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Department of Information Technology

COMPUTER NETWORKS

Name of the Faculty: Mrs.S. Neelima, Assistant Professor, Department of IT
Subject: Computer Networks
Year & Semester: III-I
Topic: Wired LANs: Ethernet
Conventional Methods: Chalk & Talk
Teaching Methodology: Flipped Class Room

In Computer Networks subject, Ethernet is the traditional technology for connecting devices in a wired local area network (LAN) or wide area network (WAN). It enables devices to communicate with each other. Generally Ethernet topic is demonstrated by faculty using chalk & talk but I have used teaching methodology as flipped class room because in Computer Engineering Workshop students already studied about the connecting computers in LAN using Ethernet in their II semester So, the innovative method of Flipped class room used for explaining Wired LANS topic.

References:

1. https://www.javatpoint.com/what-is-ethernet
2. https://examradar.com/wired-lans-ethernet-short-notes/
3. https://www.geeksforgeeks.org/local-area-network-lan-technologies/

ETHERNET PROTOCOL:

IEEE Project 802

The IEEE has subdivided the data-link layer into two sublayers: logical link control (LLC) and media access control (MAC). IEEE has also created several physical-layer standards for different LAN protocols.

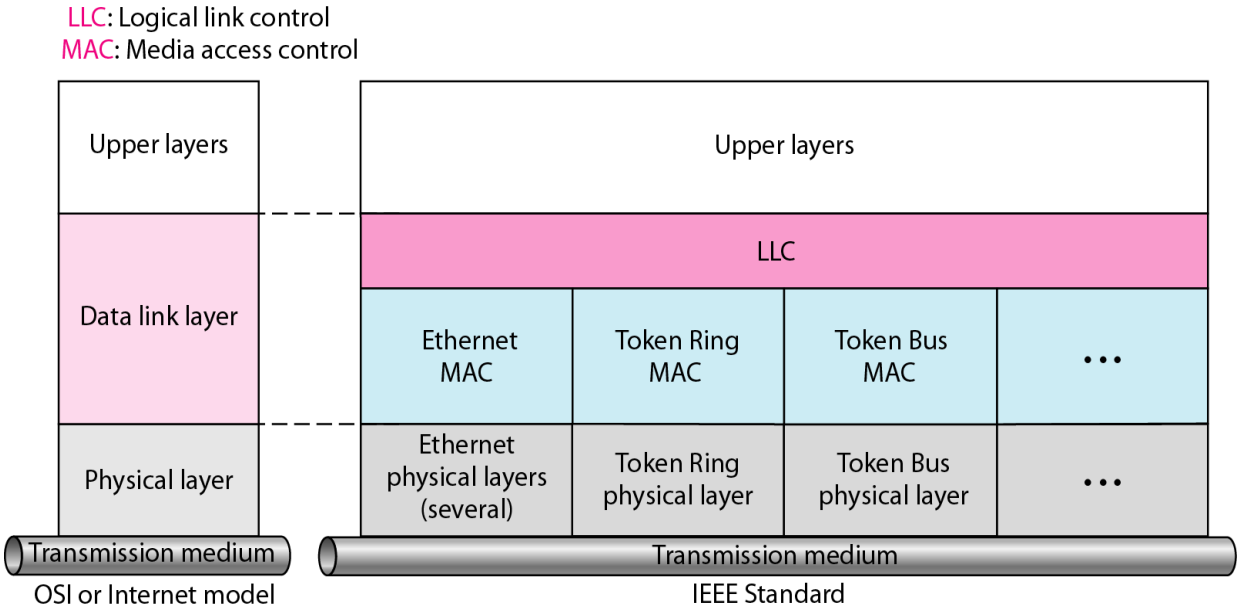
Logical Link Control (LLC)

- 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). Framing is handled in both the LLC sub layer and the MAC sub layer
- The LLC provides a single link-layer control protocol for all IEEE LANs. This means LLC protocol can provide interconnectivity between different LANs because it makes the MAC sub layer transparent.

Media Access Control (MAC)

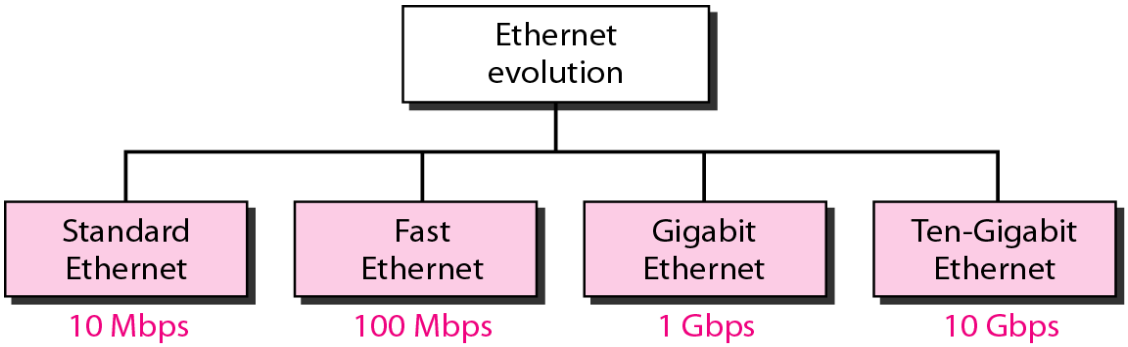
- IEEE Project 802 has created a sub layer called media access control that defines the specific access method for each LAN.
- For example, itdefines CSMA/CD as the media access method for Ethernet LANs and defines thetoken-passing method for Token Ring and Token Bus LANs

IEEE standard for LANs



Ethernet Evolution:

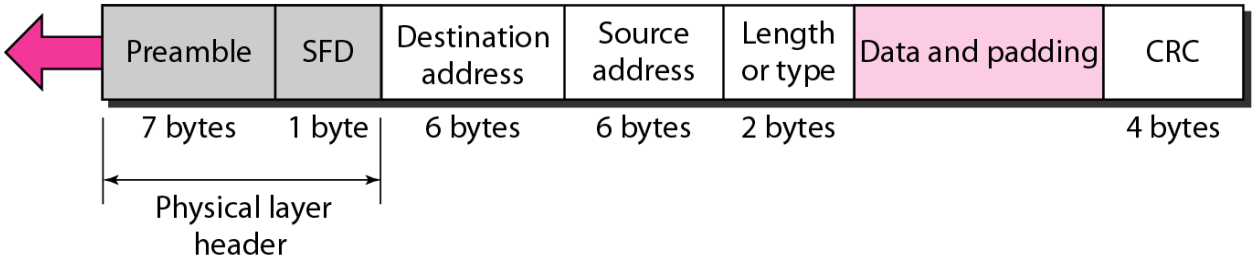
The Ethernet LAN was developed in the 1970s by Robert Metcalfe and David Boggs.Since then, it has gone through four generations: Standard Ethernet (10 Mbps), FastEthernet (100 Mbps), Gigabit Ethernet (1 Gbps), and 10 Gigabit Ethernet(10 Gbps)



802.3 MAC frame

Preamble: 56 bits of alternating 1s and 0s.

SFD: Start frame delimiter, flag (10101011)



Wired LANs:Ethernet using Flipped Class Room

The Innovative teaching method, flipped class room helped the students to recollect the concept which is completed earlier and flipped class room also used for to improve the presentation skills in the students. The Ethernet topic is well explained by the student.