



COMPUTER NETWORKS LAB

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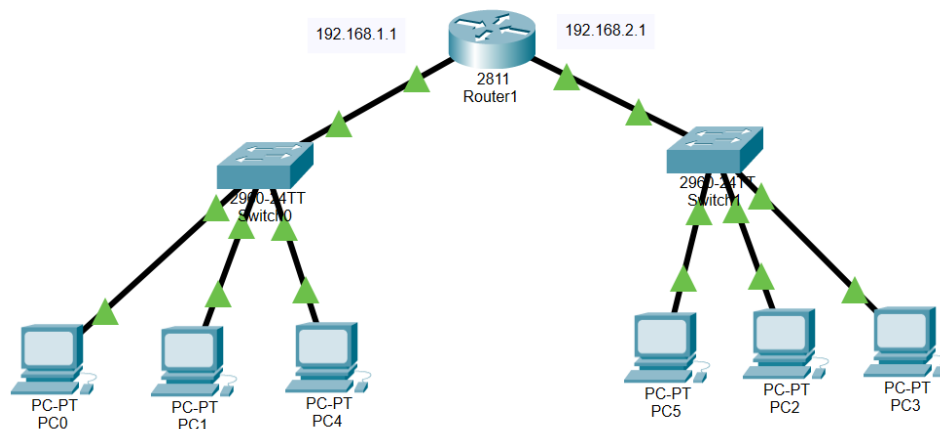
Department of Computer Science

● Dynamic Host Configuration Protocol (DHCP):

The **Dynamic Host Configuration Protocol (DHCP)** is a network management protocol used on Internet Protocol (IP) networks for automatically assigning IP addresses and other communication parameters to devices connected to the network using a client–server architecture.

DHCP services exist for networks running Internet Protocol version 4 (IPv4), as well as version 6 (IPv6). The IPv6 version of the DHCP protocol is commonly called DHCPv6.

● ARCHITECTURE AND CONFIGURATION:



● Configure DHCP Server through CLI:

```
Router1
Physical Config CLI Attributes
IOS Command Line Interface

--- System Configuration Dialog ---
Would you like to enter the initial configuration dialog? [yes/no]: no

Press RETURN to get started!

Router>
Router>
Router>en
Router#config t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#
Router(config)#
Router(config)#host
% Incomplete command.
Router(config)#hostname dhcp-server
dhcp-server(config)#int f0/0
dhcp-server(config-if)#ip add 192.168.1.1 255.255.255.0
dhcp-server(config-if)#no sh

dhcp-server(config-if)#
%LINK-5-CHANGED: Interface FastEthernet0/0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to up

dhcp-server(config-if)#
dhcp-server(config-if)#int f0/1
dhcp-server(config-if)#ip add 192.168.2.1 255.255.255.0
dhcp-server(config-if)#no sh
```

```

dhcp-server(config-if)#
%LINK-5-CHANGED: Interface FastEthernet0/1, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state to up

dhcp-server(config-if)#exit
dhcp-server(config)#do sh ip int br
Interface      IP-Address      OK? Method Status      Protocol
FastEthernet0/0 192.168.1.1     YES manual up          up
FastEthernet0/1 192.168.2.1     YES manual up          up
Vlan1          unassigned      YES unset  administratively down down
dhcp-server(config)#
dhcp-server(config)#ip dhcp ex
% Incomplete command.
dhcp-server(config)#ip dhcp excluded-address 192.168.1.1
dhcp-server(config)#ip dhcp excluded-address 192.168.2.1
dhcp-server(config)#
dhcp-server(config)#
dhcp-server(config)#
dhcp-server(config)#ip dhcp pool 192.168.1.1
dhcp-server(dhcp-config)#net
% Incomplete command.
dhcp-server(dhcp-config)#network 192.168.1.0 255.255.255.0
dhcp-server(dhcp-config)#de
% Incomplete command.
dhcp-server(dhcp-config)#default-router 192.168.1.1
dhcp-server(dhcp-config)#dns-server 8.8.8.8
dhcp-server(dhcp-config)#exit
dhcp-server(config)#ip dhcp pool 192.168.2.1
dhcp-server(dhcp-config)#network 192.168.2.0 255.255.255.0
dhcp-server(dhcp-config)#default-router 192.168.2.1
dhcp-server(dhcp-config)#dns-server 8.8.8.8
dhcp-server(dhcp-config)#

```

```

dhcp-server(dhcp-config)#dns-server 8.8.8.8
dhcp-server(dhcp-config)#
dhcp-server(dhcp-config)#
dhcp-server(dhcp-config)#z
% Ambiguous command: "z"
dhcp-server(config)#^Z
dhcp-server#
%SYS-5-CONFIG_I: Configured from console by console

dhcp-server#sh run | sec dhcp
hostname dhcp-server
ip dhcp excluded-address 192.168.1.1
ip dhcp excluded-address 192.168.2.1
ip dhcp pool 192.168.1.1
network 192.168.1.0 255.255.255.0
default-router 192.168.1.1
dns-server 8.8.8.8
ip dhcp pool 192.168.2.1
network 192.168.2.0 255.255.255.0
default-router 192.168.2.1
dns-server 8.8.8.8
dhcp-server#
dhcp-server#

```

● PC0,PC1 IP Configuration through DHCP:



Physical Config **Desktop** Programming At

IP Configuration

Interface FastEthernet0

IP Configuration

☒ DHCP ☐ Static

IP Address 192.168.1.2

Subnet Mask 255.255.255.0

Default Gateway 192.168.1.1

DNS Server 8.8.8.8



Physical Config **Desktop** Programming /

IP Configuration

Interface FastEthernet0

IP Configuration

☒ DHCP ☐ Static


IP Address 192.168.1.3

Subnet Mask 255.255.255.0

Default Gateway 192.168.1.1

DNS Server 8.8.8.8

● PC2,PC3 IP Configuration through DHCP:

 PC2

Physical Config **Desktop** Programming

IP Configuration

Interface FastEthernet0

IP Configuration

☒ DHCP ☐ Static

IP Address 192.168.2.3

Subnet Mask 255.255.255.0

Default Gateway 192.168.2.1

DNS Server 8.8.8.8

 PC3

Physical Config **Desktop** Programming

IP Configuration

Interface FastEthernet0

IP Configuration

☒ DHCP ☐ Static


IP Address 192.168.2.4

Subnet Mask 255.255.255.0

Default Gateway 192.168.2.1

DNS Server 8.8.8.8

● PING Command from PC0 to PC5 :

 PC5

Physical Config **Desktop** Programming Attributes

Command Prompt

Packet Tracer PC Command Line 1.0
C:\>ping 192.168.1.2

Pinging 192.168.1.2 with 32 bytes of data:

Request timed out.
Reply from 192.168.1.2: bytes=32 time<1ms TTL=127
Reply from 192.168.1.2: bytes=32 time<1ms TTL=127
Reply from 192.168.1.2: bytes=32 time=3ms TTL=127

Ping statistics for 192.168.1.2:
Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
Approximate round trip times in milli-seconds:
Minimum = 0ms, Maximum = 3ms, Average = 1ms

● PING Command from PC1 to PC2:

