

Course Name: A Level (2<sup>nd</sup> Sem)

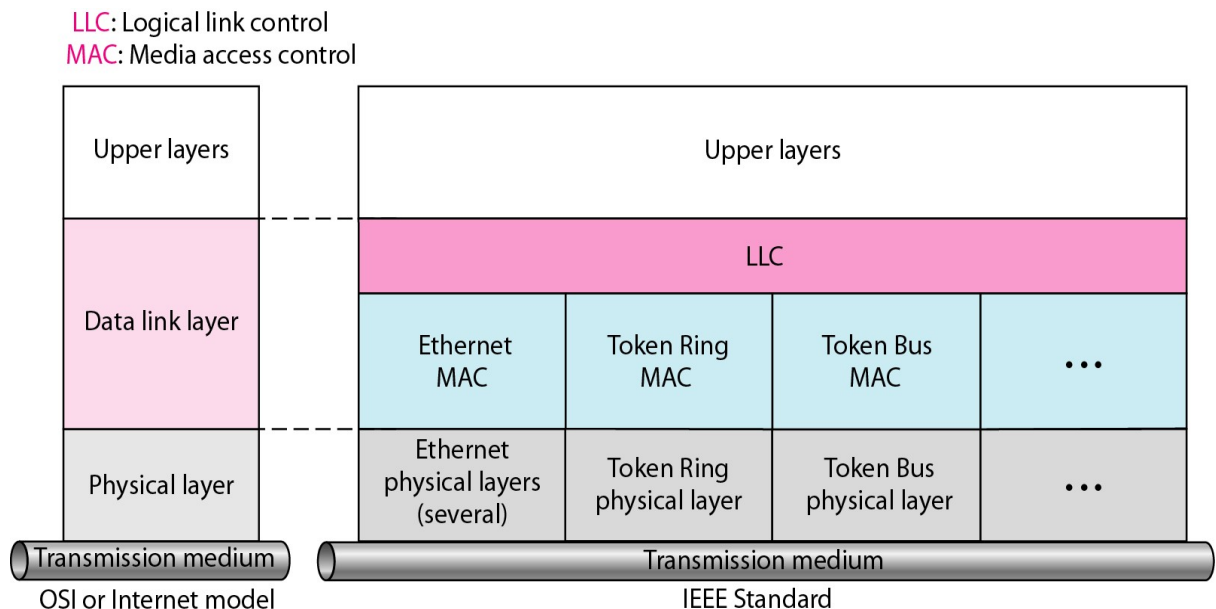
Subject: DCN

Topic: IEEE Standards  
(Wired LAN: Ethernet)

Date: 19-05-20

## IEEE Standards:

- In 1985, the Computer Society of the IEEE started a project, called **Project 802**, to set standards to enable intercommunication among equipment from a variety of manufacturers.
- It is a way of specifying functions of the physical layer and the data link layer of major LAN protocols.
- The standard was adopted by the American National Standards Institute (ANSI). In 1987, the International Organization for Standardization (ISO) also approved it as an international standard under the designation ISO 8802.
- The relationship of the 802 Standard to the traditional OSI model is shown in Figure.
- The IEEE has subdivided the data link layer into two sub-layers: logical link control (LLC) and media access control (MAC). IEEE has also created several physical layer standards for different LAN protocols.



- In IEEE Project 802, flow control, error control, and part of the framing duties are collected into one sub-layer called the **Logical Link Control (LLC)**.
- The LLC provides one single data link control protocol for all IEEE LANs. A single LLC protocol can provide interconnectivity between different LANs because it makes the MAC sub-layer transparent.

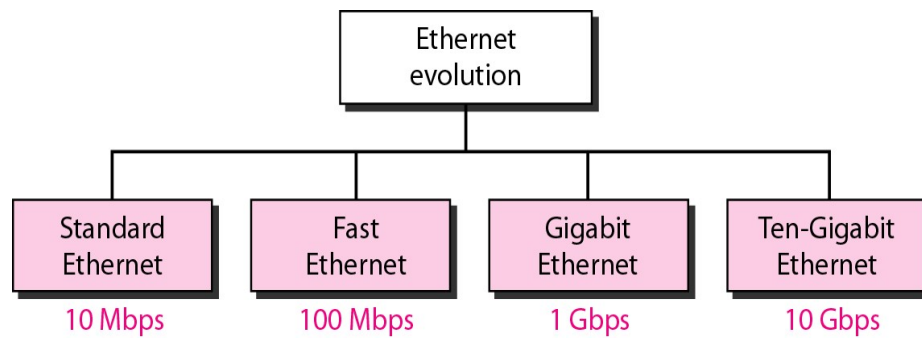
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- IEEE Project 802 has created a sub-layer called **Media Access Control (MAC)** that defines the specific access method for each LAN. For example, it defines CSMA/CD as the media access method for Ethernet LANs and the token passing method for Token Ring and Token Bus LANs. Part of the framing function is also handled by the MAC layer.
- Thus, the IEEE Standard Project 802, designed to regulate the manufacturing and interconnectivity between different LANs.
- As we know that a **local area network (LAN)** is a computer network that is designed for a limited geographic area such as a building or a campus. A LAN can be used as an isolated network to connect computers in an organization for the sole purpose of sharing resources. LANs are also linked to a wide area network (WAN) or the Internet.
- The LAN market has several technologies such as Ethernet, Token Ring, Token Bus, FDDI, and ATM LAN. **Ethernet** is by far the dominant technology.

## Ethernet:

- The original Ethernet was created in 1976 at Xerox's Palo Alto Research Center (PARC). It has gone through four generations: Standard Ethernet (10 Mbps), Fast Ethernet (100 Mbps), Gigabit Ethernet (1 Gbps), and Ten-Gigabit Ethernet (10 Gbps), as shown in Figure.



## Exercises:

- A. What is IEEE Project 802? How does it divide data link layer into two sub-layers?**
- B. What is Ethernet? Write the name of Ethernet evolutions with their transmission speed.**