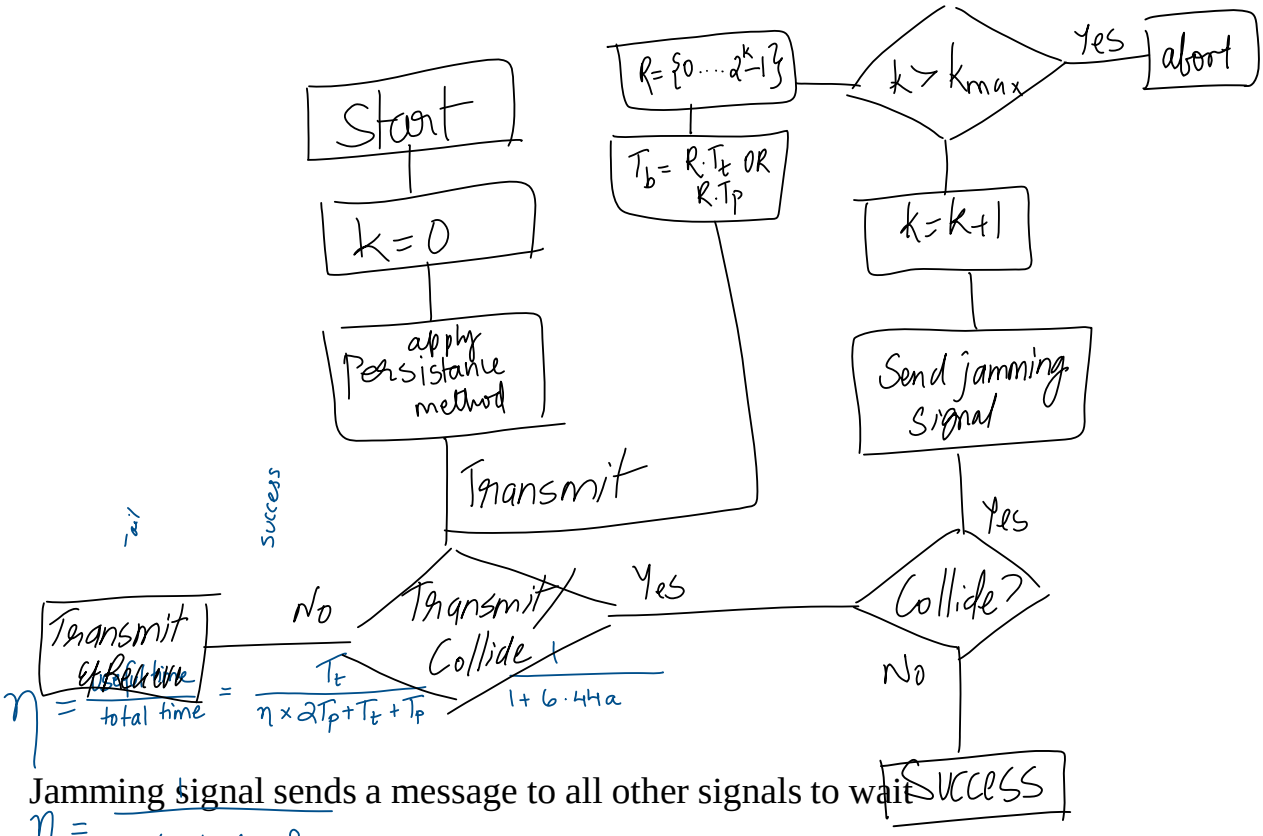
5. CSMA 2

Tuesday, March 2, 2021 11:12 AM

CSMA/CD

If collision is to be detected,

Tt >= 2Tp
L>= 2Tp*B

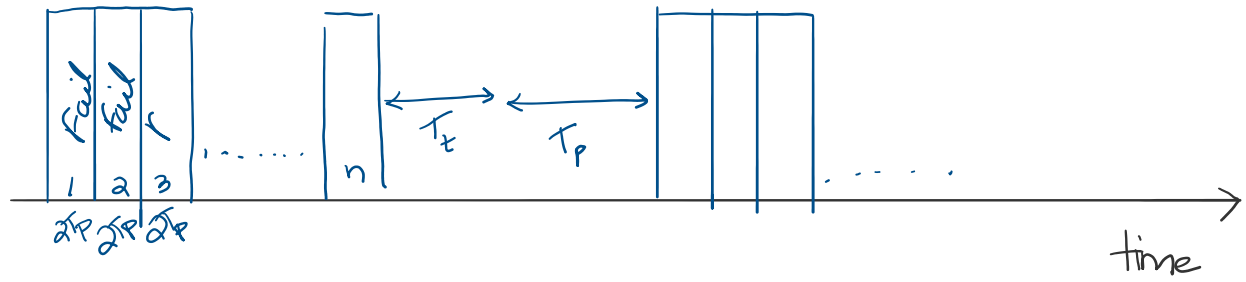


$\eta = \frac{T_t}{\text{total time}} = \frac{T_t}{\eta \times 2T_p + T_t + T_p} = \frac{1}{1 + 6.44a}$

Jamming signal sends a message to all other signals to wait

$\eta = \frac{1}{1 + 6.44\, d \times B}$

Efficiency:



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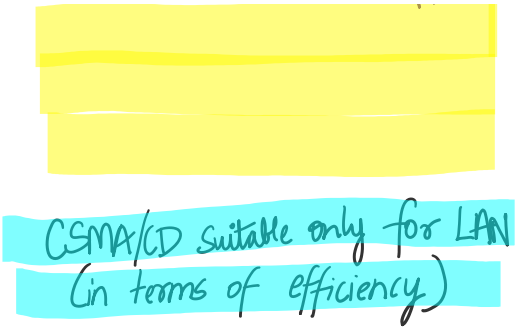
↳ approx. e = 2.718

↓ a = T_p/T_t



increase d → efficiency reduces

After the first collision:

A	B
k=1	k=1
R=0,1	R=0,1

RA	RB	result
0	0	Collide
0	1	A
1	0	B
1	1	Collide

P(C)=0.5
P(A)=0.25
P(B)=0.25

Station A
1st packet transmitted
2nd packet collided
Station B
1st packet collided
1st packet retransmitted

A	B
k=1	k=2
R=0,1	R=0,1,2,3,4

A	B	Result
0	0	C

0	1	A
0	2	A
0	3	A
1	0	B
1	1	C
1	2	A
1	3	A

P(C)=0.25
P(A)=0.625
P(B)=0.125

Capture effect:
One station constantly neglected from the transmission
Problem with exponential algorithm

Since there are two stations involved:
Binary exponential algorithm