Course Name: A Level (2nd Sem)   Subject: DCN

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Topic: Multiple Access   Date: 24-04-20

- The data link layer is considered as two sub-layers. The upper sub-layer is responsible for data link control, and the lower sub-layer is responsible for resolving access to the shared media. If the channel is dedicated, we do not need the lower sub-layer.
- When nodes or stations are connected and use a common link, called a multipoint or broadcast link, we need a multiple-access protocol to coordinate access to the link.
- The following protocols have been devised to handle access to a shared link that categorizes into three groups:
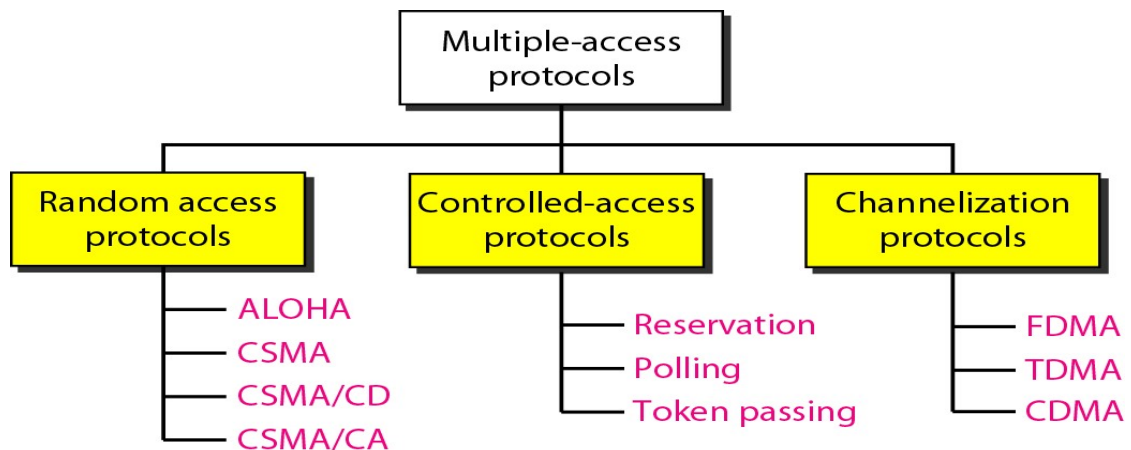
Random Access:

- In random access or contention methods, no station is superior to another station and none is assigned the control over another. No station permits, or does not permit, another station to send. At each instance, a station that has data to send uses a procedure defined by the protocol to make a decision on whether or not to send that depends on the state of the medium (idle or busy.
- Two features give this method its name. First, there is no scheduled time for a station to transmit. Transmission is random among the stations. That is why these methods are called **random access**. Second, no rules specify which station should send next. Stations compete with one another to access the medium. That is why these methods are also called **contention methods**.
- In a random access method, each station has the right to the medium without being controlled by any other station. However, if more than one station tries to send, there is an access conflict-collision-and the frames will be either destroyed or

modified. To avoid access conflict or to resolve it when it happens, each station follows a procedure that answers the following questions:

- When can the station access the medium?
- What can the station do if the medium is busy?
- How can the station determine the success or failure of the transmission?
- What can the station do if there is an access conflict?

The earliest protocol known as ALOHA, which used a very simple procedure called multiple access (MA). The method was improved with the addition of a procedure that forces the station to sense the medium before transmitting. This was called carrier sense multiple access. This method later evolved into two parallel methods: carrier sense multiple access with collision detection (CSMA/CD) and carrier sense multiple access with collision avoidance (CSMA/CA). CSMA/CD tells the station what to do when a collision is detected. CSMA/CA tries to avoid the collision.

Exercises:

1. **What do you understand by Multiple Access? What are the Multiple Access Protocols?**
2. **Why random access method is also called contention method?**