Networking Essentials
ITC 2243

KAVINDU CHETHIYA YAKUPITIYA

PHD (IS-READING), MSC (CS), PGD (CS), BSC (IT), DIP (TECH, IT), CCNA, NSE (CERT)

Signal Types

DEFINITION:

ANALOG SIGNALS

- ❑CONTINUOUS
- ❑INFINITE RANGE OF VALUES
- ❑MORE EXACT VALUES, BUT MORE DIFFICULT TO WORK WITH

DIGITAL SIGNALS

- ❑DISCRETE
- ❑FINITE RANGE OF VALUES (2)
- ❑NOT AS EXACT AS ANALOG, BUT EASIER TO WORK WITH

Analog vs Digital

DIFFERENCE IN WORKING:

- THE WORKING OF THE DIGITAL SIGNALS ARE MORE RELIABLE AND ACCURATE.
- DIGITAL SIGNALS ARE USED TO PLAY THE INFORMATION.
- DIGITAL SIGNALS HAVE PRIORITY OVER ANALOG SIGNALS.

Examples For Analog

EXAMPLES OF ANALOG DEVICES:

Pros & Cons Of Analog

PROS AND CONS OF ANALOG SIGNALS:

ADVANTAGES

- MAJOR ADVANTAGES OF THE ANALOG SIGNAL IS INFINITE AMOUNT OF DATA.
- DENSITY IS MUCH HIGHER.
- EASY PROCESSING.

DISADVANTAGES

- UNWANTED NOISE IN RECORDING.
- IF WE TRANSMIT DATA AT LONG DISTANCE THE UNWANTED DISTURBANCE IS THERE.
- GENERATION LOOS IS ALSO A BIG CON OF ANALOG SIGNALS.

Examples For Digital

EXAMPLE OF DIGITAL DEVICES:

Pros & Cons Of Digital

PROS AND CONS OF DIGITAL SIGNALS:

ADVANTAGES

- BECAUSE OF THEIR DIGITAL NATURE THEY CAN TRAVEL FASTER IN OVER DIGITAL LINES.
- ABILITY TO TRANSFER MORE DATA AS COMPARED TO ANALOG.

DISADVANTAGES

- GREATER BANDWIDTH IS ESSENTIAL.
- SYSTEMS AND PROCESSING IS MORE COMPLEX.

Application

APPLICATIONS:

ANALOG:

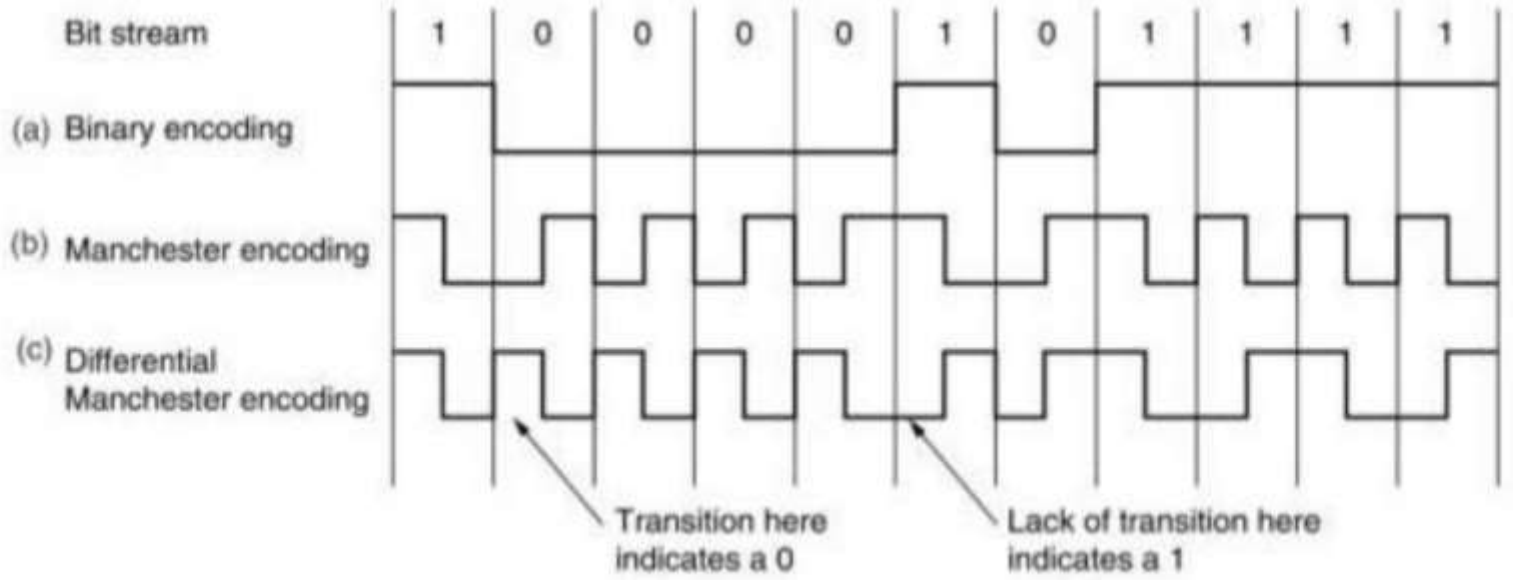
- ❑ THERMOMETER
- ❑ PHOTOCOPIERS
- ❑ OLD LAND LINE TELEPHONES
- ❑ AUDIO TAPES
- ❑ VCRS (SAME AS TV)

DIGITAL:

- ❑ PCS, PDAS
- ❑ MOBILE PHONES

Data Encoding

- The information available in the binary form must be encoded into a signal before it can be transmitted. This is known Data Encoding. The signal generated at this stage is a digital signal.
- None of the versions of Ethernet uses straight binary encoding with 0 volts for a 0 bit and 5 volts for a 1 bit.

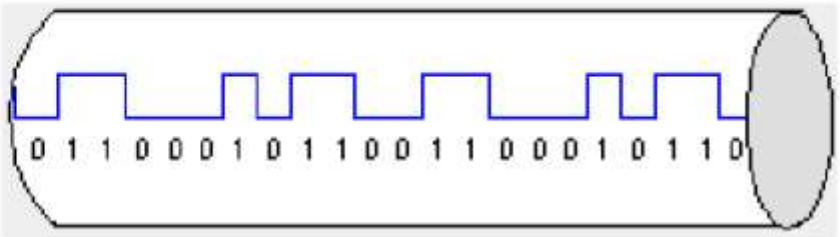


Transmission Techniques

There are two types of transmission techniques: called baseband and broadband.

Baseband transmission

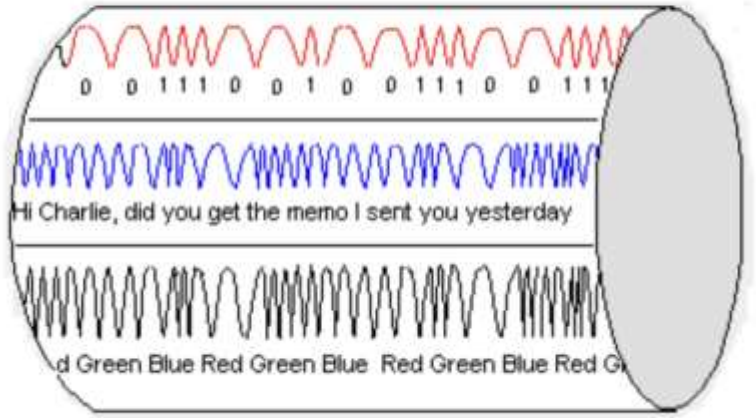
- Digital signaling.
- Entire bandwidth is for single signal transmission.
- Short distance signal travelling.
- Frequency division multiplexing is not possible.
- Example: Ethernet is using Basebands for LAN.



Transmission Techniques

Broadband transmission

- Analog signaling.
- Simultaneous transmission of multiple signals over different frequencies.
- Frequency division multiplexing possible.
- Signal travelling distance is long.
- Example : Cable TV



Thank You!!!