

MASSACHUSETTS INSTITUTE OF TECHNOLOGY

11/5

1970

Memo to Prof. Saltzer

Room

Ext.

PDP8 has recovered yesterday.

This is a measurement result done yesterday.

- \* larger degree of multiprogramming than before
- \* more missing-page faults were observed by PDP8
- \* percentage of user computation has increased
- \* heavier commands suffer more than before in terms of response time

from

Akira

Room

Ext.

MURAN BOSTON

MPM109  
 11/5/70  
 #users = 34  
 MFTN3  
 10.6 b  
 256 K core  
 1 CPU

\*\*\*\*\* MULTICS PERFORMANCE ANALYSIS \*\*\*\*\*

USER NO	COMMAND	TIME	CPU TIME	NO OF P.F.
0	login	1726	2.376	41 + 135
	edm	1735	4.140	251 + 244
	fortran	1738	4.651	41 + 452
	edm	1742	2.261	79 + 177
	fortran	1744	4.084	18 + 409
	rename	1744	.759	21 + 75
	print	1745	1.038	3 + 80
	a_prime\$prime	1747	3.011	14 + 217
	list	1747	.555	3 + 40
	df	1748	1.325	6 + 201
	edm	1757	2.783	167 + 220
	fortran	1758	2.724	15 + 248
	edm	1803	1.622	113 + 81
	fortran	1805	4.318	36 + 398
	rename	1805	.454	3 + 40
	print	1806	.563	7 + 43
	b_prime\$prime	1807	1.820	27 + 131
	list	1808	.444	7 + 32
	df	1809	.541	8 + 54
	logout			+

\*\*\*\*\* SUMMARY \*\*\*\*\*

USER NO	TOTAL CPU TIME	TOTAL REAL TIME	TOTAL NO OF P.F.	NO OF INTER-ACTIONS	AVERAGE CPU TIME	AVERAGE RESPONSE TIME	AVERAGE NO OF P.F.
USER 0	37.093	2515	819 + 3142	66	.562	12.2 (5.1)	12 + 47

\*\*\*\*\*#users

(	21.824	1285	436 + 1895	33	.661	14.9 (6.3)	13 + 57	36 first half
	15.269	1197	383 + 1297	33	.463	9.5 (4.0)	11 + 39	31 second half
						↑		average except "fortran"

tcn -all

Total metering time 0:45:55

Ave queue length 10.70  
 Ave eligible 4.29 ←  
 Pre-page factor 8 ←  
 Te first (seconds) 2  
 Te last (seconds) 2  
 Ti max (seconds) 8

MPM109

11/5/70

#users - 34

MFTN3

10.6 b

256 K core

1 CPU

IDLE TYPE	TIME	%
Total idle	0:08:08	17.72
Multi-prog idle	0:08:08	17.71
Non-multi-prog idle	0:00:00	.00
Zero idle	0:00:00	0.00

COUNTER	TOTAL	ATB	#/INT
Interactions	683	4.035 sec	
Loadings	3155	.874 sec	4.619
Blocks	2801	.984 sec	
Wakeups	2818	.978 sec	
Waits	154477	17.840 msec	226.174
Notifies	359763	7.660 msec	
Schedulings	3245	.849 sec	4.751
Pre-empts	138572	19.888 msec	202.887

Time	%Int	%Cum	Ave	%T	%CumT
0.0	76	76	.206	17	17
.5	13	89	.730	10	27
1.0	4	93	1.269	5	32
1.5	4	97	1.900	8	40
2.0	1	97	2.332	2	42
2.5	1	98	2.811	2	43
3.0	0	98	3.375	1	44
3.5	0	99	3.918	2	46
4.0	0	99	4.470	2	48
4.5	0	99	5.019	1	49
5.0	0	99	5.497	0	50
5.5	0	100	6.052	1	50
6.0	0	100	6.599	0	51
6.5	0	100	7.240	0	51
7.0	0	100	7.652	1	52
7.5	0	100	8.101	45	100

DEPTH	%PF	TBPF	%GTW	TBS	%CPU
1	33.6	15.6	29.3	11.7	35.7
2	27.5	14.7	27.4	9.6	27.5
3	21.7	14.0	23.3	8.5	20.6
4	13.8	14.0	15.9	7.9	13.2
5	5.4	13.2	6.0	7.7	4.9
6	1.1	12.4	1.1	7.3	1.0
7	.5	70.1	.5	6.6	.5

r 1809 1.898 8+22

Total metering time 0:48:06

Deactivations	3900
Ast grace	0:00:58
Used ASTs	384
Free ASTs	0
Held ASTs	125
Seg Faults	5739

	#	ATB
Needc	213659	13.509 msec.
Steps	810032	3.563 msec.
Ceiling	163	.295 min.
Laps	4183	.690 sec.
Skip wired	15422	187.156 msec.
Skip used	512188	5.635 msec.
Skip mod	60983	47.330 msec.
Skip os	7780	370.992 msec.

170 pages, 27 wired.  
Average steps 3.791

	DRUM	DSU270	DSU170
Left	1323	6946	0
Reads	191444	18533	0
ATB	15.077	155.739	0.000
Writes	103893	9984	0
ATB	27.782	289.094	0.000
ATB I/O	9.773	101.214	0.000
% Cpcty	21	52	0
Ave Latency	26.440	77.544	0.000
N Errors	0	0	0
F Errors	0	0	0

r 1811 1.348" 2+31

ttm -all

Total metering time 0:49:06

	%	AVE
Page Faults	9.88	1771.674
Drum interrupts	5.75	1132.481
Getwork	9.61	878.648
Seg Faults	2.73	13850.619
Interrupts	5.62	3331.235
Gate faults	3.75	3670.000
MP Idle	18.05	
MP Idle	.03	
Zero idle	0.00	
Other	44.56	

r 1813 1.364 8+106

hml

Multics 10.6b, load 27.5/41.0; 29 users

r 1813 .302 9+27