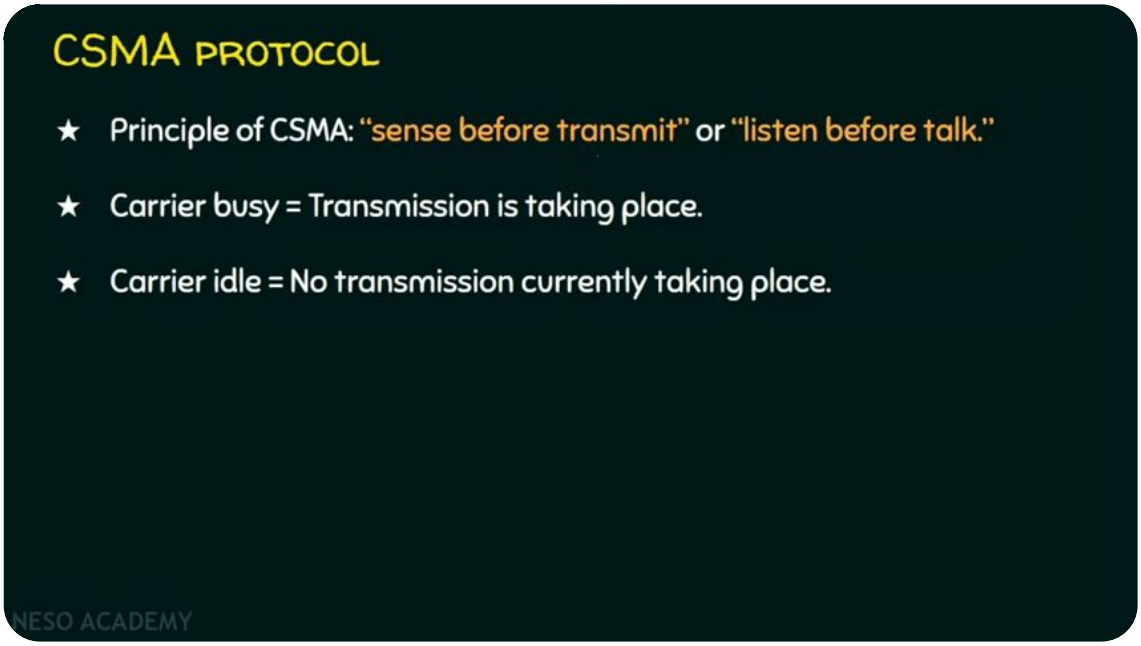
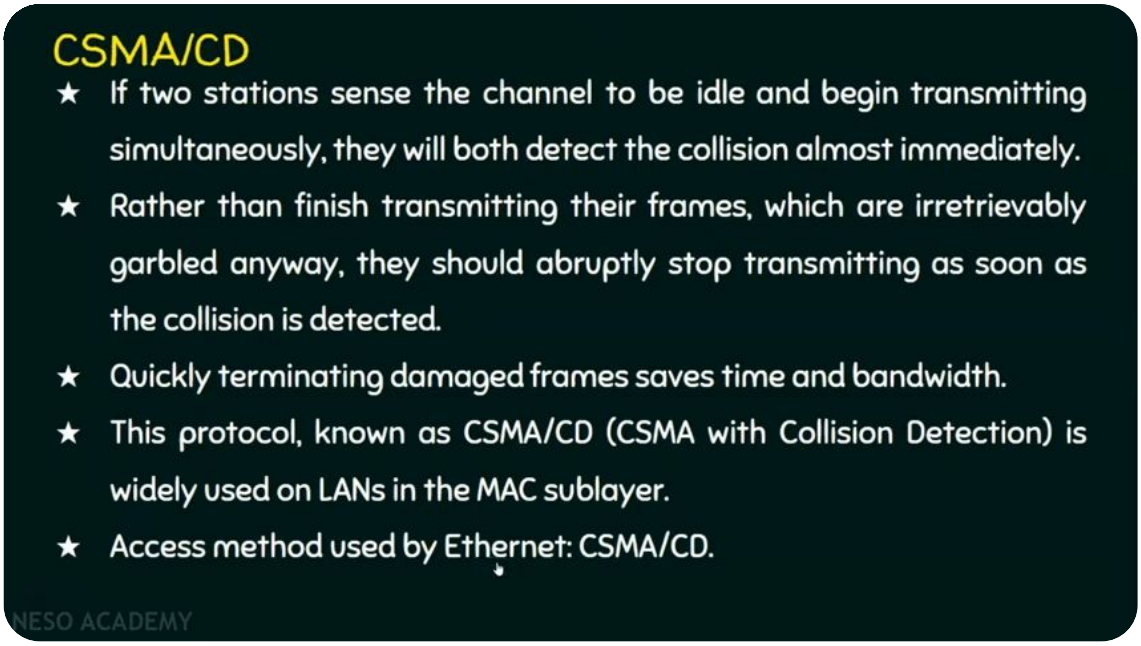
01:22



03:07



06:16

CSMA/CD

- ★ At the point marked t_0, a station has finished transmitting its frame.
- ★ Any other station having a frame to send may now attempt to do so. If two or more stations decide to transmit simultaneously, there will be a collision.
- ★ Collisions can be detected by looking at the power or pulse width of the received signal and comparing it to the transmitted signal.
- ★ After a station detects a collision, it aborts its transmission, waits a random period of time, and then tries again, assuming that no other station has started transmitting in the meantime.
- ★ Therefore, model for CSMA/CD will consist of alternating contention and transmission periods, with idle periods occurring when all stations are quiet.

NESO ACADEMY

07:40

CSMA/CD – For GATE aspirants

$$\text{Efficiency} = \frac{1}{1 + 6.44 \times a}$$

$$a = \frac{T_p}{T_t}$$

- ★ If distance increases, efficiency of CSMA decreases.
- ★ CSMA is not suitable for long distance networks like WAN; but works optimally for LAN.
- ★ If length of packet is bigger, the efficiency of CSMA also increases; but maximum limit for length is 1500 Bytes.
- ★ Transmission Time >= Round Trip Time of 1 bit
- ★ Transmission Time >= 2*Propagation Time

NESO ACADEMY

11:38

CSMA/CA

- ★ Carrier-sense multiple access with collision avoidance (CSMA/CA) is a network multiple access method in which carrier sensing is used, but nodes attempt to avoid collisions by beginning transmission only after the channel is sensed to be "idle".
- ★ It is particularly important for wireless networks, where the collision detection of the alternative CSMA/CD is not possible due to wireless

transmitters desensing their receivers during packet transmission.

- ★ CSMA/CA is unreliable due to the hidden node problem and exposed terminal problem.
- ★ Solution: RTS/CTS exchange.
- ★ CSMA/CA is a protocol that operates in the Data Link Layer (Layer 2) of the OSI model.