24/7/25

Exp-2

NETWORK CABLES

Aim : Study of Different types of Network Cables

a) understand different types of Network cable.

Different types of cable used in networking are :

1) unshielded twisted pair (UTP) cable
2) shielded twisted pair (STP) cable
3) coaxial cable
4) fibre optic cable

Cable type	category	Maximum data transmission	Advantages/ disadvantages	Application/ use
UTP	Category 3	10 bps	Adv → cheaper in cost → Easy to install Disadv → susceptible to EMI and noise	→ 10 Base-T Ethernet → Fast Ethernet Gigabit Ethernet
	category 5	up to 100 Mbps		
	Category 5e	1 Gbps		
STP	category 6, 6a	10 Gbps	Advantages → Shielded → Faster than UTP → less susceptible to noise and interference Disadvantages → Expensive → Greater installation effort	Gigabit Ethernet 10G Ethernet (55m) Widely used in data centres Gigabit Ethernet 10G Ethernet (100m)
SSTP	category 7	10 Gbps		

Cable type	Category	Maximum data transmission	Advantages/ Disadvantages	Application/ Use
Coaxial Cable	RG-6 RG-59 RG-11	10-100Mbps	→ High bandwith → Immune to inference → Low loss bandwith → Versatile disadvantages → Limited distance → Cost → Size is bulky	Speed of signal is 500m Television network High speed internet connections
fibre optics cable	single mode multi mode	100Gbps	Advantages → High speed → high bandwith → high security → long distance Disadvantages → Expensive → Required skilled installers	→ maximum distance of fibre optics cable is around 100 meters

Student observation

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

→ straight cable:

→ connects different types of devices (eg: PC to switch, switch to router)

→ the wiring on both ends is the same.
(Eg: T568B on both side)

→ cross cable:
→ connects similar devices (eg: PC to PC, switch to switch)
→ the wiring on one end is different from the other (eg: one end T568A and the other T568B)

2) which type of cable is used to connect two PCs?
→ cross cable is used to connect two PCs directly without a switch or router.

3) which type of cable is used to connect a router/switch to your PC?
→ a straight cable is used to connect a PC to a router or switch.

4) Find out the category of twisted pair cable used in your LAN to connect the PC to the network socket.
→ In most LANs, Cat 5e or Cat 6 twisted pair cables are used.
* these support speeds of up to 1 Gbps (Cat 5e) or 10 Gbps (Cat 6)

→ you can check the cable jacket to find the category printed on it

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

understanding :

→ making a twisted pair cable involves:

* Stripping the outer insulation carefully.
* Arranging the internal wires in the correct color sequence (T568A or T568B)
* inserting the wires into the RJ45 Connector.
* Crimping the connector using a crimping tool.

Challenges faced:

* keeping wires in the correct order while inserting into the connector.
* Ensuring all wires go fully into the RJ45 plug.
* making sure the crimping was done properly to avoid loose connections.

* Mistakes in wiring pattern that caused the cable not to work.

Output Received:

→ After successfully crimping

* the cable was tested using a cable tester and showed a proper connection.

* the cross/straight cable successfully connected the devices and enabled network communication.

Result:

Hence, the different types of network cables have been successfully studied

4/2/26