

Problem Session 12: Networking

SOLUTION

Wednesday, November 18, 2020

1. Logging daemons are background processes whose purpose is simply to accept messages from clients and log them to a file. (This is sometimes used in secure networks to ensure that, even if an attacker breaks into a computer, he cant erase his traces from the logs because a copy of the log is stored elsewhere.)

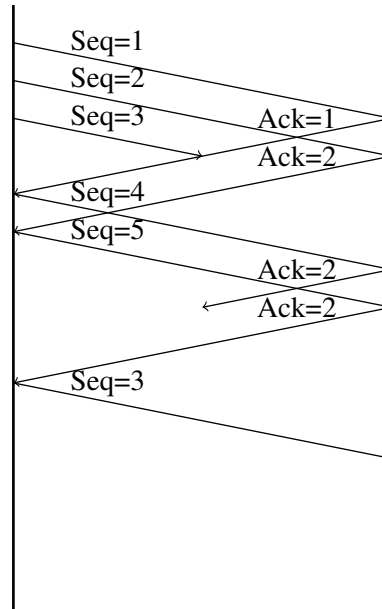
In the following table, please list the UNIX I/O function calls that each side of the connection would make. Each row should contain the name of a single system or library call, placed in the appropriate column. Please list the calls in the order they are called, not the order they return. Please only include network-related operations (accept, bind, close, connect, listen, read, socket, and write).

You should make the following assumptions:

- The server and client are communicating over TCP.
- The server finishes initializing before the client starts.
- The server only serves a single client.
- The client already knows the servers IP address.
- The client only sends one message before closing the connection.

Client	Server
	socket
	bind
	listen
	accept
socket	
connect	
	read
write	
close	

2. Assume you are communicating over a TCP connection with a window size of 3. The client wants to send a sequence of five packets to the server. Assume that the packets each contain one byte, and the sequence number of the first packet is 1. Assume that the third packet sent by the client and the third ACK sent by the server get lost. What is the sequence of messages that will be exchanged by the client and the server?



3. Some researchers have proposed TCP variants that respond to congestion events by reducing their window size by a small constant amount. How would such protocols interact with existing TCP implementations?

Clients using the proposed version would monopolize the available bandwidth.