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Lab 8.1.2.4 - Configuring Basic DHCPv4 on Router

Part 1: Build the Network and Configure Basic Device Settings

Step 4: Verify network connectivity between the routers

Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num	Edit	Delete
	Successful	R1	R2	IC...		0.000	N	0	(e...	(delete)
	Successful	R2	ISP	IC...		0.000	N	1	(e...	(delete)
	Successful	R1	ISP	IC...		0.000	N	2	(e...	(delete)

Part 2: Configure a DHCPv4 Server and a DHCP Relay Agent

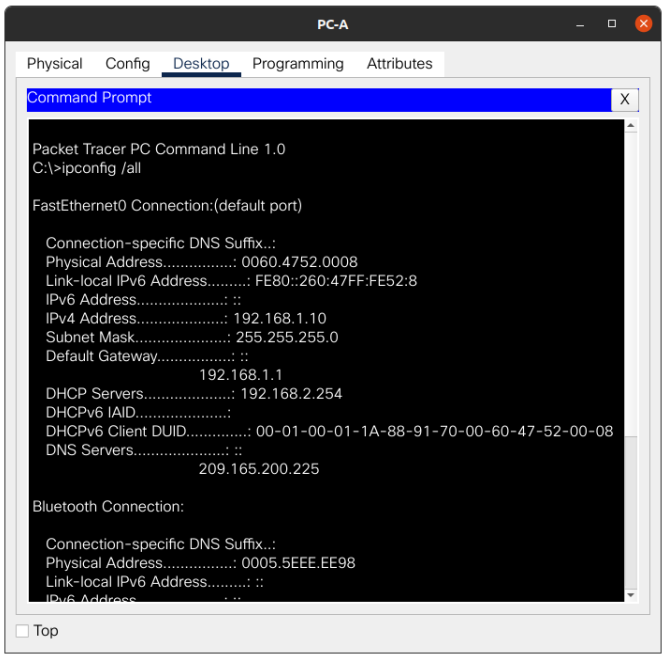
Step 2: Configure R1 as a DHCP relay agent

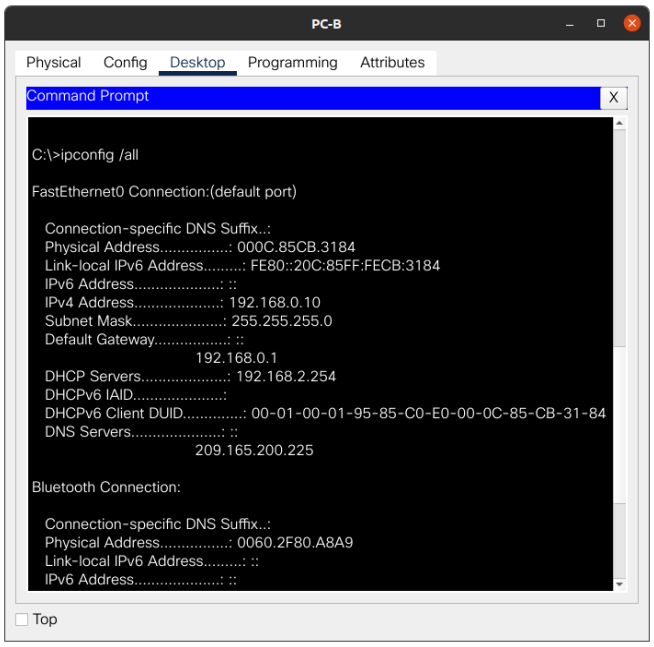
On the lines below, write the commands necessary to configure R1 as a DHCP relay agent for the R1 LANs.

interface g0/0
ip helper-address 192.168.2.254
interface g0/1
ip helper-address 192.168.2.254

Step 3: Record IP settings for PC-A and PC-B.

On PC-A and PC-B, issue the ipconfig /all command to verify that the PCs have received IP address information from the DHCP server on R2. Record the IP and MAC address for each PC.





Based on the DHCP pool that was configured on R2, what are the first available IP addresses that PC-A and PC-B can lease?
.10 addresses.

Step 4: Verify DHCP services and address leases on R2.

a) On R2, enter the show ip dhcp binding command to view DHCP address leases. Along with the IP addresses that were leased, what other piece of useful client identification information is in the output?

```
R2#show ip dhcp binding
IP address       Client-ID/              Lease expiration        Type
                 Hardware address
192.168.1.10     0060.4752.0008          --                      Automatic
192.168.0.10     000C.85CB.3184          --                      Automatic
```

The hardware address and its expiration.

b) On R2 enter the show ip dhcp pool command to view the DHCP pool settings. In the output of the show ip dhcp pool command, what does the current index refer to?

```
R2#show ip dhcp pool

Pool R1G1 :
 Utilization mark (high/low)    : 100 / 0
 Subnet size (first/next)       : 0 / 0
 Total addresses                : 254
 Leased addresses               : 1
 Excluded addresses             : 2
 Pending event                  : none

 1 subnet is currently in the pool
 Current index        IP address range                  Leased/Excluded/Total
 192.168.1.1          192.168.1.1      - 192.168.1.254     1    / 2     / 254

Pool R1G0 :
 Utilization mark (high/low)    : 100 / 0
 Subnet size (first/next)       : 0 / 0
 Total addresses                : 254
 Leased addresses               : 1
 Excluded addresses             : 2
 Pending event                  : none

 1 subnet is currently in the pool
 Current index        IP address range                  Leased/Excluded/Total
 192.168.0.1          192.168.0.1      -|192.168.0.254     1    / 2     / 254
```

c) On R2, enter the show run | begin dhcp command to view the DHCP configuration in the running configuration.

```
R2#show run | begin dhcp
ip dhcp excluded-address 192.168.0.1 192.168.0.9
ip dhcp excluded-address 192.168.1.1 192.168.1.9
!
ip dhcp pool R1G1
 network 192.168.1.0 255.255.255.0
 default-router 192.168.1.1
 dns-server 209.165.200.225
ip dhcp pool R1G0
 network 192.168.0.0 255.255.255.0
 default-router 192.168.0.1
 dns-server 209.165.200.225
```

Reflection

What do you think is the benefit of using DHCP relay agents instead of multiple routers acting as DHCP servers?
You do not need to configure multiple DHCPs.

Configuration

R1

```
enable
config t
hostname R1
no ip domain-lookup
service password-encryption
enable secret class
banner motd #
Unauthorized access is strictly prohibited. #

line con 0
password cisco
login
logging synchronous

line vty 0 4
password cisco
login

int g0/0
ip add 192.168.0.1 255.255.255.0
no shut

int g0/1
ip add 192.168.1.1 255.255.255.0
no shut
```

```
int s0/1/0
ip add 192.168.2.253 255.255.255.252
clock rate 1280000
no shut

router rip
version 2
network 192.168.0.0
network 192.168.1.0
network 192.168.2.252
no auto-summary

interface g0/0
ip helper-address 192.168.2.254
interface g0/1
ip helper-address 192.168.2.254
```

R2

```
enable
config t
hostname R2
no ip domain-lookup
service password-encryption
enable secret class
banner motd #
Unauthorized access is strictly prohibited. #

line con 0
password cisco
login
logging synchronous

line vty 0 4
password cisco
login

int s0/1/0
ip add 192.168.2.254 255.255.255.252
no shut

int s0/1/1
ip add 209.165.200.226 255.255.255.224
clock rate 128000
no shut

router rip
version 2
network 192.168.2.252
redistribute static
no auto-summary
exit
ip route 0.0.0.0 0.0.0.0 209.165.200.225

ip dhcp excluded-address 192.168.0.1 192.168.0.9
```

```
ip dhcp excluded-address 192.168.1.1 192.168.1.9
ip dhcp pool R1G1
network 192.168.1.0 255.255.255.0
default-router 192.168.1.1
dns-server 209.165.200.225
exit
ip dhcp pool R1G0
network 192.168.0.0 255.255.255.0
default-router 192.168.0.1
dns-server 209.165.200.225
```

ISP

```
enable
config t
hostname ISP
no ip domain-lookup
service password-encryption
enable secret class
banner motd #
Unauthorized access is strictly prohibited. #

line con 0
password cisco
login
logging synchronous

line vty 0 4
password cisco
login

int s0/1/1
ip add 209.165.200.225 255.255.255.252
no shut

ip route 192.168.0.0 255.255.252.0 209.165.200.226
```