1:

```
CT-S1>show vlan brief

VLAN Name                             Status    Ports
---- -------------------------------- --------- -------------------------------
1    default                          active    Fa0/1, Fa0/2, Fa0/3, Fa0/4
                                                Fa0/5, Fa0/7, Fa0/8, Fa0/9
                                                Fa0/10, Fa0/11, Fa0/12, Fa0/13
                                                Fa0/14, Fa0/15, Fa0/16, Fa0/17
                                                Fa0/18, Fa0/19, Fa0/20, Fa0/21
                                                Fa0/22, Fa0/23, Fa0/24, Gig0/2
30   VLAN30                           active    Fa0/6
1002 fddi-default                     active
1003 token-ring-default               active
1004 fddinet-default                  active
1005 trnet-default                    active
```

```
CT-S1>show int trunk
Port        Mode         Encapsulation  Status        Native vlan
Gig0/1      on           802.1q         trunking      1

Port        Vlans allowed on trunk
Gig0/1      1-1005

Port        Vlans allowed and active in management domain
Gig0/1      1,30

Port        Vlans in spanning tree forwarding state and not pruned
Gig0/1      1,30
```

Yêu cầu 3. Sử dụng bảng địa chỉ IP của các thiết bị ở Yêu cầu 1, sinh viên thực hiện cấu hình địa chỉ IP cho các thiết bị.

Kiểm tra bằng lệnh show ip interface brief:

HN-R1:

```
HN-R1> show ip interface brief
Interface              IP-Address      OK? Method Status                Protocol
GigabitEthernet0/0     unassigned      YES unset  up                    up
GigabitEthernet0/0.20  172.77.5.1      YES manual up                    up
GigabitEthernet0/0.21  172.77.5.97     YES manual up                    up
GigabitEthernet0/1     172.77.5.129    YES manual up                    up
GigabitEthernet0/2     unassigned      YES unset  administratively down down
Vlan1                  unassigned      YES unset  administratively down down
```

HN-S1:

```
GigabitEthernet0/2     unassigned      YES manual down                  down
Vlan1                  unassigned      YES manual administratively down down
Vlan20                 172.77.5.2      YES manual up                    up
Vlan21                 172.77.5.98     YES manual up                    up
HN-S1>
```

HCM-R1:

```
HCM-R1>show ip int brief
Interface              IP-Address      OK? Method Status                Protocol
GigabitEthernet0/0     172.77.5.137    YES manual up                    up
GigabitEthernet0/1     172.77.5.130    YES manual up                    up
GigabitEthernet0/2     172.77.5.133    YES manual up                    up
Loopback0              8.8.8.8         YES manual up                    up
Vlan1                  unassigned      YES unset  administratively down down
HCM-R1>
```

HCM-R2:

```
HCM-R2>show ip int brief
Interface              IP-Address      OK? Method Status                Protocol
GigabitEthernet0/0     172.77.5.138    YES manual up                    up
GigabitEthernet0/1     unassigned      YES unset  up                    up
GigabitEthernet0/1.10  172.77.5.113    YES manual up                    up
GigabitEthernet0/1.11  172.77.4.1      YES manual up                    up
GigabitEthernet0/2     unassigned      YES unset  administratively down down
Vlan1                  unassigned      YES unset  administratively down down
HCM-R2>
```

HCM-S1:

```
GigabitEthernet0/1     unassigned      YES manual up                    up
GigabitEthernet0/2     unassigned      YES manual up                    up
Vlan1                  unassigned      YES manual administratively down down
Vlan10                 172.77.5.114    YES manual up                    up
```

HCM-S2:

```
GigabitEthernet0/2     unassigned      YES manual up                    up
Vlan1                  unassigned      YES manual administratively down down
Vlan11                 172.77.4.2      YES manual up                    up
HCM-S2>
```

CT-R1:

```
CT-R1>show ip int bri
Interface              IP-Address      OK? Method Status                Protocol
GigabitEthernet0/0     unassigned      YES unset  up                    up
GigabitEthernet0/0.30  172.77.5.65     YES manual up                    up
GigabitEthernet0/1     unassigned      YES unset  administratively down down
GigabitEthernet0/2     172.77.5.134    YES manual up                    up
Vlan1                  unassigned      YES unset  administratively down down
CT-R1>
```

CT-S1:

```
GigabitEthernet0/2     unassigned      YES manual down                  down
Vlan1                  unassigned      YES manual administratively down down
Vlan30                 172.77.5.66     YES manual up                    up
CT-S1>
```

Yêu cầu 4. Sinh viên cấu hình định tuyến OSPF trên các router để thoả các yêu cầu bên dưới.

• Cấu hình định tuyến OSPF Trên các router để đảm bảo các PC và Server thấy nhau.

• Kiểm tra cấu hình định tuyến và bảng định tuyến.

• Tạo một cổng loopback 0 trên router HCM-R1 với địa chỉ 8.8.8.8/32 (ta giả sử cổng loopback này là cổng để đi Internet). Tạo một default static route đi ra cổng này. Quảng bá default static route này cho các route khác bằng OSPF (gợi ý: sử dụng lệnh default-information)

Kiểm tra bằng lệnh show ip protocol và show ip route:

HN-R1:

```
HN-R1>show ip pro

Routing Protocol is "ospf 1"
  Outgoing update filter list for all interfaces is not set
  Incoming update filter list for all interfaces is not set
  Router ID 172.77.5.129
  Number of areas in this router is 1. 1 normal 0 stub 0 nssa
  Maximum path: 4
  Routing for Networks:
    172.77.5.129 0.0.0.0 area 0
    172.77.5.1 0.0.0.0 area 0
    172.77.5.97 0.0.0.0 area 0
  Routing Information Sources:
    Gateway         Distance      Last Update
    172.77.5.129         110      00:02:05
    172.77.5.134         110      00:00:17
    172.77.5.137         110      00:25:49
    172.77.5.138         110      00:29:19
  Distance: (default is 110)
```

```
HN-R1>show ip rou
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, E - EGP
       i - IS-IS, 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

Gateway of last resort is 172.77.5.130 to network 0.0.0.0

     172.77.0.0/16 is variably subnetted, 11 subnets, 6 masks
O       172.77.4.0/24 [110/3] via 172.77.5.130, 00:30:58, GigabitEthernet0/1
C       172.77.5.0/26 is directly connected, GigabitEthernet0/0.20
L       172.77.5.1/32 is directly connected, GigabitEthernet0/0.20
O       172.77.5.64/27 [110/3] via 172.77.5.130, 00:31:57, GigabitEthernet0/1
C       172.77.5.96/28 is directly connected, GigabitEthernet0/0.21
L       172.77.5.97/32 is directly connected, GigabitEthernet0/0.21
O       172.77.5.112/28 [110/3] via 172.77.5.130, 00:31:08, GigabitEthernet0/1
C       172.77.5.128/30 is directly connected, GigabitEthernet0/1
L       172.77.5.129/32 is directly connected, GigabitEthernet0/1
O       172.77.5.132/30 [110/2] via 172.77.5.130, 00:32:07, GigabitEthernet0/1
O       172.77.5.136/30 [110/2] via 172.77.5.130, 00:33:07, GigabitEthernet0/1
O*E2 0.0.0.0/0 [110/1] via 172.77.5.130, 00:27:30, GigabitEthernet0/1
```

HCM-R1:

```
HCM-R1>show ip pro

Routing Protocol is "ospf 1"
  Outgoing update filter list for all interfaces is not set
  Incoming update filter list for all interfaces is not set
  Router ID 172.77.5.137
  It is an autonomous system boundary router
  Redistributing External Routes from,
  Number of areas in this router is 1. 1 normal 0 stub 0 nssa
  Maximum path: 4
  Routing for Networks:
    172.77.5.130 0.0.0.0 area 0
    172.77.5.133 0.0.0.0 area 0
    172.77.5.137 0.0.0.0 area 0
  Routing Information Sources:
    Gateway         Distance      Last Update
    172.77.5.129         110      00:04:18
    172.77.5.134         110      00:02:31
    172.77.5.137         110      00:28:02
    172.77.5.138         110      00:01:32
  Distance: (default is 110)
```

```
HCM-R1>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, E - EGP
       i - IS-IS, 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

Gateway of last resort is 0.0.0.0 to network 0.0.0.0

     8.0.0.0/32 is subnetted, 1 subnets
C       8.8.8.8/32 is directly connected, Loopback0
     172.77.0.0/16 is variably subnetted, 11 subnets, 6 masks
O       172.77.4.0/24 [110/2] via 172.77.5.138, 00:31:59, GigabitEthernet0/0
O       172.77.5.0/26 [110/2] via 172.77.5.129, 00:34:43, GigabitEthernet0/1
O       172.77.5.64/27 [110/2] via 172.77.5.134, 00:32:58, GigabitEthernet0/2
O       172.77.5.96/28 [110/2] via 172.77.5.129, 00:34:43, GigabitEthernet0/1
O       172.77.5.112/28 [110/2] via 172.77.5.138, 00:32:10, GigabitEthernet0/0
C       172.77.5.128/30 is directly connected, GigabitEthernet0/1
L       172.77.5.130/32 is directly connected, GigabitEthernet0/1
C       172.77.5.132/30 is directly connected, GigabitEthernet0/2
L       172.77.5.133/32 is directly connected, GigabitEthernet0/2
C       172.77.5.136/30 is directly connected, GigabitEthernet0/0
L       172.77.5.137/32 is directly connected, GigabitEthernet0/0
S*   0.0.0.0/0 is directly connected, Loopback0
```

HCM-R2:

```
HCM-R2>show ip pro

Routing Protocol is "ospf 1"
  Outgoing update filter list for all interfaces is not set
  Incoming update filter list for all interfaces is not set
  Router ID 172.77.5.138
  Number of areas in this router is 1. 1 normal 0 stub 0 nssa
  Maximum path: 4
  Routing for Networks:
    172.77.5.138 0.0.0.0 area 0
    172.77.5.113 0.0.0.0 area 0
    172.77.4.1 0.0.0.0 area 0
  Routing Information Sources:
    Gateway         Distance      Last Update
    172.77.5.129         110      00:05:09
    172.77.5.134         110      00:03:21
    172.77.5.137         110      00:28:52
    172.77.5.138         110      00:02:21
  Distance: (default is 110)


HCM-R2>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, E - EGP
       i - IS-IS, 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

Gateway of last resort is 172.77.5.137 to network 0.0.0.0

     172.77.0.0/16 is variably subnetted, 11 subnets, 6 masks
C       172.77.4.0/24 is directly connected, GigabitEthernet0/1.11
L       172.77.4.1/32 is directly connected, GigabitEthernet0/1.11
O       172.77.5.0/26 [110/3] via 172.77.5.137, 00:33:02, GigabitEthernet0/0
O       172.77.5.64/27 [110/3] via 172.77.5.137, 00:33:02, GigabitEthernet0/0
O       172.77.5.96/28 [110/3] via 172.77.5.137, 00:33:02, GigabitEthernet0/0
C       172.77.5.112/28 is directly connected, GigabitEthernet0/1.10
L       172.77.5.113/32 is directly connected, GigabitEthernet0/1.10
O       172.77.5.128/30 [110/2] via 172.77.5.137, 00:33:02, GigabitEthernet0/0
O       172.77.5.132/30 [110/2] via 172.77.5.137, 00:33:02, GigabitEthernet0/0
C       172.77.5.136/30 is directly connected, GigabitEthernet0/0
L       172.77.5.138/32 is directly connected, GigabitEthernet0/0
O*E2 0.0.0.0/0 [110/1] via 172.77.5.137, 00:29:19, GigabitEthernet0/0
```

CT-R1:

```
CT-R1>show ip pro

Routing Protocol is "ospf 1"
  Outgoing update filter list for all interfaces is not set
  Incoming update filter list for all interfaces is not set
  Router ID 172.77.5.134
  Number of areas in this router is 1. 1 normal 0 stub 0 nssa
  Maximum path: 4
  Routing for Networks:
    172.77.5.134 0.0.0.0 area 0
    172.77.5.65 0.0.0.0 area 0
  Routing Information Sources:
    Gateway         Distance      Last Update
    172.77.5.129         110      00:05:55
    172.77.5.134         110      00:04:07
    172.77.5.137         110      00:29:39
    172.77.5.138         110      00:03:08
  Distance: (default is 110)
```

```
CT-R1>show ip rou
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, E - EGP
       i - IS-IS, 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

Gateway of last resort is 172.77.5.133 to network 0.0.0.0

     172.77.0.0/16 is variably subnetted, 10 subnets, 6 masks
O       172.77.4.0/24 [110/3] via 172.77.5.133, 00:33:25, GigabitEthernet0/2
O       172.77.5.0/26 [110/3] via 172.77.5.133, 00:34:33, GigabitEthernet0/2
C       172.77.5.64/27 is directly connected, GigabitEthernet0/0.30
L       172.77.5.65/32 is directly connected, GigabitEthernet0/0.30
O       172.77.5.96/28 [110/3] via 172.77.5.133, 00:34:33, GigabitEthernet0/2
O       172.77.5.112/28 [110/3] via 172.77.5.133, 00:33:25, GigabitEthernet0/2
O       172.77.5.128/30 [110/2] via 172.77.5.133, 00:34:33, GigabitEthernet0/2
C       172.77.5.132/30 is directly connected, GigabitEthernet0/2
L       172.77.5.134/32 is directly connected, GigabitEthernet0/2
O       172.77.5.136/30 [110/2] via 172.77.5.133, 00:34:33, GigabitEthernet0/2
O*E2 0.0.0.0/0 [110/1] via 172.77.5.133, 00:29:53, GigabitEthernet0/2
```

Kiểm tra bằng ping:

HN-PC-A→HN-PC-B:

```
C:\>ping 172.77.5.110

Pinging 172.77.5.110 with 32 bytes of data:

Reply from 172.77.5.110: bytes=32 time=9ms TTL=127
Reply from 172.77.5.110: bytes=32 time<1ms TTL=127
Reply from 172.77.5.110: bytes=32 time<1ms TTL=127
Reply from 172.77.5.110: bytes=32 time<1ms TTL=127

Ping statistics for 172.77.5.110:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 9ms, Average = 2ms
```

HN-PC-A→HCM-ServerA:

```
C:\>ping 172.77.5.126

Pinging 172.77.5.126 with 32 bytes of data:

Reply from 172.77.5.126: bytes=32 time<1ms TTL=125
Reply from 172.77.5.126: bytes=32 time<1ms TTL=125
Reply from 172.77.5.126: bytes=32 time<1ms TTL=125
Reply from 172.77.5.126: bytes=32 time=1ms TTL=125

Ping statistics for 172.77.5.126:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 1ms, Average = 0ms
```

HN-PC-A→HCM-PC-A:

```
C:\>ping 172.77.4.254

Pinging 172.77.4.254 with 32 bytes of data:

Reply from 172.77.4.254: bytes=32 time<1ms TTL=125
Reply from 172.77.4.254: bytes=32 time<1ms TTL=125
Reply from 172.77.4.254: bytes=32 time<1ms TTL=125
Reply from 172.77.4.254: bytes=32 time<1ms TTL=125

Ping statistics for 172.77.4.254:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms
```

HN-PC-A→CT-PC-A:

```
C:\>ping 172.77.5.94

Pinging 172.77.5.94 with 32 bytes of data:

Request timed out.
Reply from 172.77.5.94: bytes=32 time<1ms TTL=125
Reply from 172.77.5.94: bytes=32 time<1ms TTL=125
Reply from 172.77.5.94: bytes=32 time<1ms TTL=125

Ping statistics for 172.77.5.94:
    Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms
```

HN-PC-B→HCM-ServerA:

```
C:\>ping 172.77.5.126

Pinging 172.77.5.126 with 32 bytes of data:

Reply from 172.77.5.126: bytes=32 time<1ms TTL=125
Reply from 172.77.5.126: bytes=32 time<1ms TTL=125
Reply from 172.77.5.126: bytes=32 time<1ms TTL=125
Reply from 172.77.5.126: bytes=32 time<1ms TTL=125

Ping statistics for 172.77.5.126:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>
```

HN-PC-B→HCM-PC-A:

```
C:\>ping 172.77.4.254

Pinging 172.77.4.254 with 32 bytes of data:

Reply from 172.77.4.254: bytes=32 time<1ms TTL=125
Reply from 172.77.4.254: bytes=32 time<1ms TTL=125
Reply from 172.77.4.254: bytes=32 time<1ms TTL=125
Reply from 172.77.4.254: bytes=32 time<1ms TTL=125

Ping statistics for 172.77.4.254:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms
```

HN-PC-B→CT-PC-A:

```
C:\>ping 172.77.5.94

Pinging 172.77.5.94 with 32 bytes of data:

Reply from 172.77.5.94: bytes=32 time<1ms TTL=125
Reply from 172.77.5.94: bytes=32 time<1ms TTL=125
Reply from 172.77.5.94: bytes=32 time<1ms TTL=125
Reply from 172.77.5.94: bytes=32 time<1ms TTL=125

Ping statistics for 172.77.5.94:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms
```

HCM-ServerA→HCM-PC-A:

```
C:\>ping 172.77.4.254

Pinging 172.77.4.254 with 32 bytes of data:

Reply from 172.77.4.254: bytes=32 time<1ms TTL=127
Reply from 172.77.4.254: bytes=32 time<1ms TTL=127
Reply from 172.77.4.254: bytes=32 time<1ms TTL=127
Reply from 172.77.4.254: bytes=32 time<1ms TTL=127

Ping statistics for 172.77.4.254:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms
```

HCM-ServerA→CT-PC-A:

```
C:\>ping 172.77.5.94

Pinging 172.77.5.94 with 32 bytes of data:

Reply from 172.77.5.94: bytes=32 time<1ms TTL=125
Reply from 172.77.5.94: bytes=32 time<1ms TTL=125
Reply from 172.77.5.94: bytes=32 time=1ms TTL=125
Reply from 172.77.5.94: bytes=32 time<1ms TTL=125

Ping statistics for 172.77.5.94:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 1ms, Average = 0ms
```

HCM-PC-A→CT-PC-A:

```
C:\>ping 172.77.5.94

Pinging 172.77.5.94 with 32 bytes of data:

Reply from 172.77.5.94: bytes=32 time<1ms TTL=125
Reply from 172.77.5.94: bytes=32 time=7ms TTL=125
Reply from 172.77.5.94: bytes=32 time<1ms TTL=125
Reply from 172.77.5.94: bytes=32 time<1ms TTL=125

Ping statistics for 172.77.5.94:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 7ms, Average = 1ms
```

Tạo cổng loopback 0 trên HCM-R1:

interface loopback 0

ip address 8.8.8.8 255.255.255.255

Tạo default static route

ip route 0.0.0.0 0.0.0.0 Loopback0

Quảng bá default static route

router ospf 1

default-information originate

Kiểm tra kết quả: ở hình chụp thực hiện câu lệnh show ip route ở các router trên đều có dòng cuối thể hiện default static route đã được quảng bá

```
HCM-R1>show ip int brief
Interface              IP-Address      OK? Method Status                Protocol
GigabitEthernet0/0     172.77.5.137    YES manual up                    up
GigabitEthernet0/1     172.77.5.130    YES manual up                    up
GigabitEthernet0/2     172.77.5.133    YES manual up                    up
Loopback0              8.8.8.8         YES manual up                    up
Vlan1                  unassigned      YES unset  administratively down down
HCM-R1>
```