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UNIVERSITY

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FACULTY OF ENGINEERING & TECHNOLOGY

BCA-302 Computer Networks

Lecture-27

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# OUTLINE

➤ WAN DEVICES

➤ EXTERNAL CSU/DSU

➤ CSU/DSU INTERFACE CARD

➤ MODEMS

➤ WAN STANDARDS ORGANIZATIONS

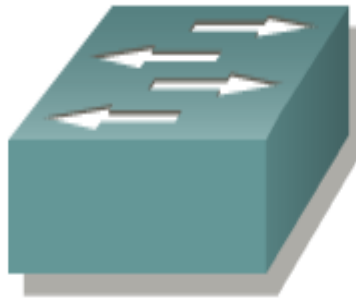


# WAN DEVICES

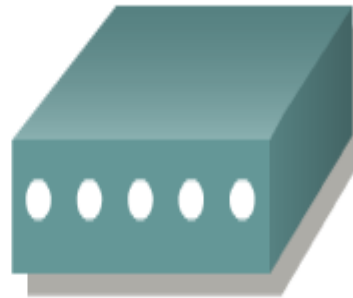
Router



Switch



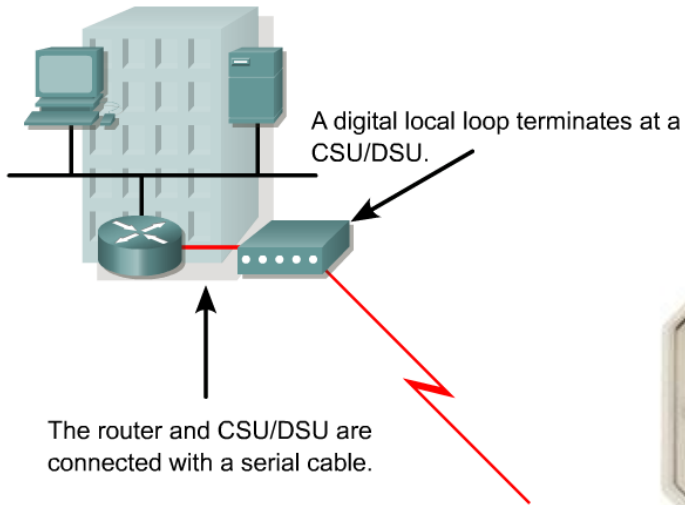
Modem (CSU/DSU)



Communication  
Server



# EXTERNAL CSU/DSU



To T1 circuit

To router

For digital lines, a **channel service unit (CSU)** and a **data service unit (DSU)** are required. We won't go into the differences here. The two are often combined into a single piece of equipment, called the **CSU/DSU**.

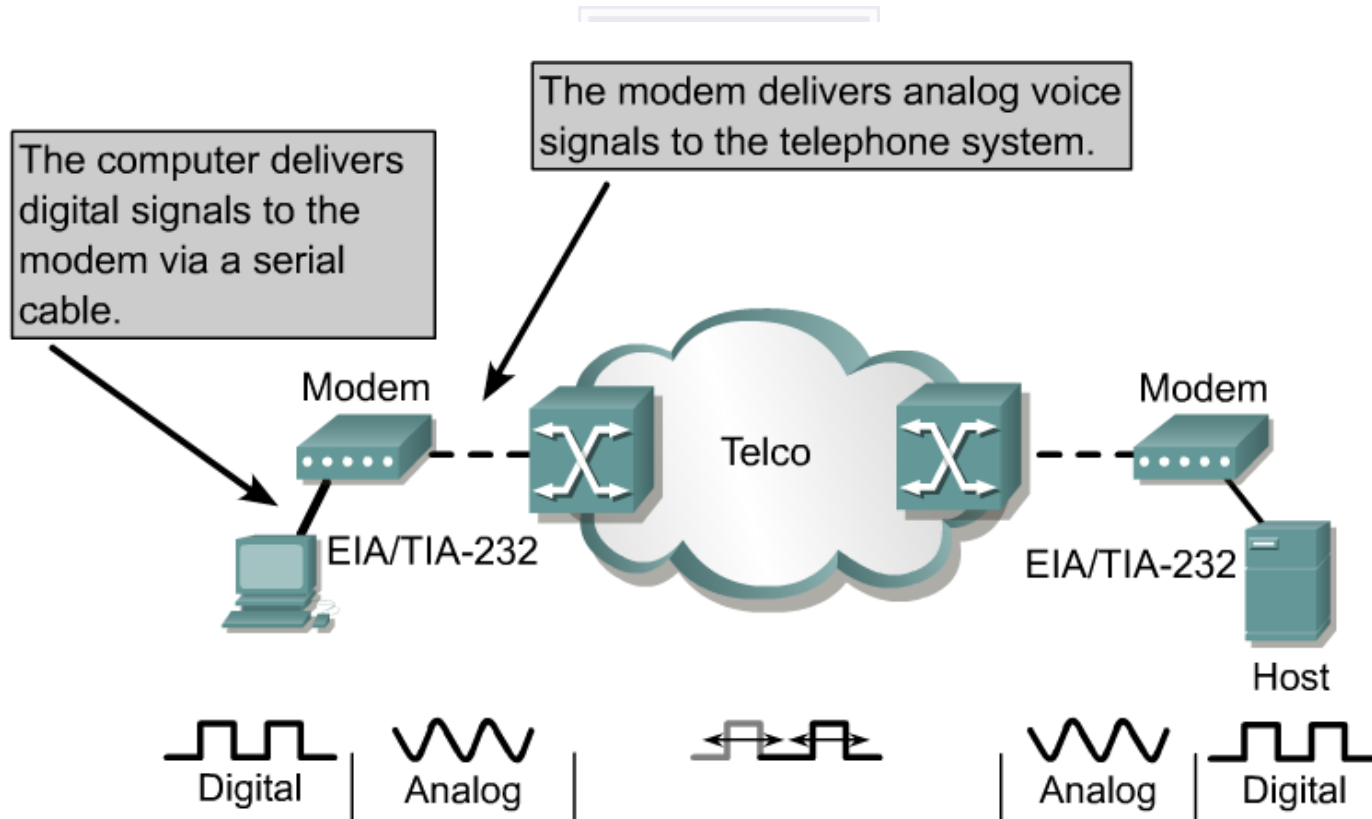
# CSU/DSU INTERFACE CARD

The CSU/DSU may also be built into the interface card in the router



# MODEMS

- Modems transmit data over voice-grade telephone lines by modulating and demodulating the signal.
- The digital signals are superimposed on an analog voice signal that is modulated for transmission.
- The modulated signal can be heard as a series of whistles by turning on the internal modem speaker.
- At the receiving end the analog signals are returned to their digital form, or demodulated.



# WAN STANDARDS ORGANIZATIONS

- WAN standards typically describe both physical layer delivery methods and data link layer requirements, including physical addressing, flow control, and encapsulation.
- WAN standards are defined and managed by a number of recognized authorities.

Acronym	Organization
ITU-T (was CCITT)	International Telecommunication Union Telecommunication Standardization Sector, formerly the Consultative Committee for International Telegraph and Telephone
ISO	International Organization for Standardization
IETF	Internet Engineering Task Force
EIA	Electronic Industries Association
TIA	Telecommunications Industries Association

# Multiple Choice Question

## MUTIPLE CHOICE QUESTIONS:

Sr no	Question	Option A	Option B	OptionC	OptionD
1	Transport layer aggregates data from different applications into a single stream before passing it to _____	network layer	data link layer	application layer	physical layer
2	Which of the following are transport layer protocols used in networking?	TCP and FTP	UDP and HTTP	TCP and UDP	HTTP and FTP
3	User datagram protocol is called connectionless because _____	all UDP packets are treated independently by transport layer	it sends data as a stream of related packets	it is received in the same order as sent order	it sends data very quickly
4	Transmission control protocol _____	is a connection-oriented protocol	uses a three way handshake to establish a connection	receives data from application as a single stream	all of the mentioned
5	An endpoint of an inter-process communication flow across a computer network is called _____	socket	pipe	port	machine



# REFERENCES

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

