

HCIA 实验 3 路由基础（静态路由）

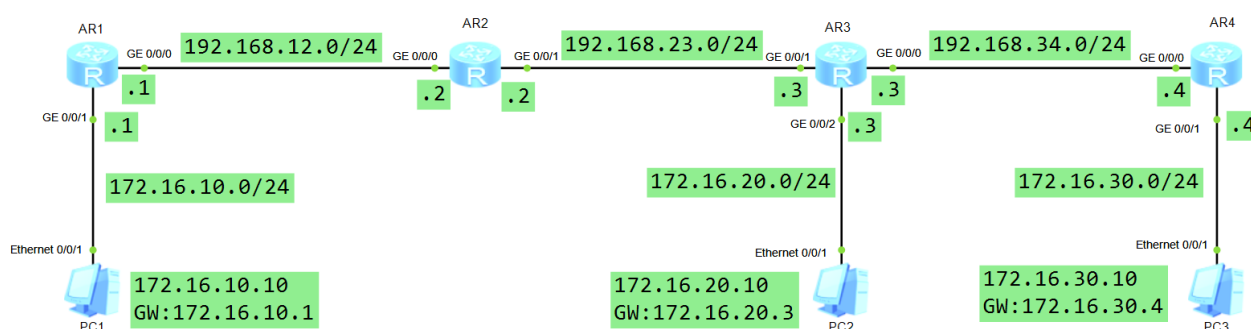
版本 V1.1

密级 ☒ 开放 ☐ 内部 ☐ 机密

类型 ☐ 讨论版 ☐ 测试版 ☒ 正式版

修订记录				
修订日期	修订人	版本号	审核人	修订说明
2019-11-12	Ryan	1.0		
2020-01-20	童驰阳	1.1		增加静态路由下一跳和出接口说明。

1 实验拓扑



2 实验需求

- 如图所示，配置各路由器设备名称，IP地址
- 如图所示，配置各PC的IP地址、掩码、网关
- 在R1 R2 R3 R4上配置静态路由
 - 路由的目标网络号与实际网络号相同
 - 采用下一跳的方式配置静态路由

- c) 不得使用默认路由
- d) PC1 PC2 PC3可以互通

3 配置思路及验证结果

3.1 配置设备名称和 IP 地址

R1

```
[Huawei] sysname R1
[R1] interface g0/0/0
[R1-GigabitEthernet0/0/0] ip address 192.168.12.1 24
[R1-GigabitEthernet0/0/0] interface g0/0/1
[R1-GigabitEthernet0/0/1] ip add 172.16.1.254 24
```

R2

```
[Huawei] sysname R2
[R2] interface g0/0/0
[R2-GigabitEthernet0/0/0] ip address 192.168.12.2 24
[R2-GigabitEthernet0/0/0] interface g0/0/1
[R2-GigabitEthernet0/0/1] ip address 192.168.23.2 24
```

R3

```
[Huawei] sysname R3
[R3] interface g0/0/0
[R3-GigabitEthernet0/0/0] ip address 192.168.23.3 24
[R3-GigabitEthernet0/0/0] interface g0/0/1
[R3-GigabitEthernet0/0/1] ip address 192.168.34.3 24
[R3-GigabitEthernet0/0/1] interface g0/0/2
[R3-GigabitEthernet0/0/2] ip address 172.16.2.254 24
```

R4

```
[Huawei] sysname R4
[R4] interface g0/0/0
[R4-GigabitEthernet0/0/0] ip address 192.168.34.4 24
[R4-GigabitEthernet0/0/0] interface g0/0/1
[R4-GigabitEthernet0/0/1] ip address 172.16.3.254 24
```

3.2 配置静态路由

3.2.1 配置 R1 到 PC2 和 PC3 的静态路由

R1

```
[R1] ip route-static 172.16.2.0 24 192.168.12.2
```

```
[R1] ip route-static 172.16.3.0 24 192.168.12.2
```

注意：在以太网多路访问（MA）环境下，静态路由的下一跳地址必须配置，出接口可以选配。
在点到点（P2P）环境下，静态路由可以只配置出接口。

3.2.2 配置 R2 到 PC1，PC2 和 PC3 的静态路由

R2

```
[R2] ip route-static 172.16.1.0 24 192.168.12.1
```

```
[R2] ip route-static 172.16.2.0 24 192.168.23.3
```

```
[R2] ip route-static 172.16.3.0 24 192.168.23.3
```

3.2.3 配置 R3 到 PC1 和 PC3 的静态路由

R3

```
[R3] ip route-static 172.16.1.0 24 192.168.23.2
```

```
[R3] ip route-static 172.16.3.0 24 192.168.34.4
```

3.2.4 配置 R4 到 PC1，PC2 的静态路由

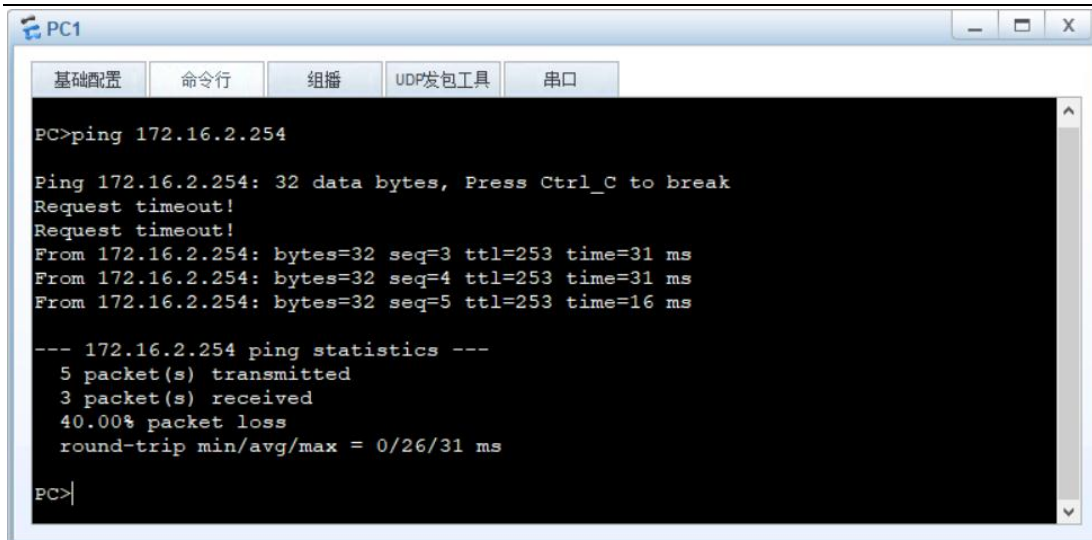
R4

```
[R4] ip route-static 172.16.1.0 24 192.168.34.3
```

```
[R4] ip route-static 172.16.2.0 24 192.168.34.3
```

3.3 验证实验结果

PC1与PC2互通，思考为什么会丢包



```
PC1
基础配置 命令行 组播 UDP发包工具 串口

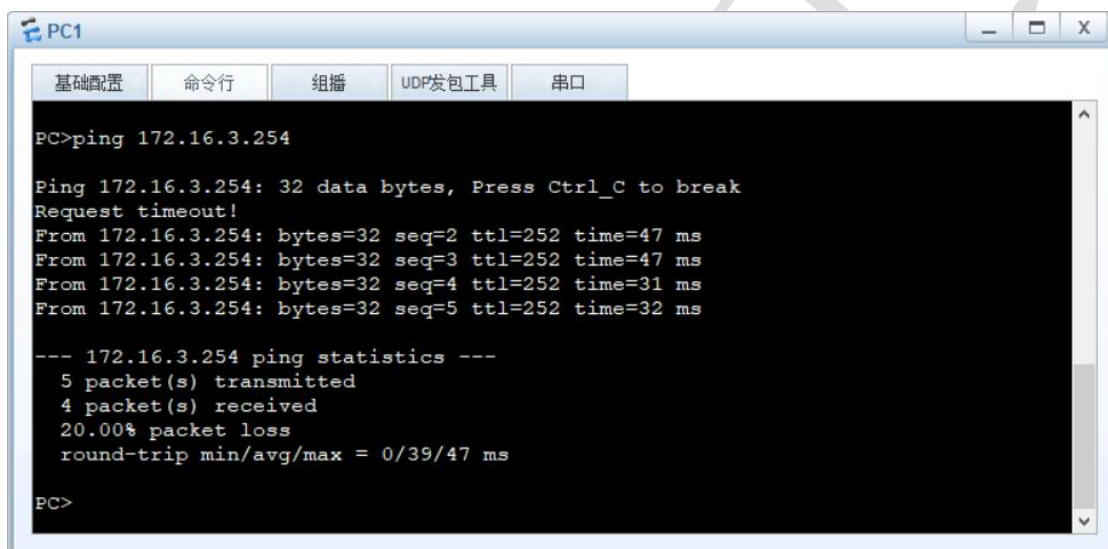
PC>ping 172.16.2.254

Ping 172.16.2.254: 32 data bytes, Press Ctrl_C to break
Request timeout!
Request timeout!
From 172.16.2.254: bytes=32 seq=3 ttl=253 time=31 ms
From 172.16.2.254: bytes=32 seq=4 ttl=253 time=31 ms
From 172.16.2.254: bytes=32 seq=5 ttl=253 time=16 ms

--- 172.16.2.254 ping statistics ---
 5 packet(s) transmitted
 3 packet(s) received
40.00% packet loss
round-trip min/avg/max = 0/26/31 ms

PC>
```

PC1与PC3互通



```
PC1
基础配置 命令行 组播 UDP发包工具 串口

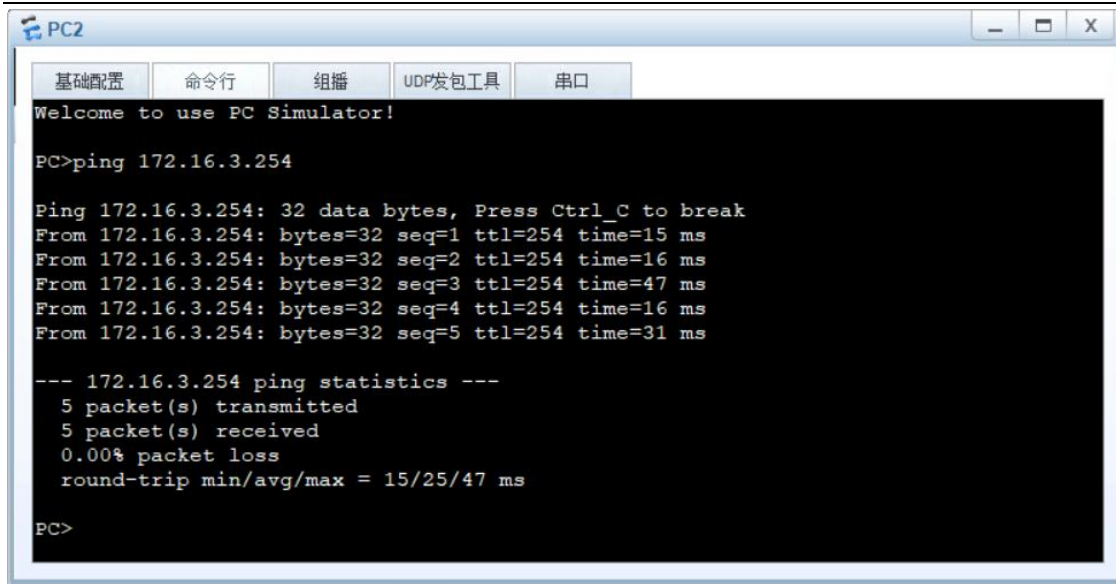
PC>ping 172.16.3.254

Ping 172.16.3.254: 32 data bytes, Press Ctrl_C to break
Request timeout!
From 172.16.3.254: bytes=32 seq=2 ttl=252 time=47 ms
From 172.16.3.254: bytes=32 seq=3 ttl=252 time=47 ms
From 172.16.3.254: bytes=32 seq=4 ttl=252 time=31 ms
From 172.16.3.254: bytes=32 seq=5 ttl=252 time=32 ms

--- 172.16.3.254 ping statistics ---
 5 packet(s) transmitted
 4 packet(s) received
20.00% packet loss
round-trip min/avg/max = 0/39/47 ms

PC>
```

PC2与PC3互通



The screenshot shows a window titled 'PC2' with a menu bar containing '基础配置', '命令行', '组播', 'UDP发包工具', and '串口'. The '命令行' (Command Line) tab is active, displaying a terminal window. The terminal text is as follows:

```
Welcome to use PC Simulator!

PC>ping 172.16.3.254

Ping 172.16.3.254: 32 data bytes, Press Ctrl_C to break
From 172.16.3.254: bytes=32 seq=1 ttl=254 time=15 ms
From 172.16.3.254: bytes=32 seq=2 ttl=254 time=16 ms
From 172.16.3.254: bytes=32 seq=3 ttl=254 time=47 ms
From 172.16.3.254: bytes=32 seq=4 ttl=254 time=16 ms
From 172.16.3.254: bytes=32 seq=5 ttl=254 time=31 ms

--- 172.16.3.254 ping statistics ---
 5 packet(s) transmitted
 5 packet(s) received
 0.00% packet loss
 round-trip min/avg/max = 15/25/47 ms

PC>
```