Lab#3B: DHCP

Please read Kurose 4.4.2.

1. Intro

DHCP is a protocol to provide an IP address to a computer remotely through the network. DHCP uses UDP traffic to achieve its goal. One or more DHCP servers can sit in the same network for providing IP addresses to requesting computers. Addresses may be assigned from a common pool on a FCFS-basis or based on a table provided by network admin.

DHCP process consists of four different exchanges: DISCOVER, OFFER, REQUEST and CONFIRMATION. A fifth step may happen once a system no longer needs the IP it obtained in the past: RELEASE.

2. Traffic analysis

Exercise#1: Check how is your computer obtaining its IP address (control panel in Windows, or you may use ipconfig /all)

- **a)** Start capturing UDP traffic on port 67 with Wireshark
- **b)** Issue ipconfig /release to release your current IP address
- **c)** Issue ipconfig /renew to start a new DHCP request
- **d)** Observe the traffic created due to the above process
- **e)** Look for DHCPDISCOVER message and provide the following values: type of message, source IP, destination IP, source port, destination port, transaction ID, your IP & server IP.
- **f)** In this message your computer is asking for an specific IP address: where is that done?
- **g)** List the first four options the client is requesting.

Exercise#2: Now focus on DHCPOFFER responses.

a) How many are there?

b) provide the following values: type of message, source IP, destination IP, source port, destination port, transaction ID, your IP & server IP.

c) What is the value for DHCP server identifier on each of the answers?

d) Where are these DHCP servers located in the campus networks? Is that your same network? (you may want to use ipconfig /all to see that).

Exercise#3: Now focus on DHCPREQUEST:

a) provide the following values: type of message, source IP, destination IP, source port, destination port, transaction ID, your IP & server IP.

b) What is the server the client is replying to?

Exercise#4: Now focus on DHCPACK of which you've got more than one.

a) How many answers have you got?

b) What are the IP addresses of these servers?

Exercise#5: Now focus on what happens when an address is released.

a) Start another capture and then type ipconfig /release

b) What DHCP messages are transmitted? Who does intervene in the dialog? Is there any response?