Program Design

The server and client communicate by sending “ASD” messages which are encapsulated in a reliable transport protocol (RTP) running over UDP.

The custom RTP works by specifying an RTP header which contains information about the transfer state and size of the payload data. The sender begins by sending a “data” packet and does not send the next packet until the receiver has sent an acknowledgement. Once all the “data” packets have been successfully sent, the sender terminates the interaction with a “FIN” packet. If the receiver does not send the packet acknowledgement before a timeout, the sender will try again up to a maximum of RTP_MAX_RETRY times. If this limit is exceeded, the protocol will return a failed status.

The ASD messages are sent over the RTP protocol to the server and only contain information for each instruction (Test, Run command, Stop server). The implementation of RTP is located in asd.c and the library exposes an API that can be used to reliably send or receive ASD commands. (asd_send_command and asd_receive_command).

An example of the RTP (with a packet loss) is shown in the diagram below.