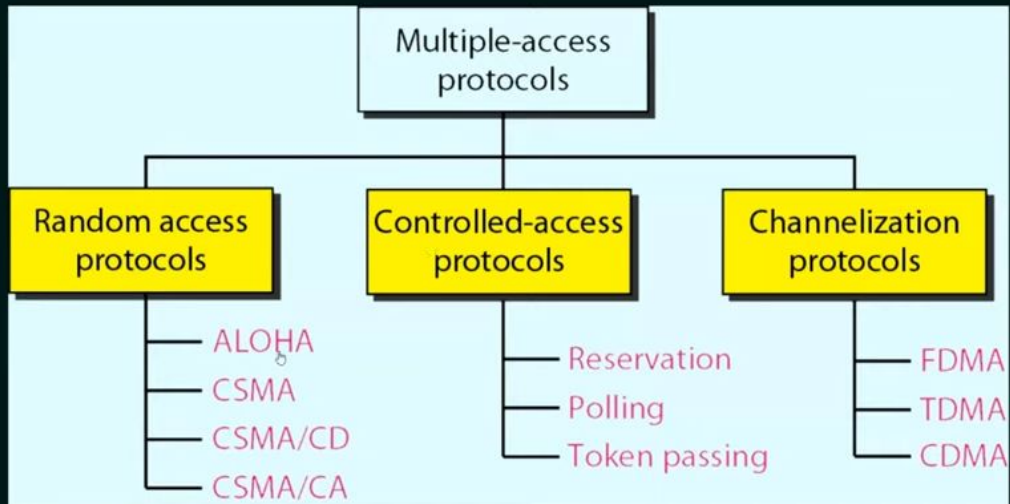


00:52

MULTIPLE ACCESS PROTOCOLS



NESO ACADEMY

02:59

CSMA PROTOCOL

- ★ Carrier Sense Protocol.
- ★ To minimize the chance of collision and, therefore, increase the performance, the CSMA method was developed.
- ★ Principle of CSMA: "sense before transmit" or "listen before talk."
- ★ Carrier busy = Transmission is taking place.
- ★ Carrier idle = No transmission currently taking place.
- ★ The possibility of collision still exists because of propagation delay; a station may sense the medium and find it idle, only because the first bit sent by another station has not yet been received.

NESO ACADEMY

04:02

TYPES OF CSMA

1. 1-Persistent CSMA
2. P-Persistent CSMA
3. Non-Persistent CSMA
4. O-Persistent CSMA

CSMA/CD (CSMA with Collision Detection)

CSMA/CA (CSMA with Collision Avoidance)

1-PERSISTENT CSMA

- ★ Before sending the data, the station first listens to the channel to see if anyone else is transmitting the data at that moment.
- ★ If the channel is idle, the station transmits a frame.
- ★ If busy, then it senses the transmission medium continuously until it becomes idle.
- ★ Since the station transmits the frame with the probability of 1 when the carrier or channel is idle, this scheme of CSMA is called as 1-Persistent CSMA.
- ★ The propagation delay has an important effect on the performance of the protocol.

NON-PERSISTENT CSMA

- ★ Before sending, a station senses the channel. If no one else is sending, the station begins doing so itself.
- ★ However, if the channel is already in use, the station does not

continually sense it for the purpose of seizing it immediately upon detecting the end of the previous transmission.

- ★ Instead, it waits a random period of time and then repeats the algorithm. Consequently, this algorithm leads to better channel utilization but longer delays than 1-persistent CSMA.

NESO ACADEMY

10:14

P-PERSISTENT CSMA

- ★ It applies to slotted channels.
- ★ When a station becomes ready to send, it senses the channel.
- ★ If it is idle, it transmits with a probability P .
- ★ With a probability $Q=1-P$, it defers until the next slot.
- ★ If that slot is also idle, it either transmits or defers again, with probabilities P and Q .
- ★ This process is repeated until either the frame has been transmitted or another station has begun transmitting.
- ★ In the latter case, the unlucky station acts as if there had been a collision (i.e., it waits a random time and starts again).
- ★ If the station initially senses the channel busy, it waits until the next slot and applies the above algorithm.

NESO ACADEMY

12:12

O-PERSISTENT CSMA

- ★ Each node is assigned a transmission order by a supervisory node.

