NSSA-220 Mini Project 1: Application Performance Monitoring

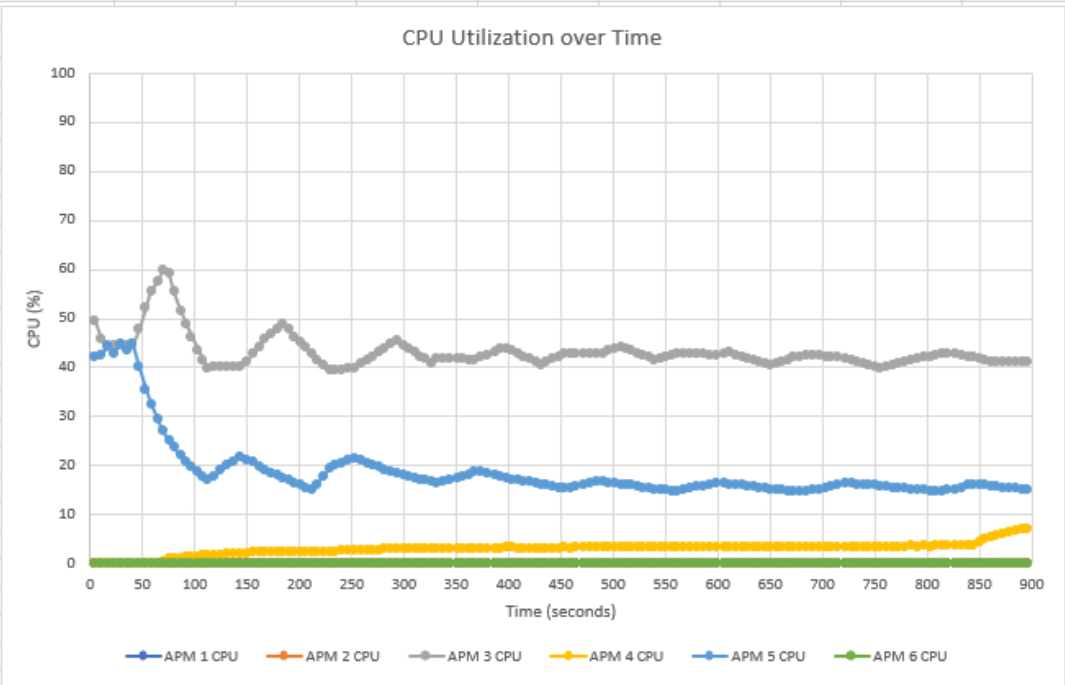
Bashair Algarni , Zaki Bawade

Introduction

Write a 3-4 sentence introduction that describes what this project was about. Use the project slides as your guide. I want to see you describe the project in your own words.

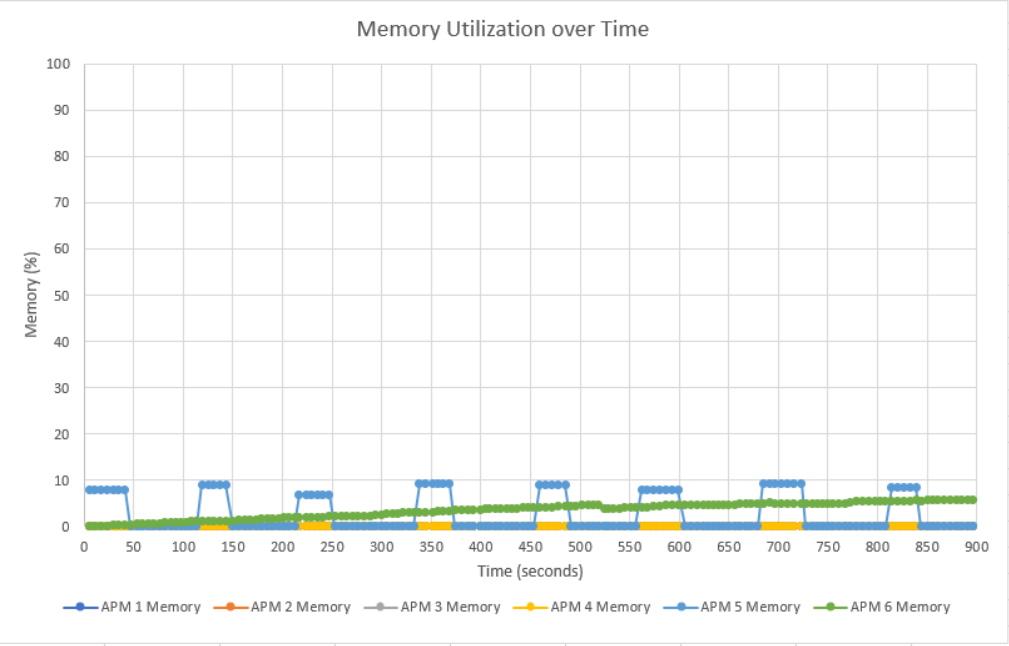
This mini project is about monitoring the performance metrics of applications/processes of the Linux system. These performance metrics include CPU and memory consumption, hard-disk space, hard-disk read/write speed, and the network bandwidth. The application performance monitoring (APM) helps detect system issues, which allows the system administrator to fix them, thereby preventing any major system failures.

Process Level Metrics



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

The process 1, 2, and 6 have zero CPU utilization, and hence they are characterized by a straight line plotted across 0% CPU utilization. Process 3 had the most CPU utilization among all the other processes, whereas process 4 had lesser CPU utilization than processes 3 and 5. Process 5 had an initial spike in the CPU utilization, which reduced gradually over time.

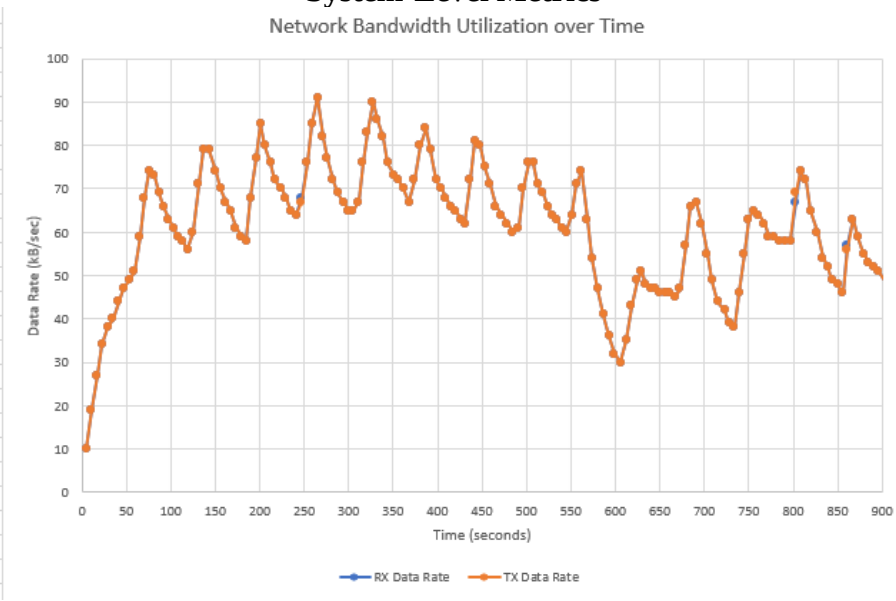


Describe what the memory utilization plot shows in 2-3 sentences.

Process 5 has the most memory utilization when it grabs the memory, whereas processes 1,2,3 and 4 had the least memory utilization. Process 5 has an interesting pattern in memory utilization where it grabs the memory and then frees it. The memory leak is observed in process 6, which means that memory usage increases over time.

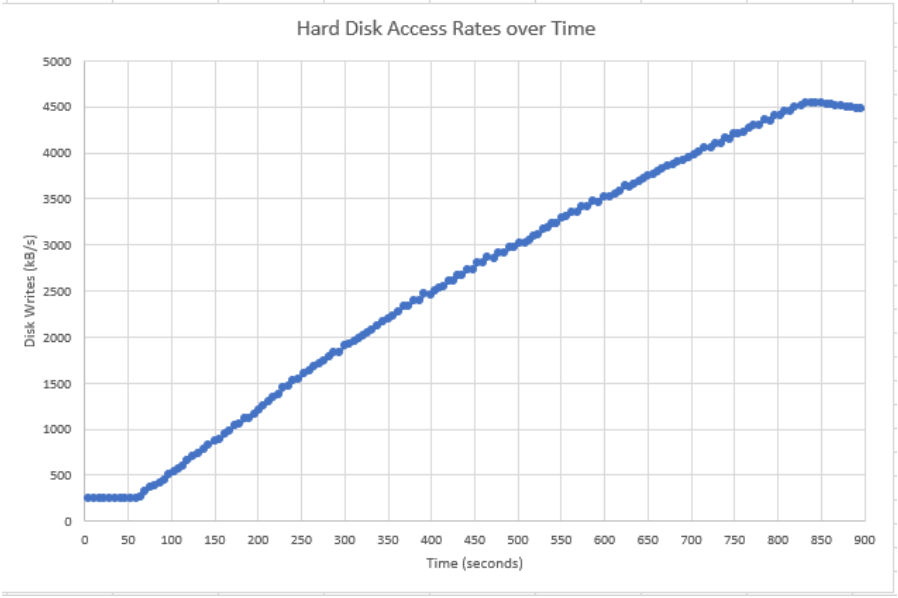
Potential things to write about: Which processes used the most CPU/memory? Which processes used the least CPU/memory? Did any processes have any interesting patterns in their CPU and/or memory utilization? Could you see a memory leak (memory use that only increased over time) in any of the processes?

System-Level Metrics



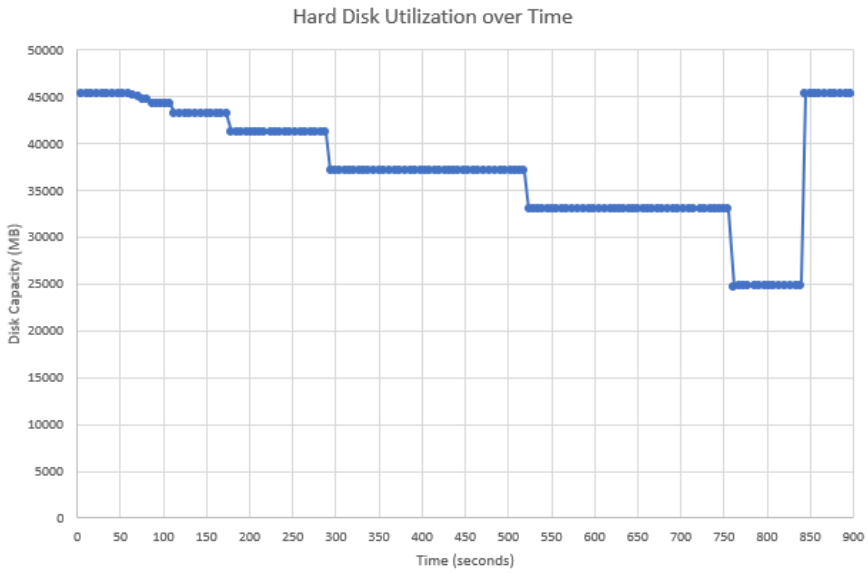
Describe what the network bandwidth utilization plot shows in 2-3 sentences.

The transmit and receive data rates are precisely the same; hence we see that their plots have been overlapped. We see sudden spikes and drops in the data rates over time. If there are any errors or packet drops, we will see a difference between the transmit and the receive data rates. Monitoring network data rates will help determine where it needs to be improved and what measures can be taken to ensure that it performs the best.



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

The disk access rate plot shows a linear curve over time. Hard disk performance has a direct impact on the applications running on the system. A sudden drop in the access rate can tell us that there's an issue with the hard disk which needs to be addressed immediately.



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

The hard disk utilization decreases over time, and at 14 minutes a sudden spike is observed in the hard disk utilization. Hard disk utilization helps system administrators identify the available free disk space and add more hard disk.

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 describe 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 we used with the default resources was sufficient to handle all the application processes. One of the most challenging questions an IT organization comes across is, 'Why is the application so slow?'. APM helps to monitor the performance level matrix of the system hosting these applications. By observing these matrices, the system administrator can decide if there's a need for a system upgrade or troubleshoot any issues if necessary. The ultimate purpose of an application monitoring software for any organization is to provide uninterrupted and quality service to the end customer.