

廈門大學



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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1 实验目的

学习 Cisco IOS 的预备知识，了解路由器的基本结构机器在网络中所起的作用，实德队 IOS 配置环境有一个初步的认识。

2 实验环境

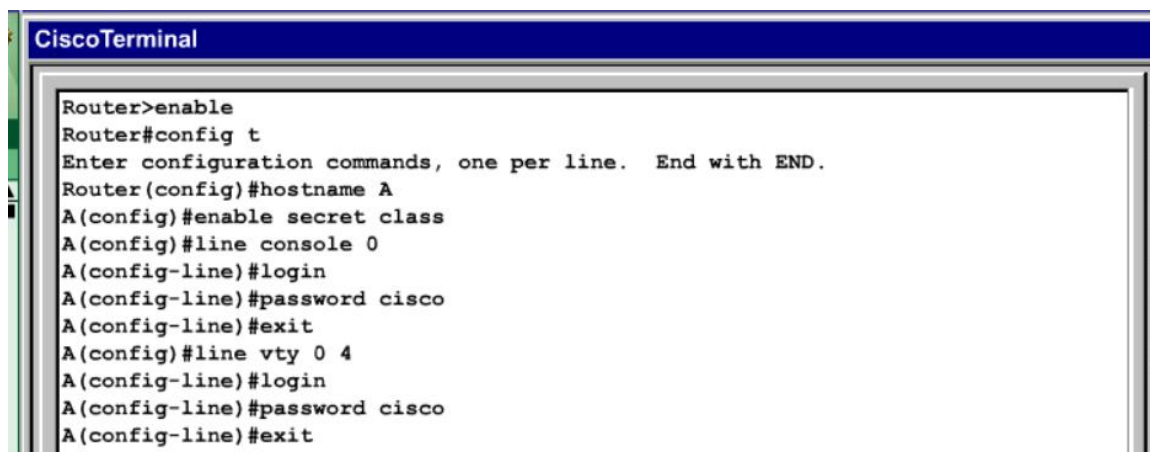
Windows 64bits 操作系统

Cisco 公司的 eSim 和 CCNA NETWORK VISUALIZER

3 实验结果

一. 路由器常规配置：（以 Lab_A 为例）

设置 hostname 和密码。



```
CiscoTerminal
Router>enable
Router#config t
Enter configuration commands, one per line. End with END.
Router(config)#hostname A
A(config)#enable secret class
A(config)#line console 0
A(config-line)#login
A(config-line)#password cisco
A(config-line)#exit
A(config)#line vty 0 4
A(config-line)#login
A(config-line)#password cisco
A(config-line)#exit
```

对 Lab_A 的每隔端口设置 IP 地址和属性（最后一个 shutdown 输入错误，后面纠正了）

```
CiscoTerminal
A(config)#int e0
A(config-if)#ip addr 192.5.5.1 255.255.255.0
A(config-if)#no shutdown
A(config-if)#exit
A(config)#int e1
A(config-if)#ip addr 205.7.5.1 255.255.255.0
A(config-if)#no shutdown
A(config-if)#exit
A(config)#int s0
A(config-if)#ip addr 201.100.11.1 255.255.255.0
A(config-if)#no shut down
```

设置与 Lab_A 连接的网段，网段内部用 rip 协议路由。

```
A(config)#router rip
A(config-router)#network 192.5.5.0
A(config-router)#network 205.7.5.0
A(config-router)#network 201.100.11.0
A(config-router)#exit
```

在 Lab_A 中设置每隔路由器的 ip 地址表

```
A(config)#ip host A 192.5.5.1 201.100.11.1 205.7.5.1
```

Show Done 检查

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

对 BCDE 其余对照拓扑图重复操作即可。

二. 静态路由配置

配置路由器 R1

```

Router>en
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#hostname R1
R1(config)#int e0/0
R1(config-if)#ip add 10.10.10.254 255.255.255.0
R1(config-if)#no shut
R1(config-if)#
*Aug 20 14:12:55.933: %LINK-3-UPDOWN: Interface Ethernet0/0, changed state to up
*Aug 20 14:12:56.940: %LINEPROTO-5-UPDOWN: Line protocol on Interface Ethernet0/0, changed state to up
R1(config-if)#do ping 10.10.10.1
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 10.10.10.1, timeout is 2 seconds:
..!!!
Success rate is 60 percent (3/5), round-trip min/avg/max = 1/1/1 ms
R1(config-if)#end
R1#info
*Aug 20 14:13:43.471: %SYS-5-CONFIG_I: Configured from console by console
R1#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R1(config)#int e0/1
R1(config-if)#ip add 10.12.12.1 255.255.255.252
R1(config-if)#no shut
R1(config-if)#

```

同样操作（修改部分数值 如 ip addr），配置其余端口，并且测试直连相同。

配置静态路由：（以 R2 展示）

```
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
        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

Gateway of last resort is not set

    10.0.0.0/8 is variably subnetted, 4 subnets, 2 masks
C       10.12.12.0/30 is directly connected, Ethernet0/1
L       10.12.12.2/32 is directly connected, Ethernet0/1
C       10.23.23.0/30 is directly connected, Ethernet0/0
L       10.23.23.1/32 is directly connected, Ethernet0/0
R2#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R2(config)#ip route 10.10.10.0 255.255.255.0 10.12.12.1
R2(config)#ip route 10.10.20.0 255.255.255.0 10.23.23.2
R2(config)#do 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

Gateway of last resort is not set

    10.0.0.0/8 is variably subnetted, 6 subnets, 3 masks
S       10.10.10.0/24 [1/0] via 10.12.12.1
S       10.10.20.0/24 [1/0] via 10.23.23.2
C       10.12.12.0/30 is directly connected, Ethernet0/1
L       10.12.12.2/32 is directly connected, Ethernet0/1
C       10.23.23.0/30 is directly connected, Ethernet0/0
L       10.23.23.1/32 is directly connected, Ethernet0/0
```

Ping 命令检测连通性即可。

```
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
```

4 实验总结

配置路由，是个精细活，按错个数字，搞半天可能都找不到出错在哪，所以一定要小心再小心。