

Network cables

Study of different types of Network

cables

a) understand different types of network cable.

Different type 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	category 3	10 Gbps	Advantages	10 Base-T Ethernet
	category 5	up to 100 Mbps	<ul style="list-style-type: none"> • cheaper in cost • Easy to install as they have a smaller overall diameter 	Fast Ethernet, Gigabit Ethernet
	category 6e	1 Gbps	<ul style="list-style-type: none"> Disadvantages • More prone to EMI 	Fast Ethernet, Gigabit Ethernet
STP	Category 6, 6a	10 Gbps	<ul style="list-style-type: none"> Advantages • shielded. • Faster than UTP • less susceptible to noise and interference 	Gigabit Ethernet, 10 Gb Ethernet (FSM) widely used in data centres
SSTP	category 7		<ul style="list-style-type: none"> Disadvantages • Expensive • Greater installation 	Gigabit Ethernet, 10 Gb Ethernet (Room)

Coaxial cable	RN-6 RN-59 RN-11	10-100 Mbps	<ul style="list-style-type: none"> • High bandwidth • Immune to interference • low loss bandwidth • versatile 	Speed of Signal is 900m Television network High Speed Internet connectivity
			Disadvantages <ul style="list-style-type: none"> • Limited distance • Cost • Size is bulky 	
Copper Fibre Optics cable	Single mode Multi mode (OM3) (OM4)	100 Gbps	Advantages <ul style="list-style-type: none"> • High speed • High bandwidth • High security • Long distance Disadvantages <ul style="list-style-type: none"> • Expensive • Requires skilled installers 	Maximum distance of Fibre optics cable is around 100meters

Student observation

1. What is the difference between cross cable and straight cable.

Feature

Wiring Pattern

Used For

Example devices

Modern Devices

Straight cable

Same on both ends

Connecting different types of devices (eg. PC to switch)

PC to Router, PC to Switch

Many newer devices have Auto-MDIX and can auto-adjust

Cross Cable

Different wiring pattern

Connecting similar devices (PC to PC)

PC to PC, Switch to Switch.

Still useful in some specific legacy setups.

2. which type of cable is used to connect two PCs

• Additionally, a crossover cable is used to connect two PCs directly without a switch or router in between.

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

• A straight cable is used to connect different devices, such as :

• PC \leftrightarrow Switch

• PC \leftrightarrow Router

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

• Cat 5e (supports up to 1 Gbps)

• Cat 6 (supports up to 10 Gbps over shorter distances)

• Cat 6a, Cat 7, etc.,

Example: CAT 6 UTP 24AWG 4PR VERIFIED EIA/TIA 568B PATCH CORD.

5. write down your understanding, challenges faced,

and output received while making a twisted pair cross / straight cable.

• Making a network cable involves arranging 8 color-coded wires in a specific sequence (T568A or T568B standard).

• For a straight cable, both ends use same standard.

• For a cross cable, one end uses T568A, the other uses T568B.

• (repeated)

• (repeated)

(repeated)

• (repeated)

Result:

The various network cable are used in their connections are done successfully.

