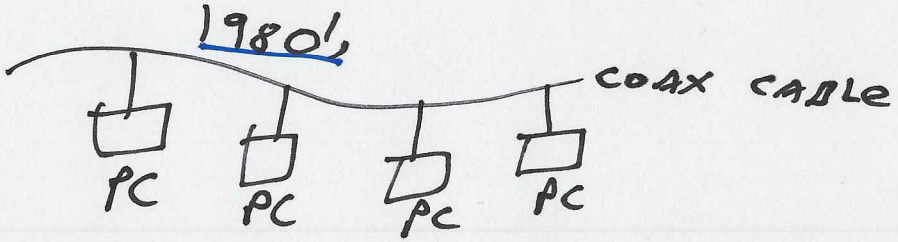
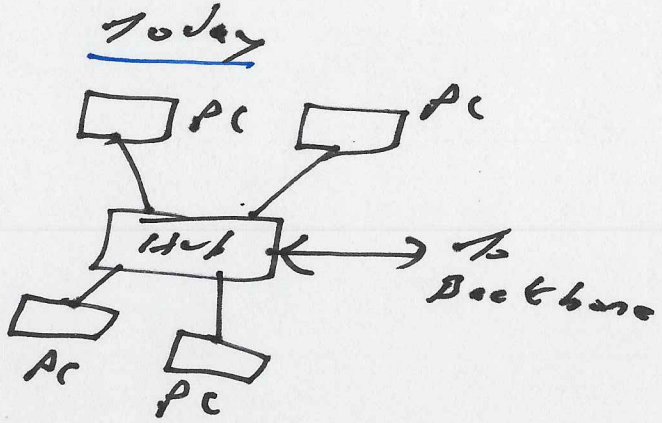
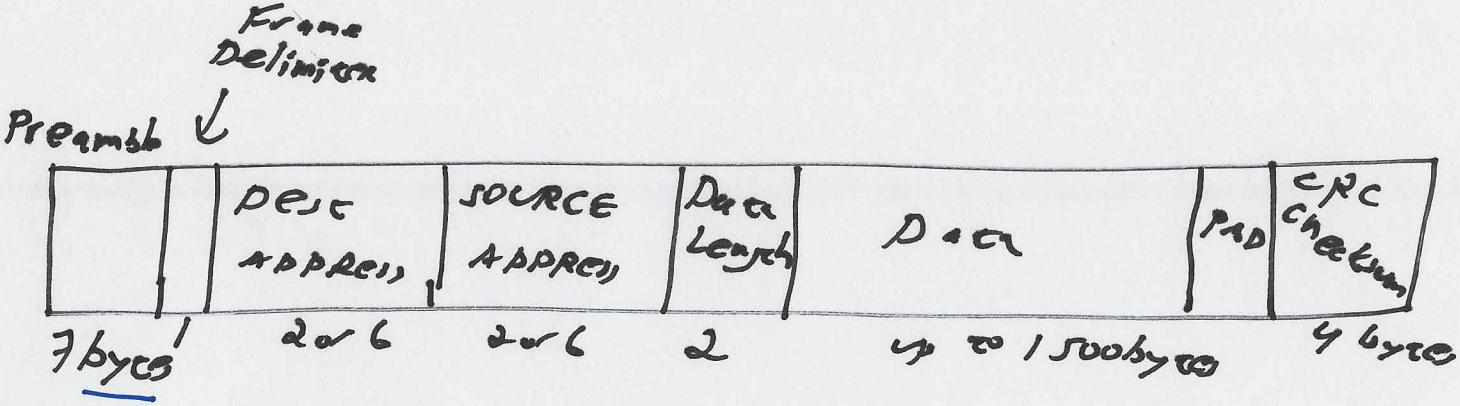
Ethernet







10 Mbps (ear 1980's)

- Binary Expo Backoff
- Manchester Encoding (Self line code)

100 Mbps (1990's)

- 4B5B
- Uses FDDI signaling technology
- Uses hub architecture

Gigabit Ethernet (1000 Mbps)

- 1998
- fiber, copper, twisted pair option
- 8B10B encoding
- range: 500m fiber
  200m twisted pair

10 Gbps Ethernet

- 8 implementations including one 4λ system. ← parallel wavelength
- operates in 4×2.5Gbps "lans" → 64B66B encoding
- early 2000's.

40/100 Gbps Ethernet

Objectives

- MAC data rates of 40 and 100 Gbps.
- Full duplex only
- Use existing min, max frame length
- Use current frame format
- Optical Transport Network (OTN) support
  (see optical networks ch. ptr)

Higher Speed Ethernet

- Compound Annual Growth Rate is 58%
- 400 Gbps Ethernet double with current technology
- 1000 Gbps (1 Tbps) need more R&D, new technology

Objectives:

- 200 and 400 Gbps
- existing frame format + min, max frame size.
- bit error rate 10^{-13} (100 Gbps is 10^{-12})
- OTN network support
- Chip to chip, chip to module applications

Ethernet has transformed itself for 35 years!