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Experiment No. :   Performed Date :   /   /20

Title of Experiment : computer network components.

REMARKS

• **Aim :-** study of computer network components : cables, connectors, Routers, switches, Etheenet. and related interfacing cards.

Network : A computer network is a group of computers linked to each other that enables the computer to communicate with another computer and share their resources, data and applications.

Network devices :- or networking hardware are physical devices that are required for communication and interaction between hardware on a computer network.

1. **network cables :-**
Different types of network cables, are used depending on the network physical layer, topology and size. These are networking hardware used to connect one network device to another network devices. optical fibre cable is used for long distances or for applications requiring high bandwidth or electrical isolation

- Etheenet Feame Foemat :-

|←——————————————— 64~1518 byte ———————————————→|

|← Etheenet Headee (14 bytes) →|

7 byte	1 byte	6byte	6 byte	2byte	46 to 1500 byte	4byte
paeemble	staet feame olimitee	Destination Addeess	souece addeess	length	datq	Feame check sequence (CRC)
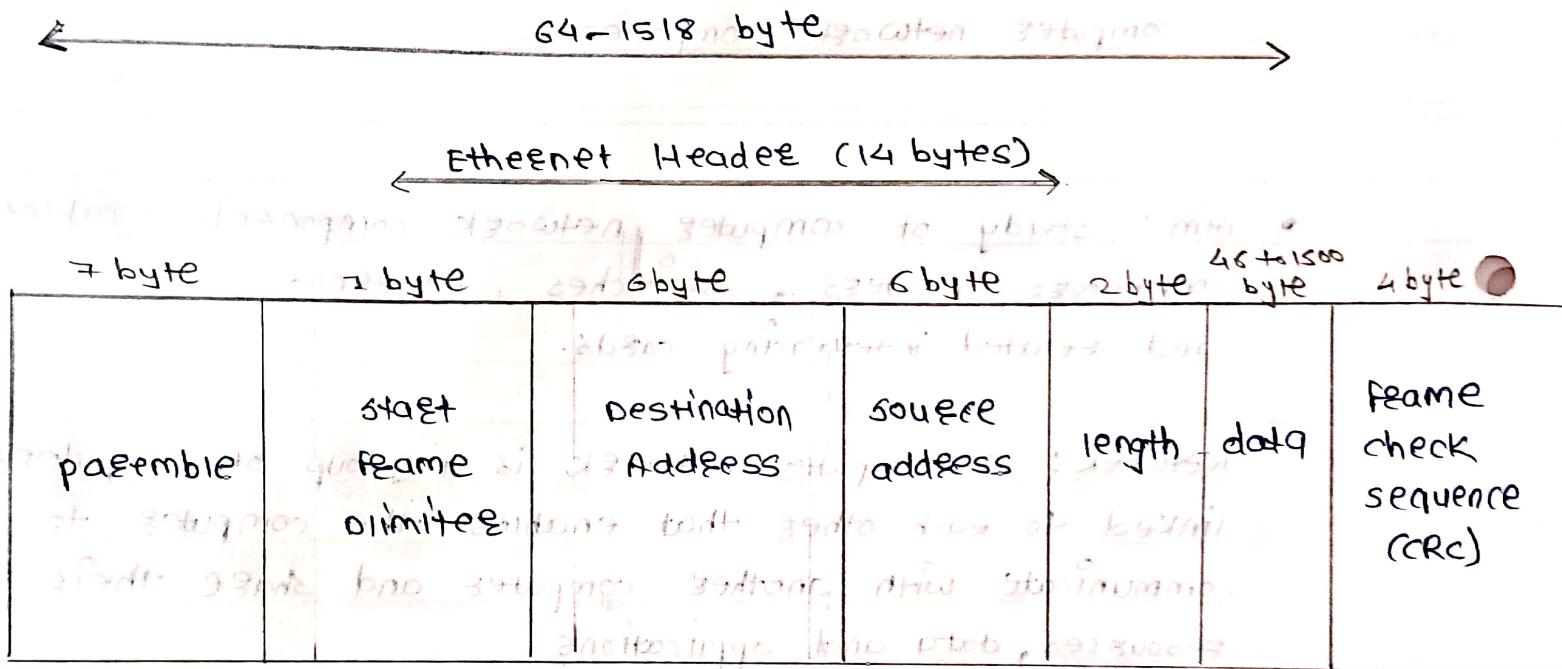
IEEE 802-3 Etheenet feame Foemat.

help of Routing table. A router reads it's routing table to decide the best available and speedy route for the pocket delivery to destination. Routers can be wired or wireless and there are many specialized types of routers that serve specific functions.

4. Switches :-
Switches are networking devices operating of layers 2 of a data link layer of the OSI model.
They connect devices in a network and use pocket switching to send, receive or forward data pockets of data frames over the network. A switches has many ports, to which computers are plugged in. When a data frame arrives at any part of a network, switches it examines the destination address, performs necessary checks and sends the frame to the corresponding devices (S). It supports unicast, multicast as well as broadcast communication.

5. Ethernet :-
Ethernet is most commonly used technology for wired LAN. It is still in use because ethernet is able to update itself to meet the needs of the time.

- From it's inventions, it has gave through the four generations.
   1. std ethernet (10 MBPS) 802.3
   2. fast (100 mbps)
   3. Gigabit (1 GBPS)

Different types of network cables are :-

- coaxial cable.
- twister pair cable. These are again divided into two types.

A] shielded twisted pair (STP) cable. each pair wrapped with an metal shield, then all pairs are wrapped in a single outer plastic sheath.

B] unshielded twisted pair (UDP). all pairs are wrapped in a single plastic sheath.

- fible optic cable.

2. connectors :-

A connectors is a device that terminates a segment of cabling or provides a point of entry for networking devices such as computers, hubs and routers.

Following are the few types of connectors.

1] ethernet cable connector

2] coaxial cable connector

3] USB connector.

4] fiber optic cable connector.

3. Router :-

A Router is a networking device that forwards data packets between computers network. It is typically connected to at least two LAN's and the internet service provider (ISP). It serves two primary functions managing traffic between these network by forwading data packets to their intended destination using IP address, allowing multiple devices to use the same internet connection. The packets are delivered to end station using

4. 10 Gigabit (10 GBPS)

Basic frame which is required for all MAC implementation is defined in IEEE 802.3 standards. though several optical formats are being used to extend the protocol's basic capability, ethernet frame starts with preamble and SFD, both works at the physical layer. ethernet header contains both source and destination MAC address, after which the payoland of the frame is present. The last field is CRC which is used to detect the error. Now, let's study each field of basic frame format.

6. network interface card :-

A network interface card (NIC) is a hardware component without which a computer cannot be connected over a network. It is a circuit board installed in a computer that provides a dedicated network connection to the computer. It is also called network interface card controller, network adapter or LAN adapter.

NIC allows both wired and wireless communication. NIC allows communications between computers connected via local area network (LAN). as well as communication over large-scale network through internet protocol (IP). NIC is both a physical layer and a data link layer device. i.e, it provides the necessary hardware circuitry so that the physical layer process and some data link layer

process can run on it.

- Types of NIC cards :-
          there are two types of NIC cards.
   1. Internet network cards.
   2. Ethernet network cards.

NIC consist of memory, connectors, processor, jumpers, routers, MAC address.

- Result :-
1] Data transfer role and speed is high.
2] In IP these are 2 version
       i] IPv4
       ii] IPv6

- conclusion :-
   we have studied IP and IP version and also studied MAC address