厦門大學

信息学院软件工程系

《计算机网络》实验报告

题　　目　实验五　CISCO IOS 路由配置

班　　级　软件工程 2018 级 1 班

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实验时间　2020 年 4 月 8 日

2020 年　4　月　21　日

1 实验目的

使用 Router eSIM v1.1 模拟器来模拟路由器的配置环境;使用 CCNA Network Visualizer 6.0 配置静态路由、动态路由和交换机端口的 VLAN(虚拟局域网)

2 实验环境

Router eSIM v1.1 CNNA Network Visualizer 6.0

3 实验结果

使用 Router eSIM v1.1 模拟路由配置

```
Router>enable
Router#show startip-config
                ^
% Invalid input detected at '^' marker.

Router#show startup-config
 %% Non-volatile configuration memory is not present
Router#config t
Enter configuration commands, one per line.  End with END.
Router(config)#hostname lab_A
lab_A(config)#banner motd #
Enter TEXT message.  End with the character '#'.
Accounting Department
```

完成配置后打印路由表，ping 操作

```
RounterA#show ip route
Codes: C - connected, S - static, I - IGRP, 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, * - candidate default
       U - per-user static route, o - ODR

Gateway of last resort is not set

R   204.204.7.0     /24 [120/2] via 201.100.11.2, 00:00:03, Serial0
R   223.8.151.0     /24 [120/2] via 201.100.11.2, 00:00:04, Serial0
C   201.100.11.0    /24 is directly connected, Serial0
R   219.17.100.0    /24 [120/1] via 201.100.11.2, 00:00:04, Serial0
C   192.5.5.0       /24 is directly connected, Ethernet0
R   199.6.13.0      /24 [120/1] via 201.100.11.2, 00:00:04, Serial0
C   205.7.5.0       /24 is directly connected, Ethernet1
R   210.93.105.0    /24 [120/3] via 201.100.11.2, 00:00:04, Serial0
RounterA#ping 210.93.105.1
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echoes to 210.93.105.1, timeout is 2 seconds:
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 32/33/36 ms
```

对 CNNA network 6.0 进行配置

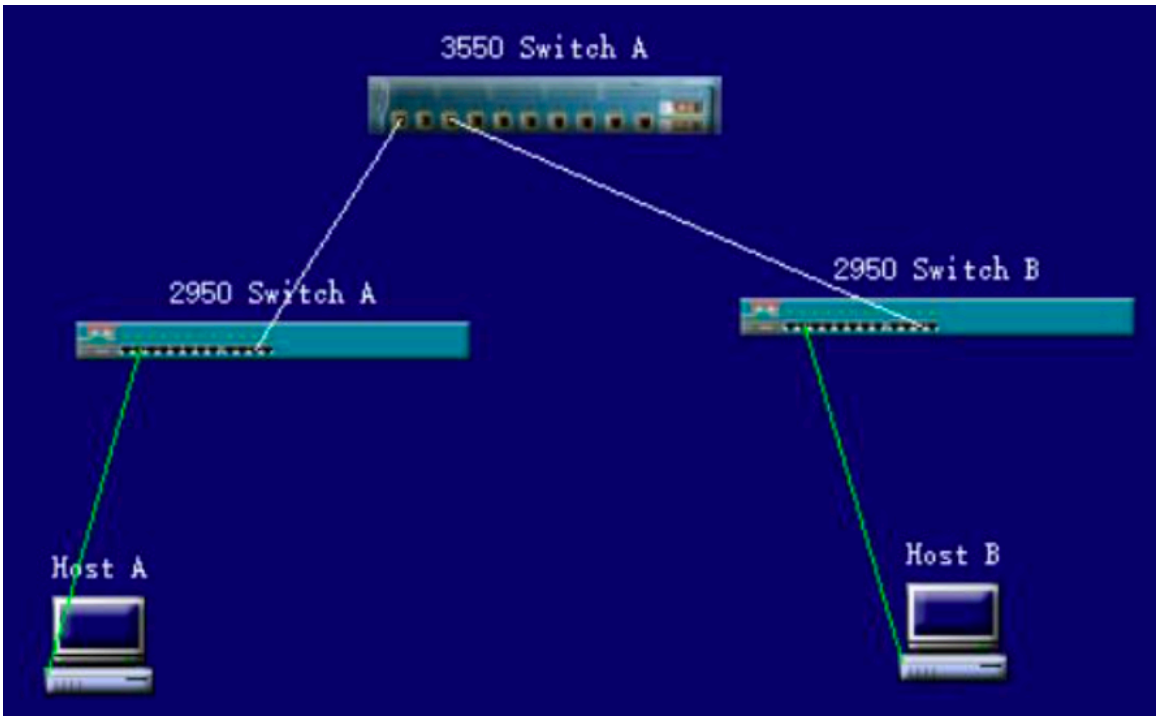
静态：

```
Router(config)#ip route 199.6.13.0 255.255.255.0 201.100.11.2
Router(config)#exit
Router#show ip route
Codes: C - connected, S - static, I - IGRP, 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, * - candidate d
       U - per-user static route, o - ODR, P - periodic downloaded static
       T - traffic engineered route

Gateway of last resort is not set
S     199.6.13.0 [1/0] via 201.100.11.2
C     201.100.11.0/24 is directly connected, Serial0/0
C     192.5.5.0/24 is directly connected, FastEthernet0/0
C     205.7.5.0/24 is directly connected, FastEthernet0/1
Router#ping 199.6.13.1

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 199.6.13.1, timeout is 2 seconds:
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 4/4/4 ms
Router#
```

动态：

```
Router(config)#exit
Router#show ip protocols
Routing Protocol is "rip"
  Sending updates every 30 seconds, next due in 1 seconds
  Invalid after 180 seconds, hold down 180, flushed after 240
  Outgoing update filter list for all interfaces is not set
  Incoming update filter list for all interfaces is not set
  Redistributing: rip
  Default version control: send version 1, receive any version
    Interface             Send  Recv  Triggered RIP  Key-chain
    Serial0/0             1     1 2
    FastEthernet0/1       1     1 2
    FastEthernet0/0       1     1 2
  Automatic network summarization is in effect
  Maximum path: 4
  Routing for networks:
    10.0.0.0
    192.5.5.0
    205.7.5.0
```

VLAN 配置：



两台主机互 ping：

```
C:\>ping 20.20.20.2

Pinging 20.20.20.2 with 32 bytes of data:

Reply from 20.20.20.2 ;bytes=32 time=22ms TTL=254
Reply from 20.20.20.2 ;bytes=32 time=22ms TTL=254
Reply from 20.20.20.2 ;bytes=32 time=22ms TTL=254
Reply from 20.20.20.2 ;bytes=32 time=22ms TTL=254

Ping Statistics for 20.20.20.2:
    Packets Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 22ms, Maximum = 23ms, Average = 22ms
```

```
C:\>ping 10.10.10.2

Pinging 10.10.10.2 with 32 bytes of data:

Reply from 10.10.10.2 ;bytes=32 time=22ms TTL=254
Reply from 10.10.10.2 ;bytes=32 time=22ms TTL=254
Reply from 10.10.10.2 ;bytes=32 time=22ms TTL=254
Reply from 10.10.10.2 ;bytes=32 time=22ms TTL=254

Ping Statistics for 10.10.10.2:
    Packets Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 22ms, Maximum = 23ms, Average = 22ms
```

交换机 ping 主机：

```
3550A>en
3550A#ping 192.168.10.3

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 192.168.10.3, timeout is 2 seconds:
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 4/4/4 ms
3550A#
```

4 实验总结

经过这次实验，我掌握了对 Router eSIM v1.1 和 CNNA Network Visualizer 6.0 的使用，对路由器的原理有了更深入的理解，学会了如何配置路由器。