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 路由器基本配置

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 10 日

1 实验目的

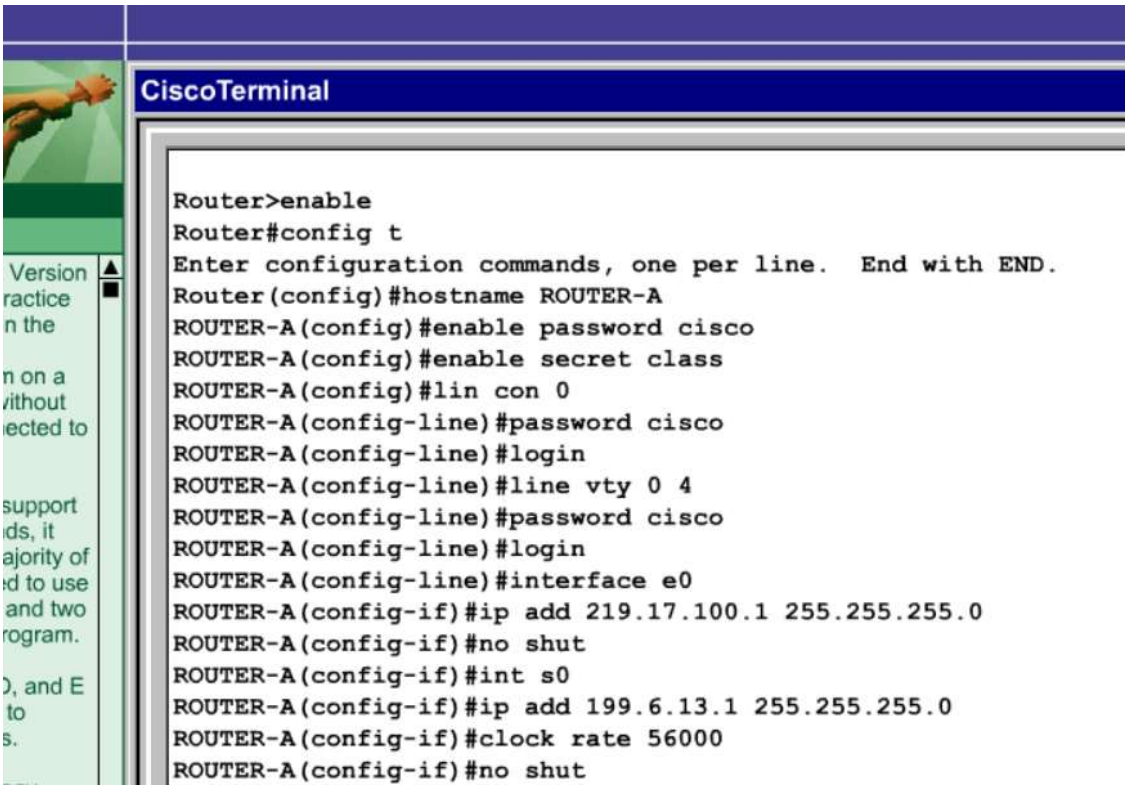
使用 Router eSIM v1.1 模拟器来模拟路由器的配置环境；使用 CCNA Network Visualizer 6.0 配置静态路由、动态路由和交换机端口的 VLAN（虚拟局域网）

2 实验环境

Win10，Router eSIM v1.1，CCNA Network Visualizer 6.0

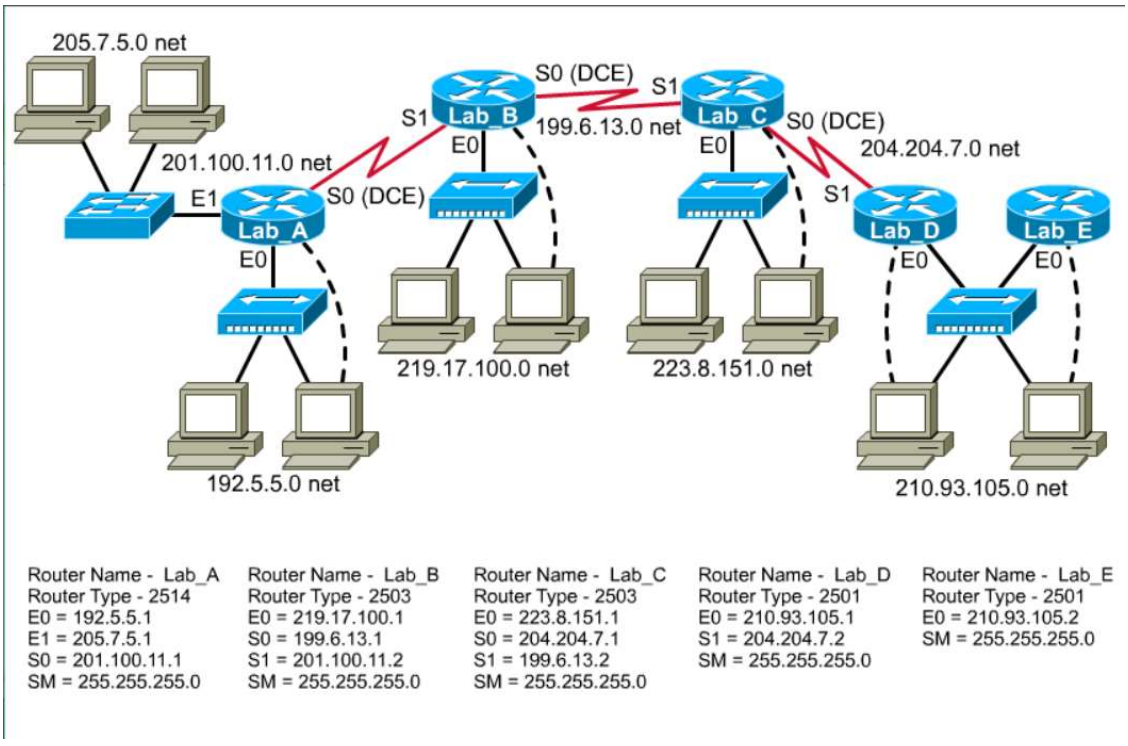
3 实验结果

Router eSIM v1.1 的使用

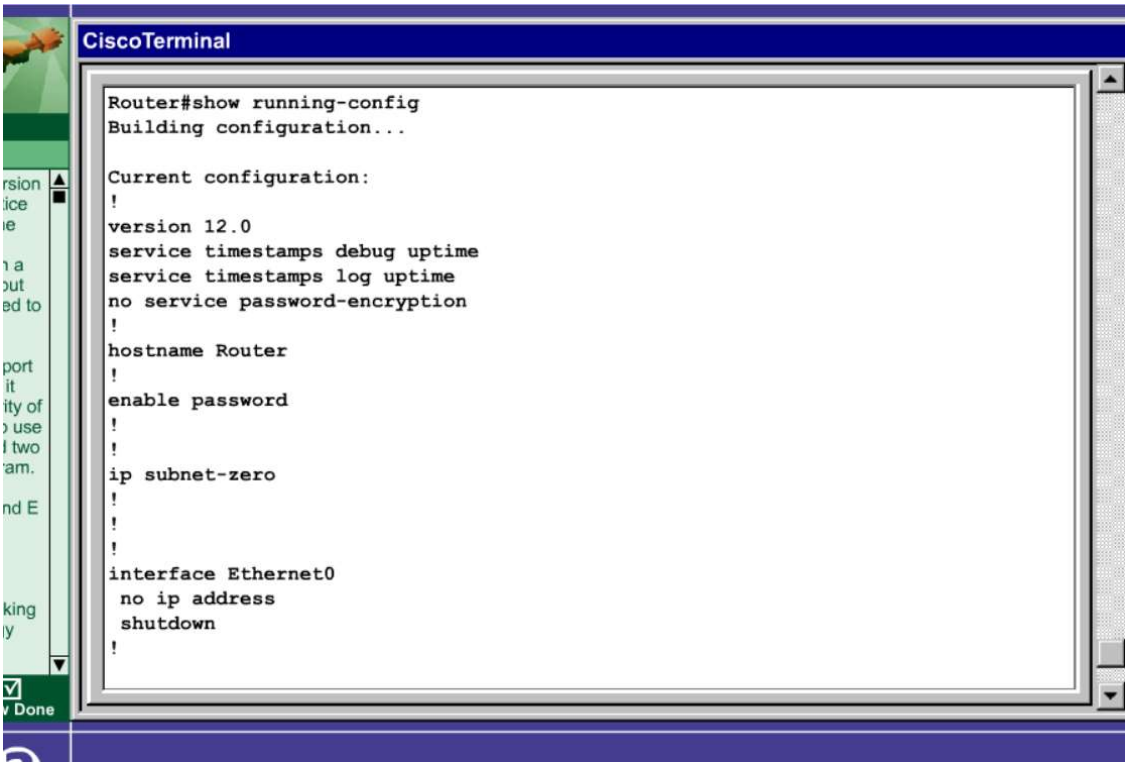


```
ROUTER-A(config-if)#exit
ROUTER-A(config)#router rip
ROUTER-A(config-router)#network 201.100.11.0
ROUTER-A(config-router)#network 219.17.100.0
ROUTER-A(config-router)#network 199.6.13.0
ROUTER-A(config-router)#exit
ROUTER-A(config)#ip host ROUTER-A 192.5.5.1 205.7.5.1 201.100.11.1
ROUTER-A(config)#ip host ROUTER-B 219.17.100.1 199.6.13.1 201.100.11.2
ROUTER-A(config)#ip host ROUTER-C 223.8.151.1 204.204.7.1 199.6.13.2
ROUTER-A(config)#ip host ROUTER-D 210.93.105.1 204.204.7.2
ROUTER-A(config)#ip host ROUTER-E 210.93.105.2
ROUTER-A(config)#exit
00:332:43: %SYS-5-CONFIG_I: Configured from console by console
ROUTER-A#exit
```

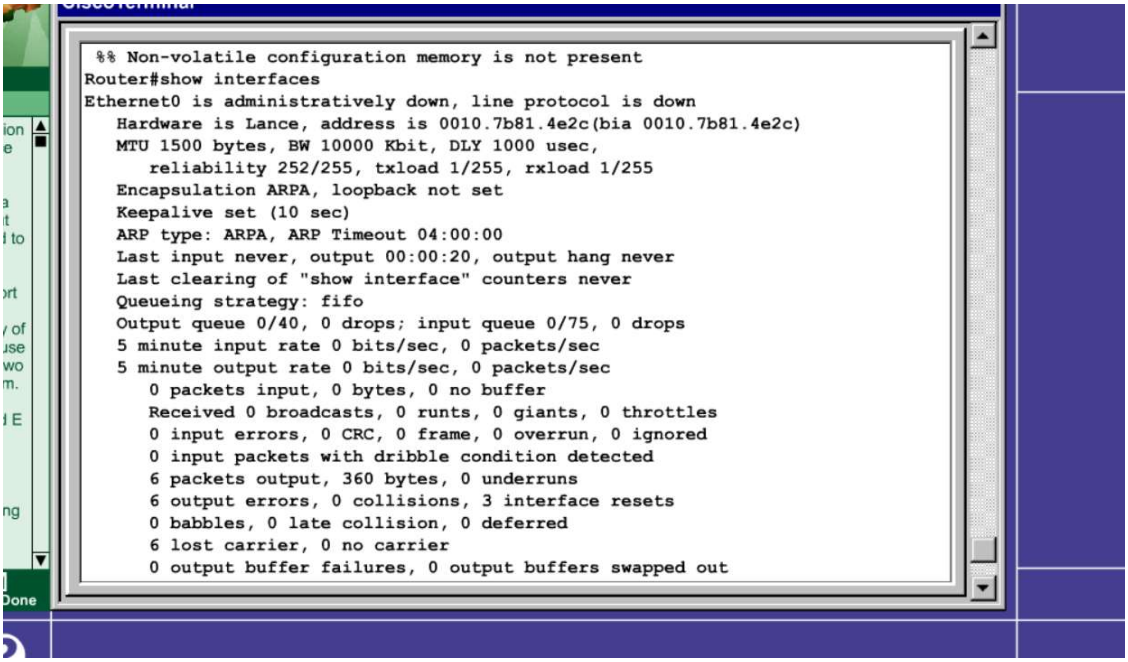
Show topology



Show running-config

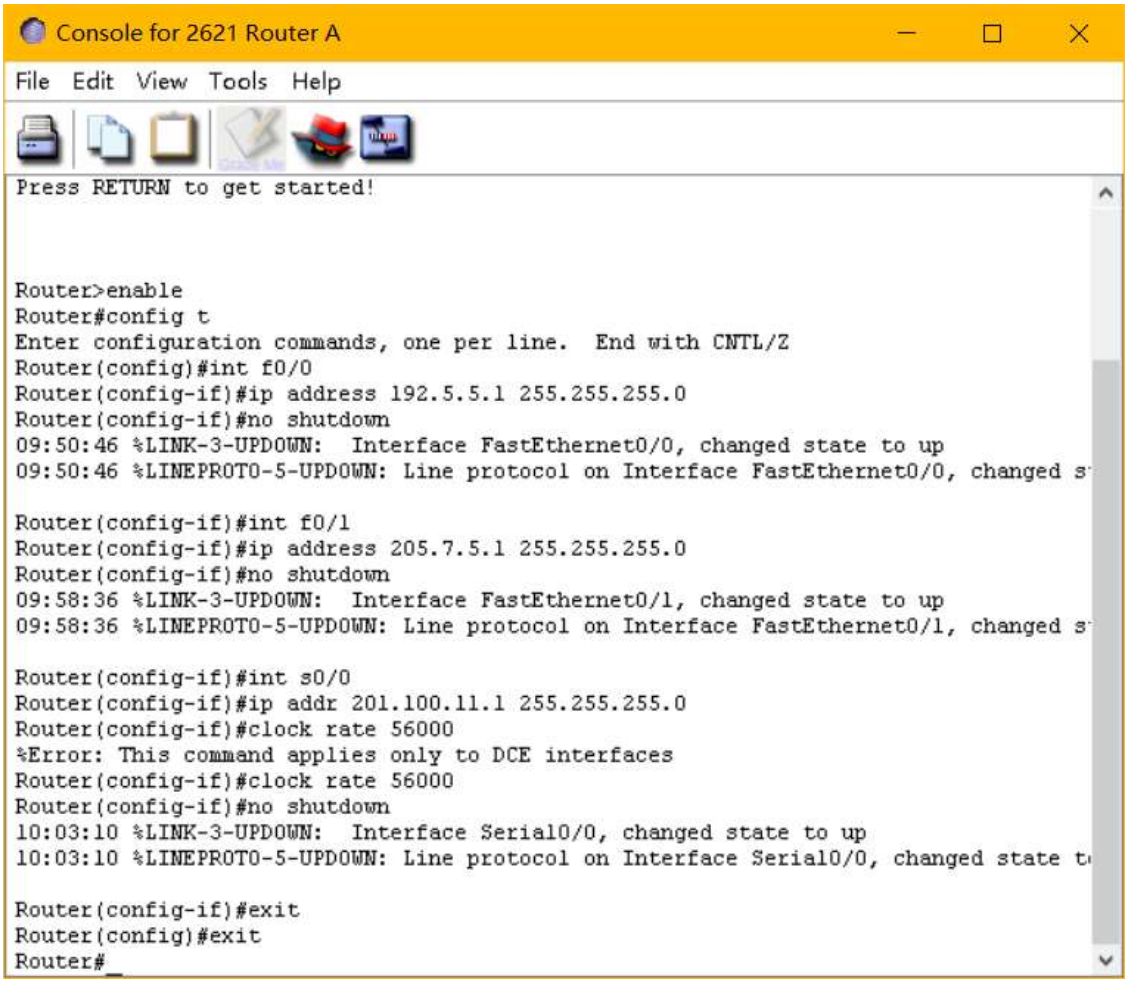


Show interfaces



CCNA Network Visualizer 6.0 配置静态路由

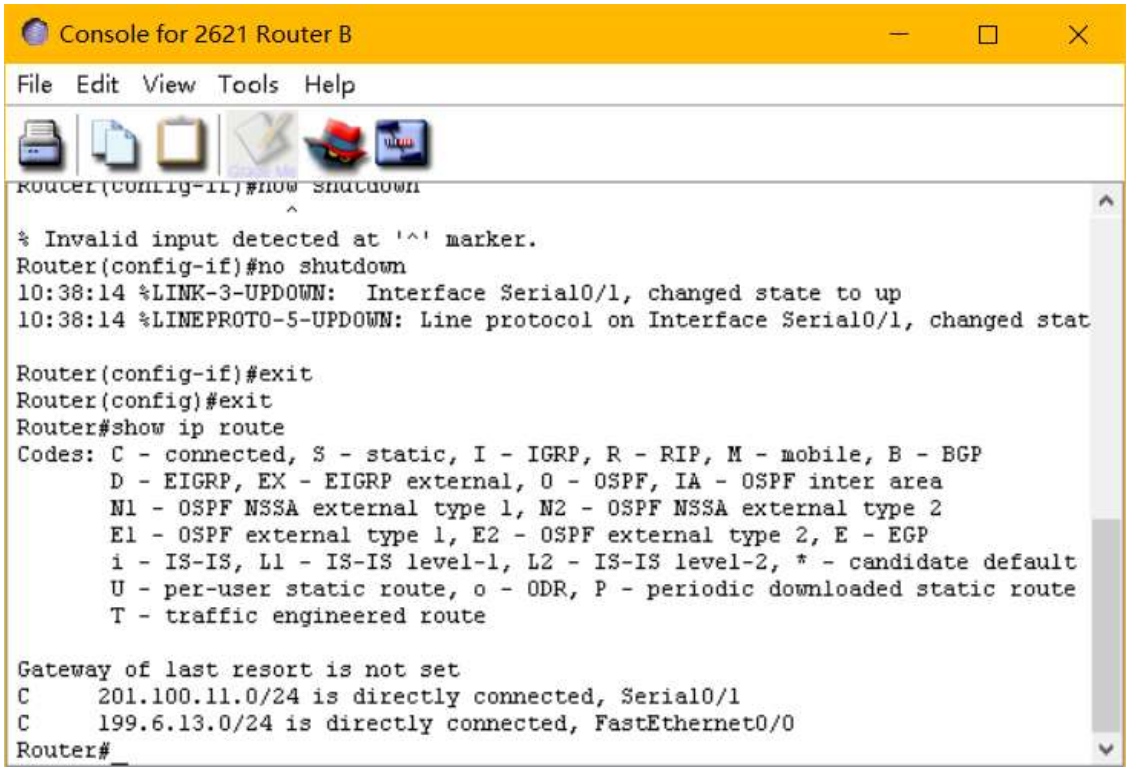
Router A 配置



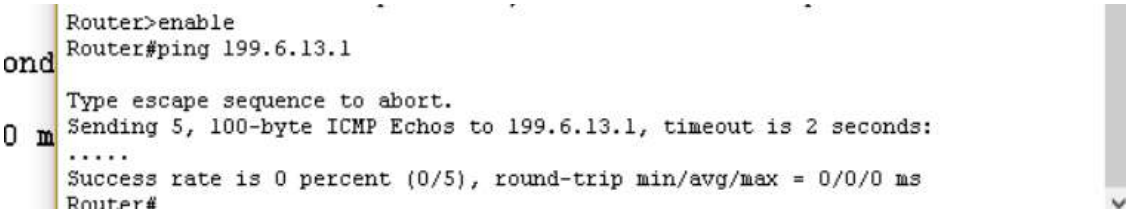

```
Router(config-if)#exit
Router(config)#exit
Router#show ip route
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, * - candidate default
       U - per-user static route, o - ODR, P - periodic downloaded static route
       T - traffic engineered route

Gateway of last resort is not set
C     192.5.5.0/24 is directly connected, FastEthernet0/0
C     205.7.5.0/24 is directly connected, FastEthernet0/1
C     201.100.11.0/24 is directly connected, Serial0/0
Router#
```

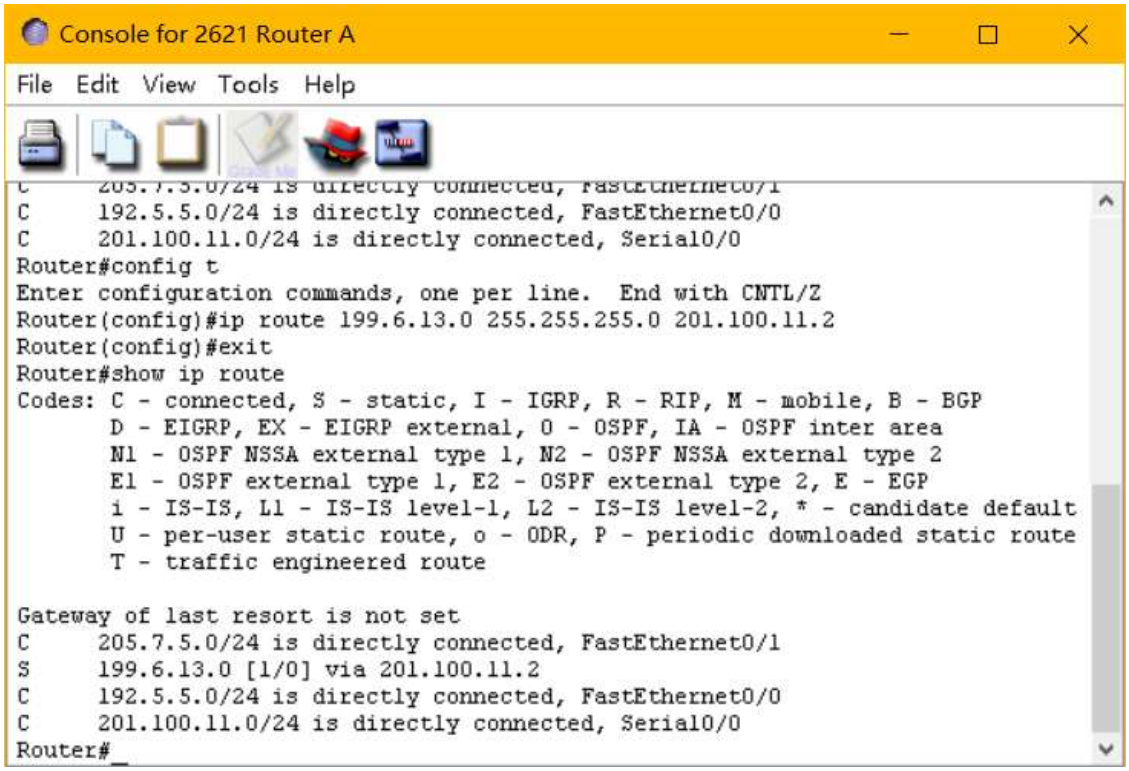
Router B 配置同



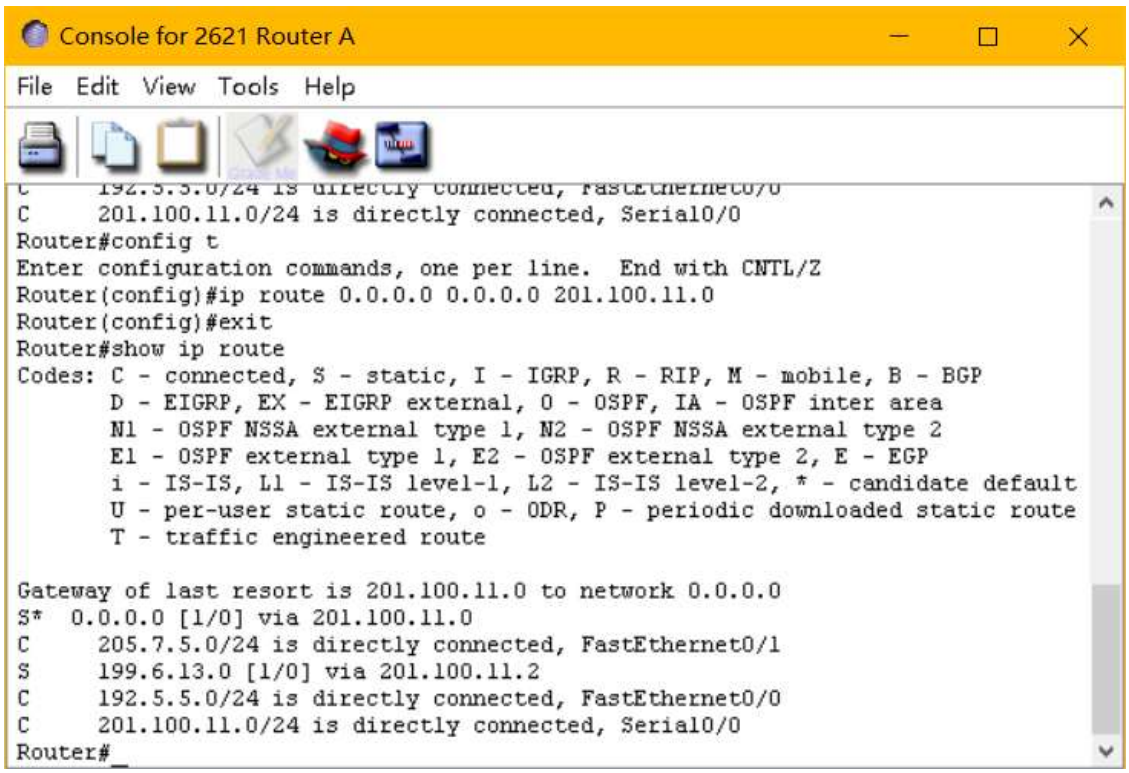
测试是否连通



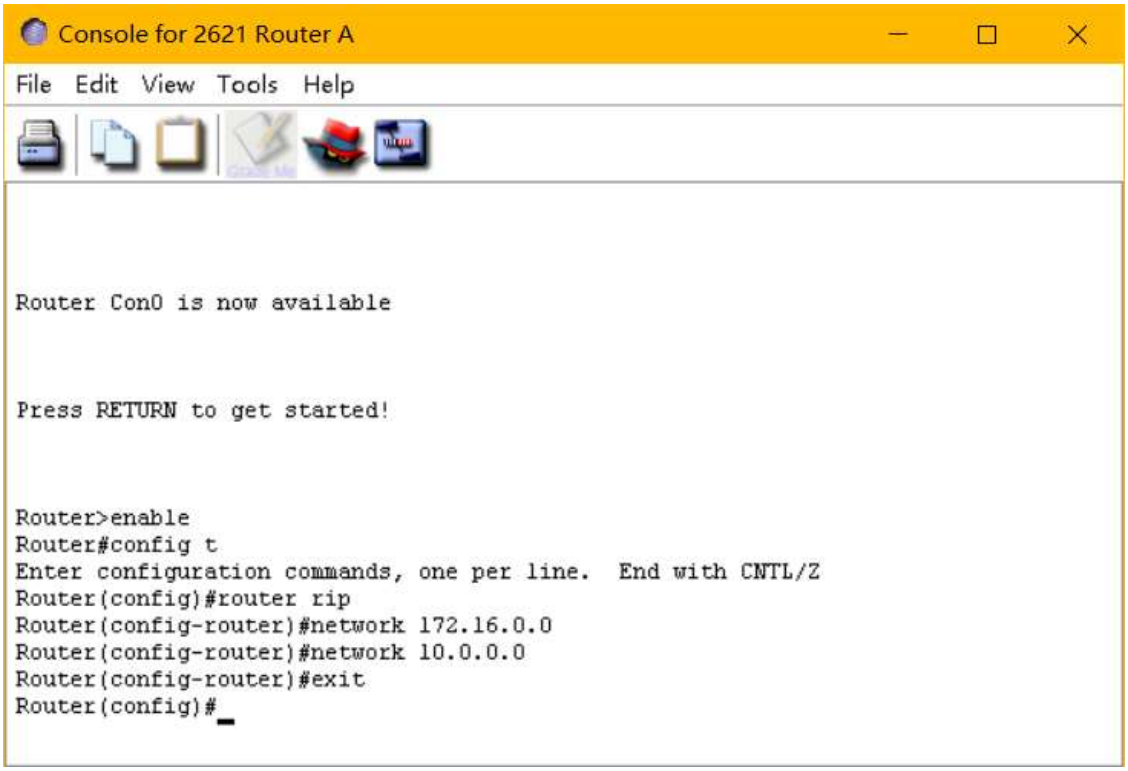
配置静态路由

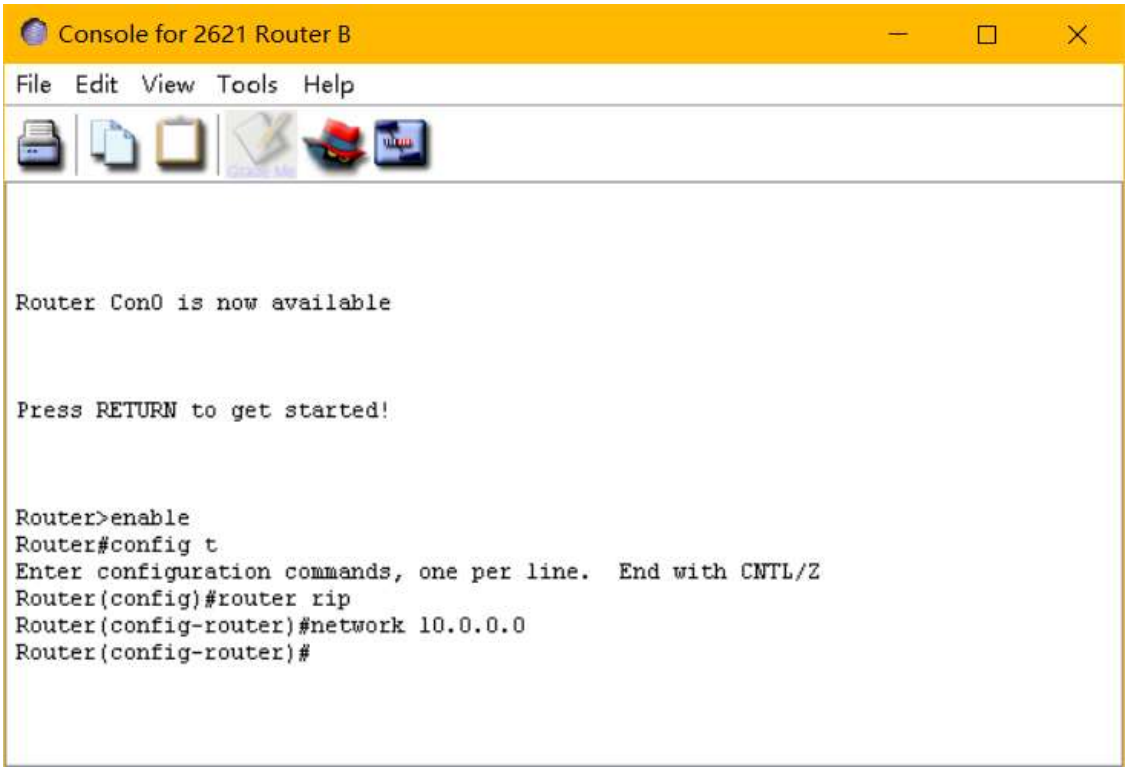

Console for 2621 Router A
File Edit View Tools Help
C 205.7.5.0/24 is directly connected, FastEthernet0/1
C 192.5.5.0/24 is directly connected, FastEthernet0/0
C 201.100.11.0/24 is directly connected, Serial0/0
Router#config t
Enter configuration commands, one per line. End with CNTL/Z
Router(config)#ip 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 default
U - per-user static route, o - ODR, P - periodic downloaded static route
T - traffic engineered route
Gateway of last resort is not set
C 205.7.5.0/24 is directly connected, FastEthernet0/1
S 199.6.13.0 [1/0] via 201.100.11.2
C 192.5.5.0/24 is directly connected, FastEthernet0/0
C 201.100.11.0/24 is directly connected, Serial0/0
Router#_

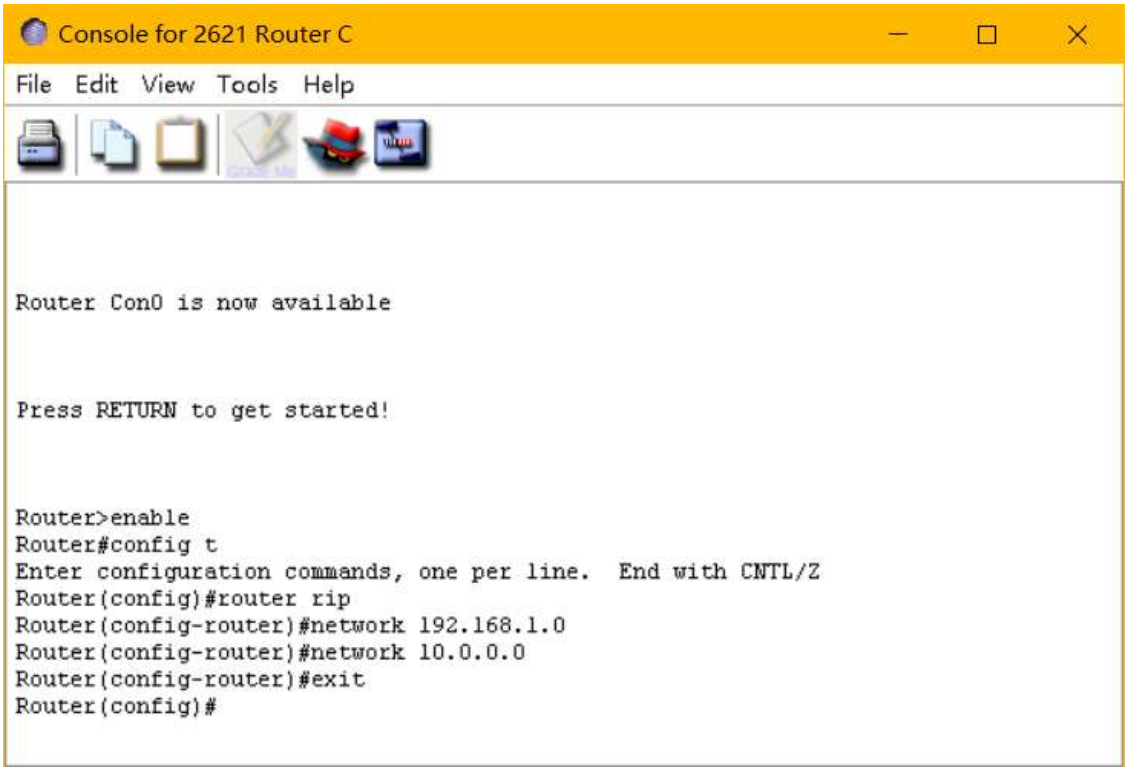
配置默认路由


Console for 2621 Router A
File Edit View Tools Help
C 201.100.11.0/24 is directly connected, Serial0/0
Router#config t
Enter configuration commands, one per line. End with CNTL/Z
Router(config)#ip route 0.0.0.0 0.0.0.0 201.100.11.0
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 default
U - per-user static route, o - ODR, P - periodic downloaded static route
T - traffic engineered route
Gateway of last resort is 201.100.11.0 to network 0.0.0.0
S* 0.0.0.0 [1/0] via 201.100.11.0
C 205.7.5.0/24 is directly connected, FastEthernet0/1
S 199.6.13.0 [1/0] via 201.100.11.2
C 192.5.5.0/24 is directly connected, FastEthernet0/0
C 201.100.11.0/24 is directly connected, Serial0/0
Router#_

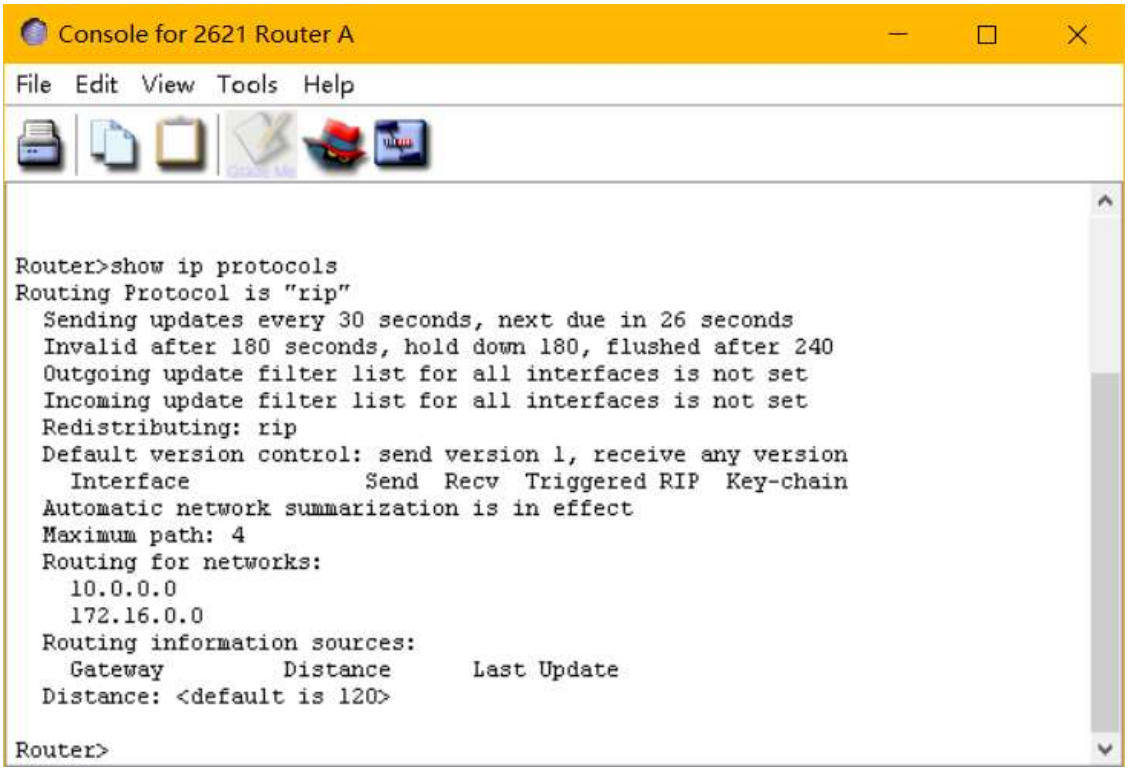
动态路由


Console for 2621 Router A
File Edit View Tools Help
Router Con0 is now available
Press RETURN to get started!
Router>enable
Router#config t
Enter configuration commands, one per line. End with CNTL/Z
Router(config)#router rip
Router(config-router)#network 172.16.0.0
Router(config-router)#network 10.0.0.0
Router(config-router)#exit
Router(config)#


Console for 2621 Router B
File Edit View Tools Help
Router Con0 is now available
Press RETURN to get started!
Router>enable
Router#config t
Enter configuration commands, one per line. End with CNTL/Z
Router(config)#router rip
Router(config-router)#network 10.0.0.0
Router(config-router)#

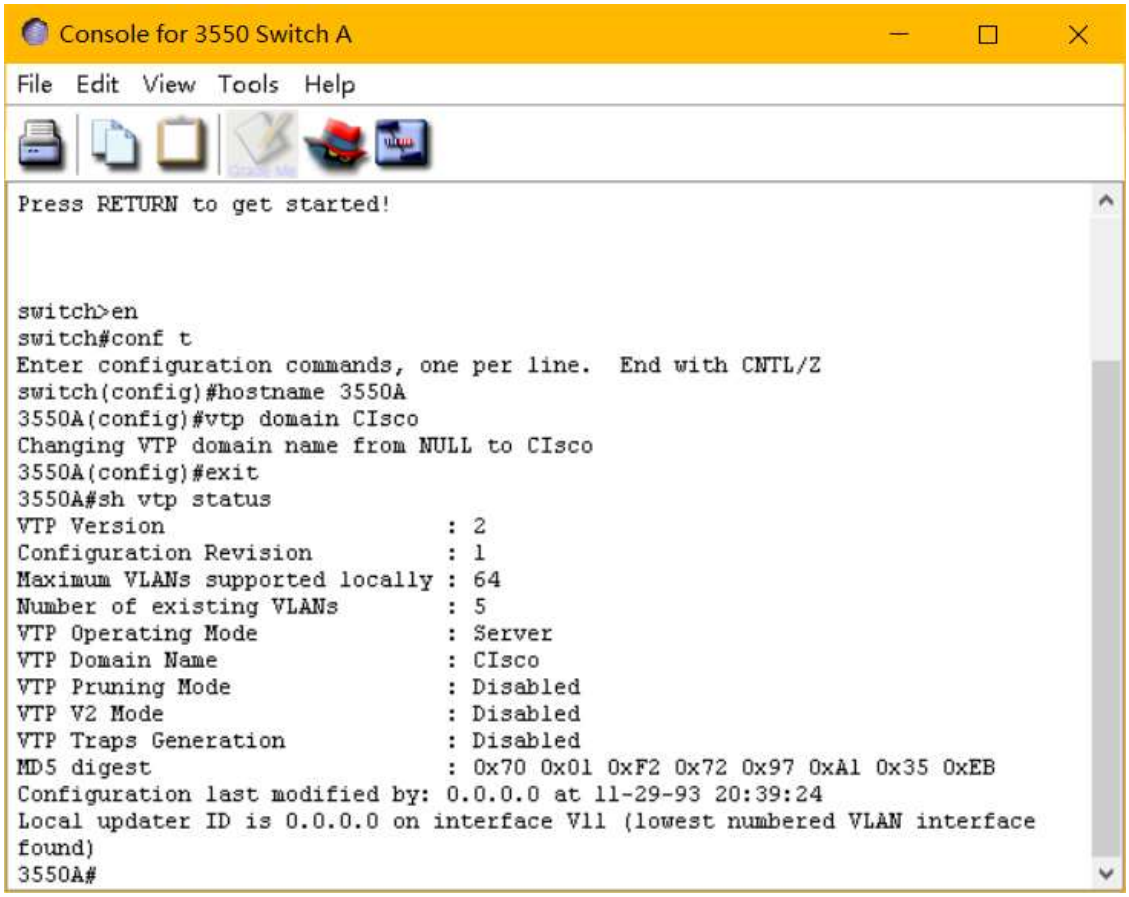


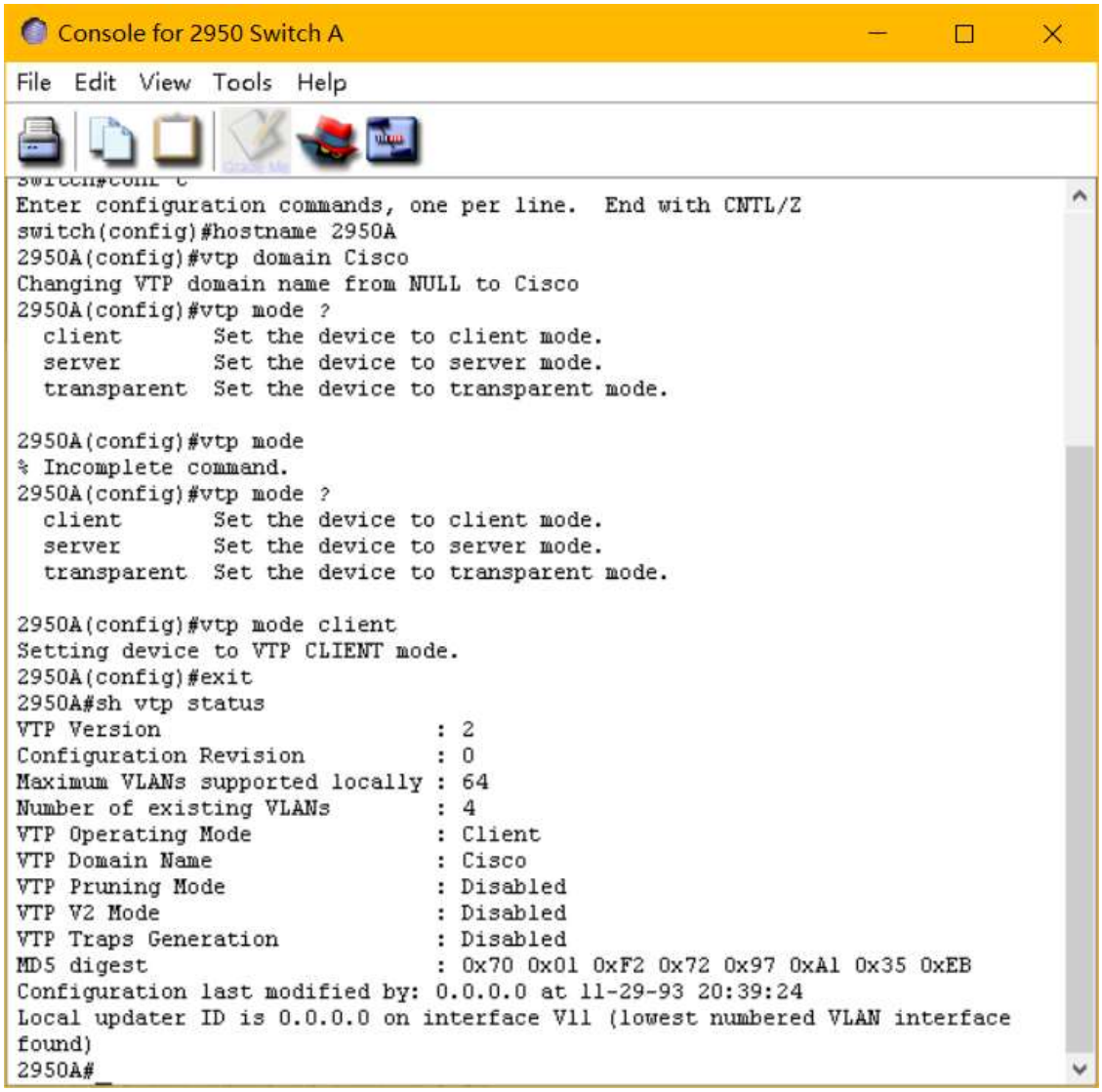
Show ip protocols

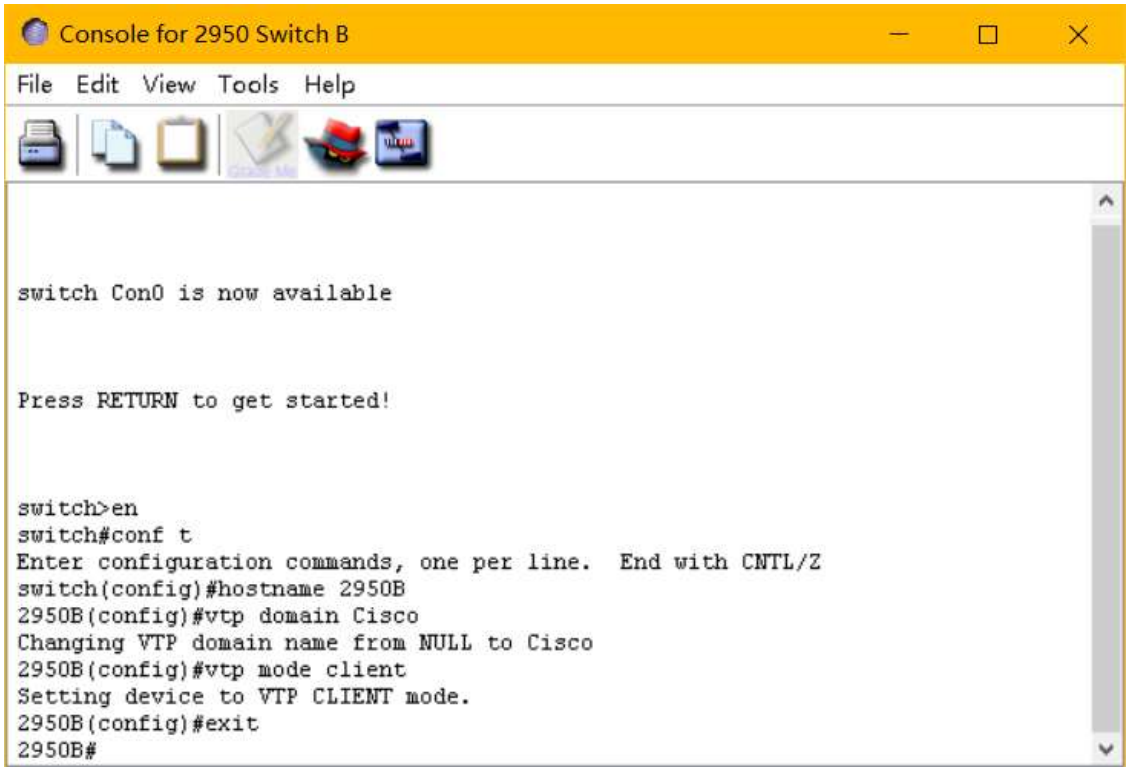


交换机端口的 VLAN（虚拟局域网）

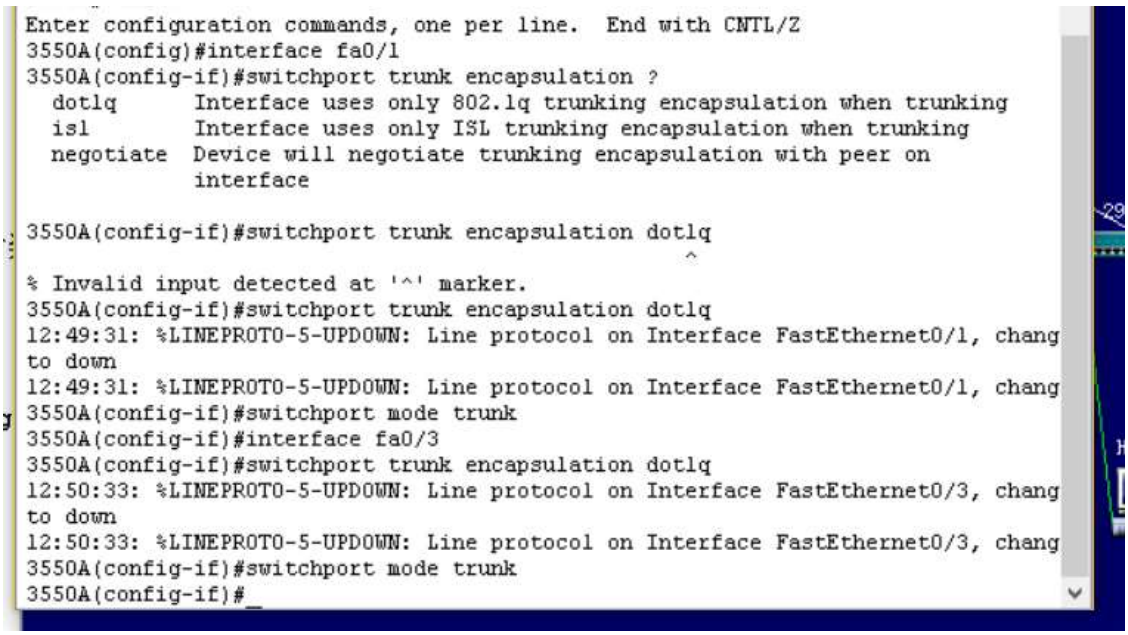
配置 VTP 管理域




Console for 2950 Switch A
File Edit View Tools Help
Enter configuration commands, one per line. End with CNTL/Z
switch(config)#hostname 2950A
2950A(config)#vtp domain Cisco
Changing VTP domain name from NULL to Cisco
2950A(config)#vtp mode ?
client Set the device to client mode.
server Set the device to server mode.
transparent Set the device to transparent mode.
2950A(config)#vtp mode
% Incomplete command.
2950A(config)#vtp mode ?
client Set the device to client mode.
server Set the device to server mode.
transparent Set the device to transparent mode.
2950A(config)#vtp mode client
Setting device to VTP CLIENT mode.
2950A(config)#exit
2950A#sh vtp status
VTP Version : 2
Configuration Revision : 0
Maximum VLANs supported locally : 64
Number of existing VLANs : 4
VTP Operating Mode : Client
VTP Domain Name : Cisco
VTP Pruning Mode : Disabled
VTP V2 Mode : Disabled
VTP Traps Generation : Disabled
MD5 digest : 0x70 0x01 0xF2 0x72 0x97 0xA1 0x35 0xEB
Configuration last modified by: 0.0.0.0 at 11-29-93 20:39:24
Local updater ID is 0.0.0.0 on interface Vl1 (lowest numbered VLAN interface found)
2950A#



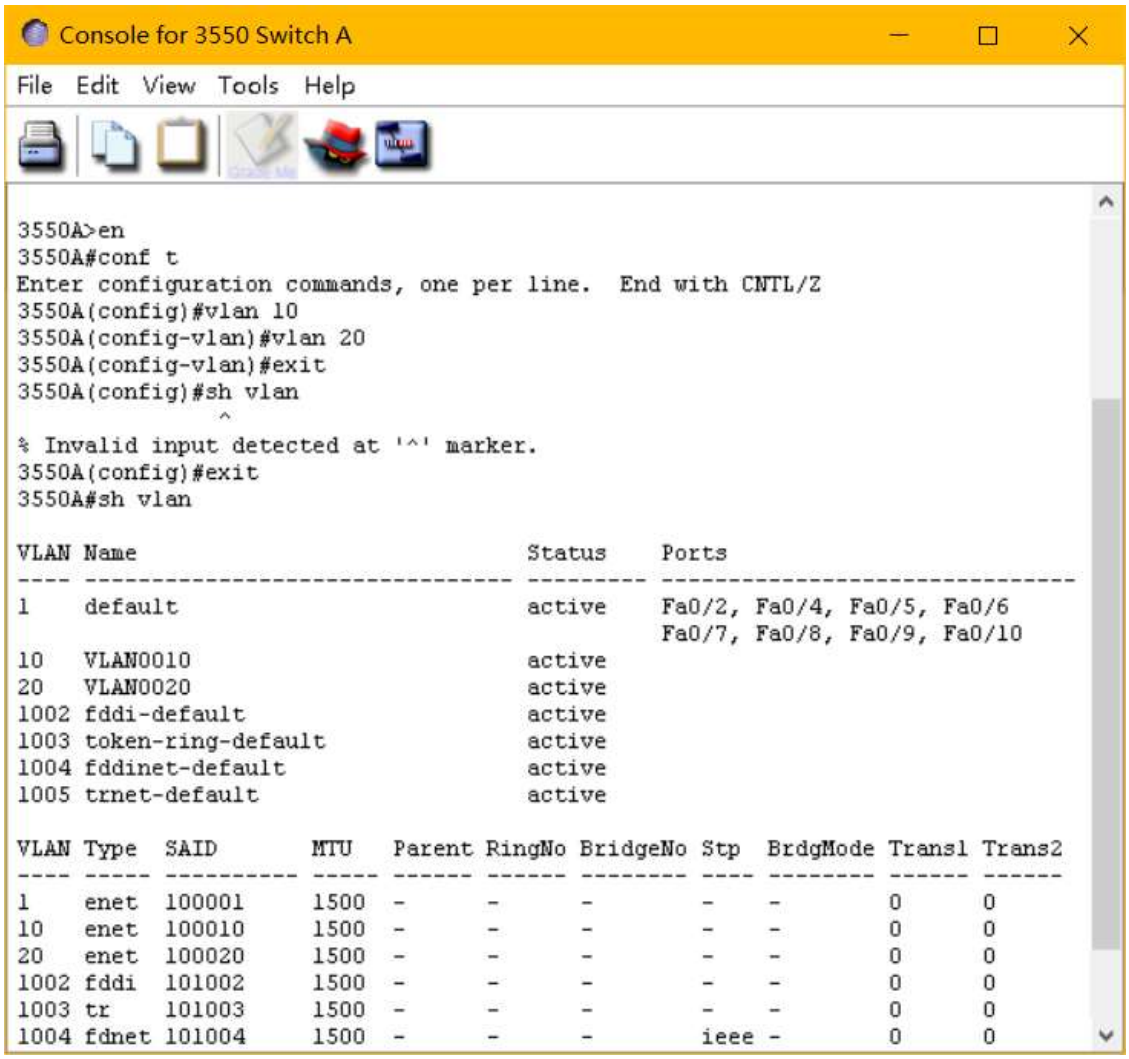
配置 Trunk




```
2950A>enable
2950A#conf t
Enter configuration commands, one per line.  End with CNTL/Z
2950A(config)#interface fa0/11
2950A(config-if)#switchport mode trunk
```

```
2950B>en
2950B#conf t
Enter configuration commands, one per line.  End with CNTL/Z
2950B(config)#interface fa0/11
2950B(config-if)#switchport mode trunk
```

创建 VLAN

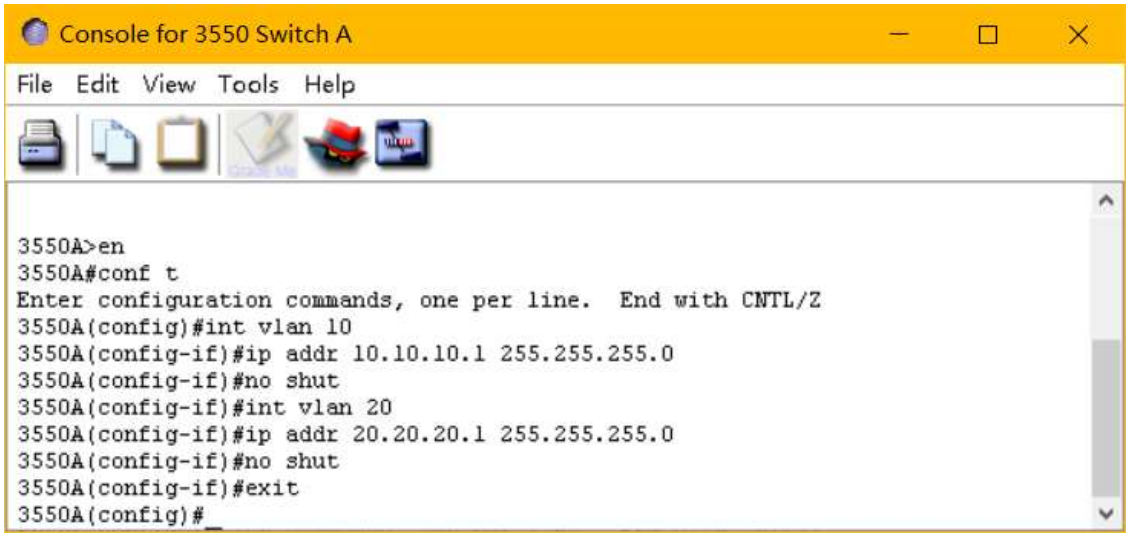


交换机端口加入 VLAN

```
2950A>en
2950A#conf t
Enter configuration commands, one per line.  End with CNTL/Z
2950A(config)#interface fa0/2
2950A(config-if)#switchport access vlan 10
2950A(config-if)#
```

```
2950B>en
2950B#conf t
Enter configuration commands, one per line.  End with CNTL/Z
2950B(config)#interface fa0/2
2950B(config-if)#switchport access vlan 20
```

配置第三层交换机



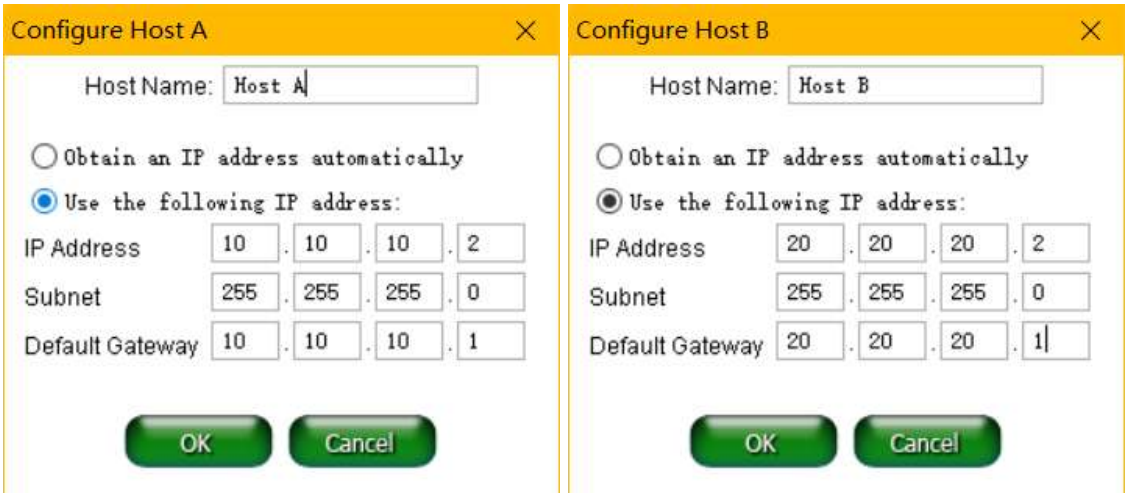

```
3550A(config)#ip routing
```

```
3550A(config)#int vlan 1
3550A(config-if)#ip addr 192.168.10.1 255.255.255.0
3550A(config-if)#no shut
3550A(config-if)#
```

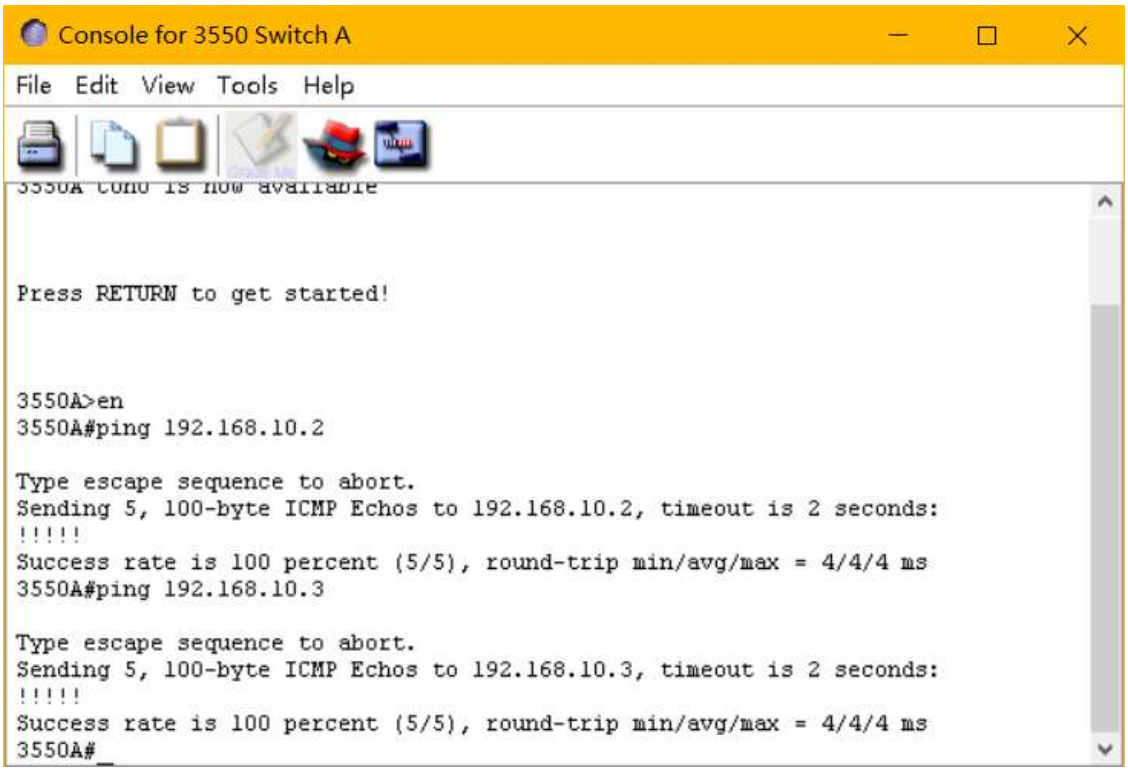
```
2950A>en
2950A#conf t
Enter configuration commands, one per line.  End with CNTL/Z
2950A(config)#int vlan 1
2950A(config-if)#ip addr 192.168.10.2 255.255.255.0
2950A(config-if)#no shutdown
```

```
2950B>en
2950B#conf t
Enter configuration commands, one per line.  End with CNTL/Z
2950B(config)#int vlan 1
2950B(config-if)#ip addr 192.168.10.3 255.255.255.0
2950B(config-if)#no shutdown
```

配置主机



测试：



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4 实验总结

学会了使用 Router eSIM v1.1 的基本配置路由器操作

学会了使用 CCNA Network Visualizer 6.0 建立基本的 RouterSim Network，包括添加路由器、交换机、主机，配置 IP 地址，子网掩码，包括静态路由协议、动态路由协议和 VLAN 等。