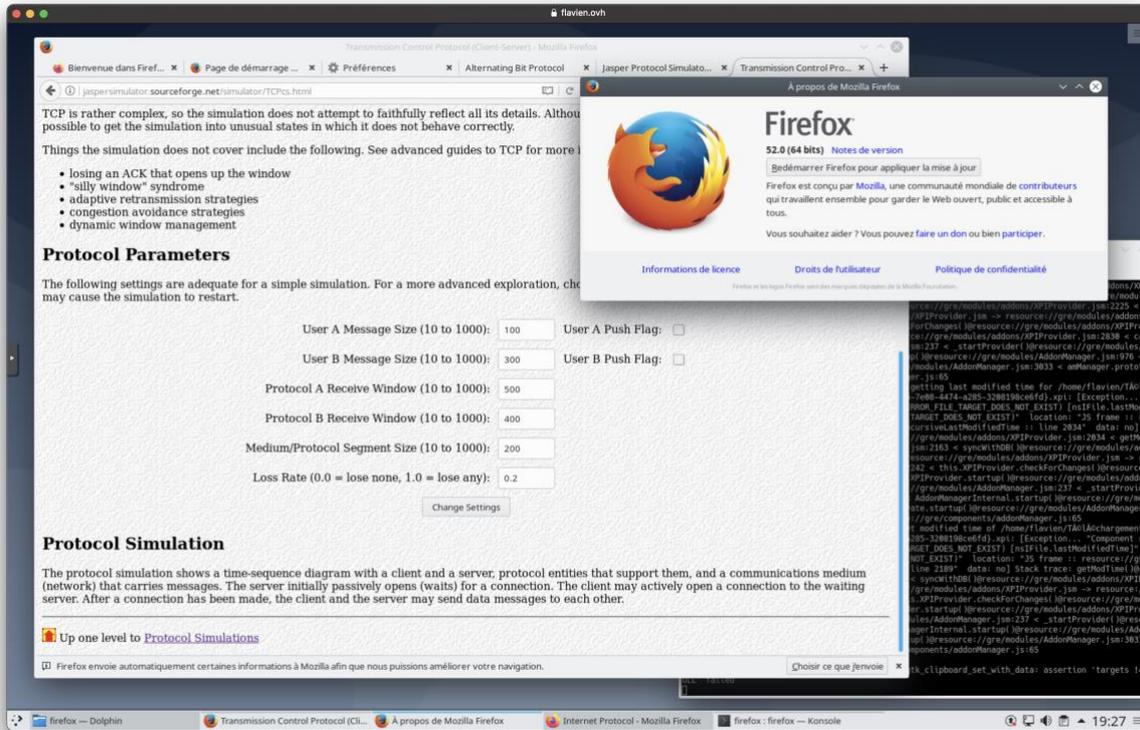


Part 1 : Protocols

I couldn't run the jasper simulator on my computer since java applets are deprecated in Firefox since version 52 in March 2017 (<https://support.mozilla.org/en-US/kb/use-java-plugin-to-view-interactive-content>).



Even in Firefox 42 I couldn't run the applets, so I was using the description text of jasper simulator and Wikipedia to write these notes.

IP (Internet Protocol)

The Internet Protocol is the principal communications protocol in the Internet protocol suite for relaying datagrams. It is located in layer 3 in the OSI model.

IP has the task of delivering datagrams from the source host to the destination host solely based on the IP addresses in the IP datagram's header. If the payload is too big for a datagram, fragmentation can occur.

The header is typically 20 bytes, important values are

- IP addresses source and destination
- TTL (Time To Live) which indicate how many routers the datagram can pass into, each router removes 1 to this value and the datagram is lost when it is at 0
- 16-bit identifier : in case of fragmentation all fragments to the same datagram have the same identifier
- Flags that indicate in case of fragmentation if other fragments are coming up or if it can't be fragmented
- Fragmentation offset : to know which part of the datagram the fragment is
- Checksum to validate that the datagram header is not corrupted.

TCP (Transmission Control Protocol)

The Transmission Control Protocol (TCP) is one of the main protocols of the Internet protocol suite for relaying packets. It is located in layer 4 in the OSI model. TCP provides reliable, ordered, and error-checked delivery of a stream of octets (bytes) between applications running on hosts communicating via an IP network.

TCP is connection-oriented, and a connection between client and server is established before data can be sent. The server must be listening (passive open) for connection requests from clients before a connection is established. Three-way handshake (active open), retransmission, and error-detection adds to reliability but lengthens latency. TCP employs network congestion avoidance.