

MASSACHUSETTS INSTITUTE OF TECHNOLOGY

Oct. 21 1968

Memo to _____ Room _____ Ext. _____

PST + AST

7pm

↑
paper. sig. no. 2 to a+65
↑ paper

from _____ Room _____ Ext. _____

MURAN BOSTON

Bound description request to 1K

MASSACHUSETTS INSTITUTE OF TECHNOLOGY

Oct. 21, 1968

Memo to Remove per process seg from AST Room Ext. _____
in heritable to PDS instead for per process seg.

- 1. induction (w/ ID of process) (makes AST appear better)
- 2. unique meaningless of descriptor
X - per process directory

otherwise 1K per process in AST
~15 seg @ { 15 wds name + ID
10 wds thread
32 wds file MAP

from _____
MURAN BOSJON

Room _____ Ext. _____

MASSACHUSETTS INSTITUTE OF TECHNOLOGY

Oct 12, 1968

Memo to Perf. improvement Room _____ Ext. _____

36-bit unique IDs in file sys.
w/ in-line code to test
(now 70 ^{bit} w/ out of-line code)

from _____ Room _____ Ext. _____
MURAN BOSTON

MASSACHUSETTS INSTITUTE OF TECHNOLOGY

Oct 13, 1968

Memo to Perf. improvement Room _____ Ext. _____

~~1/2~~ 1/2 blocks after ready msg
before turning on proceed by bit

from _____ Room _____ Ext. _____
MURAN BOSTON

Policies

Oct. 11, 1968

~~2-ling vs 3-ling~~

~~390K~~

~~one table~~

~~DBL's~~

2+ pool sys. src

clock demon

1. Debug
 2. Perf
 3. off CTSS
- } priorities

— gradual redo of file sys.

Perf. issues

ASTE half-life of decay

Flag on 64 word page free pool going dry

Fix bug in ASTE removal of FILO of inactive seg.

Fix bug in AST size to 6K+600n

Fix bug in unanswered console read blocking after 15 sec.

Develop ^{script} for permanent calc w/ key commands

Questions:

1. why long seg f. ?
2. " " " p.f. ?
3. effect of 1-user sys
4. " " 390K
5. Master tape-demon for slowness (256K seg size?)
6. Remove command slow?

Basic Commands

- ① EDM
- ② Print
- ③ List or STATUS
- ④ { rename
link/unlink
remove
copy or move
- ⑤ archive

EPLBSA
EPL
~~AED~~
EPL
AED
Ftn II

.. (From Saljo)

Corbat

10/11/68

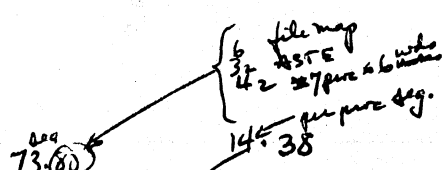
Potential Command Speedup Strategy

1. Place bottom half of TWDIM in ring zero; wire down and use a wired-down stack.
2. Bind
 - a. top half of TWDIM
 - b. listener
 - c. shell
 - d. related subroutinesinto a single segment, named `command_sys`
3. Fix listener to call TWDIM directly, not through switch
4. Wire `command_sys` down in ring 1
5. Place first 1K of combined linkage section for ring 1 in the ring one stack.
6. Add the ring one stack to the list of segments which "must be active" for an active process.
7. Add a "look ahead" call to read in the ring one stack whenever loading a process.
8. Revise IPC
9. Wire-down revised IPC
10. 2 level scheduler.

Fixes

based on 149-unwired proc.
73 seg seg 10-11 data,
14- hardware data

OCT. 11, 1968



1. Reize SST size to $5840 + 600n$
2. Meter Tape demon for slowness (256K seg. size !?)
3. Assoc. mem in for linkage faults in shell
4. Drum DIM able to pre-load a segment and not just a page
5. Fast seg. fault using 30 spare bits in SDW
6. Keep all col. 4 + sup. segments loaded (hence no AST trailers)
7. Preload only segments w/ loaded and only 1-user (per process); use special mark for 14 key segments between commands
8. When call block, remove pages only belonging to him.
9. Use assoc. memory per process ~~on~~ on each page fault of last 50 active, per process seg.
(record: ^{unique ID} ~~seg #~~, page #, AST ^{head table} entry) use reverse ptr to head T from ASTC, time?

per process:

- PDS - wired
- KST
- PDF
- HC stack } loaded
- Stack-1
- comb link
- LOT
- static
- free
- end. sth. } per ring
- CCT (for gin)
- TWP DBase
- attach table
- Event Chart.

Daily Summary

1. Provide means of loading/wiring seg. loaded in col. 4
2. Fast segment fault (fill both rings)
3. Pre loading pages
4. Combining key segments
5. ACL reduction; 32 char names
6. Fix removal list alg.

Major fixes

Dec. 1 - TC/IPC w/active-eligible

Nov. 15 - TTY in ring 0

2 wks - load/wire seg. in col. 4

2 wks. fast seg. fault

(easy? more definition) pre-loading/post-purging pages

(need eval) Command fixes en toto

Oct. 11, 1968

(IPC)

120K → 150K, reduced paging

elim buffer copy, better buffer strategy, reduced paging

lines for key commands;

may 1/2 seg fault time, 10% improve.

makes core more effective, ^{improved} response

CTSS-like on key commands

Questions

10/11/68

1. Why long pf.?
2. Why long seq. f.?
3. Note: working set $\sim 120K \ll 155K$
explains worse perf. of command.
4. Note: 99K wired down in 1K ~~40~~ ^{page 17} K wired d.
in 64w. pages prob. is desc. in
wired down figures from ~~deduct dump~~
5. Vordach for debugging?
6. Observe that if long seq. f. ⁴⁰ removed could
pretty much say 8 users sys. despite
5K/user since ~ 102 min. ~~last~~ to run
7. Probably should ratchet up 64w pool
if goes dry
8. What is effect of 1-user only; do we
get long seq. faults?
9. What is effect of 390K seq.?
10. Now spend $\sim 78\%$ of time in a page in fault

Per
Sect. 1. (a) ← may prob. © 10, 1968

see wire main stream; ring 0, 1

✓3. Fix scheduler for 2 levels

✓4. Install revised list, print

v.1.7

1.6

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Oct. 2 1968

Memo to Perf. Fix Room _____ Ext. _____

- 1. Active + Eligible processes, ~~no~~ no loaded ^{w/did up}
- 2. ~~TTY I/O~~ → rings w/ ~~no~~ interaction sw.
 (~~by-pass switch~~)
- 3. Print buffer fix
- 4. Print command
- 5. TC/IPC
- 6. new primitives for list

from _____ Room _____ Ext. _____

MURAN BOSTON

Sept. 13, 1968

DIM deficiencies

1. M-P control ^(1/2) ~~→~~ load control ^{2K} (5-10) ^{#K}

2. IPC

done 3. (Post Bind)

4. (Binder): Combine MM, rebind, etc.

(1.6) 5. PDS - PRDS + (seq. fault locking being fixed)

6. 32 char names at create branch, change name, create link

7. Seq. control + Dis control

8. Command upgrades

done 9. Basic command machinery in ring ¹/₃₂ w/o ring ³²

see later 10. " " " wired-down

(1.6 w/o int) w/ IPC w/ int 11. Scheduling returns to RT; 8 sec + 1 level w/ 1/2 sw; 2 w/ int. sw.

done 12. Interaction switch in I/O

? see later 13. Page clusters?

14. Preload "obvious" seq. when loading

15. Rework AST to ~ 2/3 present size w/ word straddles

see later 16. Fast segment fault for active segments

done 17. Make all Des. Seq. wired in ?

18. Present SDW's in Des. Seq. ?

19. Rework list-dir to move only 32 char and not 512

? 20. ~~wired down~~ Page table management by the replenisher

see later 21. Check on # of DS. pages for eligible processes

22. have only active + eligible processes, no loaded

23. TTY I/O → ^{wired} ring 0 (w/ interaction sw, w/o. GMM buffers)

done by 23. 24. Fix ^{TTY} Print buffer strategy to refill after 4 lines not 1

(1.6) 25. Fix Print command to call i/o once