Lab01:TCP/IP overview

Objective:

1. Get acquainted with some commonly used networking commands
2. Understand the concept of layering/encapsulation by looking at link, IP and TCP headers.

General instructions

1. Open a file "lab01.txt", As you proceed with the lab instructions below, for each exercise, note down the answers to the exercise along with any interesting observations in the file. You will be submitting this file for grading at the end of the lab.

Lab instructions:

Exercise 1: Popular Network Commands

- arp
- ipconfig
- route
- ping
- traceroute

Study the different options associated with each command. Throughout the lab, you will use these commands extensively. You can also execute the commands, without arguments and see what they output.

Report: Explain what the above commands do in 2-3 sentences (per command).

Record the following TCP/IP information for your computer
IP address:
Subnet Mask:
Default Gateway:

Compare the TCP/IP configuration of this computer to others on the LAN

If your computer is on a LAN, compare the information of several machines.

Are there any similarities?
What is similar about the IP addresses?
What is similar about the default gateways?

Check additional TCP/IP configuration information

To see detailed information, type **ipconfig /all** and press **Enter**.
Notice the Physical Address (MAC) and the NIC model (Description).
In the LAN, what similarities about the Physical (MAC) Addresses are seen?

Write down the IP addresses of any servers listed:
Write down the computer Host Name:

Do all of the servers and workstations share the same network portion of the IP address as the student workstation? _____

Part2- **Using ping and tracert from a Workstation**

Learn to use the TCP/IP Packet Internet Groper (**ping**) command from a workstation.

1. Learn to use the Traceroute (**tracert**) command from a workstation.
2. Observe name resolution occurrences using DNS servers. (use nslookup)

Ping the IP address of another computer

2. ping the IP address of the default gateway
3. ping the IP address of a DHCP or DNS server (Use the command: ipconfig /all)
4. ping the Loopback IP address of this computer (127.0.0.1)
5. ping the hostname of another computer (E.g.amrita.edu)
6. Trace a local host name or IP address (tracert amrita.edu)
7. Trace other IP addresses or domain names

Task to do:

a. What is loopback address?

b. Difference between IP address and default gateway.

c. Difference between TCP and UDP

d. Difference between DHCP and DNS Severs

e. Difference between ping and tracert

f. Difference between arp and dns