

MPM132

8/4/71

users = 53

MFTN3

15.16

384 K core

2 CPUs

2 DS270 channels
interlaced memory

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

USER NO	COMMAND	TIME	CPU TIME	NO OF P.F.
0	login	1559	2.742	0 + 79
	edm	1608	3.093	50 + 286
	fortran	1609	5.768	3 + 262
	edm	1613	2.448	36 + 134
	fortran	1614	6.001	22 + 338
	rename	1615	.738	3 + 26
	print	1616	1.312	1 + 33
	a_prime\$prime	1617	2.489	14 + 77
	list	1618	1.186	5 + 49
	df	1619	1.586	4 + 44
	edm	1627	4.751	72 + 265
	fortran	1628	3.455	1 + 166
	edm	1633	2.721	28 + 148
	fortran	1634	5.330	12 + 296
	rename	1635	.593	5 + 20
	print	1635	.810	1 + 32
	b_prime\$prime	1637	1.803	2 + 72
	list	1637	.519	5 + 20
	df	1638	1.254	1 + 64
	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	47.857	2320	265 + 2302	66	.725	5.4 (3.6)	4 + 34

***** #users

(26.621	1149	138 + 1219	33	.807	5.6 (3.7)	4 + 37	53 first half
	21.236	1139	127 + 1083	33	.643	5.2 (3.5)	3 + 32	52 second half

↑ except "fortran"

The version II of the Fortran compiler is now being used. It seems that the compilation

JOB -all

Total metering time 0:34:03

Ave queue length	10.10	}
Ave eligible	5.58	
Working-set factor	.50	}
Working-set addend	0	
Tc first (seconds)	2	
Tc last (seconds)	2	
Ti max (seconds)	8	

IDLE TYPE	TIME	%
Total idle	0:09:33	14.03
Multi-prog idle	0:08:00	11.74
Loading idle	0:01:07	1.65
Non-multi-prog idle	0:00:26	.64
Zero idle	0:00:00	0.00

almost saturated

COUNTER	TOTAL	ATB	#/INT
Interactions	725	2.819 sec	
Loadings	4336	.438 sec	6.436
Blocks	3437	.595 sec	
Waitups	3450	.592 sec	
Waits	131040	15.597 msec	180.745
Notifies	345516	5.215 msec	
Schedulings	4218	.485 sec	5.818
Pre-empts	131427	15.551 msec	181.279

Time	%Int	%Cum	Ave	%T	%CumT
0.5	50	50	.247	35	35
.5	11	61	.732	23	58
1.0	4	64	1.268	13	72
1.5	3	67	1.266	15	86
2.0	1	68	2.310	5	91
2.5	1	68	2.859	6	97
3.0	0	69	3.414	3	100
3.5	0	69	3.853	2	102
4.0	0	69	4.366	2	104
4.5	0	69	4.889	0	104
5.0	0	69	5.526	4	108
5.5	0	69	5.991	2	110
6.0	0	69	6.397	0	110
6.5	0	69	7.233	1	111
7.0	30	100	7.341	640	751
7.5	0	100	8.103	-661	100

DEPTH	%PF	TRPF	%GTW	TBS	%CPU
1	21.4	28.1	18.3	20.1	22.4
2	21.9	31.9	19.7	21.8	26.0
3	18.7	30.0	19.8	17.1	20.8
4	16.5	24.1	18.5	13.0	14.8
5	14.0	20.8	15.5	11.3	10.9
6	10.6	20.0	11.1	11.5	8.0
7	.5	0.0	.5	0.0	.5

r 1633 3.275 12+54

Multics 15.16, load 53.0/54.0; 52 users

r 1634 .360 1+22

fsr -all

Total metering time 0:36:22

	#	ATB		
Deactivations	6704	.326	sec.	
Seg Faults	8909	.245	sec.	
Bound Faults	324	6.737	sec.	
Setfaults (all)	18360	118.899	msec.	
Setfaults (acc)	225	9.701	sec.	
Updates	8767	249.980	msec.	
Steps	19347	112.824	msec.	
Skips (ehs)	5528	.395	sec.	
Skips (inf)	4019	.543	sec.	
Skips (level)	2641	.827	sec.	
Skips (init)	0	0.000	sec.	
Skips (rins)	30	72.760	sec.	
Skips (lock)	67	32.579	sec.	
Skips (no)	10	218.280	sec.	
ASZ Sizes	4	16	64	64
Number	408	160	90	0
Need	4305	1861	786	0
Steps	12152	4065	2504	0
Ave Steps	2.8	2.1	3.2	0.0
Grace (sec)	73.3	85.9	78.5	0.0

	#	ATB		
Needs	183542	11.893	msec.	
Ceiling	147	.247	min.	
Lans	1722	1.268	sec.	
Steps	641985	3.400	msec.	
Skip wired	13361	163.371	msec.	
Skip used	367540	5.939	msec.	
Skip mod	65648	33.250	msec.	
Skip os	11894	183.522	msec.	

315 nodes, 38 wired.

Average steps 3.498

	DRUM	DSU270	DSU170
Left	480	3197	5942
Reads	151427	26190	832
ATB	14.415	83.345	2342.065
Writes	95243	17289	129
ATB	22.918	126.254	16920.963
ATB I/O	8.849	50.204	2057.309
Crcty	23	104	4
Ave Latency	22.926	81.104	77.131

r 1635 2.474 3+47

post -all

Multics 15.15, load 54.0/54.0: 53 users

Total metering time 0:22:45

	%	AVE	
Page Faults	10.31	3317.535	$\rightarrow \text{mtbpf} \left(\frac{\text{in process}}{\text{time}} \right) = \frac{3.317}{0.1031} \times 0.8729 = \underline{\underline{28.1 \text{ msec}}}$
Drum interrupts	5.23	2092.921	
Getwork	7.52	1166.987	
Seg Faults	3.96	19073.591	
Bound Faults	.34	45956.150	
Interrupts	6.72	3573.312	
Cache faults	2.86	3670.000	
MP Idle	10.96		} 12.71%
Loading idle	1.45		
MP Idle	.30		
Zero idle	0.00		
Other	50.35		\leftarrow larger than usual

r 1537 1.724 1+45

post -all;intm2 -all

Total metering time 0:39:22

Working-set factor	.50
Working-set addend	0
Min-eligible	2
Max-eligible	6
# bad pre-paging	21.46
Drum faults/pre-paging	1.63
# drum priority moves	15.01
# misses	5.53
Ave post size	28.35
Ave purge size	10.52
% purged	37.10
Ave pre size	15.95
Ave pre-pagings	8.06
% pre-paged	50.58
Thrashing percentage	5.06
Ave post in core	21.77
Ave working-set size	11.01
Ave used in quantum	24.94
Pre-purge time	19.54
Post-purge time	19.12
Calls	4787

Total metering time 0:39:24

	ATB lock	loop %	loop time
ntl	6.0 ms.	3.89	.466 ms.
tbl	3.1 ms.	.36	.023 ms.

all locks 4.25 \leftarrow out of 100 % CPU capacity

r 1537 1.531 1+41

hxx

Multics 15.16, load 53.0/54.0; 52 users

r 1639 .387 2+19

pcd

```

cpu b 7
cpu a 3
} 2 CPUs 4 384 kcore
time a 2 0 7 11 13
mem c 200 on
mem d 200 on
mem e 200 on
clock b 1 25 edt 4
drum 0 7700 1 4 5 6
d190 0 195340 a 37 8. 102030405 607
d290 0 60650 a 27 10. 401130214 3151216
part mult 0 7700 0 57650 0 104340 0 0
part salv 0 0 57650 1000 0 0 0 0
part dump 0 0 0 0 104340 1000 0 0
schd 400080 20 20 100
sst 16. 408. 160. 90. 0.
int 27 30 31 32 37
rds 9. 350. 1000.
tty 5
tty a 60 3 1200.
tty a 70 3 1200.
tty a 100 32. 133.
tty a 200 32. 133.
tty e 400 14. 110.
tty a 300 24. 150.
tel 5 75. 150. 130.
intx 77 mult

```

r 1639 1.699 3+27

```

ttvm
total metering time 5.78 hr, .26953055e+03 terminal hr
min output buffer 430 chars, 28 sec.
ave output buffer 990 chars, 66 sec.
ATB output blocks 30 1426 sec.
ATB status .154 7.207 sec.
% status queued 3.0%
ATB quit 22.7 1058.1 sec.
ATB dialups 36.0 1681.6 sec.
ATB cycle 1.3 59.8 sec.
output buffer eff. 81%
ave interrupt time 4.594 ms. 3.1%
max interrupt time 193.384 ms.

```

	total	1050	2741	M37	T300	ARDS	2741	M35
cur # dialed	51	2	35	10	1	3	0	0
ave # dialed	46.7	3.6	28.3	8.5	.9	2.4	2.7	.3
input rate	1.9	.3	.3	.2	.4	.3	.4	.1
output rate	28.2	3.3	3.5	3.4	5.1	7.3	3.5	1.5
r 1640	1.475	6+34						

hmu

Multics 15.16, load 52.0/54.0; 51 users

r 1641 .598 1+16

rzd scs 245
245 000001100110

interlaced memory

r 1641 .386 1+26

rzd scs 201
201 0000000000002

r 1641 .308 7+21

rzd tc_data 315
315 000000000000

← preemptive priority scheduling for eligible processes

r 1641 .409 6+17

da -d270

Connects = 246099, 77077.

P RW D CORE

1 P 3 7720

r 1642 .390 5+14

da -d270

Connects = 246218, 77180.

← Two DS270 channels are in operation

P RW D CORE

0 W 3 12140

0 W 3 320

0 W 3 10460

0 W 3 5400

0 W 3 4760

0 W 3 11700

0 W 3 7260

0 W 3 7520

0 W 3 12000

0 W 3 11360

0 W 3 11420

r 1642 .842 6+15

too

avg = 8, elapsed time = 727 sec, 23 active last 15 sec.

flags	tu	dtu	te	ts	ti	tssc	event	d	ws	process
WNLERI	1461	93	1143	4002	8000	-.001	0 0	31	Translator	
LBI	1337	86	1081	4008	8000	.023	21517 1	59	Backup	
MLERI	78	19	688	0	0	.004	0 0	5	Sekino	
LBI	426	102	1437	0	8000	.001	0 0	3	Schaller	
MLEI	315	67	57	0	0	.112	0 0	9	IO	
WLETI	1692	50	59	0	0	.101	0 0	25	initializer	
W	11	2	0	0	0	.533	0 0	2	Hatvany	
W	132	9	0	0	0	.475	0 0	3	Mc	
W	514	27	0	0	0	.398	0 0	13	EFranklin	
r 1642	1.857	1+71								