

HCIP---网络类型实验

原创

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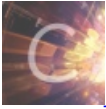
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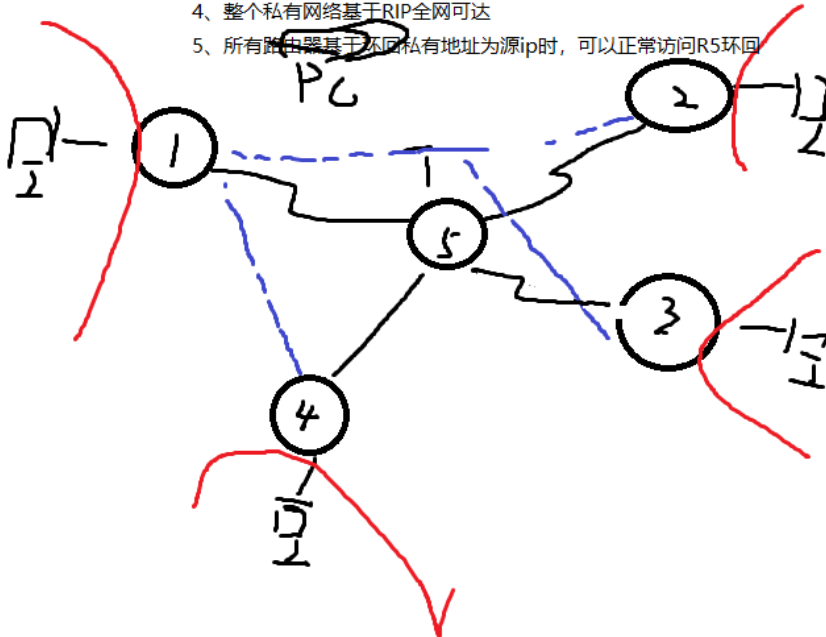
HCIP

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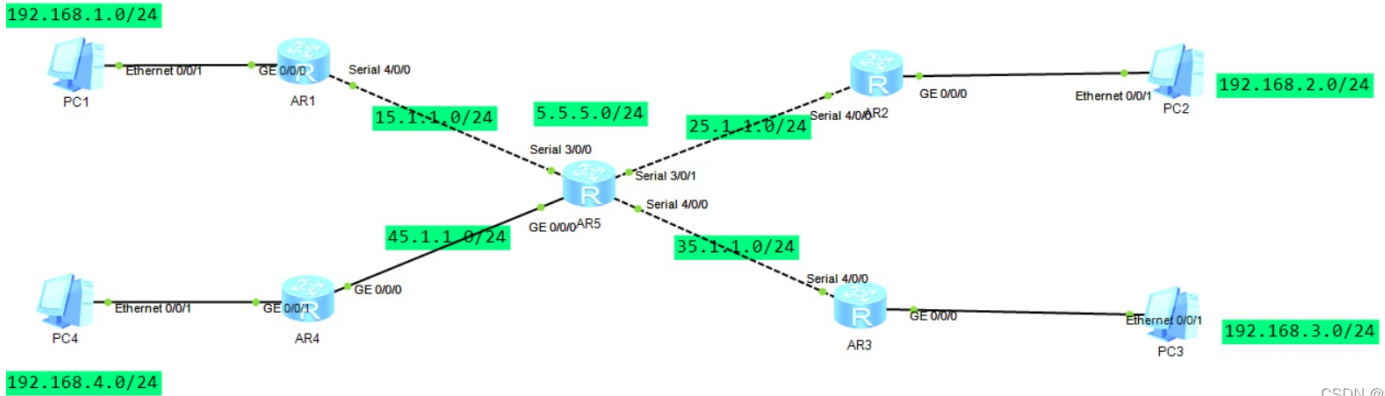
订阅专栏

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



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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
(1): 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]
Apr 2 2022 22:01:58-08:00 r1 %%01IFNET/4/LINK_STATE(1)[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(1)[18]:The line protocol PP
P IPCP on the interface Serial4/0/0 has entered the UP state.
[r1]
Request time out
```

连接设备的以太网和千兆以太网接口

45.1.1.0/24

192.168.4.0/24

GE 0/0/0 AR5

GE 0/0/1 AR4

GE 0/0/0

GE 0/0/1

Serial

POS

E1

ATM

PC4

AR4

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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(1)[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

```

```

[r5]ping 35.1.1.1
PING 35.1.1.1: 56 data bytes, press CTRL_C to break
Reply from 35.1.1.1: bytes=56 Sequence=1 ttl=255 time=20 ms
Apr  2 2022 22:09:23-08:00 r5 %%01IFNET/4/LINK_STATE(1)[64]:The line protocol PP
P on the interface Serial3/0/1 has entered the UP state.
[r5]
Apr  2 2022 22:09:23-08:00 r5 %%01IFNET/4/LINK_STATE(1)[65]:The line protocol PP
P on the interface Serial3/0/1 has entered the DOWN state.
[r5]
Reply from 35.1.1.1: bytes=56 Sequence=2 ttl=255 time=20 ms
Reply from 35.1.1.1: bytes=56 Sequence=3 ttl=255 time=20 ms
Reply from 35.1.1.1: bytes=56 Sequence=4 ttl=255 time=30 ms
Reply from 35.1.1.1: bytes=56 Sequence=5 ttl=255 time=20 ms

--- 35.1.1.1 ping statistics ---
 5 packet(s) transmitted
 5 packet(s) received 192.168.4.0/24
 0.00% packet loss
 round-trip min/avg/max = 20/22/30 ms

```

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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



The image shows a window titled "PC1" with several tabs: "基础配置", "命令行", "组播", "UDP发包工具", and "串口". The "基础配置" tab is active, displaying network configuration fields. Under "IPv4 配置", the "静态" radio button is selected, and the "自动获取 DNS 服务器地址" checkbox is unchecked. The IP address is set to 192.168.1.2, the subnet mask to 255.255.255.0, and the gateway to 192.168.1.1. Both DNS1 and DNS2 are set to 0.0.0.0. Under "IPv6 配置", the "静态" radio button is selected, and the IPv6 address, prefix length, and gateway are all set to ::. An "应用" button is located at the bottom right of the configuration area.

配置项	值
主机名	
MAC 地址	54-89-98-86-37-22
IPv4 配置	
静态	<input checked="" type="radio"/>
DHCP	<input type="radio"/>
自动获取 DNS 服务器地址	<input type="checkbox"/>
IP 地址	192 . 168 . 1 . 2
DNS1	0 . 0 . 0 . 0
子网掩码	255 . 255 . 255 . 0
DNS2	0 . 0 . 0 . 0
网关	192 . 168 . 1 . 1
IPv6 配置	
静态	<input checked="" type="radio"/>
DHCPv6	<input type="radio"/>
IPv6 地址	::
前缀长度	128
IPv6 网关	::

其余的就按照网关，掩码，IP地址配就完了。

The image shows a window titled "PC1" with a light blue border and standard Windows window controls (minimize, maximize, close) in the top right corner. Below the title bar is a menu bar with five tabs: "基础配置", "命令行", "组播", "UDP发包工具", and "串口". The "命令行" tab is selected. The main area is a black terminal window with white text. The text in the terminal is as follows:

```
Welcome to use PC Simulator!  
  
PC>ping 192.168.3.1  
  
Ping 192.168.3.1: 32 data bytes, Press Ctrl_C to break  
From 192.168.3.1: bytes=32 seq=1 ttl=254 time=16 ms  
From 192.168.3.1: bytes=32 seq=2 ttl=254 time=31 ms  
From 192.168.3.1: bytes=32 seq=3 ttl=254 time=31 ms  
From 192.168.3.1: bytes=32 seq=4 ttl=254 time=16 ms  
From 192.168.3.1: bytes=32 seq=5 ttl=254 time=31 ms  
  
--- 192.168.3.1 ping statistics ---  
 5 packet(s) transmitted  
 5 packet(s) received  
 0.00% packet loss  
 round-trip min/avg/max = 16/25/31 ms  
  
PC>
```

In the bottom right corner of the terminal window, there is a small watermark that reads "CSDN @Ch An".

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

```

192.168.2.1 / 24

5.5.5.5 / 24

192.168.3.1 / 24

15.1.1.0 / 24

45.1.1.0 / 24

192.168.4.0 / 24

- 1个CON/AUX接口
- 固定8FE接口
- 1个WAN侧uplink接口,
- 1个USB接口

总数: 9 选中: 0

CSDN @Ch An

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！