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CS 360

Lab 3 - Download Accelerator

For this lab I ran the test on campus on a wired connection where I used speedtest.net and got 93Mbs download and 64Mbs upload while running the test on my laptop. From that test I got these results:

Figure 1; Campus Wired Small

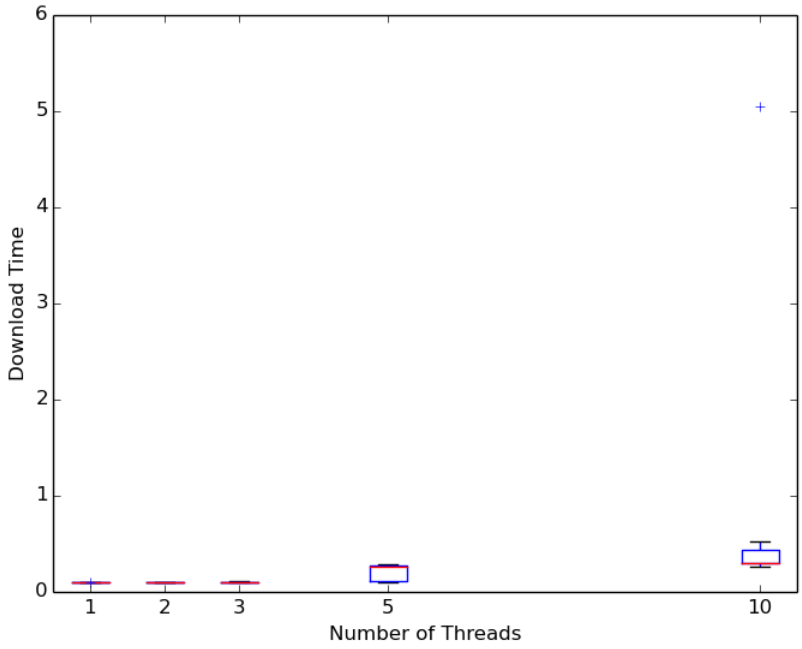


Figure 2; Campus Wired Medium

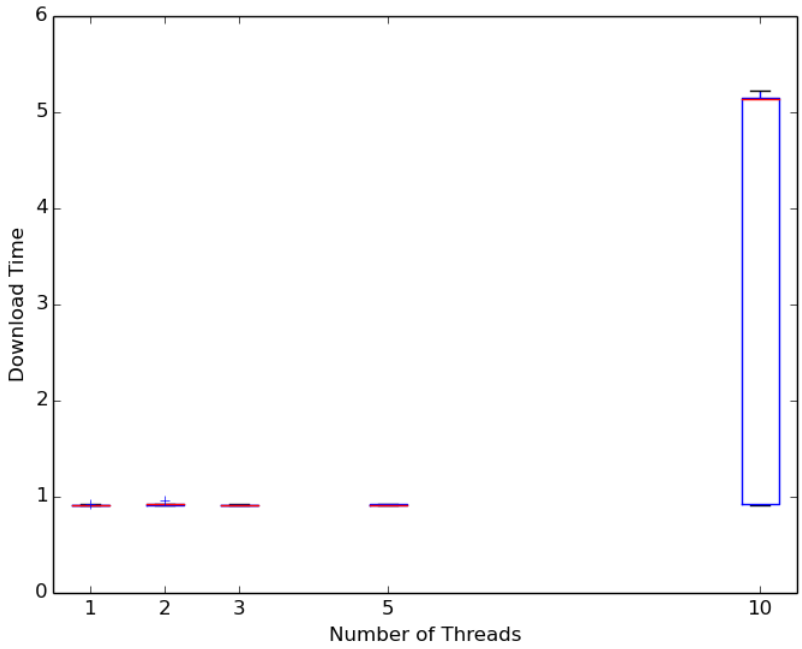
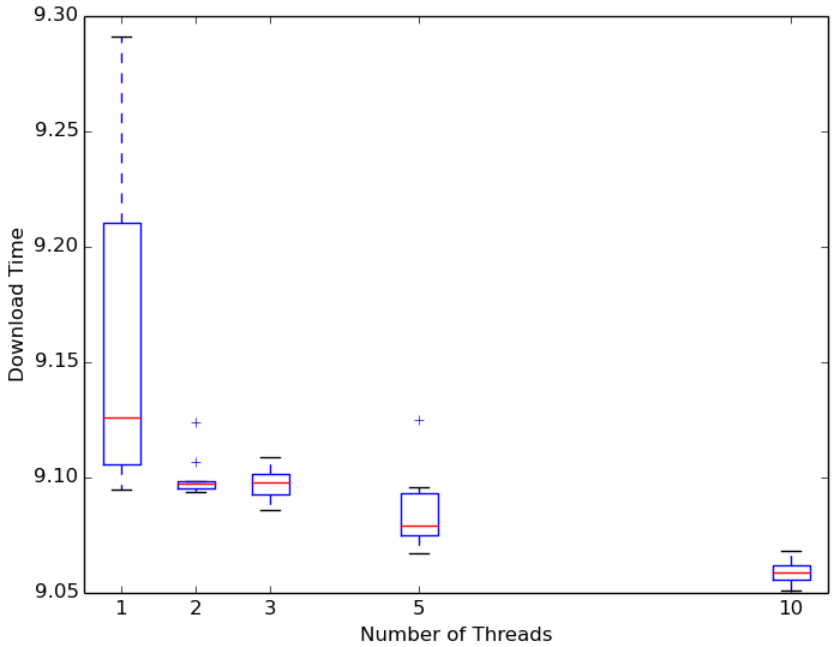


Figure 3; Campus Wired Large



Then I also went home where I have a Gbps connection through Google Fiber and I used a wired connection to run the test again. I ran a speed test to check right before I did it, since my roomates were home using the connection but I got 645Mbs download and 854Mbs upload. From that test I got these graphs:

Figure 4; Google Fiber Small

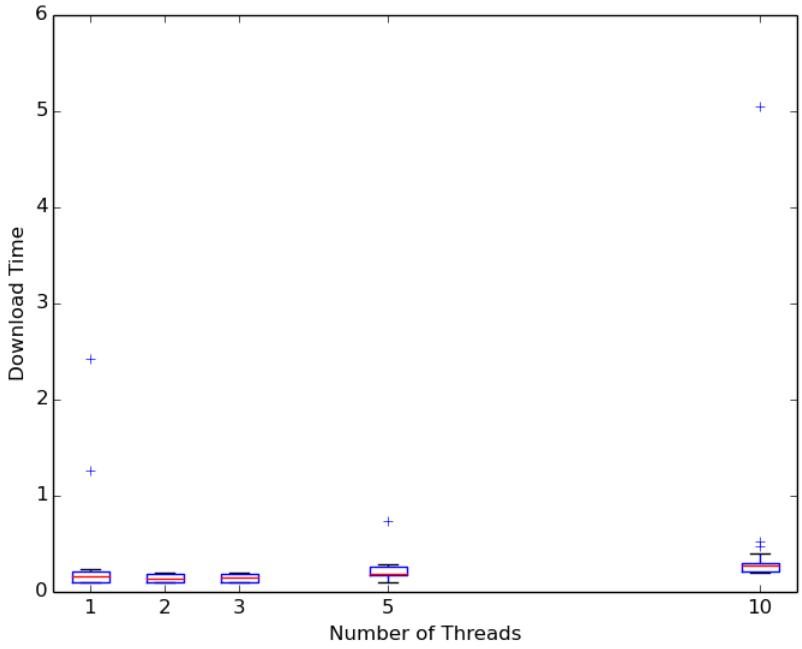


Figure 5; Google Fiber Medium

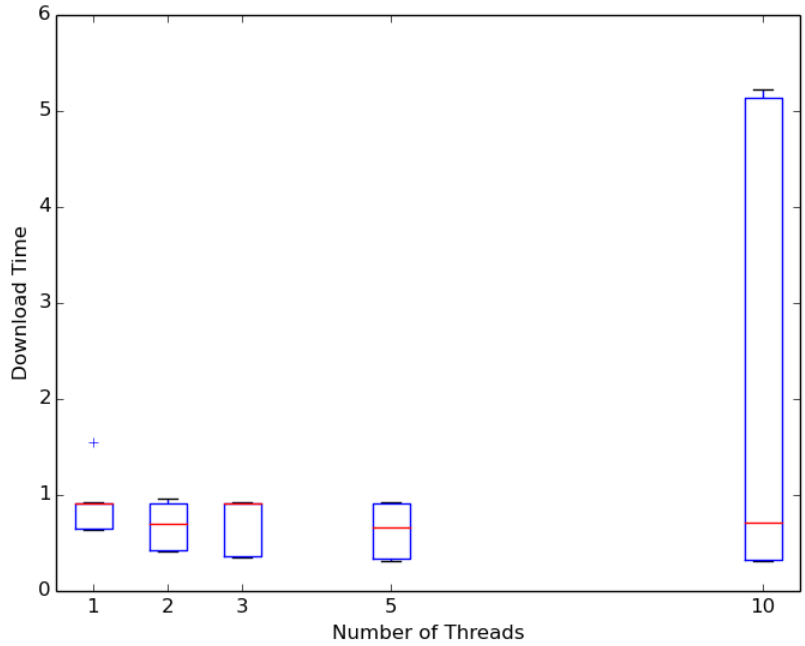
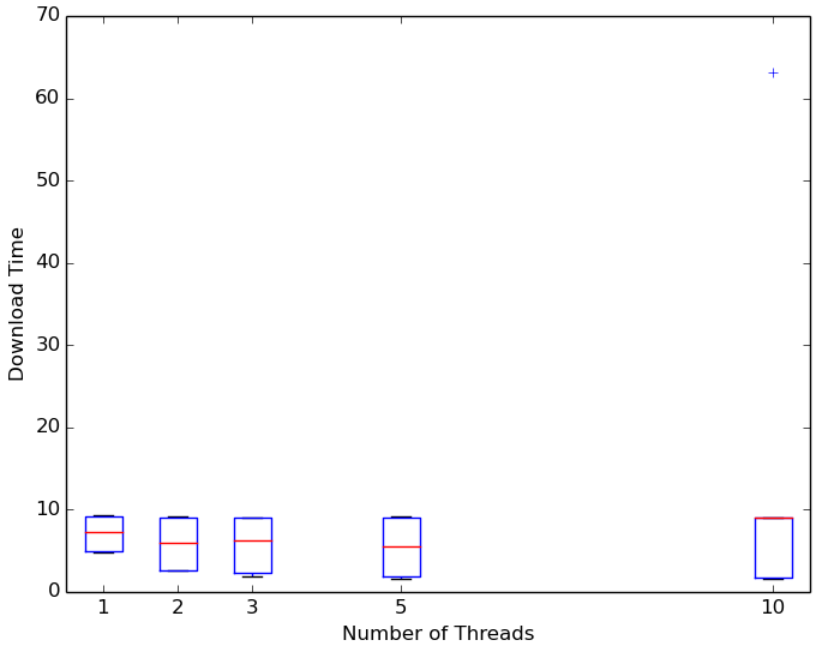


Figure 6; Google Fiber Large



Now to compare and contrast. As for threads, in both figures 3 and 6, which are the large file downloads, it's noticeable that more threads means that the data did get downloaded faster. However for the small

download it can also be seen in figures 1 and 3 that it actually took longer to get the data because of more threads. Whereas for the medium sized files both figures 2 and 5 show a slight to moderate increase in download speed. So more threads = faster? Well it'll depend. For very small downloads, no. It's quite possible that for small downloads one thread could get the whole file in one go, or if not, then in just a couple of checks to the buffer. Creating more threads to do this, actually would cause more overhead and processing to happen with all the threads versus just one thread thus taking longer to process than with just one or a couple threads. Now for large files, more threads does mean faster downloads. The question becomes where the threshold of how many threads to use is. That can depend on a lot. For my system 10 threads for 100MB was great and helped out a lot. The threshold though, realistically would depend on certain variables of the system itself, such as the size that the receiving buffer actually is, cores in the computer, actual ability of cores to thread, connection speed and other variables. A slower connection might work just as well with a few threads as it would with many. But in general fewer threads for small downlaods works great and more threads for larger (I'd give it like over 50MB downloads would be large) files helps out, in both cases the trick is finding when to stop with the threads as you can have too many and have so much work to do that the computer is doing more than it would have with fewer threads.