ISTE-444 Project 1: Application Performance Monitoring

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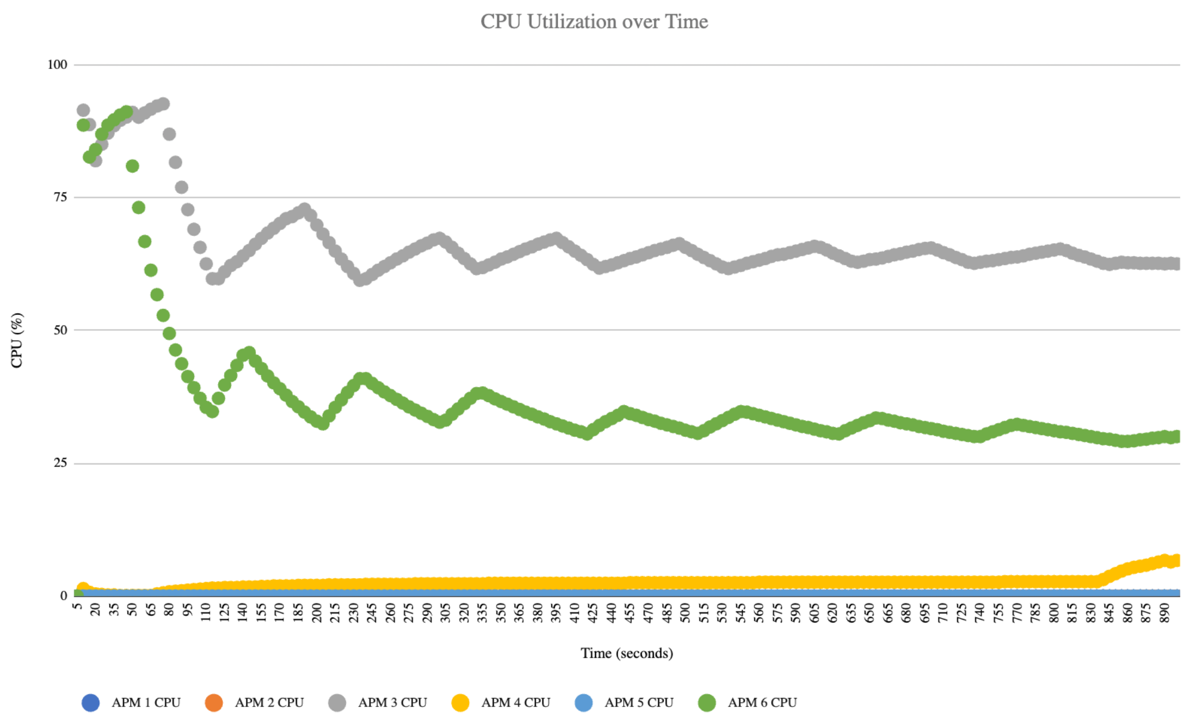
Introduction

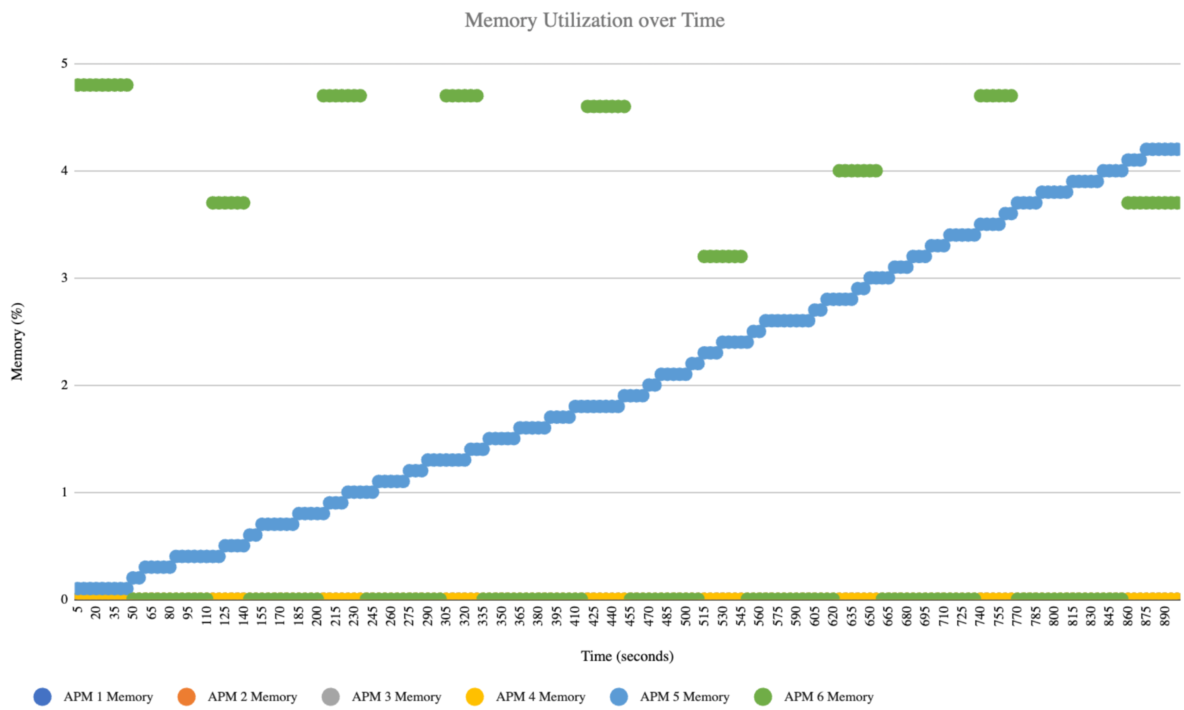
This project is about how different tasks can limit and restrict different resources on a computer. The lab more specifically showed us how to monitor these fluctuations using bash scripting, exit trapping, and utilizing linux tools. Using these techniques we were able to successfully see what tasks utilized the most memory, processing power, networking power, and disk space.

Process Number	Process Name
APM 1	bandwidth hog burst
APM 2	bandwidth hog
APM 3	cpu hog
APM 4	disk hog
APM 5	memory hog leak
APM 6	memory hog

Process Level Metrics

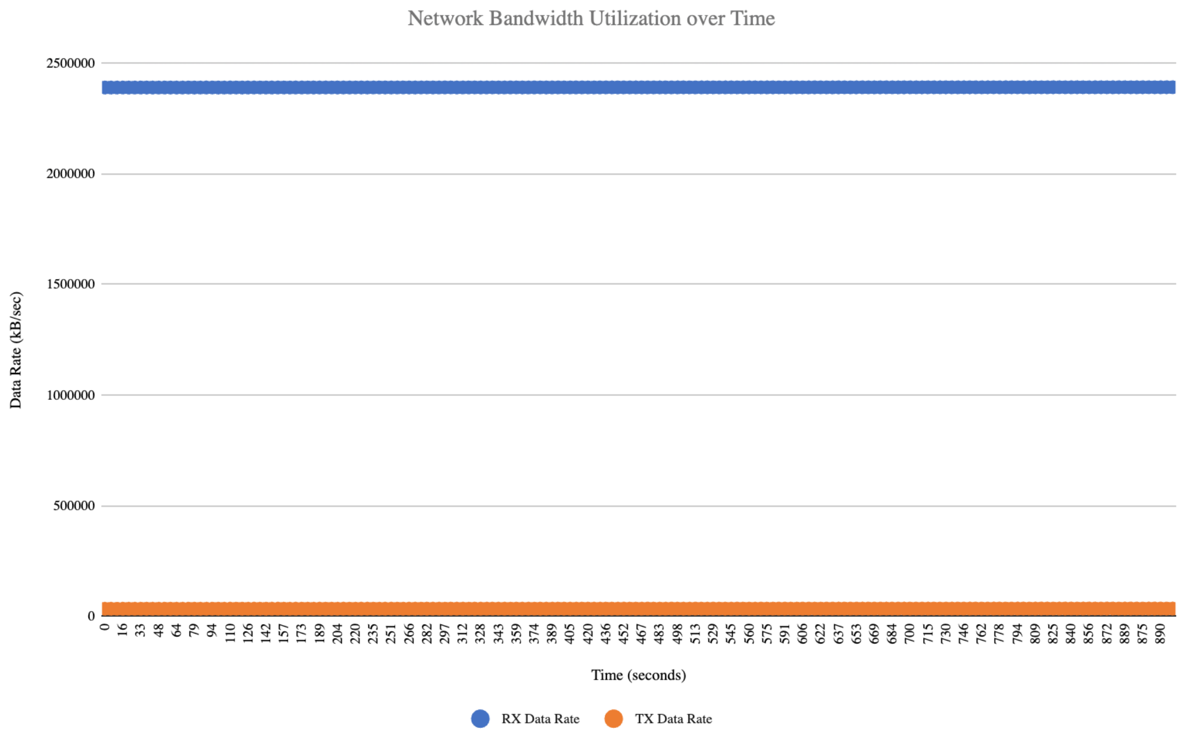


In this plot you can see that APM 6 and APM 3 use the most processing power in terms of CPU utilization. They also did a lot of jumping around and you can see that via the sharp turns they took on the graph. On the other hand, processes 1, 2, 4, and 5 don't really tax the CPU as much. That being said, if we were to continue the tests for a longer period of time the 4th task may have increased CPU usage.

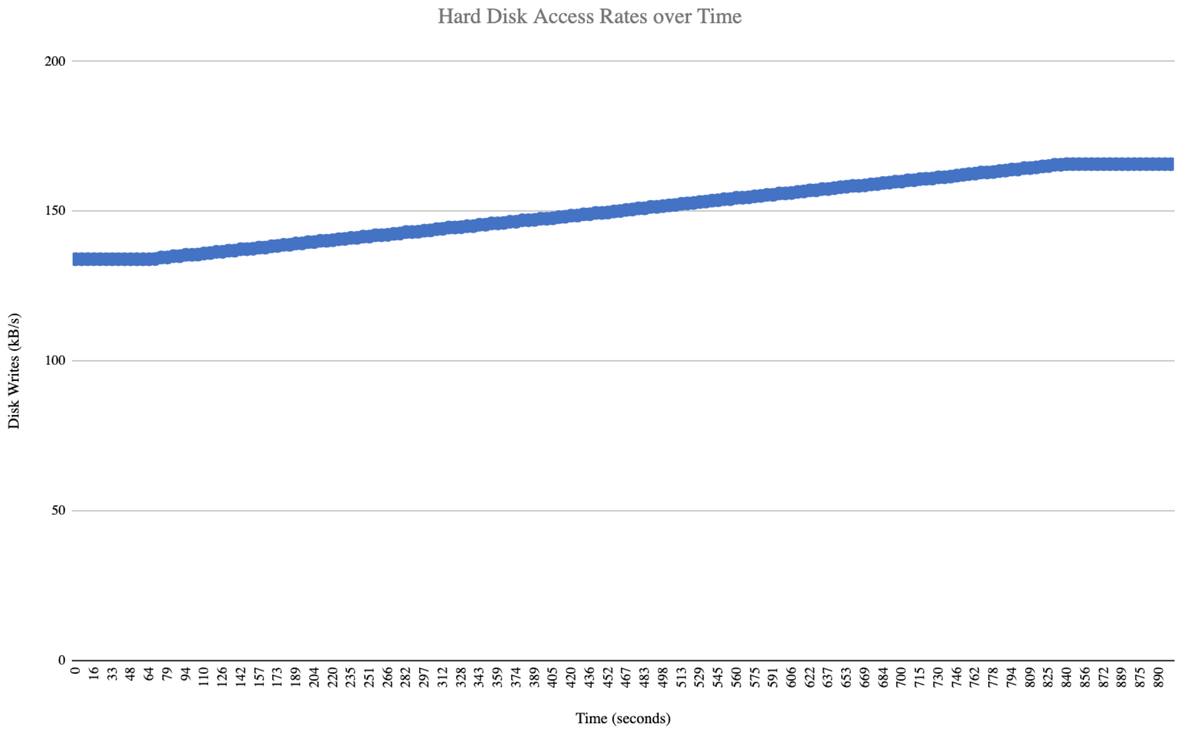


In this plot you can clearly see a memory leak with process number 5. This is a memory leak because the process utilization of memory constantly increases. Process 6 was all over the place in terms of memory usage which is interesting. Process 6 would utilize high amounts of memory then drop back down to doing nothing. The other processes didn't really do much.

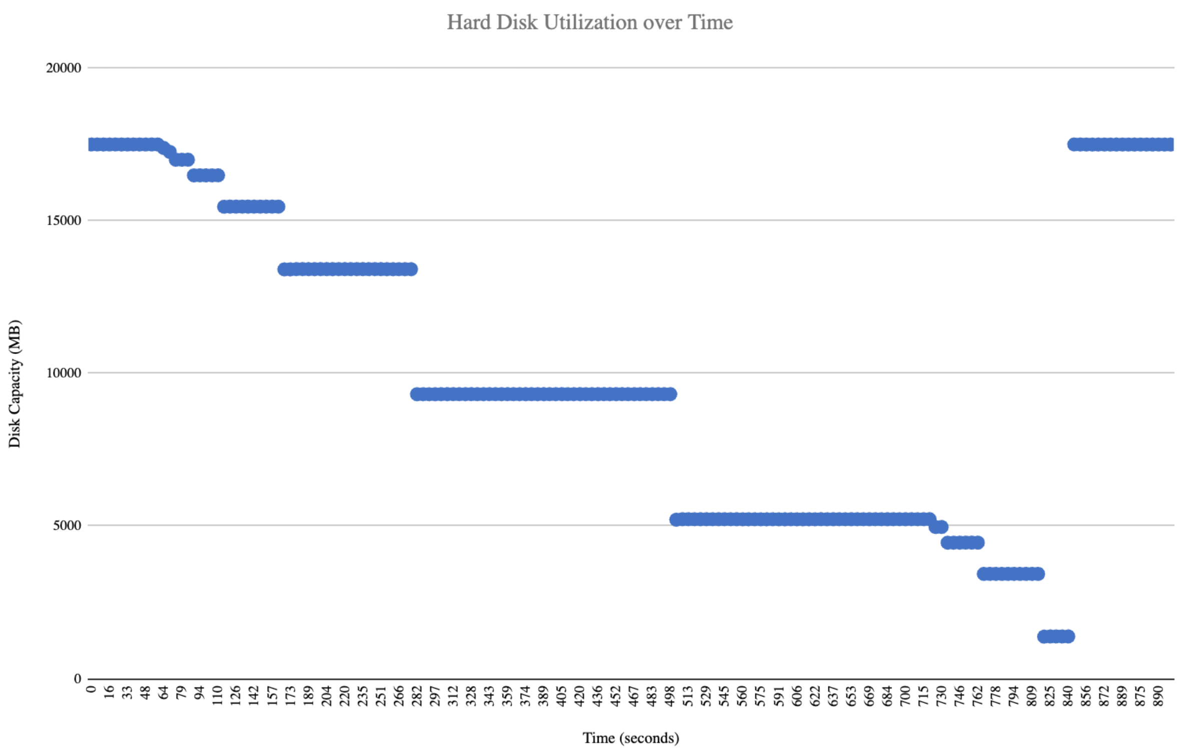
System Level Metrics



This network bandwidth graph really isn't that interesting. You can see that the ens192 network interface only received data at a pretty much constant rate while the program didn't transmit all that much data, staying closer to 0 on the y axis.



The hard disk rate plot shows data being accessed at an almost constant upward sloping rate. That being said, at around the 13 min mark, the data access plateaus remains constant. I am not sure what caused the program to do that but it is an interesting observation.



This and the last graph of hard disk access rates is interesting because as the disk capacity decreases the hard disk access rates increase. Also, at around the 13 minute mark the disk capacity resets and goes all the way back up to its initial value. This happens at the same time the hard disk access rates plateau.

Summary and Lessons Learned

Based on the information from the csv files and graphs, it is safe to say that the VM used had sufficient computing resources to handle the subprocesses during run-time. In terms of cpu usage, the graph shows that APM 3 and APM 6 picked at around 90% between 0 and 1 minute. While this could be a problem, the graph also shows that the usage drops after 110 seconds, making the 90% usage not a constant problem. In terms of memory, the 4GB of memory was more than enough as the peak memory usage was slightly lower than 5%. Data rates, while affecting the bandwidth, did not cause the machine to crash. Finally, data from the disk shows that the 30GB storage limit was not close to being hit.

Working on a team project requires collaboration, which we were able to achieve through constant communication. During working sessions, having multiple viewpoints makes it easier to find the solution to a problem.