

Average throughput vs. Loss rate

In the Go-back-N algorithm, in the case of a packet loss, the entire window of packets is resent by the sender code. So, if the average data loss increases, this decreases the average throughput and increases the transmission time.

The parameters are:

- Window size = 15
- Timeout = 100
- Delay = 80
- Filesize = 34134832 bits

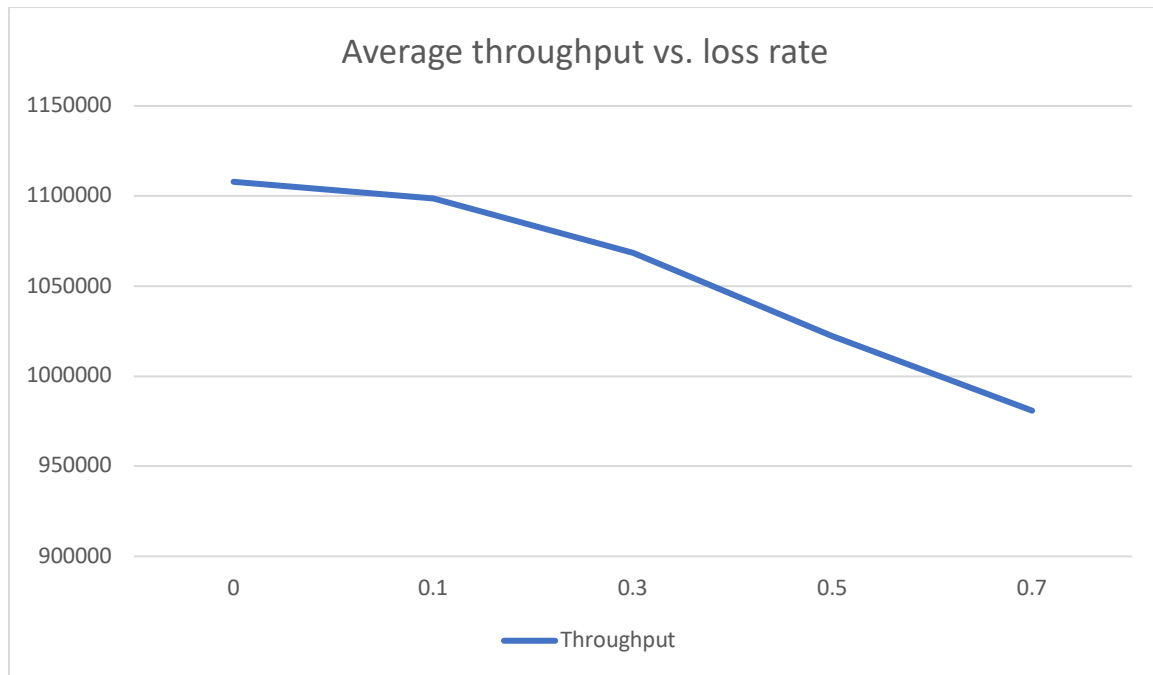
- P = 0.0
 - Time elapsed = 30.81s
 - Avg. throughput = 1107914.05bps

- P = 0.1
 - Time elapsed = 31.07s
 - Avg. throughput = 1098642.8bps

- P = 0.3
 - Time elapsed = 31.95s
 - Avg. throughput = 1068382.8bps

- P = 0.5
 - Time elapsed = 33.39s
 - Avg. throughput = 1022307bps

- P = 0.7
 - Time elapsed = 34.80s
 - Avg. throughput = 980885.9bps



Average throughput vs. Window size

The algorithm uses a window size where the timeout is applicable upon transmission confirmation not being received. So, if there's a larger window size, more packets will be transmitted and the total time taken for transfer is lower. So, with a bigger window size, the time for packet transfer takes less time. So, it is also evident that packet loss probability decreases if the average throughput changes.

The Go-Back-N algorithm uses a window with a specific window size and the timeout is also set for the whole window, so when the sender is ready to send packets, it sends all the packets that are readily available in the window in one go. This means if we have a bigger window size, more packets will be sent at once, and as we can see in the graph, when the window size increases, the time taken to finish packet transfer decreases, which results in a higher average throughput. Additionally, it can be seen, the packet loss probability also has an effect on the average throughput. When the window size is big, more packets will be lost and the average throughput slowly gets steadier too.

The parameters are:

- P = 0.1
- Timeout = 100
- Delay = 80
- Filesize = 34134832 bits

- N = 20
 - Time elapsed = 22.86s
 - Avg. throughput = 1493212.2bps

- N = 40

- Time elapsed = 11.25s
- Avg. throughput = 3034207.2bps
- N = 60
 - Time elapsed = 12.33s
 - Avg. throughput = 2768437.3bps
- N = 80
 - Time elapsed = 8.56s
 - Avg. throughput = 3987714.0bps
- N = 100
 - Time elapsed = 6.48s
 - Avg. throughput = 5267720.9bps

