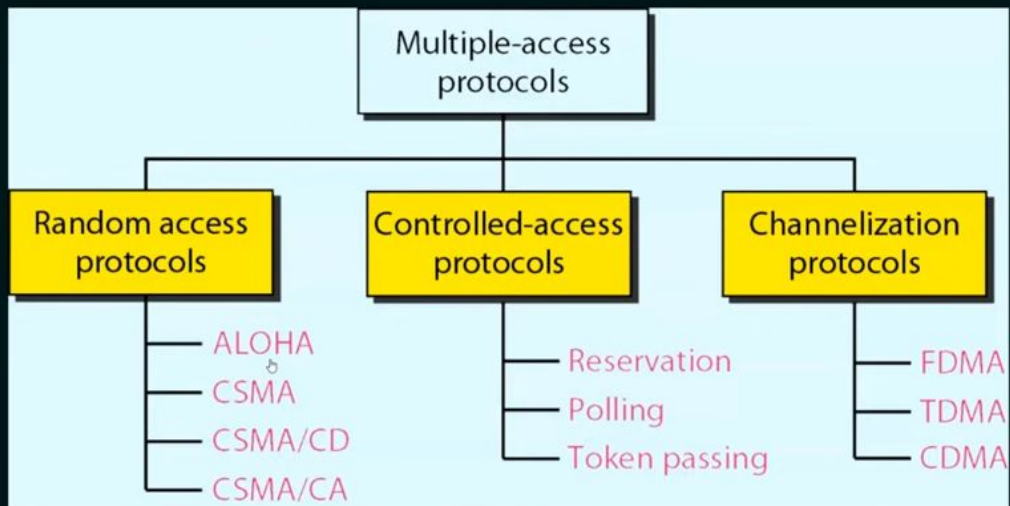


00:48

## MULTIPLE ACCESS PROTOCOLS



NESO ACADEMY

03:00

## ALOHA

- ★ Aloha is a random access protocol.
- ★ It was actually designed for WLAN but it is also applicable for shared medium.
- ★ In this, multiple stations can transmit data at the same time and can hence lead to collision and data being garbled.

### Types:

- ★ Pure Aloha
- ★ Slotted Aloha

NESO ACADEMY

07:40

## PURE ALOHA

- ★ Pure ALOHA allows stations to transmit whenever they have data to be sent.
- ★ When a station sends data it waits for an acknowledgement.
- ★ If the acknowledgement doesn't come within the allotted time then the station waits for a random amount of time called back-off time ( $T_b$ ) and re-sends the data.
- ★ Since different stations wait for different amount of time, the probability of further collision decreases.
- ★ The throughput of pure aloha is maximized when frames are of uniform length.

## PURE ALOHA

- ★ Whenever two frames try to occupy the channel at the same time, there will be a collision and both will be garbled.
- ★ If the first bit of a new frame overlaps with just the last bit of a frame almost finished, both frames will be totally destroyed and both will have to be retransmitted later.

Vulnerable Time =  $2 \times T_{fr}$

Throughput =  $G \times e^{-2G}$ ; Where  $G$  is the number of stations wish to transmit in the same time.

Maximum throughput = 0.184 for  $G=0.5$  ( $1/2$ )