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