

**Subject Computer network**

**Lecture : Arief Prasetyo**

## Practicum 11

### *ARP (Address Resolution Protocol)*

From:



Name : Mumtaz Zain A

Class : TI – 2I      Absent : 18

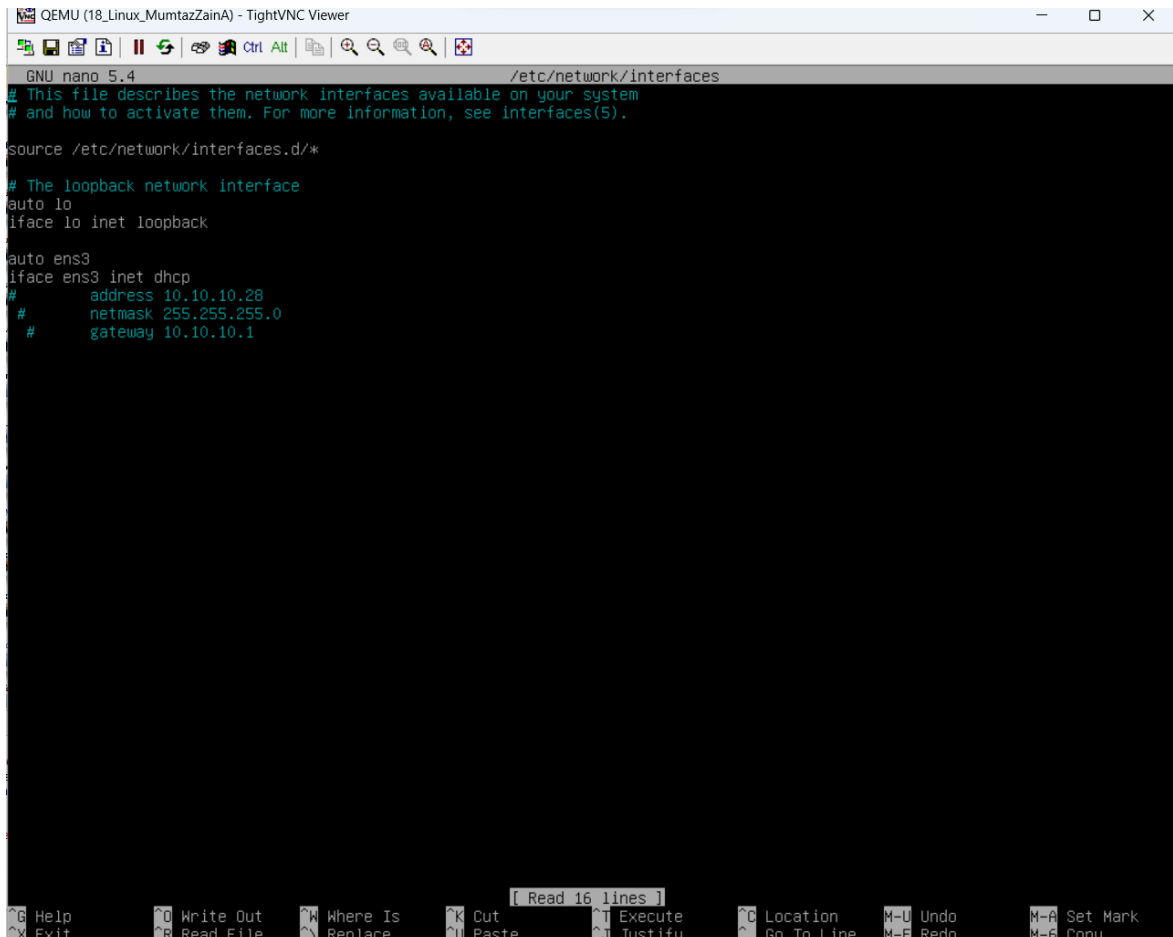
Phone : 085852566964

email:zainabdullah2126@gmail.com

# Network Hardware Identification

## Address Resolution Protocol (ARP)

1. Questions / Job Descriptions / Practicum :
  - a. Make sure your computer gets a dhcp ip from the DHCP server.
  - b. Open a terminal and run the command `sudo arp -a` on your respective host, observe the results and do a screenshot. What does the output produced by the `arp -a` command mean?
  - c. Do the `ping ip_number` command (eg: `ping 192.168.130.150`, the ip address that is still available on your network)
  - d. Run the command `sudo arp -a` once again. Observe the difference in the output compared to experiment no. 2.
  - e. Answer the following question: Why is the command result have differences compared to previous experimental results even though the same command is used? Explain briefly.
  - f. We can reduce ARP Cache or disable ARP Cache, do the experiment below:
    - a. Run command `sudo arp -d hostname` (hostname can be an ip address, use one of the hostnames listed on the ARP Cache). Observe the result by running the command `sudo arp -a`. Record the results of your experiment as your report.
    - b. Run the following command: `sudo ifconfig ens3 -arp down`, observe the results by running the command `arp -a`. Record the results of your experiment as your report.
  - g. Write the results of your experiment and answers in a report and collect them using the usual file naming format.
2. Answers to questions / assignments / practicum :
  - a.



The screenshot shows a QEMU virtual machine window titled "QEMU (18\_Linux\_MumtazZainA) - TightVNC Viewer". Inside the terminal, the nano 5.4 text editor is open, editing the file `/etc/network/interfaces`. The file content is as follows:

```
GNU nano 5.4 /etc/network/interfaces
# This file describes the network interfaces available on your system
# and how to activate them. For more information, see interfaces(5).

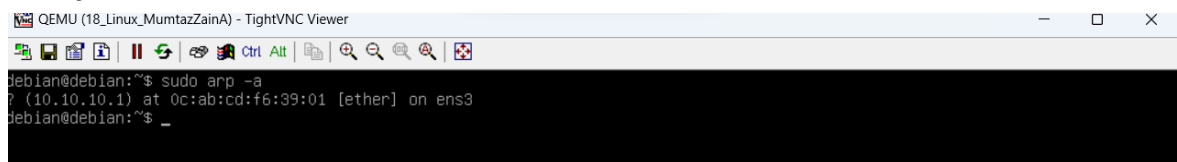
source /etc/network/interfaces.d/*

# The loopback network interface
auto lo
iface lo inet loopback

auto ens3
iface ens3 inet dhcp
#     address 10.10.10.28
#     netmask 255.255.255.0
#     gateway 10.10.10.1
```

The bottom status bar of the nano editor shows various keyboard shortcuts: Help, Exit, Write Out, Read File, Where Is, Replace, Cut, Paste, Execute, Justify, Location, Go To Line, Undo, Redo, Set Mark, and Copy.

b.



The screenshot shows the same QEMU virtual machine window. The terminal now displays the output of the command `sudo arp -a`:

```
debian@debian:~$ sudo arp -a
? (10.10.10.1) at 0c:ab:cd:f6:39:01 [ether] on ens3
debian@debian:~$ _
```

The "sudo arp -a" command retrieves information from the ARP (Address Resolution Protocol) cache on your computer, which stores information about devices connected to your local network. The information displayed in the output includes the IP address and MAC address of each device, as well as its connection status with the network.

c.

```
QEMU (18_Linux_MumtazZainA) - TightVNC Viewer
debian@debian:~$ sudo arp -a
[sudo] password for debian:
? (10.10.10.1) at 0c:ab:cd:f6:39:01 [ether] on ens3
debian@debian:~$ ping 10.10.10.28
PING 10.10.10.28 (10.10.10.28) 56(84) bytes of data.
From 10.10.10.253 icmp_seq=1 Destination Host Unreachable
From 10.10.10.253 icmp_seq=2 Destination Host Unreachable
From 10.10.10.253 icmp_seq=3 Destination Host Unreachable
^C
--- 10.10.10.28 ping statistics ---
4 packets transmitted, 0 received, +3 errors, 100% packet loss, time 3051ms
pipe 4
```

d.

```
QEMU (18_Linux_MumtazZainA) - TightVNC Viewer
debian@debian:~$ sudo arp -a
[sudo] password for debian:
? (10.10.10.1) at 0c:ab:cd:f6:39:01 [ether] on ens3
debian@debian:~$ ping 10.10.10.28
PING 10.10.10.28 (10.10.10.28) 56(84) bytes of data.
From 10.10.10.253 icmp_seq=1 Destination Host Unreachable
From 10.10.10.253 icmp_seq=2 Destination Host Unreachable
From 10.10.10.253 icmp_seq=3 Destination Host Unreachable
^C
--- 10.10.10.28 ping statistics ---
4 packets transmitted, 0 received, +3 errors, 100% packet loss, time 3051ms
pipe 4
debian@debian:~$ sudo arp -a
? (10.10.10.28) at <incomplete> on ens3
? (10.10.10.1) at 0c:ab:cd:f6:39:01 [ether] on ens3
debian@debian:~$
```

- e. the "ping" command is used to send packets to a specific IP address and check the network connection. When you ping an IP address listed in the "arp -a" list, you are sending packets to that device and causing the device to respond. This can cause the ARP cache on your computer to be updated with the latest information about the device, including the latest MAC address.

f. a.

```
QEMU (18_Linux_MumtazZainA) - TightVNC Viewer
debian@debian:~$ sudo arp -a
? (10.10.10.1) at 0c:ab:cd:f6:39:01 [ether] on ens3
debian@debian:~$
```

b.

```
QEMU (18_Linux_MumtazZainA) - TightVNC Viewer
debian@debian:~$ sudo arp -a
? (10.10.10.1) at 0c:ab:cd:f6:39:01 [ether] on ens3
debian@debian:~$ sudo ifconfig ens3 -arp down
debian@debian:~$ sudo arp -a
debian@debian:~$ _
```

**Acquired competence :**

We can know the ARP tool and we can use ARP Tool