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Study of different types of Network cable

AIM:

Study of different types of Network cables

a) Understand different types of network cable.

Different types of cables used in networking are:

1) unshielded Twisted Pair (UTP) cable
2) Shielded Twisted pair (STP) cable
3) coaxial cable
4) Fiber optic cable.

Cable type	category	Maximum Data Transmission	Advantages / Disadvantages	Application / use.
UTP	category3	10bps	advantages *cheaper in cost *easy to install as they have smaller overall diameter	10Base-T ethernet
	category5	Upto 100 mbps		Past ethernet, gigabit ethernet
	category5e	1Gbps	disadvantages *more prone to (EMI) electromagnet interface & noise	Fast ethernet gigabit ethernet
STP	category 6, 6a	10Gbps	advantages *shielded *faster than UTP *less susceptible to noise & interface	Gigabit ethernet 10G ethernet (55 m) widely used in data centers
SSTP	Category 7	10Gbps	disadvantages *expensive *greater install -ation effort	Gigabit ethernet 10G ethernet (100m)

Coaxial Cable	RG-6 RG-59 RG-11	10-100 Mbps	Advantages * high bandwidth * immune to interference * low loss bandwidth * versatile Disadvantages * limited distance * cost * Size is bulky	Speed of signal is 500 m television network High speed Internet connect-ons
fibre optic cable	single mode multimode	10Gbps	advantages * high speed * high bandwidth * high security * long distance Disadvantage: * expensive * requires skilled installers	Maximum distance of fiber optical cable is around 100 meters

b)

1) What is the difference between cross cable and straight cable?

Straight cable (straight-through cable):

This type of cable connects each pin on one end to the corresponding pin on the other end (Pin 1 to pin 1, Pin 2 to pin 2, etc.). It is used to connect different types of devices such as a PC to a switch or router.

Cross cable (Crossover cable):

In crossover cable, the transmit & receive wires are crossed. For example, the transmit pins on one end connect to the receive pins on the other end. It is used to connect similar devices directly such as PC to PC or switch, without an intermediary device.

2) Which type of cable is used to connect two PCs?

A crossover cable is used to directly connect 2 PC's

3) Which type of cable is used to connect a router/switch to your PC?

A straight through cable is used to connect a router or switch to PC.

4) Find out the category of twisted pair cable used in your LAN to connect the PC to network socket

Usually, category 5e or category 6 twisted pair cables are used in LANs for connecting PCs to network sockets

5) write down your understanding, challenges faced, & output received while making a twisted pair cross/straight cable.

Understanding:

I learned that ethernet cables are made up of twisted pair of wires, depending on how these wires are arranged & connected the cable can be used for different network purpose.

Challenges faced

While making the cable, I found it challenging to ensure the wires were inserted correctly & in right order according to T568A or T568B wiring standards. Crimping RJ45 connectors securely was also tricky

Output received:

After making the cable & testing it with a cable tester, the cable showed proper continuity & pin alignment. When used, the devices connected with cable communicate correctly, confirming the cable was made properly

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Result:

Different types of network cables, such as straight through & crossover cables serves specific purposes in connecting devices. Understanding their wiring & uses help ensure proper network communication & device compatibility