

## HCIP-Datcom 分解实验 - DHCP

臧家林制作

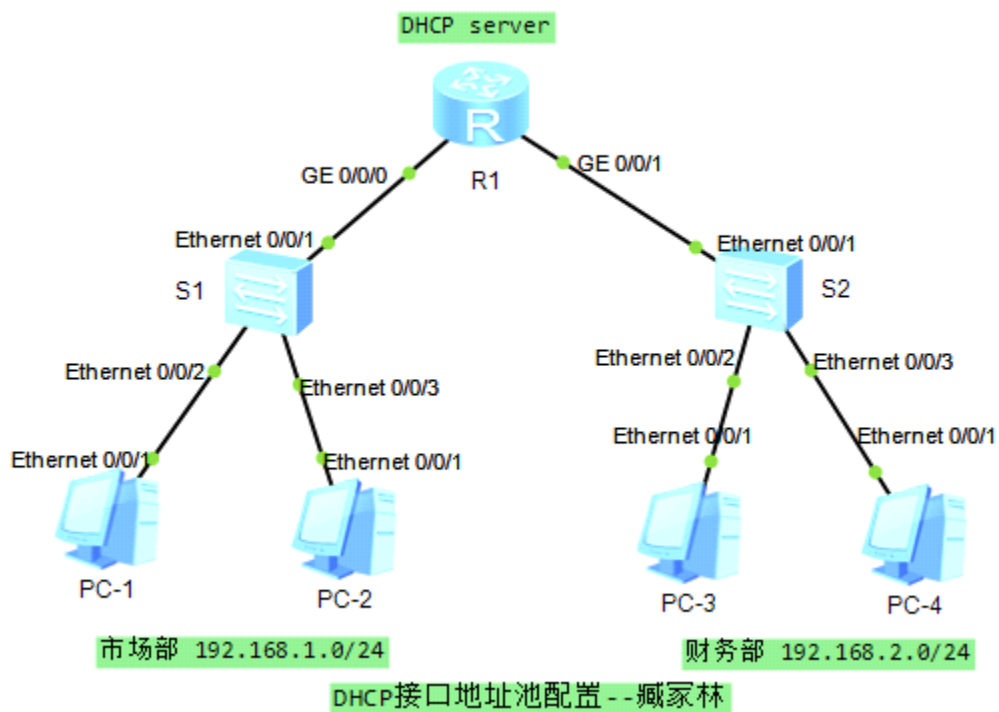


DHCP 实验 1： DHCP 配置

DHCP 实验 2： DHCP 中继配置

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### DHCP 实验 1： DHCP 配置



R1 做为 DHCP 的服务器

R1 : 配置接口 IP 地址

```
undo ter mo
sys
sysname R1
user-interface console 0
idle-timeout 0 0
int g0/0/0
ip add 192.168.1.254 24
int g0/0/1
ip add 192.168.2.254 24
q
```

配置 DHCP

```
R1 :
dhcp enable
int g0/0/0
dhcp select interface
dhcp server dns-list 192.168.1.254
dhcp server excluded-ip-address 192.168.1.1
192.168.1.10
dhcp server lease day 3
int g0/0/1
dhcp select interface
q
```

配置完成后，查看 PC DHCP 能否获取到地址 ipconfig  
4 台 PC 应该能相互 ping 通

```
PC>ipconfig

Link local IPv6 address.....: fe80::5689:98ff:fe2a:6c9
IPv6 address.....: :: / 128
IPv6 gateway.....: ::
IPv4 address.....: 192.168.1.252
Subnet mask.....: 255.255.255.0
Gateway.....: 192.168.1.254
Physical address.....: 54-89-98-2A-06-C9
DNS server.....: 1.1.1.1
                  192.168.1.254
```

## DHCP 地址池配置

R1 :

```
dhcp enable
ip pool dhcp1
gateway-list 192.168.1.254
network 192.168.1.0 mask 255.255.255.0
excluded-ip-address 192.168.1.1 192.168.1.10
lease day 3
dns-list 1.1.1.1
ip pool dhcp2
gateway-list 192.168.2.254
network 192.168.2.0 mask 255.255.255.0
int g0/0/0
dhcp select global
int g0/0/1
dhcp select global
```

PC 查看 ipconfig ，也可以获取到地址

R1 : display ip pool

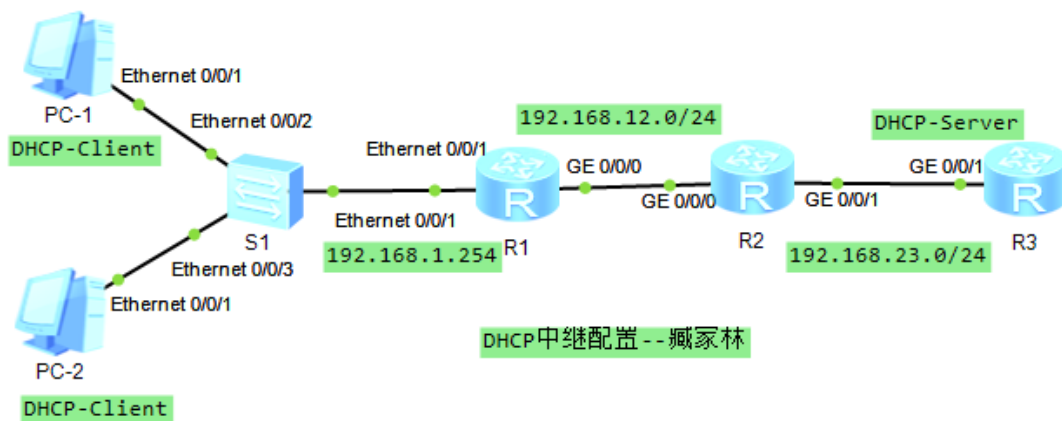
```
[R1]dis ip pool
```

```
-----  
Pool-name       : dhcp1  
Pool-No         : 0  
Position        : Local          Status          : Unlocked  
Gateway-0       : 192.168.1.254  
Mask            : 255.255.255.0  
VPN instance    : --  
-----
```

```
Pool-name       : dhcp2  
Pool-No         : 1  
Position        : Local          Status          : Unlocked  
Gateway-0       : 192.168.2.254
```

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## DHCP 实验 2： DHCP 中继配置



### 基础配置

```
R1:  
undo ter mo  
sys  
sysname R1  
user-interface console 0  
idle-timeout 0 0  
int g0/0/0
```

```
ip add 192.168.12.1 24
int e0/0/1
ip add 192.168.1.254 24
q
```

```
ospf router-id 1.1.1.1
area 0
network 192.168.1.254 0.0.0.0
network 192.168.12.1 0.0.0.0
q
```

```
R2:
undo ter mo
sys
sysname R2
user-interface console 0
idle-timeout 0 0
int g0/0/0
ip add 192.168.12.2 24
int g0/0/1
ip add 192.168.23.2 24
q
```

```
ospf router-id 2.2.2.2
area 0
network 192.168.12.2 0.0.0.0
network 192.168.23.2 0.0.0.0
q
```

```
R3:
undo ter mo
sys
sysname R3
user-interface console 0
```

```
idle-timeout 0 0
int g0/0/1
ip add 192.168.23.3 24
q

ospf router-id 3.3.3.3
area 0
network 192.168.23.3 0.0.0.0
q
```

R3 做为 DHCP Server 配置

```
R3:
dhcp enable
ip pool dhcp
gateway-list 192.168.1.254
network 192.168.1.0 mask 255.255.255.0
int g0/0/1
dhcp select global
```

R1 做为 DHCP 的中继配置

```
R1:
dhcp enable
int e0/0/1
dhcp select relay
dhcp relay server-ip 192.168.23.3
```

验证 PC ipconfig 能获取到 IP 地址

```
PC>ipconfig

Link local IPv6 address.....: fe80::5689:98ff:fe4c:4c53
IPv6 address.....: :: / 128
IPv6 gateway.....: ::
IPv4 address.....: 192.168.1.252
Subnet mask.....: 255.255.255.0
Gateway.....: 192.168.1.254
Physical address.....: 54-89-98-CF-4C-53
DNS server.....:
```

=====

## SW1 配置 DHCP Snooping

- 1.使能 DHCP Snooping 功能。
- 2.配置接口的信任状态，以保证客户端从合法的服务器获取 IP 地址。
- 3.使能 ARP 与 DHCP Snooping 的联动功能，保证 DHCP 用户在异常下线时实时更新绑定表。
- 4.使能根据 DHCP Snooping 绑定表生成接口的静态 MAC 表项功能，以防止非 DHCP 用户攻击。
- 5.使能对 DHCP 报文进行绑定表匹配检查的功能，防止仿冒 DHCP 报文攻击。
- 6.配置 DHCP 报文上送 DHCP 报文处理单元的最大允许速率，防止 DHCP 报文泛洪攻击。
- 7.配置允许接入的最大用户数以及使能检测 DHCP Request

SW1：

dhcp enable

dhcp snooping enable

在 VLAN 1 中开启，或者在连接用户侧接口开启

dhcp snooping enable vlan 1

或者

int e0/0/2

dhcp snooping enable

int e0/0/3

dhcp snooping enable

配置接口的信任状态：将连接 DHCP Server 的接口状态配置为“Trusted”

```
int e0/0/1
dhcp snooping trusted
```

使能 ARP 与 DHCP Snooping 的联动功能。  
arp dhcp-snooping-detect enable

使能对 DHCP 报文进行绑定表匹配检查的功能。  
int e0/0/1  
dhcp snooping check dhcp-request enable

配置 DHCP 报文上送 DHCP 报文处理单元的最大允许速率为 10pps。  
dhcp snooping check dhcp-rate enable  
dhcp snooping check dhcp-rate 10

配置接口允许接入的最大用户数。  
int e0/0/1  
dhcp snooping max-user-number 2

查看 DHCP Snooping 的配置信息。display dhcp snooping configuration



```

[SW1]display dhcp snooping configuration
#
dhcp snooping enable
dhcp snooping check dhcp-rate enable
dhcp snooping check dhcp-rate 10
arp dhcp-snooping-detect enable
#
vlan 1
  dhcp snooping enable
#
interface Ethernet0/0/1
  dhcp snooping trusted
  dhcp snooping check dhcp-request enable
  dhcp snooping max-user-number 2

```

查看接口下的 DHCP Snooping 运行信息。display dhcp snooping interface e0/0/1

```

[SW1]display dhcp snooping interface e0/0/1
DHCP snooping running information for interface Ethernet0/0/1
DHCP snooping                : Disable  (default)
Trusted interface             : Yes
Dhcp user max number          : 2
Current dhcp user number      : 0
Check dhcp-giaddr             : Disable  (default)
Check dhcp-chaddr             : Disable  (default)
Alarm dhcp-chaddr             : Disable  (default)
Check dhcp-request            : Enable
Alarm dhcp-request            : Disable  (default)
Check dhcp-rate               : Disable  (default)
Alarm dhcp-rate               : Disable  (default)
Alarm dhcp-rate threshold     : 100
Discarded dhcp packets for rate limit : 0
Alarm dhcp-reply              : Disable  (default)

```