Time taken to transmit file

Basic considerations:

* File size was 799kB
* All measurements taken on the same pc (Daniel Maccaline’s Desktop)
* All Times taken as an average over 10 runs
* All print commands that occur between the timer being started and stopped were disabled
  + The only print commands were the print statement indicating the program was starting and the time display at the end

**Option 1 - No Loss/bit-errors**

With Loss and corruption rates at 0% both ways, the time to transmit the file was: .33 s

From this result, an interesting observation can be made. First, the time taken for a 0% loss is the same as the time taken with a 0% corruption rate in phase 3. This is expected, as the only change is when and how retransmissions occur, and at this setting, no retransmission occurs.

**Option 2 – ACK packet bit-error:**

ACK corrupted from server to client

Numeric Results (Packet Corruption, Server):

|  |  |
| --- | --- |
| Corruption chance (Server to Client) | Average time |
| 0% | .34 |
| 5% | .84 |
| 10% | 1.48 |
| 15% | 2.22 |
| 20% | 3.21 |
| 25% | 4.12 |
| 30% | 5.37 |
| 35% | 6.70 |
| 40% | 8.46 |
| 45% | 9.99 |
| 50% | 12.53 |
| 55% | 15.23 |
| 60% | 18.58 |

**Option 3 – Data packet bit-error:**

Packet corrupted from client to server

Numeric Results (Packet Corruption, Client):

|  |  |
| --- | --- |
| Corruption chance (Client to Server) | Average time |
| 0% | .34 |
| 5% | .77 |
| 10% | 1.50 |
| 15% | 2.15 |
| 20% | 3.21 |
| 25% | 4.29 |
| 30% | 5.34 |
| 35% | 6.85 |
| 40% | 8.51 |
| 45% | 10.28 |
| 50% | 12.51 |
| 55% | 15.85 |
| 60% | 19.32 |

**Option 4 – ACK packet loss:**

ACK dropped from server to client

Numeric Results (Packet Loss, Server):

|  |  |
| --- | --- |
| Loss chance (Server to Client) | Average time |
| 0% | .34 |
| 5% | .91 |
| 10% | 1.42 |
| 15% | 2.15 |
| 20% | 3.14 |
| 25% | 4.01 |
| 30% | 5.22 |
| 35% | 6.93 |
| 40% | 8.45 |
| 45% | 10.13 |
| 50% | 12.63 |
| 55% | 15.91 |
| 60% | 19.38 |

**Option 5 – Data packet loss:**

Packet dropped from client to server

Numeric Results (Packet Loss, Client):

|  |  |
| --- | --- |
| Loss chance (Client to Server) | Average time |
| 0% |  |
| 5% |  |
| 10% |  |
| 15% |  |
| 20% |  |
| 25% |  |
| 30% |  |
| 35% |  |
| 40% |  |
| 45% |  |
| 50% |  |
| 55% |  |
| 60% |  |

Numeric Results (Packet Loss, both ways):

|  |  |
| --- | --- |
| Loss chance (Client and Server) | Average time |
| 0% | .33 s |
| 5% | 1.35 s |
| 10% | 3.03 s |
| 15% | 4.83 s |
| 20% | 7.097 s |
| 25% | 9.75 s |
| 30% | 12.93 s |
| 35% | 17.35 s |
| 40% | 22.55 s |
| 45% | 29.65 s |
| 50% | 39.11 s |
| 55% | 50.55 s |
| 60% | 67.09 s |

Graphical Representation