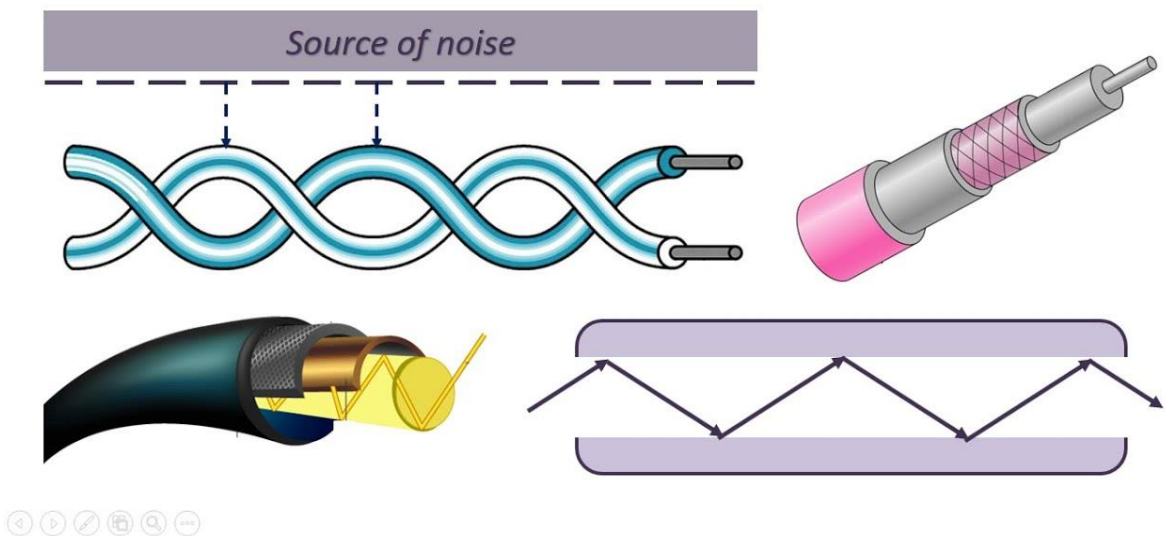


Guided Transmission Media

What is Guided Transmission Media?

- **Guided transmission media** refers to any type of communication that uses physical cables or wires to transmit data between devices. The data is "guided" through the cables along a specific path, unlike wireless transmission.

GUIDED MEDIA [TWISTED PAIR, COAXIAL AND FIBER OPTIC] TRANSMISSION MEDIA (PART 2)



Types of Guided Transmission Media:

1. Twisted-Pair Cable:

- Consists of **two insulated copper wires** twisted around each other.
- Used for **telephones** and **local area networks (LANs)**.
- There are two types:
 - **Unshielded Twisted Pair (UTP)**: Common in home and office networks.
 - **Shielded Twisted Pair (STP)**: Has extra shielding to reduce interference, used in environments with high interference.

2. Coaxial Cable:

- Has a **central conductor (copper)**, surrounded by insulation, a metallic shield, and an outer cover.
- Used for **cable TV** and **internet** connections.
- Less interference compared to twisted-pair cables and can transmit data over longer distances.

3. Fiber-Optic Cable:

- Uses **light signals** to transmit data through **thin glass or plastic fibers**.
- Very fast and can carry data over long distances without loss.
- Commonly used for **high-speed internet** connections and **long-distance communication**.
- More expensive than twisted-pair or coaxial cables, but provides much higher bandwidth.

Advantages of Guided Transmission Media:

- **Reliable:** Physical cables provide a stable connection with less interference than wireless media.
- **Faster Speeds:** Fiber-optic cables, in particular, offer incredibly high data transmission speeds.
- **Security:** It is harder to intercept data in guided media compared to wireless transmissions.

Disadvantages of Guided Transmission Media:

- **Installation Cost:** Installing physical cables can be expensive, especially over long distances.
- **Limited Mobility:** Devices need to be connected to the cable, which limits movement.
- **Maintenance:** Cables can wear out over time and may need maintenance or replacement.

Where is it Used?

- Guided transmission media is used in:
 - **Home and office networks (LAN)**
 - **Telephone lines**
 - **Cable television**
 - **Internet connections** (especially with fiber-optic cables)