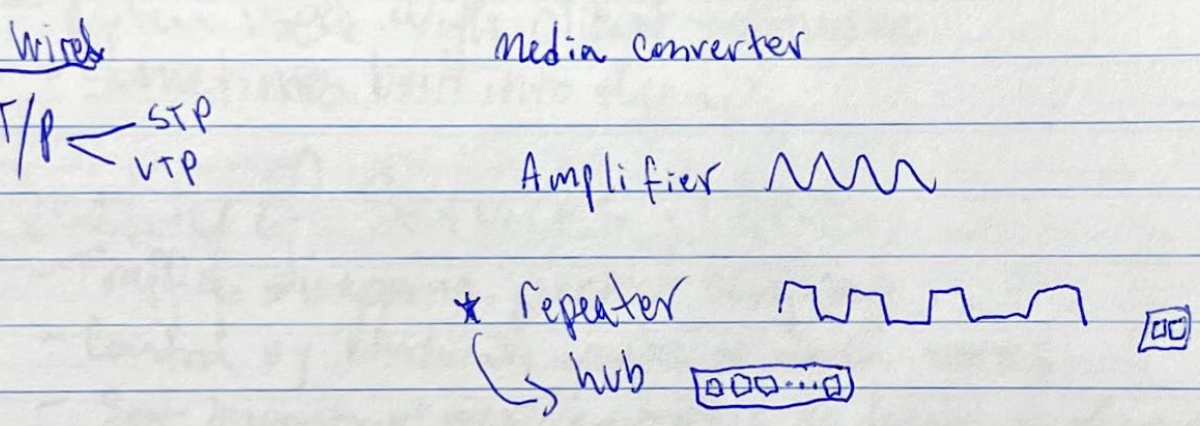
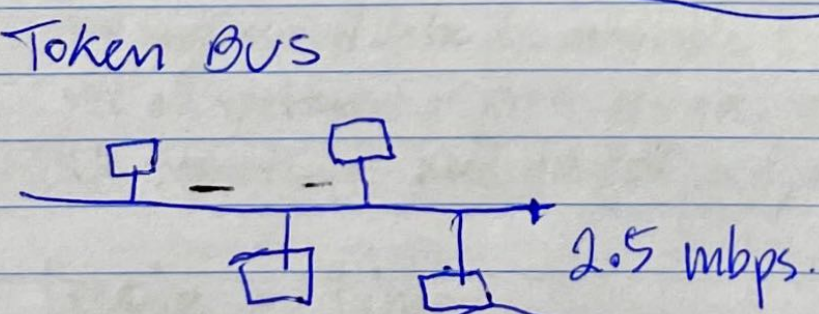
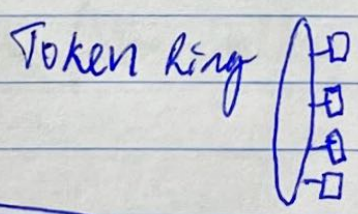


ATG Learning - Mond-Thurs 8:30am - 10pm
 Friday 8:30am - 6:00pm
 Sat-Sun 10am - 4pm
 ATGlearning.com

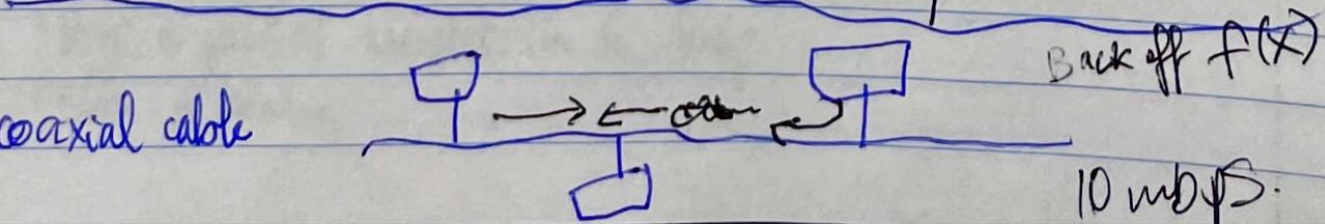
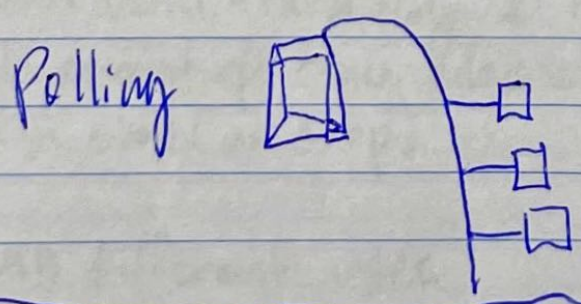
Review:
 Cables: Twisted pair, Coaxial & Fiber
 Wireless: ~~radio~~ antenna



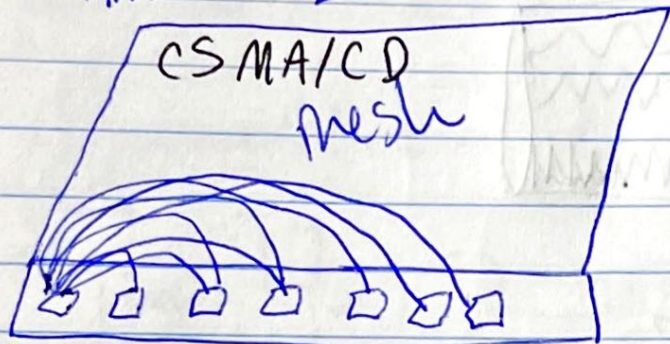
Data link MAC Address Physical "Frame"



Ethernet at data link is MAC address.
 Ethernet at physical layer is cable...



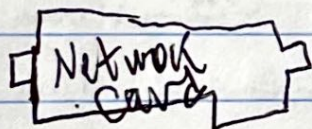
Switches to cut down on crash.
 AAA F12 ✓ learn the mac address



1	AAA
2	BBB
4	CCC
5	DDI
6	DEI
7	F12

Data link deal with multiple access

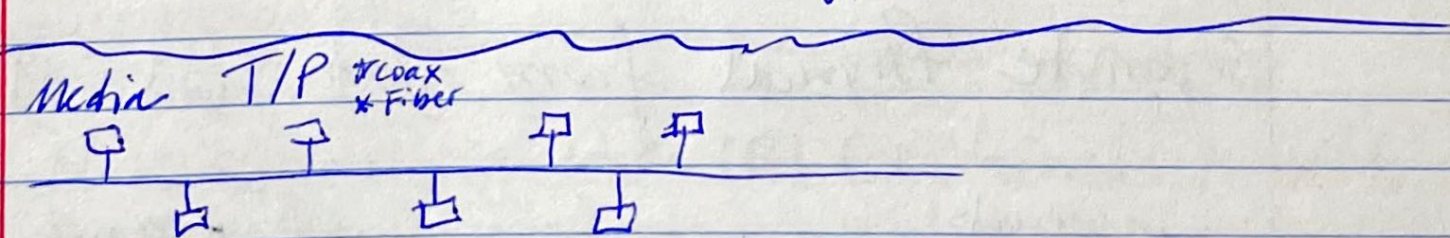
Network card is the key



Sunny Classroom

Carrier Sense Multiple Access - CSMA

CSMA/CD is an old technology be helpful

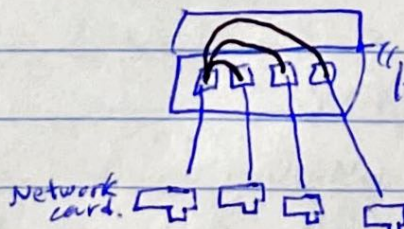


Ethernet "CSMA/CD"

Problem w/ cable Rats.

T/P = Twisted Pair

"Star" use device like a hub.



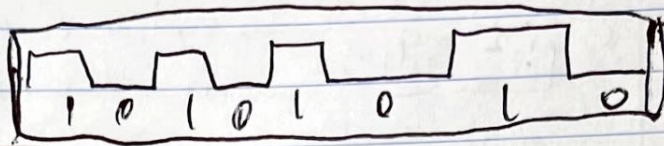
"Hub" always at Layer ①
 (1+0 bits)

"It will send information out of each jack!" "Collisions"
 To stop collision - use switch

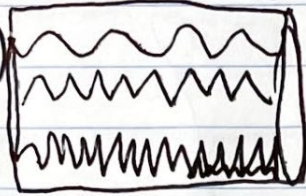
Sunny Ethernet IEEE 802.3. Youtube things you need to know about the ethernet.
 7 things about Ethernet.

William Prado
04/14/2025

Baseband (TDM)



Broadband (FDM)



Ethernet Evolution

10 Mbps Ethernet

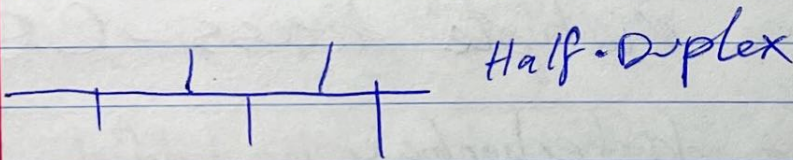
100 Mbps FDDI

100 Mbps Ethernet

100 Mbps Ethernet Now

Cards changed but the cables are the same

Transmit & receiver (Fiber)



Separate Physical from Data Link = P/DL

is on steroids

000000

hub is always half-Duplex.

Repeater = Digital

Bridge is at data link layer.

LX Long wave

LH Long range

WDM Wavelength Division Multiplexing

DWDM Dense Wavelength Division Multiplexing

TX twisted pair

FX fiber

SX

LR

SR

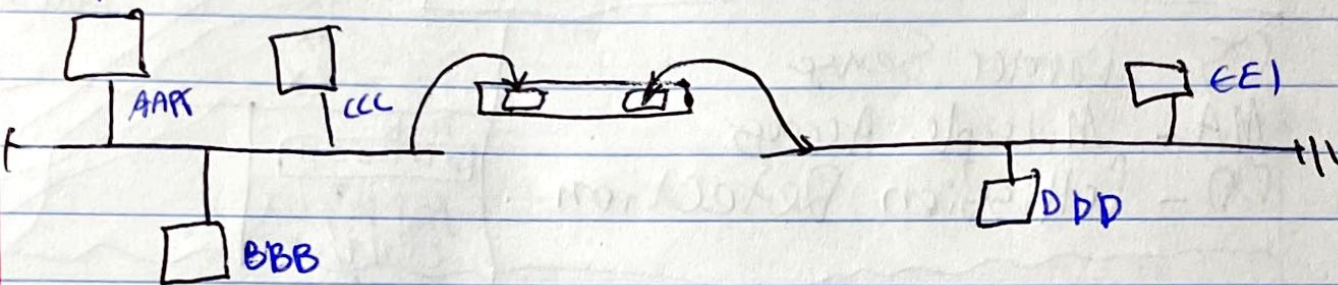
16 Base
100 Base
1000 Base
10 G Base
20 G Base
40 G Base

Coax. F type connector for coax

Fiber. twist & clamp
ST, SC, LC

Youtube Professor Messer. Ethernet Standards - N10-008
Campina Network 1.3

Difference between Bridge & Repeater.



Port	MAC
1	AAA
1	BBB
1	CCC
2	DDD
2	EEE

- 1 Physical
- 2 Data link MAC

Hub

Hub, switch & Router Explained - What's the difference?

How does a switch learn MAC Addresses

Ethernet frame - Sunny Classroom.

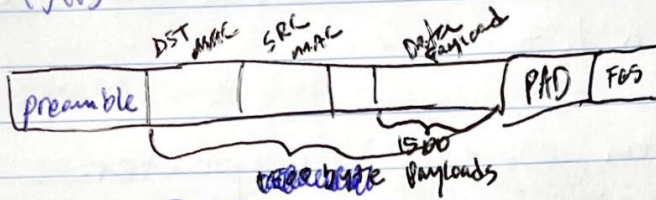
Transport ^{Protocol} _{units} → Segment
Network → Packet
Data Link → Frame

Ethernet Frame.

04-11-2025

Test

1500s



Bridge

Switch Full Duplex

TX
TX
RX
RX

Hub
Half Duplex
CSMA/CD

Half Duplex vs. Full Duplex
one directions
one at a time
CSMA/CD
both ways
directions

CS - Carrier Sense
MA - Multiple Access
CD - Collision Detection

Full-duplex
half-duplex
Simplex

Phone
Walky talky

Seeing
Classroom
Youtube

Youtube

What is CWDM?
Coarse Wavelength Division

Youtube Dense Wavelength Division Multiplexing (DWDM)

Computer Network Interface Card.

|| || to connect to the network

devmgmt.msc = Device Management.

Network Interface Card.

|| adapter (NIC).

Physical layer 01010101.

Data Link layer Frames.

Ethernet Frame

Media Access Control Address Format