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FACULTY OF ENGINEERING & TECHNOLOGY

BCA-302Computer Networks

Lecture-13

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OUTLINE

- ETHERNET PHYSICAL LAYER STANDARDS
- ETHERNET 10BASE-T & 100BASE-TX
- 10BASE-T & 100BASE-TX HUBS
- FAST ETHERNET
- GIGABIT ETHERNET
- IEEE 802.2: LOGICAL LINK CONTROL

ETHERNET PHYSICAL LAYER STANDARDS

10Base5

10 Mbps, Baseband transmission, 500m cable length

10Base2

10 Mbps, Baseband transmission, ~200m cable length

10Base-T

10 Mbps, Baseband transmission, UTP cable

100Base-TX

100 Mbps, Baseband transmission, UTP cable

ETHERNET 10BASE-T & 100BASE-TX

Wiring

Unshielded Twisted Pair (UTP)

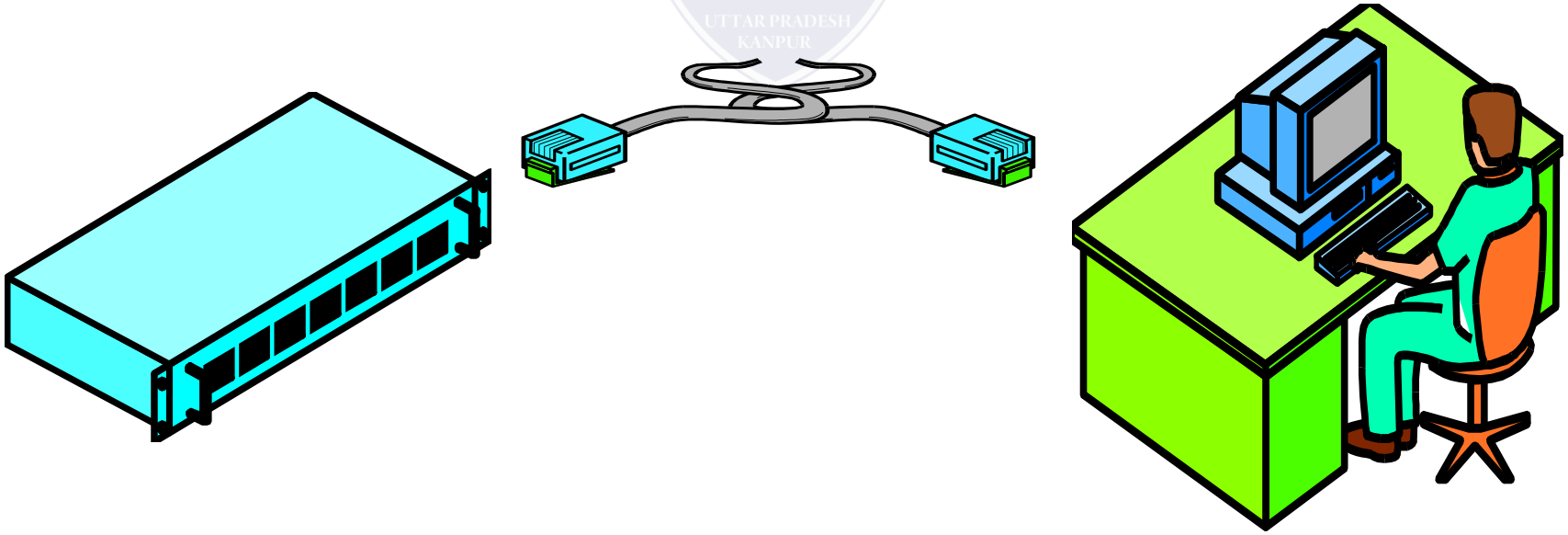
Category 5 wiring is best

Cat 3 and Cat 4 in some older installations

Bundle of eight wires (only uses four)

Terminates in RJ-45 connector

10Base-T & 100Base-TX hubs



10BASE-T & 100BASE-TX HUBS

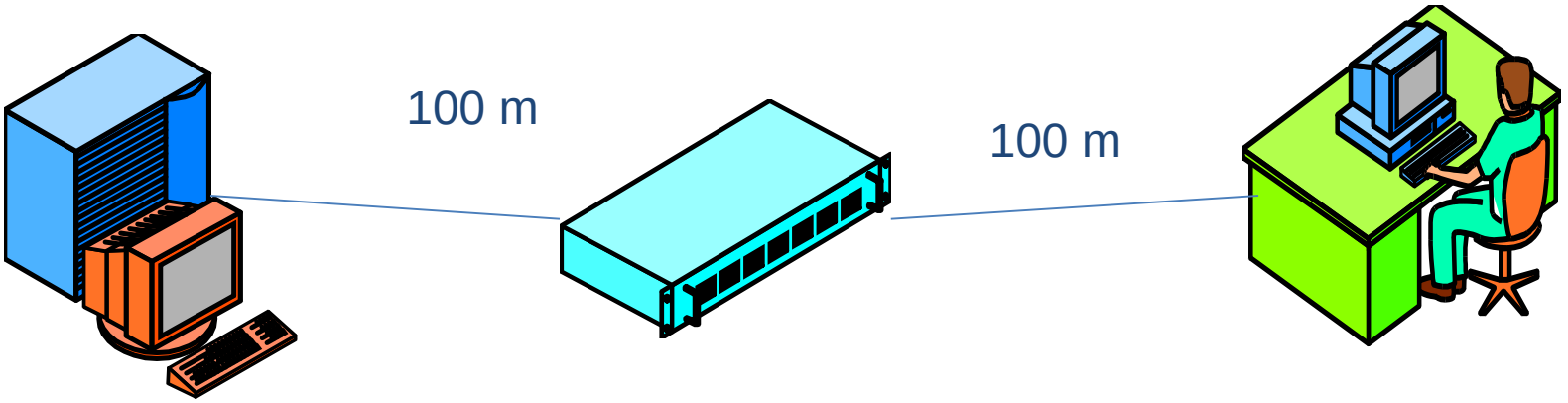
Hubs have many ports, each of which has one incoming network cable

Hubs are usually located in computer rooms, or network distribution cupboards
a *patch panel* (or patch bay) is used to connect between hubs and the wall sockets throughout a building

Wiring

100 meters maximum distance hub-to-station

Can use multiple hubs (max 4) to increase the distance between any two stations



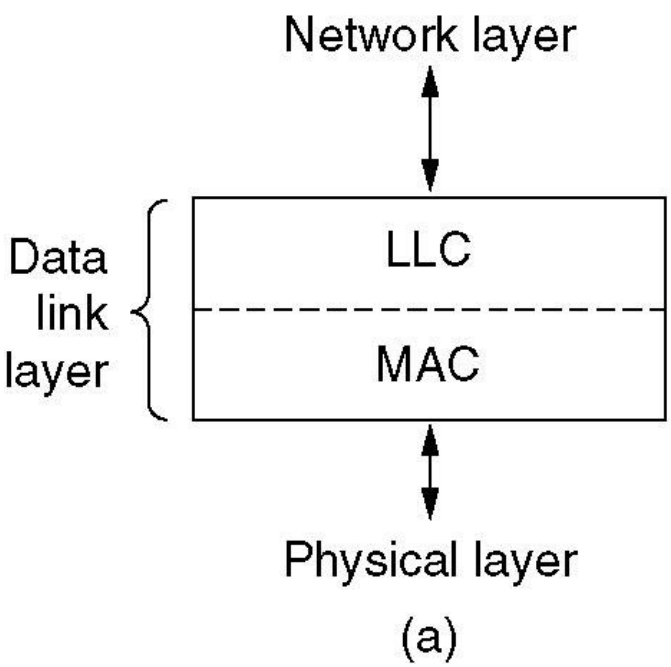
The original fast Ethernet cabling

Name	Cable	Max. segment	Advantages
100Base-T4	Twisted pair	100 m	Uses category 3 UTP
100Base-TX	Twisted pair	100 m	Full duplex at 100 Mbps
100Base-FX	Fiber optics	2000 m	Full duplex at 100 Mbps; long runs

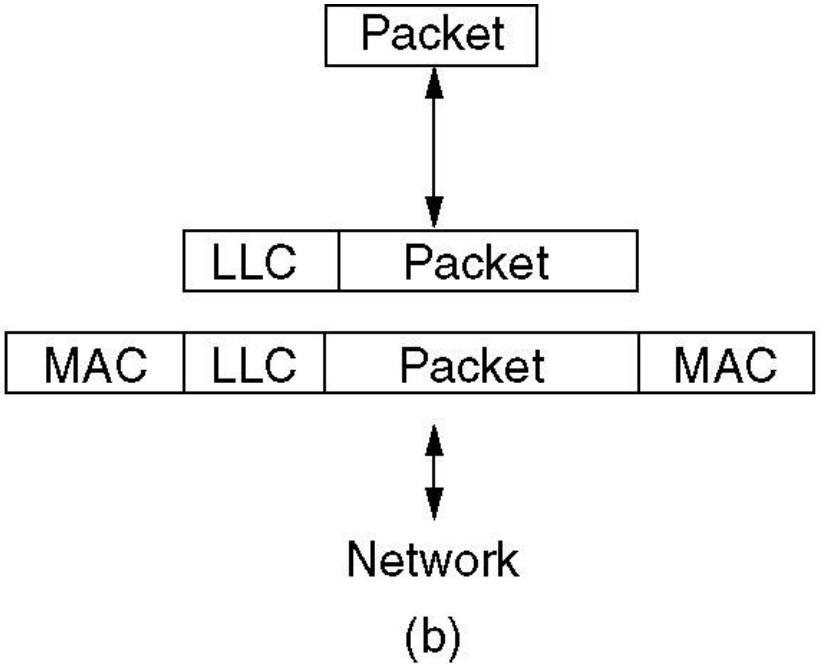
Gigabit Ethernet cabling

Name	Cable	Max. segment	Advantages
1000Base-SX	Fiber optics	550 m	Multimode fiber (50, 62.5 microns)
1000Base-LX	Fiber optics	5000 m	Single (10 μ) or multimode (50, 62.5 μ)
1000Base-CX	2 Pairs of STP	25 m	Shielded twisted pair
1000Base-T	4 Pairs of UTP	100 m	Standard category 5 UTP

IEEE 802.2: LOGICAL LINK CONTROL



Position of LLC



Protocol formats

Multiple Choice Question

MUTIPLE CHOICE QUESTIONS:

Sr no	Question	Option A	Option B	OptionC	OptionD
1	Which of this is not a constituent of residential telephone line?	A high-speed downstream channel	A medium-speed downstream channel	A low-speed downstream channel	An ultra-high speed downstrea m channel
2	Home Access is provided by _____	DSL	FTTP	Cable	All of the mentioned
3	OSI stands for _____	open system interconnection	operating system interface	optical service implementation	open service Internet
4	The number of layers in ISO OSI reference model is _____	4	5	6	7
5	TCP/IP model does not have _____ layer but OSI model have this layer.	session layer	transport layer	application layer	network layer

REFERENCES

- http://www.engppt.com/2009/12/networking-fourozan-ppt-slides.html