

Controlled Access Protocols in Computer Network

In controlled access, the stations seek information from one another to find which station has the right to send. It allows only one node to send at a time, to avoid collision of messages on shared medium.

The three controlled-access methods are:

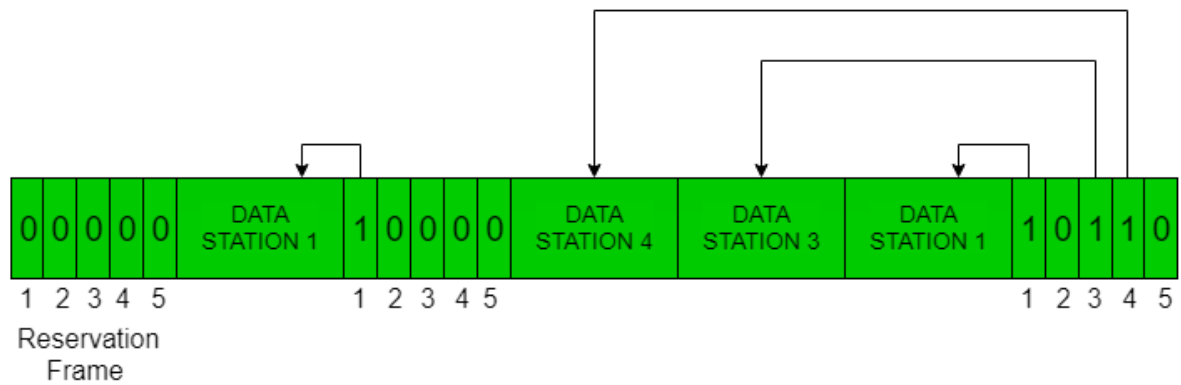
Reservation

Polling

Token Passing

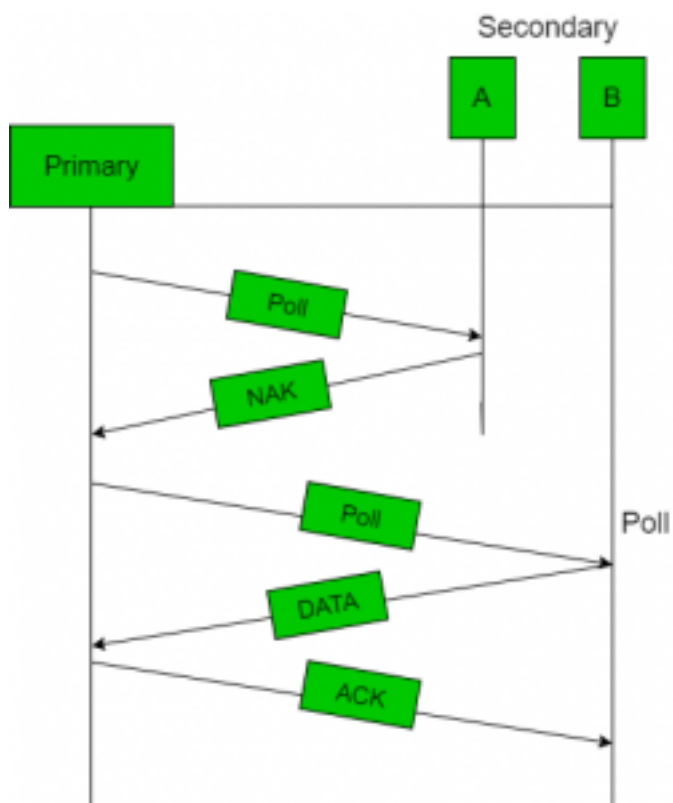
Reservation

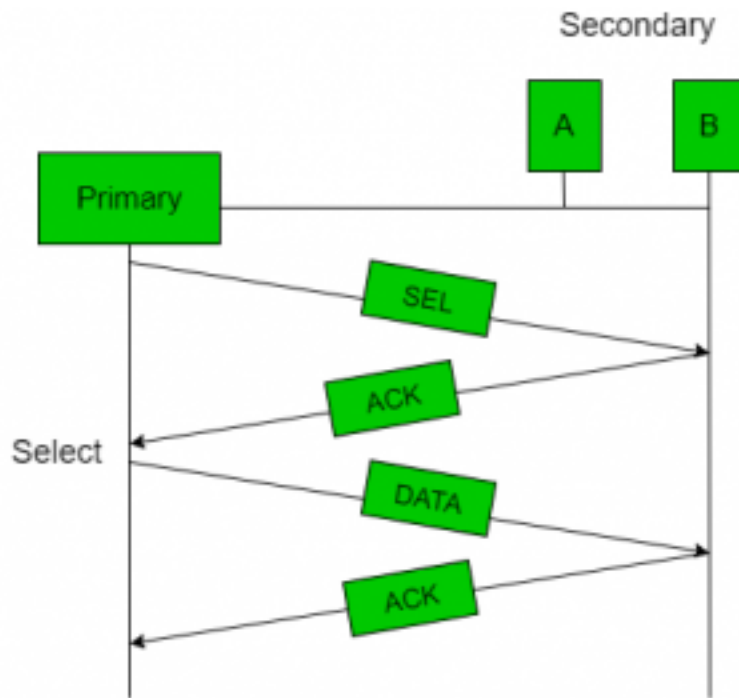
- In the reservation method, a station needs to make a reservation before sending data.
- The time line has two kinds of periods:
 1. Reservation interval of fixed time length
 2. Data transmission period of variable frames.



Polling

- Polling process is similar to the roll-call performed in class. Just like the teacher, a controller sends a message to each node in turn.





Token Passing

- In token passing scheme, the stations are connected logically to each other in form of ring and access of stations is governed by tokens

Performance

Performance of token ring can be concluded by 2 parameters:-

- Delay**, which is a measure of time between when a packet is ready and when it is delivered. So, the average time (delay) required to send a token to the next station = a/N .
- Throughput**, which is a measure of the successful traffic.

Throughput, $S = 1/(1 + a/N)$ for $a < 1$

and

$$S = 1/\{a(1 + 1/N)\} \text{ for } a > 1.$$

where N = number of stations

$$a = T_p/T_t$$

(T_p = propagation delay and T_t = transmission delay)

