

file

MPM107
users = 35
7/21/70
MFTN3
8.7

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

USER NO	COMMAND	TIME	CPU TIME	NO OF P.F.
0	login	1532	2.415	39 + 198
	edm	1542	3.897	226 + 224
	fortran	1542	3.645	33 + 295
	edm	1547	1.638	137 + 102
	fortran	1543	3.213	62 + 248
	rename	1549	.664	9 + 56
	print	1550	.791	6 + 51
	a_prime\$prime	1551	2.359	43 + 129
	list	1552	.604	3 + 42
	df	1553	.887	7 + 87
	edm	1602	2.925	233 + 160
	fortran	1603	2.279	34 + 183
	edm	1607	1.543	151 + 86
	fortran	1608	2.787	39 + 208
	rename	1609	.425	3 + 38
	print	1609	.565	7 + 56
	b_prime\$prime	1611	1.641	35 + 83
	list	1611	.375	6 + 34
	df	1612	.466	2 + 36
	logout			+

256 Kcore
1 CPU
Pre-page factor = 16

***** 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	30.604	2333	1036 + 2118	66	.463	6.1	15+ 32

(17.698	1170	526 + 1234	33	.536	7.3	15+ 37	37 first half
	12.906	1131	510 + 884	33	.391	4.9	15+ 26	34 second half

5.4 sec. } except 'fortran'
3.2 sec. }

Note: A "quit" key was not usable on the 8.7 system. This might have contributed to the good system response observed above, as well as the increased value of pre-page factor.

MPM107

```

machine apt
77777777777777 2:53.8 001100000004 763035663543 10:55.5 010111000002
763035666043 33.8 300100000000 763035663557 1:30.2 200100000002
763035663570 1:52.3 200100000002 763035663600 2:01.1 200100000002
763035670104 61:12.7 014110000002 763035663636 8.0 001100000004
763035663647 12.3 001100000004 763035663661 10.7 001100000004
763035664500 6.8 001100000004 763035666264 14.0 001100000004
763035663745 1:05.7 001100000004 763035663762 39.7 000100000002
763035667721 17.6 000100000002 763035670032 80.3 000100000002
763035664026 24.0 001100000004 763035670013 66.2 001100000004
763035667306 65.2 001100000004 763035664511 13.6 001100000004
763035667140 1:41.0 001100000004 763035667056 31.6 001100000004
763035666563 11.7 300100000000 763035667607 21.8 001100000004
763035664306 13.6 001100000004 763035667540 7.8 001100000004
763035667113 37.2 000100000004 763035667232 55.3 001100000004
763035667046 29.1 034130000001 763035666732 18.6 001100000004
763035667364 3.9 100100000000 763035666654 1:06.4 001100000004
763035670046 79.3 001100000004 763035667437 30.8 001100000004
763035666620 1:22.0 001100000004 763035667671 9.1 001100000004
763035665212 8.2 001100000004 763035667462 12.8 001100000004
763035670130 1.8 000100000002 763035665641 28.9 001100000004
r 1615 4.196 102+113

```

fsn -all

Total metering time 0:46:32

```

Deactivations 3917
Ast grace 0:00:40
Used ASTs 326
Free ASTs 0
Held ASTs 161
Ser Faults 5535

```

	#	ATB
Needs	165017	16.925 msec.
Steps	550211	5.076 msec.
Ceiling	51	.913 min.
Lans	2658	1.051 sec.
Skip wired	7781	358.940 msec.
Skip used	333376	8.373 msec.
Skip mod	37972	73.552 msec.
Skip os	6065	460.496 msec.

174 pages, 24 wired.
Average steps 3.334

	DRUM	DSU270	DSU170
Left	741	1687	0
Reads	145377	15502	0
ATB	19.211	180.164	0.000
Writes	81287	10431	0
ATB	34.359	267.751	0.000
ATB I/O	12.322	107.697	0.000
% Crcty	16	46	0
M Errors	0	0	0
P Errors	0	0	0

tcn -all

Total metering time 0:48:29

Ave queue length 10.95
 Ave eligible 3.06
 Pre-page factor 16
 Te first (seconds) 2
 Te last (seconds) 2
 Ti max (seconds) 8

←←←←← } Note
 ←←←←← } Note

IDLE TYPE	TIME	%
Total idle	0:12:50	26.49
Multi-prog idle	0:12:44	26.27
Non-multi-prog idle	0:00:06	.22
Zero idle	0:00:00	0.00

} Note

COUNTER	TOTAL	ATB	#/INT
Interactions	2670	1.090 sec	
Loadings	3350	.869 sec	1.255
Blocks	2856	1.015 sec	
Wokeups	2911	1.000 sec	
Waits	115414	25.213 msec	43.226
Notifies	313643	9.278 msec	
Schedulings	3402	.855 sec	1.274
Pre-empts	133773	21.753 msec	50.102

Time	%Int	%Cum	Ave	%T	%CumT
0.0	83	83	.185	19	19
.5	10	93	.732	9	28
1.0	3	96	1.246	5	33
1.5	1	98	1.778	3	36
2.0	1	99	2.394	3	39
2.5	0	99	2.794	1	40
3.0	0	99	3.410	1	41
3.5	0	99	3.935	1	42
4.0	0	99	4.331	0	42
4.5	0	99	5.078	0	43
5.0	0	100	5.562	1	43
5.5	0	100	5.882	1	44
6.0	0	100	6.201	0	44
6.5	0	100	6.896	0	44
7.0	0	100	7.563	1	45
7.5	0	100	8.088	52	100

DEPTH	CP	TBPF	%QTY	TBS	%CPU
1	43.4	18.5	36.7	14.0	43.4
2	33.2	19.1	35.7	11.3	34.1
3	19.4	18.2	22.5	9.9	19.1
4	5.8	16.4	6.7	8.9	5.2
5	.7	18.7	.8	8.6	.8

r 1619 2.211 28+61

hmu

P0(20, 20), P1(12, 12), P2(5, 6); Total: 37 users, 35 max.
r 1619 .251 8+10

>uid>m>w>o>ppm

Total metering time 0:49:53

Ave pre-page time 17.679

Ave post_purge time 19.454

Pre-page calls 3426

Post-purge calls 3426

Ave pre-pagings 14.881

Ave post-purgings 16.665

Ave pre-page size 31.737

Pre-page factor 16

% pre-paging needed 46.890 ←

Ave misses 1.806

Thrashing index 4.807

r 1620 .639 6+12

>uid>m>w>o>ttm

Total metering time 0:49:39

	%	AVE
Page Faults	7.05	1785.737
Drum interrupts	4.22	1154.986
Getwork	8.30	945.217
Seg Faults	2.54	12504.244
Interrupts	4.88	3362.797
Gate faults	5.52	3670.000
MP Idle	26.25	
NMP Idle	.22	
Zero idle	0.00	
Other	41.01 ←	

r 1621 1.061 2+51

hmu

P0(20, 20), P1(11, 12), P2(5, 6); Total: 36 users, 35 max.
r 1621 .231 7+14

file

MPM108
#users = 37
7/28/70
MFTN3
8.8

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

USER NO	COMMAND	TIME	CPU TIME	NO OF P.F.
0	login	1150	2.722	10 + 280
	edm	1159	4.340	271 + 261
	fortran	1200	4.166	69 + 349
	edm	1205	2.400	60 + 188
	fortran	1206	3.281	58 + 234
	rename	1207	.747	8 + 64
	print	1208	.863	10 + 67
	a_prime\$prime	1209	2.209	71 + 94
	list	1210	.654	3 + 65
	df	1211	.662	6 + 38
	edm	1220	3.770	183 + 274
	fortran	1222	2.574	24 + 216
	edm	1226	1.958	119 + 130
	fortran	1227	2.836	40 + 205
	rename	1228	.410	7 + 29
	print	1228	.541	1 + 41
	b_prime\$prime	1230	1.725	33 + 79
	list	1230	.514	2 + 48
	df	1231	.599	6 + 56
	logout			+

256 K core
1 CPU
Pre-paying factor = 16

***** 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	34.249	2415	971 + 2438	66	.518	6.9	14+ 36

***** #users *****

(19.322	1186	556 + 1360	33	.586	8.2	16 + 41	37 first half
	14.927	1196	415 + 1078	33	.453	5.5	12 + 32	37 second half

6.4 sec. } except "fortran"
4.6 sec.

MPM II

76314313007	3:19.6	034110000002	763143130171	10:46.1	010110000002
763143130215	22.2	200100000002	763143130205	19.4	001100000004
763143130236	3.3	001100000004	763143131671	33.5	200100000000
763143131514	9.0	001100000004	763143130246	1:33.0	000100000002
763143130322	43.9	000100000002	763143130266	1:32.2	200100000002
763143130406	1:51.5	200100000002	763143130351	2:52.9	214110000002
763143130072	46.5	001100000004	763143131405	1:20.2	000100000002
763143131614	10.6	300100000000	763143130444	35.3	001100000004
763143130501	19.8	200100000002	763143132021	16.6	001100000004
763143130525	28.1	001100000004	763143130514	13.5	200100000002
763143131747		001100000004	763143130542	34.1	001100000004
763143131604	32.9	001100000004	763143132145	2	001000000000
763143132643	13.1	001100000004	763143131556	1:13.4	001100000004
763143132672	7.4	200100000002	763143132010	34.5	300100000000 ← PDP8
763143132653	75.2	001100000004	763143131417	26.7	001100000004
763143131063	10.8	001100000004	763143131574	34.9	001100000004
763143131703	5.7	001100000004	763143132500	13.8	001100000004
763143132512	20.1	001100000004	763143131724	39.8	034130000001
763143132366	19.6	001100000004	763143132467	15.7	001100000004
r 1234	1:04.4	001100000004	763143132177	23.2	200100000002
	4.386	82+118			

fsm -all

Total metering time 0:46:24

Deactivations	5057
Ast grace	0:00:31
Used ASTs	324
Free ASTs	0
Held ASTs	165
Seg Faults	6452

	#	ATB
Needc	168893	16.484 msec.
Steps	569442	4.889 msec.
Ceiling	30	1.547 min.
Laps	2730	1.020 sec.
Skip wired	8356	333.184 msec.
Skip used	345821	8.051 msec.
Skip mod	39736	70.065 msec.
Skip os	6636	419.543 msec.

174 pages, 21 wired.
Average steps 3.372

	DRUM	DSU270	DSU170
Left	912	11497	0
Reads	149699	16271	0
ATB	18.598	171.107	0.000
Writes	86701	10124	0
ATB	32.111	274.999	0.000
ATB I/O	11.777	105.478	0.000
% Cpcty	16	47	0
N Errors	0	0	0
F Errors	0	0	0

r 1235 1.188 21+22

TCM -all

Total metering time 0:47:54

Ave queue length 9.37
 Ave eligible 2.80
 Pre-page factor 16
 Te first (seconds) 2
 Te last (seconds) 2
 Ti max (seconds) 8

User's Think Time

$(37-9.4) * .95 \approx \underline{26 \text{ sec.}}$

System Response Time

$9.4 * .95 \approx \underline{8.9 \text{ sec.}}$

IDLE TYPE	TIME	%
Total idle	0:12:28	26.03
Multi-prog idle	0:12:22	25.83
Non-multi-prog idle	0:00:05	.19
Zero idle	0:00:00	0.00

COUNTER	TOTAL	ATB	#/INT
Interactions	3031	.948 sec	
Loadings	3590	.801 sec	1.184
Blocks	3260	.882 sec	
Wakeups	3278	.877 sec	
Waits	119028	24.152 msec	39.270
Notifies	321212	8.950 msec	
Schedulings	3663	.785 sec	1.209
Pre-empt	132568	21.685 msec	43.737

Time	%Int	%Cum	Ave	%T	%CumT
0.0	83	83	.197	23	23
.5	11	93	.734	11	34
1.0	3	96	1.276	5	39
1.5	1	98	1.790	4	43
2.0	1	98	2.442	2	45
2.5	1	99	2.804	2	47
3.0	0	99	3.470	2	50
3.5	0	99	3.848	1	51
4.0	0	100	4.357	1	52
4.5	0	100	4.989	0	52
5.0	0	100	5.428	1	53
5.5	0	100	5.980	0	53
6.0	0	100	6.291	0	53
6.5	0	100	6.816	0	53
7.0	0	100	7.632	1	54
7.5	0	100	8.205	44	100

DEPTH	%PF	TBPF	%GTW	TBS	%CPU
1	41.4	18.5	35.7	13.9	42.9
2	31.4	18.6	34.1	11.1	32.7
3	21.4	16.7	23.8	9.7	20.1
4	7.2	14.9	7.9	8.7	6.1
5	1.1	10.1	1.1	6.6	.8
6	.5	7.8	.5	7.8	.5

r 1237 2.454 34+68

hmu₂₃
PO(13, 20), P1(11, 12), P2(6, 6); Total: ~~32~~ users, 35 max.
r 1239 .294 10+19 40

>udd>m>w>o>ppm

Total metering time 0:51:03

Ave pre-page time	15.824
Ave post_purge time	18.972
Pre-page calls	3914
Post-purge calls	3913
Ave pre-pagings	13.776
Ave post-purgings	16.580
Ave pre-page size	31.066
Pre-page factor	16
% pre-paging needed	44.344
Ave misses	2.363
Thrashing index	4.424

r 1240 .771 43+22

>udd>m>w>o>ttm

Total metering time 0:50:54

	%	AVE
Page Faults	6.99	1752.074
Drum interrupts	4.38	1159.505
Getwork	8.70	973.886
Seg Faults	4.01	16722.712
Interrupts	5.17	3311.842
Gate faults	5.47	3670.000
MP Idle	25.90	
NMP Idle	.18	
Zero idle	0.00	
Other	39.21	

r 1240 1.247 7+81

hmu₂₁
PO(17, 20), P1(10, 12), P2(5, 6); Total: ~~35~~ users, 35 max.
r 1240 .315 35+10 36