

IEEE 802.3 Ethernet Frame

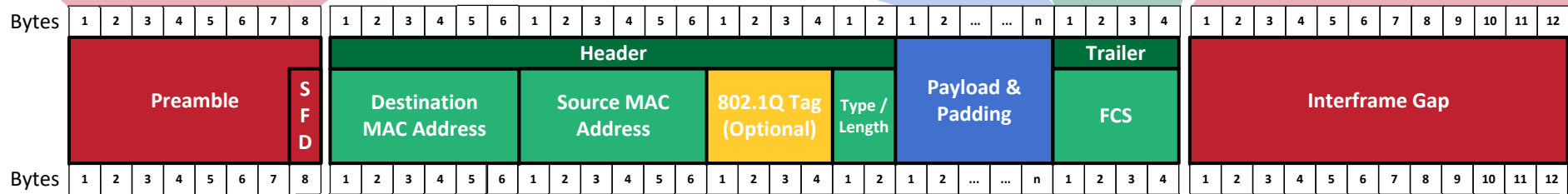


Preamble
Serve as a clock synchronisation mechanism and demonstrates the pace of arriving data. Repeats seven 10101010 (0xAA) patterns long enough for the receiver to set it's clock. Ends with a **Start Frame Delimiter** 10101011 (0xAB) pattern which informs the physical layer that a data-link layer frame "is coming".

Payload & Padding
Contains upper layer (layers 3 through 7) protocol data. Padding is required if payload < 46 bytes to ensure a 64 byte frame in order for CSMA/CD to function correctly. $n = 42 - 1500$ when 802.1q tag is present and $46 - 1500$ when not present.

Trailer
Error Checking. Ethernet uses Cyclical Redundancy Check (CRC).

Interframe Gap
Pause between frames. Used for receiver clock recovery. Varies between standards but min. gap is 96 bit times (Time it takes to transfer 96 bits/12 bytes of data).

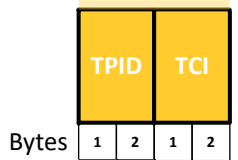
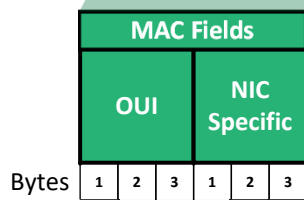


Min. Frame Size

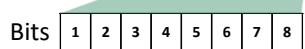
Header	14 bytes
Payload/Padding	4 bytes
Trailer	46 bytes
Total	64 bytes

Max. Frame Size

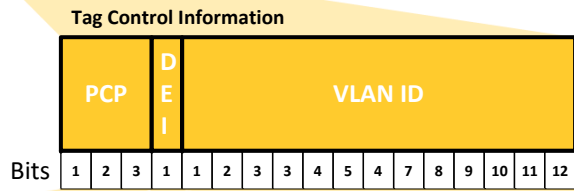
Header w/802.1q tag	18 bytes
Payload	4 bytes
Trailer	46 bytes
Total	1522 bytes



Type / Length
If value of field is < 1500 (0x5DC) then **802.3 frame** is assumed and field value specifies true **length** of frame. If value of field is ≥ 1536 (0x0600) then **Ethernet II or DIX frame** is assumed and field value specifies **type** of upper layer protocol expected in payload. Common Values are IPv4 - 0x0800 (2048), IPv6 - 0x86DD (34525), and ARP - 0x0806 (2054).



Tag Protocol Identifier
Always set to 0x8100 to identify that 802.1Q tag is present.



Universal/Local (UL) Bit
0: Universally Administered
1: Locally Administered

Individual/Group (IG) Bit
0: Individual (Unicast)
1: Group (Multicast/Broadcast)

Priority Code Point
802.1p (CoS) value. Indicates the frame priority level. 7 = highest, 0 = lowest.

Drop Eligibility Indicator
Indicate whether frame is eligible to be dropped in times of congestion. Always set to '0' on Ethernet only networks.

VLAN ID
Specifies which VLAN the frame belongs to. Permitted values are 1-4095 (0 & 4096 are reserved).