**Logo

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*Independent University Bangladesh (IUB)* **Course ID: CSE316L  
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Section: 04  
  
  
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Lab Report 8**

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**Lab Experiment 8:** DHCP configuration

**Objective:**

Assume that R1 is DHCP server and R2 as a DHCP client in one interface and Relay in

another interface.

1. Configure three DHCP pools on R1:

a. 10pool:

Range: 10.0.0.0/24

Default Gateway: 10.0.0.1

DNS Server: 10.0.0.1

b. 20pool:

Range: 20.0.0.0/24

Default Gateway: 20.0.0.1

DNS Server: 20.0.0.1

c. 12pool:

Range: 192.168.12.0/24

2. Configure R2’s G0/0 interface as a DHCP client, then enable the interface

3. Configure R2’s G0/1 interface as a DHCP relay agent so that hosts on the 20.0.0.0/24

network can get IP address

4. Automatic assignment of appropriate (dhcp) IP address

5. Ping from all PCs from Router-A

6. Ping All PC to all PC

**Tools and Materials:**

For our experiment, we will be using the **Cisco Packet Tracer** software to simulate the workings.

**Instructions:**

**Setting up connections**

1. Open Cisco Packet Tracer.
2. Bring 2 [Routers] from the [Network Devices] section. We will be using the 1941 router.
3. Bring 2 [Switches] from the [Network Devices] section. We will be using the 2950-24 switch.
4. Bring 4 [PC] from the [End Devices] section.
5. Set up the connection R1 to R2, R1 to Switch0, Switch0 to PC1, Switch0 to PC2, R2 to Switch1, Switch1 to PC4 and Switch1 to PC3 using an automatic connection mode denoted by a lightning symbol.

Diagram

Description automatically generated

**Set starting IP address of routers**

**R1**

1. Single click on **R1**.
2. Go to **CLI** tab.
3. The following commands are run below with their output:

**Output:**

Router>enable

Router#config t

Enter configuration commands, one per line. End with CNTL/Z.

Router(config)#hostname R1

R1(config)#interface Gig 0/1

R1(config-if)#no shutdown

R1(config-if)#

%LINK-5-CHANGED: Interface GigabitEthernet0/1, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/1, changed state to up

R1(config-if)#exit

R1(config)#interface gig 0/0

R1(config-if)#no shutdown

R1(config-if)#

%LINK-5-CHANGED: Interface GigabitEthernet0/0, changed state to up

R1(config-if)#exit

R1(config)#int gig 0/1

R1(config-if)#ip address 10.0.0.1 255.255.255.0

R1(config-if)#exit

R1(config)#int gig 0/0

R1(config-if)#ip address 192.168.12.1 255.255.255.0

R1(config-if)#

**R2**

1. Single click on **R2**.
2. Go to **CLI** tab.
3. The following commands are run below with their output:

**Output:**

Router>enable

Router#config t

Enter configuration commands, one per line. End with CNTL/Z.

Router(config)#hostname R2

R2(config)#int gig 0/1

R2(config-if)#no shutdown

R2(config-if)#

%LINK-5-CHANGED: Interface GigabitEthernet0/1, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/1, changed state to up

R2(config-if)#ip address 20.0.0.1 255.255.255.0

R2(config-if)#

**Configure DHCP**

1. Single click on **R1**.
2. Go to **CLI** tab.
3. The following commands are run below with their output:

**Console Output:**

R1>enable

R1#config t

Enter configuration commands, one per line. End with CNTL/Z.

R1(config)#ip dhcp pool 10pool

R1(dhcp-config)#network 10.0.0.0 255.255.255.0

R1(dhcp-config)#default-router 10.0.0.1

R1(dhcp-config)#dns-server 10.0.0.1

R1(dhcp-config)#exit

R1(config)#ip dhcp pool 20pool

R1(dhcp-config)#network 20.0.0.0 255.255.255.0

R1(dhcp-config)#default-router 20.0.0.1

R1(dhcp-config)#dns-server 20.0.0.1

R1(dhcp-config)#exit

R1(config)#ip dhcp pool 12pool

R1(dhcp-config)#network 192.168.12.0 255.255.255.0

R1(dhcp-config)#exit

R1(config)#

**Obtain IP address from DHCP server**

**PC1**

1. Single click on PC1.
2. Go to Desktop tab on top.
3. Go to Command Prompt.
4. The commands and their output are shown below.

**Command Line Output:**

Packet Tracer PC Command Line 1.0

C:\>ipconfig

FastEthernet0 Connection:(default port)

Connection-specific DNS Suffix..:

Link-local IPv6 Address.........: FE80::2D0:BAFF:FE7B:DA9A

IPv6 Address....................: ::

IPv4 Address....................: 0.0.0.0

Subnet Mask.....................: 0.0.0.0

Default Gateway.................: ::

0.0.0.0

Bluetooth Connection:

Connection-specific DNS Suffix..:

Link-local IPv6 Address.........: ::

IPv6 Address....................: ::

IPv4 Address....................: 0.0.0.0

Subnet Mask.....................: 0.0.0.0

Default Gateway.................: ::

0.0.0.0

C:\>ipconfig /renew

IP Address......................: 10.0.0.2

Subnet Mask.....................: 255.255.255.0

Default Gateway.................: 10.0.0.1

DNS Server......................: 10.0.0.1

C:\>

**PC2**

1. Single click on PC2.
2. Go to Desktop tab on top.
3. Go to Command Prompt.
4. The commands and their output are shown below.

**Command Line Output:**

Packet Tracer PC Command Line 1.0

C:\>ipconfig

FastEthernet0 Connection:(default port)

Connection-specific DNS Suffix..:

Link-local IPv6 Address.........: FE80::201:C9FF:FE6B:4CC4

IPv6 Address....................: ::

IPv4 Address....................: 0.0.0.0

Subnet Mask.....................: 0.0.0.0

Default Gateway.................: ::

0.0.0.0

Bluetooth Connection:

Connection-specific DNS Suffix..:

Link-local IPv6 Address.........: ::

IPv6 Address....................: ::

IPv4 Address....................: 0.0.0.0

Subnet Mask.....................: 0.0.0.0

Default Gateway.................: ::

0.0.0.0

C:\>ipconfig /renew

IP Address......................: 10.0.0.3

Subnet Mask.....................: 255.255.255.0

Default Gateway.................: 10.0.0.1

DNS Server......................: 10.0.0.1

C:\>

**Obtain R2 IP address from DHCP server and set Relay-Agent**

1. Single click on R2.
2. Go to CLI tab.
3. The following commands are run below with their output:

**Console Output:**

R2>enable

R2#config t

Enter configuration commands, one per line. End with CNTL/Z.

R2(config)#int gig 0/0

R2(config-if)#ip address dhcp

R2(config-if)#no shutdown

R2(config-if)#

%LINK-5-CHANGED: Interface GigabitEthernet0/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0, changed state to up

%DHCP-6-ADDRESS\_ASSIGN: Interface GigabitEthernet0/0 assigned DHCP address 192.168.12.2, mask 255.255.255.0, hostname R2

R2(config-if)#exit

R2(config)#exit

R2#

%SYS-5-CONFIG\_I: Configured from console by console

R2#config t

Enter configuration commands, one per line. End with CNTL/Z.

R2(config)#int gig 0/1

R2(config-if)#ip helper-address 192.168.12.1

R2(config-if)#

**Obtain PC3 IP address from DHCP server**

1. Single click on PC3.
2. Go to Desktop tab on top.
3. Go to Command Prompt.
4. The commands and their output are shown below.

**Command Line Output:**

Packet Tracer PC Command Line 1.0

C:\>ipconfig

FastEthernet0 Connection:(default port)

Connection-specific DNS Suffix..:

Link-local IPv6 Address.........: FE80::2E0:B0FF:FE4E:5716

IPv6 Address....................: ::

IPv4 Address....................: 0.0.0.0

Subnet Mask.....................: 0.0.0.0

Default Gateway.................: ::

0.0.0.0

Bluetooth Connection:

Connection-specific DNS Suffix..:

Link-local IPv6 Address.........: ::

IPv6 Address....................: ::

IPv4 Address....................: 0.0.0.0

Subnet Mask.....................: 0.0.0.0

Default Gateway.................: ::

0.0.0.0

C:\>ipconfig /release

Port is not using DHCP.

C:\>ipconfig /renew

DHCP request failed.

We were not able to find IP address for PC3 from DHCP server.

**View running configuration**

**R1**

1. Single click on R1.
2. Go to CLI tab.
3. The following commands are run below with their output:

**Console Output:**

R1>enable

R1#show running-config

Building configuration...

Current configuration : 882 bytes

!

version 15.1

no service timestamps log datetime msec

no service timestamps debug datetime msec

no service password-encryption

!

hostname R1

!

!

!

!

!

ip dhcp pool 10pool

network 10.0.0.0 255.255.255.0

default-router 10.0.0.1

dns-server 10.0.0.1

ip dhcp pool 20pool

network 20.0.0.0 255.255.255.0

default-router 20.0.0.1

dns-server 20.0.0.1

ip dhcp pool 12pool

network 192.168.12.0 255.255.255.0

!

!

!

R1#

**R2**

1. Single click on R2.
2. Go to CLI tab.
3. The following commands are run below with their output:

**Output:**

R2>enable

R2#show running-config

Building configuration...

Current configuration : 640 bytes

!

version 15.1

no service timestamps log datetime msec

no service timestamps debug datetime msec

no service password-encryption

!

hostname R2

!

!

!

!

!

!

!

!

ip cef

no ipv6 cef

!

!

!

!

license udi pid CISCO1941/K9 sn FTX15242A3C-

!

!

!

!

!

!

!

!

!

!

!

spanning-tree mode pvst

!

!

!

!

!

!

interface GigabitEthernet0/0

ip address dhcp

duplex auto

speed auto

!

interface GigabitEthernet0/1

ip address 20.0.0.1 255.255.255.0

ip helper-address 192.168.12.1

duplex auto

speed auto

!

interface Vlan1

no ip address

shutdown

!

ip classless

!

ip flow-export version 9

!

!

!

!

!

!

!

!

line con 0

!

line aux 0

!

line vty 0 4

R2#

**Obtain PC4 IP address by using IP configuration**

1. Single click on PC4.
2. Go to Desktop tab on top.
3. Go to IP Configuration.
4. Click on DHCPradio button to get IP address from DHCP server.

We were not able to find IP address for PC4 from DHCP server.