Homework 7 - Transport

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Par

-Utilizes udp to send a sequence of messages(each message is a sequence of bytes) to a port/ip pair

-Ensures reliable delivery of messages by the receiver sending an acknowledgment to the sender when the message is received, and the sender retransmitting the message if a timer has expired before such an acknowledgment is received.

-Ensures in order delivery of messages because the sender does not send the next message until the current one is acknowledged.

-Coincidentally, only one message can be sent at a time which is almost always a waste of available bandwidth.

Sliding Windows

Follows the same rules as par, with the following differences:

-Instead of sending one message in the sequence at a time, a fixed size subsequence(window) of messages in the sequence is sent.

-The starting point of the subsequence(window) is initially the beginning of the message sequence, and as acknowledgments are received, the window will increase its starting point in the sequence to the first unacknowledged message in the sequence.

-Increases bandwidth utilization.

Tcp

Follows the same rules as sliding windows, with the following differences:

-Instead of a sequence of messages, tcp operates on sequences of bytes, which is encapsulated in a sequence of one of more segments.

-The window size is adjustable, and changes based on how many bytes at a time the receiver can accept. The sender sends the number of bytes specified by this window size, and it is thru this mechanism the flow control is exercised.

-The acknowledgements sent by the receiver indicate the next byte missing in the sequence, instead of the last received message in the sequence.

-Instead of using a port to interact with the stream, a “connection” is used. A connection is identified by two endpoints, where each endpoint is a port and ip address pair. This effectively passes the problem of

demultiplexing to the api and away from the user. A connection can also be thought of as a virtual circuit that exists between two applications.