



SNS COLLEGE OF TECHNOLOGY COIMBATORE

AN AUTONOMOUS INSTITUTION

Accredited by NBA – AICTE and Accredited by NAAC – UGC with ‘A++’ Grade

Approved by AICTE New Delhi & affiliated to the Anna University, Chennai



DEPARTMENT OF MCA

Course Name : 23CAT601 - DATA COMMUNICATION AND NETWORK

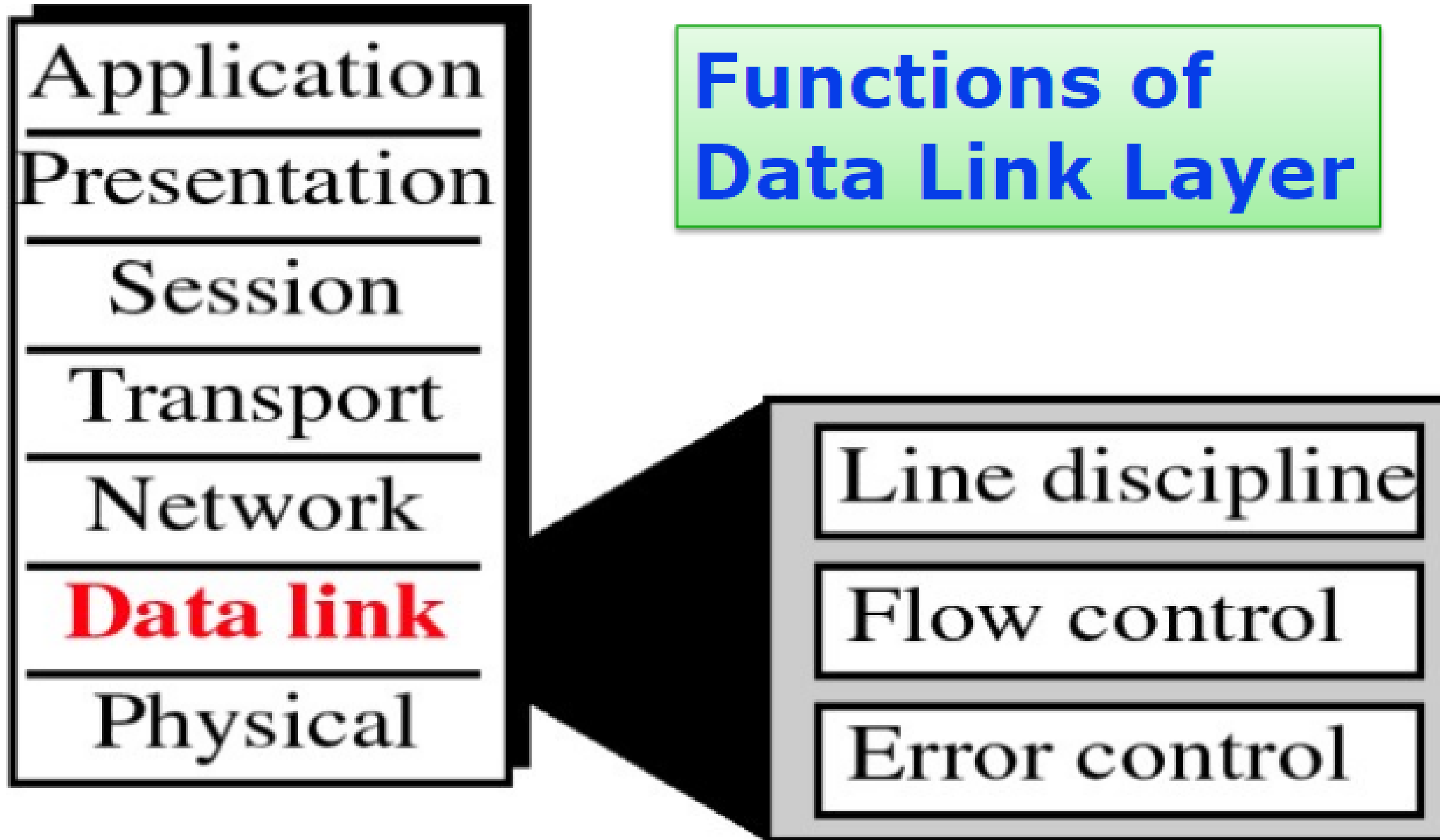
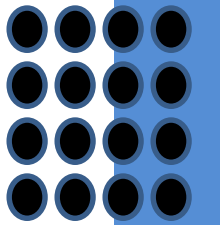
Class : I Year / I Semester

Unit II - ERROR CONTROL AND DATA LINK PROTOCOLS

Topic – Error Correction

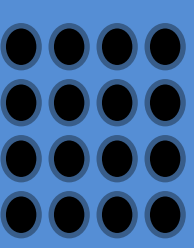


Error Correction





Data Link Control

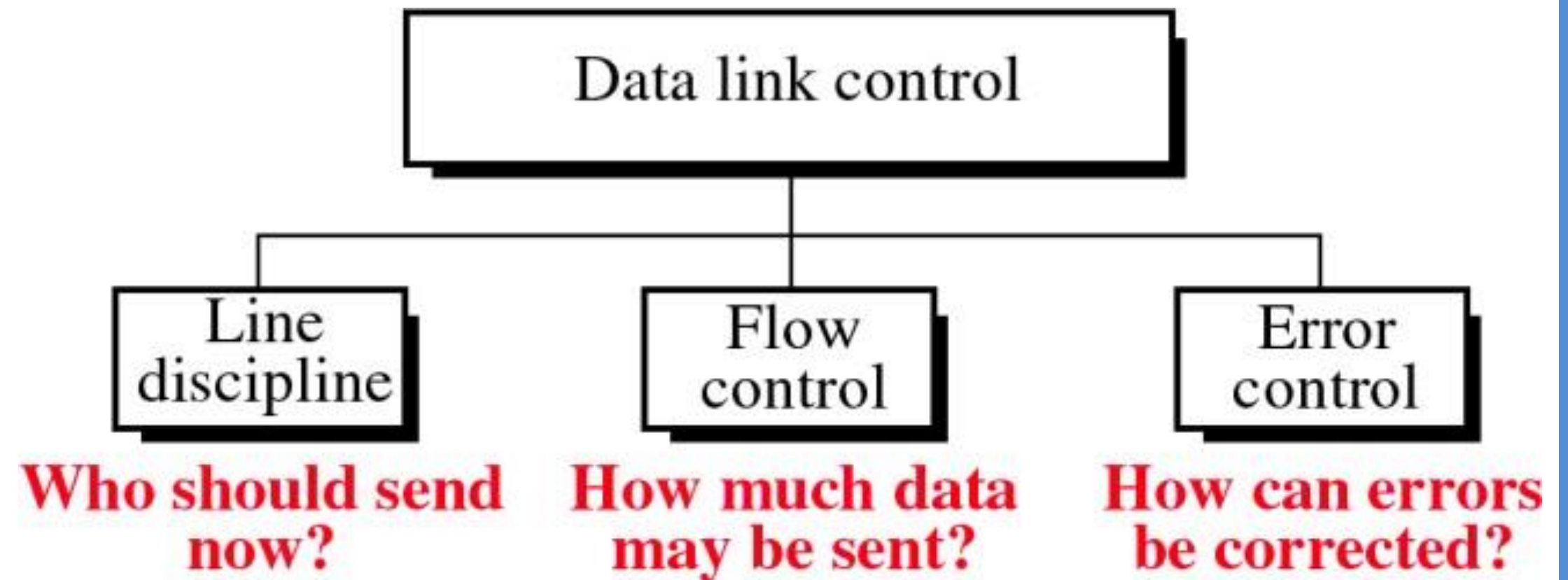


The Data link layer provides three functions:

- Line discipline
- Flow Control
- Error Control

Line Discipline is a functionality of the Data link layer that provides the coordination among the link systems. It determines which device can send, and when it can send the data.

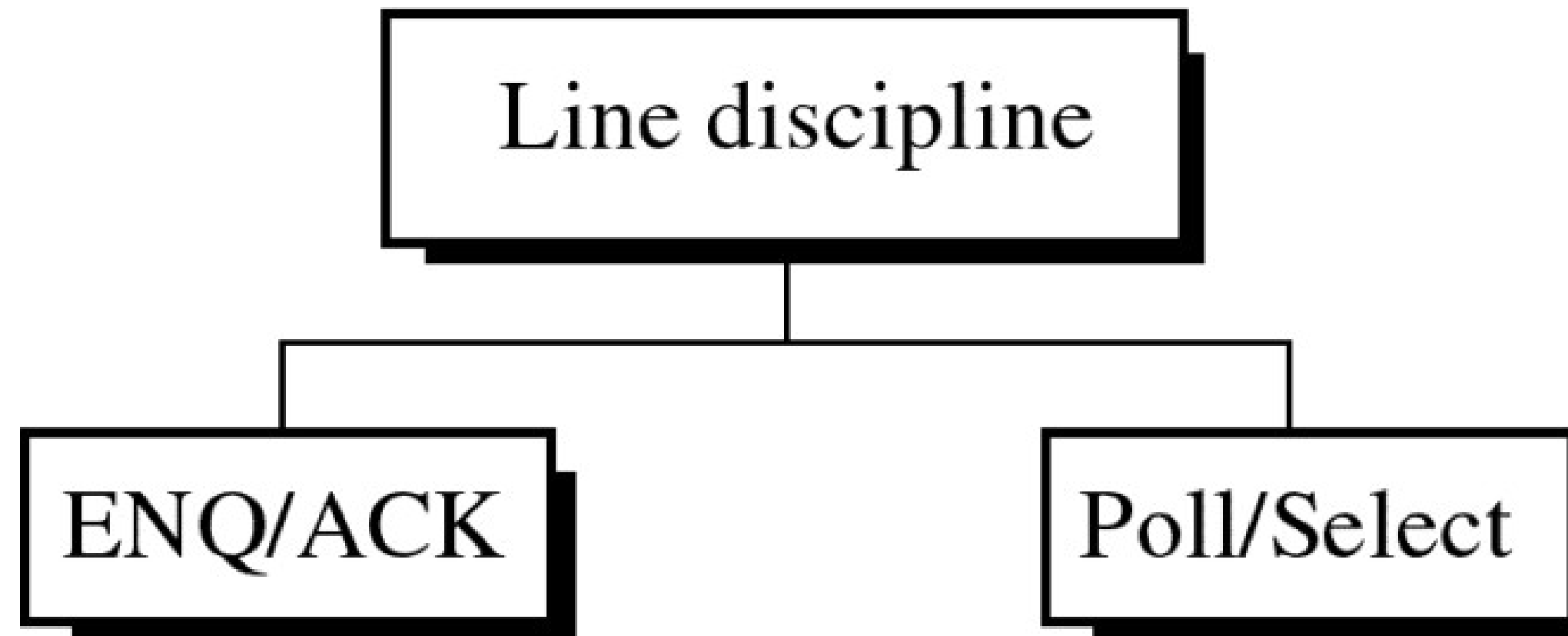
Error Correction/Priyanga S/MCA/SNSCT





Line Discipline

END/ACK stands for Enquiry/Acknowledgement is used when there is no wrong receiver available on the link and having a dedicated path between the two devices so that the device capable of receiving the transmission is the intended one.

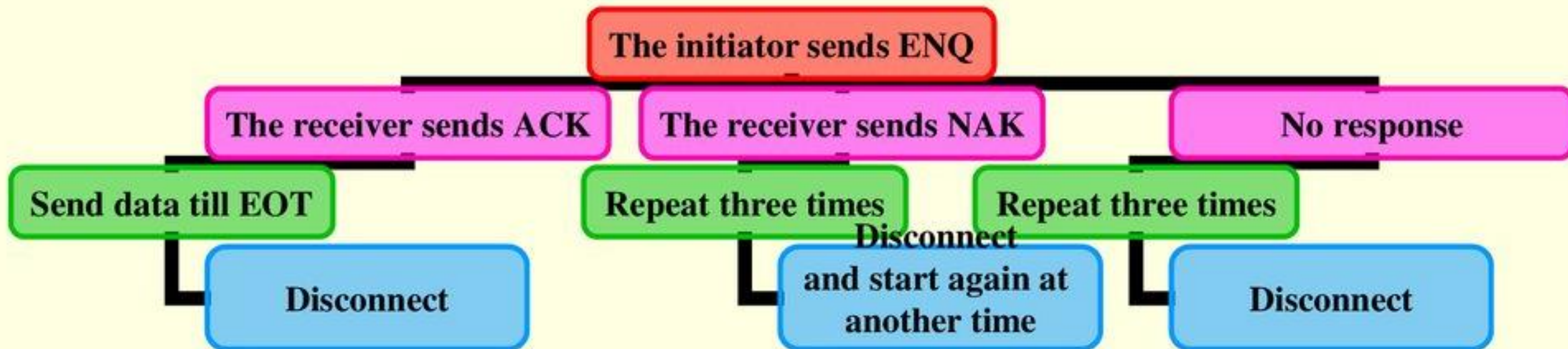
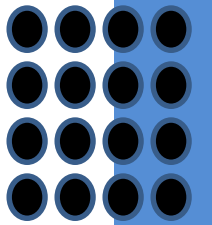




Line Discipline

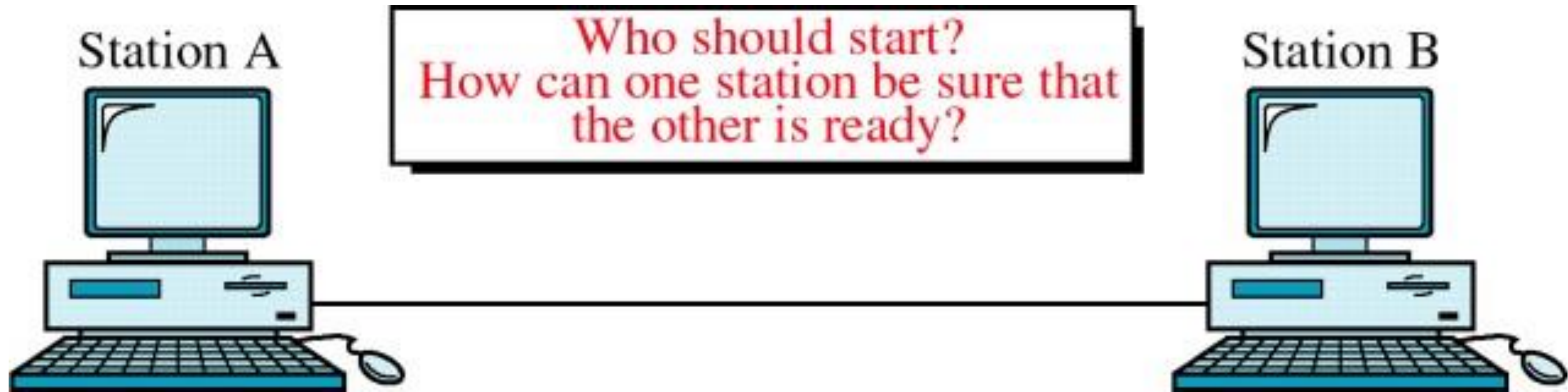
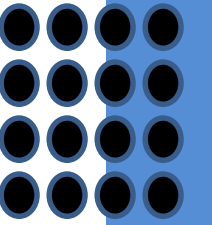
END/ACK stands for Enquiry/Acknowledgement is used when there is no wrong receiver getting the information

i.e when there is a dedicated link between the two devices so that the devices capable of receiving the data is the intended one.



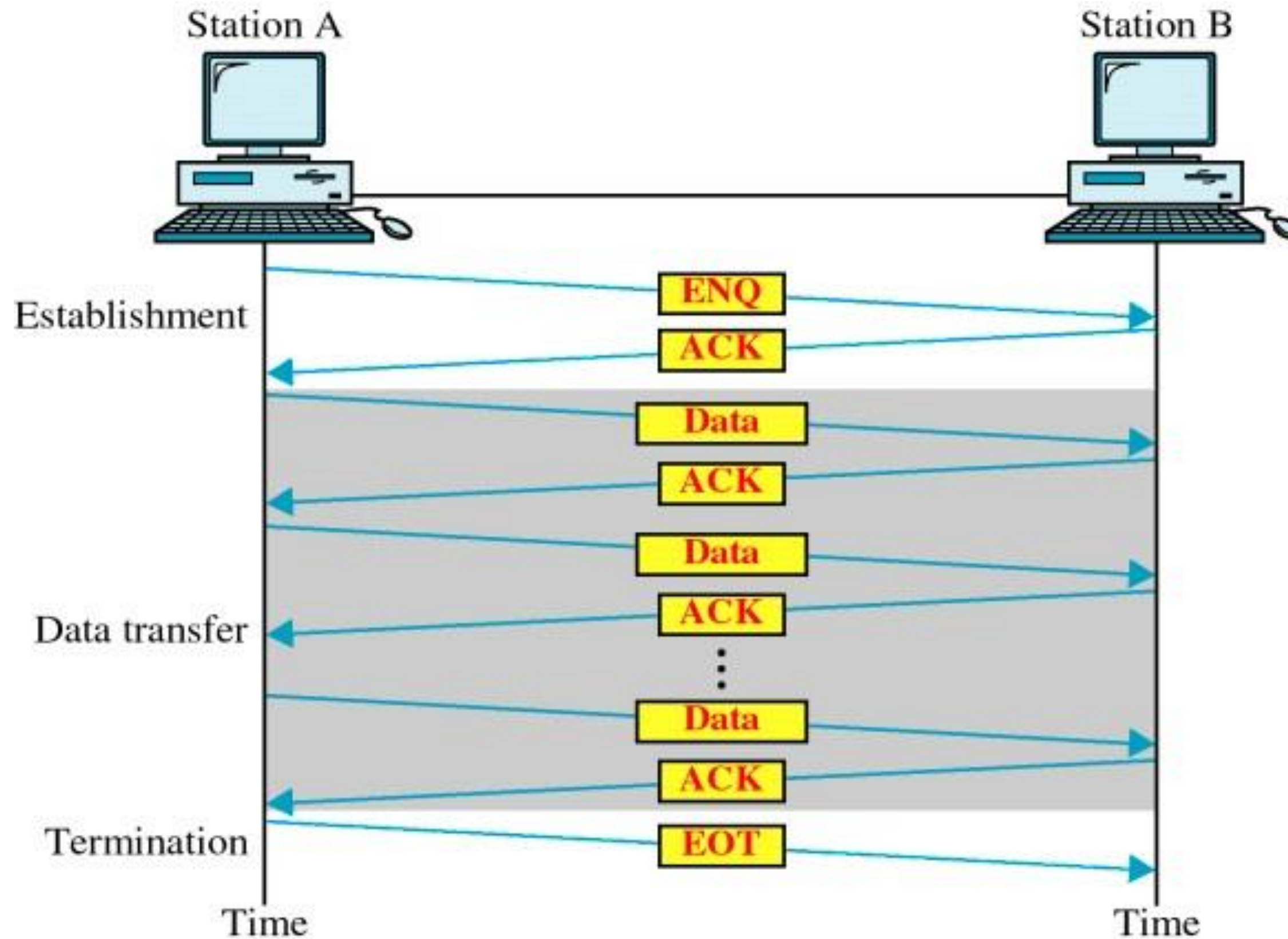


ENQ / ACK





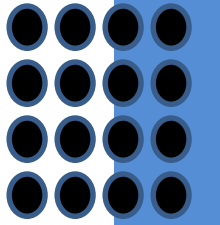
ENQ / ACK





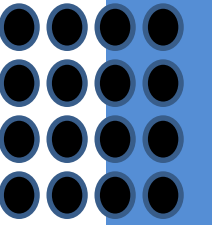
Poll / Select

- The Poll/Select method of line discipline works with those topologies where one device is designated as a primary station, and other devices are secondary stations
- All data communication must be made through primary device
- If the primary device wants to receive the data from the secondary device, it asks the secondary device that they anything to send, this process is known as polling.
- If the primary device wants to send some data to the secondary device, then it tells the target secondary to get ready to receive the data, this process is known as selecting.

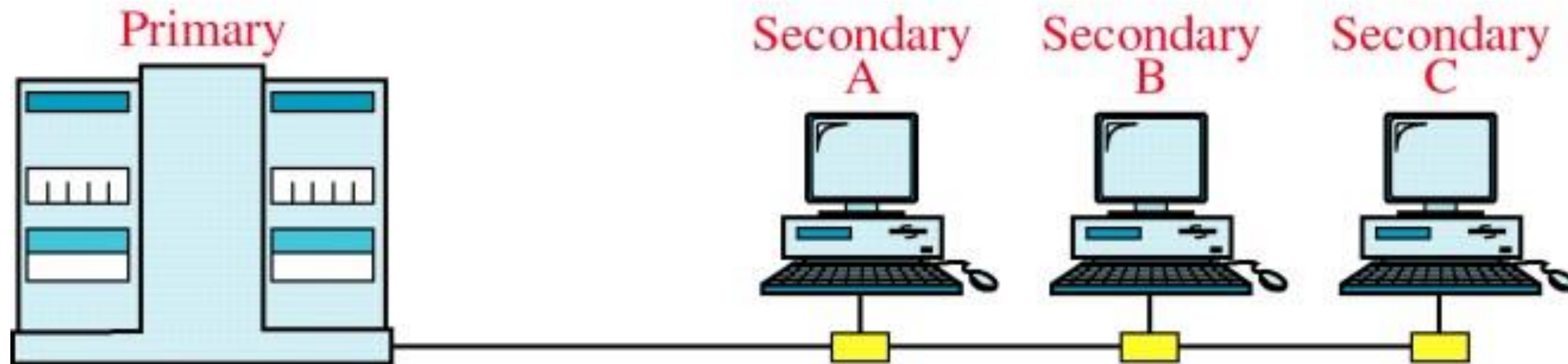




Multipoint Discipline



Who has the right to the channel?





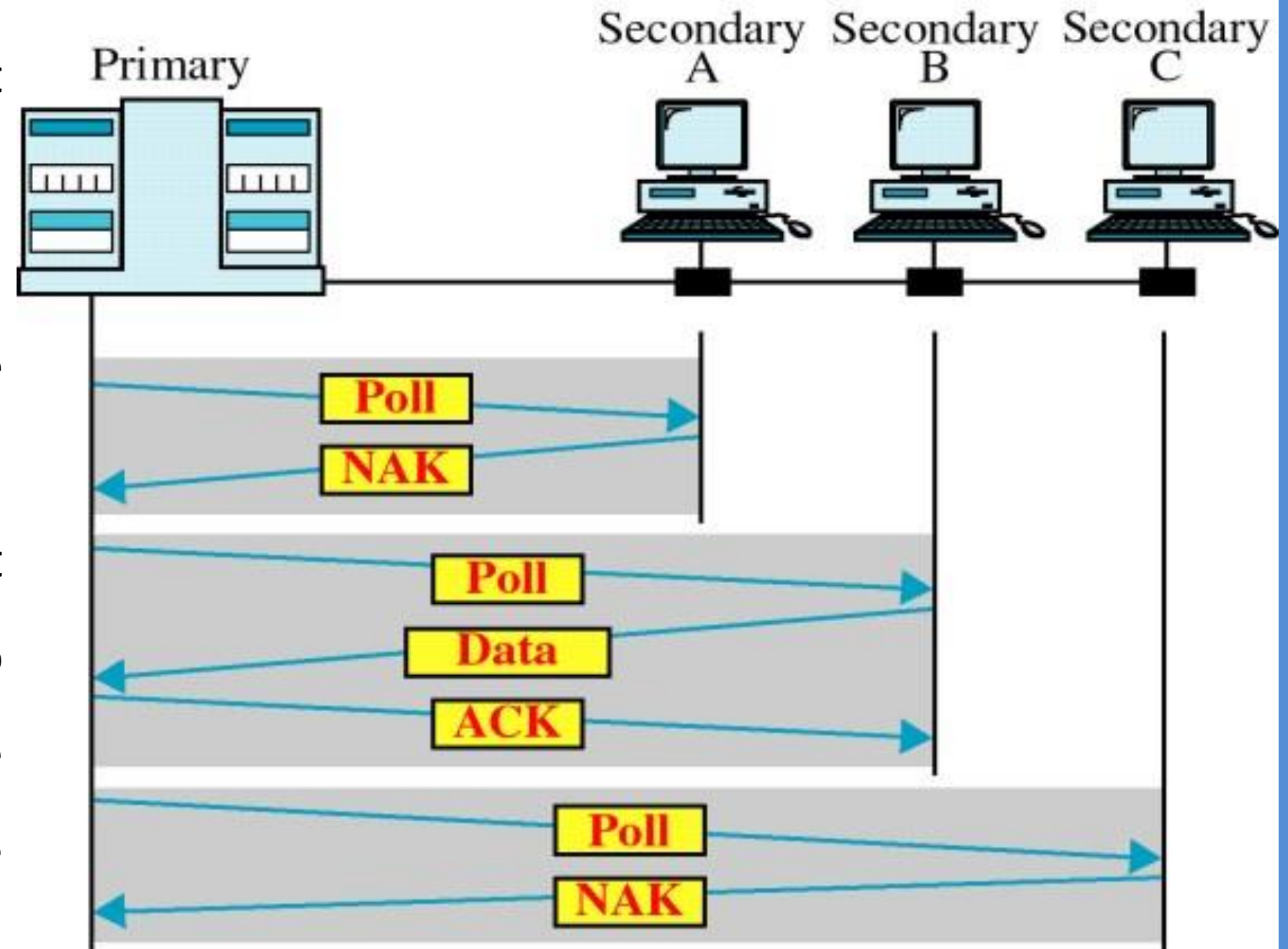
Line Discipline Poll

The Poll mode is used when the primary device wants to receive some data from the secondary device.

When a primary device wants to receive the data, then it asks each device whether it has anything to send.

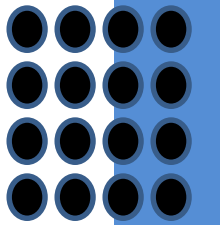
Firstly, the primary asks (poll) the first secondary device, if it responds with the NACK (Negative Acknowledgement) means that it has nothing to send.

Now, it approaches the second secondary device, it responds with the ACK means that it has the data to send. The secondary device can send more than one frame one after another or sometimes it may be required to send ACK before sending each one, depending on the type of the protocol being used.

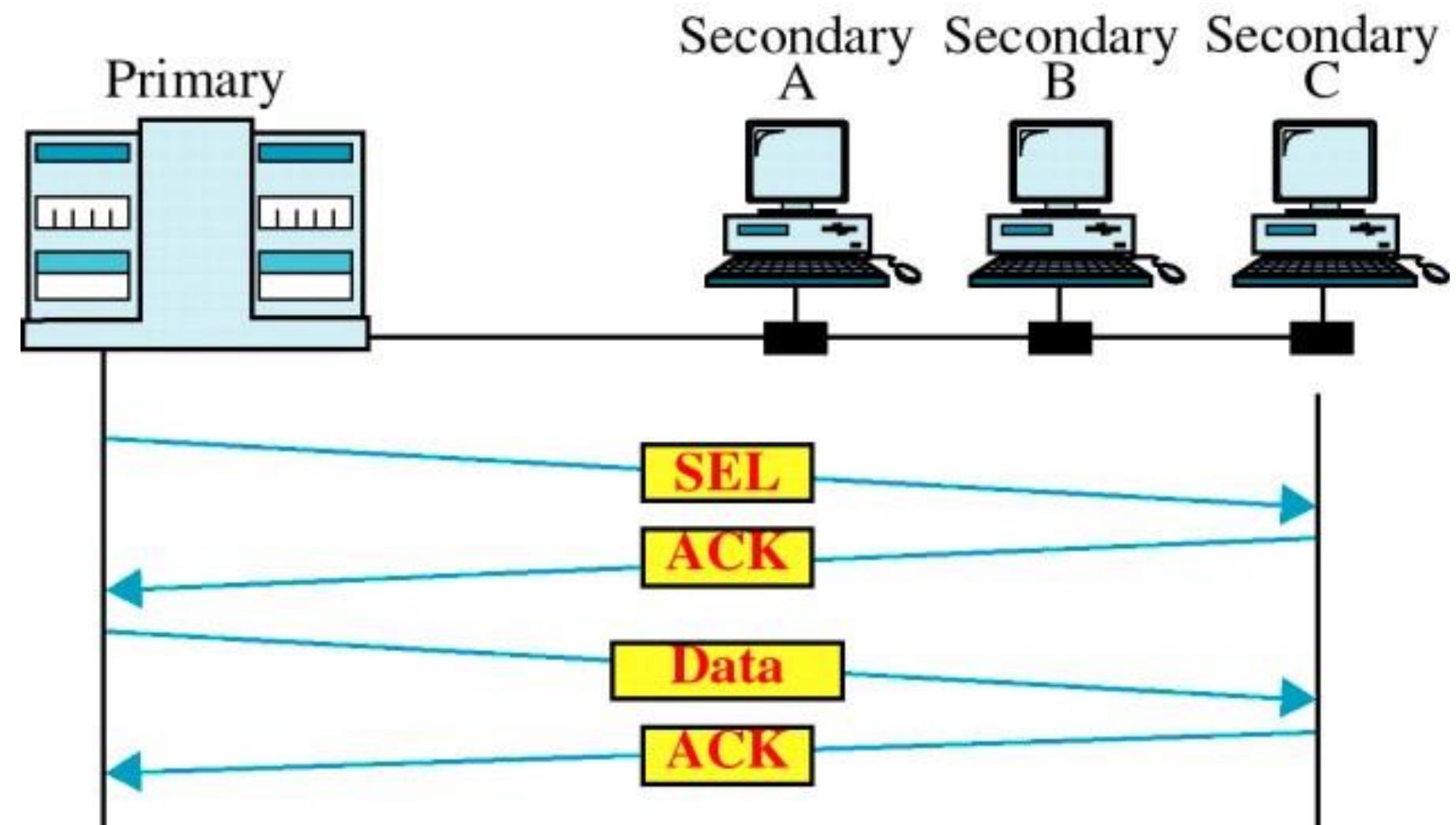




Select



- The select mode is used when the primary device has something to send.
- When the primary device wants to send some data, then it alerts the secondary device for the upcoming transmission by transmitting a Select (SEL) frame, one field of the frame includes the address of the intended secondary device.
- When the secondary device receives the SEL frame, it sends an acknowledgement that indicates the secondary ready status.
- If the secondary device is ready to accept the data, then the primary device sends two or more data frames to the intended secondary device. Once the data has been transmitted, the secondary sends an acknowledgement specifies that the data has been received.



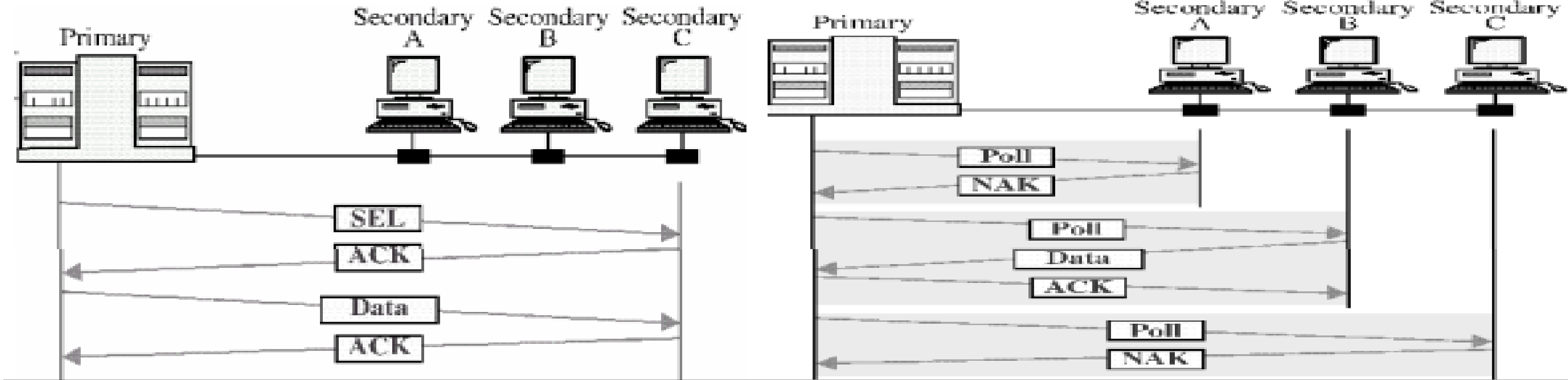


Multipoint Discipline

Poll / Select

- Used in multipoint systems
- Used with topologies where one device is designated as the primary station and other devices are secondary stations

Who has the right to the channel?

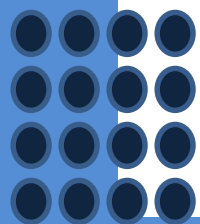




Reference



1. <https://www.geeksforgeeks.org/line-discipline-in-data-link-layer/>
2. <https://www.javatpoint.com/data-link-controls#:~:text=Line%20Discipline%20is%20a%20functionality,it%20can%20send%20the%20data>





Reference



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