5. Tutorial 4

Monday, March 1, 2021 12:56 PM

(1) a. $B = 10$ Mbps

$L = 5000$ bits

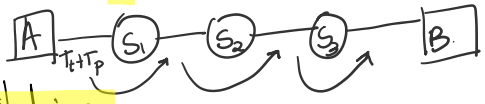
$T_{P_{A-R}} = T_{P_{R-B}} = 10\,\mu s$

$T_{total} = T_{t_A} + T_{P_{A-R}} + T_{t_R} + T_{P_{R-B}}$

$= \frac{5000}{10^7} + 10\,\mu s + \frac{5000}{10^7} + 10\,\mu s$

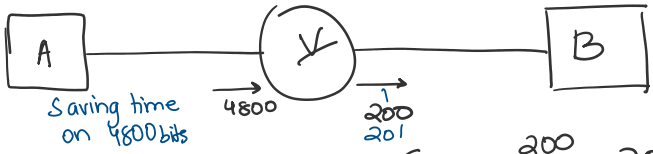
$= 1.02 \times 10^{-3}\,s = 1020\,\mu s$

b. $4T_t + 4T_p$



c. Cutthrough Switching

- capable of transmitting the packet before receiving the entire packet.



Transmission delay for 200 bits: $T_{t_{A_{200}}} = \frac{200}{10^7} = 20\,\mu s$

$T_{P_{A-R}} = 10\,\mu s$ after 30 µs, retransmission begins

$T_{total} = T_{t_{200}} + T_{P_{A-R}} + T_{t_{R5000}} + T_{P_{R-B}}$

$= 20\,\mu s + 10\,\mu s + 500\,\mu s + 10\,\mu s$

$= 540\,\mu s$

(2)

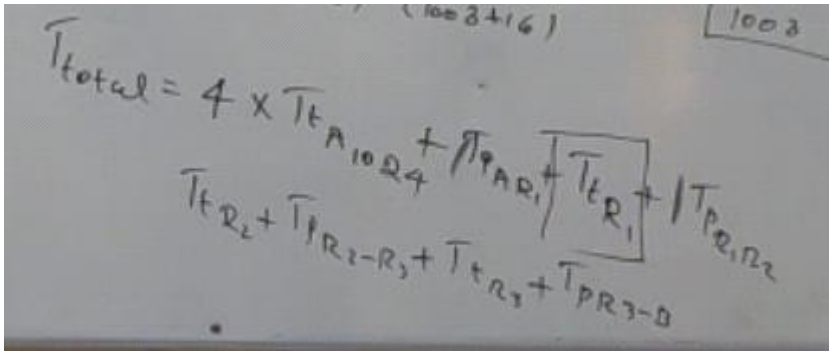
End to end delay =

Setup + TtA + 4*Tp
0.2 + 3200/9600 + 4*0.001 = 0.5373

3200 bits divided into packets of size 1024[including header]
16 bit header + 1008 bit data

Number of packets: 3200/1008 = 3.1746
Rounded to 4 packets (minimum)

176bit data + 832 bit padding + 16 bit header = 4th packets contents



= 4*(1024/9600) + 4*0.001 + 3*(1024/9600) = 0.7507 s

3.

0	101	000	111	Frame 1
1	111	001	100	Frame 2

4 frames