

ECE792-038 Homework Assignment #1

Basic Topics

Due Monday, September 17, 2018

No late homework will be accepted; turn in whatever you have completed.

Provide CLI output/Screenshot to support your answer

Problem 1. (10 Points) Basic Linux network verification tasks. Using the CLI Utility, show the following default configurations of your machine:

1. Interfaces
2. Routing table
3. DNS
4. DHCP (You might need to look at some configurations file)

Problem 2. (10 Points) Basic Linux performance verification tasks. Using the CLI Utility, show following performance stats of your machine.

1. **CPU usage:** Display three reports of statistics for all processors at two second intervals. Which CPU is least used (*idle* most of the time)?
2. **Memory usage:** Display 3 reports of MEM statistics for every active task in the system at two second intervals. Which one is the most memory intensive task.

Problem 3. (20 Points) Basic Linux tasks, use of tools. Install iperf traffic generator on your system. Run iperf command (iperf -c < ipofyourVM > -t 10 -l < packet size(eg100B) >). Keep doubling packet sizes from 100 B to 6400B for different run. What is the average throughput achieved by the iperf data transfer for different packet size? Explain your observation. (Note: Before running client you need to start your server iperf -s < ipofyourVM >)

Problem 4. (50 Points) Slow server Problem.

1. Monitoring Script

Write a shell script to do the following tasks:

- (a) Log the CPU load averages in a CSV file with T second granularity for TP seconds. (format of csv: timestamp, 1 min load average, 5 min load average, 15 min load average)
- (b) Generate alert
 - i. "HIGH CPU usage" if CPU usage in last one minute is more than a user defined threshold X .

- ii. "Very HIGH CPU usage" if CPU usage in last 5 minutes is more than a user defined threshold Y and load is increasing.

Log alert messages in a separate CSV file as timestamp, alert String, CPU load Average

Test this script by running a cron job. Submit your script (with readme) and a graph showing one minute load average taken every 10 seconds over 10 minutes duration.

2. **Log cleaning scripts** A script to clear log files every hour (You can use cron job or log rotation)