

Telecommunication LAN Cables

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❖ Twisted pair

- **Twisted pair is the ordinary copper wire.**
- **Low speed transmission medium**
- **Consists of 2 insulated wires they can be Shielded STP or Unshielded UTP**
- **STP UTP are the most popular, cheap, and easy to work with**
- **They have a crosstalk issues, and vulnerable to Electromagnetic Interference (EMI)**
- **Twisted pair is sometimes installed in two or more 4 pairs , all within a single cable**
- **Connects home and many business computers to the telephone company**
- **Each connection on twisted pair requires both wires**
- **UTP Categories**
 - **Cat 1**
 - Used for phone
 - Not good for Data transmission
 - **Cat 2**
 - Specified in EIA/TIA-585 standard
 - Handle data up to 4 Meg /Sec (4MBps)
 - **Cat 3**
 - Used in 10BaseT networks
 - Handle data up to 10 Meg /Sec (10MBps)
 - Common usage
 - **Cat 4**
 - Used in Token Ring networks
 - Handle data up to 16 Meg /Sec (16Bps)
 - **Cat 5**
 - It is the standard for new installations
 - Handle data up to 100 Meg /Sec (100MBps)
 - Common usage
 - **Cat 6**
 - Handle data up to 155 Meg /Sec (155MBps)
 - **Cat 6**
 - Handle data up to 1 Billion Bits /Sec (GBps)
- **UTP does not require fixed spacing between connections like coaxial**
- **STP UTP are easy to tap into**

❖ Coaxial cable

- **Coaxial cable was invented in 1929 and first used commercially in 1941**

- **More resistant to EMI than Twisted pair**
- **Can transmit greater bandwidth and distance than twisted pair**
- **Coaxial cable is the kind of copper cable used by cable TV companies**
- **Coaxial cable is sometimes used by telephone companies from their central office to the telephone poles near users**
- **Widely installed for use in business and corporation Ethernet and other types of local area network**
- **2 types of coaxial**
 - **50 ohm for digital signaling**
 - **75 ohm for analog signaling**
 - **THINNET RG58 10Base2 up to 185 meters**
 - **THICKNET RG8, RG11 10Base5 up to 500 meters**

❖ **Fiber optic**

- **Transmit information as light impulses using glass or plastic wire**
- **Can transmit greater bandwidth and distance than twisted pair & Coaxial**
- **Used in backbone networks**
- **Fiber optic can transmit data at high speed**
- **More resistant to EMI than Twisted pair & Coaxial**
- **Hard to tap into**
- **Transmission on fiber optic wire requires repeating at distance intervals**
- **The glass fiber requires more protection within an outer cable than copper**
- **Most expensive to install**