

DISCLAIMER: This “cheat sheet” is not necessarily a set of exhaustive instructions for Project 1. This was made just to give you a good idea of what the project is about and what it should include. Be sure to look at the slides.

Tool collects processes and system level metrics every 5 seconds (5 points):

Process level metrics are %CPU and %memory utilization, while system level metrics are RX/TX data rates, hard disk writes, and hard disk utilization.

Tool collects %CPU and %memory utilization per process using ps (10 points):

SHOULD BE DONE WITH PART 6 TO WRITE THIS DATA!!!

Tools collects RX and TX data rates (in kB/s) with a sampling interval of 1 second using ifstat (20 points):

Network and Bandwidth Utilization -- Will be measured “in terms of receive (RX) data rate and transmit (TX) data rate using the ifstat tool”. (pg 8 of slides) It collects this data every 1 second.

Tool collects hard disk writes (in kB/s) to sda using iostat (10 points):

Hard Disk Access Rates -- “Measure hard disk writes in kB/second to the primary hard drive (sda) using the iostat tool”. (pg 9 of slides)

Tool collects hard disk utilization on “/” in MB available using df (5 points):

Hard disk utilization -- “Measure hard disk utilization on the “/” mount (the /dev/mapper/centos-root filesystem) using the df tool”. (pg 10 of slides)

Tool outputs CPU and memory metrics to a CSV file specific to that process

(<proc_name>_metrics.csv) with the format <seconds>, <%CPU>, <%memory> (10 points):

Should be done as you collect data in a 15 minute run.

Tool outputs CPU and memory metrics to a CSV file specific to that process

(<proc_name>_metrics.csv) with the format <seconds>, <%CPU>, <%memory> (10 points):

Should be done as you collect data in a 15 minute run.

Tool spawns all application processes (5 points)

Tool kills all application processes and any other processes it spawns in an exit trap function called cleanup (10 points):

If you do not kill the application processes before ending the script, you may have issues when trying to run the script again until those processes time out.

Tool includes at least three functions that (1) spawn all applications and other processes, (2) collect system level metrics, (3) collect process level metrics (5 points):

THIS LIST DOES NOT INCLUDE THE FUNCTION TO KILL ALL PROCESSES (see directly above)

- (1) spawn_processes # spawns all processes to read information from
- (2) collect_system_metrics # TX, RX, hard drive
- (3) collect_process_metrics # %memory, %CPU

These names are just examples for what function names you could use, you don't have to stick to them.

Report showing results from a 15 minute run of the APM tool (10 points):

Work on this as you go!

The APM tool shall output all CPU and memory metrics to a CSV file specific to the process they were measured from. Name the files < proc_name >_metrics.csv with their respective process name ("cpu" or "mem")

The format of the process specific output files shall be...

<seconds>, <%CPU>, <%memory>

This is the process data you need to record as described in the rubric. These files do not need headers for the data.

The APM tool shall write all system level metrics to a file called system_metrics.csv. This is a single file.

The format of the system level output file shall be...

<seconds>, <RX data rate>, <TX data rate>, <disk writes>, <available disk capacity>

This is the system data you need to record as described in the rubric. This file does not need headers for the data.

All output files should be for a 15 minute run. That means you collect data for 15 minutes and use those output files of data. You will then use that data to create graphs (see below for graphs).

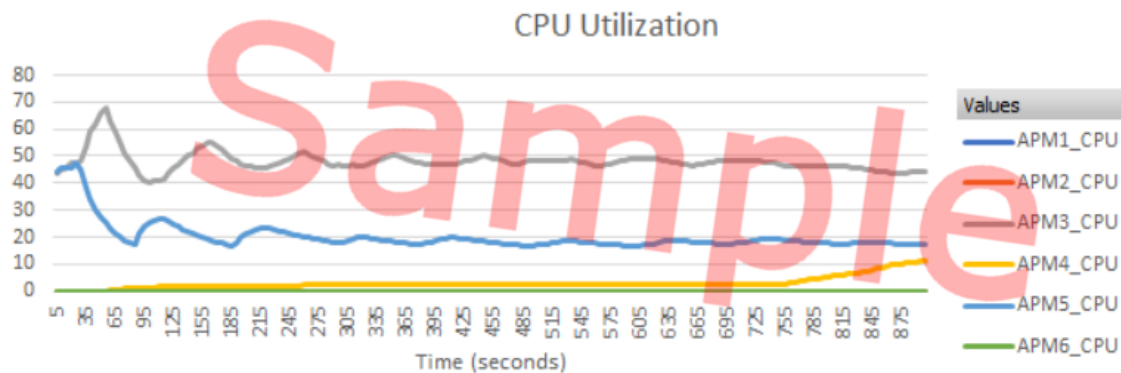
Make sure you have the default CENTOS resources! They are...

- 1 CPU core
- 2 GB memory
- 100 GB hard disk
- Bridged NIC (ens33) to the host machine NIC (Ethernet 2, assuming an IST lab machine is being used)

If you are having trouble completing any aspect of the project please let Garret or your TA know ASAP. This also goes for if you are having trouble with your group.

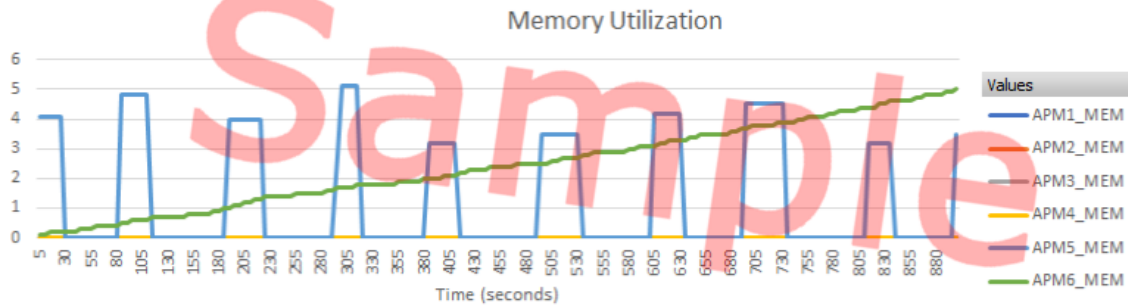
Sample graphs made using data generated from project 1 script:

APM1_CPU APM2_CPU APM3_CPU APM4_CPU APM5_CPU APM6_CPU



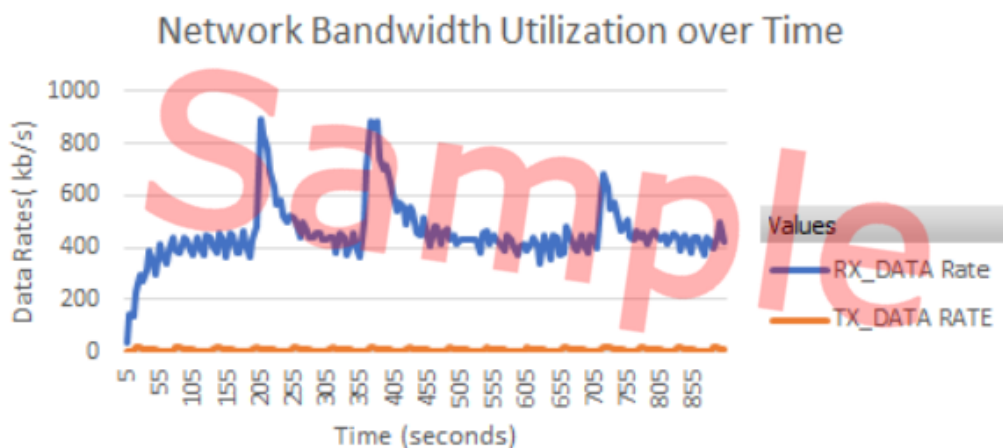
TIME ▾

APM1_MEM APM2_MEM APM3_MEM APM4_MEM APM5_MEM APM6_MEM



TIME ▾

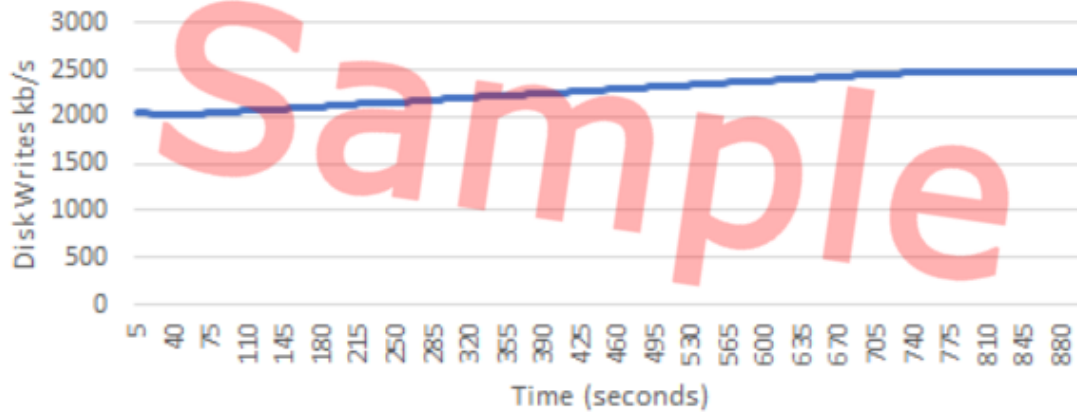
RX_DATA Rate TX_DATA RATE



TIME ▾

Sum of DISK WRITES

Hard Disk Access Rates over Time



TIME ▼

Sum of DISK CAPACITY

Hard Disk Utilization over Time



TIME ▼