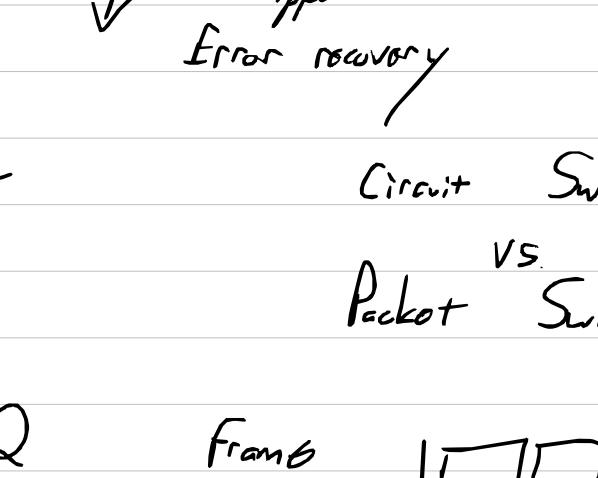
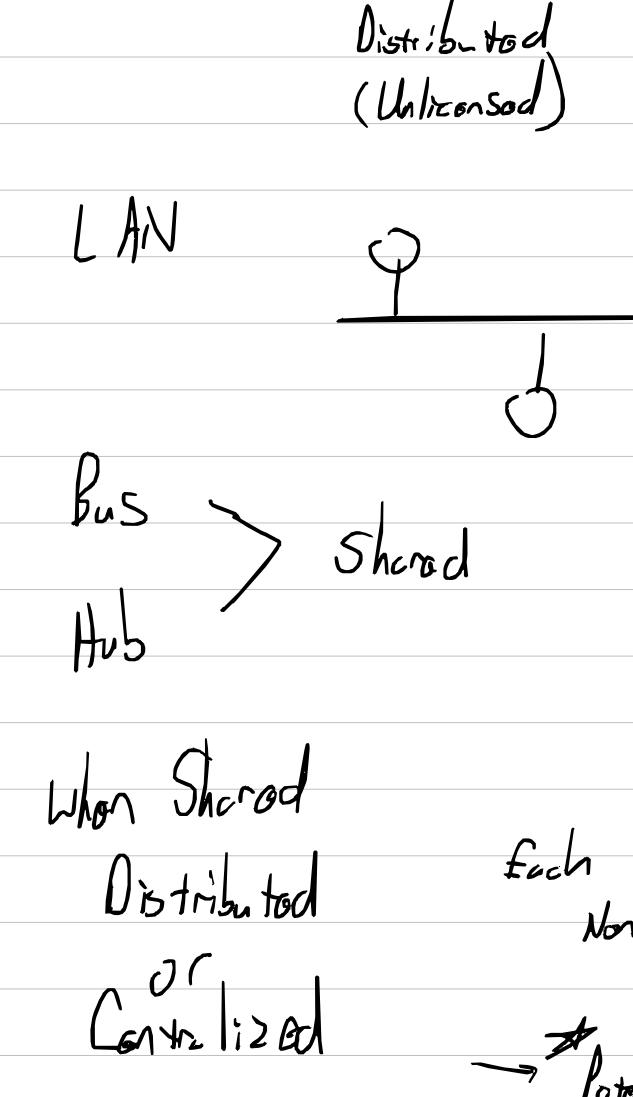


# Lecture 3 - Link Layer

Last lecture



Recall OSI



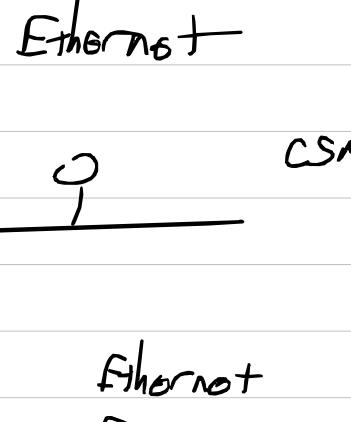
Packet

Circuit Switching

Packet vs. Switching

Layer 2

Frame



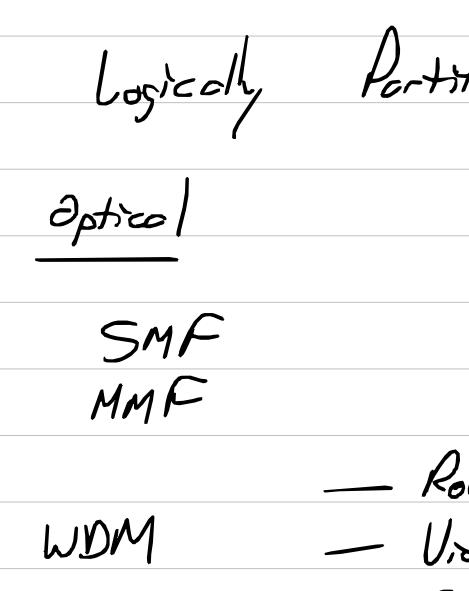
Preamble Head

Today Links Direction Sharing

Wired vs. Wireless

Distributed (Unlicensed) vs. Centralized (Licensed)

LAN



When Shared

Distributed

Each node competes

or Centralized

Non-deterministic (generally)

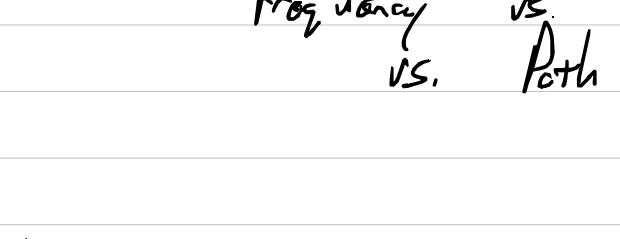
→ Potentially deterministic

Wire

802.3 Ethernet

CSMA/CD

Hub



CSMA/CD

CSMA/CD

CSMA

CA → Hand

Collision

Carrier

Sense

Ethernet 10 Mb/s

Fast 100 Mb/s

Gig 1000 Mb/s

2.5 Gig 10,000 Mb/s

Radius ↓ to account for propagation

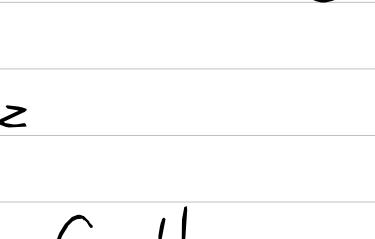
collision detection

Possible wiring

Switch

Store & Forward

Star



Layer 2

MAC Address

6 Bytes

Hex

— : — : —

Broadcast

All 1's

Switch

Soft Learning

Simple/Dumb

Managed

Web Interface

Layer 2 MAC

VLAN

Logically Partition

Fast

5

6

Channels

Channel width

Frequency

Frequency vs. Path Loss

Path Loss

Wireless vs. Wireless

CSMA/CA

Slotted ALOHA

Exp. Backoff

DIFS

SIFS

PIFS

PIFS</p