****LAB # 11****

Dynamic Host Configuration Protocol (DHCP) Server

OBJECTIVE

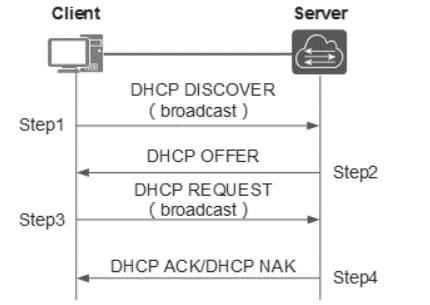
To understand and configure Dynamic Host Configuration Protocol (DHCP) Server

**THEORY**

Computer networks can be of any form like a LAN, WAN etc. If you are connected to a local LAN or an internet connection, the IP addresses form the basis of communication over computer networks. An IP address is the identity of a host or a computer device while connected to any network.

In most of the cases when you connect your computer to a LAN or internet, you’ll notice that the IP address and other information like subnet mask etc. are assigned to your computer automatically. As the name suggests, DHCP is used to control the network configuration of a host through a remote server. DHCP functionality comes installed as a default feature in most of the contemporary operating systems. DHCP is an excellent alternative to the time-consuming manual configuration of network settings on a host or a network device.

DHCP works on a client-server model. Being a protocol, it has its own set of messages that are exchanged between client and server.



Following are the messages use to assign IP to any network device

### **DHCPDISCOVER**

It is a DHCP message that marks the beginning of a DHCP interaction between client and server. This message is sent by a client (host or device connected to a network) that is connected to a local subnet. It’s a broadcast message that uses 255.255.255.255 as destination IP address while the source IP address is 0.0.0.0

### **DHCPOFFER**

It is DHCP message that is sent in response to DHCPDISCOVER by a DHCP server to DHCP client. This message contains the network configuration settings for the client that sent the DHCPDISCOVER message.

### **DHCPREQUEST**

This DHCP message is sent in response to DHCPOFFER indicating that the client has accepted the network configuration sent in DHCPOFFER message from the server.

### **DHCPACK**

This message is sent by the DHCP server in response to DHCPREQUEST received from the client. This message marks the end of the process that started with DHCPDISCOVER. The DHCPACK message is nothing but an acknowledgement by the DHCP server that authorizes the DHCP client to start using the network configuration it received from the DHCP server earlier.

### **DHCP PACKET TRACER CONFIGURATION FOR ONE BROADCAST DOMAIN**

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On routerA, firstly we will give an ip address to the router interface that is connected to the switch.Secondly that we will create a **DHCP pool** named IPD. In this pool we will mention ip addresses that will be given to the **DHCP clients**. After that we will assign the router’s interface address as a default-router address for clients. And in the last part, we will exclude some addresses with “**ip dhcp excluded address**” command, that we don’t want to use during this dynamic ip assignments. With “**ip dhcp excluded address**” command, the mentined addresses will not used in the pool.

RouterA# **config terminal**

RouterA(config)# **interface fastEthernet 1/0**

RouterA(config-if)# **ip address 192.168.10.1 255.255.255.0**

RouterA(config-if)# **no shutdown**

%LINK-5-CHANGED: Interface FastEthernet1/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet1/0, changed state to up<

RouterA(config-if)# **exit**

RouterA(config)# **ip dhcp pool IPD**

RouterA(dhcp-config)# **network 192.168.10.0 255.255.255.0**

RouterA(dhcp-config)# **default-router 192.168.10.1**

RouterA(dhcp-config)# **exit**

RouterA(config)# **ip dhcp excluded-address 192.168.10.1 192.168.10.10**

RouterA(config)# **ip dhcp excluded-address 192.168.10.12 192.168.10.14**

After this configuration, when we check the ip address of PC0, we will see the ip address **192.168.10.11** . Because it is the first available address in **DHCP pool**

We can also check the pool information with Cisco “**show ip dhcp pool**” command.

## **LAB ASSIGNMENT**

Q1.Perform [DHCP Packet Tracer Configuratin For One Broadcast Domain](https://ipcisco.com/lesson/router-dhcp-configuration-with-packet-tracer-ccna/#DHCP_Packet_Tracer_Config_For_One_Broadcast_Domain)

## **HOME ASSIGNMENT**

Q1: Discuss the functionality of DHCP

Q2: Perform [DHCP Packet Tracer Configuration for multiple Broadcast Domain](https://ipcisco.com/lesson/router-dhcp-configuration-with-packet-tracer-ccna/#DHCP_Packet_Tracer_Config_For_One_Broadcast_Domain)