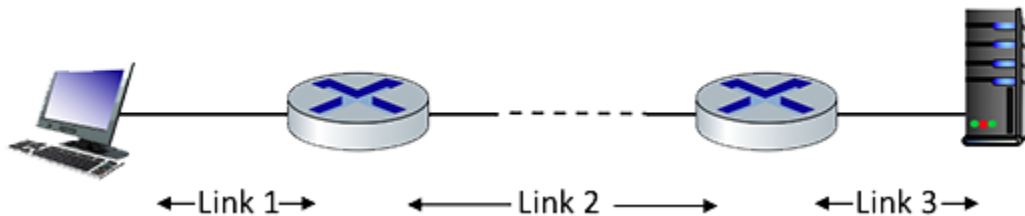


Computer Science and Engineering Department, SVNIT, Surat
B.tech.-III, Semester-V
Computer Networks (CS303)
Tutorial – 3

1. A system is consistently transmitting data (Consider the sender generates M-bit unit of data at every fixed interval of time). Assume when this application starts, it will continue running for a relatively long period of time. Answer the following questions.
 - a) Which network architecture will be more appropriate for above? Do you prefer a circuit- or packet-switched network? Justify your answer.
 - b) Assuming it is a packet switched network, how would an increase in packet length effect the propagation delay?
2. Consider the following figure, which has three links connected to one another as displayed below. For each link, the transmission rate and link length are provided. Assume that a packet has 16000 bits. Each link's light propagation delay is 3×10^8 meters per second.



Link	Transmission rate	Link length
1	10 Mbps	2 km
2	100 Mbps	500 km
3	1000 Mbps	3 km

- a) Count transmission delay and propagation delay for each link.
 - b) Count total link delay.
3. A packet is having length of 2500 bytes, propagation speed 2.5×10^8 m/s, and transmission rate 3 Mbps.
 - a) How long it will take for a packet to travel over a link of distance 7200 km?
 - b) In general, how long does it take for a packet of length L to travel across a link with the parameters d, ps, and bps? Write your answer.
 - c) Does the length of the packet affect the delay? Does the transmission rate affect this delay?

4. How long will it take a frame with a size of 6 million bits to send over a link with 8 routers, each of which has a processing time of $2\ \mu\text{s}$ and a queuing time of $3\ \mu\text{s}$? The link is 1500 kilometers long. Inside the link, light travels at a speed of $2 \times 10^8\ \text{m/s}$. The link has a 4 Mbps bandwidth.