

Tutorial 6

1. R1 acts as Cisco IOS DHCPv4 server assigns and manages IPv4 addresses from specified address pools within the router to DHCPv4 clients. You are required to exclude first 5 IP addresses from both of the LANs. Write down the commands for R1.

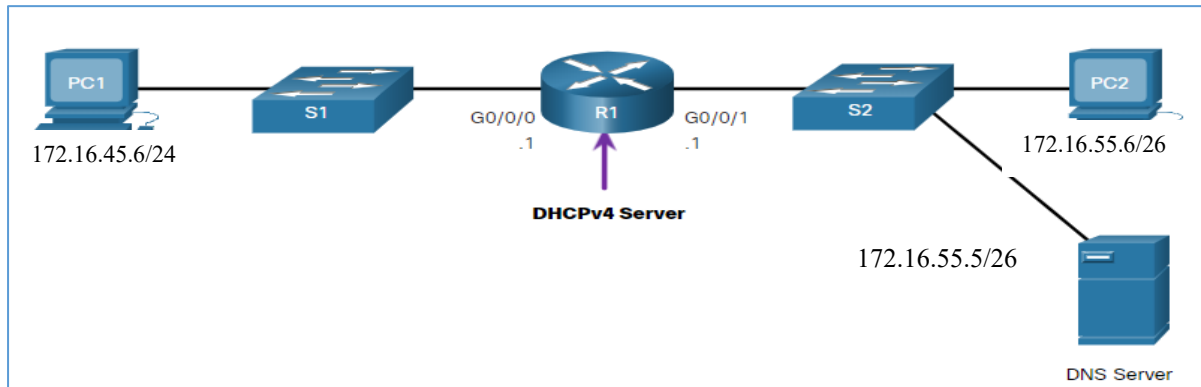


Figure 1-1: A network topology

2. A network administrator has setup a network topology as shown in Figure2-1 and configures DHCP, Syslog and NTP services as shown in Figure 2-2.

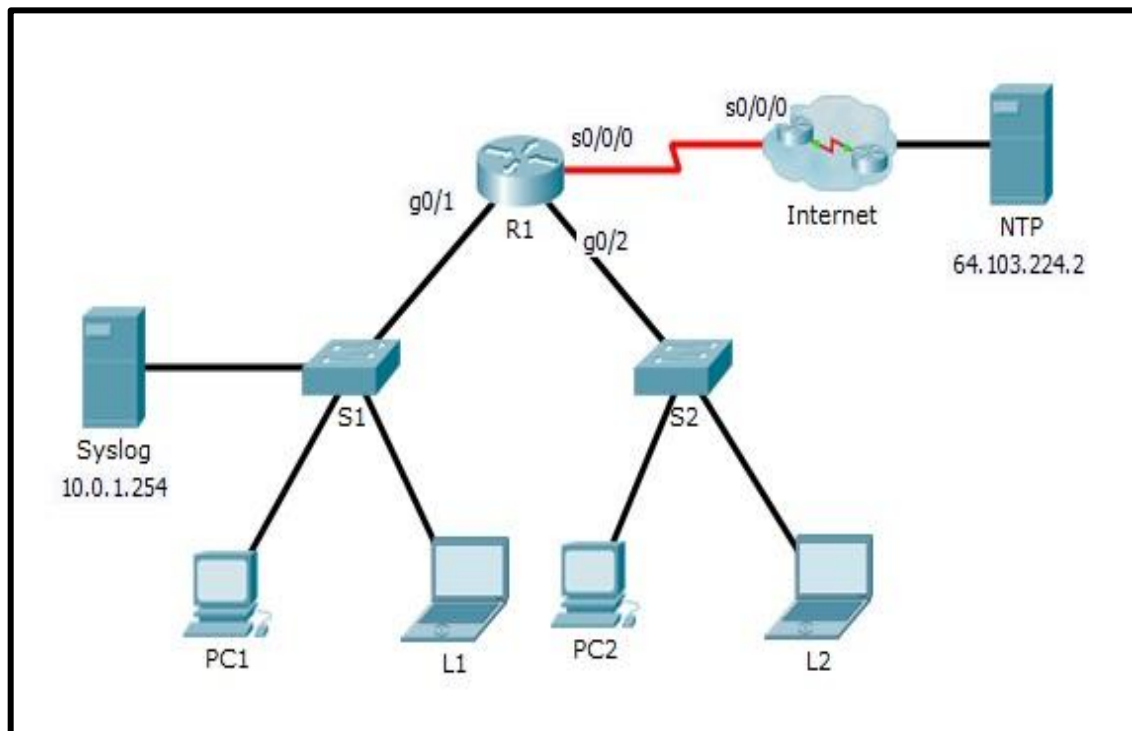


Figure 2-1: A network topology

```
service timestamps log datetime msec

hostname R1

ip dhcp excluded-address 10.0.1.254
ip dhcp excluded-address 10.0.3.1 10.0.3.3
ip dhcp excluded-address 10.0.1.1 10.0.1.2

ip dhcp pool 10.0.1.X
 network 10.0.1.0 255.255.255.0
 default-router 10.0.1.1

interface GigabitEthernet0/1
 ip address 10.0.1.1 255.255.255.0

interface GigabitEthernet0/2
 ip address 10.0.3.1 255.255.255.0

interface Serial0/0/0
 ip address 209.165.14.2 255.255.255.0

ip route 0.0.0.0 0.0.0.0 Serial0/0/0

ntp server 64.103.224.2 key 0
```

Figure 2-2: Partial output of “show running-config”

- (i) DHCP is not functioning for PC2 and L2 when the network administrator tried to release and renew IP addresses as shown in Figure 2-3. Based on Figure 2-1 and Figure 2-2, **identify** and **rectify** the problem.

```
PC>ipconfig /release

IP Address.....: 0.0.0.0
Subnet Mask.....: 0.0.0.0
Default Gateway...: 0.0.0.0
DNS Server.....: 0.0.0.0

PC>ipconfig /renew
DHCP request failed.
```

Figure2-3: Sample output of “ipconfig /release” and “ipconfig /renew”

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a) DHCP (Dynamic Host Configuration Protocol) configurations are to be configured in BE-DHCP router. PC-V, PC-JK, PC-HOPE and PC-JM should obtain the IP addresses and other DHCP configurations automatically from BE-DHCP router as shown in Figure 5-1. Use Table 5-1 to document the DHCP configurations with justifications. (16 marks)

Router name	Configurations	Justifications

Q4. With reference to a network topology shown in Figure 4-1 and output of “show run” configurations in Figure 4-2, answer the followings.

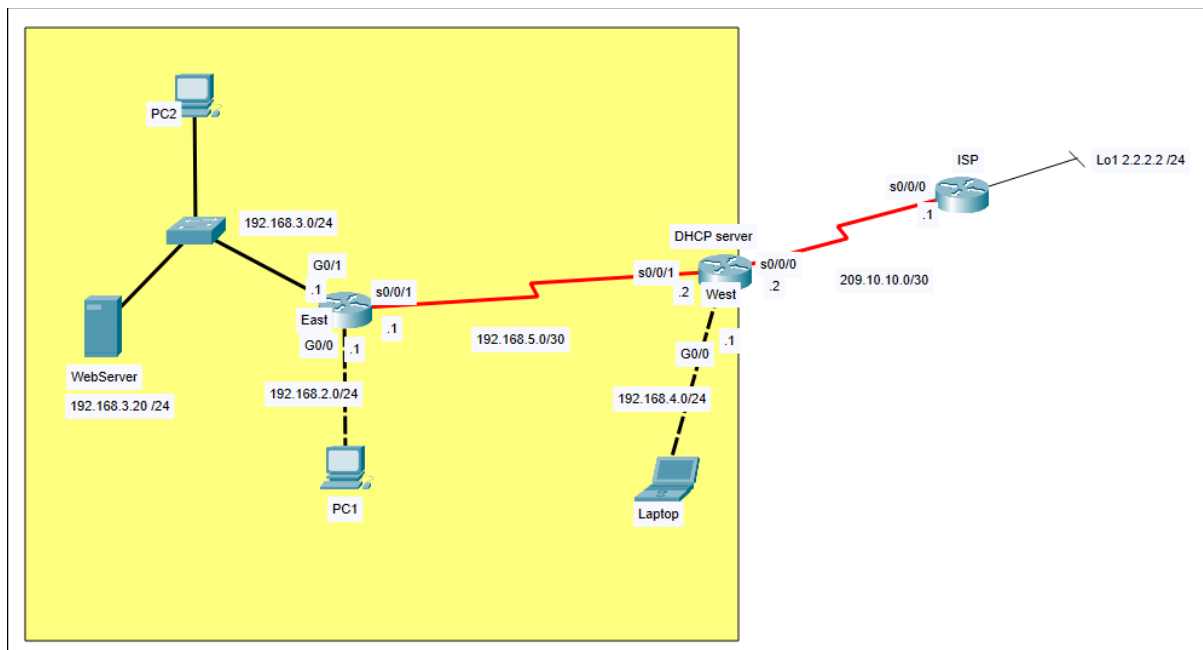


Figure 4-1: A network topology

East	West
<pre>interface GigabitEthernet0/0 ip address 192.168.2.1 255.255.255.0 interface GigabitEthernet0/1 ip address 192.168.3.1 255.255.255.0 interface Serial0/0/1 ip address 192.168.5.1 255.255.255.252 clock rate 64000</pre>	<pre>ip dhcp excluded-address 192.168.2.1 192.168.2.10 ip dhcp excluded-address 192.168.3.1 192.168.3.10 ip dhcp excluded-address 192.168.4.1 192.168.4.10 ip dhcp pool EastG0/0 network 192.168.2.0 255.255.255.0 ip dhcp pool EastG0/1 network 192.168.3.0 255.255.255.0 ip dhcp pool WestG0/0 network 192.168.4.0 255.255.255.0 interface GigabitEthernet0/0 ip address 192.168.4.1 255.255.255.0 interface Serial0/0/0 ip address 209.10.10.2 255.255.255.252 interface Serial0/0/1 ip address 192.168.5.2 255.255.255.252 ip route 0.0.0.0 0.0.0.0 Serial0/0/0</pre>

Figure 4-2: Output of “show run” command

- a) DHCP (Dynamic Host Control Protocol) server configurations were configured in the West router. PC1, PC2 and Laptop were unable to obtain the IP addresses and other DHCP configurations successfully. Evaluate the DHCP configurations in Figures 4-1 and 4-2. Use Table 4-1 to document the identified errors, provide the solutions/correct configurations for the respective errors and lastly justified your answers. (9 marks)

Table 4-1: Documentation Table

Item	Problems	Solutions	Justifications
(i)			
(ii)			

Q5. Pass year question 202301

OSPF and static routing are implemented in the respective routers as shown in Figure 3-1 network topology. All devices can communicate with each other. With reference to Figure 3-1, answer the following questions.

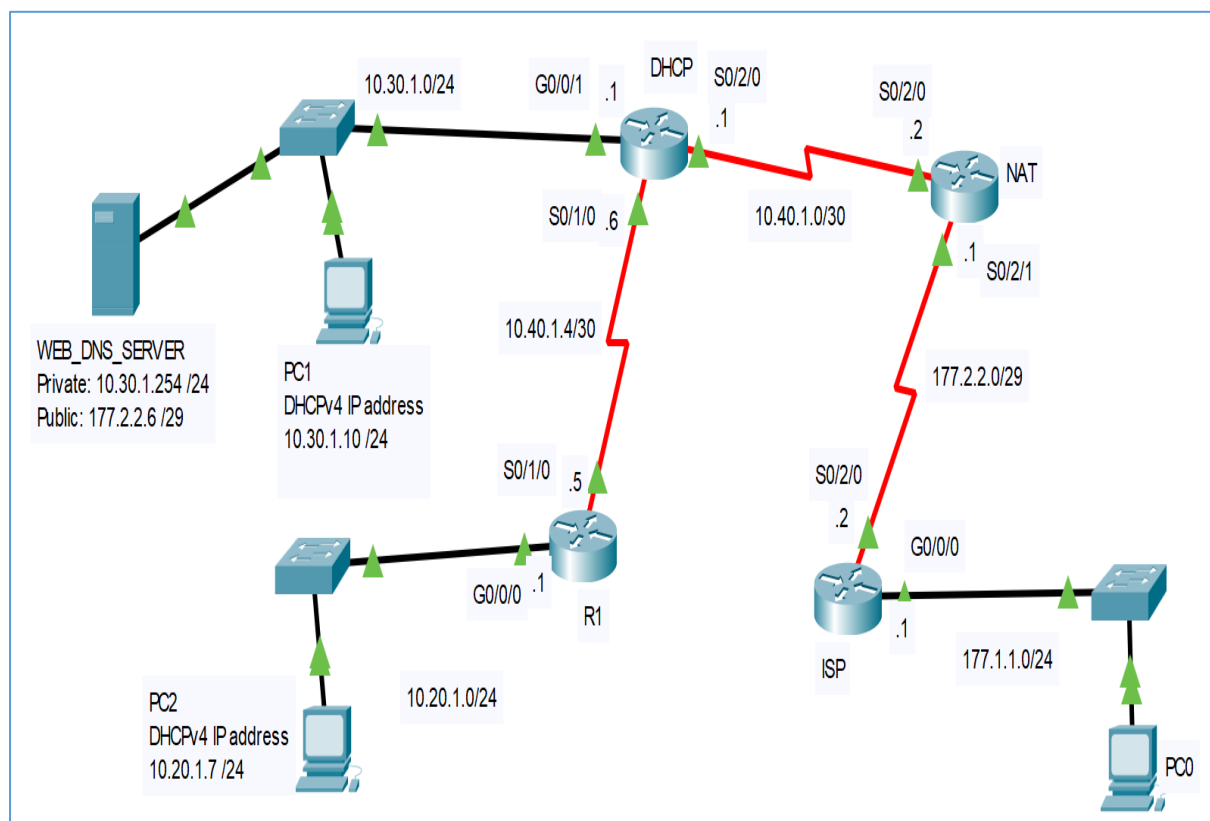


Figure 3-1: A network topology

DHCP	R1
ip dhcp excluded-address 10.30.1.1 10.30.1.9	interface GigabitEthernet0/0/0
ip dhcp pool DHCP	ip address 10.20.1.1 255.255.255.0
network 10.10.1.0 255.255.255.0	interface Serial0/1/0
dns-server 10.30.1.254	ip address 10.40.1.5 255.255.255.252
interface GigabitEthernet0/0/1	:
ip address 10.30.1.1 255.255.255.0	:
interface Serial0/1/0	
ip address 10.40.1.6 255.255.255.252	
clock rate 2000000	
interface Serial0/2/0	
ip address 10.40.1.1 255.255.255.252	
clock rate 2000000	
:	
:	

Figure 3-2: Partial output of “show run” commands

DHCP (Dynamic Host Configuration Protocol) server configurations are implemented in **DHCP** router. PC1 and PC2 were unable to obtain the IP addresses and other DHCP configurations successfully. Analyze the DHCP configurations in Figures 3-1 and 3-2. Use Table 3-1 to document all errors, provide the solutions/correct configurations for the respective errors and lastly justified your answers. State your assumptions in your answers.

Table 3-1: Documentation Table

Items	Errors	Solutions	Justifications

(12 marks)