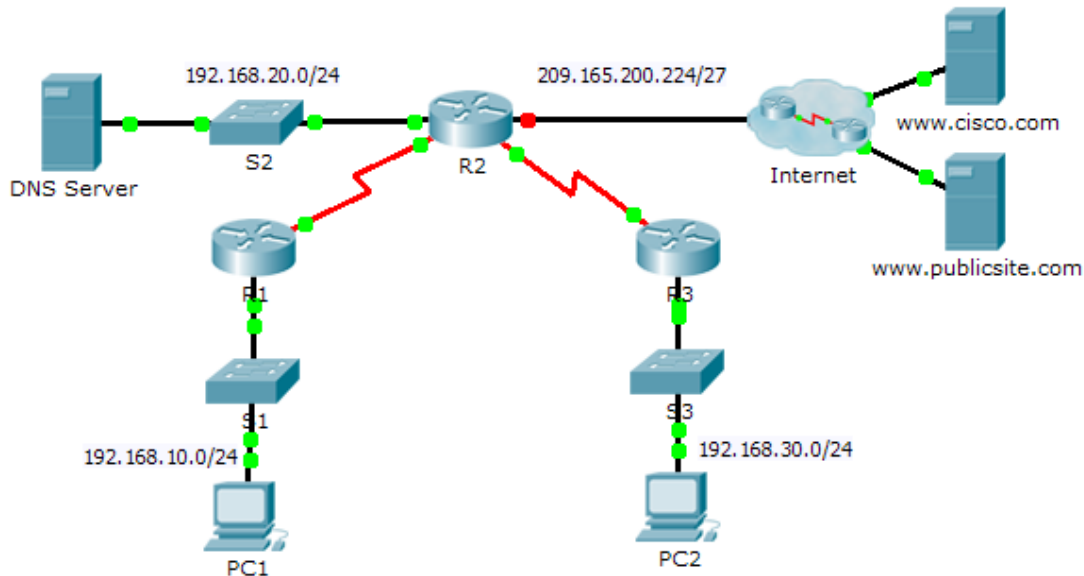# Packet Tracer - Configuring DHCP Using Cisco IOS

Topology

Addressing Table

Device	Interface	IPv4 Address	Subnet Mask	Default Gateway
R1	G0/0	192.168.10.1	255.255.255.0	N/A
	S0/0/0	10.1.1.1	255.255.255.252	N/A
R2	G0/0	192.168.20.1	255.255.255.0	N/A
	G0/1	DHCP Assigned	DHCP Assigned	N/A
	S0/0/0	10.1.1.2	255.255.255.252	N/A
	S0/0/1	10.2.2.2	255.255.255.252	N/A
R3	G0/0	192.168.30.1	255.255.255.0	N/A
	S0/0/1	10.2.2.1	255.255.255.0	N/A
PC1	NIC	DHCP Assigned	DHCP Assigned	DHCP Assigned
PC2	NIC	DHCP Assigned	DHCP Assigned	DHCP Assigned
DNS Server	NIC	192.168.20.254	255.255.255.0	192.168.20.1

Objectives

Part 1: Configure a Router as a DHCP Server

Part 2: Configure DHCP Relay

Part 3: Configure a Router as a DHCP Client

Part 4: Verify DHCP and Connectivity

Scenario

A dedicated DHCP server is scalable and relatively easy to manage, but can be costly to have one at every location in a network. However, a Cisco router can be configured to provide DHCP services without the need for a dedicated server. As the network technician for your company, you are tasked with configuring a Cisco router as a DHCP server to provide dynamic allocation of addresses to clients on the network. You are also required to configure the edge router as a DHCP client so that it receives an IP address from the ISP network.

Part 1: Configure a Router as a DHCP Server

Step 1: Configure the excluded IPv4 addresses.

Configure **R2** to exclude the first 10 addresses from the R1 and R3 LANs. All other addresses should be available in the DHCP address pool.

Step 2: Create a DHCP pool on R2 for the R1 LAN.

a. Create a DHCP pool named **R1-LAN** (case-sensitive).

b. Configure the DHCP pool to include the network address, the default gateway, and the IP address of the DNS server.

Step 3: Create a DHCP pool on R2 for the R3 LAN.

a.   Create a DHCP pool named **R3-LAN** (case-sensitive).

b. Configure the DHCP pool to include the network address, the default gateway, and the IP address of the DNS server.

Part 2: Configure DHCP Relay

Step 1: Configure R1 and R3 as a DHCP relay agent.

Step 2: Set PC1 and PC2 to receive IP addressing information from DHCP.

Part 3: Configure R2 as a DHCP Client

a. Configure the Gigabit Ethernet 0/1 interface on R2 to receive IP addressing from DHCP and activate the interface.

Note: Use Packet Tracer's **Fast Forward Time** feature to speed up the process or wait until R2 forms an EIGRP adjacency with the ISP router.

b. Use the **show ip interface brief** command to verify that R2 received an IP address from DHCP.

Part 4: Verify DHCP and Connectivity

Step 1: Verify DHCP bindings.

```
R2# show ip dhcp binding
IP address       Client-ID/              Lease expiration        Type
                 Hardware address
192.168.10.11    0002.4AA5.1470          --                      Automatic
192.168.30.11    0004.9A97.2535          --                      Automatic
```

Step 2: Verify configurations.

Verify that **PC1** and **PC2** can now ping each other and all other devices.