**NSSA-220 Project 1: Application Performance Monitoring**

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**Introduction**

This project is about collecting system level and process level data while running 6 scripts that were provided to us for 15 minutes. We had to create a script that grabbed the system and process level data and put them in a .csv format. Once we grabbed all of the data from the 15 minute run, we had to kill all of the scripts we collected data from. Then we put all the data in data plots and analyzed them.

**Process Level Metrics**

**A graph showing a line of a graph

Description automatically generated with medium confidence**

Describe what the CPU utilization plot shows in 2-3 sentences.

APM 3 and APM5 had the most CPU utilization which initially spiked but eventually leveled off after a minute, whereas APM1, APM2, and APM6 used a negligible amount of the CPU during the whole window. APM4 used rather little CPU in the first minute but began climbing near the end of the test. So APM4 had a memory leak.

A graph with orange and blue lines

Description automatically generated

Describe what the memory utilization plot shows in 2-3 sentences.

None of the APM processes used much memory relative to the disk size of the VM, but APM6 was gradually using more and more memory. This suggests that it was not properly freeing memory after it was used.

**Potential things to write about**: Which processes used the most CPU/memory? Which processes used the least CPU/memory? Did any processes have any interesting patterns in their CPU and/or memory utilization? Could you see a memory leak (memory use that only increased over time) in any of the processes?

**System Level Metrics**

A graph with blue lines and red lines

Description automatically generated

The processes started off receiving a lot of bandwidth, and remained consistent with some spikes, especially towards the end, the processes did not use much TX after the initial couple minutes.

A graph with a line

Description automatically generated

Describe what the hard disk access rates plot shows in 1-2 sentences.

The hard disk access rates start off at around 300, and then linearly climb to around 600 towards the end.

A graph showing a line going up

Description automatically generated

Describe what the hard disk utilization plot shows in 1-2 sentences.

The processes used very little memory to start with, and slowly spiking up and at the end. At the end of the duration, the memory utilization dropped significantly.

**Potential things to write about**: How similar (or not) were the transmit and receive data rates? Could you see any patterns in how the data rates changed over time? Were there any interesting patterns in the hard disk access rates or hard disk utilization?

**Summary and Lessons Learned**

Write 3-4 sentences that describes whether or not the VM you used had enough computing resources (CPU, memory, network capacity, and disk) to handle the mix of application processes that were running and what lessons you learned while working as a team on this project.

The VM seemed to have enough memory to run all these processes without any issue. But looking at the hard disk utilization, if they were to run for a longer period of time, you might have run out of hard disk storage. The VM had an adequate amount of CPU storage, with APM3 and APM5 only taking up about 5% of the CPU.

We learned teamwork, ssh-ing, collaboration, and debugging. It was very frustrating that only 1 person could work on the VM without it crashing. We got around this by taking turns coding parts of the script.