**SAMRAT ASHOK TECHNOLOGICAL INSTITUTE**



Computer Networks Lab-5 (1)

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**Communication Media**

**Types of Communication Media:**

1. **Wired/Guided/Bound Communication Media:**

A transmission media where the data signal are transmitted along a specific path through cables.

**Types of Wired communication media:**

1. **Twisted Pair Cable:**

A twisted pair cable consists of a pair of insulated copper wire twisted around each other. Used of connecting computers in the network.

Types of Twisted Pair Cables:

**Unshielded (UTP):** UTP consists of two insulated copper wires twisted around each other. This type of cable has the ability to block interference and does not depend on a physical shield.

**Advantages –**

1. These cables are cost-effective and easy to install owing to their compact size.
2. They are generally used for short-distance transmission of both voice and data.
3. It is less costly as compared to other types of cables.

**Disadvantages –**

1. The connection established using UTP is not secure.
2. They are efficient only for a distance up to 100 meters and have to be installed in pieces of up to 100 meters.
3. These cables have limited bandwidth.

**Shielded (STP):** This type of cables consists of a special cover (a copper braid or a foil shield) to block external interference.

**Advantages –**

1. They are generally used for long-distance communication and transmission and are installed underground.
2. The protective shield prevents external electromagnetic noise penetration into the cable.
3. They have a higher bandwidth as compared to UTP.

**Disadvantages –**

1. These cables are very expensive.
2. They require a lot of maintenance which increases the cost more.
3. These can be installed underground only.
4. The length of the segment is similar to UTP for these cables.

**Applications of Twisted pair cables:**

* Twisted Pair cables are used in telephone lines to provide data and voice channels.
* The DSL lines make use of these cables.
* Local Area Networks (LAN) also make use of twisted pair cables.
* They can be used for both analogue and digital transmission.
* RJ-45 is a very common application of twisted pair cables.

1. **Coaxial Cables:**

It consists of 2 parallel conductors each with theirs separate insulated protection encased in a plastic covering containing an insulation layer made of PVC or Teflon.

### Applications of Coaxial cable

The coaxial cables are used in Ethernet LANs and also used in MANs

Television, Internet, CCTV, Video, HDTV.

**Advantages**

1. Coaxial cables support high bandwidth.
2. It is easy to install coaxial cables.
3. coaxial cables have better cut-through resistance so they are more reliable and durable.
4. Less affected by noise or cross-talk or electromagnetic inference.
5. Coaxial cables support multiple channels

**Disadvantages**

1. Coaxial cables are expensive.
2. The coaxial cable must be grounded in order to prevent any crosstalk.
3. As a Coaxial cable has multiple layers it is very bulky.
4. There is a chance of breaking the coaxial cable and attaching a “t-joint” by hackers, this compromises the security of the data.
5. **Optical Fibre Cable:**

It uses the concept of reflection of light through a core made up of glass or plastic.