DATE: April 1, 1974
TO: Distribution
FROM: M. S. Hodges
SUBJECT: Multics Change Requests

Attached are copies of all Multics Change Requests which were approved from March 16 through March 31, 1974.

Multics Project internal working documentation. Not to be reproduced or distributed outside the Multics Project.
Title: Make I/O daemon perform deletions after crash

Author: Robert S. Coren

Source: (if external) e.g., "User", "Marketing"

Classification: Incompatible Change
Justification: Marketing Requirement

Objections/Comments:

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

Reasons: Segments printed by I/O daemon whose retention time hasn't expired when system shuts down or crashes aren't deleted.

Summary: Change I/O coordinator so that when it comes up, it deletes any segments left over from previous session.

Detailed Proposal: When coordinator comes up, before accepting wakeups from device drivers, it goes through the list of "saved" requests. For each one, it deletes the file if requested, and then unthreads and frees the request descriptor. The areas for requests and descriptors are not reinitialized until after this has been done.

Implications: 1. All files printed in response to "dprint -dl" commands will actually be deleted.
   2. If the time between shutdown and startup is less than the I/O daemon's retention interval, some files may be deleted sooner than they would have been if the system hadn't crashed.

Note: This could be regarded as the first step in making the coordinator's operation essentially continuous across crashes, i.e. enabling the restarting of requests performed before the most recent crash if their retention intervals were unexpired, etc. If this next phase is ever implemented, implication 2 above will go away.
Restrict traps at first reference

REASONS: Traps at first reference as currently defined have deficiencies; i.e., they do not get invoked if the segment is not referenced via the linker. In order not to encourage more extensive use of these traps, it is proposed that they be restricted to their current usage, i.e., only one at a time per object segment. As now defined, an object segment may have an array of traps, but it is believed that no one used this feature. Only the first element of the array the binder produces is actually usable.

DETAILED PROPOSAL:

a. Change standard object segment document to mention restriction of one trap.
b. Change binder to allow only one input component with a trap and to generate only one trap.
c. Change the linker's user ring trap invoking procedure to invoke only one trap.
d. Change alm to generate only one trap per segment.

IMPLICATIONS: Potential generality will be lost, especially for the binder. It will no longer be able to claim to bind any group of standard object segments. As mentioned above, it does not now actually regenerate more than one usable trap.

SUMMARY: Restrict number of traps at first reference to one per object segment.
TITLE: Fix bugs in binder and make improvements

AUTHOR: M. Weaver

SOURCE: (if external) e.g., "User", "Marketing"

CLASSIFICATION | JUSTIFICATION | Replaced by proposal MCR
-----------------|---------------|-----------------------------
Incompatible Change | Marketing Requirement | Implented in System
Extension | Conformance to Standard | 
Restriction | Increased Consistency | Objections/Comments:
Performance Improvement | Simplification | 
Reliability Improvement | Generalization | 
Unreported | Bug Fix | 

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

REASONS: There are several improvements which should be made to the binder.
1. It should be better adapted for binding and producing segments > 64k.
2. It can benefit greatly from use of EIS instructions.
3. There are several bugs to be fixed (see attached copy of binder_status.info).

SUMMARY:
1. Be sure it can bind at least the combined pil and fortran compilers. This primarily requires an increase in the input component limit.
2. Recompile with the EIS compiler.
3. Fix as many of the bugs on the list as I can in a reasonable amount of time.

IMPLICATIONS: None

DETAILED PROPOSAL: Most of this work is already done.
This file contains binder BUGS and PLANNED IMPROVEMENTS.

8  next free number

BUGS
7  74.03.04  type 3 and equivalent type 5 links prelinked with Global: no_link; in file
6  74.03.01  traps at first reference are not properly relocated
5  74.02.11  repatch table sometimes overflows
4  74.02.05  definitions that have the retain bit on are not always retained
3  74.02.05  command does not accept input name foo.archive (UPRF 6220)
2  74.02.06  bitcount sometimes set < current length, causing fault; seems to happen only with simultaneous No_Table and Global: no_link binfile options
1  74.02.05  extra segname definitions sometimes generated
MULTICS CHANGE REQUEST

TITLE: Programs for processing SYSERR log.

AUTHOR: T H Van Vleck

SOURCE: (if external: e.g., "User", "Marketing")

CLASSIFICATION | JUSTIFICATION | REPLACED BY PROPOSAL MCR
--- | --- | ---
Incompatible | Marketing | Implemented in System

REASONS: The new SYSERR logging mechanism provides a hardcore segment which records messages output by ring zero programs. It is desirable to be able to examine part or all of this log in the process of system administration, maintenance, and programming. Daily reports with selections of this log should also be prepared automatically.

SUMMARY: Install new programs "print_syserr_log" and "daily_syserr_process", which examine the SYSERR log.

The print_syserr_log program extracts the syserr log from the hardcore and prints all or part of the log. The user may specify a starting date and time, a starting sequence number, or a character string which must be contained in the lines printed.

The daily_syserr_process program extracts the syserr log from the hardcore, and scans the portion of the log added since the last time the program was run. Under control of an ASCII control file, "syserr_select_file", the program examines each message and may output the line on one or more I/O streams. Thus, one report containing only disk error messages might be produced, and another report might contain only system-crash messages.

The location of the "last line looked at" data is the segment sys_admin_data. The daily_log_process program will be modified to use this same strategy, so that daily log processing need not require
write access on the log file (a problem the network group ran into when they attempted to use daily_log_process on the net_log.)

IMPLICATIONS: New reports on system operation will be available.

The use by programmed tools of the SYSERR messages makes the contents of the administrative reports more sensitive to minor changes in the format of hardcore error messages. This suggests that a more formal mechanism for installations of modules with new error messages or changes to the text of old error messages would be very useful. (We should be doing this anyway.)

Since daily_sys-err_process considers only one line at a time, its usefulness is degraded to the extent that a message cannot be identified by simple string matching. In particular, it would be helpful to add to such messages as the octal dump of the control unit produced by the op-not-complete handler, an indication of which program produced the output line. These message improvements can of course be done incrementally. (The suggestion that, if a message pertains to the previous message, it begin with some character such as "-" to indicate the continuation, won't work on a multiple-CPU system.)
### MULTICS CHANGE REQUEST

**TITLE:** Change to config card format

**AUTHOR:** N.I. Morris

**SOURCE:** (if external) e.g., "User", "Marketing"

**CLASSIFICATION** | **JUSTIFICATION** | **REASONS**
--- | --- | ---
Incompatible Change | Marketing Requirement | Required for on-line T & D, MPC firmware loading, etc.
Extension | Conformance to Standard | Objections/Comments:
Restriction | Increased Consistency | Bug Fix
Performance Improvement | Simplification |
Reliability Improvement | Generalization |

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

**REASONS:** Required for on-line T & D, MPC firmware loading, etc. (See MTB-048)
# MULTICS CHANGE REQUEST

**TITLE:** 355 Fix

**AUTHOR:** R. Snyder

**SOURCE:** (if external) e.g., "User", "Marketing"

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

**REASONS:** A bug was discovered in the stop_channel portion of the 355 software. This bug would cause writes to the 6180 to not be dequeued when they were supposed to be.

**SUMMARY:** The bug will be fixed.

**IMPLICATIONS:** Fewer Crashes.
TITLE: Entry Bound fix

AUTHOR: Bernard S. Greenberg

SOURCE: (if external) e.g., "User", "Marketing"

CLASSIFICATION . JUSTIFICATION

Incompatible Change Marketing Requirement Replaced by proposal MCR

Extension Conformance to Standard

Restriction Increased Consistency

Performance Improvement Simplification

Reliability Improvement Generalization

Unreported Bug Fix

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

REASONS: Call limiters are not set in user's SDWs for hardcore gates. This is a security hole. An interim mechanism set up to fix this problem fails to work at all.

SUMMARY: Partially implement full entry bound mechanism, with special case in initialization for hardcore gates.

IMPLICATIONS: When and if the call limiter of a segment is made a user-settable attribute, no change need be made to the SDW creation mechanism.

DETAILED PROPOSAL: Modify seg_fault to extract entry bound and gate switch from segment branch. Modify init_branches to place this information in the branches of hardcore gates. Modify both of these programs to remove special-case trailer mechanism which attempted to solve this problem. All branches are created with entry bound switch off and entry bound of zero, allowing all user segments to be handled as now.

STATUS: Proposed software written and debugged - operational.
**MULTICS CHANGE REQUEST**

**TITLE:** Fix bugs in BOS TSTCHN command

**AUTHOR:** N.I. Morris

**SOURCE:** (if external) e.g., "User", "Marketing"

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

**REASONS:** TSTCHN uses index registers which are not saved across BOS calls. A change to the BOS typewriter subroutines brought this problem out.

**SUMMARY:** Change TSTCHN to use those index registers which are saved across a call.
MULTICS CHANGE REQUEST

TITLE: TTYDIM Fixes

AUTHOR: R.B. Snyder

SOURCE: (if external) e.g., "User", "Marketing"

STATUS
Written 3/13/74
Approved 3/19/74
Rejected
Postponed
Withdrawn
Expires 9/19/74

CLASSIFICATION | JUSTIFICATION | Replaced by proposal MCR |
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Incompatible Change | Marketing Requirement | Implemented in System |
\(\times\) Extension | Conformance to Standard | Objections/Comments: |
Restriction | Increased Consistency | |
Performance Improvement | Simplification | |
Reliability Improvement | Generalization | |
\(\times\) | Bug Fix | |

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

REASONS: A number of small bugs exist in the ttydim. They should be fixed. In addition, it is proposed to not make the default terminal type for 150 $ 300 baud be tty37 with acks & naks to turn on/off the proceed lite as these characters often foul up non-tty37 like terminals.

SUMMARY: The following bug fixes & improvements will be made:
1. the set graphic position (045) character will be made to work (MPRF 005864)
2. lost carriage returns in crecho mode will be fixed (MPRF #6285 & 6276)
3. certain control characters will no longer be sent to the ARDS (MPRF #5865)
4. Escaping the escape character will be fixed (MPRF #5657)
5. the case shift will be remembered correctly for terminals like the 1050 (MPRF #6985)
6. only those terminals which really are model 37 ttys will have ACK/NAK sequences sent to them to turn on/off the proceed lite.
7. time delays will be put in for backspacing on a TN300 (MPRF 6660)
8. the form feed will be made a legal character on a TN300 (MPRF 6626)
9. the TI700 answerback will be recognized and saved.

IMPLICATIONS: Users will be told of no ACK/NAK—shouldn't be any problems.
### MULTICS CHANGE REQUEST

**TITLE:** bug in proc_brackets_

**AUTHOR:** Steve Herbst

**SOURCE:** (if external) e.g., "User", "Marketing"

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

**REASONS:**

proc_brackets$_\text{return_value}$ returns an unintentional error code of 102 instead of 0. This results in the message "code 102 not found in error_table_." When there are nested brackets in a command line.

**SUMMARY:**

Initialize code to 0 at return_value and nested_brackets entries.
MULTICS CHANGE REQUEST

TITLE: Command Name Usage Monitor

AUTHOR: D. Kayden and R. Roach

SOURCE: (if external; e.g., "User", "Marketing")

CLASSIFICATION | JUSTIFICATION
| Incompatible | Marketing |
| Change | Requirement |
| Extension | Conformance |
| Restriction | Consistency |
| Performance | |
| Improvement | Simplification |
| Reliability | |
| Improvement | Generalization |
| Bug Fix | |

Use these headings: REASONS, SUMMARY, IMPLICATIONS, and optionally DETAILED PROPOSAL

REASONS: To provide some method of monitoring usage of various commands (by name).

SUMMARY: Install a check in find_command_ to see if command being issued is on a list defined dynamically by the installation.

IMPLICATIONS: This proposal would be installed in the tools library to be used by an installation when needed. Should a better method be developed, the change can easily be replaced.

DETAILED PROPOSAL: See MTB-032 - modified as follows:

The check to see if the command being issued is on the list of commands being monitored was moved from an external routine to an inline check. This eliminates most of the overhead when checking is being done.
**MULTICS CHANGE REQUEST**

**TITLE:** Fix bg in BOS PRINT Command

**AUTHOR:** N. L. Morris

**SOURCE:** (if external) e.g., "User", "Marketing"

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

**REASONS:**
The PRINT command expects an argument to be supplied specifying the tape to be printed. It should assume a default tape number of 1 if the argument is missing.

**Summary:**
A default tape number of 1 will be used.
TITLE: Change OPC configuration card

AUTHOR: N. L. Morris

SOURCE: (if external) e.g., "User", "Marketing"
Internal

CLASSIFICATION | JUSTIFICATION | Replaced by proposal MCR
--- | --- | ---
Incompatible Change | Marketing Requirement | Implemented in System
Extension | Conformance to Standard | Objections/Comments:
Restriction | Increased Consistency
Performance Improvement | Simplification
Reliability Improvement | Generalization

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

REASONS:
A special OPC configuration card is currently used to define the IOM number, channel number, and operating parameters for the operator's console. Since the operator's console is really a peripheral device, a PRPH card should be used.

Summary:
The configuration card for the operator's console will be changed to the following format:

```
PRPH OPC IOM# ch# type buf_split
```

where:

- IOM#, ch#, and buf_split are as described in MOSN 4.3.1.
- type is either "IBM", "EMC", or "SCC" to describe an IBM selectric console, an entry model console, or a system control console, respectively.

Detailed proposal:
The oc_data_init module will be modified to search for the new PRPH card. The configuration deck can be changed immediately to have both old and new format cards. When the new software is installed, the old format OPC card can be removed.
MULTICS CHANGE REQUEST

<table>
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<th>TITLE: upgrade and fix bugs in some bound_debug_util routines</th>
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<tr>
<td>AUTHOR: M. Weaver</td>
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Use these headings: REASONS, SUMMARY, IMPLICATIONS, DETAILED PROPOSAL (Optional)

REASONS: get_entry_name does not know about the new entry sequence definition as defined by MCR 119. It also does not validate entry sequences for procedures compiled by basic or the new EIS PL/I compiler (the latter because the compiler name as stored in the object segment has recently been changed to "PL/I"). find_condition_info treats the version number in its structure "argument" as output rather than input. This defeats the number's purpose for future upward compatibility. find_pathname is now duplicated in bound_error_handlers.

SUMMARY: Delete find_pathname from bound_debug_util. Fix and extend get_entry_name_. Change find_condition_info to look at version number. For the time being, any version number will be equivalent to 1 (see below).

IMPLICATIONS: Since the current version of get_entry_name appears to return correct names for PL/I and basic no change should be apparent to its users.

Because many callers of find_condition_info do not now set the version number, find_condition_info will for the time being treat all version numbers as equivalent to 1. If and when a new version of the structure is defined, find_condition_info will look for that version number explicitly but still treat all others as equivalent to 1.
TITLE: Fix bug in LD355 and Blast

AUTHOR: M. J. Grady

SOURCE: (if external) e.g., "User", "Marketing"

CLASSIFICATION | JUSTIFICATION | Replaced by proposal MCR
--------- | ------------ | ----------------------
Incompatible Change | Marketing Requirement | Implemented in System
Extension | Conformance to Standard | Objections/Comments:
Restriction | Increased Consistency |
Performance Improvement | Simplification |
Reliability Improvement | Generalization |
Unreported | Bug Fix |

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

REASONS: Fix bug in LD355 which caused all but first HSLA config card to be ignored.

SUMMARY: Change index register used by ld355 to scan config cards.

IMPLICATIONS: Allows use of all-HSLA subchannels.
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Use these headings: REASONS, SUMMARY, IMPLICATIONS, DETAILED PROPOSAL (Optional)

REASONS: Time can be saved by using built-in functions under EIS in place of array calculations.

SUMMARY: Some of the programs to be optimized are:

```
abbrev
cfull_command_processor_
proc_quotes_
proc_parens_
proc_brackets_
full_find_command_
```
**MULTICS CHANGE REQUEST**

**TITLE:** EIS version of find_command_

**AUTHOR:** Steve Herbst

**SOURCE:** (if external) e.g., "User", "Marketing"

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**CLASSIFICATION** | **JUSTIFICATION** | **Replaced by proposal MCR**
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Incompatible Change | Marketing Requirement | Implemented in System
Extension | Conformance to Standard | Objections/Comments:
Restriction | Increased Consistency |  
Performance Improvement | Simplification |  
Reliability Improvement | Generalization |  
| | Bug Fix |  

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

**REASONS:** find_command_ uses a small associative memory to keep pointers to most-used command entries. This memory is currently handled as an array.

**SUMMARY:** Use of index and substr under EIS will speed up the searching and setting of data, and may allow a larger associative memory.
**MULTICS CHANGE REQUEST**

**STATUS**
- Written
- Approved
- Rejected
- Postponed
- Withdrawn
- Expires

**CLASSIFICATION**
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**DATE**
- Written: 3/15/74
- Approved: 3/24/74
- Rejected: 3/24/74
- Postponed: 3/24/74
- Expires: 9/24/74

**AUTHOR:** E. Stone
**SOURCE:** (if external) e.g., "User", "Marketing"

**REASONS:** When doing an on-line salvage, `salv_truncate` calls `pc$truncate` incorrectly. Arguments 6 and 7 (did and file map size index) are reversed. This causes `pc$truncate` to think that the size of the file map is either 64 words or 256 words. If this is not the case, information in the directory is overwritten.

**IMPLICATIONS:** Nothing but the best.
MULTICS CHANGE REQUEST

TITLE: New version of Indent command

AUTHOR: T H Van Vleck

SOURCE: (if external: e.g., "User", "Marketing")

CLASSIFICATION | JUSTIFICATION
---|---
Incompatible | Replaced by proposal MCR
Change | Implemented in System
Extension | Requirement
Restriction | Consistency
Performance | Simplification
Improvement | Generalization
| Bug Fix

Use these headings: REASONS, SUMMARY, IMPLICATIONS, and optionally DETAILED PROPOSAL

REASONS:

The change made a few months ago to cause Indent to provide additional levels of indentation for compound IF statements caused confusing and unpleasing indentation when there were more than two IF's and a DO-group in the statement. Furthermore, the indentation of ELSE clauses was not keyed to the indentation of the corresponding IF, which tended to conceal the structure of complicated statements.

A new version of Indent was written to take full advantage of the EIS compiler, to fix the problems mentioned above, and to cure several other minor problems.

SUMMARY:

The new version of Indent is more than twice as fast as the currently installed version.

The command knows somewhat more about the structure of a PL/I program than it used to: it keeps a switch which tells when it is at the beginning of a statement, and will not recognize most reserved identifiers unless the switch is on. This change provides a speed improvement, and also means that a statement like

go to begin;

Page 1
New version of Indent command

will no longer confuse the indentation counters. As a side effect of this change, Indent can recognize some gross errors, such as beginning a statement with a punctuation mark, and will print an error message if a syntax error of this type is encountered.

The major change has been to the Indentation of complex IF-THEN-ELSE statements. Like the current version, the new indent increases the indentation level for every IF encountered; however, DO groups are now indented at the depth which a single statement subject to the THEN would be, and ELSE clauses are lined up with the corresponding IF. For example, the new indent produces

```plaintext
If a then
  if b then
    if c then do;
      x = 1;
      y = 1;
      end;
    else y = 4;
  else y = 3;
else y = 2;
```

where the old indent produces

```plaintext
if a then
  if b then
    if c then do;
      x = 1;
      y = 1;
      end;
    else y = 4;
  else y = 3;
else y = 2;
```

Statements which are continued over more than one line have an extra indentation of five spaces for all lines of the statement but the first.
TITLE: Fix Bugs in BOS PATCH Command

AUTHOR: N. L. Morris

SOURCE: Internal

CLASSIFICATION | JUSTIFICATION |
--- | --- |
Incompatible Change | Marketing Requirement |
Extension | Conformance to Standard |
Restriction | Increased Consistency |
Performance Improvement | Simplification |
Reliability Improvement | Generalization |
Unreported | Bug Fix |

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

REASONS:
1. A bug in PATCH causes the modified bit in the PDMAP entry for a page not to be set when modifying a page. This causes the patch to be "lost".

2. A deficiency in the BOS appending simulation package causes the paging device map to be used when in fact it is invalid.

Summary:
1. The wrong field in a PTW was being tested. PATCH will be changed to test the proper field.

2. The appending simulation package must examine the fsdct to determine if the paging device ID is non-zero before using the PDMAP.
**MULTICS CHANGE REQUEST**

<table>
<thead>
<tr>
<th>TITLE:</th>
<th>Change &quot;assign_device&quot; algorithm</th>
</tr>
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<tbody>
<tr>
<td>AUTHOR:</td>
<td>N. L. Morris</td>
</tr>
<tr>
<td>SOURCE:</td>
<td>(if external) e.g., &quot;User&quot;, &quot;Marketing&quot;</td>
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</table>

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

**REASONS:**

The current device assignment algorithm was designed for an environment in which several non-identical disk subsystems could be in use. It assumed that the highest-level (lowest device ID) device was faster than the lowest-level device, and attempted to assign segments to the highest-speed device whenever possible.

Now, when more than one disk subsystem is to be used, the subsystems will be identical. Therefore, a different device assignment algorithm is desired. This algorithm will attempt to equalize the load between two disk subsystems.

**Summary:**

A new version of "assign_device" will be coded. New segments will be assigned to the device containing the greater amount of free storage.

**Implications:**

When two disk subsystems are used, one will not tend to overflow before the other one. The new algorithm will tend to equalize the space remaining on both disk subsystems.

The device spillover threshold mechanism implemented by use of the THRS config card will no longer be used. The code to read the THRS card can be removed.
MULTICS CHANGE REQUEST

TITLE: Fix bugs in Version 1 APL

AUTHOR: Paul A. Green and Maxim G. Smith

SOURCE: (if external: e.g., "User", "Marketing")

CLASSIFICATION | JUSTIFICATION
| Incompatible | Marketing
| Change | Requirement | Implemented in System
| Extension | To Standard | Objections/Comments
| Restriction | Consistency | Increased
| Improvement | Simplification |
| Reliability | | |
| Improvement | Generalization |
| (Unreported) | Bug Fix |

Use these headings: REASONS, SUMMARY, IMPLICATIONS, and optionally DETAILED PROPOSAL

REASONS:
In the process of testing the new APL (Multics Version 2 APL), a number of unreported bugs were found in the old APL. As they were all rather trivial to fix, and are rather serious bugs, they should be fixed no matter what the status of the two APLs is.

SUMMARY:
Replace the programs sort1.pl1, rev_sort1.pl1, sortf.pl1, and rev_sortf.pl1. This will fix a bug causing the APL grade (sort) operator to fail to sort properly. Replace the program matinv.pl1 with one that is more accurate; this will give better results for the APL matrix divide and matrix invert operators.

IMPLICATIONS:
Sorting will work for all cases, and matrix division and inversion will be more accurate (meaning, of course, that the answers returned will change). The improved accuracy obviously outweighs any compatibility issues.

DETAILED PROPOSAL:
Coded, tested, and ready for submission.
TITLE: Modify the acl commands to work for MSFs.

AUTHOR: Eleanor Stone

SOURCE: (if external) e.g., "User", "Marketing"

CLASSIFICATION | JUSTIFICATION | Replaced by proposal MCR
--- | --- | ---
Incompatible Change | Marketing Requirement | Implemented in System
Extension | x | Conformance to Standard
Restriction | x | Increased Consistency
Performance Improvement | | Simplification
Reliability Improvement | | Generalization

IMPLICATIONS: The listacl and deleteacl commands will give misleading results for MSFs with non-standard acls.

REASONS:
The acl commands (setacl, listacl, deleteacl) are the only major commands that do not distinguish directories and MSFs. This is a request that these commands be changed to manipulate the acl of an MSF consistently. To accomplish this, the following steps should be taken.

A. Add 2 new entries to msf_manager_
   - msf_manager_$acl_add
   - msf_manager_$acl_delete
   (There exists an entry to list the acl of an MSF.)

B. Change acl_commands to recognize MSFs and to call the appropriate entry in msf_manager.

C. Change tssi_ to call the new entries to msf_manager when appropriate.
MULTICS CHANGE REQUEST

TITLE: New Core Freeing Mechanism

AUTHOR: Bernard S. Greenberg

SOURCE: (if external) e.g., "User", "Marketing"

CLASSIFICATION

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REASONS: It has recently been discovered that there are 13 usable pages of Multics core which never get added to the paging pool. This is due to three independent bugs: a technically illegal PL/I statement, a misinterpretation of a variable, and three pages worth of oversight.

This MCR implements a new mechanism which systematically collects all pages of usable core, eliminating the oversights, all future oversights, and much special-casing, including the code containing the illegal statement. The misinterpreted variable is also re-interpreted.

A bug related to this problem, not contributing to it, but necessary for the new mechanism, is fixed.

SUMMARY: A program doing a marking-type garbage collection on core at the end of collection 1 initialization will catch all cases of unused pages. Ad hoc code to explicitly free several pages is removed.

IMPLICATIONS: Expected performance improvement.

DETAILED PROPOSAL: After the establishment of paging by update_sst_plI, a program called collect_free_core runs through the initializer's descriptor segment, looking at SDW's of unpaged segments. The core map entry of page containing a word of such a segment is specially flagged. The pages containing the BOS toehold and the page table for the SGAS are also flagged. The core map array is then scanned. Specially flagged core map entries are unflagged, core map entries already in the paging pool are skipped, and all others are added to the free page pool.

A bug in bootstrapI causes zero-length segments (e.g., disk data segments for disks not present in the configuration) to acquire SDW's which describe all of core. This bug would cause the proposed algorithm to fail in all cases. bootstrapI will be changed to create SDW's which would create segment faults if referenced for such segments.
## MULTICS CHANGE REQUEST

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<td>Bug Fix #272</td>
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Use these headings: REASONS, SUMMARY, IMPLICATIONS, DETAILED PROPOSAL (Optional)

### REASONS:
If the master initializer console is used for input after the issuance of any "sac" command, the system will crash. This occurs because an internal proc is used as the target of an event call channel. In this case the "environment pointer" needed by the internal.praddia not restarted by the event call and a required start.variable is over-written.

### SUMMARY:
Correct the problem

### IMPLICATIONS:
None; Emergency fix already installed.
**TITLE:** Restore ability to call online salvager from use rings.

**AUTHOR:** A. Kobziar

**SOURCE:** (if external) e.g., "User", "Marketing"

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

**REASONS:** Call online_salvager$salvage_dir has been inadvertently removed from hphcs_. This is a safety valve which can be used to unscramble a directory or just test the online salvager.

**SUMMARY:** Add online_salvager$salvage_dir to hphcs_.

---

**STATUS** | **DATE**
---|---
Written | 3/19/74
Approved | 3/26/74
Rejected | 3/26/74
Postponed | 9/24/74
Withdrawn | 9/24/74
Expires | 9/24/74
**MULTICS CHANGE REQUEST**

| TITLE: | Fix Network portion of Answering Service to properly re-initialize pseudo-TTY |
| AUTHOR: | D. Wells |
| STATUS | Written 3/19/74 |
| DATE | Approved 7/26/74 |
| SOURCE: | (if external) e.g., "User", "Marketing" |
| CLASSIFICATION | JUSTIFICATION | Replaced by proposal MCR |
| Incompatible Change | Marketing Requirement | Implemented in System |
| Extension | Conformance to Standard | |
| Restriction | Increased Consistency | |
| Performance Improvement | Simplification | |
| Reliability Improvement | Generalization | |
| XXX Improvement | Bug Fix | |

**Objections/Comments:**

**REASONS:** The recent changes to the Answering Service to handle the "new" TELNET protocol failed to properly re-initialize some variables. These variables were only used if cases where a foreign host "offered" to perform one of the negotiated options. Because few servers on the Network offered this type of negotiation, this code did not get tested.

**SUMMARY:** Change programs to:

1) reinitialize each pseudo-TTY upon each "dialup."
2) as a backup measure, truncate the on-line segment where such data is kept, each time that the Answering Service "Logger" is initialized.

**THIS MCR IS SUBMITTED PER THE "EMERGENCY INSTALLATION" PROCEDURE.**

**THE BUG FIXES WERE SUBMITTED ALREADY.**