COMSATS University Islamabad, Sahiwal Campus

COMPUTER NETWORKS LAB

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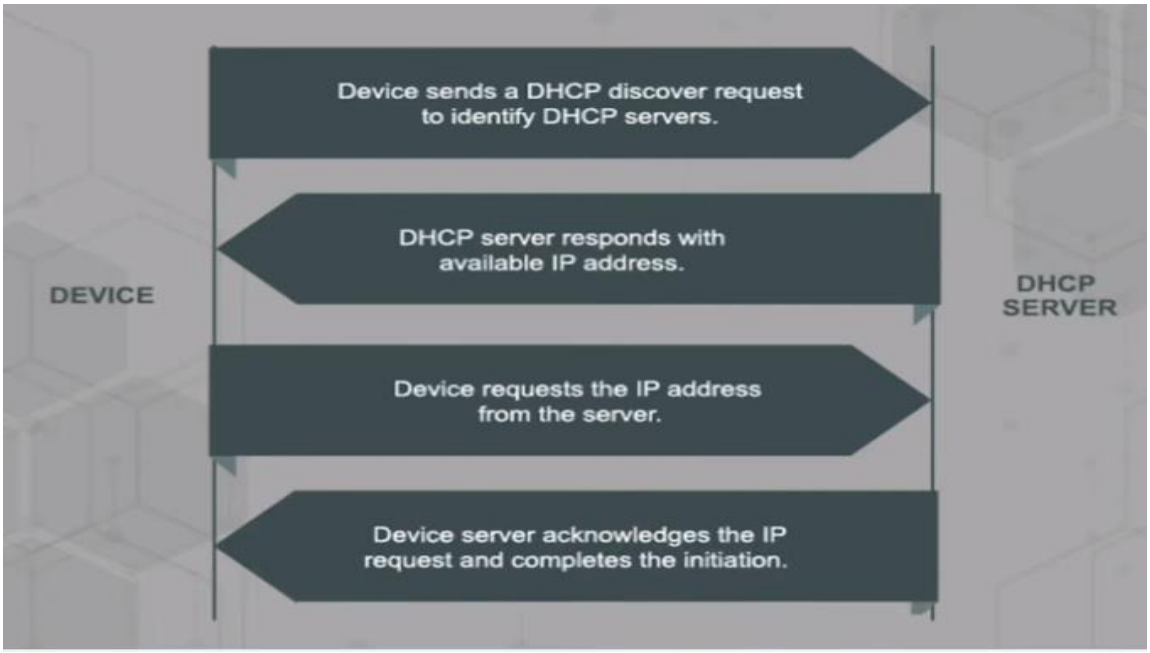
● Dynamic Host Configuration Protocol (DHCP):

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.

The technology eliminates the need for individually configuring network devices manually, and consists of two network components, a centrally installed network DHCP server and client instances of the protocol stack on each computer or device. When connected to the network, and periodically thereafter, a client requests a set of parameters from the server using DHCP.

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.



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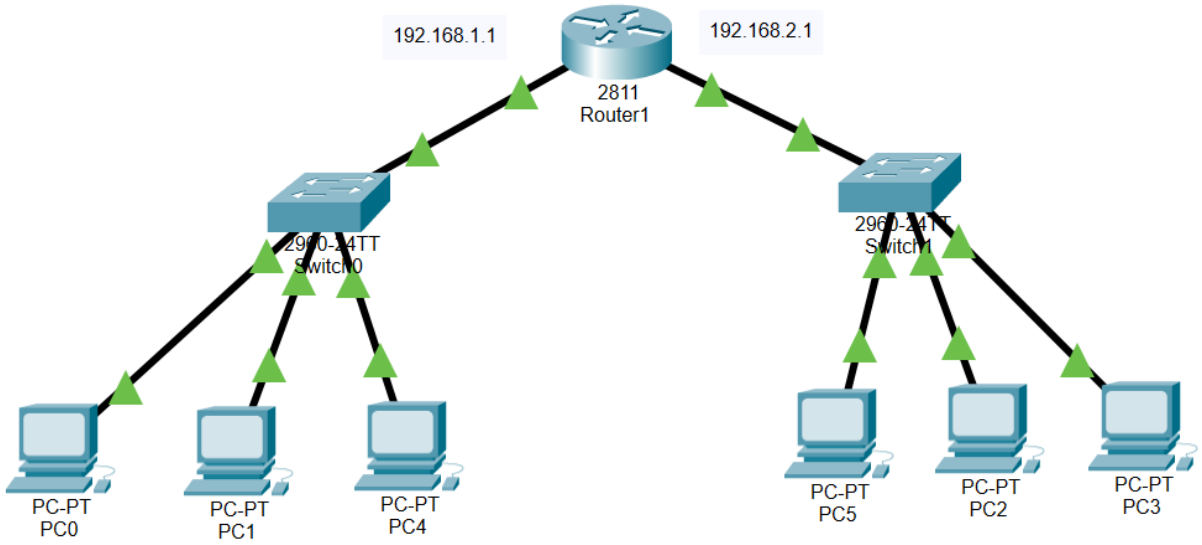
ARCHITECTURE AND CONFIGURATION:



Configure DHCP Server through CLI:

Router1

Physical Config CLI Attributes

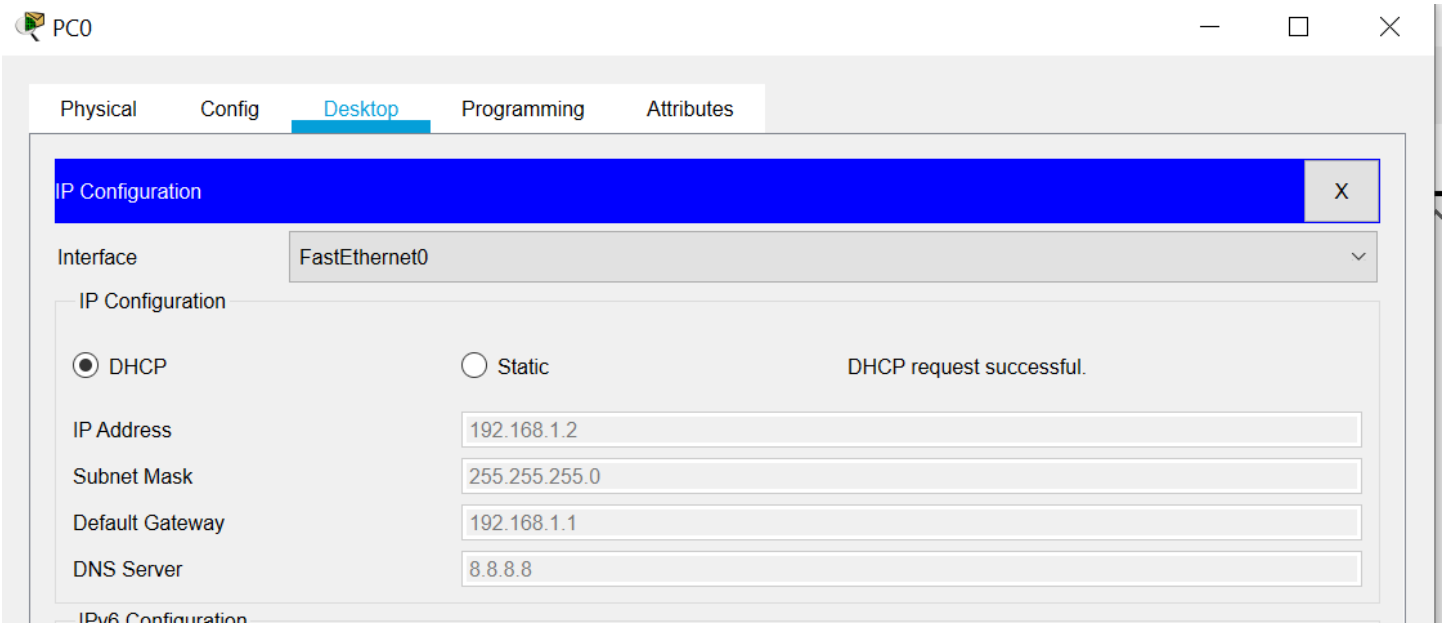
IOS Command Line Interface

```
         --- 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
```

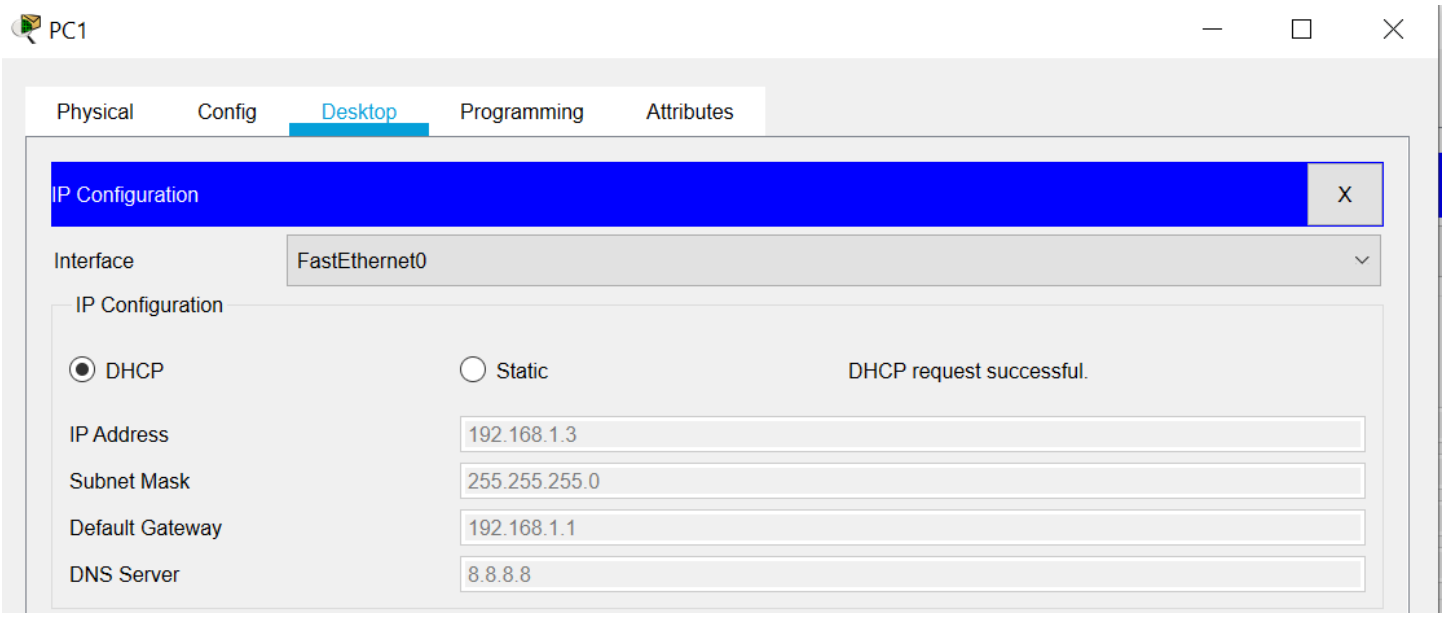
```
dhcp-server(config-if)#
%LINK-5-CHANGED: Interface FastEthernet0/1, changed state to up

%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)#
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#
```

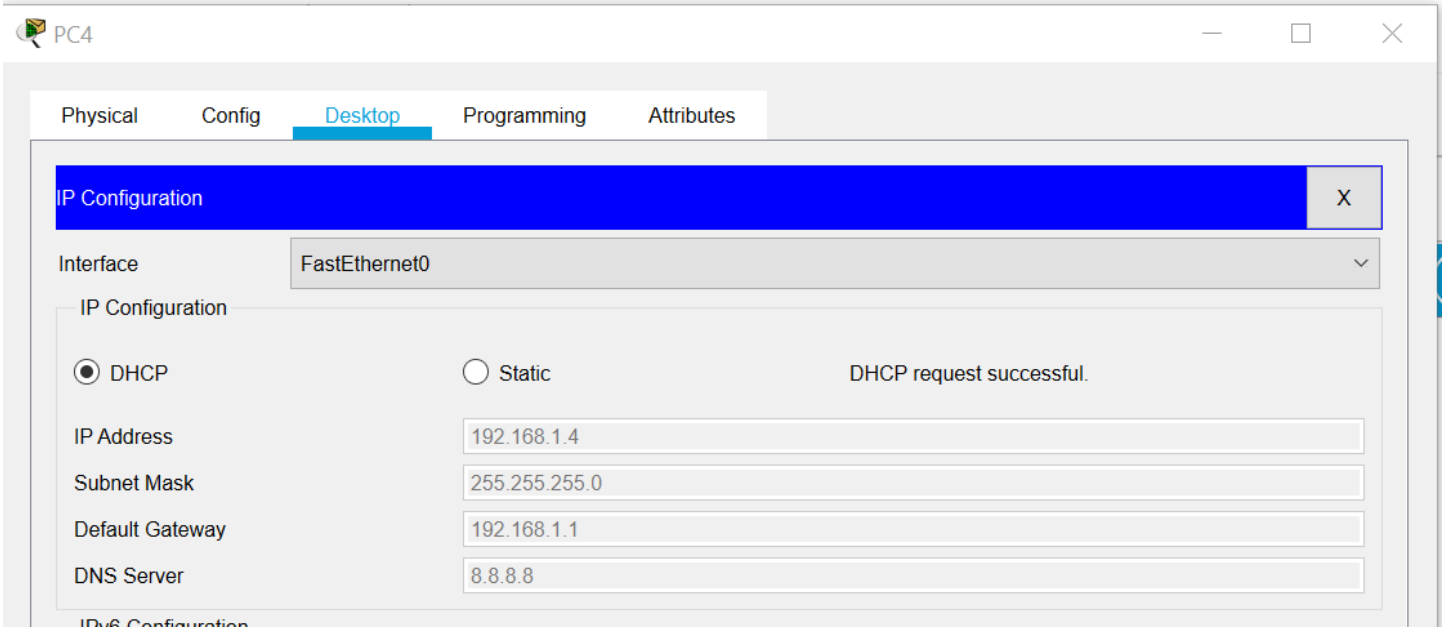
- **PC0 IP Configuration through DHCP:**



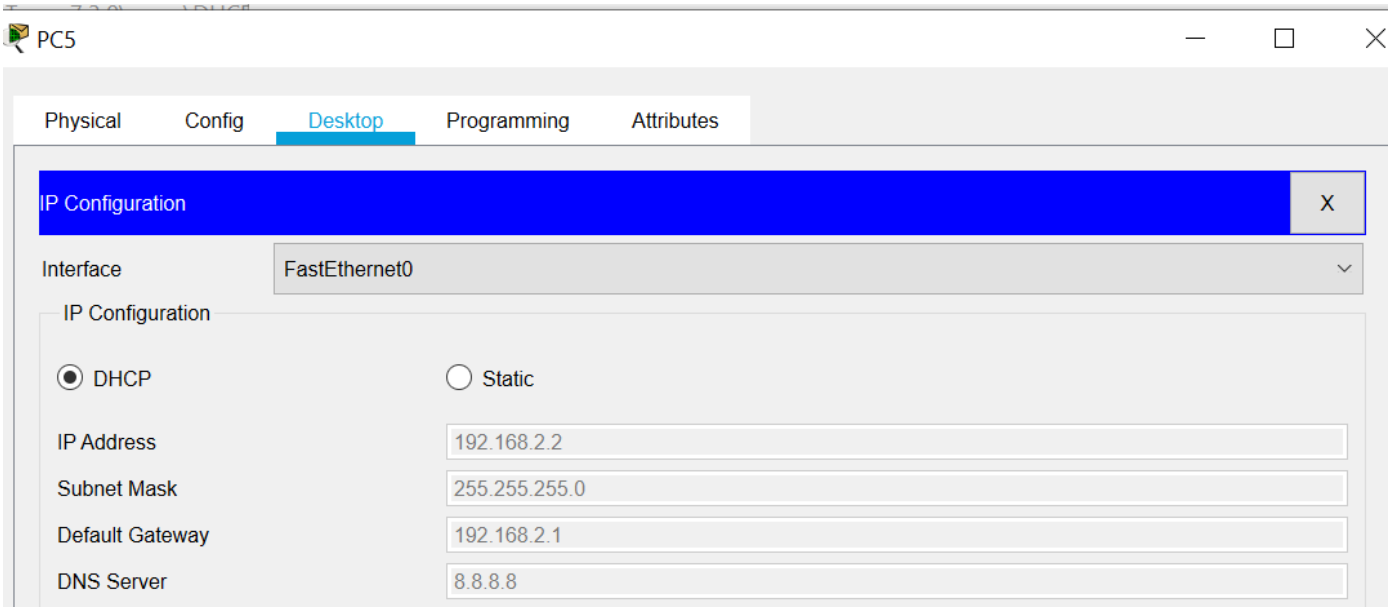
- **PC1 IP Configuration through DHCP:**



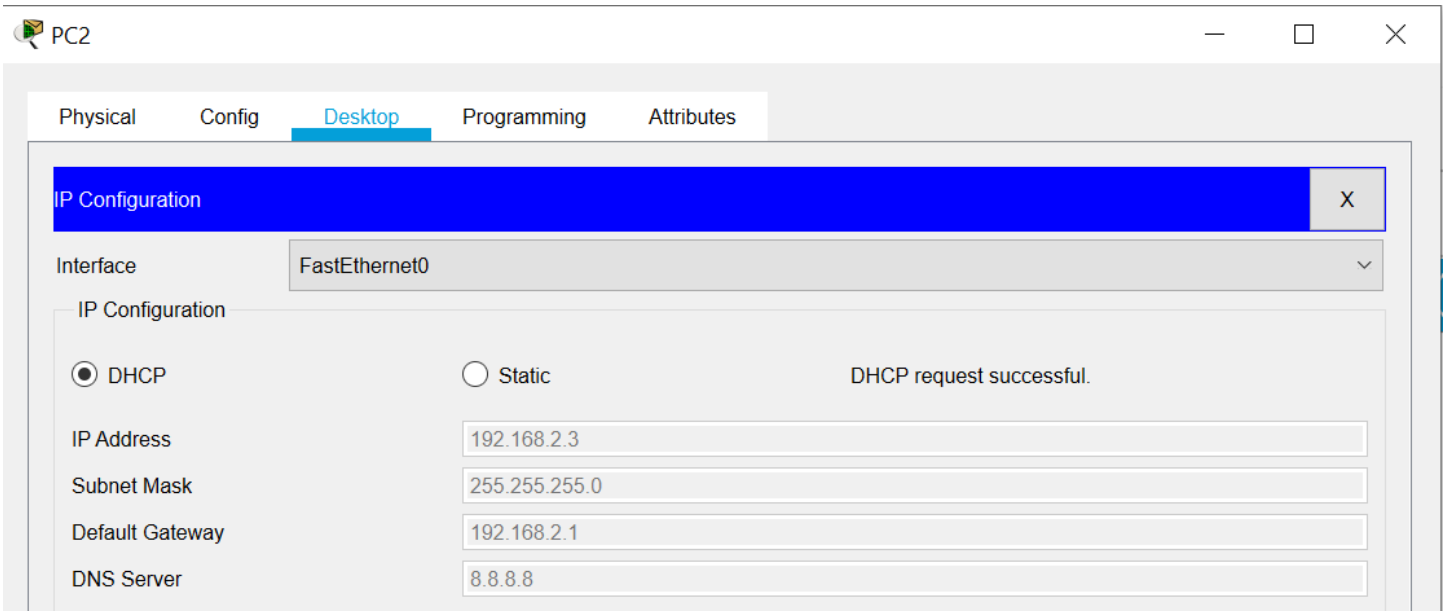
- **PC5 IP Configuration through DHCP:**



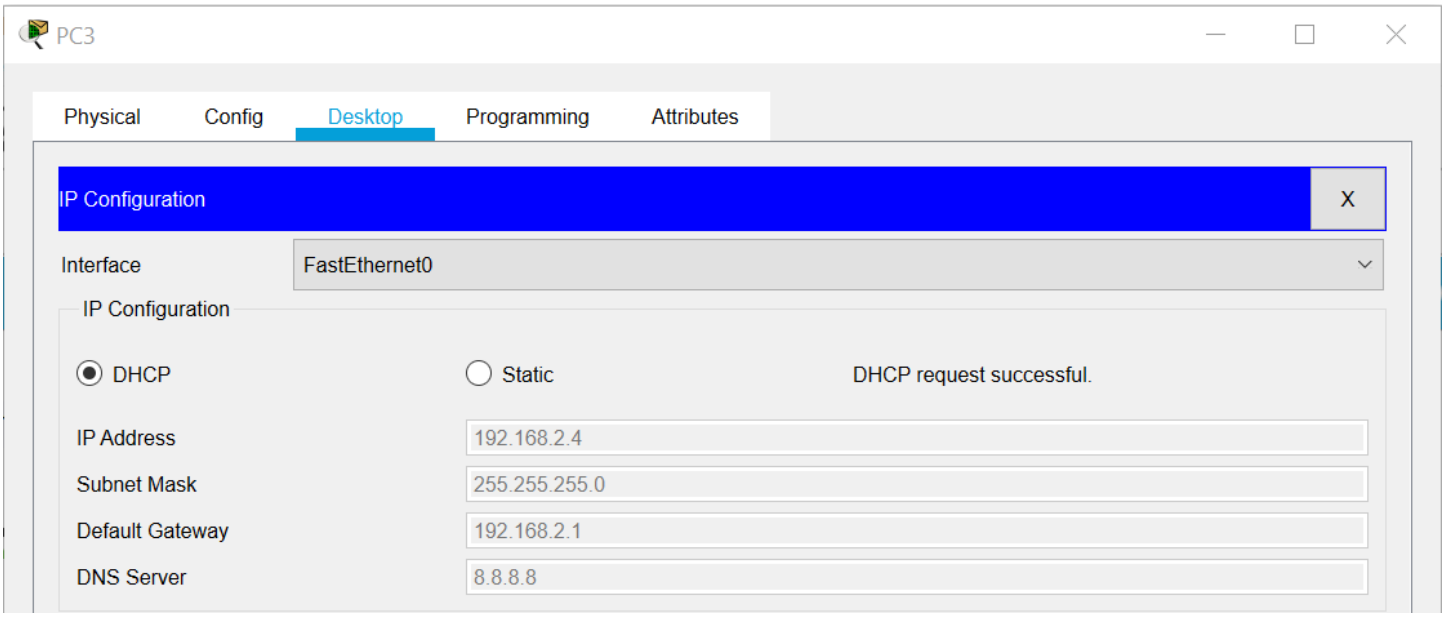
- **PC5 IP Configuration through DHCP:**



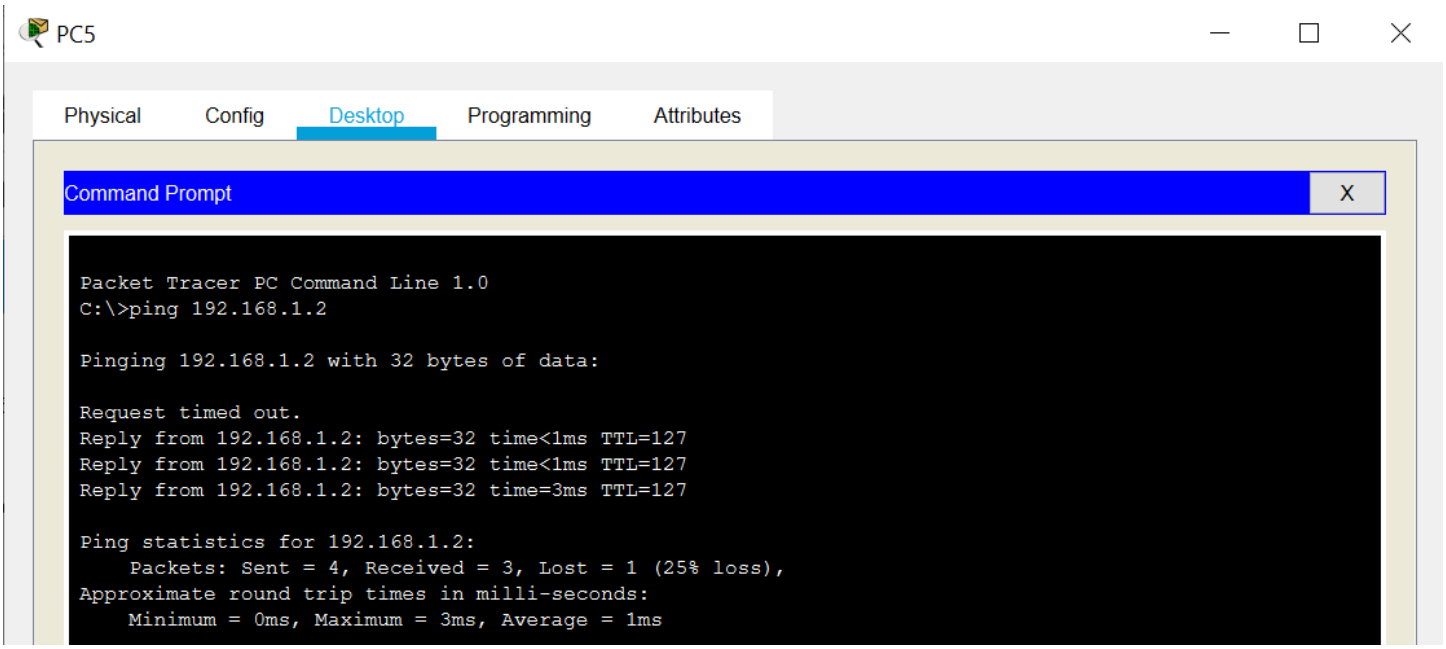
● PC2 IP Configuration through DHCP:



● PC3 IP Configuration through DHCP:



- **PING Command from PC0 to PC5 :**



- **PING Command from PC1 to PC2:**