



RAMA UNIVERSITY

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FACULTY OF ENGINEERING & TECHNOLOGY

DCS-503 Computer Networks

Lecture-26

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OUTLINE

➤ WAN DEVICES

➤ EXTERNAL CSU/DSU

➤ CSU/DSU INTERFACE CARD

➤ MODEMS

➤ WAN STANDARDS ORGANIZATIONS

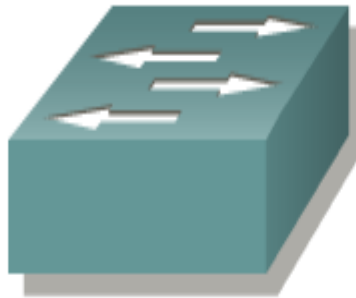


WAN DEVICES

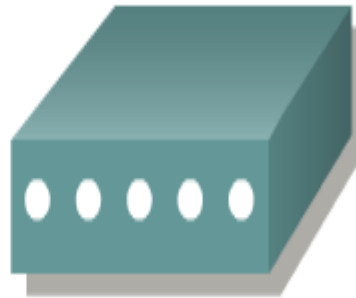
Router



Switch



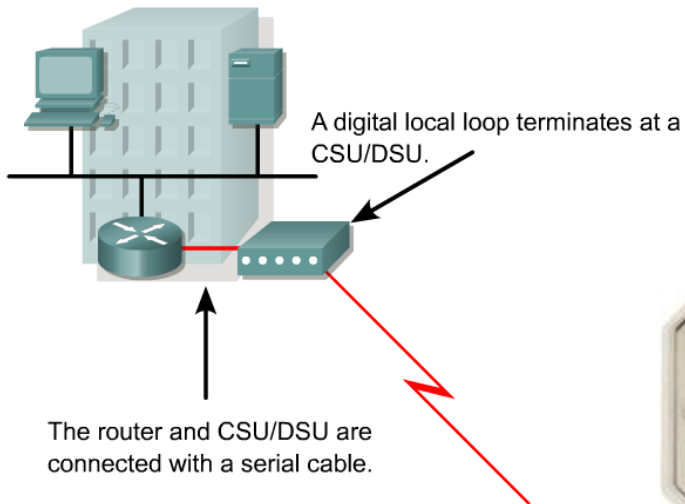
Modem (CSU/DSU)



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**.

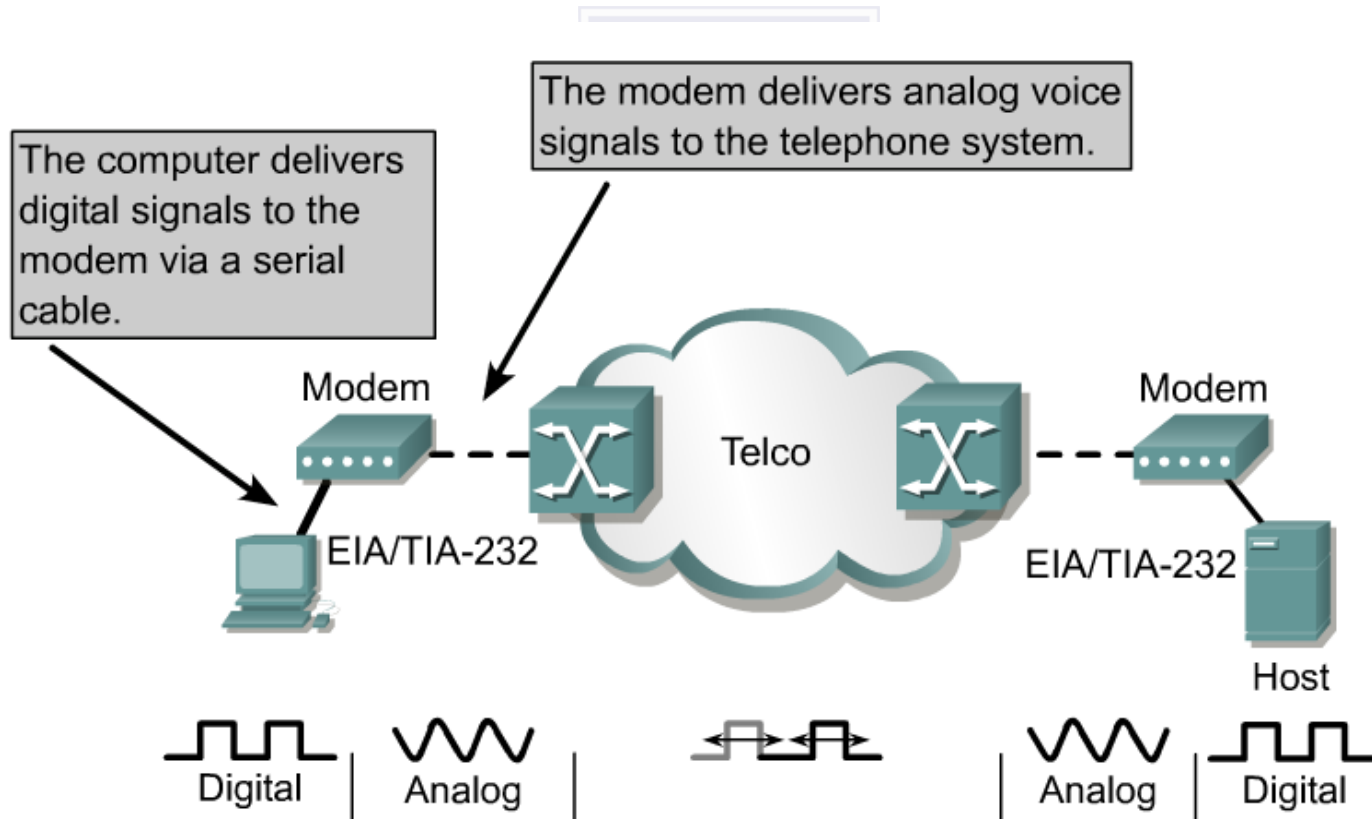
CSU/DSU INTERFACE CARD

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	The network layer is concerned with _____ of data.	bits	frames	packets	bytes
2	Which one of the following is not a function of network layer?	routing	inter-networking	congestion control	error control
3	A 4 byte IP address consists of _____	only network address	only host address	network address & host address	network address & MAC address
4	In virtual circuit network each packet contains _____	full source and destination address	a short VC number	only source address	only destination address
5	Which of the following routing algorithms can be used for network layer design?	shortest path algorithm	distance vector routing	link state routing	all of the mentioned

REFERENCES

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

