

## IEEE standard for LANs

LLC: Logical link control MAC: Media access control

	Upper layers		Upper layers			
	Data link layer	,	LLC			
			Ethernet MAC	Token Ring MAC	Token Bus MAC	•••
	Physical layer		Ethernet physical layers (several)	Token Ring physical layer	Token Bus physical layer	•••
Transmission medium			Transmission medium			
OSI or Internet model			IEEE Standard			

# STANDARD ETHERNET

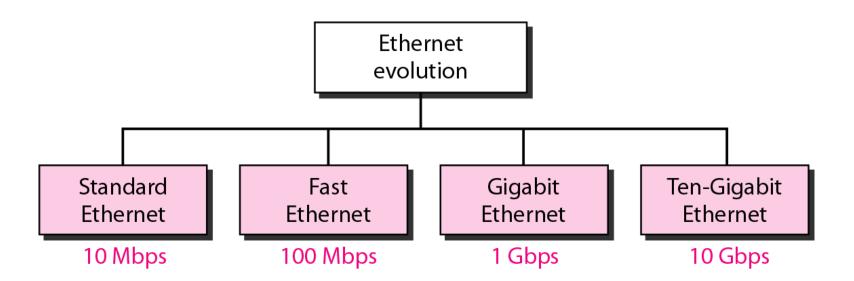
The original Ethernet was created in 1976 at Xerox's Palo Alto Research Center (PARC). Since then, it has gone through four generations. We briefly discuss the Standard (or traditional) Ethernet in this section.

Topics discussed in this section:

MAC Sublayer Physical Layer



### Ethernet evolution through four generations

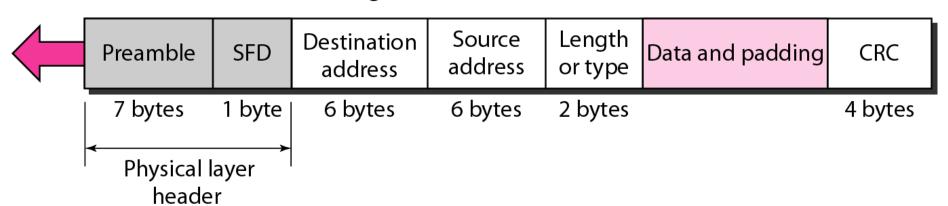




#### 802.3 MAC frame

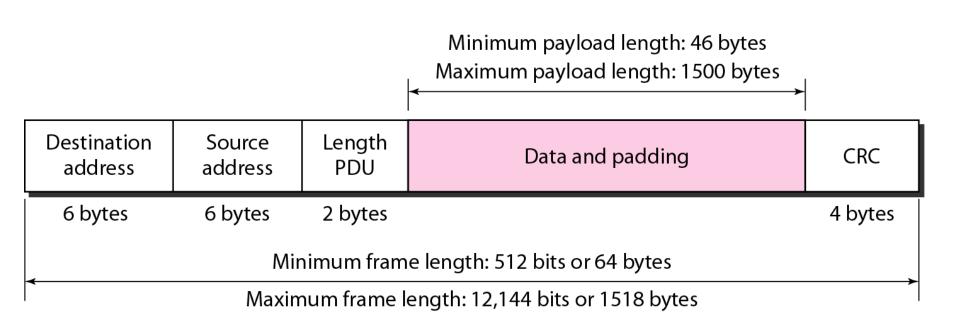
Preamble: 56 bits of alternating 1s and 0s.

SFD: Start frame delimiter, flag (10101011)





#### Minimum and maximum lengths







# Frame length:

Minimum: 64 bytes (512 bits)

**Maximum: 1518 bytes (12,144 bits)** 



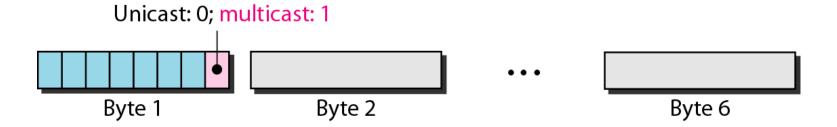
#### Example of an Ethernet address in hexadecimal notation

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

6 bytes = 12 hex digits = 48 bits



#### Unicast and multicast addresses







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.