

计算机网络



实验四 CISCO IOS 路由器 基本配置

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主要思路

一、使用 Router eSIM v1.1 模拟器来模拟路由器的配置环境

- ① 查询可以使用的命令
- ② 进入超级用户模式，显示当前配置，显示配置接口，显示版本号和路由器信息
- ③ 更改配置路由器等内容
 - 对第一台路由器进行改名
 - 设置当日消息标题
 - 建立 IP 地址映射表

主要思路

一、使用 Router eSIM v1.1 模拟器来模拟路由器的配置环境

- 为路由器的一个接口配置 IP 地址
 - 配置充当 DCE 端（数字通信设备）的串行端口
 - 查看端口配置情况
 - 开启路由器接口，Show 查看成功配置情况
- ④ 超级用户口令、手动打开和关闭接口与其他配置
- ⑤ 查看DONE、拓扑图

实验结果

Lab_A	Not Completed
Hostname	Done
Enable Secret	Done
Line Console Login	Done
Line Console Password	Done
Line vty Login	Done
Line vty Password	Done
E0 IP	Done
E0 Shutdown	Done
E1 IP	Done
E1 Shutdown	Done
S0 IP	Done
S0 Clock Rate	Done
S0 Shutdown	Done
Routing Protocol	Not Done
Network 1	Not Done
Network 2	Not Done
Network 3	Not Done
IP Host Lab_A	Done
IP Host Lab_B	Done
IP Host Lab_C	Done
IP Host Lab_D	Done
IP Host Lab_E	Done

Time elapsed 21:17

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Flash

File View Control Help

CISCO SYSTEMS
NETWORKING
ACADEMY

Cisco Networking Academy Program
Router eSIM™
Student Version 1.1

Router eSIM™
Student Version 1.1

The eSIMStudent Version will allow you to practice many of the labs in the Cisco Networking Academy Program on a single computer without having to be connected to a router.

While it does not support all of the commands, it does support a majority of those you will need to use in semesters one and two of the academy program.

Use the A, B, C, D, and E buttons to the left to access the routers.

Refer to the topology when needed, by clicking on the Show Topology button below.

Hide Topology Show Done

EXIT FEEDBACK FAQ

Router Name - Lab_A
Router Type - 2514
E0 = 192.5.5.1
E1 = 205.7.5.1
S0 = 201.100.11.1
SM = 255.255.255.0

Router Name - Lab_B
Router Type - 2503
E0 = 219.17.100.1
E1 = 199.6.13.1
S0 = 201.100.11.2
SM = 255.255.255.0

Router Name - Lab_C
Router Type - 2503
E0 = 223.8.151.1
E1 = 204.204.7.1
S0 = 199.6.13.2
SM = 255.255.255.0

Router Name - Lab_D
Router Type - 2501
E0 = 210.93.105.1
E1 = 204.204.7.2
S0 = 255.255.255.0

Router Name - Lab_E
Router Type - 2501
E0 = 210.93.105.2
E1 = 255.255.255.0

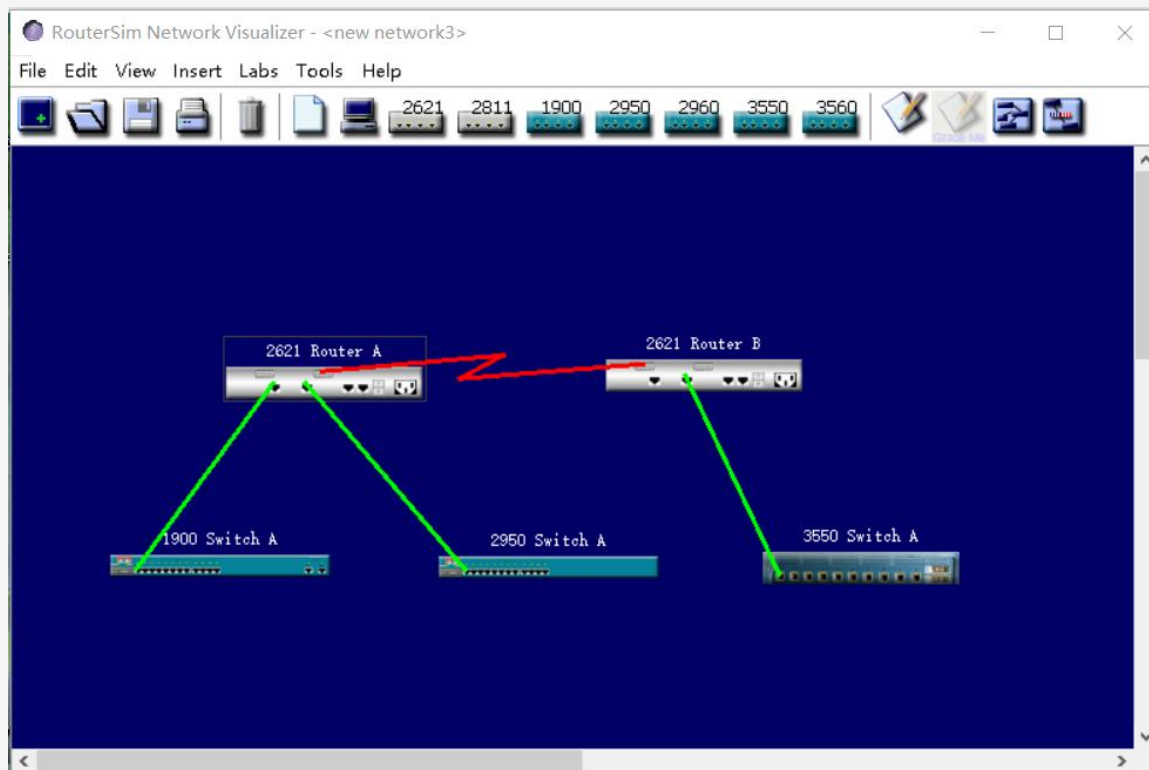
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主要思路

二、使用CCNA Network Visualizer 6.0 配置静态路由

- (1) 在模拟器中放置设备，并连接（A的S0/0选择DCE）
- (2) 设置路由器A、B
- (3) 在 RouterA 上用 ping 命令测试到路由器RouterB的直连网络地址199.6.13.1是否联通。
- (4) 配置静态路由（A到B的路径），检查连通性

实验结果



```
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
```

主要思路

三、使用CCNA Network Visualizer 6.0 配置动态路由

(1) Router eSIM v1.1上的动态路由配置

Checking Your Configuration

This activity is not completed.

Please click on one of the buttons below to **check** that Router's Configuration:

A B C D E

Please click on one of the buttons below to **set** that Router's Configuration:

A B C D E

Loads all router variables for this eSIM™ scenario except the IP host table, which means, for example, that you will not be able to use the router name as part of ping or telnet commands.

Lab_A	Completed
Hostname	Done
Enable Secret	Done
Line Console Login	Done
Line Console Password	Done
Line vty Login	Done
Line vty Password	Done
E0 IP	Done
E0 Shutdown	Done
E1 IP	Done
E1 Shutdown	Done
S0 IP	Done
S0 Clock Rate	Done
S0 Shutdown	Done
Routing Protocol	Done
Network 1	Done
Network 2	Done
Network 3	Done
IP Host Lab_A	Done
IP Host Lab_B	Done
IP Host Lab_C	Done
IP Host Lab_D	Done
IP Host Lab_E	Done
Time elapsed	103:34

主要思路

三、使用CCNA Network Visualizer 6.0 配置动态路由

(2) CCNA Network Visualizer 6.0 配置动态路由

A、配置 RIP 协议并查看路由 RIP 协议的工作情况

B、查看路由表，发现其学到的网络

R表示该条目是通过RIP协议学到的，到达目标网络192.5.5.0的数据包回从路由器的Serial0/1端口被转发到IP地址为201.100.11.1的下一跳路由器端口中。

```
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
R    192.5.5.0 [120/1] via 201.100.11.1, 00:00:19, Serial0/1
C    199.6.13.0/24 is directly connected, FastEthernet0/0
C    201.100.11.0/24 is directly connected, Serial0/1
R    205.7.5.0 [120/1] via 201.100.11.1, 00:00:19, Serial0/1
Router#
```


主要思路

四、使用CCNA Network Visualizer 6.0 配置交换机端口的 VLAN

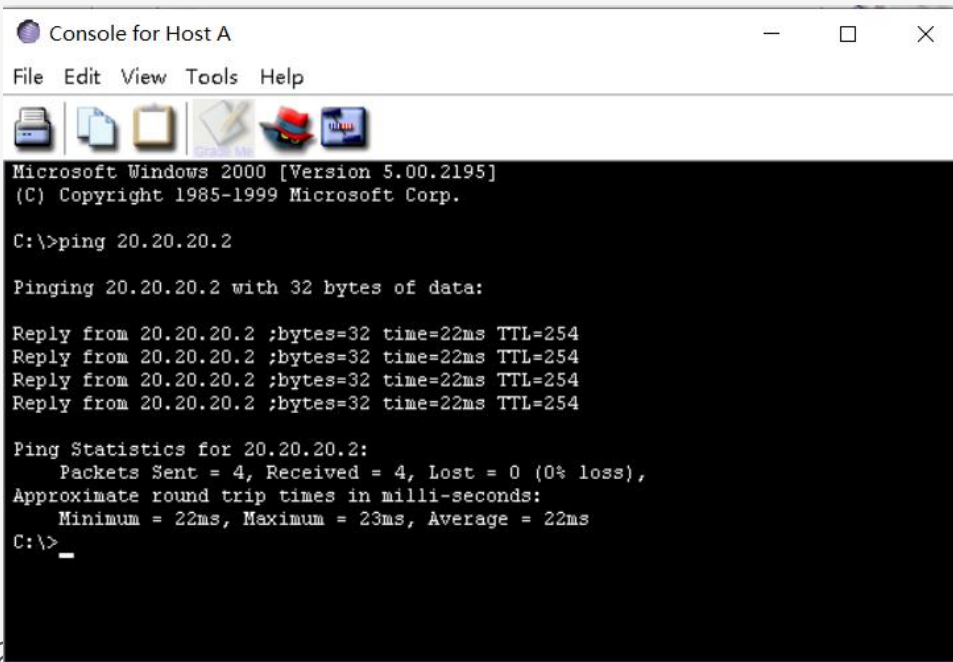
- ① 设置VTP域 (VLAN管理域, 由一个以上共享VTP域名相连接的交换机组成)
- ② 配置Trunk (带宽扩展和链路备份)
- ③ 创建VLAN (虚拟的逻辑的LAN)
- ④ 交换机端口加入VLAN
- ⑤ 配置第三层交换机
- ⑥ 配置各交换机的管理地址
- ⑦ 配置主机HostA和HostB, 并进行测试

实验结果（交换机ping，主机ping）

```
3550A>en
3550A#ping 192.168.10.2

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 192.168.10.2, timeout is 2 seconds:
!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 4/4/4 ms
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
```



```
Microsoft Windows [Version 5.00.2195]
(C) Copyright 1985-1999 Microsoft Corp.

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:\>
```

主要思路

五、思科模拟器 Packet Tracer 7.0 配置静态路由

- (1) 终端与服务器的使用 (HTTP、DNS)
- (2) 交换机的使用
- (3) 静态路由配置

```
C:\>ping 172.16.1.1

Pinging 172.16.1.1 with 32 bytes of data:

Reply from 172.16.1.1: bytes=32 time<1ms TTL=126
Reply from 172.16.1.1: bytes=32 time<1ms TTL=126
Reply from 172.16.1.1: bytes=32 time<1ms TTL=126
Reply from 172.16.1.1: bytes=32 time<1ms TTL=126

Ping statistics for 172.16.1.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms
```

主要思路

六、思科模拟器 Packet Tracer 7.0 其他使用（参照视频）

(1) 风力发电

(2) 物联网

(3) 4G3G

问题

视频教程中缺少了一部分：终端与服务器的使用（HTTP、DNS）

中，PC0应该设置DNS Server成服务器的地址。否则将会无法正常使用域名。

问题

软件下载（CISCO账号）：

运行软件，如果你有Cisco的帐号的话，可以使用 `User Login`，如果没有，请免费用我的,请不要改密码。

邮箱： `cqviecloud@qq.com`

密码： `Cqvie890`

演示视频

https://www.bilibili.com/video/BV1v94y1Z7rG?spm_id_from=333.999.0.0

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谢谢大家！

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