69. Multiple Access Protocols

Outcomes of this lecture are-

1. Know the various Multiple Access Protocol.

Multiple Access Protocols –

* When the data transmission is between two nodes, and there is no dedicated channel between the two nodes, and the links are shared between various connecting nodes, the data can have a serious problem.
* Either the data can be lost if the destination node is having connection with other node, or can be overlapped or damaged.
* This creates a fuss in the network communication between two nodes.
* Here the Multiple Access Protocol takes the charge; it establishes a secure connection between the sender and receiver which avoids the collision and crosstalk during data transmission.

The Various Multiple Access Protocols are –

1. Random Access Protocol –

* ALOHA.
* CSMA – Carrier Sense Multiple Access.
* CSMA/CD - Carrier Sense Multiple Access with. Collision Detection.
* CSMA/CA - Carrier Sense Multiple Access with. Collision Avoidance.

1. Controlled Access Protocol –

* CAP Reservation.
* CAP Polling.
* CAP Token Passing.

1. Channelization Protocol –

* FDMA – Frequency Division Multiple Access.
* TDMA – Time Division Multiple Access.
* CDMA – Code Division Multiple Access.

Random Access Protocols –

* In this all stations are having same superiority, i.e. no station has more priority than other station.
* Any station can transmit the data based on the status (idle or busy), of the end node via medium.
* In random access protocols, each node works on its own, and not controlled by a station.
* There might be data collision during the transmission of data, to avoid these, the various protocols are been used.
* To avoid the conflict, each station follows the procedure –

1. When can the station access the medium?
2. What can the station do if the station is busy?
3. How can the station determine the success?
4. What can the station do if there is no conflict?

Controlled Access protocols –

* The sequence to the end devices are set on the communication of data transmission based on the superiority.
* When a station is assigned for the data communication, it becomes the superior station and it controls the communication between the nodes/stations.
* The other stations ask the superior station for the data transmission via the same medium.

Channelization Protocol –

* The bandwidth of the link for the data transmission is send to the station via Code, Time or Frequency