**NSSA-615 Mini Project 1: Application Performance Monitoring**

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**Introduction**

This project aims for the monitoring process of applications regarding their usage of resources in the host machine. Not only the hardware usage but also network usage will be monitored, in most of the scenarios, this is highly useful to optimizing the network environment and resources usage but this type of script also consumes machine’s resources and should be overhaul as much as possible.

**Process Level Metrics**

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

* The line chart illustrates the changes in CPU Utilization over time of APM 1 to 6, additionally, APM 3, APM 5 and APM 4 are the only APMs that consume CPU processes with APM 3 being the highest one. All 3 APMs have a tendency of stabilizing throughout most of the period after the spikes in the first few minutes.

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

* Based on the chart above, only APM 6 and APM 5 truly used the system memory. The former APM had a trend of increasing the usage of its memory through time, the latter APM tent to consume memory periodically and free-up the memory when it is not needed. Lastly, APM6 will become a memory leak problem if it is not addressed.

**System Level Metrics**

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

* The RX Data Rate and TX Data Rate values are identical to one another, they are both fluctuate in their statistics except for the first minute, the value was steadily increasing up to 60 KBs. Overall, their average data rate is fairly stable with a small increase around every 200 to 300 seconds.

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

* The Hard Disk Access Rates’ increment is rather stable during the period with only a small tendency of dropping near the end of the testing minute.

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

* According to the given line chart, the host’s Disk Capacity (Mb) was decreasing overtime. However, near the end of the testing phase, it seems that all the consumed space were deleted and the Disk Capacity returned to the starting point.

**Summary and Lessons Learned**

* The VM machine that I was using has very low CPU process power, I had to increase the number of cores to 2 in order to perform this task without any delays. The memory was not an issue but it could lead to a potential memory leak due to APM6 activity. Continuing, our Disk Capacity and Network Usage where consumed considerably although it did resolve itself in the end.
* We were be able to help each other with our weaknesses, such as syntax, logical structures, and from that we learnt from one another.
* In this project, I have learned how to build an APM tool using bash language ; this project helps us to know more about linux commands that deal with memory, cpu and hard disk . Working with my classmates helps me to achieve the goal of this project and clear the confusion about how I should use some commands .