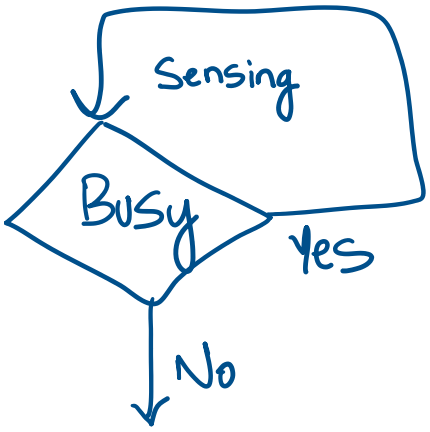
5. CSMA

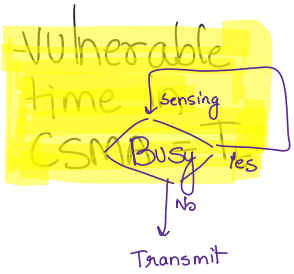
Monday, March 1, 2021 7:44 AM

Persistence Method

- 1 - Persistence
- Non persistence
- P persistence



Sense channel.
if free transmit
persistence
else wait



What is the overall problem with CSMA?

* no acknowledgement
* What happens if data collides? CSMA/CD

if 2 stations in the channel.
as soon as channel free, both transmit at the same time, collision occurs.

Sensing by A

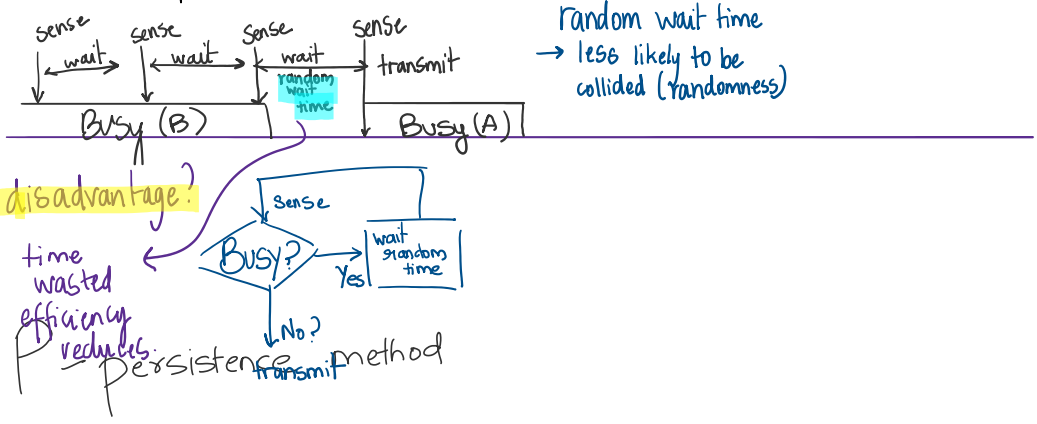
Busy (B) | Busy (A) to be free.

with probability 1 the moment channel is sensed

CSMA is not a complete approach without [detection/avoidance]

non-

persistence



random wait time → less likely to be collided (randomness)

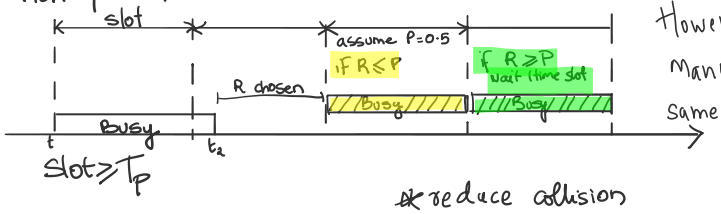
disadvantage?

time wasted

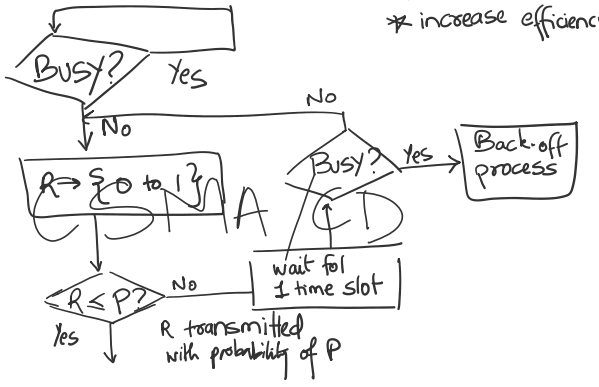
efficiency reduces

persistence method

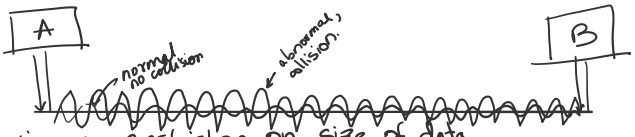
- combines advantages of 1-P persistence & non-persistence.



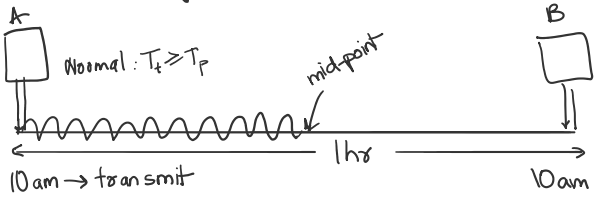
* reduce collision
* increase efficiency



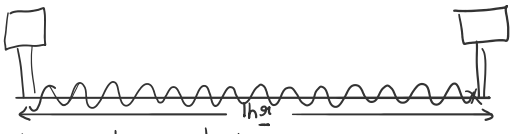
P = 0.3 (1/3)
assuming that only 1 station at a time choses a value ≤ 0.3.
It is based on probability.
However, if you do not know how many stations will transmit at the same time, the optimal value of P=0.5.



* impose restriction on size of data
* suppose while transmitting it detects abnormal level of energy, it detects collision and retransmits data.



10.30 am → collision
11.00 am → detect collision at A



10 am → transmit (A)
10:59 am → collision
11:58 am → detect collision

$T_t \geq 2T_p$

$L/B \geq 2T_p$

$L \geq 2T_p * B$