MPL-19

TO: Multics Performance Log

FROM: R. J. Feiertag

SUBJECT: Certification of system 3.0.7

DATE: June 9, 1969

A certification run was made of system 3.0.7 which contains the
new traffic controller preemption strategy and directories on the disk.
This system includes having the system library on the disk. Also the
time burst is set to 8 sec.

No significant changes are observed over system 3.0.5. The reduction
in the number of page faults is probably due to the 8 sec. time burst.
Having directories on the disk causes an increase in eligibility idle
time which is undoubtedly the primary cause of the poor response. It
seems putting directories on the disk has negated any gains made by the
new traffic controller and the 8 sec. time burst.

TO: Multics Performance Log

DATE: June 9, 1969

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SUBJECT: Multics System Performance Certification Record

I   Variable settings: operating system

     System being certified: 3.0.7

     Certifier used: multics_test_f   Script used: cert1

     Number of processes used: 4

     Typewriter output: Yes [X] No [ ]   Number of lines output:

     System Segment Table Size: 30k

     Number of permanently wired pages:

     Maximum number of processes eligible for multiprogramming: 2

     Maximum number of processes which may be loaded: 2

     Scheduling Quanta, starting with highest-priority queue:

     1. __8__ 2. __8__ 3. __16__ 4. __32__ 5. _____ 6. _____

II   Hardware configuration

     Amount of Core Memory: 256k

     Number of processors: 1

     Firehose Drum: Yes [X] No [ ]

     Disk   Yes [X] No [ ]

     Installation used: MAC

     Date of Certification run: 6/7/69

     Time of Certification run: 913 EDT

III   Other factors expected to influence measurements:

     This system contains new pre-emption strategy and
     directories on the disk.

Certification of System: 3.0.7

IV   Measurements

a. CPU time breakdown

	during process creation	during command sequence	total
1. Time used by subject processes	64.1 sec.	264.1	328.2
2. Time spent loading processes	0.7	1.9	2.6
3. Time spent in file system daemon	3.7	16.0	19.7
4. Idle time due to eligibility control	40.9	150.2	191.1
5. Idle time during page waits	16.6	14.1	30.7
6. True idle time	1.4	30.3	31.7
Total CPU time charged	127.4	476.6	604.0

b. Breakdown of CPU times used by subject processes

	during process creation	during command sequence	total
1. Missing-page fault time	12.9	44.1	57.0
2. Missing-segment fault time	3.6	2.3	5.9
3. Linkage fault time	24.5	17.1	41.6
4. Wall crossing fault time	4.5	6.1	10.6
5. Interrupt handling time	4.1	17.8	21.9
6. Non-fault time	18.9	194.6	213.5
Total	68.5	282.0	350.5

Certification of System: 3.0.7

c. Fault times and number

Process Creation	missing page	missing segment	Linkage	wall crossing	Interrupt
average fault time	7.0 ms.	11.0	32.4	1.4	1.0
number of faults	1835	324	755	3144	4129

command sequence

	missing page	missing segment	Linkage	wall crossing	Interrupt
average fault time	7.5	15.9	23.4	1.4	1.2
number of faults	5880	144	729	4438	13676

d. Average times seen by a process

1. Average real time for completion of a process: 415.0 sec.

2. Average process creation time: 16.0 sec.

3. Average time for execution of command sequence: 66.0 sec.

4. Time for CTSS to execute same command sequence.   55 sec.

5. Performance relative to CTSS (#4/#3)   .83

V   Output of original run may be found in file labeled:

VI   Comments:

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P - page faults
S - segment faults
L - linkage faults
W - wall crossing
I - interrupts
N - non fault time
E - elegibility idle time

Certification of 4 users

using script "cert1"

and certifiers:

multics_test_c : 1.9, 1.12

multics_test_d : 2.1, 2.2, 2.3

multics_test_f : 3.0.5

← multiprogramming control

← AST/page table coupling

TW D/m in ring 0

new file system, SST-30K

pre-emption + directories on disk

adjusted base

Time to run script in seconds

700
600
500
400
300
200
100
0

1.9   1.12   2.1   2.2   2.3   3.0.5   3.0.7

12/10/68   1/7/69   1/2/69   2/7/69