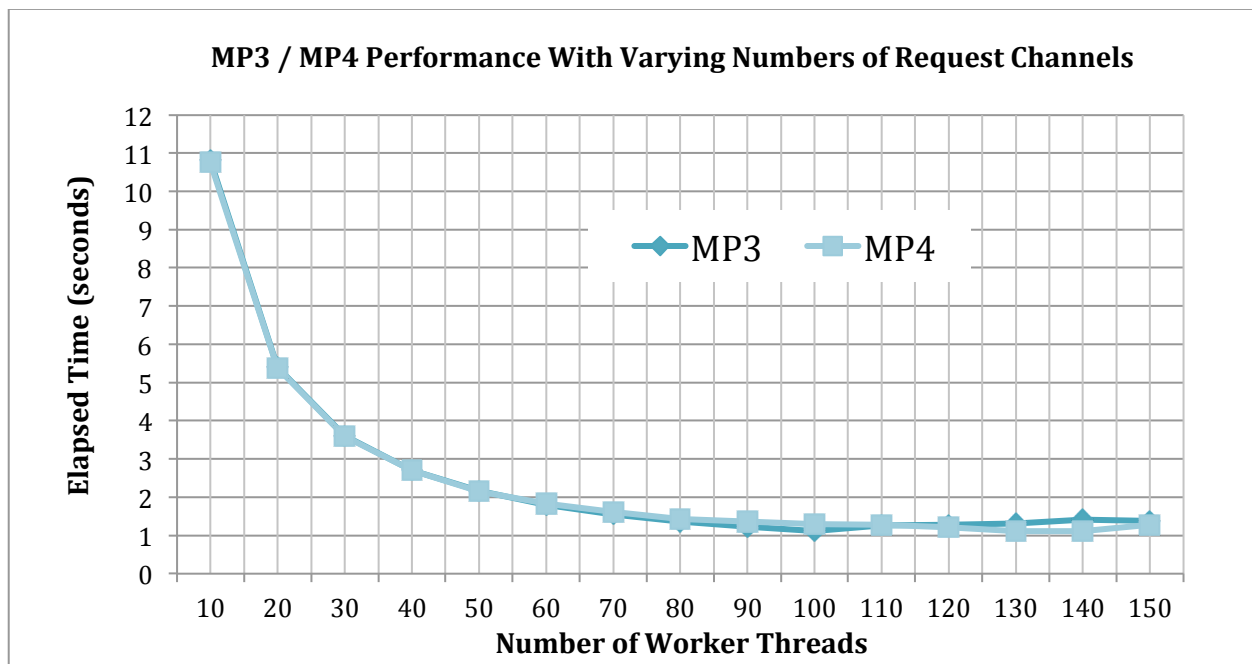


Machine Problem 4 Report

MP4 Performance Relative to Buffer Size, Request Channel Count, & MP3 Performance

The MP4 client program implementation differs from the MP3 implementation in that it handles all request channels in a single event handler thread rather than in separate worker threads. Despite this difference, the performance of the MP4 implementation closely mirrors its MP3 counterpart. As with MP3, the MP4 implementation's runtime is hardly affected by variations in buffer size. Tests run with vastly different buffer size inputs led to nearly identical results. Similarly, the runtimes of MP4 tests using varying numbers of request channels closely tracks the runtimes of MP3 tests using corresponding numbers of worker threads. This comparability is illustrated by the plot below.



As with the MP3 implementation, increasing the number of request channels (now in one event handler thread) greatly boosts performance for low values. This effect noticeably flatlines after around 100 request channels. While the implementations are very similar, the MP4's single-thread implementation appears to slightly outperform the MP3 implementation for high numbers of request channels, e.g., when there are more than 100 request channels.

One minor but helpful feature is the inclusion of *Person* structs containing information relevant to each person, such as their associated names, response buffers, and request and statistic threads. Pointers to these structs are passed to thread functions and coupled with buffer-stored requests. This helps to clean up code and avoid any unnecessary look-up time, and also allows for later scaling