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Experiment No. : Performed Date : / /20

Title of Experiment : configuration of IP and MAC address and local area network setup.

REMARKS

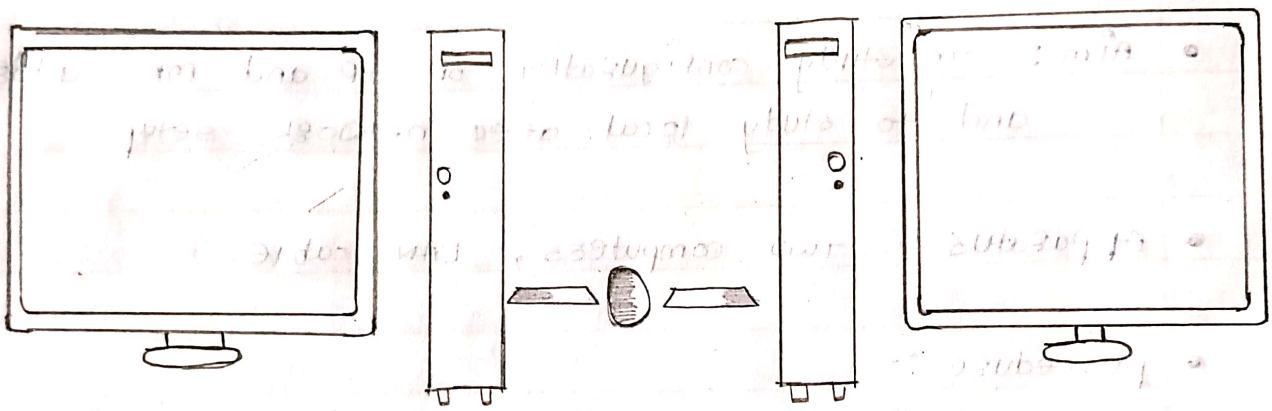
- Aim :- To study configuration of IP and MAC address and to study local area network setup.

- Apparatus :- two computers, LAN cable.

- procedure :-

1. Go to "control panel > Network and internet > network and sharing center -> change adapter settings."
2. click on "change Adapter setting." this will reveal different connections. select the appropriate connection for your LAN. usually, but not necessarily. the connection will be called ethernet.
3. Right-click on the connection and select "properties". this local area's connection properties window will appear.
4. under the network tab, tab select "internet protocol version 4 (TCP/IPV4)," then click on "properties".
5. In the properties menu, set the IP address and subnet masks of the first computer to :-
   - IP - 192.168.01
   - Subnet mask - 255.255.255.0.

Block diagram :-



6. Repeat all the above steps for the second computer and set the IP address and subset mask as follows :-
   - IP - 192.168.02
   - subnet mask - 255.255.255.0
7. After assigning the IP address, you need to head back to network and sharing center and click on the "change advanced sharing setting" option.
8. In the advanced sharing setting menu, you need to enable the "turn on network discovery" and "turn on automatic setup of network-connected devices" options.
9. Right click on "this pc" and choose "properties" click on "change setting" -> change." this levels at window with the name of the workgroup. the value for the workgroup name should be the same for both pcs. By default, the workgroup name will be WORKGROUP, but you can change it to any name you like.
10. Right click on the drive you want to share. scroll to the "give access" to options and click "advanced setting". under the sharing tab, click the "advanced sharing" buttons

this levels the advanced sharing window. check the "share this folder" checkbox and click "apply -> ok".

at this page, you will be have successfully connected the two computers to share your drives between them.

- theory :-

* local area network (LAN)

a local area network (LAN) is a collection of devices

connected together in one physical location, such as a building, office, or home. A LAN can be small or large ranging from a home network with one user to an enterprise network with thousands of users and devices in an office or school.

A LAN comprises cables, access points, switches, routers and other components that enable devices to connect to internal servers, web servers and other LANs via wide area network. Data transfer rate and speed of LAN is high (100mbps).

The components used in LAN are layer 2 devices like switches, bridge and layer 1 devices like hubs, repeaters. It experiences fewer data transmission error. LAN is easier to maintain at relatively low costs as it covers a relatively small geographical area. In LAN high bandwidth is available for transmission.

* Internet protocol address (IP address) :-

An IP address is a numerical label assigned to each device participating in a computer network that uses the internet protocol for communication.

An IP address serves two principal functions :- host or network interface identification and location addressing.

Two versions of the Internet protocol (IP) are in use: IP version 4 and IP version 6.

1. IPv4.

In IPv4 an address consists of 32 bits which limits the address space to 4294967296 (2^{32}) possible unique address.

IPv4 addresses are canonically represented in dot-decimal notation, which consists of four decimal numbers, each ranging from 0 to 255, seperated by dots: e.g. 172.16.254.1 Each part represents a group of 8 bits (octet) of the address.

- the higher-order bits of the address make up the network part of the address and
- the rest constitutes the host part of the address. In addition the host part of the address can be divided further to allow for a sub network address.

* IPv6.
IPv6 was originally designed because the no. of available unregistered IPv4 addresses was running low. Because IPv6 uses a 128-bit addressing scheme. it has more than 79 octillion times as they many availble address as IPv4. also, instead of representing the binary digit as decimal digits. IPv6 uses eight sets of four hexa-decimal digits. like so: 3FFE; 0B00; 0800; 0002; 0000; 0000; 0000; 000C.

* media access control address (MAC address),
the MAC address is a unique value assigned to a network interface controller (NIC). MAC addresses are also known as hardware address or physical address. they uniquely identify an adapter on a LAN, MAC. address are used in the medium access control protocol

sub layer of the data link layer.
MAC addresses are 12 digit hexadecimal numbers. By convention, MAC address are usually written as the following format :-
mm:mm:mm:ss:ss:ss or mm:mm-mm-ss-ss-ss
the first half on a MAC address contains the ID number of the adapter manufacter. these ID's are requested by an iternet standards body (see sidebar.). the second half of a MAC address represents the serial no. assigned to the adapter by manufacture.

* Result :-
The IP is 192.168.0.1. This used to share the file of the folder.

* conclusion :-
we have studied about the IP, LAN and it types and MAC too..