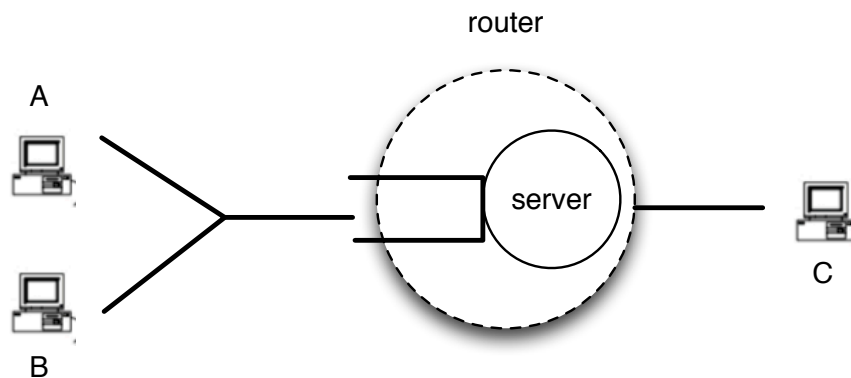


U2577 Computer Networks

Homework 10

1. As follows, node A has an unlimited data to node C. Node A is using a window-based transport protocol with a fixed window size W . Thus, node A can send a new packet transmission whenever the number of unacknowledged packets is less than W . Suppose that the transmission time of a packet for nodes A, B, C, and the router is 1 unit time, and that an ACK takes 0.5 unit time from node C to node A. In this problem, ignore the propagation delay and processing delay, i.e., only consider the transmission delay and the queueing delay at the router.



- Suppose node B is silent, and that there is no congestion along the acknowledgement path from C to A. What is the average throughput (packets/unit time) as a function of window size W ? What is the minimum window size that A should choose to achieve a throughput of 10 packets/unit time? Call this value W^* . With this choice of window size, what is the average packet delay (time from leaving node A to arriving at node C)?
 - Now consider that node B also has an unlimited data to node C, and that node B and node A both use the window size W^* . Suppose nodes A and B are perfectly scheduled with the equal probability, i.e., no collision. What is the throughput of nodes A? What is the average packet delay?
2. (Due date: June 18) Linux socket programming.
 - Implement a server and a client.
 - The client sends a route request to the server. It asks for a minimum-cost path in the graph, as follows, from a source to a destination, e.g., from node 2 to node 9.

- The server has a graph. When receiving a request, the server computes the minimum-cost path, e.g., 2,5,9, and responses the client by the path.
- Upload (1) server.c (2) client.c (3) simple report.

