

TO:           Distribution  
FROM:         Joan Archer  
DATE:         28 April 75  
RE:           Multics Change Requests

Enclosed are copies of Multics Change Requests which were approved from 16 March 75 to 31 March 75.

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|  |                        |  |
|--|------------------------|--|
| Ver. 3<br>741022   | MULTICS CHANGE REQUEST | MCR <u>1043</u>  |
| TITLE: Total On Line Test System (TOLTS) and<br>Peripheral On-Line Test System (POLTS)                                 |                        | STATUS: <u>Written</u> DATE: <u>02/17/75</u>                 |
| AUTHOR: A. A. Berglund for J. Rhodes   |                        | Status: <u>P2/25/75 A3/23/75</u><br>Expires: <u>08/17/75</u> |
| Planned for System: MR 2.1   |                        | CATEGORY (check one)   |
| Fixes Bug Number(s): not applicable  |                        | ( ) Lib. Maint. Tools  |
| Documented in MTB:   |                        | ( <input checked="" type="checkbox"/> ) Sys. Anal. Tools     |
| Incompatible Change: no  |                        | ( ) Sys. Prog. Tools   |
| User/Operations-visible Interface Change: no   |                        | ( ) 355  |
| Coded in: ( <input checked="" type="checkbox"/> ) PL/I ( ) ALM ( <input checked="" type="checkbox"/> ) other-see below |                        | ( ) BOS  |
| Performance: ( <input checked="" type="checkbox"/> ) better ( ) same ( ) worse   |                        | ( ) Salvager   |
| DOCUMENTATION CHANGES (specify one or more)  |                        | ( ) Ring Zero  |
| MPM (vol,sect) MPAM (sect)   |                        | ( ) Ring One   |
| MOSN (sect) MSAM (sect)  |                        | ( ) SysDaemon/Admin  |
| PLMs (AN#)   |                        | ( ) Runtime  |
| Info Segs  |                        | ( ) User Command/Subr  |
| Other TOLTS Users Guide  |                        |  |

OBJECTIONS/COMMENTS: "Approved in order to meet contractual commitments. The MCRB recommends that the decision to emulate GCOS T&D interfaces be reconsidered before any more online T&D extensions are done for Multics.

Headings are: SUMMARY, REASONS, IMPLICATIONS, DETAILED PROPOSAL (optional)

SUMMARY: Install bound\_tolts\_ ("Total On-Line Test System" TOLTS) into >system\_library\_tools.

REASONS: Scheduled Product Calendar Item for MR2.1 Release.

DETAILED PROPOSAL: This version of TOLTS/POLTS is scheduled to be released with MR2.1. The functional capabilities include:

- Resource Allocation
- Test Page Selection
- Test Page Dispatching
- Test Sequencing
- Option Processing
- Test and Diagnostic Language (TDL) Interpretation
- I/O Set Up and Issue
- Error Checking and Message Formatting
- Test Page Termination
- Resource De-Allocation

The TOLTS/POLTS package allows the testing of the following devices:

- ASA 7-Track Magnetic Tape (AT7C)
- ASA 9-Track Magnetic Tape (AT9A,AT9B)
- MTS500 7-Track Magnetic Tape (T57A)
- MST500 9-Track Magnetic Tape (T59A,T59B,T59C)
- CR20 Card Reader (R20C)
- CR21 Card Reader (R21C)
- CRZ301 Card Reader (R34C)
- CPZ201 Card Punch (P23C)

CPZ300 Card Punch (P32C)  
PRT201 Printer (PRTC)  
PRT300/301 Printers (AP3C,BP3C)  
PRT303 Printer (AP4C,BP4C)  
PRT401/402 Printer (136 Line) (P40A,P40B)  
PRT401/402 Printer (160 Line) (P40C,P40D)  
System Console (CONC)  
System Control Center (SCCC)

IMPLICATIONS: The TOLTS/POLTS package can be invoked by one of two ways. Either from "normal Multics command level" (type: "bound\_tolts\_stolts\_"), or by using the tolts\_overseer\_. Normal command level invocation is intended for use by "sophisticated" **Engineers** who have a good working knowledge of the overall Multics System. Use of the overseer (tolts\_overseer\_) is provided for **Engineers** who possess a limited knowledge of Multics and need to run in a more restricted and controlled environment.

Ver. 3  
741022

MULTICS CHANGE REQUEST

MCR 1044

TITLE: Install tolts\_overseer\_

STATUS: Written | DATE: 02/17/75  
Status: 2/25/75 A 3/25/75  
Expires: 08/17/75

AUTHOR: A. A. Berglund for J. Rhodes

Planned for System: MR 2.1  
Fixes Bug Number(s): not applicable  
Documented in MTB:  
Incompatible Change: no  
User/Operations-visible Interface Change: no  
Coded in:  PL/I  ALM  other-see below  
Performance:  better  same  worse

CATEGORY (check one)  
 Lib. Maint. Tools  
 Sys. Anal. Tools  
 Sys. Prog. Tools  
 355  
 BOS  
 Salvager  
 Ring Zero  
 Ring One  
 SysDaemon/Admin  
 Runtime  
 User Command/Subr

DOCUMENTATION CHANGES (specify one or more)

MPM (vol,sect)                    MPAM (sect)  
MOSN (sect)                        MSAM (sect)  
PLMs (AN#)  
Info Segs  
Other                                See MTB

OBJECTIONS/COMMENTS: "Approved in order to meet contractual commitments.  
The MCRB recommends that the decision to emulate GCOS T&D interfaces-  
be reconsidered before any more online T&D extensions are done for Mult

Headings are: SUMMARY, REASONS, IMPLICATIONS, DETAILED PROPOSAL (optional)

SUMMARY: Install tolts\_overseer\_ (special on-line T&D overseer) into  
system\_library\_tools.

REASONS: Scheduled Product Calendar Item for MR2.1 Release.

DETAILED PROPOSAL: The tolts\_overseer\_ has been designed and implemented  
to establish a "conditioned" environment for users of the Multics "Total  
On-Line Test System" (TOLTS). With this overseer a user may login to  
Multics and run TOLTS without requiring a great deal of knowledge on the  
other features of Multics. Unlike the TOLTS package running on other  
systems, the Multics TOLTS (along with this overseer) provides the  
capability of accepting special TOLTS requests. These requests primarily  
deal with allowing the user to print configuration data, etc. For example:

???test pcd            (comment: prints formatted configuration data.)

configuration:

opc    01600   emc  
prtb   01200   301   3  
tape   018xx   500   1   7trks starting at 8 and 7 9trks starting at 1  
prtc   01200   301   2  
rdra   01001   301  
punb   01500   201  
rdrb   01400   201  
puna   01101   301   prtd   00801   1600   600   136  
prta   00901   1200   600   136

where:

prta = Multics Device Name  
00901 = iom/channel/device in decimal  
1200 = device type  
600 = print train  
136 = number of print columns

tape 018xx = iom #0 channel 18 device xx (handlers 01 or 02 etc.)

IMPLICATION: It is recommended that **sites** desiring to use this overseer register a project called Tolts specifying: "initproc: tolts\_overseer\_;" as the initial process in the Project Definition Table (PDT) for Tolts.pdt. Also, placing the following commands in the system\_start\_up.ec.

```
setacl$hpsetacl >system_library_1>pioi_("") .link) (re rew) *.Tolts.*  
setacl$hpsetacl >system_library_1>phcs_("") .link) (re rew) *.Tolts.*
```

NOTE: The above commands are required for any other user(s) running TOLTS regardless of whether or not they are using the overseer.

Multics Change Request

|   |                                     |                   |                       |                    |
|---|-------------------------------------|-------------------|-----------------------|--------------------|
| TITLE: Revise submission testing programs to use library_fetch_   |                                     | STATUS            | DATE                  |                    |
| AUTHOR: A. Scherer  |                                     | Written           | 3/4/75                |                    |
| -Coded in: <input checked="" type="checkbox"/> PL/I <input type="checkbox"/> ALM <input type="checkbox"/> other-<br>explain in DETAILED PROPOSAL<br>-Planned for System MR<br>-Fixes Bug Number(s)<br>-Documented in MTB<br>-User/Operations-visible<br>Interface change? <input type="checkbox"/> yes <input checked="" type="checkbox"/> no<br>-Incompatible change? <input type="checkbox"/> yes <input checked="" type="checkbox"/> no<br>-Performance: <input checked="" type="checkbox"/> Better <input type="checkbox"/> Same<br><input type="checkbox"/> Worse<br>-Replaces MCR | Category (Check One)                |                   | Status                |                    |
|   | <input checked="" type="checkbox"/> | Lib. Maint. Tools | Expires               |                    |
|   |                                     | Sys. Anal. Tools  | DOCUMENTATION CHANGES |                    |
|   |                                     | Sys. Prog. Tools  | Document              | Specify One or Mor |
|   | 355                                 | MPM (Vol, Sect.)  |                       |                    |
|   | BOS                                 | PLMS (AN #)       | AN80                  |                    |
|   | Salvager                            | MOSN (Sect.)      |                       |                    |
|   | Ring Zero                           | MPAM (Sect.)      |                       |                    |
|   | Ring One                            | MSAM (Sect.)      |                       |                    |
|   | SysDaemon/Admin.                    |                   |                       |                    |
|   | Runtime                             |                   |                       |                    |
|   | User Cmmd/Subr.                     |                   |                       |                    |
| Objections/Comments:  |                                     | Info Segs         |                       |                    |
|   |                                     | Other (Name)      |                       |                    |
|   |                                     | None (Reason)     |                       |                    |

Use these headings: SUMMARY, REASONS, IMPLICATIONS, DETAILED PROPOSAL (Optional)

SUMMARY: Once library\_fetch\_ has been installed as a special entry for the use of the submission tests, then the submission tests should be changed to call it instead of get\_library\_segment.

This will eliminate the need for a command\_error condition handler since library\_fetch\_ will return a code.

In addition library\_fetch\_ will be a more powerful and more reliable tool since it will not depend on the presence of a whole series of control segs to tell it where to find library entries.

Most important, there will be only one system library data base to which all library referencing programs will look for their information about library entries.

|  |                        |   |
|--|------------------------|---|
| Ver. 3   | MULTICS CHANGE REQUEST | MCR 1074                                    |
| 741022   |                        |   |
| TITLE: Make ESD more fail-safe.  |                        | STATUS   DATE                               |
| AUTHOR: Paul Green (for Noel Morris)   |                        | Written   02/28/75                          |
|  |                        | Status   <del>Rejected</del> A 3/2/75       |
|  |                        | Expires   08/28/75                          |
| Planned for System: not applicable   |                        |   |
| Fixes Bug Number(s): not applicable  |                        | CATEGORY (check one)                        |
| Documented in MTB: not applicable  |                        | ( ) Lib. Maint. Tools                       |
| Incompatible Change: yes   |                        | ( ) Sys. Anal. Tools                        |
| User/Operations-visible Interface Change: no                                       |                        | ( ) Sys. Prog. Tools                        |
| Coded in: ( ) PL/I ( <input checked="" type="checkbox"/> ) ALM ( ) other-see below |                        | ( ) 355                                     |
| Performance: ( <input checked="" type="checkbox"/> ) better ( ) same ( ) worse     |                        | ( <input checked="" type="checkbox"/> ) BOS |
|  |                        | ( ) Salvager                                |
| DOCUMENTATION CHANGES (specify one or more)  |                        | ( ) Ring Zero                               |
| MPM (vol,sect) MPAM (sect)   |                        | ( ) Ring One                                |
| MOSN (sect) MSAM (sect)  |                        | ( ) SysDaemon/Admin                         |
| PLMs (AN#)   |                        | ( ) Runtime                                 |
| Info Segs  |                        | ( ) User Command/Subr                       |
| Other Multics Operator's Handbook  |                        |   |
| OBJECTIONS/COMMENTS:   |                        |   |

Headings are: SUMMARY, REASONS, IMPLICATIONS, DETAILED PROPOSAL (optional)

**SUMMARY:**

Change the BOS ESD command to print an error message on return if it cannot find the segment number of emergency\_shutdown, rather than using a default segment number of 13. The message will be (approx.) "Cannot find emergency\_shutdown in SLT, ESD failed, run a SALV LONG."

**REASONS:**

The current operation is guaranteed to fail, since the default segment number ESD uses is 13, but emergency\_shutdown is now segment 14. Rather than change the default to 14, it is proposed that ESD just quit; the fact that it couldn't find emergency\_shutdown in the SLT means that the SLT has been clobbered, which probably means that the emergency shutdown would itself fail. By blundering on, as it now does, there is a great risk of clobbering the disks. By stopping before any damage is done, the worst that can happen is that some pages may not get written out, and that the long salvager should be run to check for reused or unprotected addresses, and to deactivate segments which were active.

**IMPLICATIONS:**

Fixes the bug, and should make ESD less likely to ruin the hierarchy.

Multics Change Request

MMP  
3/4/75

|   |  |                                   |                       |                     |
|---|--|-----------------------------------|-----------------------|---------------------|
| TITLE: GCOS SIMULATOR   |  | STATUS                            | DATE                  |                     |
| AUTHOR: R. H. MORRISON  |  | Written                           | 03/14/75              |                     |
| -Coded in: <input checked="" type="checkbox"/> PL/I <input checked="" type="checkbox"/> ALM <input type="checkbox"/> other-<br>explain in DETAILED PROPOSAL<br>-Planned for System MR <u>2.1</u><br>-Fixes Bug Number(s) _____<br>-Documented in MTB _____<br>-User/Operations-visible<br>Interface change? <input type="checkbox"/> yes <input checked="" type="checkbox"/> no<br>-Incompatible change? <input type="checkbox"/> yes <input checked="" type="checkbox"/> no<br>-Performance: <input type="checkbox"/> Better <input checked="" type="checkbox"/> Same<br><input type="checkbox"/> Worse<br>-Replaces MCR _____ | Category (Check One)                     | Status                            | A 03/18/75            |                     |
|   |  | Lib. Maint. Tools                 | Expires               | 02/18/75            |
|   |  | Sys. Anal. Tools                  | DOCUMENTATION CHANGES |                     |
|   |  | Sys. Prog. Tools                  | Document              | Specify One or More |
|   |  | 355                               | MPM (Vol, Sect.)      |                     |
|   |  | BOS                               | PLMS (AN #)           |                     |
|   |  | Salvager                          | MOSN (Sect.)          |                     |
|   |  | Ring Zero                         | MPAM (Sect.)          |                     |
|   |  | Ring One                          | MSAM (Sect.)          |                     |
|   |  | SysDaemon/Admin.                  | Info Segs             |                     |
|   | Runtime                                  | Other (Name)                      |                       |                     |
|   | User Cmmd/Subr.                          | None (Reason) No interface change |                       |                     |
|   | <input checked="" type="checkbox"/> GCOS |                                   |                       |                     |
| Objections/Comments:  |  |                                   |                       |                     |

Use these headings: SUMMARY, REASONS, IMPLICATIONS, DETAILED PROPOSAL (Optional)

SUMMARY: Replace: gcos\_cc\_activity\_cards\_  
gcos\_control\_tables\_  
gcos\_cleanup\_files\_

- REASONS:
1. Fix bug in the allocation of b\* file for object decks.
  2. Fix bug in the printing of file codes on the execution report.

IMPLICATIONS: Avoids changes to some GCOS job decks.



|   |  |                                   |                     |
|---|--|-----------------------------------|---------------------|
| TITLE: GCOS SIMULATOR   |  | STATUS                            | DATE                |
| AUTHOR: RH MORRISON   |  | Written                           | 03/14/75            |
| -Coded in: <input type="checkbox"/> PL/I <input type="checkbox"/> ALM <input checked="" type="checkbox"/> other-<br>explain in DETAILED PROPOSAL<br>-Planned for System MR 2.1<br>-Fixes Bug Number(s) _____<br>-Documented in MTB _____<br>-User/Operations-visible<br>Interface change? <input type="checkbox"/> yes <input checked="" type="checkbox"/> no<br>-Incompatible change? <input type="checkbox"/> yes <input checked="" type="checkbox"/> no<br>-Performance: <input checked="" type="checkbox"/> Better <input type="checkbox"/> Same<br><input type="checkbox"/> Worse<br>-Replaces MCR _____ |  | Status                            | A 03/18/75          |
|   |  | Expires                           | 02/18/75            |
|   |  | DOCUMENTATION CHANGES             |                     |
| Category (Check One)<br><input type="checkbox"/> Lib. Maint. Tools<br><input type="checkbox"/> Sys. Anal. Tools<br><input type="checkbox"/> Sys. Prog. Tools<br><input type="checkbox"/> 355<br><input type="checkbox"/> BOS<br><input type="checkbox"/> Salvager<br><input type="checkbox"/> Ring Zero<br><input type="checkbox"/> Ring One<br><input type="checkbox"/> SysDaemon/Admin.<br><input type="checkbox"/> Runtime<br><input type="checkbox"/> User Cmmd/Subr.<br><input checked="" type="checkbox"/> GCOS   |  | Document                          | Specify One or More |
| Objections/Comments:  |  | MPM (Vol, Sect.)                  |                     |
|   |  | PLMS (AN #)                       |                     |
|   |  | MOSN (Sect.)                      |                     |
|   |  | MPAM (Sect.)                      |                     |
|   |  | MSAM (Sect.)                      |                     |
|   |  | Info Segs                         |                     |
|   |  | Other (Name)                      |                     |
|   |  | None (Reason) No interface change |                     |

Use these headings: SUMMARY, REASONS, IMPLICATIONS, DETAILED PROPOSAL (Optional)

SUMMARY: 1. Install GCOS SR 1/G System Software (SF1 & SF2).  
2. Install GCOS SR 1/G System Subroutine Library.

REASONS: Update GCOS Simulator to GCOS SR1/G from SR E/7.

IMPLICATIONS: The simulator will use SR 1/G versions of GCOS language compilers and other software.

Multics Change Request

|   |  |                       |                     |
|---|--|-----------------------|---------------------|
| TITLE: Fix reconfiguration mask setting bug   |  | STATUS                | DATE                |
| AUTHOR: B. Greenberg  |  | Written               | 03/10/75            |
| -Coded in: <input checked="" type="checkbox"/> PL/I <input type="checkbox"/> ALM <input type="checkbox"/> other-<br>explain in DETAILED PROPOSAL<br>-Planned for System MR NA<br>-Fixes Bug Number(s) unreported<br>-Documented in MTB<br>-User/Operations-visible<br>Interface change? <input type="checkbox"/> yes <input checked="" type="checkbox"/> no<br>-Incompatible change? <input type="checkbox"/> yes <input checked="" type="checkbox"/> no<br>-Performance: <input type="checkbox"/> Better <input checked="" type="checkbox"/> Same<br><input type="checkbox"/> Worse<br>-Replaces MCR | Category (Check One)                       |                       |                     |
|   | <input type="checkbox"/> Lib. Maint. Tools | DOCUMENTATION CHANGES |                     |
|   | <input type="checkbox"/> Sys. Anal. Tools  | Document              | Specify One or More |
|   | <input type="checkbox"/> Sys. Prog. Tools  | MPM (Vol, Sect.)      |                     |
| <input type="checkbox"/> 355  | PLMS (AN #)                                |                       |                     |
| <input type="checkbox"/> BOS  | MOSN (Sect.)                               |                       |                     |
| <input type="checkbox"/> Salvager   | MPAM (Sect.)                               |                       |                     |
| <input checked="" type="checkbox"/> Ring Zero   | MSAM (Sect.)                               |                       |                     |
| <input type="checkbox"/> Ring One   | Info Segs                                  |                       |                     |
| <input type="checkbox"/> SysDaemon/Admin.   | Other (Name)                               |                       |                     |
| <input type="checkbox"/> Runtime  | None (Reason) Trivial bug fix              |                       |                     |
| <input type="checkbox"/> User Cmmnd/Subr.   |  |                       |                     |
| Objections/Comments:  |  |                       |                     |

Use these headings: SUMMARY, REASONS, IMPLICATIONS, DETAILED PROPOSAL (Optional)

SUMMARY: reconfig fails to set\_proc\_required during certain mask setting operations, causing occasional reconfiguration crashes, and making 3-cpu configurations chancy at times.

IMPLICATIONS:

Reliability improvement: change declaration so that correct object code is generated.

DETAILED PROPOSAL:

Fix bug.

Multics Change Request

|  |  |                       |                     |
|--|--|-----------------------|---------------------|
| TITLE: Do not use user-ring modified machine conditions  |  | STATUS                | DATE                |
| AUTHOR: S. Webber  |  | Written               | 03/14/75            |
| -Coded in: <input checked="" type="checkbox"/> PL/I <input checked="" type="checkbox"/> ALM <input type="checkbox"/> other-<br>explain in DETAILED PROPOSAL<br>-Planned for System MR _____<br>-Fixes Bug Number(s) _____<br>-Documented in MTB _____<br>-User/Operations-visible<br>Interface change? <input type="checkbox"/> yes <input checked="" type="checkbox"/> no<br>-Incompatible change? <input type="checkbox"/> yes <input checked="" type="checkbox"/> no<br>-Performance: <input checked="" type="checkbox"/> Better <input type="checkbox"/> Same<br><input type="checkbox"/> Worse<br>-Replaces MCR _____ |  | Status                | A 03/18/75          |
|  |  | Expires               | 07/18/75            |
| Category (Check One)<br><input type="checkbox"/> Lib. Maint. Tools<br><input type="checkbox"/> Sys. Anal. Tools<br><input type="checkbox"/> Sys. Prog. Tools<br><input type="checkbox"/> 355<br><input type="checkbox"/> BOS<br><input type="checkbox"/> Salvager<br><input checked="" type="checkbox"/> Ring Zero<br><input type="checkbox"/> Ring One<br><input type="checkbox"/> SysDaemon/Admin.<br><input type="checkbox"/> Runtime<br><input type="checkbox"/> User Cmmnd/Subr.  |  | DOCUMENTATION CHANGES |                     |
|  |  | Document              | Specify One or More |
|  |  | MPM (Vol, Sect.)      | SWG                 |
|  |  | PLMS (AN #)           | 60,67               |
|  |  | MOSN (Sect.)          |                     |
|  |  | MPAM (Sect.)          |                     |
|  |  | MSAM (Sect.)          |                     |
| Objections/Comments:   |  | Info Segs             | XX                  |
|  |  | Other (Name)          |                     |
|  |  | None (Reason)         |                     |

Use these headings: SUMMARY, REASONS, IMPLICATIONS, DETAILED PROPOSAL (Optional)

SUMMARY: Due to apparently unsolvable problems in validating machine conditions, it is proposed that we do not use machine conditions that have been modified by users. Rather, a very selective set of legal modifications will be allowed to a copy of the machine conditions that never leave ring 0.

REASONS: We cannot validate machine conditions today.

DETAILED PROPOSAL:

1. When a user-ring fault is signalled, the signaller places a copy of the SCU data and the Pointers and Lengths data (16 words total) in a buffer of such machine conditions located between the data area of the PDS and the ring 0 stack. The machine conditions are placed in this buffer after the ring 0 stack is abandoned. The machine conditions are left in ring 0 where they were copied. The ring 0 stack-begin-pointer and stack-end-pointer in the PDS header are thus different (after signalling the fault) from what they were before the fault occurred. Also, before signalling, the signaller places a unique 18 bit code (unique to the process -- for a while anyway) in an unused field of the ring 0 copy of the SCU data saved in the PDS. This same unique code is placed in the machine conditions structure passed to the user (although not in the SCU part).
2. When a user wants to restart machine conditions he does just what is done today, i.e., the user may or may not "diddle" them before "returning to the FIM" (restart\_fault, really). The program restart\_fault (executing in ring 0) copies the machine conditions into ring 0, validates any changes made to the SCU data, and if all is well, restores the control unit (after loading PRS, etc.). The Pointers and Lengths are not

copied from the user ring. Before restoring the control unit, however, the machine conditions set in the PDS with the same unique code is discarded and any "hole" left in the machine conditions region is filled in with the last set in the region. The stack-begin-pointer and stack-end-pointer are changed to reflect the fact that one fewer set of machine conditions are now being saved on the PDS. If the correct set of machine conditions are not found, "illegal\_return" is signalled.

3. Every "signaller" frame in the user-ring stack must have a cleanup handler. This handler calls into ring 0 to release the set of machine conditions associated with the signaller frame. This will prevent an arbitrarily large number of sets of machine conditions from building up in ring 0.
4. The "validation" done in step 2 will be quite strict. The proposed rules are:
  - a. If the MIF (mid-instruction-fault) indicator is ON, NO changes are allowed, and
  - b. If the MIF indicator is OFF, the instruction fields may be arbitrarily changed.

#### NOTES

A simple stack mechanism for saving machine conditions in ring 0 will not suffice. A process doing any kind of "tasking" may very well not behave, on the whole, in a strict first-in-last-out manner. This is why when machine conditions are restarted, only that set is purged from the ring 0 buffer.

If a user tries to restart machine conditions that have been illegally modified, we may want to audit the fact.

The rules above for allowed diddling are strict. There may be valid modifications we decide later to allow. Until good evidence is given, though, we should prevent surprises.

Multics Change Request

TITLE: Fix problems in system\_monthly\_report

AUTHOR: T. Casey

STATUS DATE

Written 03/14/75

Status 03/18/75

Expires 09/18/75

- Coded in:  PL/I  ALM  other-  
explain in DETAILED PROPOSAL
- Planned for System MR
- Fixes Bug Number(s) unreported
- Documented in MTB
- User/Operations-visible  
Interface change?  yes  no
- Incompatible change?  yes  no
- Performance:  Better  Same  
 Worse
- Replaces MCR

Category (Check One)

- Lib. Maint. Tools
- Sys. Anal. Tools
- Sys. Prog. Tools
- 355
- BOS
- Salvager
- Ring Zero
- Ring One
- SysDaemon/Admin.
- Runtime
- User Cmmd/Subr.

DOCUMENTATION CHANGES

Document Specify One or More

MPM (Vol, Sect.)

PLMS (AN #)

MOSN (Sect.)

MPAM (Sect.)

MSAM (Sect.)

Objections/Comments:

Info Segs

Other (Name)

None (Reason) no interface change

Use these headings: SUMMARY, REASONS, IMPLICATIONS, DETAILED PROPOSAL (Optional)

SUMMARY: Put tests for zero divisor before every statement that contains division by a variable.

REASONS: system\_monthly\_report computes percentages involving pairs of values for the current month, and percentage changes from the previous month. At an installation that just started up, and has zero values for the previous month, or at which certain events did not occur during the current month, these computations result in attempted division by zero, which aborts the monthly billing run.

Multics Change Request

|   |  |                       |                     |
|---|--|-----------------------|---------------------|
| TITLE: Fix bugs in debug  |  | STATUS                | DATE                |
| AUTHOR: S. Barr   |  | Written               | 03/13/75            |
| -Coded in: <input checked="" type="checkbox"/> PL/I <input type="checkbox"/> ALM <input type="checkbox"/> other-<br>explain in DETAILED PROPOSAL<br>-Planned for System MR<br>-Fixes Bug Number(s) <u>unreported</u><br>-Documented in MTB<br>-User/Operations-visible<br>Interface change? <input type="checkbox"/> yes <input checked="" type="checkbox"/> no<br>-Incompatible change? <input type="checkbox"/> yes <input checked="" type="checkbox"/> no<br>-Performance: <input type="checkbox"/> Better <input checked="" type="checkbox"/> Same<br><input type="checkbox"/> Worse<br>-Replaces MCR _____ |  | Status                | A 03118/75          |
|   |  | Expires               | 03/18/75            |
|   |  | DOCUMENTATION CHANGES |                     |
|   |  | Document              | Specify One or More |
|   |  | MPM (Vol, Sect.)      | none                |
|   |  | PLMS (AN #)           |                     |
|   |  | MOSN (Sect.)          |                     |
|   |  | MPAM (Sect.)          |                     |
|   |  | MSAM (Sect.)          |                     |
| Objections/Comments:  |  | Info Segs             |                     |
|   |  | Other (Name)          |                     |
|   |  | None (Reason)         |                     |

Use these headings: SUMMARY, REASONS, IMPLICATIONS, DETAILED PROPOSAL (Optional)

SUMMARY:

PROPOSAL:

1. Multiple assignment statement should be fixed. (x = 1 2 3)  
The current version only assigns the first number. This requires rewriting the main loop of db\_assign.
2. The print request should be fixed:
  - a. Character strings longer than 256 should be able to be printed and trailing blanks should not be suppressed. The current version calls ioa\_ which limits strings to 256 characters. iox\_\$put\_chars should be used instead.
  - b. Instructions should be fixed to:
    1. Correctly print EIS descriptors when the procedure has been compiled without the table option.
    2. Interpret offsets in pll\_operators\_. The procedure should call find\_operator\_name\_ to get the information.
    3. Print legal alm modifiers that are not used by pll.

- 
- c. The graphic output mode should be restored. It was removed in the last installation.
  - d. A request for an illegal print mode should not set the print mode.
  - e. If the value of a register is requested, debug should not create a new register. It should assume the user has mistyped the register name and give the error message "Register not defined"
3. A misleading error message that is printed when the stack threading pointers are invalid should be changed from "Can't trace the stack to depth N" to "Can't trace the stack past depth N-1".
  4. A bug should be fixed that prevents a user from setting a break in the location following the current break in some cases. The instruction may already be loaded into the odd instruction register so the mme2 put into the text has no effect.
  5. The break command syntax should be changed to be more reasonable. ".br 1" causes all the breaks in the current segment to be reset because the space terminates the break command. Debug should allow one or more spaces between the ".br" and the break number.

TITLE: Change error code returned by tty\_ "modes"  
AUTHOR: Robert S. Coren

| STATUS  | DATE       |
|---------|------------|
| Written | 03/18/75   |
| Status  | A 03/25/75 |
| Expires | 09/25/75   |

-Coded in:  PL/I  ALM  other-  
explain in DETAILED PROPOSAL  
-Planned for System MR 3.0  
-Fixes Bug Number(s) \_\_\_\_\_  
-Documented in MTB \_\_\_\_\_  
-User/Operations-visible  
Interface change?  yes  no  
-Incompatible change?  yes  no  
-Performance:  Better  Same  
 Worse  
-Replaces MCR \_\_\_\_\_

Category (Check One)

|   |
|---|
| <input type="checkbox"/> Lib. Maint. Tools    |
| <input type="checkbox"/> Sys. Anal. Tools     |
| <input type="checkbox"/> Sys. Prog. Tools     |
| <input type="checkbox"/> 355                  |
| <input type="checkbox"/> ROS                  |
| <input type="checkbox"/> Salvager             |
| <input checked="" type="checkbox"/> Ring Zero |
| <input type="checkbox"/> Ring One             |
| <input type="checkbox"/> SysDaemon/Admin.     |
| <input type="checkbox"/> Runtime              |
| <input type="checkbox"/> User Cmmnd/Subr.     |

DOCUMENTATION CHANGES

|                  |                     |
|------------------|---------------------|
| Document         | Specify One or More |
| MPM (Vol, Sect.) |                     |
| PLMS (AN #)      |                     |
| MOSN (Sect.)     |                     |
| MPAM (Sect.)     |                     |
| MSAM (Sect.)     |                     |

Objections/Comments:

|               |      |
|---------------|------|
| Info Segs     |      |
| Other (Name)  |      |
| None (Reason) | NONE |

Use these headings: SUMMARY, REASONS, IMPLICATIONS, DETAILED PROPOSAL (Optional)

SUMMARY:

Make hcs\_\$tty\_order return error\_table\_\$bad\_mode if asked to change to an invalid mode, and error\_table\_\$smallarg if the character string argument is too small to hold the "old modes" string.

REASONS:

Currently hcs\_\$tty\_order returns error\_table\_\$undefined\_order\_request in both these cases, which is inaccurate and misleading, and not in accordance with the MPM documentation for iox\_\$modes.

IMPLICATIONS:

iox\_\$modes should be changed at some point to translate error\_table\_\$smallarg to a zero code (it already handles the actual situation correctly).

Note: The new answering service understands the codes properly, no other system program calls hcs\_\$tty\_order for "modes" directly.



Multics Change Request

|   |  |                       |                     |
|---|--|-----------------------|---------------------|
| TITLE: Add new modes for terminals  |  | STATUS                | DATE                |
| AUTHOR: Robert S. Coren   |  | Written               | 03/18/75            |
| -Coded in: <input checked="" type="checkbox"/> PL/I <input type="checkbox"/> ALM <input type="checkbox"/> other-<br>explain in DETAILED PROPOSAL<br>-Planned for System MR 3.0<br>-Fixes Bug Number(s) _____<br>-Documented in MTB _____<br>-User/Operations-visible<br>Interface change? <input checked="" type="checkbox"/> yes <input type="checkbox"/> no<br>-Incompatible change? <input type="checkbox"/> yes <input checked="" type="checkbox"/> no<br>-Performance: <input type="checkbox"/> Better <input checked="" type="checkbox"/> Same<br><input type="checkbox"/> Worse<br>-Replaces MCR _____ |  | Status                | A 03/25/75          |
|   |  | Expires               | 09/25/75            |
|   |  | DOCUMENTATION CHANGES |                     |
| Category (Check One)<br><input type="checkbox"/> Lib. Maint. Tools<br><input type="checkbox"/> Sys. Anal. Tools<br><input type="checkbox"/> Sys. Prog. Tools<br><input type="checkbox"/> 355<br><input type="checkbox"/> BOS<br><input type="checkbox"/> Salvager<br><input checked="" type="checkbox"/> Ring Zero<br><input type="checkbox"/> Ring One<br><input type="checkbox"/> SysDaemon/Admin.<br><input type="checkbox"/> Runtime<br><input type="checkbox"/> User Cmmd/Subr.  |  | Document              | Specify One or More |
|   |  | MPM (Vol, Sect.)      | Subr (tty_)         |
|   |  | PLMS (AN #)           |                     |
|   |  | MOSN (Sect.)          |                     |
|   |  | MPAM (Sect.)          |                     |
|   |  | MSAM (Sect.)          |                     |
|   |  | Info Segs             |                     |
|   |  | Other (Name)          |                     |
|   |  | None (Reason)         |                     |
|   |  | Objections/Comments:  |                     |

Use these headings: SUMMARY, REASONS, IMPLICATIONS, DETAILED PROPOSAL (Optional)

SUMMARY:

Add the modes lfecho, tabecho, echoplex, and fullpdx to the list recognized by tty\_index. See attached draft MPM documentation excerpts.

REASONS:

The new 355 software permits the implementation of these modes, and they are potentially useful to users.

IMPLICATIONS:

Character string required to hold complete list of modes will be longer (but still <128 characters). See MCR on new error codes returned by hcs\_\$tty\_order.

Name: tty\_

This I/O module supports I/O from/to devices that can be operated in a typewriter-like manner, e.g., the user's terminal.

### Modes Operation

The modes operation is supported when the I/O switch is open. The recognized modes are listed below. Some modes have a complement indicated by the circumflex character (^) that turns the mode off (e.g., ^erkl). For these modes the complement is displayed along with the mode.

lfecho, ^lfecho

specifies that a line feed is to be echoed and inserted in the user's input stream when a carriage return is typed. (Default is off; the same restriction applies as for crecho.)

tabecho, ^tabecho

specifies that the appropriate number of spaces are to be echoed when a horizontal tab is typed. (Default is off; the same restriction applies as for crecho.)

echoplex, ^echoplex

specifies that all characters typed on the terminal are to be echoed. (Default is off; the same restriction applies as for crecho.)

fulldpx, ^fulldpx

specifies that the terminal is to be allowed to receive and transmit simultaneously. (Default is off; this mode is automatically turned on and off when echoplex is turned on and off.)

|   |  |                                      |                     |
|---|--|--------------------------------------|---------------------|
| TITLE: Install pl1_operators_ and record_io_  |  | STATUS                               | DATE                |
| AUTHOR: R. A. Barnes  |  | Written                              | 03-18-75            |
| -Coded in: <input type="checkbox"/> PL/I <input checked="" type="checkbox"/> ALM <input type="checkbox"/> other-<br>explain in DETAILED PROPOSAL<br>-Planned for System MR<br>-Fixes Bug Number(s) PL/I 1254,<br><del>*Documented XXXXX</del> 1318<br>-User/Operations-visible<br>Interface change? <input type="checkbox"/> yes <input checked="" type="checkbox"/> no<br>-Incompatible change? <input type="checkbox"/> yes <input checked="" type="checkbox"/> no<br>-Performance: <input checked="" type="checkbox"/> Better <input type="checkbox"/> Same<br><input type="checkbox"/> Worse<br>-Replaces MCR |  | Status                               | A 03/25/75          |
|   |  | Expires                              | 09/25/75            |
|   |  | DOCUMENTATION CHANGES                |                     |
| Category (Check One)<br><input type="checkbox"/> Lib. Maint. Tools<br><input type="checkbox"/> Sys. Anal. Tools<br><input type="checkbox"/> Sys. Prog. Tools<br><input type="checkbox"/> 355<br><input type="checkbox"/> BOS<br><input type="checkbox"/> Salvager<br><input type="checkbox"/> Ring Zero<br><input type="checkbox"/> Ring One<br><input type="checkbox"/> SysDaemon/Admin.<br><input checked="" type="checkbox"/> Runtime<br><input type="checkbox"/> User Cmnd/Subr.  |  | Document                             | Specify One or More |
| Objections/Comments:  |  | MPM (Vol, Sect.)                     |                     |
|   |  | PLMS (AN #)                          |                     |
|   |  | MOSN (Sect.)                         |                     |
|   |  | MPAM (Sect.)                         |                     |
|   |  | MSAM (Sect.)                         |                     |
|   |  | Info Segs                            |                     |
|   |  | Other (Name)                         |                     |
|   |  | None (Reason) No user visible change |                     |

Use these headings: SUMMARY, REASONS, IMPLICATIONS, DETAILED PROPOSAL (Optional)

SUMMARY:

Replace pl1\_operators\_ and add record\_io\_ to bound\_sss\_wired\_ to greatly improve performance of PL/I record I/O on unkeyed sequential files.

REASONS:

Improves performance of PL/I programs doing record i/o. Also fixes following bugs:

- 1254 in which return (char(\*)) from inside a non\_quick begin block faults in pl1\_operators\_.
- 1318 in which dcl str auto char(length(char\_star\_fun (length(b)))); fails.

PROPOSAL:

record\_io\_ runs in the caller's stack frame in the same manner as pl1\_operators\_. For simple read, write, and rewrite statements on unkeyed sequential files, record\_io\_ calls iox\_ directly (using the entry variables in the iocb) rather than the much slower plio2\_recio\_. If iox\_ returns an error code, plio2\_recio\_ is entered at a special entry point to diagnose the error, and signal the proper condition. record\_io\_ must be bound with pl1\_operators\_ but need not be wired.

Multics Change Request

|  |  |                       |                     |
|--|--|-----------------------|---------------------|
| TITLE: Fix bug in link_unsnap caused by 25-3 linker  |  | STATUS                | DATE                |
| AUTHOR: Steve Webber   |  | Written               | 3/18/75             |
| -Coded in: <input checked="" type="checkbox"/> PL/I <input type="checkbox"/> ALM <input type="checkbox"/> other-<br>explain in DETAILED PROPOSAL<br>-Planned for System MR _____<br>-Fixes Bug Number(s) unreported _____<br>-Documented in MTB _____<br>-User/Operations-visible<br>Interface change? <input type="checkbox"/> yes <input checked="" type="checkbox"/> no<br>-Incompatible change? <input type="checkbox"/> yes <input checked="" type="checkbox"/> no<br>-Performance: <input type="checkbox"/> Better <input checked="" type="checkbox"/> Same<br><input type="checkbox"/> Worse<br>-Replaces MCR _____ |  | Status                | A 03/25/76          |
|  |  | Expires               | 09/26/75            |
|  |  | DOCUMENTATION CHANGES |                     |
| Category (Check One)<br><input type="checkbox"/> Lib. Maint. Tools<br><input type="checkbox"/> Sys. Anal. Tools<br><input type="checkbox"/> Sys. Prog. Tools<br><input type="checkbox"/> 355<br><input type="checkbox"/> BOS<br><input type="checkbox"/> Salvager<br><input type="checkbox"/> Ring Zero<br><input type="checkbox"/> Ring One<br><input type="checkbox"/> SysDaemon/Admin.<br><input type="checkbox"/> Runtime<br><input checked="" type="checkbox"/> User Cmmnd/Subr.  |  | Document              | Specify One or More |
| Objections/Comments:   |  | MPM (Vol, Sect.)      |                     |
|  |  | PLMS (AN #)           |                     |
|  |  | MOSN (Sect.)          |                     |
|  |  | MPAM (Sect.)          |                     |
|  |  | MSAM (Sect.)          |                     |
|  |  | Info Segs             |                     |
|  |  | Other (Name)          |                     |
|  |  | None (Reason)         | No change           |

Use these headings: SUMMARY, REASONS, IMPLICATIONS, DETAILED PROPOSAL (Optional)

SUMMARY OF PROPOSAL:

Fix bug in link\_unsnap\_ caused by installation of 25-3 linker.

REASONS AND JUSTIFICATION:

The current link\_unsnap\_ does not handle variable size linkage offset tables correctly.

| Ver. 3<br>741022   | MULTICS CHANGE REQUEST | MCR <u>1085</u>  |                      |  |   |   |                              |                              |                                   |                                    |                                   |  |                                  |   |
|--|------------------------|--|----------------------|--|---|---|------------------------------|------------------------------|-----------------------------------|------------------------------------|-----------------------------------|--|----------------------------------|---|
| TITLE: Install print_auth_names and<br>print_proc_auth.<br>AUTHOR: Lee Scheffler   |                        | <table border="1"> <tr> <th>STATUS</th> <th>DATE</th> </tr> <tr> <td>Written</td> <td>03/14/75</td> </tr> <tr> <td>Status</td> <td><del>03/14/75</del></td> </tr> <tr> <td>Expires</td> <td>09/14/75</td> </tr> </table>   | STATUS               | DATE                                       | Written                                   | 03/14/75                                  | Status                       | <del>03/14/75</del>          | Expires                           | 09/14/75                           |                                   |  |                                  |   |
| STATUS   | DATE                   |  |                      |  |   |   |                              |                              |                                   |                                    |                                   |  |                                  |   |
| Written  | 03/14/75               |  |                      |  |   |   |                              |                              |                                   |                                    |                                   |  |                                  |   |
| Status   | <del>03/14/75</del>    |  |                      |  |   |   |                              |                              |                                   |                                    |                                   |  |                                  |   |
| Expires  | 09/14/75               |  |                      |  |   |   |                              |                              |                                   |                                    |                                   |  |                                  |   |
| Planned for System: not applicable<br>Fixes Bug Number(s): not applicable<br>Documented in MTB: not applicable<br>Incompatible Change: no<br>User/Operations-visible Interface Change: no<br>Coded in: <input checked="" type="checkbox"/> PL/I <input type="checkbox"/> ALM <input type="checkbox"/> other-see below<br>Performance: <input type="checkbox"/> better <input type="checkbox"/> same <input type="checkbox"/> worse |                        | <table border="1"> <tr> <th>CATEGORY (check one)</th> </tr> <tr> <td><input type="checkbox"/> Lib. Maint. Tools</td> </tr> <tr> <td><input type="checkbox"/> Sys. Anal. Tools</td> </tr> <tr> <td><input type="checkbox"/> Sys. Prog. Tools</td> </tr> <tr> <td><input type="checkbox"/> 355</td> </tr> <tr> <td><input type="checkbox"/> BOS</td> </tr> <tr> <td><input type="checkbox"/> Salvager</td> </tr> <tr> <td><input type="checkbox"/> Ring Zero</td> </tr> <tr> <td><input type="checkbox"/> Ring One</td> </tr> <tr> <td><input type="checkbox"/> SysDaemon/Admin</td> </tr> <tr> <td><input type="checkbox"/> Runtime</td> </tr> <tr> <td><input checked="" type="checkbox"/> User Command/Subr</td> </tr> </table> | CATEGORY (check one) | <input type="checkbox"/> Lib. Maint. Tools | <input type="checkbox"/> Sys. Anal. Tools | <input type="checkbox"/> Sys. Prog. Tools | <input type="checkbox"/> 355 | <input type="checkbox"/> BOS | <input type="checkbox"/> Salvager | <input type="checkbox"/> Ring Zero | <input type="checkbox"/> Ring One | <input type="checkbox"/> SysDaemon/Admin | <input type="checkbox"/> Runtime | <input checked="" type="checkbox"/> User Command/Subr |
| CATEGORY (check one)   |                        |  |                      |  |   |   |                              |                              |                                   |                                    |                                   |  |                                  |   |
| <input type="checkbox"/> Lib. Maint. Tools   |                        |  |                      |  |   |   |                              |                              |                                   |                                    |                                   |  |                                  |   |
| <input type="checkbox"/> Sys. Anal. Tools  |                        |  |                      |  |   |   |                              |                              |                                   |                                    |                                   |  |                                  |   |
| <input type="checkbox"/> Sys. Prog. Tools  |                        |  |                      |  |   |   |                              |                              |                                   |                                    |                                   |  |                                  |   |
| <input type="checkbox"/> 355   |                        |  |                      |  |   |   |                              |                              |                                   |                                    |                                   |  |                                  |   |
| <input type="checkbox"/> BOS   |                        |  |                      |  |   |   |                              |                              |                                   |                                    |                                   |  |                                  |   |
| <input type="checkbox"/> Salvager  |                        |  |                      |  |   |   |                              |                              |                                   |                                    |                                   |  |                                  |   |
| <input type="checkbox"/> Ring Zero   |                        |  |                      |  |   |   |                              |                              |                                   |                                    |                                   |  |                                  |   |
| <input type="checkbox"/> Ring One  |                        |  |                      |  |   |   |                              |                              |                                   |                                    |                                   |  |                                  |   |
| <input type="checkbox"/> SysDaemon/Admin   |                        |  |                      |  |   |   |                              |                              |                                   |                                    |                                   |  |                                  |   |
| <input type="checkbox"/> Runtime   |                        |  |                      |  |   |   |                              |                              |                                   |                                    |                                   |  |                                  |   |
| <input checked="" type="checkbox"/> User Command/Subr  |                        |  |                      |  |   |   |                              |                              |                                   |                                    |                                   |  |                                  |   |
| <b>DOCUMENTATION CHANGES (specify one or more)</b><br>MPM (vol,sect) II.9            MPAM (sect)<br>MOSN (sect)                    MSAM (sect)<br>PLMs (AN#)<br>Info Segs<br>Other   |                        |  |                      |  |   |   |                              |                              |                                   |                                    |                                   |  |                                  |   |
| <b>OBJECTIONS/COMMENTS:</b><br><br>  |                        |  |                      |  |   |   |                              |                              |                                   |                                    |                                   |  |                                  |   |

Headings are: SUMMARY, REASONS, IMPLICATIONS, DETAILED PROPOSAL (optional)

SUMMARY: Install print\_auth\_names (pan) and print\_proc\_auth (ppa) in the standard library in bound\_access\_commands\_.

REASONS: The print\_auth\_names command enables a user to determine the possible access class/authorization names which may be used with commands taking authorization or access class arguments (login, new\_proc, dprint, create\_dir, etc).

The print\_proc\_auth command prints the current authorization and maximum authorization of a user's process.

See the attached writeups for more complete information.

Command

03/14/75

Name: print\_auth\_names, pan

The print\_auth\_names command will list the names of the sensitivity levels and access categories defined for the installation. Only the names which can be used to describe an access class or access authorization between system low and system high will be listed, unless the "-all" control argument is given.

Usage: print\_auth\_names -control\_args

control\_args may be any of the following optional arguments:

|                 |   |
|-----------------|---|
| -level          | list sensitivity levels (default)           |
| -category, -cat | list access categories (default)            |
| -brief, -bf     | supress title and headings                  |
| -all, -a        | list all possible names (above system high) |

This command will list the names which are acceptable to the convert\_authorization\_ subroutine to define an access class or access authorization. (All commands and system interfaces which use a character string to describe an access class use this subroutine.) Both the long and short names are printed.

Command

03/14/75

Name: print\_proc\_auth, ppa

This command causes the current process' access authorization and current system privileges (if any) to be printed on the terminal.

Usage

print\_proc\_auth -control\_args-

The following optional arguments may be specified:

- long, -lg           Print the installation-defined long names (up to 32 characters) for the sensitivity levels and categories.
- all, -a             Print the maximum access authorization of this process.

Notes

If -long is not specified, the access authorization printed will be composed of the installation-defined short names (8 characters or less) for sensitivity levels and categories.

The maximum authorization printed for the -all control argument is the maximum authorization that this process could have been given at login, and corresponds to the maximum access class of upgraded directories that may be created by this process.

|  |                        |           |
|--|------------------------|-----------|
| Ver. 3   | MULTICS CHANGE REQUEST | MCR 1086  |
| 741022   |                        |           |
| TITLE: Fix bugs in convert_authorization_  | STATUS                 | DATE      |
| AUTHOR: Paul Green   | Written                | 03/17/75  |
|  | Status                 | A03/25/75 |
|  | Expires                | 09/17/75  |
| Planned for System: not applicable   |                        |           |
| Fixes Bug Number(s): not applicable  |                        |           |
| Documented in MTB: not applicable  |                        |           |
| Incompatible Change: no  |                        |           |
| User/Operations-visible Interface Change: no   |                        |           |
| Coded in: <input checked="" type="checkbox"/> PL/I <input type="checkbox"/> ALM <input type="checkbox"/> other-see below |                        |           |
| Performance: <input type="checkbox"/> better <input checked="" type="checkbox"/> same <input type="checkbox"/> worse     |                        |           |
|  |                        |           |
| DOCUMENTATION CHANGES (specify one or more)  |                        |           |
| MPM (vol,sect) II.9 MPAM (sect)  |                        |           |
| MOSN (sect) MSAM (sect)  |                        |           |
| PLMs (AN#)   |                        |           |
| Info Segs  |                        |           |
| Other  |                        |           |
|  |                        |           |
| OBJECTIONS/COMMENTS:   |                        |           |
|  |                        |           |
|  |                        |           |

Headings are: SUMMARY, REASONS, IMPLICATIONS, DETAILED PROPOSAL (optional)

SUMMARY:

Fix several unreported bugs in convert\_authorization\_\$to\_string.

REASONS:

Null names (all blanks) were not being handled properly.

IMPLICATIONS:

Output will be correct in all cases.

DETAILED PROPOSAL:

Change already tested and coded.



Multics Change Request

|  |  |                              |                       |
|--|--|------------------------------|-----------------------|
| TITLE: Resorting of Daily summaries  |  | STATUS                       | DATE                  |
| AUTHOR: F. C. Smith  |  | Written                      | 3/18/75               |
| -Coded in <input type="checkbox"/> PL/I <input type="checkbox"/> ALM <input type="checkbox"/> other-<br>explain in DETAILED PROPOSAL<br>-Planned for System MR <input checked="" type="checkbox"/> NA<br>-Fixes Bug Number(s) _____<br>-Documented in MTB _____<br>-User/Operations-visible<br>Interface change? <input checked="" type="checkbox"/> yes <input type="checkbox"/> no<br>-Incompatible change? <input type="checkbox"/> yes <input checked="" type="checkbox"/> no<br>-Performance: <input type="checkbox"/> Better <input type="checkbox"/> Same<br><input checked="" type="checkbox"/> Worse<br>-Replaces MCR _____ | Category (Check One)                                 |                              | DOCUMENTATION CHANGES |
|  | <input type="checkbox"/> Lib. Maint. Tools           | Document Specify One or More |                       |
|  | <input type="checkbox"/> Sys. Anal. Tools            | MPM (Vol, Sect.)             |                       |
|  | <input type="checkbox"/> Sys. Prog. Tools            | PLMS (AN #) 72               |                       |
|  | <input type="checkbox"/> 355                         | MOSN (Sect.)                 |                       |
|  | <input type="checkbox"/> BOS                         | MPAM (Sect.)                 |                       |
|  | <input type="checkbox"/> Salvager                    | MSAM (Sect.)                 |                       |
|  | <input type="checkbox"/> Ring Zero                   | Info Segs                    |                       |
|  | <input type="checkbox"/> Ring One                    | Other (Name)                 |                       |
|  | <input checked="" type="checkbox"/> SysDaemon/Admin. | None (Reason)                |                       |
| <input type="checkbox"/> Runtime   |  |                              |                       |
| <input type="checkbox"/> User Cmmd/Subr.   |  |                              |                       |
| Objections/Comments:   |  |                              |                       |

Use these headings: SUMMARY, REASONS, IMPLICATIONS, DETAILED PROPOSAL (Optional)

SUMMARY: Modify daily\_summary to sort the requisition status information it prints by project ID. Only the output will be resorted; the requisition file will not be changed.

Reasons: The summary will be more useful in this form.

Implications: User Accounts will be able to locate information about the accounting status of a project quickly and easily.

Multics Change Request

|   |  |                       |                     |  |
|---|--|-----------------------|---------------------|--|
| TITLE: Mailing pages for account bills.   |  | STATUS                | DATE                |  |
| AUTHOR: F. C. Smith   |  | Written               | 3/18/75             |  |
| -Coded in: <input checked="" type="checkbox"/> PL/I <input type="checkbox"/> AIM <input type="checkbox"/> other-<br>explain in DETAILED PROPOSAL<br>-Planned for System MR <u>na</u><br>-Fixes Bug Number(s) _____<br>-Documented in MTB _____<br>-User/Operations-visible<br>Interface change? <input checked="" type="checkbox"/> yes <input type="checkbox"/> no<br>-Incompatible change? <input type="checkbox"/> yes <input checked="" type="checkbox"/> no<br>-Performance: <input type="checkbox"/> Better <input type="checkbox"/> Same<br><input checked="" type="checkbox"/> Worse<br>-Replaces MCR _____ | Category (Check One)                                 | Status                | A 03/25/75          |  |
|   | <input type="checkbox"/> Lib. Maint. Tools           | Expires               | 09/25/76            |  |
|   | <input type="checkbox"/> Sys. Anal. Tools            | DOCUMENTATION CHANGES |                     |  |
|   | <input type="checkbox"/> Sys. Prog. Tools            | Document              | Specify One or More |  |
|   | <input type="checkbox"/> 355                         | MPM (Vol, Sect.)      |                     |  |
|   | <input type="checkbox"/> BOS                         | PLMS (AN #)           |                     |  |
|   | <input type="checkbox"/> Salvager                    | MOSN (Sect.)          |                     |  |
|   | <input type="checkbox"/> Ring Zero                   | MPAM (Sect.)          |                     |  |
|   | <input type="checkbox"/> Ring One                    | MSAM (Sect.)          | 4                   |  |
|   | <input checked="" type="checkbox"/> SysDaemon/Admin. | Info Segs             |                     |  |
| <input type="checkbox"/> Runtime  | Other (Name)   |                       |                     |  |
| <input type="checkbox"/> User Cmmd/Subr.  | None (Reason)  |                       |                     |  |
| Objections/Comments:  |  |                       |                     |  |

Use these headings: SUMMARY, REASONS, IMPLICATIONS, DETAILED PROPOSAL (Optional)

SUMMARY: Modify write\_acct\_bill to print mailing pages with one copy of the account bills.

Reasons: Copies of the account bills are mailed to project supervisors. If mailing pages are not printed, they must be written by hand.

Implications: User accounts will no longer have to handwrite mailing pages.

|   |                        |   |
|---|------------------------|---|
| Ver. 3<br>741022                                    | MULTICS CHANGE REQUEST | MCR 1089                                |
| TITLE: Change answering service to work with<br>MCS |                        | STATUS   DATE<br>Written   03/18/75     |
| AUTHOR: Paul Green                                  |                        | Status   03/26/75<br>Expires   09/18/75 |
| Planned for System: MR 3.0                          |                        |   |
| Fixes Bug Number(s): not applicable                 |                        | CATEGORY (check one)                    |
| Documented In MTB: not applicable                   |                        | ( ) Lib. Maint. Tools                   |
| Incompatible Change: no                             |                        | ( ) Sys. Anal. Tools                    |
| User/Operations-visible Interface Change: no        |                        | ( ) Sys. Prog. Tools                    |
| Coded In: (X) PL/I ( ) ALM ( ) other-see below      |                        | ( ) 355                                 |
| Performance: ( ) better (X) same ( ) worse          |                        | ( ) BOS                                 |
|   |                        | ( ) Salvager                            |
| DOCUMENTATION CHANGES (specify one or more)         |                        | ( ) Ring Zero                           |
| MPM (vol, sect) MPAM (sect)                         |                        | ( ) Ring One                            |
| MOSN (sect) MSAM (sect)                             |                        | (X) SysDaemon/Admin                     |
| PLMs (AN#) AN66                                     |                        | ( ) Runtime                             |
| Info Segs   |                        | ( ) User Command/Subr                   |
| Other   |                        |   |
| OBJECTIONS/COMMENTS:                                |                        |   |

Headings are: SUMMARY, REASONS, IMPLICATIONS, DETAILED PROPOSAL (optional)

#### SUMMARY:

Change answering service to perform several tasks that are no longer automatically performed by the ring 0 ttydim. These are reading the answerback, and determining the terminal type from it, and setting the initial modes and electronic tabs.

#### REASONS:

The answering service must be able to read and write on a terminal after it dials up, so it seems logical to have it do the initialization. The reading of the answerback must be done first, in order to handle Model 37 teletypes properly; therefore it must be done by the answering service.

#### IMPLICATIONS:

None. Only those changes necessary to preserve the present functions will be added to the answering service at this time. These changes are compatible with the present ring 0 ttydim, and can therefore be installed before MCS.

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|-----|-----|
| Ver. 3 | | |
| 741022 | MULTICS CHANGE REQUEST | MCR 1090 |
|-----|-----|
| TITLE: | Fix Ring 4 tty dim to make ios_work | STATUS | DATE |
| | with dialed terminals. | Written | 03/18/75 |
| AUTHOR: | Paul Green | Status | 402/25/75 |
| | | Expires | 09/18/75 |
|-----|-----|
| Planned for System: | not applicable | |
| Fixes Bug Number(s): | not applicable | CATEGORY (check one) |
| Documented in MTB: | not applicable | ( ) Lib. Maint. Tools |
| Incompatible Change: | no | ( ) Sys. Anal. Tools |
| User/Operations-visible Interface Change: | yes | ( ) Sys. Prog. Tools |
| Coded in: (X) PL/I ( ) ALM ( ) other-see below | ( ) 355 |
| Performance: (X) better ( ) same ( ) worse | ( ) BOS |
| | | ( ) Salvager |
|-----|-----|
| DOCUMENTATION CHANGES (specify one or more) | | |
| MPM (vol,sect) II.10 | MPAM (sect) | ( ) Ring Zero |
| MOSN (sect) | MSAM (sect) | ( ) Ring One |
| PLMs (AN#) | | ( ) SysDaemon/Admin |
| Info Segs | | ( ) Runtime |
| Other | | (X) User Command/Subr |
|-----|-----|
| OBJECTIONS/COMMENTS: | | |
| | | |
| | | |
|-----|-----|

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Headings are: SUMMARY, REASONS, IMPLICATIONS, DETAILED PROPOSAL (optional)

SUMMARY:

Change the read and write entries of tw\_ to return a status code (instead of going blocked) if the terminal hangs up. Change the detach entry of tw\_ to not return a status code if the terminal has already hung up (ring 0 has already detached the terminal, and returns a code indicating this).

REASONS:

These changes will make it possible for a process doing i/o to a dialed terminal to recover from hangups on that line.

IMPLICATIONS:

Programs which call ios\_\$read to get input from the terminal, and do not check the status code, but just check for "nelemt < 1" or somesuch, will go into a loop if the terminal hangs up. Programs which use ios\_\$read\_ptr will behave properly, since it will signal a condition in this case ("io\_error"). The system programs I have checked (listen\_, debug) behave properly.

DETAILED PROPOSAL:

Replace tw\_.alm, tw\_write.pl1 and rest\_of\_ttydim.pl1. Split the terminet 1200 output editing software into a separate program, to reduce the number of pages that the command loop occupies. Eliminate some obsolete alm transfer vectors in bound\_command\_loop\_ (which are left over from the days of version 1 pl1).

-----  
tty dim  
-----

Page 4

and TTY35s, and 125 for TTY38s.)

**pln** specifies the length in lines of a page. When an attempt is made to exceed this length, an ARDS "DEL" character is printed; when the user types an erase character, the output continues with the next page. This mode is functional only for ARDS terminals. (Default page length is 50 for ARDS.)

**hndquit** specifies that when a quit is detected, a new line character is echoed and a resetread of the associated stream is performed. (Default is on.)

**default** is a shorthand for erkl, can, rrawl, rrawo, and esc. The settings for other modes are not affected.

### Returned Status

Only standard Multics error codes are returned as the first half of the status string. The first half of the status string being nonzero indicates an error. At present, none of the bits in the second half of the status string are meaningful.

Possible error codes are:

**error\_table\_\$io\_no\_permission** The telephone line connection of this device has been disconnected, and the process is no longer permitted to do I/O on this device. The only I/O System call permitted is to detach the I/O stream.

### Order Requests

The following order requests are implemented by this DIM:

**hangup** causes the telephone line connection of the terminal to be disconnected, if possible.

**listen** cause a wakeup to be sent to the process if the line associated with this device ID is dialed up.

**info** causes information about the device to be returned. The pointer argument should point to the following structure that is filled in by the call.

Multics Change Request

|  |                      |               |                       |                     |
|--|----------------------|---------------|-----------------------|---------------------|
| TITLE: GCOS DAEMON to Run Jobs in Ring 5   |                      | STATUS        | DATE                  |                     |
| AUTHOR: R. H. MORRISON   |                      | Written       | 3/18/75               |                     |
| -Coded in: <input checked="" type="checkbox"/> PL/I <input type="checkbox"/> ALM <input type="checkbox"/> other-<br>explain in DETAILED PROPOSAL<br>-Planned for System MR 2.1<br>-Fixes Bug Number(s) _____<br>-Documented in MTB _____<br>-User/Operations-visible<br>Interface change? <input type="checkbox"/> yes <input checked="" type="checkbox"/> no<br>-Incompatible change? <input type="checkbox"/> yes <input type="checkbox"/> no<br>-Performance: <input type="checkbox"/> Better <input checked="" type="checkbox"/> Same<br><input type="checkbox"/> Worse<br>-Replaces MCR _____ | Category (Check One) |               | Status                |                     |
|  | Lib. Maint. Tools    |               | A 02/25/75            |                     |
|  | Sys. Anal. Tools     |               | Expires               |                     |
|  | Sys. Prog. Tools     |               | 09/25/75              |                     |
|  | 355                  |               | DOCUMENTATION CHANGES |                     |
|  | BOS                  |               | Document              | Specify One or More |
|  | Salvager             |               | MPM (Vol, Sect.)      |                     |
|  | Ring Zero            |               | PLMS (AN #)           |                     |
|  | Ring One             |               | MOSN (Sect.)          |                     |
|  | SysDaemon/Admin.     |               | MPAM (Sect.)          |                     |
| Runtime  |                      | MSAM (Sect.)  |                       |                     |
| User Cmd/Subr.   |                      |               |                       |                     |
| X GCOS   |                      |               |                       |                     |
| Objections/Comments:   |                      | Info Segs     |                       |                     |
|  |                      | Other (Name)  | GCOS MANUAL - AN05    |                     |
|  |                      | None (Reason) |                       |                     |

Use these headings: SUMMARY, REASONS, IMPLICATIONS, DETAILED PROPOSAL (Optional)

SUMMARY: Replace: gcos\_daemon\_init.pl1  
 gcos\_queue\_job.pl1  
 gcos\_read.pl1

REASONS: Allow absentee gcos jobs from the GCOS DAEMON to run in ring 5.

IMPLICATIONS: The GCOS Environment Simulator manual section, "Installing the GCOS DAEMON" must be changed to specify: ring numbers of 5,5 instead of 4,4 for Anonymous.GCOS in the pmf; and ring 5 initial ACL's.

DETAILED PROPOSAL: The changes to the above procedures set ring brackets to 5,5,5 on the job deck and .absin segments created by the GCOS DAEMON.

Multics Change Request

|                        |         |            |
|------------------------|---------|------------|
| TITLE: Fix bug in stu_ | STATUS  | DATE       |
| AUTHOR: Jeff Broughton | Written | 03/18/75   |
|                        | Status  | A 03/25/75 |
|                        | Expires | 09/25/75   |

|   |                          |                   |  |
|---|--------------------------|-------------------|--|
| -Coded in: <input checked="" type="checkbox"/> PL/I <input type="checkbox"/> ALM <input type="checkbox"/> other-<br>explain in DETAILED PROPOSAL<br>-Planned for System MR _____<br>-Fixes Bug Number(s) _____<br>-Documented in MTB _____<br>-User/Operations-visible<br>Interface change? <input type="checkbox"/> yes <input checked="" type="checkbox"/> no<br>-Incompatible change? <input type="checkbox"/> yes <input checked="" type="checkbox"/> no<br>-Performance: <input type="checkbox"/> Better <input checked="" type="checkbox"/> Same<br><input type="checkbox"/> Worse<br>-Replaces MCR _____ | Category (Check One)     |                   | DOCUMENTATION CHANGES<br>Document Specify One or More<br>MPM (Vol, Sect.)<br>PLMS (AN #)<br>MOSN (Sect.)<br>MPAM (Sect.)<br>MSAM (Sect.)<br>Info Segs<br>Other (Name)<br>None (Reason) Documentation correct |
|   | <input type="checkbox"/> | Lib. Maint. Tools |  |
|   | <input type="checkbox"/> | Sys. Anal. Tools  |  |
|   | <input type="checkbox"/> | Sys. Prog. Tools  |  |
|   | <input type="checkbox"/> | 355               |  |
|   | <input type="checkbox"/> | BOS               |  |
|   | <input type="checkbox"/> | Salvager          |  |
|   | <input type="checkbox"/> | Ring Zero         |  |
|   | <input type="checkbox"/> | Ring One          |  |
|   | <input type="checkbox"/> | SysDaemon/Admin.  |  |
| <input checked="" type="checkbox"/>   | Runtime                  |                   |  |
| <input type="checkbox"/>  | User Cmmnd/Subr.         |                   |  |

Objections/Comments:

Use these headings: SUMMARY, REASONS, IMPLICATIONS, DETAILED PROPOSAL (Optional)

SUMMARY:

Modify stu\_ to return a pointer to the length word as the address of a varying string in all cases.

REASONS:

Fix a bug, common to probe, debug, and PL/I get and put data statements, wherein variables that are parameter, non-member, varying strings are not accessed correctly. The problem is that for variables of this class and type, stu\_ will return a pointer to the string part as the address. In all other cases, a pointer to the length word is returned. Changing stu\_ will deal with the culprit directly and avoid compensating for the bug in several other locations.

IMPLICATIONS:

Debug has been modified to special case variables of this type. This modification would have to be removed.

Multics Change Request

|   |  |                       |                     |
|---|--|-----------------------|---------------------|
| TITLE: Fix bug in record_stream_  |  | STATUS                | DATE                |
| AUTHOR: M. Asherman   |  | Written               | 03/20/75            |
| <input checked="" type="checkbox"/> Coded in: <input checked="" type="checkbox"/> XPL/I <input type="checkbox"/> ALM <input type="checkbox"/> other-<br>explain in DETAILED PROPOSAL<br><input type="checkbox"/> Planned for System MR<br><input type="checkbox"/> Fixes Bug Number(s) unreported<br><input type="checkbox"/> Documented in MTB<br><input type="checkbox"/> User/Operations-visible<br>Interface change? <input type="checkbox"/> yes <input checked="" type="checkbox"/> no<br><input type="checkbox"/> Incompatible change? <input type="checkbox"/> yes <input checked="" type="checkbox"/> no<br>Performance: <input type="checkbox"/> Better <input checked="" type="checkbox"/> Same<br><input type="checkbox"/> Worse<br><input type="checkbox"/> Replaces MCR |  | Status                | A 03/25/75          |
|   |  | Expires               | 09/25/75            |
|   |  | DOCUMENTATION CHANGES |                     |
| Category (Check One)<br><input type="checkbox"/> Lib. Maint. Tools<br><input type="checkbox"/> Sys. Anal. Tools<br><input type="checkbox"/> Sys. Prog. Tools<br><input type="checkbox"/> 355<br><input type="checkbox"/> BOS<br><input type="checkbox"/> Salvager<br><input type="checkbox"/> Ring Zero<br><input type="checkbox"/> Ring One<br><input type="checkbox"/> SysDaemon/Admin.<br><input type="checkbox"/> Runtime<br><input checked="" type="checkbox"/> User Cmnd/Subr.  |  | Document              | Specify One or More |
| Objections/Comments:  |  | MPM (Vol, Sect.)      |                     |
|   |  | PLMS (AN #)           |                     |
|   |  | MOSN (Sect.)          |                     |
|   |  | MPAM (Sect.)          |                     |
|   |  | MSAM (Sect.)          |                     |
|   |  | Info Segs             | record stream .info |
|   |  | Other (Name)          |                     |
|   |  | None (Reason)         |                     |

Use these headings: SUMMARY, REASONS, IMPLICATIONS, DETAILED PROPOSAL (Optional)

SUMMARY: Fix record\_stream\_ bug preventing use of this module with already-opened switches e.g. user\_i/o.



Multiple Change Request

|   |                      |                                 |                       |                     |
|---|----------------------|---------------------------------|-----------------------|---------------------|
| TITLE: Fix bug in find_common_acl_names_  |                      | STATUS                          | DATE                  |                     |
| AUTHOR: Steve Herbst  |                      | Written                         | 03-18-75              |                     |
| -Coded in: <input checked="" type="checkbox"/> PL/I <input type="checkbox"/> ALM <input type="checkbox"/> other-<br>explain in DETAILED PROPOSAL<br>-Planned for System MR _____<br>-Fixes Bug Number(s) _____<br>-Documented in MTB _____<br>-User/Operations-visible<br>Interface change? <input type="checkbox"/> yes <input checked="" type="checkbox"/> no<br>-Incompatible change? <input type="checkbox"/> yes <input checked="" type="checkbox"/> no<br>-Performance: <input type="checkbox"/> Better <input checked="" type="checkbox"/> Same<br><input type="checkbox"/> Worse<br>-Replaces MCR _____ | Category (Check One) |                                 | Status                |                     |
|   | Lib. Maint. Tools    |                                 | Expires               |                     |
|   | Sys. Anal. Tools     |                                 | DOCUMENTATION CHANGES |                     |
|   | Sys. Prog. Tools     |                                 | Document              | Specify One or More |
|   | 355                  |                                 | MPM (Vol, Sect.)      |                     |
|   | BOS                  |                                 | PLMS (AN #)           |                     |
|   | Salvager             |                                 | MOSN (Sect.)          |                     |
|   | Ring Zero            |                                 | MPAM (Sect.)          |                     |
|   | Ring One             |                                 | MSAM (Sect.)          |                     |
|   | SysDaemon/Admin.     |                                 | Info Segs             |                     |
| Runtime   |                      | Other (Name)                    |                       |                     |
| <input checked="" type="checkbox"/> User Cmd/Subr.  |                      | None (Reason) compatible change |                       |                     |
| Objections/Comments:  |                      |                                 |                       |                     |

Use these headings: SUMMARY, REASONS, IMPLICATIONS, DETAILED PROPOSAL (Optional)

SUMMARY:

Fix bug causing find\_common\_acl\_names\_ to match incorrectly a name containing no periods.

REASONS:

Matching the name A when A.\*.\* appears on the ACL results in no match. The first component of the name to be matched is incorrectly set to A.\*.\* instead of A.

Multics Change Request

|   |  |   |            |                  |                     |
|---|--|---|------------|------------------|---------------------|
| TITLE: change dprint total line   |  | STATUS  | DATE       |                  |                     |
| AUTHOR: Steve Herbst  |  | Written   | 3-14-75    |                  |                     |
| <input checked="" type="checkbox"/> Coded in PL/I <input type="checkbox"/> ALM <input type="checkbox"/> other-<br>explain in DETAILED PROPOSAL<br><input type="checkbox"/> Planned for System MR<br><input type="checkbox"/> Fixes Bug Number(s) _____<br><input type="checkbox"/> Documented in MTB _____<br><input type="checkbox"/> User/Operations-visible<br>Interface change? <input checked="" type="checkbox"/> yes <input type="checkbox"/> no<br><input type="checkbox"/> Incompatible change? <input type="checkbox"/> yes <input checked="" type="checkbox"/> no<br><input type="checkbox"/> Performance: <input type="checkbox"/> Better <input checked="" type="checkbox"/> Same<br><input type="checkbox"/> Worse<br><input type="checkbox"/> Replaces MCR _____ |  | Status  | A 03/25/75 |                  |                     |
|   |  | Expires   | 09/25/75   |                  |                     |
|   |  | DOCUMENTATION CHANGES                               |            | Document         | Specify One or More |
|   |  | Category (Check One)                                |            | MPM (Vol, Sect.) |                     |
|   |  | Lib. Maint. Tools                                   |            |                  |                     |
|   |  | Sys. Anal. Tools                                    |            |                  |                     |
|   |  | Sys. Prog. Tools                                    |            |                  |                     |
|   |  | 355   |            |                  |                     |
|   |  | BOS   |            |                  |                     |
|   |  | Salvager  |            |                  |                     |
|   |  | Ring Zero   |            |                  |                     |
|   |  | Ring One  |            |                  |                     |
|   |  | SysDaemon/Admin.                                    |            |                  |                     |
|   |  | Runtime   |            |                  |                     |
|   |  | <input checked="" type="checkbox"/> User Cmmd/Subr. |            |                  |                     |
| Objections/Comments:  |  | Info Segs   |            |                  |                     |
|   |  | Other (Name)  |            |                  |                     |
|   |  | None (Reason) No MPM change                         |            |                  |                     |

Use these headings: SUMMARY, REASONS, IMPLICATIONS, DETAILED PROPOSAL (Optional)

SUMMARY:

Make the dprint command print correct totals when there is more than one device class (request type) or queue specified on a line and at least one request is queued.

REASON:

When dprint is asked to enter requests in several queues, the total line says:

i requests signalled, j already queued

where i is the total number of requests signalled by the command line and j is the number of requests in the last queue only.

DETAILED PROPOSAL:

Print a total line for each queue in which a request is entered. If there is more than one, each total line includes a device class (request type) and queue number. Print totals at the end unless user specifies -brief somewhere in the line. This change does not affect a line containing no pathnames. That case will operate as it does today, printing totals for the last queue specified.

Multic Change Request

|  |                          |                             |                       |                     |
|--|--------------------------|-----------------------------|-----------------------|---------------------|
| TITLE: Make dprint test for zero length segment or MSF   |                          | STATUS                      | DATE                  |                     |
| AUTHOR: S. Herbst  |                          | Written                     | 3/19/75               |                     |
| <input checked="" type="checkbox"/> PL/I <input type="checkbox"/> ALM <input type="checkbox"/> other-<br>explain in DETAILED PROPOSAL<br>-Planned for System MR _____<br>-Fixes Bug Number(s) _____<br>-Documented in MTB _____<br>-User/Operations-visible<br>Interface change? <input checked="" type="checkbox"/> yes <input type="checkbox"/> no<br>-Incompatible change? <input type="checkbox"/> yes <input checked="" type="checkbox"/> no<br>-Performance: <input type="checkbox"/> Better <input checked="" type="checkbox"/> Same<br><input type="checkbox"/> Worse<br>-Replaces MCR _____ | Category (Check One)     |                             | Expires               |                     |
|  | <input type="checkbox"/> | Lib. Maint. Tools           |                       | A 03/25/75          |
|  | <input type="checkbox"/> | Sys. Anal. Tools            | 09/25/75              |                     |
|  | <input type="checkbox"/> | Sys. Prog. Tools            | DOCUMENTATION CHANGES |                     |
|  | <input type="checkbox"/> | 355                         | Document              | Specify One or More |
|  | <input type="checkbox"/> | BOS                         | MPM (Vol, Sect.)      |                     |
|  | <input type="checkbox"/> | Salvager                    | PLMS (AN #)           |                     |
|  | <input type="checkbox"/> | Ring Zero                   | MOSN (Sect.)          |                     |
|  | <input type="checkbox"/> | Ring One                    | MPAM (Sect.)          |                     |
|  | <input type="checkbox"/> | SysDaemon/Admin.            | MSAM (Sect.)          |                     |
| <input type="checkbox"/>   | Runtime                  | Info Segs                   |                       |                     |
| <input checked="" type="checkbox"/>  | User Cmmd/Subr.          | Other (Name)                |                       |                     |
| <input type="checkbox"/>   |                          | None (Reason) not mentioned |                       |                     |
| Objections/Comments:   |                          |                             |                       |                     |

Use these headings: SUMMARY, REASONS, IMPLICATIONS, DETAILED PROPOSAL (Optional)

SUMMARY: Make dprint query (as when entry not found) when asked to dprint a zero length segment or MSF.

REASONS: It is better to be told at command time than to receive an error message as your printed output.