DHCP 四次握手实验
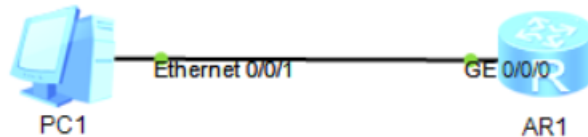
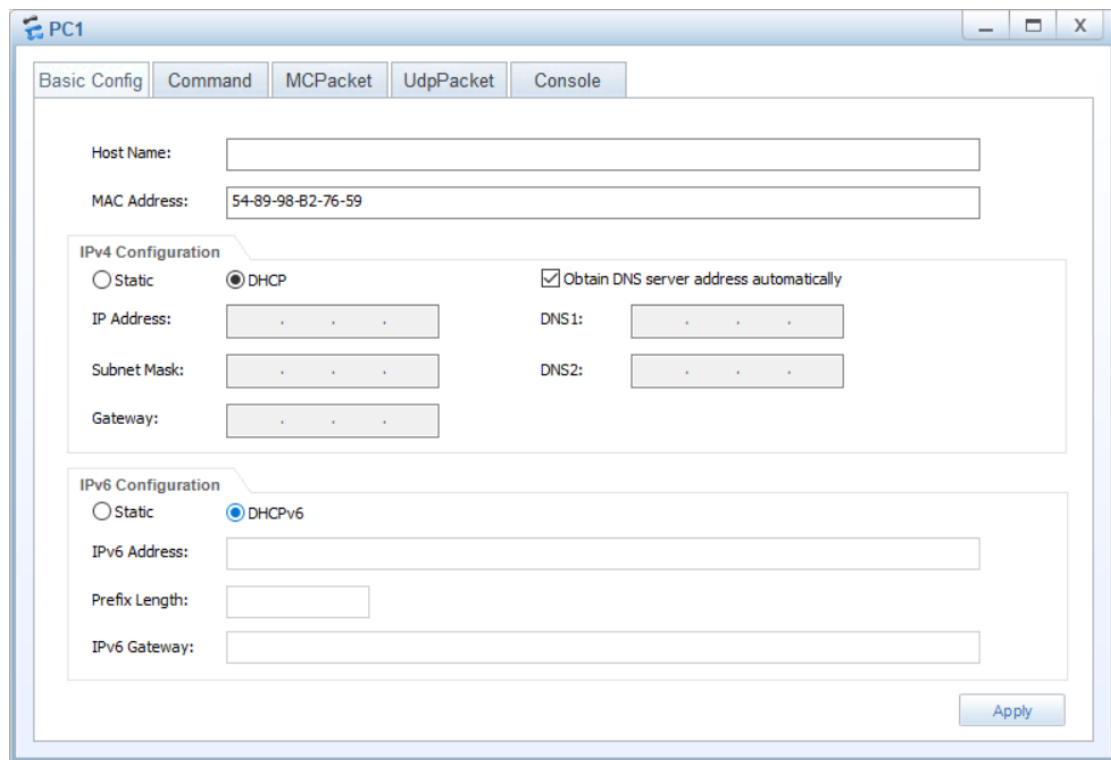## *Hollow Man*

一、 实验网络拓扑

二、 实验内容

使用华为 eNSP 模拟器，首先配置 PC1：

然后使用如下命令：

\<Huawei>sys

[Huawei]dhcp enable   #开启 dhcp 功能
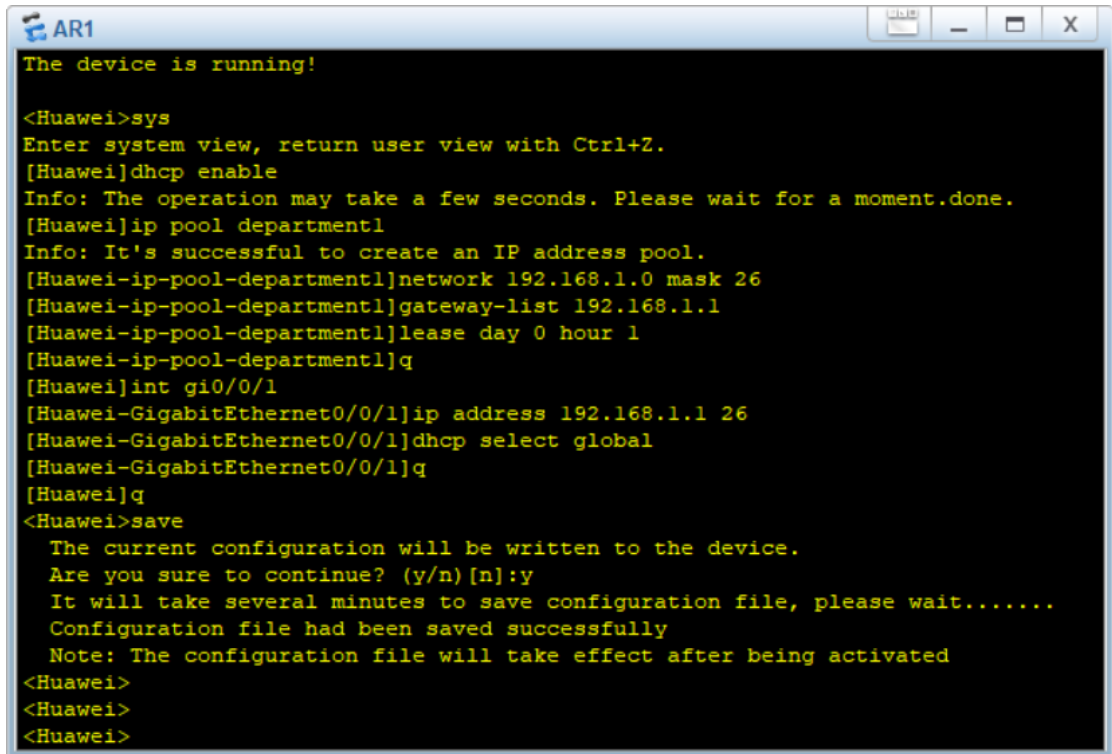
[Huawei]ip pool department1   #命令 ip pool + 地址池名称

[Huawei-ip-pool-department1]network 192.168.1.0 mask 26 #配置全局地址池中可以参与分配的 IP 地址段

[Huawei-ip-pool-department1]gateway-list 192.168.1.1   #配置网关 IP 地址

[Huawei-ip-pool-department1]lease day 0 hour 1   #配置 IP 地址的租约期

[Huawei-ip-pool-department1]q

[Huawei]interface GigabitEthernet 0/0/0

[Huawei-GigabitEthernet0/0/0]ip address 192.168.1.1 26   #给接口添加 IP 地址，即对应的网关地址

[Huawei-GigabitEthernet0/0/0]dhcp select global   #接口下配置基于全局地址池的服务方式

[Huawei-GigabitEthernet0/0/0]q

[Huawei]q

<Huawei>save

```
AR1                                                          _  □  X

The device is running!

<Huawei>sys
Enter system view, return user view with Ctrl+Z.
[Huawei]dhcp enable
Info: The operation may take a few seconds. Please wait for a moment.done.
[Huawei]ip pool department1
Info: It's successful to create an IP address pool.
[Huawei-ip-pool-department1]network 192.168.1.0 mask 26
[Huawei-ip-pool-department1]gateway-list 192.168.1.1
[Huawei-ip-pool-department1]lease day 0 hour 1
[Huawei-ip-pool-department1]q
[Huawei]int gi0/0/1
[Huawei-GigabitEthernet0/0/1]ip address 192.168.1.1 26
[Huawei-GigabitEthernet0/0/1]dhcp select global
[Huawei-GigabitEthernet0/0/1]q
[Huawei]q
<Huawei>save
  The current configuration will be written to the device.
  Are you sure to continue? (y/n)[n]:y
  It will take several minutes to save configuration file, please wait.......
  Configuration file had been saved successfully
  Note: The configuration file will take effect after being activated
<Huawei>
<Huawei>
<Huawei>
```

```
AR1                                                          ▭▭▭    _    ☐    X

[Huawei]dhcp enable
[Huawei]q
<Huawei>int gi0/0/1
            ^
Error: Unrecognized command found at '^' position.
<Huawei>sys
Enter system view, return user view with Ctrl+Z.
[Huawei]int gi0/0/1
[Huawei-GigabitEthernet0/0/1]undo ip address 192.168.1.1 26
[Huawei-GigabitEthernet0/0/1]undo dhcp select global
[Huawei-GigabitEthernet0/0/1]q
[Huawei]int gi0/0/0
[Huawei-GigabitEthernet0/0/0]ip address 192.168.1.1 26
Dec 11 2019 20:53:04-08:00 Huawei %%01IFNET/4/LINK_STATE(1)[0]:The line protoco
 IP on the interface GigabitEthernet0/0/0 has entered the UP state.
[Huawei-GigabitEthernet0/0/0]dhcp select global
[Huawei-GigabitEthernet0/0/0]q
[Huawei]q
<Huawei>save
  The current configuration will be written to the device.
  Are you sure to continue? (y/n)[n]:y
  It will take several minutes to save configuration file, please wait.......
  Configuration file had been saved successfully
  Note: The configuration file will take effect after being activated
<Huawei>
```

使用 wireshark 抓包，得:


```
35 150.031000   0.0.0.0          255.255.255.255   DHCP    410 DHCP Discover - Transaction ID 0x17f2
36 150.062000   192.168.1.1      192.168.1.62      DHCP    342 DHCP Offer    - Transaction ID 0x17f2
37 152.031000   0.0.0.0          255.255.255.255   DHCP    410 DHCP Request  - Transaction ID 0x17f2
38 152.031000   192.168.1.1      192.168.1.62      DHCP    342 DHCP ACK      - Transaction ID 0x17f2
39 153.031000   HuaweiTe_b2:76:59   Broadcast      ARP      60 Gratuitous ARP for 192.168.1.62 (Request)
40 154.015000   HuaweiTe_b2:76:59   Broadcast      ARP      60 Gratuitous ARP for 192.168.1.62 (Request)
41 155.015000   HuaweiTe_b2:76:59   Broadcast      ARP      60 Gratuitous ARP for 192.168.1.62 (Request)
```

```
> Frame 35: 410 bytes on wire (3280 bits), 410 bytes captured (3280 bits) on interface 0
> Ethernet II, Src: HuaweiTe_b2:76:59 (54:89:98:b2:76:59), Dst: Broadcast (ff:ff:ff:ff:ff:ff)
> Internet Protocol Version 4, Src: 0.0.0.0, Dst: 255.255.255.255
> User Datagram Protocol, Src Port: 68, Dst Port: 67
> Dynamic Host Configuration Protocol (Discover)
```

```
35 150.031000   0.0.0.0          255.255.255.255   DHCP    410 DHCP Discover - Transaction ID 0x17f2
36 150.062000   192.168.1.1      192.168.1.62      DHCP    342 DHCP Offer    - Transaction ID 0x17f2
37 152.031000   0.0.0.0          255.255.255.255   DHCP    410 DHCP Request  - Transaction ID 0x17f2
38 152.031000   192.168.1.1      192.168.1.62      DHCP    342 DHCP ACK      - Transaction ID 0x17f2
39 153.031000   HuaweiTe_b2:76:59   Broadcast      ARP      60 Gratuitous ARP for 192.168.1.62 (Request)
40 154.015000   HuaweiTe_b2:76:59   Broadcast      ARP      60 Gratuitous ARP for 192.168.1.62 (Request)
41 155.015000   HuaweiTe_b2:76:59   Broadcast      ARP      60 Gratuitous ARP for 192.168.1.62 (Request)
42 194.906000   fe80::5689:98ff:feb…  ff02::1:2    DHCPv6  112 Solicit XID: 0x38cdf0 CID: 00030001548998b27659
```

```
> Frame 36: 342 bytes on wire (2736 bits), 342 bytes captured (2736 bits) on interface 0
> Ethernet II, Src: HuaweiTe_76:59:e9 (00:e0:fc:76:59:e9), Dst: HuaweiTe_b2:76:59 (54:89:98:b2:76:59)
> Internet Protocol Version 4, Src: 192.168.1.1, Dst: 192.168.1.62
> User Datagram Protocol, Src Port: 67, Dst Port: 68
> Dynamic Host Configuration Protocol (Offer)
```

```
35 150.031000   0.0.0.0          255.255.255.255   DHCP    410 DHCP Discover - Transaction ID 0x17f2
36 150.062000   192.168.1.1      192.168.1.62      DHCP    342 DHCP Offer    - Transaction ID 0x17f2
37 152.031000   0.0.0.0          255.255.255.255   DHCP    410 DHCP Request  - Transaction ID 0x17f2
38 152.031000   192.168.1.1      192.168.1.62      DHCP    342 DHCP ACK      - Transaction ID 0x17f2
39 153.031000   HuaweiTe_b2:76:59   Broadcast      ARP      60 Gratuitous ARP for 192.168.1.62 (Request)
40 154.015000   HuaweiTe_b2:76:59   Broadcast      ARP      60 Gratuitous ARP for 192.168.1.62 (Request)
41 155.015000   HuaweiTe_b2:76:59   Broadcast      ARP      60 Gratuitous ARP for 192.168.1.62 (Request)
42 194.906000   fe80::5689:98ff:feb…  ff02::1:2    DHCPv6  112 Solicit XID: 0x38cdf0 CID: 00030001548998b27659
```

```
> Frame 37: 410 bytes on wire (3280 bits), 410 bytes captured (3280 bits) on interface 0
> Ethernet II, Src: HuaweiTe_b2:76:59 (54:89:98:b2:76:59), Dst: Broadcast (ff:ff:ff:ff:ff:ff)
> Internet Protocol Version 4, Src: 0.0.0.0, Dst: 255.255.255.255
> User Datagram Protocol, Src Port: 68, Dst Port: 67
> Dynamic Host Configuration Protocol (Request)
```

```
35 150.031000    0.0.0.0             255.255.255.255    DHCP    410 DHCP Discover - Transaction ID 0x17f2
36 150.062000    192.168.1.1         192.168.1.62       DHCP    342 DHCP Offer    - Transaction ID 0x17f2
37 152.031000    0.0.0.0             255.255.255.255    DHCP    410 DHCP Request  - Transaction ID 0x17f2
38 152.031000    192.168.1.1         192.168.1.62       DHCP    342 DHCP ACK      - Transaction ID 0x17f2
39 153.031000    HuaweiTe_b2:76:59   Broadcast          ARP      60 Gratuitous ARP for 192.168.1.62 (Request)
40 154.015000    HuaweiTe_b2:76:59   Broadcast          ARP      60 Gratuitous ARP for 192.168.1.62 (Request)
41 155.015000    HuaweiTe_b2:76:59   Broadcast          ARP      60 Gratuitous ARP for 192.168.1.62 (Request)
42 194.906000    fe80::5689:98ff:feb… ff02::1:2         DHCPv6  112 Solicit XID: 0x38cdf0 CID: 00030001548998b27659
```

> Frame 38: 342 bytes on wire (2736 bits), 342 bytes captured (2736 bits) on interface 0
> Ethernet II, Src: HuaweiTe_76:59:e9 (00:e0:fc:76:59:e9), Dst: HuaweiTe_b2:76:59 (54:89:98:b2:76:59)
> Internet Protocol Version 4, Src: 192.168.1.1, Dst: 192.168.1.62
> User Datagram Protocol, Src Port: 67, Dst Port: 68
> Dynamic Host Configuration Protocol (ACK)