

REPORT – QUESTION 4a

The objective of this question was to run dtella and linuxdcp for around 3 hrs and to run perf on linuxdcp every 10/20 seconds to collect data about its CPU usage and the number of context-switches.

Three runs of the test were performed:
(Please refer to graphs for details)

1) In this run, linuxdcp was run along with a lot of IO intensive processes. To simulate a lot of IO intensive processes, the stress command was used with the -i option.

In this run, nothing was put to download on linuxdcp nor did some other client download something.

As a result we get a consistent number of context-switches/sec and a consistent CPU utilization with no huge spikes or dips when we analyse linuxdcp.

2) In this run, linuxdcp was run along with a lot of CPU intensive processes. To simulate a lot of CPU intensive processes, the stress command was used with the -c option.

In this run, a couple of files were queued for download on linuxdcp and after some time, some other client downloaded a couple of files from this system.

As a result there was a huge spike in the CPU utilization and the number of context-switches/sec in those time intervals.

3) In this run, linuxdcp was run along with a lot of CPU and IO intensive processes. To simulate running a lot of IO intensive and CPU intensive processes simultaneously, the stress command with the -c and the -i option was used.

In this run, a batch of files was kept for download for an extended period of time and this was repeated again after an interval of time.

This resulted in high CPU utilization and a large number of context-switches/sec for a good amount of time.

It was also noticed that the mean CPU utilization of linuxdcp was slightly higher when other IO intensive processes were running as opposed to when other CPU intensive processes were running. This is because when other CPU intensive processes run, then they hog the CPU and linuxdcp gets less of the CPU.

Also the mean number of Context Switches of linuxdcp was slightly higher when other CPU intensive processes were running as linuxdcp was getting context-switched out to those processes which demanded more CPU.

From this we can conclude that when a file is downloading or uploading on linuxdcp, it utilizes the CPU and as a result is context-switched in to and out from very frequently if there is another CPU intensive process that is running simultaneously.