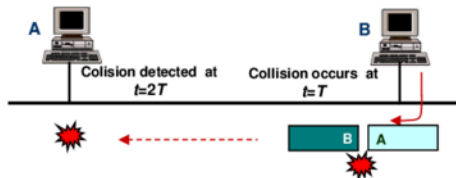
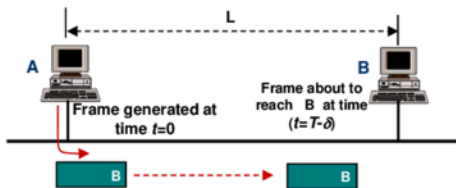


- Each station monitors the channel (*Carrier Sense*) and only sends data if the channel is idle. If the channel is busy the station must wait until it is free. All the stations can access the medium (*Multiple Access*).
- Collisions can occur if two stations transmit simultaneously. When a collision is detected (*Collision Detection*), both stations stop transmission and wait a random period of time before retransmitting.



$T_f = 2 \times T_p = (2 \times L) / v$ ,  $T_f = N_f$  (minimum) /  $D_b$ : Frame duration  
 $T_p$  = propagation time (one way);  $L$  = maximum distance  
 $D_b$  = bit rate;  $N_f$  = Number of bits in the Ethernet frame.  
 $v$  = propagation speed;  $N_t$  (minimum) =  $64 \times 8 = 512$  bits

The standard IEEE802.3 imposes for  $D_b = 10 \text{ Mb/s} \rightarrow L = 2500 \text{ m}$

$D_b = 100 \text{ Mb/s} \rightarrow L = 250 \text{ m}$

$D_b = 1 \text{ Gb/s} \rightarrow L = 25 \text{ m} !!!$