

Lecture Exercise: Queuing delay

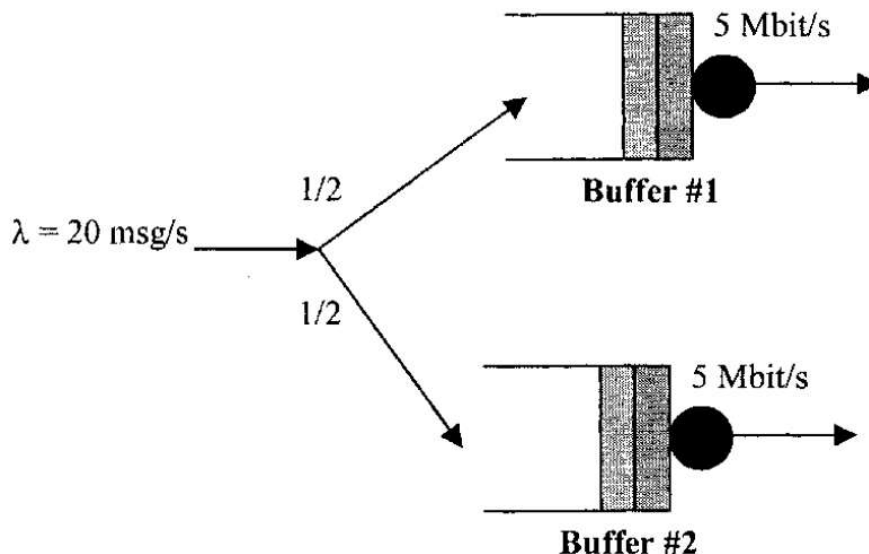
[Start Assignment](#)

Due Wednesday by 11:59p.m. **Points** 5 **Submitting** a text entry box or a file upload

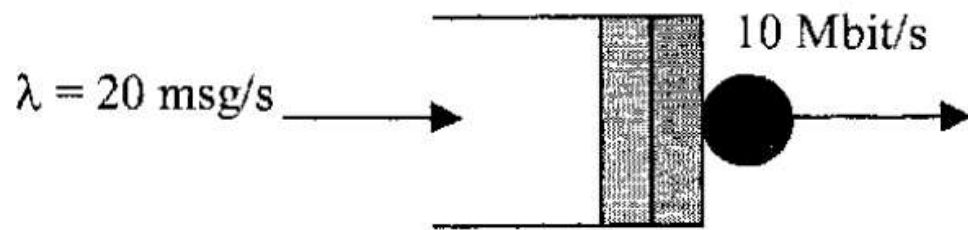
[check last slide in queueing lecture]

A telecommunication operator has two (parallel) transmitters at 5 Mbit/s. A switch at the input of the link divides the messages with equal probability among the two transmitters. Each transmitter has a buffer with infinite capacity to store the messages. The messages arrive to the link according to a Poisson process with mean rate $\lambda = 20$ msg/s and have a mean length of 100 kbit.

1) It is required to evaluate the mean delay from the message arrival to the input of the radio link to when its transmission has been completed.



2) We assume that the operator substitutes the two transmitters with a single one with a rate of 10 Mbit/s; we have to evaluate the mean message delay in this case and to compare this result to the previous point.



Compare between (1) and (2) in terms of the queuing delay experienced by each packet. Which model should the operator use for a better user experience? What about reliability?