The Telecommunications Customer

ITS 214
Wiring Structure

- We always use a “hierarchy”
  - Use a common path as long as possible
  - Split into smaller branches when needed
- Makes wiring cheaper, because
  - Wiring cost is driven by labor - fewer paths mean fewer crew hours
  - Large combined runs allow high capacity cabling and multiplexing
Outside Plant

• The wiring from the Central Office to the customer Demarc
  • High capacity “Main Feeder” leaves the CO
  • Goes to a Distribution Frame
  • Smaller Branch Feeders go to building or subdivisions
  • For small buildings and residential areas, further aggregation points are used
Inside the Building

- Main Distribution Frame
  - Inside the Demarc

- Intermediate Distribution Frames
  - One or more per building
  - Often at least one per floor
  - Aggregate wiring from individuals rooms and jacks
Remember PDH?

- Multiplexing on the local loop using PDH
- DS1 - 24 digital voice channels (24 times 64kbps)
  - The “T1” flavor
    - 1.5Mbps for data, 24 voice channels for PSTN connect
  - The “ISDN PRI” flavor (Primary Rate Interface)
    - Similar to 24 channel version of T1
    - 23 voice channels and on signaling channel (ITU Q.931)
- DS3 - 45Mbps
  - For Internet connectivity
  - 28 T1s for PSTN
DID

• Direct Inward Dialing
  • If the customer uses an on-site switch
  • There are more phones than connections to the CO
  • How can a caller reach an individual employee
    • Use an attendant (automated most likely)
    • DID assigns a number to every phone and signals that number ahead of the call
    • Customer switch gets the number and rings the assigned phone
Some more Terminology

• FXS and FXO
  • The FX (Foreign Exchange) term goes back to when the telephone company provided all customer equipment
  • Foreign = not on my network

• FXS
  • Interface for an analog phone

• FXO
  • Interface to connect to another switch

• These terms appear a lot in Voice over IP