HCIP---网络类型实验

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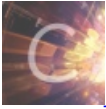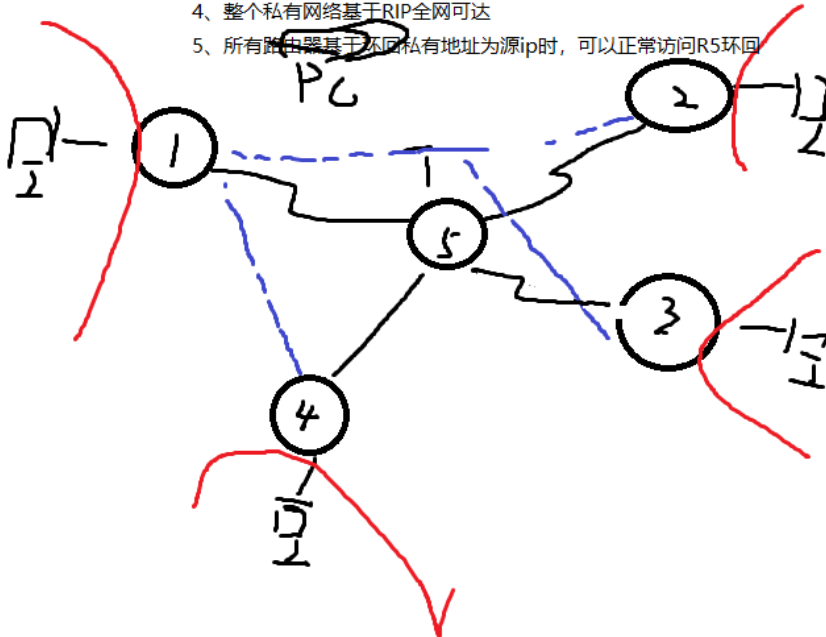
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HCIP

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一、实验要求
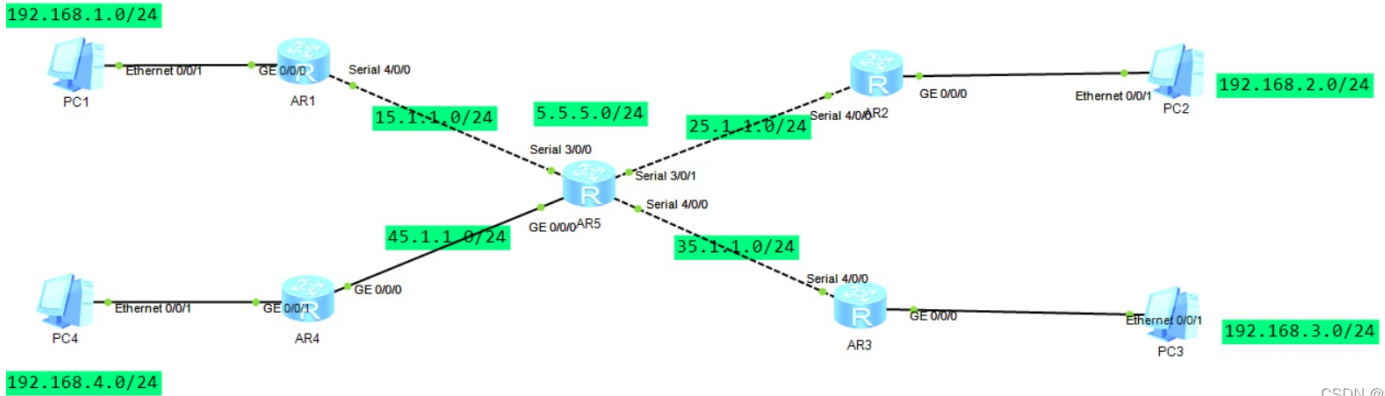
1、R5为ISP，只能进行ip地址配置；其所有接口配置为公有ip地址

2、R1与R5间使用PPP的PAP认证，R5为主认证方；R2与R5间使用PPP的chap认证，R5为主认证方；R3与R5间使用HDLC封装

3、R1/2/3构建一个MGRE环境，R1为中心站点；R1/4间为点到点GRE

4、整个私有网络基于RIP全网可达

5、所有路由器基于不同私有地址为源ip时，可以正常访问R5环回

二、实验拓扑

三、实验配置

1.配置各个接口上的IP地址

```
[r1]int g0/0/0
[r1-GigabitEthernet0/0/0]ip address 192.168.1.1 24
[r1-GigabitEthernet0/0/0]int s4/0/0
[r1-Serial4/0/0]ip address 15.1.1.1 24


[r2]int g0/0/0
[r2-GigabitEthernet0/0/0]ip address 192.168.2.1 24
[r2-GigabitEthernet0/0/0]int s4/0/0
[r2-Serial4/0/0]ip address 25.1.1.1 24

[r3]int g0/0/0
[r3-GigabitEthernet0/0/0]ip address 192.168.3.1 24
[r3-GigabitEthernet0/0/0]int s4/0/0
[r3-Serial4/0/0]ip address 35.1.1.1 24

[r4]int g0/0/1
[r4-GigabitEthernet0/0/1]ip address 192.168.4.1 24
[r4-GigabitEthernet0/0/1]int g0/0/0
[r4-GigabitEthernet0/0/0]ip address 45.1.1.1 24

[r5]int l0
[r5-LoopBack0]ip address  5.5.5.5 24
[r5-LoopBack0]int g0/0/0
[r5-GigabitEthernet0/0/0]ip address 45.1.1.2 24
[r5-GigabitEthernet0/0/0]int s3/0/0
[r5-Serial3/0/0]ip address 15.1.1.2 24
[r5-Serial3/0/0]int s3/0/1
[r5-Serial3/0/1]ip address 25.1.1.2 24
[r5-Serial3/0/1]int s4/0/0
[r5-Serial4/0/0]ip address 35.1.1.2 24
```

2.写出各个私网的缺省全部指R5公网区域

```
[r1]ip route-static 0.0.0.0  0 15.1.1.2
[r2]ip route-static 0.0.0.0 0 25.1.1.2
[r3]ip route-static 0.0.0.0 0 35.1.1.2
[r4]ip route-static 0.0.0.0 0 45.1.1.2
```

```
[r4]ping 5.5.5.5
  PING 5.5.5.5: 56  data bytes, press CTRL_C to break
    Reply from 5.5.5.5: bytes=56 Sequence=1 ttl=255 time=70 ms
    Reply from 5.5.5.5: bytes=56 Sequence=2 ttl=255 time=20 ms
    Reply from 5.5.5.5: bytes=56 Sequence=3 ttl=255 time=20 ms
    Reply from 5.5.5.5: bytes=56 Sequence=4 ttl=255 time=20 ms
    Reply from 5.5.5.5: bytes=56 Sequence=5 ttl=255 time=20 ms
```

简单测试一下公网，已经全部通了，养成做好一个配置就测试一次，避免到最后所有配置做完了在测试，遇到错误不好排错。

3.做pap chap认证

```
[r1]interface  s4/0/0
[r1-Serial4/0/0]ppp  pap  local-user  a password cipher 123456
```

```
[r1]display ip in b
*down: administratively down
^down: standby
(l): loopback
(s): spoofing
The number of interface that is UP in Physical is 3
The number of interface that is DOWN in Physical is 3
The number of interface that is UP in Protocol is 2
The number of interface that is DOWN in Protocol is 4

Interface              IP Address/Mask      Physical    Protocol
GigabitEthernet0/0/0   192.168.1.1/24       up          up
GigabitEthernet0/0/1   unassigned           down        down
GigabitEthernet0/0/2   unassigned           down        down
NULL0                  unassigned           up          up(s)
Serial4/0/0            15.1.1.1/24          up          down
Serial4/0/1            unassigned           down        down
[r1]                   .2: 56  data bytes, press CTRL_C to break
    Request time out
Apr  2 2022 22:01:58-08:00 r1 %%01IFNET/4/LINK_STATE(l)[17]:The line protocol PP
P on the interface Serial4/0/0 has entered the UP state.
[r1]
Apr  2 2022 22:01:58-08:00 r1 %%01IFNET/4/LINK_STATE(l)[18]:The line protocol PP
P IPCP on the interface Serial4/0/0 has entered the UP state.
[r1]
    Request time out
```

这里先关闭R5上对应的接口，然后再打开，这样协议才能通

```
[r5-aaa]local-user b privilege level  15 password cipher 123456
[r5-aaa]local-user b service-type ppp
[r5]int s3/0/1
[r5-Serial3/0/1]ppp authentication-mode chap
[r5-Serial3/0/1]shutdown
[r5-Serial3/0/1]undo shutdown
[r2-Serial4/0/0]ppp chap user b
[r2-Serial4/0/0]ppp chap password  cipher 123456
```

4.改hdlc封装

```
[r3]interface  s4/0/0
[r3-Serial4/0/0]link-protocol hdlc
Warning: The encapsulation protocol of the link will be changed. Continue? [Y/N]
:y
Apr  2 2022 22:07:53-08:00 r3 %%01IFNET/4/CHANGE_ENCAP(l)[0]:The user performed
the configuration that will change the encapsulation protocol of the link and th
en selected Y.

[r5]int Serial 4/0/0
[r5-Serial4/0/0]link-protocol hdlc
Warning: The encapsulation protocol of the link will be changed. Continue? [Y/N]
:y
```


5.做GRE ， MGRE

```
R1:
interface Tunnel0/0/0
 ip address 10.1.1.1 255.255.255.0
 undo rip split-horizon
 tunnel-protocol gre p2mp
 source 15.1.1.1
 nhrp entry multicast dynamic
 nhrp network-id 100

[r1]interface  Tunnel 0/0/1
[V200R003C00]
#
interface Tunnel0/0/1
 ip address 10.1.2.1 255.255.255.0
 tunnel-protocol gre
 source 15.1.1.1
 destination 45.1.1.1
#
```

R2:
```
interface Tunnel0/0/0
 ip address 10.1.1.2 255.255.255.0
 tunnel-protocol gre p2mp
 source Serial4/0/0
 nhrp network-id 100
 nhrp entry 10.1.1.1 15.1.1.1 register
#
```

```
[r3]interface  Tunnel 0/0/0
[V200R003C00]
#
interface Tunnel0/0/0
 ip address 10.1.1.3 255.255.255.0
 tunnel-protocol gre p2mp
 source Serial4/0/0
 nhrp network-id 100
 nhrp entry 10.1.1.1 15.1.1.1 register
#
```

R4:

```
[r4]interface Tunnel 0/0/0
[V200R003C00]
#
interface Tunnel0/0/0
 ip address 10.1.2.2 255.255.255.0
 tunnel-protocol gre
 source 45.1.1.1
 destination 15.1.1.1
#
```

6.跑rip协议

```
[r1]rip 1
[r1-rip-1]v 2
[V200R003C00]
#
rip 1
 version 2
 network 192.168.1.0
 network 10.0.0.0
```

```
[r2]rip 1
[r2-rip-1]v 2
[V200R003C00]
#
rip 1
 version 2
 network 192.168.2.0
 network 10.0.0.0
#
```

```
[r3]rip 1
[r3-rip-1]v
[r3-rip-1]version 2
[V200R003C00]
#
rip 1
 version 2
 network 10.0.0.0
 network 192.168.3.0
```

7.手动配置电脑的IP

其余的就按照网关，掩码，IP地址配就完了。

四、测试信息

```
[rl]ping 192.168.2.1
  PING 192.168.2.1: 56  data bytes, press CTRL_C to break
    Reply from 192.168.2.1: bytes=56 Sequence=1 ttl=255 time=30 ms
    Reply from 192.168.2.1: bytes=56 Sequence=2 ttl=255 time=20 ms
    Reply from 192.168.2.1: bytes=56 Sequence=3 ttl=255 time=20 ms
    Reply from 192.168.2.1: bytes=56 Sequence=4 ttl=255 time=30 ms
    Reply from 192.168.2.1: bytes=56 Sequence=5 ttl=255 time=30 ms

  --- 192.168.2.1 ping statistics ---
    5 packet(s) transmitted
    5 packet(s) received
    0.00% packet loss
    round-trip min/avg/max = 20/26/30 ms

[rl]ping 5.5.5.5
  PING 5.5.5.5: 56  data bytes, press CTRL_C to break
    Reply from 5.5.5.5: bytes=56 Sequence=1 ttl=255 time=40 ms
    Reply from 5.5.5.5: bytes=56 Sequence=2 ttl=255 time=20 ms
    Reply from 5.5.5.5: bytes=56 Sequence=3 ttl=255 time=20 ms
    Reply from 5.5.5.5: bytes=56 Sequence=4 ttl=255 time=20 ms
    Reply from 5.5.5.5: bytes=56 Sequence=5 ttl=255 time=20 ms

  --- 5.5.5.5 ping statistics ---
    5 packet(s) transmitted
    5 packet(s) received
    0.00% packet loss
    round-trip min/avg/max = 20/24/40 ms

[rl]ping 192.168.3.1
  PING 192.168.3.1: 56  data bytes, press CTRL_C to break
    Reply from 192.168.3.1: bytes=56 Sequence=1 ttl=255 time=40 ms
    Reply from 192.168.3.1: bytes=56 Sequence=2 ttl=255 time=20 ms
    Reply from 192.168.3.1: bytes=56 Sequence=3 ttl=255 time=40 ms
    Reply from 192.168.3.1: bytes=56 Sequence=4 ttl=255 time=30 ms
    Reply from 192.168.3.1: bytes=56 Sequence=5 ttl=255 time=30 ms

  --- 192.168.3.1 ping statistics ---
    5 packet(s) transmitted
    5 packet(s) received
    0.00% packet loss
    round-trip min/avg/max = 20/32/40 ms

[rl]
```

大学生活也基本上过了一半了，在寝室玩游戏的始终是玩游戏的，他们的聊天里面也只有游戏，都是摆的自己今天打游戏遇到的什么队友，遇到什么好看的皮肤。。。现在跟宿舍里玩游戏的同学越走越远了，也许注定我们不是同一个世界的人吧，始终坚信道不同吧，三观也各不相同，不强求。大学四年，还剩俩年，渐渐地对专业、班级没有了归属感，我宁愿在我的小圈子里努力做好自己的事情。室友都是年纪比我大的，都是二十几岁的人，每天就指望着游戏来满足自己的成就感，这种生活我实在不喜欢。人还是应该努力一点的。不然你在这干嘛，人生就这么一次，不要浪费呀！你不努力，永远有别人比你更努力。生活总得有点向往吧。在学习过程发现同龄人还有很多很优秀的同学，他们才是志同道合的人，唉，算了，发什么牢骚啊，做好自己即可了。该睡觉了，大家晚安吧！