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(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 bandwidths
    - 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