

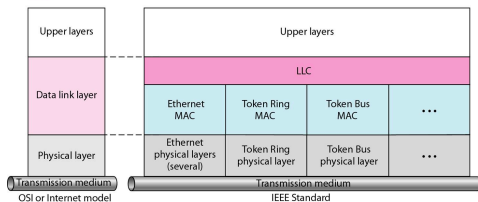


## IEEE Standard for LAN (Standard Ethernet)

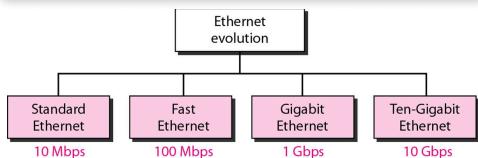
The IEEE 802 Project defines networking standards for LANs and MANs. IEEE 802.3 specifies the Ethernet standard, which is the most widely used LAN technology in the world.

### IEEE standard for LANs

LLC: Logical link control  
MAC: Media access control



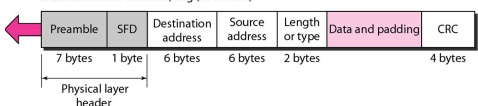
### Ethernet Evolution



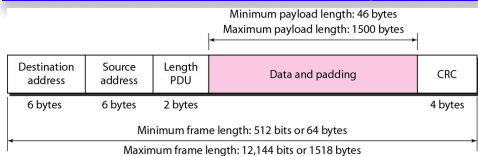
### 802.3 MAC Frame

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

SFD: Start frame delimiter, flag (10101011)



### Minimum and Maximum Lengths



### Ethernet Address in Hexadecimal Notation

06:01:02:01:2C:4B

6 bytes = 12 hex digits = 48 bits

Unicast: 0; multicast: 1



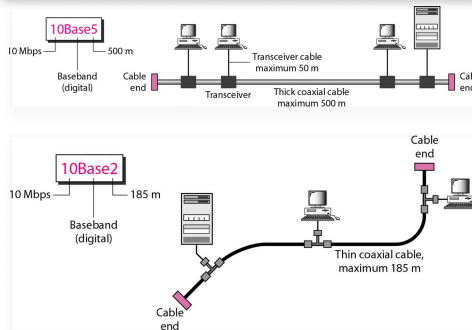
- The least significant bit of the first byte defines the type of address. If the bit is 0, the address is unicast; otherwise, it is multicast.
- The broadcast destination address is a special case of the multicast address in which all bits are 1s.

Unicast Address ► 4A:30:10:21:10:1A

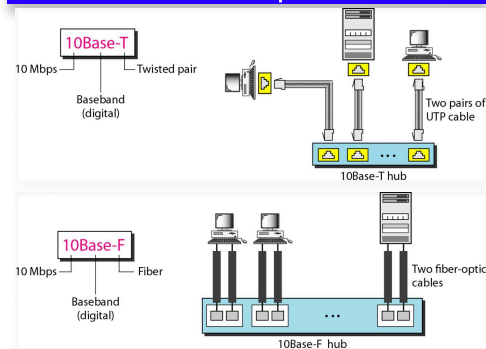
Multicast Address ► 47:20:1B:2E:08:EE

Broadcast Address ► FF:FF:FF:FF:FF:FF

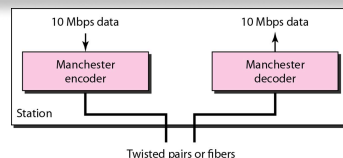
### Standard Ethernet Implementations



### Standard Ethernet Implementations



### Encoding in a Standard Ethernet implementation



### Access Method

- The standard Ethernet chose CSMA/CD with 1-persistent method.

### Changes in the Standard



### References

- <https://www.wireshark.org/tools/oui-lookup.html>
- Forouzan, B. A. (2007). Data communications and networking (4th ed.)
- Data Communication and Networking 5E, BEHROUZ A. FOROUZAN