

## Exercise 1 Workshop In Communication Networks - Benchmarking Throughput

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To use on linux

Open terminal and run following lines:

```
>> make
```

```
>> server
```

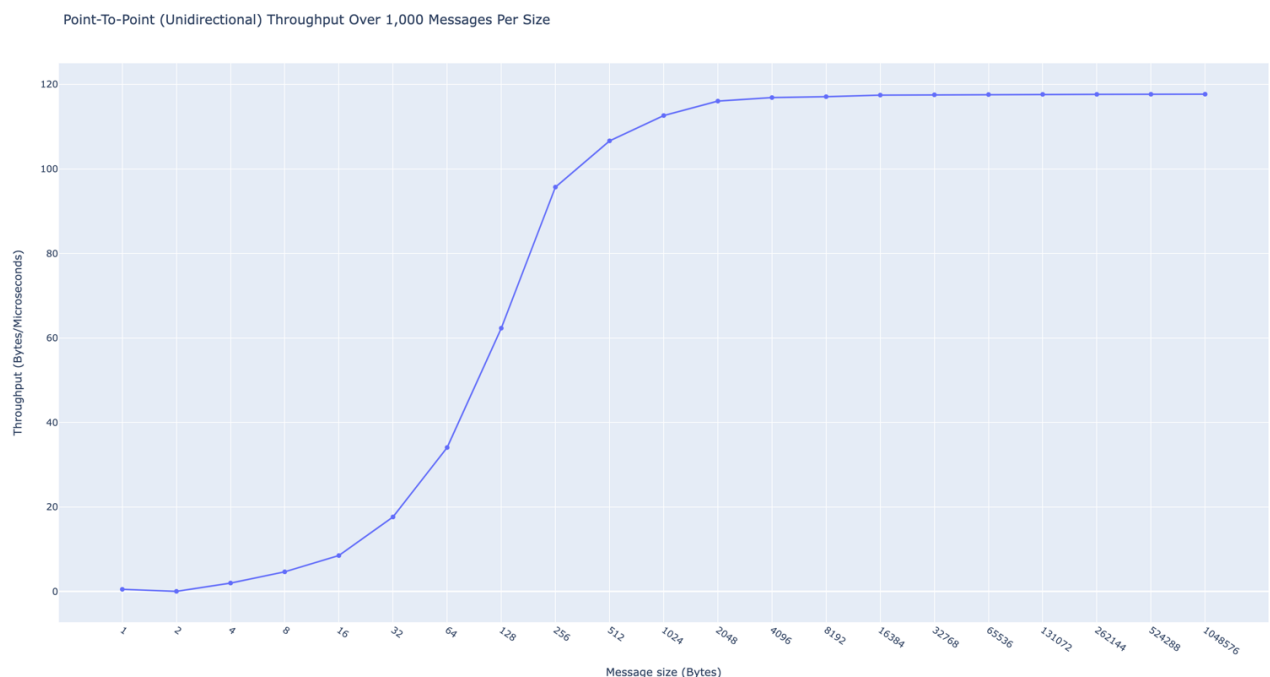
```
>> client <server_ip>
```

The goal of the implemented code was to measure point-to-point (unidirectional) throughput between two machines for an exponential series of message sizes, ranging from 1 byte to 1MB.

The implemented code had a server and a client component, both written in C++, that shared some code.

The server had to be run first and the client second. The client connected to the server and sent a certain number of messages. After all messages had arrived, the server replied and the client calculated the throughput based on the time it all took.

The performance results obtained from running the implemented code were as follows:



As can be seen from the results, the throughput increased as the message size increased, which is expected since larger messages can be transmitted more efficiently. The throughput for the TCP protocol between the two servers reaches a top of around 117 bytes/microsecond for message sizes greater than or equal to 4096 bytes. This is because as the message size increases, the amount of overhead (such as headers and other protocol information) becomes a smaller percentage of the total message size, and the data payload

makes up a larger percentage. Therefore, the amount of time required to transfer the payload becomes the dominant factor in the overall transfer time.