Independent Study Summary

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1. Environment

The first task of this independent study is environment establishment. My task was tested throughput of different size of file on QUIC Protocol and the transfer latency.

My program runs on Caddy server. Using Caddy as a server and Chrome as a client. Caddy was download at here: https://caddyserver.com/. Also, I need to draw the graph of throughput testing and latency testing. I used Chart.js(https://www.chartjs.org/) to draw the output.
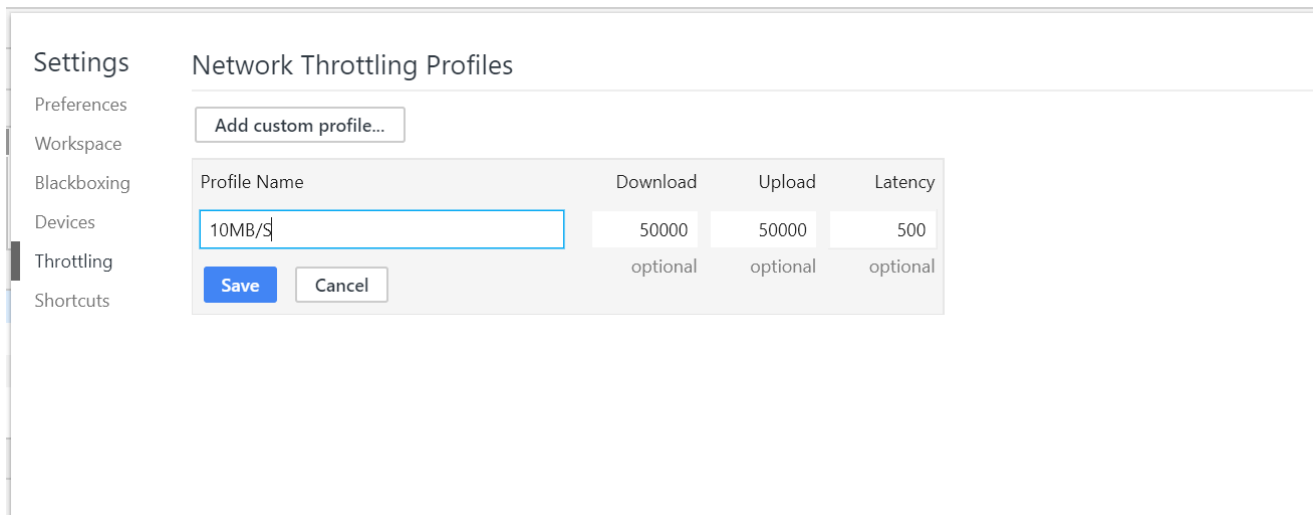
2. Throughput Testing

I tested 11 files with different size and showed result on Chrome after user downloading these files. Each file was tested several times and took it's average as final result. Users can select what they want to test, (Throughput or Latency) and how many times they want each file to iterate(1, 5, 10, 15, 20). When the results showed, users can download the image by right clicking, then choose "Save image as...". Below is the graph of 10 times for each file testing.
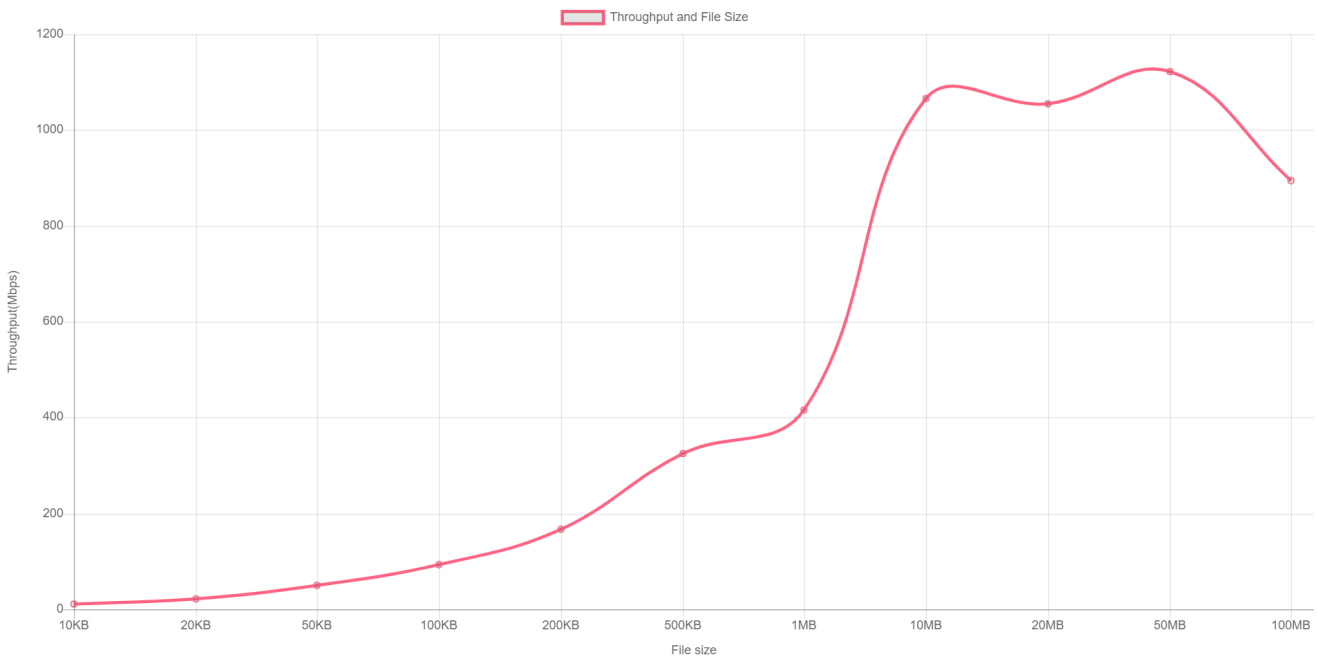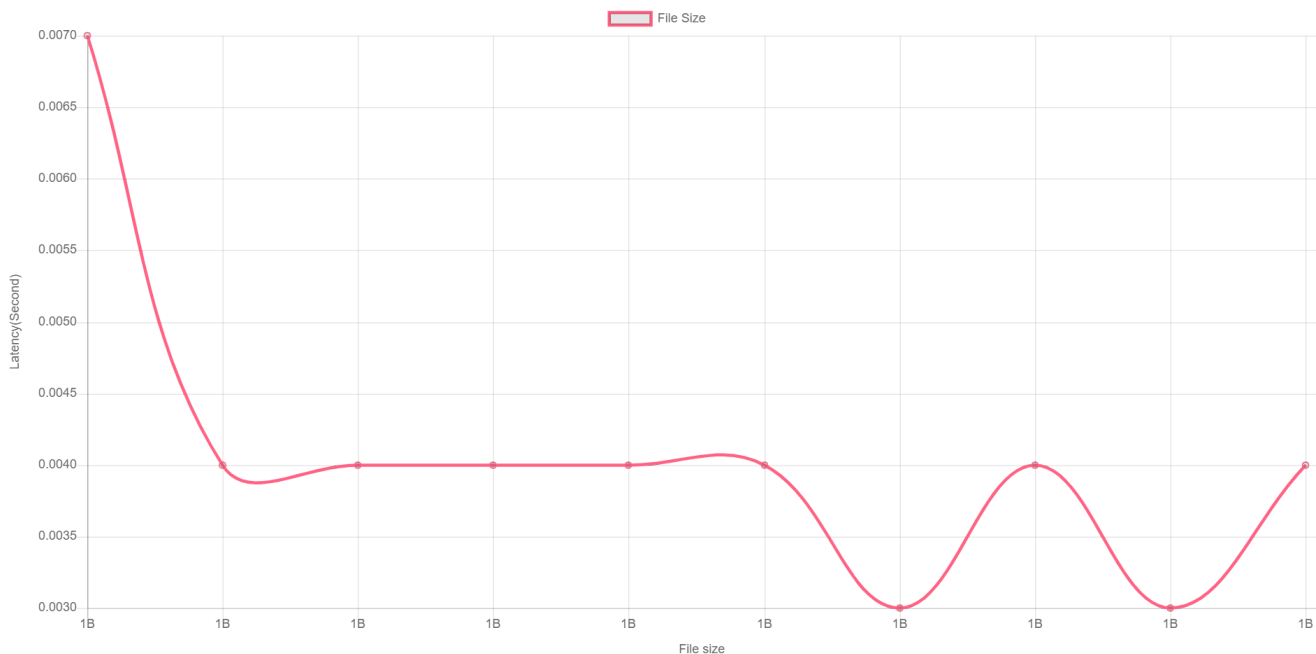

3. Latency Testing

Latency testing is based on a file which size is only one byte. Latency testing tested 10 times by default and showed the result for each time on the screen. Also, users can set the upload speed, download speed and latency as they want in the network throttling profiles in Chrome. Like the snapshot showed below.

And the snapshot of latency result is:

4. Future Work

At present, my program can test throughput and latency on HTTPS protocol. But the experiment required the testing to run on QUIC protocol. Caddy still can not start with QUIC successfully. May be because I don't have a certain domain name running on Caddy server.

Secondly, I am trying to find out a way to send parameter of network throttling to Chrome by programming. If this can be implemented, the testing can be ran more automatically and efficiently.