

Assignment 1 , Due: 16, Aug.

1. Two nodes are connected via n switches using store and forward, and cut-through switches alternately. i.e., every second switch is a cut-through switch. The distance between two nodes is 400 km (imagine NIT Trichy intranet is connected to IIITDM intranet) and the connection is made using Fiber. Cut-through switches hold the first 100 bits for identifying the right output port. Both SF and Cut-through incur 10 nano sec for processing. Calculate the total transfer time for a packet of size 1500 bytes. Assume 1000 Mbps link speed. Also, calculate the effective bandwidth.
2. How many satellites does Google earth use to capture images. Where are they placed. Assuming the image size 1MB, what is the total transfer time to transmit 1MB image from SAT to the base station. Calculate the delay-bandwidth product.
3. Mention six different ways of transferring a file from one machine to another. For each strategy, calculate the total transfer time and effective bandwidth (throughput). Note: Refer to Lab-1
4. How wide is a bit on a 1Gbps link. i.e., the length of a bit in time axis. How long is a bit in fiber. i.e., the length of a bit in distance axis (measured in meters). Assume the link speed is 1Gbps and the speed of propagation is 2×10^8 m/s.
5. What do the terms 'Average amplitude', 'DC component', 'baseline wander' refer to in the context of encoding schemes. Be precise.
6. How do you measure (compute) LAN speed. Hint: PING command. Do your experiment by varying packet size; 16, 32, 64 bytes.
7. Use traceroute/tracert to find the distance between two nodes (the number of hops); say from a node in IIITDM to www.iiitdm.ac.in. List the IP addresses and names of all intermediate hops, if possible, mention their names (for example; 216.58.197.68 refers to www.Google.com). You may do this at different times to see whether the path taken by the sample is same at all times.
8. Give an example/analogy for each of the following: Unicasting, Multicasting, Broadcasting