TO;   Distribution

FROM: Joan Archer Scott

DATE: 26 September 75

RE: Multics Change Requests

Enclosed are copies of Multics Change Requests which
were approved from 16 July through 31 July 75.

Ver. 3 741022	MULTICS CHANGE REQUEST	MCR 1339

	STATUS	DATE
TITLE: Change format of linkage section header	Written	08/06/75
	Status	03/20/75
AUTHOR: Steve Webber	Expires	02/06/76

Planned for System: MR 3.1
Fixes Bug Number(s): not applicable
Documented in MTB: not applicable
Incompatible Change: yes
User/Operations-visible Interface Change: yes
Coded in: (X)PL/I (X)ALM ( )other-see below
Performance: (X)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
(X)User Command/Subr

DOCUMENTATION CHANGES (specify one or more)

MPM (vol,sect) SWG	MPAM (sect)
MOSN (sect)	MSAM (sect)
PLMs (AN#)	
Info Segs yes	
Other	

OBJECTIONS/COMMENTS:

Pending changes for 3.0

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

SUMMARY:

Change the format of the linkage section header to include more
information.

REASONS:

The linker can be made to run simpler and faster if it can remember
information which it needs in the linkage section header.

IMPLICATIONS:

This is an incompatible change that users will have to be told of in
advance. However, the only user interface change that will be visible is in
unsnapping links. The information needed to handle this feature is
reformatted.

DETAILED PROPOSAL:

The format of the linkage section header (after being initialized by the
linker) is proposed to be as follows:

```
    dcl 1 ls_header aligned based,
        2 def_ptr ptr,
*       2 symbol_ptr ptr unal,
*       2 original_linkage_ptr ptr unal,
*       2 unused bit (72),
        2 first_link bit (18) unal,
        2 linkage_section_length bit (18) unal,
        2 text_segno bit (18) unal,
*       2 static_length bit (18) unal;
```

The starred items differ from the old declaration. The use of this format
will make the following assumptions:

1. The capability for threaded linkage blocks is being removed. The only
    uses of this in the past were with the bind_archive command (long
    obsolete) and multiple definition sections implemented as multiple
    linkage sections with defs-in-link for the last N-1 sections.

2. The compatibility requirement used to determine which version of
    linkage section header is being used is the zeroness of the "unused"
    field. Previously, this was the original linkage section pointer and
    was guaranteed nonzero.

        Note that the only reason the nxt_blk_ptr was needed was to add a
definition to a segment which had its original defs in the text section.
The new list of definitions, allocated in a second linkage block, was found
by threading this new linkage block with the original linkage block. No
translators seem to need this generality and there seems to be no reason
the system should be cluttered with it.

        The programs which currently (should) include the linkdcl include file
and are affected by this change are:

        interpret_link_
        get_defptr
        link_unsnap_
        link_snap
        datmk_util_

Of these, link_unsnap_ and interpret_link_ are in the user ring. They can
be changed to work with either format linkage header. When the hardcore
changes are made, they can be changed to expect only the new format.

        The addition of the symbol_ptr item to the linkage section header is
the first step in eliminating fs_search$get_rel_segment from the system.
The last step will require changes to system generation and initialization.

```
help -pn >udd>m>w>rf-dir>linker_changes
(32 lines in segment.)
8/6/75
```

Two changes are being made to the linker and its environment. These are

1. The capability for threaded linkage section blocks is being removed, and

2. The location of the original linkage section pointer is being moved.

The threaded linkage blocks were used by the bind_archive command which,
although obsolete for a long time, will now no longer be supported at all.
The other use of threaded linkage blocks was with multiple definition sections
associated with a single text section. This was possible when a segment with
defs in text had a new definition added to it. The new definition was added
to a new linkage block (defs in link for this block) which was threaded to
the original linkage block.

The new format linkage header is described below. This header does
not contain the block thread but does contain a new item, a pointer to
the symbol section for the segment (used in handling *symbol links). The
original linkage pointer was moved and made packed to conserve space in the linkag
header.

```
dcl 1 header aligned based,
    2 def_ptr ptr,
    2 symbol_ptr ptr unal,
    2 original_linkage_ptr ptr unal,
    2 unused bit (72),
    2 first_link bit (18) unal,
    2 linkage_section_length bit (18) unal,
    2 text_segment_number bit (18) unal,
    2 static_length bit (18) unal;
```

Ver. 3 741022	MULTICS CHANGE REQUEST	MCR____1340_____

TITLE: Retriever Changes	STATUS	DATE
	Written	08/07/75
AUTHOR: A. Kobziar	Status	A 08/80/75
	Expires	02/12/76

Planned for System: not applicable	
Fixes Bug Number(s): unreported	**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: ( )better ( )same (X)worse	( )BOS
Replaces MCR: 829	( )Salvager
DOCUMENTATION CHANGES (specify one or more)	( )Ring Zero
MPM (vol,sect) MPAM (sect)	(X)Ring One
MOSM (sect) MSAM (sect)	( )SysDaemon/Admin
PLMs (AN#) G1	( )Runtime
Info Segs	( )User Command/Subr
Other	

OBJECTIONS/COMMENTS:

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

SUMMARY:

In order to allow the reloader/retriever to work with AI rules, **the placement
of an artificial quota of 1** when creating upgraded directories was
provided because the backup record which creates the directory can not
contain the quota value. (The subsequent list dir record contains the
quota, but there is no guarantee that it will be processed.) Change this
mechanism to one which creates upgraded directories security out-of-service
and no quota rather than award the 1 page.

REASONS:

Retrievals of upgraded directories today must be issued with the -quota
option; otherwise only one segment page will be retrieved before a
record_quota_overflow condition occurs. Unfortunately, retrievals with the
-quota option allow users to cheat the quota mechanism.

DETAILED PROPOSAL:

Change the (privileged) append function to create security out-of-service
upgraded directories rather than award artificial quota. Change the
reloader/retriever to turn off security out-of-service whenever quota is
restored on upgraded directories (by calling
system_privilege_$access_class_check).

IMPLICATIONS:

Retrievals will now work correctly in all cases without the quota option.
Any process with privilege can move quota down to the upgraded directory

and place it back into service. Retrievals and reloads will have one more
call in the handling of upgraded directories, something that should be
negligible.

Multics Change Request

TITLE: Fix latest restart_fault bugs

AUTHOR: B. Greenberg

STATUS	DATE
Written	08/12/75
Status	A 08/20/75
Expires	02/20/76

-Coded in: ☐ PL/I ☒ ALM ☐ other-
 explain in DETAILED PROPOSAL
-Planned for System MR asap
-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)

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

DOCUMENTATION CHANGES

Document	Specify One or More
MPM (Vol, Sect.)	
PLMS (AN #)	60
MOSN (Sect.)	
MPAM (Sect.)	
MSAM (Sect.)	
Info Segs	
Other (Name)	
None (Reason)	

Objections/Comments:

Use these headings: Summary of Proposal, Reasons for Proposal, Implications, Detailed Proposal.

SUMMARY: Some security bugs have cropped up in the new restart_fault-signaller mechanism, allowing restart of bad machine conditions in certain cases, and overrunning the PDS with SCU data in certain other cases.

Fix these problems.

REASONS: These are security holes.

IMPLICATIONS: Security. The new restart-fault mechanism, when debugged, is much safer than the old. The initial flurry of bugs currently being experienced is expectable, and should not be taken as a certifiability problem of the new mechanism.

One implication of the proposed solution is a limit on the number of saved sets of SCU-SPL data saved at any one time in a process. To insure adequate room in the PDS for ring zero processing, no more than 350 sets of unstarted, unreleased sets of SCU-SPL data will be allowed. The 351st SCU-SPL set will not be saved, and attempt to restart this data will be signalled as illegal_return.

It is felt that it is virtually impossible to accumulate that much unstarted, unreleased SCU-LPL data in a process unless a deliberate attempt is made to circumvent the normal cleanup mechanism.

DETAILED PROPOSAL: See above.

TITLE: Repair occasional bound fault bug in page_trace	STATUS	DATE
AUTHOR: J. Gintell	Written	08.08.75
	Status	A 08/20/75
	Expires	02/20/76

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

Category (Check One)

	Category
	Lib. Maint. Tools
	Sys. Anal. Tools
	Sys. Prog. Tools
	355
	BOS
	Salvager
	Ring Zero
	Ring One
	SysDaemon/Admin.
	Runtime
X	User Cmnd/Subr.

DOCUMENTATION CHANGES

Document	Specify One or More
MPM (Vol, Sect.)	
PLMS (AN #)	
MOSN (Sect.)	
MPAM (Sect.)	
MSAM (Sect.)	
Info Segs	
Other (Name)	
None (Reason)	No change

Objections/Comments:

Use these headings: Summary of Proposal, Reasons for Proposal, Implications,
Detailed Proposal.

SUMMARY:

Fix call to internal procedure of page_trace to have
correct number of arguments.

MCR 1343
Page 1 of 1

Multics Change Request

TITLE: Fix read status order in message coordinator	STATUS	DATE	
AUTHOR: Jerold C. Whitmore	Written	8/8/75	

-Coded in: ☒PL/I ☐ALM ☐other-
 explain in DETAILED PROPOSAL
-Planned for System MR 3.0
-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)		Status	A 08/20/75
	Lib. Maint. Tools	Expires	02/20/76
	Sys. Anal. Tools	DOCUMENTATION CHANGES	
	Sys. Prog. Tools		
	355	Document	Specify One or More
	BOS		
	Salvager	MPM (Vol, Sect.)	
	Ring Zero	PLMS (AN #)	
	Ring One		
x	SysDaemon/Admin.	MOSN (Sect.)	
	Runtime	MPAM (Sect.)	
	User Cmmd/Subr.		
		MSAM (Sect.)	

Objections/Comments:	Info Segs	
	Other (Name)	
	None (Reason)	x

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

SUMMARY: Change mrd_util_$read_status to return a valid
             event channel for every call.

Reasons: The event channel is currently set to zero if
          there is input ready. This is contrary to the
          definition of the read_status order call.

Implications: The new IO daemon will no longer get a
               fatal error when an operator types a bad command.

TITLE:	Update the broadcaster_ dim to v2pl1	STATUS	DATE
AUTHOR: Jerold C. Whitmore		Written	8/8/75

-Coded in: [X] 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 [X] no
-Incompatible change? [ ] yes [X] no
-Performance: [ ] Better [ ] Same
 [ ] Worse
-Replaces MCR _____

| Status | A 08/20/75 |
| Expires | 02/20/76 |

DOCUMENTATION CHANGES

Category (Check One)

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

Document	Specify One or More
MPM (Vol, Sect.)	
PLMS (AN #)	
MOSN (Sect.)	
MPAM (Sect.)	
MSAM (Sect.)	
Info Segs	
Other (Name)	
None (Reason)	x

Objections/Comments:

Use these headings: **Summary of Proposal, Reasons for Proposal, Implications, Detailed Proposal.**

Summary: Update broadcaster_.pl1 to compile and function with the installed version of the pl1 compiler.

Reasons: The current version uses the old style null pointer comparison and thus will get a fault during attachment with the new ios writearound procedure. Some variable precisions must be changed to allow broadcast_ to compile correctly with the installed compiler.

Multics Change Request

TITLE: Fix Core accounting in pc_abs

AUTHOR: B. Greenberg

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

Category (Check One)	
	Lib. Maint. Tools
	Sys. Anal. Tools
	Sys. Prog. Tools
	355
	BOS
	Salvager
x	Ring Zero
	Ring One
	SysDaemon/Admin.
	Runtime
	User Cmnd/Subr.

STATUS	DATE	
Written	8/12/75	
Status	A 08/20/75	
Expires	02/20/76	

DOCUMENTATION CHANGES

Document	Specify One or More
MPM (Vol, Sect.)	
PLMS (AN #)	60, 71
MOSN (Sect.)	
MPAM (Sect.)	
MSAM (Sect.)	
Info Segs	
Other (Name)	
None (Reason)	

Objections/Comments:

Use these headings: Summary of Proposal, Reasons for Proposal, Implications, Detailed Proposal.

SUMMARY: Fix pc_abs to decrement sst.nused when deleting main memory.

REASONS: Recent version does not do so, constituting a bug. Effect is to cause bad eligibility computation, i.e., overcommitting main memory.

IMPLICATIONS: Better performance.

DETAILED PROPOSAL: Fix pc_abs to decrement sst.nused.

TITLE: Change initialize_peek_limits error reporting

AUTHOR: B. Greenberg.

STATUS	DATE
Written	8/12/75
Status	A 08/20/75
Expires	02/20/76

-Coded in: ☒PL/I ☐AIM ☐other- explain in DETAILED PROPOSAL
-Planned for System MR _____ asap
-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)	
	Lib. Maint. Tools
	Sys. Anal. Tools
	Sys. Prog. Tools
	355
	BOS
	Salvager
	Ring Zero
	Ring One
x	SysDaemon/Admin.
	Runtime
	User Cmmd/Subr.

DOCUMENTATION CHANGES

Document	Specify One or More
MPM (Vol, Sect.)	
PLMS (AN #)	
MOSN (Sect.)	
MPAM (Sect.)	
MSAM (Sect.)	
Info Segs	
Other (Name)	
None (Reason)	

Objections/Comments:

Use these headings: Summary of Proposal, Reasons for Proposal, Implications, Detailed Proposal.

SUMMARY: initialize_peek_limits, the program which interprets the ASCII data base ring_zero_meter_limits_ASCII_, and produces a binary version of the same, fails totally if any segment specified in the former does not exist, and prints out the uninformative and useless message "Syntax error in ASCII segment", which is also incorrect.

Change initialize_peek_limits to report explicitly if a specified segment does not exist, and to keep on going in this case.

REASONS: When initialize_peek_limits gives up, the entire conversion is aborted, and a previous, and probably incorrect version of the converted table is used. The error message also gives no clue to the nature of the problem.

IMPLICATIONS: Running a Multics will be simplified ever so slightly.

DETAILED PROPOSAL: See above.

Ver. 3 741022	MULTICS CHANGE REQUEST	MCR____1348_____

TITLE: Change method of virtual CPU time measurement AUTHOR: Steve Webber	STATUS	DATE
	Written	08/12/75
	Status	A 08/20/75
	Expires	02/12/76

Planned for System: not applicable
Fixes Bug Number(s):   not applicable
Documented in MTB: not applicable
Incompatible Change: no
User/Operations-visible Interface Change: yes
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#)   60
Info Segs
Other

OBJECTIONS/COMMENTS:

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

SUMMARY:

Change the method of calculating virtual CPU time to correct for double
metering and to include segment fault processing time in the virtual
overhead.

REASONS:

Fixes inconsistencies, anomolies, and inequities in the current scheme.

IMPLICATIONS:

The charges for certain tasks will change. Since segment fault overhead
will no longer be charged to the users, user's charges will be slightly
less. However, since double metering bugs are being fixed, less time will
be included in the virtual overhead thereby making some charges slightly
higher. It is unclear how the balance will work out except that the charges
will rarely change by more than a percent or two. At any rate, the charges
will be more equitable.

· DETAILED PROPOSAL:

Keep a variable in the pds which indicates, if nonzero, that the process is
in the midst of a task which should be charged to overhead and not the
user. Increment this variable upon entering any overhead task, decrement it
on completion of an overhead task and charge the time to the overhead pool
only in the variable reaches 0, i.e. no recursive tasks are still active.

Any overhead task which does not complete normally (record quota overflow,
segment fault error, etc) will not be charged to the overhead pool, but
rather to the user.

Upon exit from ring 0, for whatever reason, the pds variable must be made
zero.

TITLE: Install metering tools for priority scheduler		STATUS	DATE	
AUTHOR: R. Mullen SHW		Written	08.12.75	

-Coded in: [X]PL/I [ ]ALM [ ]other- explain in DETAILED PROPOSAL	Category (Check One)	STATUS	Pos/2ohs A 08/26/75
		Expires	02/26/76
	Lib. Maint. Tools		
-Planned for System MR 3.0	X Sys. Anal. Tools	DOCUMENTATION CHANGES	
-Fixes Bug Number(s) _____	Sys. Prog. Tools		
-Documented in MTB _____	355	Document	Specify One or More
-User/Operations-visible Interface change? [x] yes [ ] no	BOS		
	Salvager	MPM (Vol, Sect.)	
-Incompatible change? [ ] yes [X] no	Ring Zero	PLMS (AN #) 53	
-Performance: [ ] Better [X] Same [ ] Worse	Ring One		
	SysDaemon/Admin.	MOSN (Sect.)	
-Replaces MCR _____	Runtime	MPAM (Sect.)	
	User Cmnd/Subr.		
		MSAM (Sect.)	

Objections/Comments:	Info Segs
	Other (Name)
	None (Reason)

Use these headings: Summary of Proposal, Reasons for Proposal, Implications,
                       Detailed Proposal.

SUMMARY:

Add or revise metering tools related to priority
scheduler, and tools to set and define work
classes.

REASONS:

1.   provide new information

2.   fix bugs

3.   remove redundant information

IMPLICATIONS:

Metering scripts may need to use "print_tuning_parameters"
rather than relying on tcm to print tuning parameters.

DETAILED PROPOSAL:

See attached pages.

traffic_control_queue:tcq:

- will print new per-workclass queues.
- will print info about blocked processes if given "-all" arg.
- will print work_class number of each process.
- will print per process delta_cpu and delta_page_faults
  (since last use of tcq) rather than total_cpu and delta_cpu.

    The first time it is invoked it will print total_cpu and
    total_pagefaults per process.

traffic_control_meters:tcm:

- will no longer print any tuning parameters as PTP already
  prints them and more.
- will no longer print idle meters as they are printed by
  total_time_meters (ttm).
- will print response time as seen by processes which have
  received interactive wakeups.
- will print interaction meters and ratios. It is assumed
  that any process which has scheduling parameters = zero
  when made eligible, has interacted. Currently this includes
  tape and printer interactions as well as those resulting
  from tty interactions.

work_class_meters:wcm:

    This metering tool is new. It prints on a per-workclass basis
    the percent cpu allotted, percent cpu received, and the percent
    of eligibilities received.

gen_tcd_card:gtc:

- This command must be modified because the size of the
  header of tc_data has changed.
- gtc will also print the number of words of wired storage
  wasted, if any, by the proposed tcd card.

set_work_class:swc:

New command, requiring hphcs_ access. This command will
set the work class of processes matching a given processid
or matching a given Person.Project.tag.

Usage:

        swc   wc_num   id

if id is not given it will set the work class of the user
of the command. else if id is octal it will assume id is
a processid. else it will assume id is a Person.Project.tag.

define_work_classes:dwc:

New command, requiring hphcs_ access.

This command will define and set the percentages allotted to
the various work classes.

Usage:

        dwc   p1   p2   p3   ....pn

where the ith argument is the percent to be allotted to the ith
work class. It will not undefine any work class defined in the
MGT.

```
----------------------------------------------------------------------
I Ver. 3                                             I                  I
I 741022            MULTICS CHANGE REQUEST           I  MCR____1349____ I
I_____I_____I
I TITLE:  change print_sample_refs to use new       I_STATUS__I_DATE____I
I         object_info_  and iox_                     I_Written_I_08/18/75_I
I AUTHOR: Ross E. Klinger                            I_Status__IA08/26/75T
I_____I_Expires_I_02/18/76_I
I Planned for  System:   not applicable             I                  I
I Fixes Bug Number(s):   not applicable             I_CATEGORY_(check_one)I
I Documented  in  MTB:   not applicable             I( )Lib. Maint. Tools I
I Incompatible Change:   no                         I( )Sys. Anal. Tools  I
I User/Operations-visible Interface Change:  no     I(B)Sys. Prog. Tools  I
I Coded in: (B)PL/I ( )ALM ( )other-see below       I( )355               I
I Performance: ( )better (B)same ( )worse           I( )BOS              I
I_____I( )Salvager         I
I_DOCUMENTATION_CHANGES_(specify_one_or_more)_____I( )Ring Zero        I
I MPM (vol,sect)          MPAM (sect)               I( )Ring One         I
I MOSN (sect)             MSAM (sect)               I( )SysDaemon/Admin  I
I PLMs (AN#)                                         I( )Runtime          I
I Info Segs                                          I( )User Command/Subr I
I Other                                              I                  I
I_None_(reason)__no_user_change_____I_____I
I OBJECTIONS/COMMENTS:                               I                  I
I                                                    I                  I
I                                                    I                  I
I_____I_____I
```

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

SUMMARY: change declarations to use the new object_info_ format; change
from ios_ to iox_.

REASONS: all system procedures are being changed to use the new
object_info_ format; all system procedures are being changed to use iox_
whenever possible.

IMPLICATIONS: increased consistency.

Ver. 3		
741022	MULTICS CHANGE REQUEST	MCR____1350____

TITLE: Emergency fixes to tape_ansi_	STATUS | DATE
	Written | 08/07/75
AUTHOR: Ross E. Klinger	Status A 08/26/75
	Expires | 02/07/76

Planned for System: not applicable	
Fixes Bug Number(s): unreported	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: (■)PL/I ( )ALM ( )other-see below	( )355
Performance: ( )better (■)same ( )worse	( )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#) 57	( )Runtime
Info Segs	(■)User Command/Subr
Other	

OBJECTIONS/COMMENTS:

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

SUMMARY: these changes were installed on an emergency basis in 26.0 --

1) fix bug causing control segment to be terminated without invalidating
pointer to segment.

2) eliminate dubious series of calls which strained new tdcm_ emulation
ability.

REASONS:

1) the SSS installation of the I/O module contained a bug which resulted in
segment fault when a particular series of operations caused the control
segment to be terminated without nulling a pointer.

2) the installation of tdcm_ in 25.10 was unable to handle an admittedly
bizarre sequence of calls, resulting in a segment fault, as opposed to the
error code which the old tdcm_ returned.

IMPLICATIONS:

     I/O module works, and in addition, we found an unreported (different)
bug in tdcm_.

Ver. 3 741022	MULTICS CHANGE REQUEST	MCR 1351

		STATUS	DATE
TITLE: Fix unreported bug in tape_ansl_		Written	08/14/75
AUTHOR: Ross E. Klinger		Status	A 08/26/75
		Expires	02/14/76

		CATEGORY (check one)
Planned for System: not applicable		
Fixes Bug Number(s): unreported		( )Lib. Maint. Tools
Documented in MTB: not applicable		( )Sys. Anal. Tools
Incompatible Change: no		( )Sys. Prog. Tools
User/Operations-visible Interface Change: no		( )355
Coded in: (■)PL/I ( )ALM ( )other-see below		( )BOS
Performance: ( )better (■)same ( )worse		( )Salvager

DOCUMENTATION CHANGES (specify one or more)

MPM (vol,sect)	MPAM (sect)	( )Ring Zero
MOSN (sect)	MSAM (sect)	( )Ring One
PLMs (AN#) 57		( )SysDaemon/Admin
Info Segs		( )Runtime
Other		(■)User Command/Subr

OBJECTIONS/COMMENTS:

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

SUMMARY: A very obscure bug exists in tape_ansl_, such that if a file is
opened for sequential_output in generate or create mode, closed without
performing any data I/O operations, and the header label group's tape mark
is written over the end of tape reflective strip, the I/O switch is not
closed.

REASONS: correct performance

IMPLICATIONS: none

```
I Ver. 3                                          I                            I
I 741022            MULTICS CHANGE REQUEST        I    MCR____1352_____      I
I_____    I_____I
I TITLE:  Miscellaneous Answering Service         I STATUS  I DATE             I
I         Improvements                            I Written I 08/17/75         I
I AUTHOR: VanVleck                                I Status  I A 08/26/75       I
I_____    I Expires I 02/17/76         I
I Planned for  System:   not applicable           I_____I
I Fixes Bug Number(s):   not applicable           I CATEGORY (check one)       I
I Documented in MTB:     not applicable           I( )Lib. Maint. Tools        I
I Incompatible Change:   no                        I( )Sys. Anal. Tools         I
I User/Operations-visible Interface Change:  no    I( )Sys. Prog. Tools         I
I Coded in: (B)PL/I ( )ALM ( )other-see below      I( )355                      I
I Performance: ( )better (B)same ( )worse          I( )BOS                      I
I_____    I( )Salvager                 I
I DOCUMENTATION CHANGES (specify one or more)      I( )Ring Zero                I
I MPM (vol,sect)          MPAM (sect)              I( )Ring One                 I
I MOSN (sect)             MSAM (sect)              I( )SysDaemon/Admin          I
I PLMS (AN#)     AN66                              I( )Runtime                  I
I Info Segs                                        I( )User Command/Subr        I
I Other                                            I(B)admin                    I
I_____    I_____I
I OBJECTIONS/COMMENTS:                                                         I
I                                                                              I
I                                                                              I
I_____I
```

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

SUMMARY: Add several new features to the answering service.

   1. If no arguments are given to login, enter, etc., prompt for them.

   2. Add a new prelogin request "hello" which will cause the greeting
      message to be repeated.

   3. Add a new prelogin request "slave" which will place a terminal in a
      state such that the new I/O Daemon can claim it for use as a control
      terminal.

   4. Do not abort user output for warning messages, bump messages, or
      process termination.

REASONS:

   1. Currently the system asks for a password and then responds with an
      error message. This is foolish.

   2. 2741 terminals may receive a gibberish greeting.

   3. The way the I/O Daemon currently gets this terminal is by noticing
      that it is not currently logged in. There is a race condition here
      which could lead to unpleasant behavior.

4. The output aborting was intended to insure that an ARDS terminal with
   a full screen would not remain hung forever, with no indication to the
   user that he was about to be logged out. The abort call doesn't clear
   this condition; and its use had the unfortunate effect of scrapping
   often interesting user output. It is never crucial that the warning
   message be typed immediately; removing the abort call may dealay it
   for a few seconds. The answering service will continue to abort
   typeahead when a user process terminates, since the new process is
   probably unprepared for the old process's input.

IMPLICATIONS:

Answering service warning messages should really be handled slightly
differently by the hardcore. They should bypass (without resetting) the
end-of-page-wait condition. It is possible that removing the abort calls
might cause a problem with lack of hardcore buffer space. Since the
answering service uses the privileged "write force" operation, and since
warning messages are fairly short, it is hoped that this will never occur.

If it does occur, some users will not get the warning message.

TITLE: Fix bug in resetting a break at an EIS instruction in debug

AUTHOR: Susan Barr

	STATUS	DATE
	Written	8/18/75
	Status	A 08/26/75
	Expires	02 26/76

- Coded in: [X] PL/I [ ] ALM [ ] other-
  explain in DETAILED PROPOSAL
- Planned for System MR _____
- Fixes Bug Number(s) _____
- Documented in MTB _____
- User/Operations-visible
  Interface change? [ ] yes [X] no
- Incompatible change? [ ] yes [X] no
- Performance: [ ] Better [X] 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
X	User Cmnd/Subr.

DOCUMENTATION CHANGES

Document	Specify One or More
MPM (Vol, Sect.)	III Commands
PLMS (AN #)	
MOSN (Sect.)	
MPAM (Sect.)	
MSAM (Sect.)	
Info Segs	
Other (Name)	
None (Reason)	

Objections/Comments:

Use these headings: Summary of Proposal, Reasons for Proposal, Implications, Detailed Proposal.

SUMMARY:

The code used to restart a break at an eis instruction causes the zero and negative indicators to be set. This causes incorrect results if the eis instruction was setting those indicators (for a compare, for example).

PROPOSAL:

The indicators will be saved and then restored. The code used to restart a break is kept in the break map header which is in each object segment that has a break. The header has a version number and extra space for the addition of the instructions to save and restore the indicators. Debug will be modified to convert version 2 break map headers to version 3. Currently these self relative instructions are encoded as bit strings in db_break_map_ and are copied into the break map header. These bit string constants will be removed and the instructions will be assembled into the alm data base db_ext_stat_ so that the code will be less obscure.

IMPLICATIONS:

This change will not be visible to the users.

TITLE: Set version number before calls to object_info_ in debug		STATUS	DATE
AUTHOR: Susan Barr			

		STATUS	DATE
		Written	08/18/75
		Status	A 08/26/75
		Expires	02/26/76

-Coded in: [X] PL/I [ ] ALM [ ] other-
explain in DETAILED PROPOSAL
-Planned for System MR _____
-Fixes Bug Number(s) _____
-Documented in MTB _____
-User/Operations-visible
 Interface change? [ ] yes [x] no
-Incompatible change? [ ] yes [X] no
-Performance: [ ] Better [X] 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	
X	User Cmmd/Subr.

DOCUMENTATION CHANGES

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

Objections/Comments:

Info Segs	
Other (Name)	
None (Reason)	

Use these headings: Summary of Proposal, Reasons for Proposal, Implications,
                       Detailed Proposal.

SUMMARY:

   Fix debug to work with new object_info_ .

REASONS:

   A new object_info_ was installed that returns a different
   info structure if the version number is 2. Debug does not
   set the version number and it occasionally has the value
   of 2 causing debug to use an incorrect pointer to the
   breakmap. This causes breaks to be reset using incorrect
   offsets and legal breaks to be missed.

PROPOSAL:

   Set the version number to 1 before each call to object
   info.

   The modules to be changed:

       db_print.pl1
       db_break_map.pl1

   Note: This has already been submitted as an emergency fix.

TITLE:	Modifying the message segment facility to properly handle large messages	STATUS	DATE
AUTHOR:	Kenneth T. Pogran (MAC/CSR)	Written	08/18/75

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

Category (Check One)		Status	A 08/26/75
	Lib. Maint. Tools	Expires	02/26/76
	Sys. Anal. Tools	DOCUMENTATION CHANGES	
	Sys. Prog. Tools		
	355	Document	Specify One or More
	BOS		
	Salvager	MPM (Vol, Sect.)	
	Ring Zero	PLMS (AN #) 69	
xx	Ring One		
	SysDaemon/Admin.	MOSN (Sect.)	
	Runtime	MPAM (Sect.)	
	User Cmmd/Subr.		
		MSAM (Sect.)	

Objections/Comments:

insure that Version 2 to Version 4 conversion works

Info Segs
Other (Name)
None (Reason)

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

SUMMARY: The message segment facility is modified to properly handle large messages. This entails:

1. Changing all fields which deal with the total length of a message in bits from fixed bin (18) or bit (18) to fixed bin (24).

2. To implement (1) above, going from Version 3 to Version 4 message segments.

3. Writing an ms_convert_v3_ procedure to accomplish (2).

4. Changing the PLM (AN69) to indicate that the message_length argument is fixed bin (24) rather than fixed bin (18).

REASONS: The length of a message in bits is stored internally within the message segment in a packed, bit (18) field. If a message is greater than 7281 words long, its bit length will not fit into an 18-bit field. Thus, a previous change which upped the maximum message size from 2048 words to 255K words did not do the job intended. In fact, it introduced problems, since, if messages longer than 7281 words are placed into a message segment, they cannot be read out, and an attempt to do so will result in the salvaging of the message segment. To properly handle large messages, the bit length of a message should be stored internally as fixed bin (24).

IMPLICATIONS:

1. We will go through the hassle of introducing a new "version" of message segments. The actual change in the content of the message segment will be minuscule of course (unlike the change from Version 2 to Version 3), so the installation should go very smoothly.

2. Large messages (mail) will work properly.

3. The automatic conversion procedure mentioned in S3 and I1 above ensure that existing Version 3 message segments will be upgraded to Version 4 as they are used.

Multics Change Request

TITLE: New ready message procedure

AUTHOR: Kenneth T. Pogran   (MAC/CSR)

	STATUS	DATE
	Written	08/19/75
	Status	A 08/26/75
	Expires	02/26/76

-Coded in: [x] PL/I [ ] AIM [ ] other-
 explain in DETAILED PROPOSAL
-Planned for System MR
-Fixes Bug Number(s)
-Documented in MTB
-User/Operations-visible
 Interface change? [ ] yes [x] no
-Incompatible change? [ ] yes [x] no
-Performance: [x] 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
xx	User Cmmd/Subr.

DOCUMENTATION CHANGES

Document	Specify One or More
MPM (Vol, Sect.)	
PLMS (AN #)	
MOSN (Sect.)	
MPAM (Sect.)	
MSAM (Sect.)	
Info Segs	
Other (Name)	
None (Reason)	No interface change.

Objections/Comments:

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

SUMMARY: A new version of print_ready_message_ is installed. The new version performs
           exactly the same functions as the old version, but replaces the call to ioa_
           to print out the ready message with picture conversions and a call to
           iox_$put_chars.

REASONS: This new version of print_ready_message_ saves two milliseconds per call over
           the old version. My measurements indicate that this is about 25 per cent of
           the actual processing time of the old version (determined by subtracting the
           cost of calling "nothing" from the cost of calling "ready").

IMPLICATIONS:
           With my current implementation there is one visible change in the ready
           message, which I consider to be desirable: The pictures I chose to convert
           the time of day print out all four digits of the time, instead of suppressing
           leading zeros as the current ready message does. Thus, a ready message printed
           at three minutes after midnight will appear with a more conventional-looking
           time of day, thus:

                r 0003 . . .

           instead of the current:

                r 3 . . .

           This, of course, can be easily changed back to the present, confusing
           (in my opinion) form if this minor change is deemed undesirable.

Multics Change Request

TITLE: Impose 7280 word limit on length of messages in message segments

AUTHOR: Kenneth T. Pogran   (MAC/CSR)

STATUS	DATE
Written	08/18/75
Status	A 08/26/75
Expires	02/26/76

-Coded in: ☐ PL/I ☒ ALM ☐ other- explain in DETAILED PROPOSAL

-Planned for System MR _____

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

DOCUMENTATION CHANGES

Document	Specify One or More
MPM (Vol, Sect.)	
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: Impose limit of 7280 words on maximum size of a message placed in a Ring 1 message segment (either queue or mailbox).

REASONS: With MCR 1217, an old limitation of 2048 words on the maximum size of a message in a message segment was removed. As it turns out, the message segment primitives store the length of a message internally in bit (18) or fixed bin (18) fields. A message longer than $2**18$ bits (7281 words) may be added "properly" to a message segment (at least, nothing seems to go wrong), but it cannot be read or deleted, as the message segment facility is tripped up by the folly of its 18-bit arithmetic. A companion MCR proposes that these fixed bin (18) and bit (18) fields be changed to fixed bin (24); meanwhile, as a temporary fix, a practical limit on the size of messages placed in a message segment will be imposed.

IMPLICATIONS:
"Overly long" messages, which now cause the message segment facility to trip over its feet and salvage the message segment when it encounters them, will be prohibited until the message segment facility can be modified to handle them properly.

DETAILED PROPOSAL:
mseg_data_$max_message_size, in bound_mseg_, will be changed from 261120 to 7280.

NOTE: Submitted at MIT as an emergency fix.

TITLE:	Fix bug in GCOS Simulator	STATUS	DATE

AUTHOR: T. Casey

Written	08/19/75
Status	A 08/26/75
Expires	02/26/76

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

Category (Check One)

	Category
	Lib. Maint. Tools
	Sys. Anal. Tools
	Sys. Prog. Tools
	355
	BOS
	Salvager
	Ring Zero
	Ring One
	SysDaemon/Admin.
	Runtime
X	User Cmnd/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)

Use these headings: Summary of Proposal, Reasons for Proposal, Implications,
                       Detailed Proposal.

SUMMARY:

Change the way the GCOS Simulator modifies the machine
conditions when returning to the slave program after a
MME or other fault, to be compatible with the latest
method of verifying changed machine conditions.

REASONS:

Current simulator sometimes fails, attempting to restart
illegal machine conditions.

TITLE:	Fix bug in ed_mgt		STATUS	DATE

AUTHOR: T. Casey

	STATUS	DATE
Written	08/20/75	
Status	A 08/26/75	
Expires	02/26/76	

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

Category (Check One)

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

DOCUMENTATION CHANGES

Document	Specify One or More
MPM (Vol, Sect.)	
PLMS (AN #)	
MOSN (Sect.)	
MPAM (Sect.)	
MSAM (Sect.)	
Info Segs	
Other (Name)	
None (Reason)	

Objections/Comments:

Use these headings: Summary of Proposal, Reasons for Proposal, Implications,
                      Detailed Proposal.

SUMMARY:

A line of code accidentally left out of ed_mgt causes it
to operate continually as if the MGT had just been converted
from version 1 to version 2. The missing line will be added.

REASONS:

The bug causes some inconvenience, forcing the user to do
some additional typing to accomplish certain edit operations.

IMPLICATIONS:

It will operate as designed and documented.