

MASSACHUSETTS INSTITUTE OF TECHNOLOGY

11/9

19.70

Memo to Prof. Saltzer

Room

Ext.

Here is MPM 110

- o Comparing this result with that of "first half" of MPM109, the performance is pretty good.
- o It seems that a PDP-8 user should be privileged user.

from

Akira

Room

Ext.

MURAN BOSTON

MPM110
 11/9/70
 # users = 40
 MFTN3
 11.0AX
 256 Kcore
 1 CPU

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

USER NO	COMMAND	TIME	CPU TIME	NO OF P.F.
0	login	1443	2.686	11 + 204
	edm	1453	4.479	208 + 310
	fortran	1454	4.250	44 + 355
	edm	1459	2.205	96 + 156
	fortran	1500	3.828	24 + 348
	rename	1501	.790	6 + 84
	print	1501	.915	2 + 58
	a_prime\$prime	1503	2.799	33 + 174
	list	1504	.527	8 + 38
	df	1505	1.279	2 + 152
	edm	← standby user preemption		+

***** 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	21.072	1225	423 + 1675	33	.638	11.2 (6.4)	12 + 50 only first half

 ↑
 average except "fortran"

ten -all

MPM110

11/9/70

Total metering time 0:11:38

Ave queue length	17.14	←
Ave eligible	3.30	←
Pre-page factor	3	←
Te first (seconds)	2	
Te last (seconds)	2	
Ti max (seconds)	3	

IDLE TYPE	TIME	%
Total idle	0:01:55	16.50
Multi-prog idle	0:01:55	16.50
Non-multi-prog idle	0:00:00	0.00
Zero idle	0:00:00	0.00

COUNTS	TOTAL	ATB	#/INT
Interactions	200	3.494 sec	← wrong
Loadings	930	.778 sec	4.500
Blocks	212	.981 sec	
Wakeups	830	.842 sec	
Waits	31154	22.431 msec	155.770
Notifies	92220	6.499 msec	
Schedulings	918	.761 sec	4.590
Pre-empts	29818	24.249 msec	144.090

Time	%Int	%Cum	Ave	%T	%CumT
0.0	80	80	.183	19	19
.5	9	90	.715	9	28
1.0	5	93	1.281	6	33
1.5	4	97	1.878	9	42
2.0	1	98	2.322	3	45
2.5	0	98	2.730	1	46
3.0	0	99	3.392	2	48
3.5	0	99	4.082	1	49
4.0	0	99	4.194	0	49
4.5	0	99	5.205	2	51
5.0	0	100	5.502	2	54
5.5	0	100	5.767	0	54
6.0	0	100	6.251	0	54
6.5	0	100	7.152	1	55
7.0	0	100	7.348	0	55
7.5	0	100	7.958	42	100

DEPTH	APP	TEPT	ACTW	TBS	%CPU
1	38.7	20.2	32.3	15.5	41.7
2	29.7	19.1	30.4	11.6	28.2
3	20.9	18.7	27.1	8.8	18.7
4	10.8	18.7	12.5	3.5	8.7
5	3.0	17.4	3.5	3.5	2.9
6	.9	11.2	.0	7.2	.7

rather long

r 1457 1.974 14438

rmx

Multiplex 11.0AM, load 41.5/41.0; 41 users

fsa -all

Total metering time 0:13:33

Reactivations	1437
Ast grace	0:00:34
Used ASTs	356
Free ASTs	0
Held ASTs	191
Seg Faults	1971

	#	ATE
Keels	53394	15.608 msec.
Steps	182269	4.557 msec.
Ceiling	9	1.543 min.
Lars	916	.910 sec.
Skir wired	2173	383.818 msec.
Skir used	111002	7.506 msec.
Skir mod	14109	69.068 msec.
Skir os	2191	390.338 msec.

168 pages, 23 wired.
Average steps 3.425

	DRUM	DSU270	DSU170
Left	1121	6079	0
Reads	49033	4270	0
ATE	17.350	195.173	0.000
Writes	28928	2663	0
ATE	29.909	312.950	0.000
ATB I/O	10.843	120.206	0.000
% Crcty	19	43	0
Ave Latency	26.711	75.829	0.000
N Errors	0	0	0
F Errors	0	0	0

r 1453 1.273 3+19

tca -all

Total metering time 0:14:44

	%	AVE
Page Faults	7.66	1757.382
Drum interrupts	4.84	1126.270
Getwork	9.30	977.731
Seg Faults	3.42	14057.876
Interrupts	5.97	3532.765
Gate faults	3.42	3870.000
MP Idle	16.54	
YP Idle	0.00	
Zero idle	0.00	
Other	49.42	

r 1500 1.210 3+23

psa -all

Pre-paring mode is ON.

r 1500 .350 2+24

MPM113
 11/30/70
 #users = 44
 MFTN3
 11.4

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

USER NO	COMMAND	TIME	CPU-TIME	NO OF P.F.
0	login	1426	3.277	0 + 123
	edm	1436	8.494	96 + 457
	fortran	1437	5.758	16 + 284
	edm	1442	4.421	50 + 226
	fortran	1443	7.684	49 + 383
	rename	1444	1.465	2 + 89
	print	1445	1.252	1 + 60
	a_prime\$prime	1446	3.477	15 + 165
	list	1447	1.235	1 + 73
	df	1448	1.737	4 + 106
	edm	1457	6.948	109 + 343
	fortran	1458	4.436	7 + 273
	edm	1502	3.716	44 + 206
	fortran	1503	5.025	15 + 203
	rename	1504	.813	1 + 54
	print	1505	.765	3 + 50
	b_prime\$prime	1506	2.253	3 + 108
	list	1507	.875	1 + 48
	df	1508	1.425	1 + 63
	logout			+

384 k core
 2 CPUs
 w.s. factor = .50

***** 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 CF P.F.
USER 0	61.779	2428	418 + 3191	66	.936	9.3 (5.3)	6 + 48

***** #users

(	35,523	1230	234 + 1843	33	1.076	11.3 (6.3)	7 + 55	44 first half
	26.256	1166	184 + 1348	33	.795	7.4 (4.3)	5 + 40	43 second half

↑
average except "fortran"

Note: The expected results were obtained, in general, except a drastic increase of the CPU time spent by the user.

>udd>m>w>o>tcn -all

MPM113

Total metering time 0:18:28

Ave queue length 14.43
 Ave eligible 9.37
 Working-set factor .50
 Working-set addend 0
 Te first (seconds) 2
 Te last (seconds) 2
 Ti max (seconds) 8

← note
 ←

IDLE TYPE	TIME	%
Total idle	0:03:24	9.22
Multi-prog idle	0:03:05	8.37
Non-multi-prog idle	0:00:18	.35
Zero idle	0:00:00	0.00

← note

COUNTER	TOTAL	ATB	#/INT
Interactions	452	2.453 sec	
Loadings	2524	.439 sec	5.584
Blocks	1819	.610 sec	
Wakeups	1865	.595 sec	
Waits	93301	11.821 msec	207.524
Notifies	227202	4.380 msec	
Schedulings	2232	.497 sec	4.938
Pre-empts	74686	14.846 msec	165.235

← wrong

Time	%Int	%Cum	Ave	%T	%CumT
0.0	64	64	.249	29	29
.5	18	83	.723	24	54
1.0	7	90	1.271	16	70
1.5	5	95	1.841	16	86
2.0	2	97	2.384	8	94
2.5	2	98	2.979	3	102
3.0	1	99	3.350	4	107
3.5	0	99	3.891	2	109
4.0	0	99	4.276	1	110
4.5	0	99	4.788	1	110
5.0	0	99	5.680	1	112
5.5	0	99	5.767	0	112
6.0	0	100	6.654	1	113
6.5	0	100	6.816	0	113
7.0	0	100	7.649	1	114
7.5	0	100	8.196	-19	100

DEPTH	%PF	TBPF	%GTW	TBS	%CPU
1	16.7	21.0	13.8	15.1	16.4
2	16.6	22.4	14.3	15.5	17.3
3	15.8	22.2	15.0	13.8	16.2
4	14.2	21.4	14.7	12.2	14.1
5	12.4	20.1	13.4	11.0	11.6
6	10.0	19.5	11.2	10.2	9.1
7	7.3	19.4	8.3	10.1	6.7
8	11.1	24.5	13.3	11.9	12.5

← note

fsm -all

Total metering time 0:21:44

Deactivations	5395	
Ast grace	0:00:10	<i>← very short</i>
Used ASTs	350	
Free ASTs	0	
Held ASTs	199	
Seg Faults	7003	

	#	ATB
Needs	139176	18.751 msec.
Steps	520417	5.015 msec.
Ceiling	3165	.014 min.
Japs	1504	1.735 sec.
Skip wired	8189	318.631 msec.
Skip used	317016	8.232 msec.
Skip mod	39173	66.611 msec.
Skip os	16858	154.803 msec.

300 pages, 42 wired. *← 384 K core*
 Average steps 3.739

	DRUM	DSU270	DSU170
Left	906	4092	0
Reads	124277	12137	0
ATB	20.099	215.018	0.000
Writes	76456	8497	0
ATB	34.133	307.129	0.000
ATB I/O	13.001	126.475	<i>← 0.000 The disk is heavily used.</i>
% Cncty	32	33	0
Ave Latency	23.894	118.400	0.000
N Errors	0	0	0
F Errors	0	0	0

r 1449 1.096 3+61

>add>m>w>o>ppmt
hmi

Total metering time 0:20:58

Ave pre-page time	27.193	} <i>slightly increased.</i>
Ave post_purge time	41.524	
Pre-page calls	2528	
Post-purge calls	2529	
Ave pre-pagings	9.936	
Ave post-purgings	17.542	
Ave working-set size	49.046	} <i>note</i>
Working-set factor	.50	
Working-set addend	0	
Ave misses	3.862	
Thrashing index	8.227	

r 1450 1.021 1+47

Multics 11.4; load 43.5/41.0; 43 users

r 1450 .154 0+5

ttm -all

Total metering time 0:22:46

	%	AVE	
Page Faults	16.83	4953.000	<i>← much increased</i>
Drum interrupts	8.64	2550.171	
Getwork	11.52	1414.609	
Seg Faults	6.02	22305.113	
Interrupts	5.06	4493.130	
Gate faults	2.29	3670.000	
MP Idle	8.03		
MMP Idle	.68		
Zero idle	0.00		
Other	40.84		<i>← note</i>

r 1451 1.541 3+67

rzd sec 200
 200 000000000000 *← two processors*
 r 1451 .616 3+31

>add>m>w>o>q

avg = 13, elapsed time = 836 sec, 27 active last 15 sec.

flags	tu	dtu	te	ts	ti	tssc	event	d	ws	process
MEMRI	49	19	1215	0	0	-.000	0	0	7	Sekino
WPLEI	1	1	1761	0	0	.207	-12262224542	0	50	Morton
WPLEI	51	45	1037	2000	2000	.073	-12262224542	0	34	Taylor
MEMRI	7	7	354	0	0	.011	0	0	19	Bersack
LEI	39	29	498	0	2001	-.105	0	0	57	MSmith
LEI	24	24	309	4003	2043	.013	56200	1	26	Donaghue
LEI	80	5	154	0	0	.010	15703	1	16	Strnad
WPLEI	4	4	439	0	4004	-.094	0	0	82	Bricklin
W	430	89	0	0	0	1.654	0	0	13	IO
W	535	72	70	0	0	.758	0	0	30	initializer
W	68	23	0	0	0	.035	0	0	31	Meagher
	66	50	9	0	6001	19.969	0	0	9	Keller
	37	37	90	0	6001	2.746	0	0	57	Baber
	223	45	88	4002	6019	16.002	0	0	46	Abramson
W	300	98	90	6084	8000	43.184	0	0	87	Backup

r 1453 3.821 33+185

hmu

Multics 11.4, load 44.5/41.0; 44 users

r 1453 .419 1+21

ppa

Standby user preemption

Sekino Multics logged out 11/30/70 1453.9 est Mon

CPU usage 53 sec

@

MPM114

1/4/71

users = 37

MFTN3

13.1a

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

USER NO	COMMAND	TIME	CPU TIME	NO OF P.F.
0	login	1358	1.051	0 + 87
	edm	1407	3.610	211 + 162
	fortran	1408	4.371	38 + 357
	edm	1413	1.966	82 + 158
	fortran	1414	3.912	21 + 422
	rename	1415	.822	6 + 90
	print	1416	.878	8 + 43
	a_prime\$prime	1417	2.958	32 + 161
	list	1418	.664	6 + 48
	df	1418	1.103	7 + 94
	edm	1427	2.800	176 + 142
	fortran	1428	2.986	7 + 234
	edm	1433	2.007	100 + 139
	fortran	1435	2.351	8 + 260
	rename	1435	.598	7 + 27
	rprint	1436	.688	10 + 55
	b_prime\$prime	1437	2.080	22 + 151
	list	1438	.876	6 + 48
	df	1439	1.103	6 + 118
	logout			+

256 K core

1 CPU

w.s. factor = .50

***** 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	35.978	2420	753 + 2709	66	.545	8.4 (4.9)	11 + 41

*****#users

(	20.489	1189	411 + 1535	33	.621	8.8 (5.5)	12 + 46	33 first half
	15.489	1199	342 + 1174	33	.469	8.1 (4.2)	10 + 35	40 second half

average except "fortran"

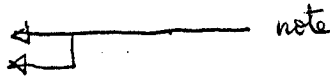
>udd>m>w>o>tcn -all

MPM114

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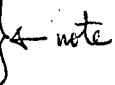
Total metering time 0:25:15

Ave queue length 10.53
 Ave eligible 4.33
 Working-set factor .50
 Working-set addend 0
 Te first (seconds) 2
 Te last (seconds) 2
 Ti max (seconds) 8



note

FILE TYPE	TIME	
Total idle	0:03:10	12.53
Multi-program idle	0:02:33	10.14
Non-multi-program idle	0:00:22	1.48
Zero idle	0:00:14	.96



note

COUNTER	TOTAL	ATB	#/INT
Interactions	189	8.016 sec	← wrong
Loadings	1535	.987 sec	8.122
Blocks read	1298	1.167 sec	
Wakeups	1318	1.150 sec	
Waits	73605	20.884 msec	339.444
Notifies	134473	9.212 msec	
Schedulings	1577	.931 sec	8.344
Pre-empts	59586	25.427 msec	315.270

Time	%Int	%Cum	Ave	BT	%CumT
0.0	72	72	.215	13	13
.5	13	85	.726	8	22
1.0	8	90	1.311	6	28
1.5	5	95	1.914	8	36
2.0	2	97	2.331	4	40
2.5	1	98	2.802	2	43
3.0	0	99	3.309	1	44
3.5	0	99	3.841	1	45
4.0	0	99	4.356	1	46
4.5	0	99	4.834	0	46
5.0	0	99	5.444	1	47
5.5	0	99	5.787	0	47
6.0	0	99	6.221	0	47
6.5	0	99	6.816	0	47
7.0	0	100	7.437	1	48
7.5	0	100	8.070	49	100

DEPT	TPT	TBPF	%TWT	TBS	%CPU
1	34.3	20.9	28.9	10.2	40.0
2	27.2	19.4	23.5	11.9	29.2
3	18.9	15.9	21.0	9.3	16.3
4	12.3	13.2	13.3	7.9	9.2
5	6.0	13.8	7.3	7.5	5.2
6	3.1	14.0	3.0	7.9	2.5
7	.5	0.0	.5	0.0	.5

← ? max eligible 6 (See ppmt)

fsx -all

Total metering time 0:27:16

Deactivations	1221
Ast grace	0:02:22
Used ASTs	443
Free ASTs	0
Held ASTs	179
Seg Faults	2166

← pretty long

	#	ATB
Needs	103783	15.772 msec.
Sters	320180	4.217 msec.
Ceiling	74	.369 min.
Lans	2017	.812 sec.
Skip wired	3036	188.324 msec.
Skip used	240455	6.333 msec.
Skip mod	29717	57.003 msec.
Skip os	3554	249.764 msec.

186 pages, 21 wired: ← 256 k core
Average steps 3.740

	DRUM	DSU270	DSU170
Left	1408	7773	22706
Reads	30404	13517	474
ATB	18.107	155.648	3453.485
Writes	47537	6004	415
ATB	34.435	272.644	3944.463
ATB I/O	11.837	99.083	1841.341
% Crcty	17	53	5
Ave Latency	23.254	83.787	51.873
N Errors	0	0	0
F Errors	0	0	0

← DS170 is rarely used.

r 1424 1.393 34+27

```
>add>mp>w>o>ppmt
ppmt -options-
options: -reset (-rs), -all (-a)
r 1425 1.374 6+20
```

ttn -all

Total metering time 0:27:41

	%	AVE.
Page Faults	9.85	1034.674
Drum interrupts	4.75	1108.789
Getwork	8.94	966.912
Seg Faults	1.78	12917.950
Interrupts	5.71	3349.000
Gate faults	3.37	3670.000
MP Idle	11.01	
MIP Idle	1.35	
Zero idle	0.00	
Other	53.43	

← note

r 1426 1.377 6+27

>add>m>w>o>prmt -all

Total metering time 0:28:43

Working-set factor .50
 Working-set addend 0
 Min-eligible 2 } ← note
 Max-eligible 0 }
 % bad pre-paging 49.32
 Drum faults/pre-paging 1.71
 % drum priority moves 14.20
 % misses 2.11
 Ave post size 70.37
 Ave purge size 15.13
 % purged 21.45
 Ave pre size 25.22
 Ave pre-pagings 12.49
 % pre-paged 49.52
 Thrashing percentage 14.52
 Ave post in core 42.43
 Ave working-set size 23.19
 Ave used in quantum 58.13
 Pre-page time 18.24
 Post-purge time 25.24
 Calls 1744

r 1426 1.028 7+17

hmu

Multics 13.1a, load 41.0/41.0; 40 users

r 1427 .224 6+8

rsd sec 200
 200 4000000000000
 r 1427 .806 6+32

link in jls < f

↓
 >add>m>w>jls>c f

>add>m>w>o>q

avg = 11, elapsed time = 1274 sec, 10 active last 15 sec.

flscr	tu	dtu	te	ts	ti	tssc	event	tl	ws	process
MFRI	34	18	1012	0	0	-0.143	0 0	0	0	0 Sekino
INI	0	0	251	0	3001	-0.085	45600	2	70	Stensrud
	7	0	46	0	2065	7.743		0 0	37	Tavares
W	0	0	51	4070	4007	16.027		0 0	34	KHuber
V	4	4	66	0	4051	30.127		0 0	82	Voydock
	44	37	23	0	0001	32.466		0 0	20	Hill
	100	47	43	0	0040	100.973		0 0	74	Scherer
W	42	30	52	0	0030	6.533		0 0	05	Translator
	187	25	40	0005	3000	174.742		0 0	77	Backup

r 1428 1.805 6+127

ppa -all
 Pre-paging mode is ON.

r 1428 .493 1+34

hmu

Multics 13.1a, load 41.0/41.0; 40 users

r 1428 .236 6+20

MPM 115
 1/27/71
 #users = 41
 MFT N3
 14.4X

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

USER NO	COMMAND	TIME	CPU TIME	NO OF P.F.
0	login	1456	3.251	0 + 92
	edm	1506	4.772	171 + 111
	fortran	1507	4.621	27 + 188
	edm	1512	2.050	95 + 69
	fortran	1513	4.504	47 + 220
	rename	1514	.838	7 + 26
	print	1514	1.101	7 + 28
	a_prime\$prime	1516	3.187	44 + 78
	list	1516	.884	2 + 44
	df	1517	1.281	7 + 28
	edm	1526	3.183	170 + 79
	fortran	1527	3.434	12 + 173
	edm	1532	2.431	94 + 99
	fortran	1533	3.303	11 + 170
	rename	1534	.858	7 + 21
	print	1535	.611	7 + 16
	b_prime\$prime	1536	2.059	25 + 83
	list	1537	.687	2 + 40
	df	1538	.972	8 + 21
	logout			+

384 k core
 1 CPU
 w.s. factor = .50

***** 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	40.776	2476	743 + 1494	66	.617	10.2 (7.0)	11 + 22

*****# users

(	23,238	1208	407 + 792	33	.704	10.1 (6.2)	12 + 24	41	first half
	17,538	1235	336 + 702	33	.532	10.3 (7.8)	10 + 21	41	second half

↑
 average except "fortran"

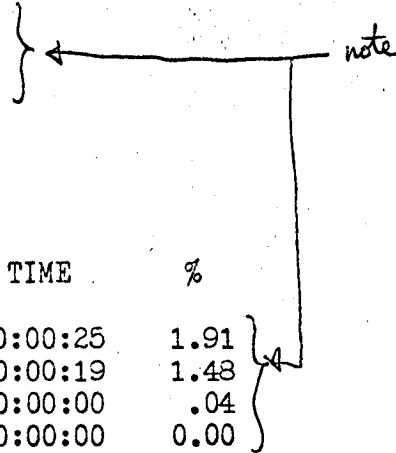
Note: The result is very similar to that of MPM112.

tcn -all

MPM115
1/27/71

Total metering time 0:22:00

Ave queue length	12.90
Ave eligible	5.26
Working-set factor	.50
Working-set addend	0
Te first (seconds)	2
Te last (seconds)	2
Ti max (seconds)	8



IDLE TYPE	TIME	%
Total idle	0:00:25	1.91
Multi-prog idle	0:00:19	1.48
Non-multi-prog idle	0:00:00	.04
Zero idle	0:00:00	0.00

COUNTER	TOTAL	ATB	#/INT
Interactions	99	13.335 sec	
Loadings	1534	.861 sec	15.495
Blocks	1300	1.015 sec	
Wakeups	1349	.979 sec	
Waits	37522	35.183 msec	379.010
Notifies	127405	10.362 msec	
Schedulings	1570	.841 sec	15.859
Pre-empts	24579	53.710 msec	248.273

Time	%Int	%Cum	Ave	%T	%CumT
0.0	67	67	.241	14	14
.5	17	84	.725	11	25
1.0	5	89	1.275	5	30
1.5	6	95	1.897	10	40
2.0	1	97	2.327	3	43
2.5	1	98	2.892	2	45
3.0	0	98	3.399	1	47
3.5	0	98	4.031	0	47
4.0	0	98	4.549	1	48
4.5	0	98	5.063	1	48
5.0	0	99	5.494	2	51
5.5	0	99	5.878	0	51
6.0	0	99	6.682	2	53
6.5	0	99	7.299	1	53
7.0	0	100	7.517	2	55
7.5	0	100	8.014	43	100

DEPTH	%PF	TBPF	%GTW	TBS	%CPU
1	38.5	42.3	29.8	33.3	47.1
2	26.3	32.6	27.4	18.9	24.8
3	17.7	27.9	20.2	14.8	14.4
4	11.0	26.9	13.6	13.1	8.7
5	6.1	28.9	7.9	13.3	5.2
6	3.5	27.6	4.2	13.6	2.9
7	.5	0.0	.5	0.0	.5

max. eligible = 6

r 1518 2.904 24+19

hmu

Multics 14.4X, load 41.5/41.0; 41 users

r 1519 .381 8+20

fsm -all

Total metering time 0:24:21

Deactivations	1952
Ast grace	0:00:56
Used ASTs	431
Free ASTs	0
Held ASTs	193
Seg Faults	2700

	#	ATB
Needc	68825	21.230 msec.
Steps	152401	9.588 msec.
Ceiling	60	.406 min.
Laps	360	4.059 sec.
Skip wired	1238	1180.265 msec.
Skip used	70693	20.669 msec.
Skip mod	9291	157.267 msec.
Skip os	2354	620.717 msec.

.293 pages, 27 wired.

Average steps 2.214

← 384 k core system

	DRUM	DSU270	DSU170
Left	1228	12361	15552
Reads	57883	8542	473
ATB	25.243	171.057	3089.150
Writes	39156	4147	229
ATB	37.317	352.343	6380.646
ATB I/O	15.058	115.152	2081.436
% Cpcty	13	45	5
Ave Latency	22.519	88.697	70.352
N Errors	0	0	1
F Errors	0	0	0

r 1520 2.028 18+42

ttn -all

Total metering time 0:25:34

	%	AVE
Page Faults	6.38	2241.217
Drum interrupts	3.35	1438.785
Getwork	8.16	1653.232
Seg Faults	3.13	16634.639
Interrupts	6.71	4150.493
Gate faults	3.69	3670.000
MP Idle	1.51	
Loading idle	.38	
NMP Idle	.03	
Zero idle	0.00	
Other	66.64	

← note about 2/3 capacity

>udd>m>w>o>ppmt -all

Uotal metering time 0:25:54

Working-set factor .50
 Working-set addend 0
 Min-eligible 2
 Max-eligible 6
 % bad pre-paging 34.69
 Drum faults/pre-paging .70
 % drum priority moves 13.47
 % misses 6.50
 Ave post size 52.22
 Ave purge size 19.81
 % purged 37.94
 Ave pre size 27.62
 Ave pre-pagings 14.07
 % pre-paged 50.95
 Thrashing percentage 5.95
 Ave post in core 42.54
 Ave working-set size 19.00
 Ave used in quantum 42.64
 Pre-page time 21.78
 Post-purge time 33.40
 Calls 1841

r 1522 1.349 24+26

cf

cpu a 4 ← CPU
 gioc a 2 0 7 11 13
 mem e 200 on
 mem d 200 on
 mem c 200 on
 drum 0 7700 1 4 5 6
 klok (b) 1 25 (est 5)
 d270 0 104270 a 37 16 103040506 71213141516 211
 d170 0 64050 a 27 6 102030405
 part mult 0 7700 0 103270 0 64050 0 0
 part salv 0 0 103270 1000 0 0 0 0
 int 27 30 31 32 37
 sst 50
 schd 400000 20 20 100
 ppds 11 1000
 ttyb 4 (144)
 tty a 300 40 150.
 tty a 100 40 133.
 tty a 200 40 133.
 tty a 60 3 1200.
 inrk 77 mult

r 1522 1.632 9+22

hmu

Multics 14.4X, load 40.5/41.0; 40 users

r 1523 .427 3+24

>udd>m>w>o>q

avq = 12, elapsed time = 525 sec, 20 active last 15 sec.

flags	tu	dtu	te	ts	ti	tssc	event	d	ws	process
NLERI	48	13	897	0	0	-.000	0 0		9	Sekino
LEI	120	13	1052	4015	8000	-.007	0 0		67	Keller
LEI	81	16	1912	0	0	.000	0 0		14	Testa
WNLEI	43	29	185	0	0	2.598	0 0		38	Miller
NLEI	76	5	274	0	0	2.605	0 0		7	Jordan
LEQI	63	4	319	0	0	2.603	0 0		6	Rolla
W	63	9	0	0	0	4.645	0 0		11	Zannetos
W	63	5	0	0	0	3.505	0 0		15	Bruce
W	35	6	0	0	0	3.352	0 0		14	Fish
W	49	5	0	0	0	.914	0 0		13	Willis
W	185	40	45	4001	8000	4.380	0 0		22	Shih
W	153	32	48	2000	8000	16.144	0 0		38	Translator
W	99	40	57	4005	8000	16.517	0 0		45	Vinograd
	117	22	60	0	8000	17.821	0 0		62	Backup

r 1524 2.783 18+97

rzd scs 200

200 4000000000000

r 1525 .798 17+50

ppm -all

Pre-paging mode is ON.

r 1525 .639 9+34

hmu

Multics 14.4X, load 40.5/41.0; 40 users

r 1526 .396 8+17