Broadcast Media

Links

- A Physical Point to Point Wire
  - 2 terminals
  - data goes in one and comes out the other
- A Bus
  - many terminals
  - data comes in one and shows up at all others
Pros and Cons

• Point-To-Point
  – Advantages?
  – Disadvantages?
• BUS
  – Advantages?
  – Disadvantages?

Using a (Full Duplex) Point-To-Point Link

• TRANSMIT
• RECEIVE
Using a BUS

• TRANSMIT
• RECEIVE

Collisions

• A collision occurs when two or more stations transmit at “roughly the same time.”
• Two (or more) good messages become garbage
• What do we mean by “roughly”
• Consider:
  – S1: at time T transmits a message M1
  – S2: at time T+d transmits a message M2
• What must d be to ensure that there are no collisions?
Dealing with Collisions

• Ignore. Rely on E2E principle
  – Unfortunately, \( P(\text{collision}) \) grows exponentially with the # of hosts
  – Q stations
  – Transmit with \( P(1/Q) \)

Other Options

• Don’t send when you see someone else sending
  – CSMA
  – Still has an initial “acquisition” window during which there can be contention and a message will be lost
  – Consider very low and very high bandwiths
    • which matters more?
More Options

- Don’t send when someone else is sending
- If you detect a collision during acquisition window, try again
- Ignores E2E
- Ethernet
- Binary exponential backoff