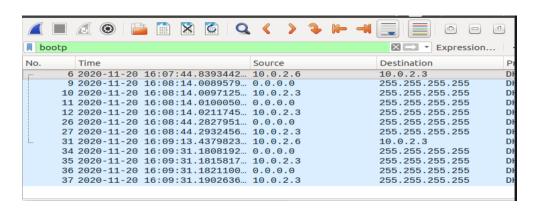# CS asdf Lab 5

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1. DHCP Experiment

(a) DHCP messages are sent over UDP

```
Protocol: UDP (17)
```

(b)

Type	Time	SRC Port	Dest Port
Discover	Nov 20, 2020 16:08:14.008957993 EST	68	67
Offer	Nov 20, 2020 16:08:14.009712588 EST	67	68
Request	Nov 20, 2020 16:08:14.010005084 EST	68	67
ACK DHCP	Nov 20, 2020 16:08:14.021174524 EST	67	68

Yes, the port numbers are the same as given in the lecture.

(c) The VM's ethernet address is **08:00:27:1e:cc:f8**

```
Address: PcsCompu_1e:cc:f8 (08:00:27:1e:cc:f8)
```

Type	ID #
Discover	0xa616f302
Offer	0xa616f302
Request	0xa616f302
ACK DHCP	0xa616f302
Discover 2	0xe00a6d26
Offer 2	0xe00a6d26
Request 2	0xe00a6d26
ACK DHCP 2	0xe00a6d26

The transaction ID field is used to keep the communication between a single requesting node and a DHCP server. Without the ID, another client requesting a new IP might take an IP that has been broadcast to serve a different client.

(d)

Type	Src IP	Dest IP
Discover	0.0.0.0	255.255.255.255
Offer	10.0.2.3	255.255.255.255
Request	0.0.0.0	255.255.255.255
ACK DHCP	10.0.2.3	255.255.255.255

In the four-message exchange, the IP address 255.255.255.255 is used to broadcast the message across the local network, as each host does not have a address to send to yet

(e) The IP address of the DCHP server is **10.0.2.3**

(f) The IP address the DHCP server is offering is **10.0.2.6**, and it is contained in the DHCP Offer message

```
Client IP address: 0.0.0.0
Your (client) IP address: 10.0.2.6
```

(g) There is no other DHCP server in my experiment

(h) The purpose of the router(gateway) option essentially tells the host about the exit point of the local network. The subnet mask lines is used to communicate regarding the size of the networks, (how many other devices have assigned IP's)

(i) The DHCP lease time is how long that the assigned IP address can be used by the receiving host. Here is it 10 minutes.

```
IP Address Lease Time: (600s) 10 minutes
```

(j) The purpose of the DHCP release message is to inform the DHCP server that the IP address of the client/host is no longer in use and can then be reused/reassigned by the DHCP server. The DHCP server does not send an ACK for a release. If the DHCP release message got lost, that IP would be unusable until the lease time expired (since the host would not send an extension request)

(k) There were 4 ARP packets sent/received during this process

Time	Source	De
4 2020-11-20 16:07:44.8377408...	PcsCompu_1e:cc:f8	Br
5 2020-11-20 16:07:44.8393229...	PcsCompu_63:a5:ae	Pc
29 2020-11-20 16:09:13.4373638...	PcsCompu_1e:cc:f8	Br
30 2020-11-20 16:09:13.4379745...	PcsCompu_63:a5:ae	Pc