Larghezza di banda : 100 MBPS

Ritardo di propagaz. dati : 1400 ms

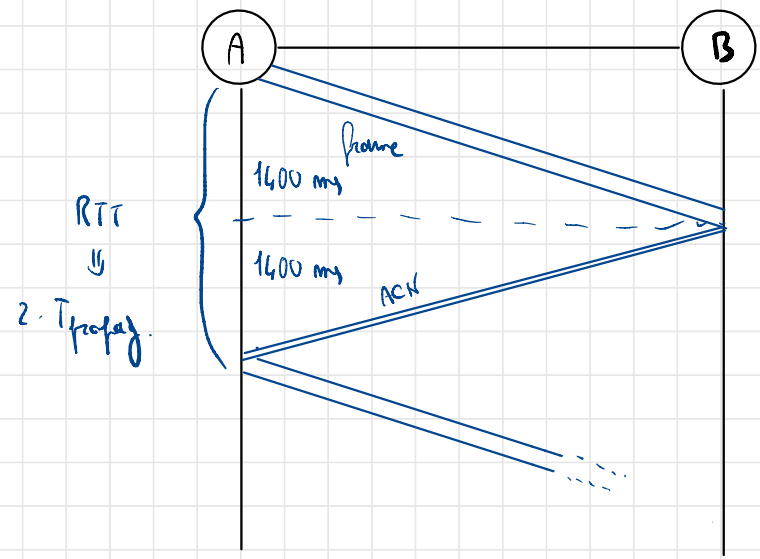
Stop and Wait

Payload = 9000 B + 1000 Intestaz. ACK = 1000 B

Perdita a 1% -> e 1% <-

Timer : 10 s

Quanta banda rimane a che utilizza l'applicativo.



Frame = 10.000 BYTE => $\frac{80.000\ B/T}{10^8\ B/T \cdot s} = 8 \cdot 10^{-4}\ s$

Banda = $100 \cdot 10^6$ MB =>

$$ACK = 1000\ BYTE = \frac{8000\ BIT}{10^8\ BIT/s} = 8 \cdot 10^{-5}\ s$$

$$T = RTT + TF + T_{ACK}$$

$$= 2 \cdot 1400 + TF + T_{ACK}$$

$$= 2800 + (8 \cdot 10^{-4}\ s) + (8 \cdot 10^{-5}\ s)$$

$$\simeq 2800\ ms = 2{,}8\ s$$

$\Rightarrow$ In 2,8 s abbiamo trasferito 9000 BYTE (payload)

$$B_W = \frac{8 \cdot 9000}{2{,}8}$$ (in assenza di perdite)

Introducendo la perdita non aspetta più la banda ma si aggiunge il timer per 2% (ritardo e ritrasm)

$$2\%\ (10\ s) = 0{,}2\ s$$

$$T = 2{,}8 + 0{,}2\ s = 3\ s$$

$$B_W = \frac{8 \cdot 9000}{3} =$$

2) Protocollo GO-BACK N

ritardo di propagazione = 100 ms

Band-W in uscita = 1 MBps

di ritorno = 10 KBps

Header = 1000 B

PAYLOAD = 9000 B

ACK = 100 B

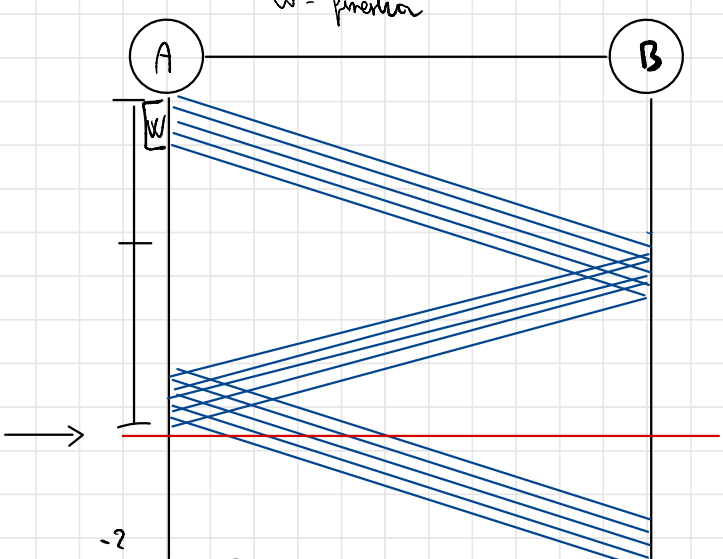
Window size affinché si abbia almeno 500 KBps in uscita?

$$B_W = \frac{W \cdot P_{payload}}{T_T}$$

$$\Downarrow$$

$$W = \frac{B_W \cdot T_T}{P_L}$$

W = finestra



$$T_{gen.\ frame} = \frac{80.000\ B}{10^6\ BPS} = 8 \cdot 10^{-2}\ s = 80\ ms$$

$$T_{gen\ ACK} = \frac{800\ B}{10^4\ BPS} = 8 \cdot 10^{-2}\ s = 80\ ms$$

$T_T = \underbrace{80 + 100}_{} + \underbrace{80 + 100}_{} = 360\ ms$

$P_L = 9000\ B \cdot 8 = 72000\ b$

$W = \frac{B_W \cdot T_T}{P_L} = \frac{500 \cdot 10^6\ b/s \cdot 360 \cdot 10^{-3}\ s}{72.000\ b} = \frac{180}{72} = 2.5$

$\Rightarrow$ La finestra è intera quindi per avere

ALMENO 500 Mbps si pone $W = 3$

STOP AND WA

$B_W = 8\ Mbps = 8 \cdot 10^6\ bps$

$T_P = 10\ ms = 10^{-2}\ s$

$Header = 10\ B = 80\ b$

$Banda\ effettiva = 5\ Mbps = 5 \cdot 10^6\ bps$

$Timer = 100\ ms = 10^{-1}\ s$

$Perdita = 1\ \%$

$T_F = ?$

$T_A = ?$

$P = ?$

$$T_F = \frac{X + 80b}{8 \cdot 10^6\ bps} = \ \rightarrow$$

$$T_A = \frac{}{8 \cdot 10^6\ bps} = \ \rightarrow$$

$$T_T = 2T_P + T_F + T_A + \underbrace{2\ ms}_{\Downarrow\ 2\%\ del\ Timer}$$