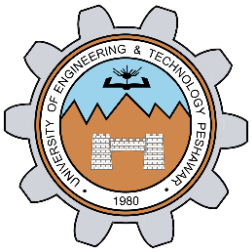
PC NETWORK TCP/IP CONFIGURATION

LAB #1



Spring 2021

CSE303L Data Communication and Networks Lab

Submitted by: **Shah Raza**

Registration No. : **18PWCSE1658**

Class Section: **B**

"On my honor, as student of University of Engineering and Technology, I have neither given nor received unauthorized assistance on this academic work."

Student Signature: _____

Submitted to:

Engr. Faiz Ullah

Wednesday, May 5th, 2021

Department of Computer Systems Engineering

University of Engineering and Technology, Peshawar

OBJECTIVES OF THE LAB

Following topics will be covered in this lab

- Gather information including connection, host name, Layer 2 MAC address and Layer 3 TCP/IP network address information.
- Compare network information to other PCs on the network.
- Identify tool used for discovering a computer's network configuration.

Gathering TCP/IP configuration information

Step 1

Establish and verify connectivity to the Internet. This ensures the computer has an IP address.

Step 2

Use the Start menu to open the Command Prompt, an MS-DOS-like window. Press Start > Programs > Accessories > Command Prompt

OR

Start > Programs > Command Prompt.

OR

Press Start>Run Then type cmd.

The following figure shows the Command screen. Type ipconfig and press the Enter key. The spelling of ipconfig is critical while case is not. It is short for IP Configuration.

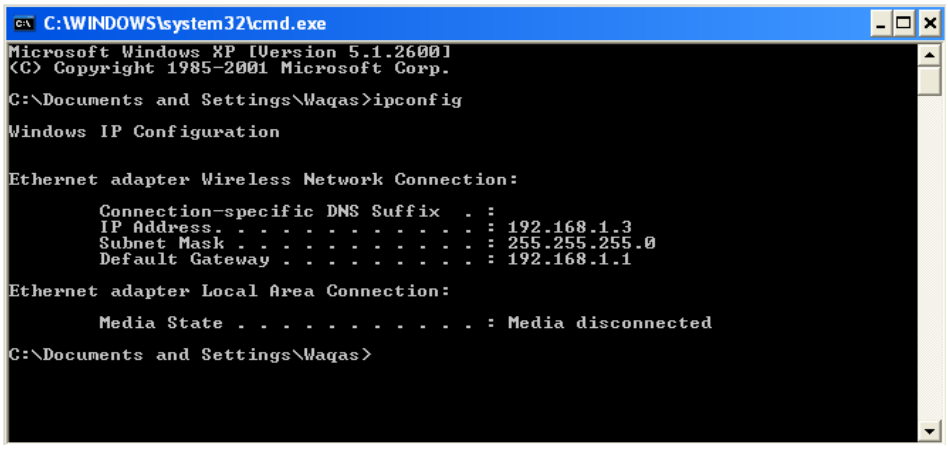


Figure 1.1 Command Screen for ipconfig

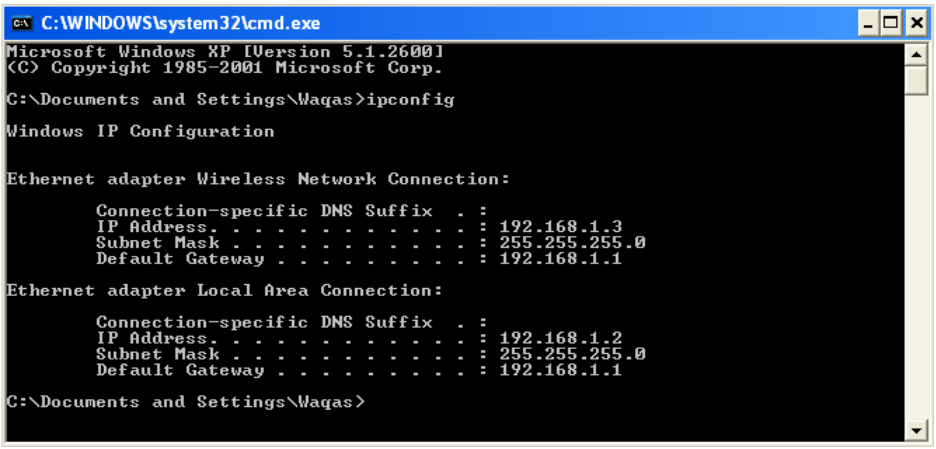


Figure 1.2 Command Screen for ipconfig

This first screen shows the IP address, subnet mask, and default gateway. The IP address and the default gateway should be in the same network or subnet, otherwise this host would not be able to communicate outside the network. In the figure the subnet mask tells us that the first three octets must be the same to be in the same network.

Note: If this computer is on a LAN, the default gateway might not be seen if it is running behind a Proxy Server. Record the following information for this computer.

Step 3

Record the following TCP/IP information for at least THREE computers

	Computer 1	**Computer 2 (Neighbor 1)**	**Computer 3 (Neighbor 1)**
IP Address	192.168.1.29	192.168.1.23	192.168.1.31
Subnet Mask	255.255.255.0	255.255.255.0	255.255.255.0
Default Gateway	192.168.1.1	192.168.1.1	192.168.1.1
DNS Address	192.168.1.1	192.168.1.1	192.168.1.1
DHCP Address	192.168.1.1	192.168.1.1	192.168.1.1

Difference between Fig.1 and Fig.2: In Fig 1.1, the host is not Connected to a Local Area Network while the host in Fig 1.2 is Connected to a LAN.

Step 4

Compare the TCP/IP configuration of this computer to others on the LAN
If this computer is on a LAN, compare the information of several machines.

Are there any similarities?

Answer: Yes, all of them have the same Subnet Mask, Default Gateway, DNS Address, DHCP Address and Network Address.

What is similar about the IP addresses?
Answer: The Network Portion of the IP addresses are similar.

What is similar about the default gateways?
Answer: All have the same Default Gateway.

Record a couple of the IP Addresses:

1. Computer 1: 192.168.1.29
2. Computer 1: 192.168.1.23
3. Computer 1: 192.168.1.31

Step 5

Check additional TCP/IP configuration information

To see detailed information, type ipconfig /all and press Enter. The figure shows the detailed IP configuration screen.

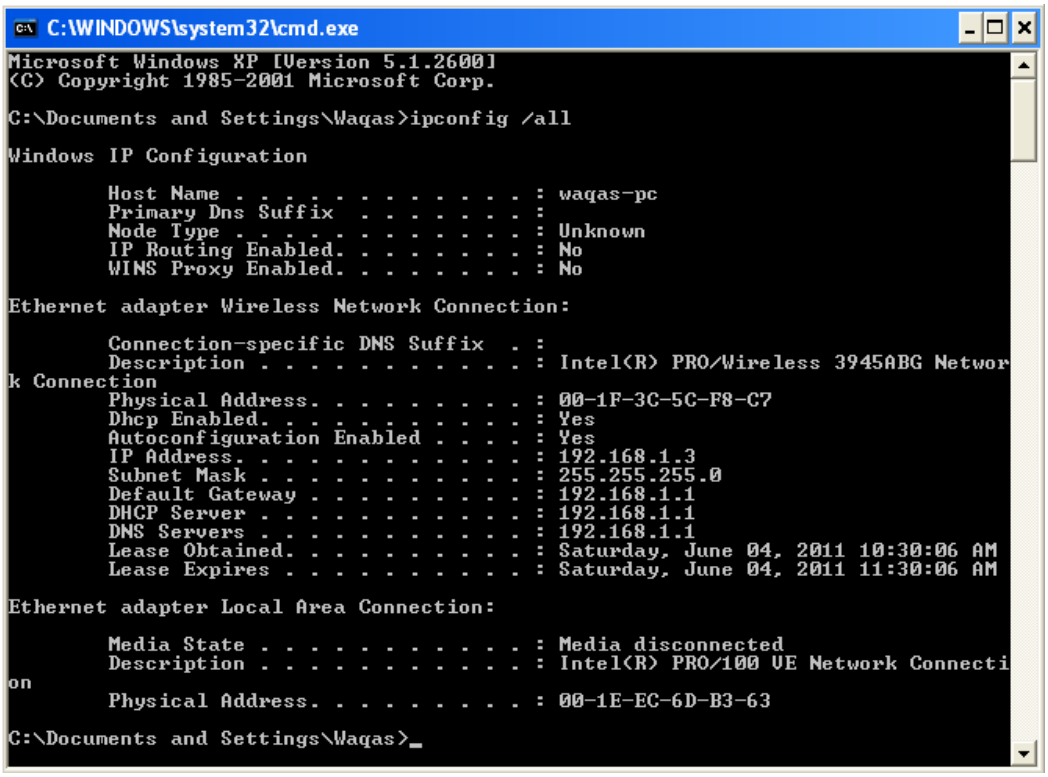


Figure1.3 Command Screen for ipconfig /all

The host name, including the computer name and NetBIOS name should be displayed. Also, the DHCP server address, if used, and the date the IP lease starts and ends should be displayed. Look over the information. Entries for the DNS, used in name resolution servers, may also be present. The previous figure reveals that the router is performing both DHCP and DNS services for this network. This would likely be a small office or home office (SOHO) or small branch office implementation.

Notice the Physical Address (MAC) and the NIC model (Description).
Physical Address(MAC): 00-1E-64-FA-C2-79
NIC model: Intel(R) Dual Band Wireless-AC 3160

Write down the computer Host Name:
DESKTOP-T3I4Q71

Write down the Host Names of a couple other computers:

1. Computer 1: DESKTOP-T3I4Q71
2. Computer 2: DESKTOP-K3R4TSE
3. Computer 3: DESKTOP-8TKL60H

Do all of the servers and workstations share the same network portion of the IP address as the student workstation?
Answer: No

Step 6
Based on observations, what can be deduced about the following results taken from three computers connected to one switch?

Computer 1
IP Address: 192.168.5.13
Subnet Mask: 255.255.255.0
Default Gateway: 192.168.12.1

Computer 2
IP Address: 192.168.5.5
Subnet Mask: 255.255.255.0
Default Gateway: 192.168.12.1
Computer 3

IP Address: 192.168.11.97
Subnet Mask: 255.255.255.0
Default Gateway: 192.168.12.1

Should they be able to talk to each other?
Answer: Computer 1 and Computer 2 should be able to communicate with each other since they have the same Network Address whereas Computer 3 has a different Network Address.

Are they all on the same network? Why or why not?
Answer: No, all are not on the same network. Only Computer 1 and Computer 2 are on the same Network. We came to this conclusion with the help of subnet mask. By And-ing the Subnet mask and IP address we can find the Network Address.