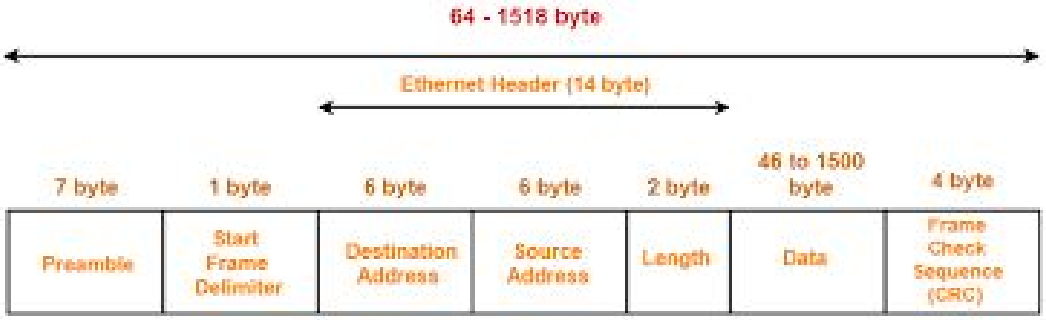
Cybersecurity
Everett HS
Mr. Plotnick

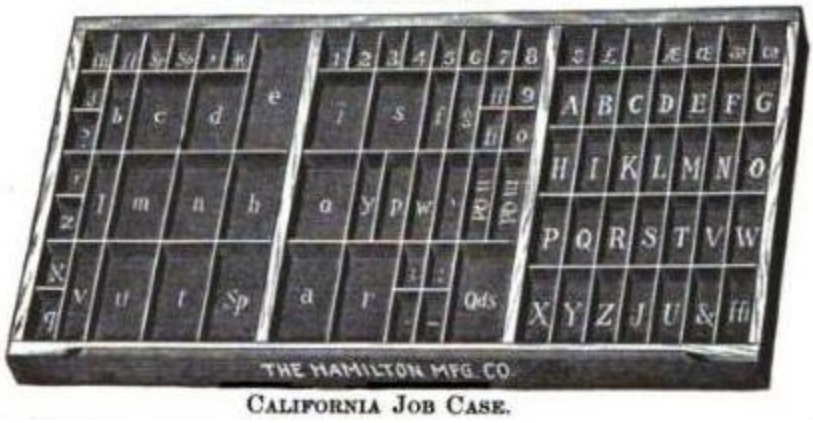
Protocols, Packets and Images

Ethernet Frame



IEEE 802.3 Ethernet Frame Format

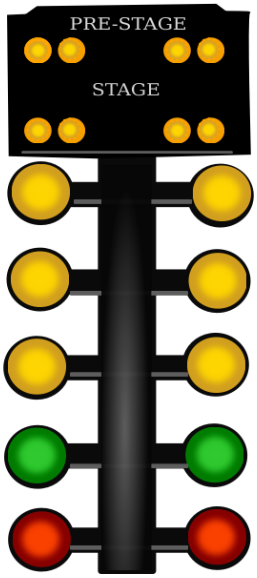
Ethernet Frame



California Job Case.

Bits are arranged in specific locations in a frame. Each location contains different information.

Preamble



The **preamble** alerts the receiving device that data is being transmitted. It is used for timing and synchronization of signals. The preamble is 7 bytes long and has the pattern 10101010.

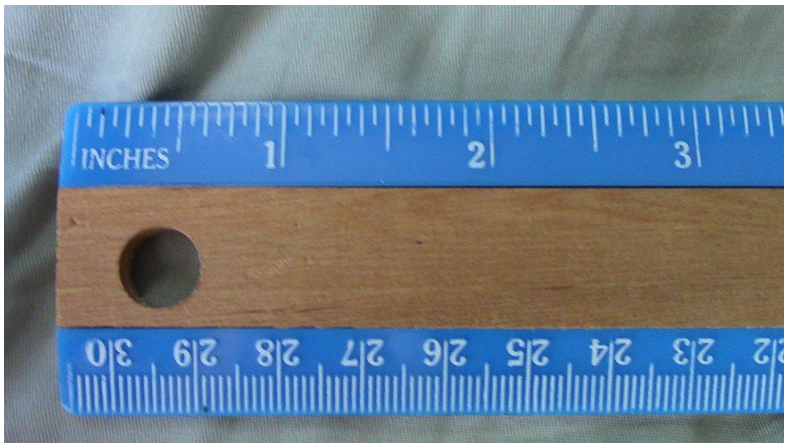
SFD

Start of Frame Delimiter. This is a 1-Byte field which is always set to 10101011. SFD indicates that upcoming bits are starting the frame.

Source and Destination Address

The Ethernet packet will contain the destination and source MAC addresses of the data. This is a 6-Byte field which contains the MAC address of the machine for which data is destined.

Length



Length is a 2-Byte field, which indicates the length of the entire Ethernet frame. This 16-bit field can hold a value between 0 to 65534, but length cannot be larger than 1500 due to Ethernet design constraints.

Data

Examples	
Quantitative Data ("Numerical")	**Qualitative** Data ("Categorical")
• Height of 1st graders • Weight of sumo wrestlers • Duration of red lights • Age of Olympians • Distance of planets • Money in 401k plans • Temperature of coffee (200 F)	• Happiness rating • Gender • Pass/Fail • Eye Color • Interview transcript • Categories of plants • Descriptive temperature of coffee ("very hot"

Also called the **payload**, this is the part of the packet that contains the actual information that you are transmitting. This can be text, images, sound or any digital content. The maximum data present may be as long as 1500 Bytes. In case data length is less than minimum length i.e. 46 bytes, then padding 0's is added to meet the minimum possible length.

Padding

IP packets have to be a particular length. **Padding** is added to make sure that the data fits what the network is designed to transmit.

CRC

Cyclic redundancy check is error checking code to make sure that data is received in an intact form.

Resources:

https://www.geeksforgeeks.org/ethernet-frame-format/

https://www.computernetworkingnotes.com/ccna-study-guide/ethernet-frame-format-explained.html