



RAMA UNIVERSITY

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FACULTY OF ENGINEERING & TECHNOLOGY

DCS-503 Computer Networks

Lecture-14

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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

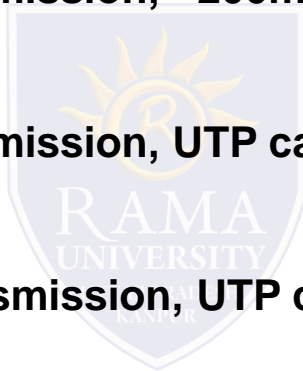
10 Mbps, Baseband transmission, ~200m cable length

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)

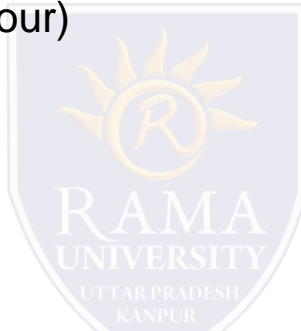
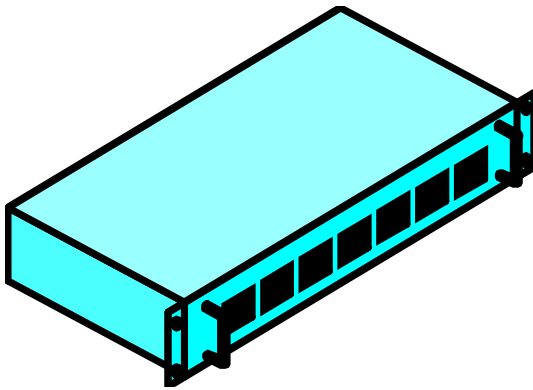
Category 5 wiring is best

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

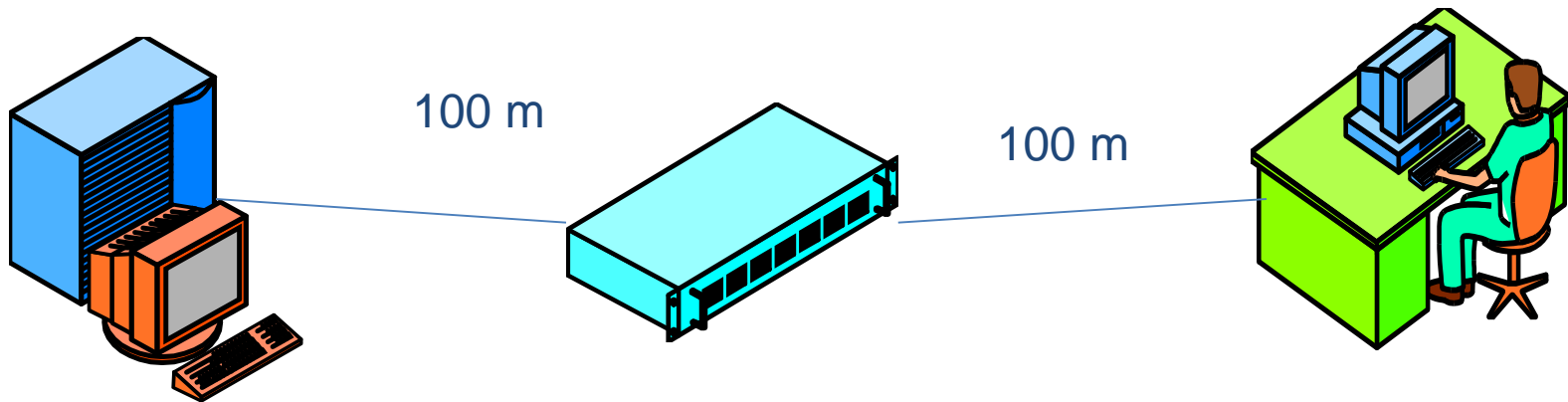
Hubs have many ports, each of which has one incoming network cable

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



FAST ETHERNET

The original fast Ethernet cabling

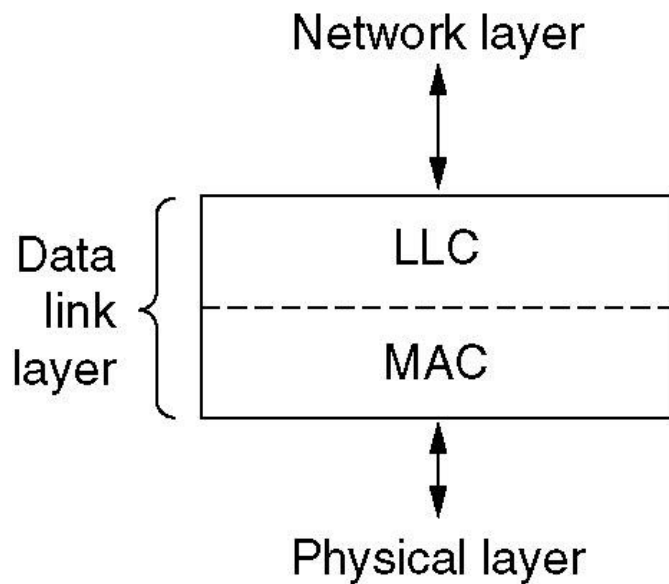
Name	Cable	Max. segment	Advantages
100Base-T4	Twisted pair	100 m	Uses category 3 UTP
100Base-TX	Twisted pair	100 m	Full duplex at 100 Mbps
100Base-FX	Fiber optics	2000 m	Full duplex at 100 Mbps; long runs

GIGABIT ETHERNET

Gigabit Ethernet cabling

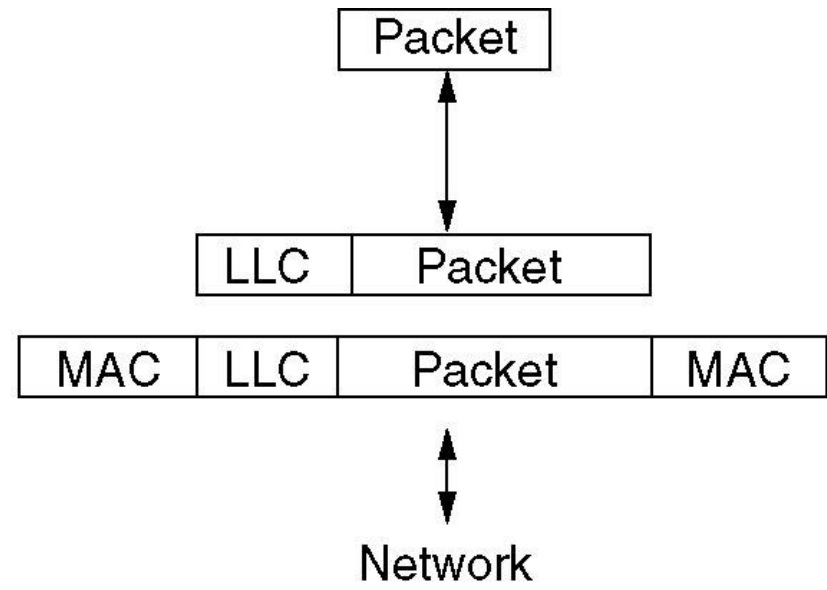
Name	Cable	Max. segment	Advantages
1000Base-SX	Fiber optics	550 m	Multimode fiber (50, 62.5 microns)
1000Base-LX	Fiber optics	5000 m	Single (10 μ) or multimode (50, 62.5 μ)
1000Base-CX	2 Pairs of STP	25 m	Shielded twisted pair
1000Base-T	4 Pairs of UTP	100 m	Standard category 5 UTP

IEEE 802.2: LOGICAL LINK CONTROL



(a)

Position of LLC



(b)

Protocol formats

Multiple Choice Question

MUTIPLE CHOICE QUESTIONS:

Sr no	Question	Option A	Option B	OptionC	OptionD
1	Which of this is not a class of IP address?	Class E	Class C	Class D	Class F
2	Internet Control Message Protocol (ICMP) has been designed to compensate _____	Error-reporting	Error-correction	Host and management queries	All of the mentioned
3	Header size of the ICMP message is _____	8-bytes	8-bits	16-bytes	16-bits
4	Which is not a application layer protocol?	HTTP	SMTP	FTP	TCP
5	The packet of information at the application layer is called _____	Packet	Message	Segment	Frame

REFERENCES

- <http://www.engppt.com/2009/12/networking-fourzan-ppt-slides.html>

