

TO:       Distribution  
FROM:     Joan Archer  
DATE:     24 July 75  
RE:       Multics Change Requests

Enclosed are copies of Multics Change Requests which were approved from 15 June through 30 June 75.

---

Multics Project internal working documentation. Not to be reproduced or distributed outside the Multics Project.

Multics Change Request

TITLE: Modification to NCP to fix bugs and add features		STATUS	DATE	
AUTHOR: D. Wells		Written	1975.06.05	
-Coded in: <input checked="" type="checkbox"/> PL/I <input checked="" type="checkbox"/> ALM <input type="checkbox"/> other- explain in DETAILED PROPOSAL -Planned for System MR -Fixes Bug Number(s) Unreported -Documented in MTB -User/Operations-visible Interface change? <input checked="" type="checkbox"/> yes <input type="checkbox"/> no -Incompatible change? <input type="checkbox"/> yes <input checked="" type="checkbox"/> no -Performance: <input type="checkbox"/> Better <input checked="" type="checkbox"/> Same <input type="checkbox"/> Worse -Replaces MCR 635	Category (Check One)		Status A 06/19/75	
	Lib. Maint. Tools		Expires 12/19/75	
	Sys. Anal. Tools		DOCUMENTATION CHANGES	
	Sys. Prog. Tools		Document Specify One or More	
		355	MPM (Vol, Sect.)	
		BOS	PLMS (AN #) Network	
		Salvager	MOSN (Sect.)	
		X Ring Zero	MPAM (Sect.)	
		Ring One	MSAM (Sect.)	
		SysDaemon/Admin.	Info Segs	
		Runtime	Other (Name)	
		User Cmmnd/Subr.	None (Reason)	
Objections/Comments:				

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

**SUMMARY:**  
 The Network Control Program will be changed to use the IOAM as suitable for handling process terminations.  
 The NCP will be changed to handle access to the "connect" function in a standard manner (via a gate)  
 The sizes of the tables in the NCP will be increased so that they are not overflowed normally.  
 A possible bug which may have trapped processes in ring zero (causing notify timeouts) is fixed.  
 Tracing is added to the NCP.  
 A few debugging flags are added to help in tracing down some additional misbehavior.  
 The IPS signal "neti" will be added to the system to allow the user\_telnet command (among others) to properly implement the "abort output" function.  
 A variety of small bugs (which only caused minor anomalies) are fixed.

**REASONS:**  
 The NCP does not currently close connections when a user process terminated, and does not shut the Network down when the Network Daemon process terminates.  
 The NCP currently determines whether or not a user may perform a connect to a foreign host by checking a ACL on a segment in the on-line system. This is non-standard and does not conform to normal usage of access control.  
 Some of the tables in the NCP are close to overflowing. This is primarily due to the large number of new hosts which have been added to the Network over the past few months.  
 A section of code which does not respect hardcore locking conventions has been located; this may be responsible for a few system shutdowns at MIT in the past few months.  
 The NCP has previously been debugged by detecting side effects; printer tracing has been added so that particular sequences of code may be traced to the printer.  
 A few bugs are known to exist but cannot be duplicated upon demand nor in tracing. Appropriately a few pieces of information are being kept in order to get more info about the problem.  
 The use of the "quit" IPS signal by the NCP has led to an inability to implement a number of standard Network functions. In particular, the abort output function of the user\_telnet command can not be implemented. The primary reason that the "quit" signal can not be used is that the Network must deal with many connections, whereas the

TTYDIM and the message coordinator need only deal with one connection (each).

A number of small bugs (which unfortunately cause major problems for users) have been fixed and a number of allocation strategies have been altered in order to minimize any other bugs that may exist.

**IMPLICATIONS:**

The number of **DST entries** will have to be increased to support this function. These entries are wired down (though the usage the NCP imposes does not require this wiring) -- thus decreasing the size of the paging pool. All possible efforts to reduce the number of entries have been made, and only one entry per active process using the NCP is needed.

A new IPS signal is added. All system installed code will handle the new signal properly (except for the part of the on-line network software that knows the condition that the NCP signals, of course). A compatibility period will be required during the period that the NCP is installed; this change should be entirely transparent to any user of the Multics Network (and non-network users will not be affected at all).

A new gate will be added to ring-zero (together with some control functions); this means that the ring-1 data base which knows about non-privileged access to ring zero segments (as by meter gate) must be changed.

A compatibility period will be required while the Network Daemon is modified to properly set the access to the new connect gate at Network initialization.

Multics Change Request

TITLE: Move some Network Administration to ring one  
AUTHOR: D. Wells, N. Federman

STATUS	DATE
Written	1975.06.05
Status	A 06/19/75
Expires	12/19/75

-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)	
<input checked="" 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 checked="" type="checkbox"/>	Ring Zero
<input checked="" type="checkbox"/>	Ring One
<input checked="" type="checkbox"/>	SysDaemon/Admin.
<input type="checkbox"/>	Runtime
<input checked="" type="checkbox"/>	User Cmmnd/Subr.

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

Objections/Comments:

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

SUMMARY:

Most Network administrative functions and attachment functions will be moved to ring 1 from ring 0. All privileged Network functions will utilize ring 1 control. Maintenance of the Network host table is converted to a ring one system (from the current mechanism of library installation of a non-object library segment). Two new gates into ring 1 will be added to allow normal and privileged access to the ring one functions.

REASONS:

When the NCP was moved from ring one into ring zero previously, it was moved bodily. It has now become apparent that a number of functions would like to be in an administrative ring (e.g. ring one) because there are a number of restrictions in ring zero which cause problems (e.g., fixed max lengths of segments and fixed ASTE sizes). Also, the Network functions should eventually be merged into the new RCP package, which executes in ring one.

The maintenance of the network host table has proved to be a major hassle. Hosts are added to the Network fairly often, and the one to two month delay at MIT causes complaints from users (and the six month to a year delay at other sites is intolerable. Also, the existence of an immediately updatable data base allow easier installation of a program to periodically fetch the actual file of host names (which is kept at another network host) and automatically update the on-line host name table.

IMPLICATIONS:

Attachment and detachment and other control functions will be slightly slower; reading, writing, and status operations will not be altered.

Because some code is moving from ring zero to ring one, a three stage compatibility process is required.

Special access to the new privileged ring one gate is required at each Multics installation, but special access to the ring zero gates is no longer required.

Move some Network Administration fo ring one.

D. Wells, N. Federman  
1975.06.05

DETAILED PROBSAL:

Two new gates will be added to ring one which precheck socket assignments and allow only limited access to sockets outside of a users normal socket space. These gates will also contain mostly null functions for all other network function entries.

A mechanism to allow the Answering Service to properly communicate negotiated TELNET options and to allow transmission to the users process of type-ahead data will be provided; this mechanism will replace the current user-modes data field which is currently kept in ring zero data bases.

A new host table mechanism will be implemented; this new mechanism allows on-line, immediate updating of host information. The new host table allows space for recording information about the status of a host, information about the host (e.g., the operating system, functions supported), and also provides space for whether or not communication should be enabled with a particular host. Special care has been taken in the design of the data base to ensure that the data base remains consistent at all times (though assumptions have been made to the effect that no user will remain in the traffic control queues for periods in excess of 24 hours). This new host table will require a writable segment in the on-line libraries (much in the manner of the message segment meters).

FUTURE PLANS (Not to be approved at this time):

The host table will be automatically updated periodically by fetching the host name definition file from across the network by a daemon process.

The Network sockets will be assigned by the Resource Control Package.

Automatic copying of ring-zero NCP logs into the on-line system (though in a daemons directory) will be performed. This will allow us to keep track of Host status, record error reports from foreign hosts, and remember anomalies discovered by the local software.

Multics Change Request

TITLE: Changes to user_telnet and user_ftp commands		STATUS	DATE	
AUTHOR: D. M. Wells		Written	1975.06.05	
- Coded in: <input checked="" type="checkbox"/> PL/I <input checked="" type="checkbox"/> ALM <input type="checkbox"/> other- explain in DETAILED PROPOSAL - Planned for System MR _____ - Fixes Bug Number(s) _____ - Documented in MFB _____ - User/Operations-visible Interface change? <input checked="" type="checkbox"/> yes <input type="checkbox"/> no - Incompatible change? <input checked="" type="checkbox"/> yes <input type="checkbox"/> no - Performance: <input type="checkbox"/> Better <input checked="" type="checkbox"/> Same <input type="checkbox"/> Worse - Replaces MCR 959	Category (Check One)		Status A 06/19/75	
	<input type="checkbox"/>	Lib. Maint. Tools	Expires 12/19/75	
	<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 #)	Network
	<input type="checkbox"/>	Salvager	MOSN (Sect.)	Network-Local
	<input type="checkbox"/>	Ring Zero	MPAM (Sect.)	
	<input type="checkbox"/>	Ring One	MSAM (Sect.)	
	<input type="checkbox"/>	SysDaemon/Admin.	Info Segs	X
<input type="checkbox"/>	Runtime	Other (Name)	NUS	
<input checked="" type="checkbox"/>	User Cmnd/Subr.	None (Reason)		
Objections/Comments:				

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

**SUMMARY:** Change user\_telnet command (and install new user\_ftp) to have a "simpler" user request interface.

**REASONS:**

Because the user\_telnet command has its own request processor which includes parenthesis, bracket and quote processing, a number of users have become confused while using it; the general problem is that they expect that quote, bracket and parenthesis processing to be done by the Multics command processor in the "execute" command. Also, a number of requests are left over from a time when it was expected that the user\_telnet command would handle multiple connections; these extra requests will be removed. (They are all able to be specified from control arguments.)

**IMPLICATIONS:**

Features are being removed -- thus, users must be informed ahead of time about this change.

**DETAILED PROPOSAL:**

The request language of the user\_telnet and user\_ftp commands will become the "simplified" request language documented in the NUS section for the user\_telnet command. The "host", "socket", "connect" and "disconnect" requests will go away. A few new control arguments and requests will be introduced to allow the use of the current command processor as an option.

**NOTE:**

By replacing MCR 959, this MCR includes the installation of the user\_ftp command.

TITLE: Install new default_error_handler_		STATUS	DATE
AUTHOR: R. Schoeman RAB		Written	06/09/75
-Coded in: <input type="checkbox"/> PL/I <input type="checkbox"/> ALM <input checked="" type="checkbox"/> other- explain in DETAILED PROPOSAL	Category (Check One)		Status
	<input type="checkbox"/> Lib. Maint. Tools	<input type="checkbox"/> Sys. Anal. Tools	A 06/19/75
-Planned for System MR	<input type="checkbox"/> Sys. Prog. Tools	Expires	12/19/75
-Fixes Bug Number(s) _____	355	DOCUMENTATION CHANGES	
-Documented in MTB	BOS	Document	Specify One or More
-User/Operations-visible	Salvager	MPM (Vol, Sect.)	
Interface change? <input type="checkbox"/> yes <input checked="" type="checkbox"/> no	Ring Zero	PLMS (AN #)	
-Incompatible change? <input type="checkbox"/> yes <input checked="" type="checkbox"/> no	Ring One	MOSN (Sect.)	
-Performance: <input type="checkbox"/> Better <input checked="" type="checkbox"/> Same	SysDaemon/Admin.	MPAM (Sect.)	
<input type="checkbox"/> Worse	X Runtime	MSAM (Sect.)	
-Replaces MCR _____	User Cmd/Subr.		
Objections/Comments:		Info Segs	
		Other (Name)	
		None (Reason) messages are nowhere documented	

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

SUMMARY:

Install a new default\_error\_handler\_ which prints more specific error messages when a KEY, RECORD, or UNDEFINED condition is raised.

REASONS:

Too much information is discarded between plio2\_runtime detecting an error during i/o and the message the user receives. Instead of the error handler printing out a message dependent only on the condition raised, it will now print out a message dependent both on the condition raised and on the status code returned to plio2\_.

IMPLICATIONS:

None.

DETAILED PROPOSAL:

All the necessary facilities including the specific oncode messages were already provided. The printing of them, however, had been intentionally suppressed.

The relevant modules are coded in PL/1 and as a message table.

## PROGRAM:

## Key Condition

```
1 oop:proc;
2 dcl p1 file;
3 open file(p1) output keyed record sequential;
4 dcl (a,b) char(1);
5 a="?";
6 write file(p1) from(a) keyfrom("g");
7 write file(p1) from(a) keyfrom("a");
8 close file(p1);
9 end;
```

## OLD MESSAGE:

oop

Error: key condition by >udd>m>rhs>test>oop|115  
occurred while doing I/O on file p1  
key a either does not exist in file  
or could not be added because it already exists

system handler for error returns to command level  
r 1155 2.858 13.230 185 level 2, 16

## NEW MESSAGE:

oop

Error: key condition by >udd>m>rhs>test>oop|115  
occurred while doing I/O on file p1  
onkey = a  
Unable to add record to keyed sequential output file;  
keys must be distinct and ascending.  
system handler for error returns to command level

rdn

r 1151 3.545 31.656 418 level 3, 18

ral



## PROGRAM:

## Record Condition

```
1  ral:proc;
2  dcl afile file;
3  dcl s char(10),t char(8);
4  s="qqqqqqqqqq";
5  open file(afile) output record;
6  write file(afile) from(s);
7  close file(afile);
8  open file(afile) record input;
9  read file(afile) into(t);
10 close file(afile);
11 end;
```

## OLD MESSAGE:

ral

Error: record condition by >udd>m>rhs>test>ral|140  
occurred while doing I/O on file afile

Record read by read statement is not the same size as the target.  
system handler for error returns to command level  
r 1155 0.611 8.122 106 level 3, 30

## NEW MESSAGE:

Error: record condition by >udd>m>rhs>test>ral|140  
occurred while doing I/O on file afile  
"read into(XX)": record in data set larger than variable XX.  
Type "start" to continue.  
system handler for error returns to command level  
r 1151 0.626 10.074 107 level 4, 30

TITLE: Install new bound_plio2_		STATUS	DATE	
AUTHOR: R. Schoeman		Written	06/09/75	
-Coded in: <input checked="" type="checkbox"/> PL/I <input type="checkbox"/> ALM <input type="checkbox"/> other- explain in DETAILED PROPOSAL -Planned for System MR _____ -Fixes Bug Number(s) _____ -Documented in MTB _____ -User/Operations-visible Interface change? <input type="checkbox"/> yes <input checked="" type="checkbox"/> no -Incompatible change? <input type="checkbox"/> yes <input checked="" type="checkbox"/> no -Performance: <input type="checkbox"/> Better <input checked="" type="checkbox"/> Same <input type="checkbox"/> Worse -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	
X Runtime		Other (Name)		
User Cmnd/Subr.		None (Reason) Specific messages nowhere defined		
Objections/Comments:				

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

SUMMARY:

Install a new bound\_plio2\_.

REASON:

It fixes 2 bugs (write on update files and some get data statements) and will allow the new default\_error\_handler\_ (MCR 1213) to provide a more informative error message when the KEY, RECORD, or UNDEFINED condition is raised.

IMPLICATIONS:

None.

DETAILED PROPOSAL:

This change in bound\_plio2\_ will support the new messages from default\_error\_handler\_. Without this change the error handler would not receive the key involved in the i/o operation when the error was detected during execution of a quick record i/o statement.

Multics Change Request

TITLE: Remove 2K limit on length of message in message segment  
AUTHOR: Kenneth T. Pogran MAC/CSR

STATUS	DATE
Written	06/04/75
Status	A 06/19/75
Expires	12/19/75

-Coded in:  PL/T  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)
<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 checked="" type="checkbox"/> Ring One
<input type="checkbox"/> SysDaemon/Admin.
<input type="checkbox"/> Runtime
<input type="checkbox"/> 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: Remove limit of 2048 words on maximum size of a message placed in a Ring.1 message segment (either queue or mailbox)

REASONS: Network mail is heavily used for the distribution of documents as well as brief missives. While the old Multics mail command imposed a limit of 1024 words of mail per message, the corresponding routine for receiving mail from the Network, ftp\_mail\_, did not. The new mail command also imposes this 1024 word limit; the new ftp\_mail\_ does not. Unfortunately, the Ring 1 message segment primitives impose a limit of 2048 words on the size of a message placed in a message segment. Thus, the change to the new mail system has become an unfortunate "incompatible change" for those accustomed to receiving lengthy network mail. The ability to receive lengthy network mail has become, by now, a de facto requirement on Network hosts, and the brand new 2048-word limit has presented problems.

IMPLICATIONS:

1. Users who call Ring 1 primitives directly, instead of using the mail command, will be able to send lengthy mail.
2. Users will be able to receive lengthy mail from other Network hosts.
3. Longer messages can also be placed in "queue"-type message segments.

DETAILED PROPOSAL:

mseg\_data \$max\_message\_size, in bound\_mseg\_, will be changed from 2048 to 261120 (1024\*255).

NOTE: Submitted at MIT as an emergency fix.

TITLE: Change incacc error message		STATUS	DATE
AUTHOR: S. Herbst		Written	06.11.75
-Coded in: <input type="checkbox"/> PL/I <input type="checkbox"/> ALM <input checked="" type="checkbox"/> other- explain in DETAILED PROPOSAL -Planned for System MR _____ -Fixes Bug Number(s) _____ -Documented in MTB _____ -User/Operations-visible Interface change? <input type="checkbox"/> yes <input checked="" type="checkbox"/> no -Incompatible change? <input type="checkbox"/> yes <input checked="" type="checkbox"/> no -Performance: <input type="checkbox"/> Better <input checked="" type="checkbox"/> Same <input type="checkbox"/> Worse -Replaces MCR _____		Status	A 06/19/75
		Expires	10/19/75
		DOCUMENTATION CHANGES	
		Document	Specify One or More
		MPM (Vol, Sect.)	
		PLMS (AN #)	
		MOSN (Sect.)	
		MPAM (Sect.)	
		MSAM (Sect.)	
		Info Segs	
		Other (Name)	
		None (Reason)	

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

SUMMARY:

Change the error table message for incacc from  
 "incorrect access to directory containing entry"  
 to  
 "incorrect access to directory".

REASON:

Increased generality so that this error code can be used for any directory. There is at least one case where the current message is misleading because the accompanying pathname is that of a directory, not an entry in a directory.

TITLE: Fix and Update Binder		STATUS	DATE	
AUTHOR: M. Weaver		Written	06.12.75	
-Coded in: <input checked="" type="checkbox"/> PL/I <input type="checkbox"/> ALM <input type="checkbox"/> other- explain in DETAILED PROPOSAL -Planned for System MR _____ -Fixes Bug Number(s) _____ -Documented in MTB <u>187</u> -User/Operations-visible Interface change? <input type="checkbox"/> yes <input checked="" type="checkbox"/> no -Incompatible change? <input type="checkbox"/> yes <input checked="" type="checkbox"/> no -Performance: <input type="checkbox"/> Better <input checked="" type="checkbox"/> Same <input type="checkbox"/> Worse -Replaces MCR _____	Category (Check One)		Status <u>A 06/19/75</u>	
		Lib. Maint. Tools	Expires <u>12/19/75</u>	
		Sys. Anal. Tools	DOCUMENTATION CHANGES	
		Sys. Prog. Tools	Document	Specify One or More
		355	MPM (Vol, Sect.)	SWG
	BOS	PLMS (AN #)		
	Salvager	MOSN (Sect.)		
	Ring Zero	MPAM (Sect.)		
	Ring One	MSAM (Sect.)		
	SysDaemon/Admin.	Info Segs		
	<input checked="" type="checkbox"/> Runtime	Other (Name)		
	User Cmnd/Subr.	None (Reason)		
Objections/Comments:				

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

SUMMARY:

Fix binder bugs 008, 009, and 010. Update binder to use new object\_info\_ structure and to generate a separate static section for a bound segment if all components with nonzero-length static have separate static. Change to check specifically for bound components and to issue an appropriate error message.

REASONS:

See attached list of bugs.  
 See MTB 187.  
 If an archive component is a bound segment, the binder currently puts out a string of confusing error messages.

IMPLICATIONS:

In a bound segment with a separate static section, references to a component's internal static cannot be pre-linked.

DETAILED PROPOSAL:

Must be installed after object\_info\_ and before compilers that produce separate static sections.

05/21/75

This file contains binder BUGS and PLANNED IMPROVEMENTS.

011 next free number

BUGS

010 /b.05.14 retain: non\_existent\_entry; causes fatal error  
message out binder binds anyway

009 /b.05.14 when binding more than 1 program with create-if-not-found  
links to the same target (e.g. FORTRAN common), only 1 of which  
initializes the target, that component must be bound before the others

008 /b.05.14 binder blows up if bound\_segname already exists without  
w access in a dir without m access

<b>TITLE:</b> Install a compare_object that handles separate static <b>AUTHOR:</b> R. A. Barnes		<b>STATUS</b> Written Status Expires	<b>DATE</b> 6/12/75 A 06/19/75 12/19/75
-Coded in: <input checked="" type="checkbox"/> PL/I <input type="checkbox"/> ALM <input type="checkbox"/> other- explain in DETAILED PROPOSAL -Planned for System MR _____ -Fixes Bug Number(s) _____ -Documented in MTB _____ -User/Operations-visible Interface change? <input checked="" type="checkbox"/> yes <input type="checkbox"/> no -Incompatible change? <input type="checkbox"/> yes <input checked="" type="checkbox"/> no -Performance: <input type="checkbox"/> Better <input checked="" type="checkbox"/> Same <input type="checkbox"/> Worse -Replaces MCR _____	<b>Category (Check One)</b> <input checked="" type="checkbox"/> Lib. Maint. Tools <input type="checkbox"/> Sys. Anal. Tools <input checked="" type="checkbox"/> Sys. Prog. Tools		<b>DOCUMENTATION CHANGES</b> Document Specify One or More MPM (Vol, Sect.) PLMS (AN #) 51 MOSN (Sect.) MPAM (Sect.) MSAM (Sect.)
	<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 type="checkbox"/> User Cmmnd/Subr.		
	<b>Objections/Comments:</b>		
	Info Segs compare_object.info Other (Name) None (Reason)		

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

Summary: compare\_object has been upgraded to compare object segments that have separate static sections. A new subroutine entry point, compare\_object\_ptr (see attached sheet), has been added to support comparison of segments given pointers and lengths. Many tools would prefer this interface.

Addition to compare\_object Documentation

-static,                   causes the static section of the 2 segments to be compared if they have separate static; otherwise the linkage sections are compared.

New Subroutine Documentation

Name: compare\_object\_ptr

This function, given pointers and lengths of 2 object segments, compares their text, definition, linkage, and static (if separate) sections and returns "1"b if they are equal and "0"b if discrepancies exist.

Usage:

```
declare compare_object_ptr entry(ptr, fixed bin(24); ptr, fixed bin(24))
      returns(bit(1) aligned);
```

```
result = compare_object_ptr(seg1, len1, seg2, len2);
```

- 1) seg1                   pointer to the first object segment(input)
- 2) len1                   length of the first object segment in bits(input)
- 3) seg2                   pointer to the second object segment(input)
- 4) len2                   length of the second object segment in bits(input)
- 5) result                  "1"b if segments are equivalent  
                          "0"b otherwise(output)

Note:

If either of the segments is not an object segment, if one of the segments is a standard object segment while the other is not, or if one has separate static and the other does not, the segments are considered unequal.



Multics Change Request

TITLE: Change set_acl's handling of bad ring brackets		STATUS	DATE
AUTHOR: S. Herbst		Written	6/10/75
-Coded in: <input checked="" type="checkbox"/> PL/I <input type="checkbox"/> ALM <input type="checkbox"/> other- explain in DETAILED PROPOSAL -Planned for System MR _____ -Fixes Bug Number(s) _____ -Documented in MTB _____ -User/Operations-visible Interface change? <input checked="" type="checkbox"/> yes <input type="checkbox"/> no -Incompatible change? <input type="checkbox"/> yes <input checked="" type="checkbox"/> no -Performance: <input type="checkbox"/> Better <input checked="" type="checkbox"/> Same <input type="checkbox"/> Worse -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 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) no change		
<input checked="" type="checkbox"/> User Cmnd/Subr.			
Objections/Comments:			

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

SUMMARY: Change set\_acl, etc. to report incorrect ring brackets when using the star convention.

REASONS: A previous change caused these commands to ignore the ring brackets error so that, for example, "sa \*\*" means "set access on everything that is bracketed appropriately." This is a non-standard interpretation of \*\*; usually if there is a problem with any entry an error message is printed. The inconvenience of occasional ring brackets messages is minimal.

IMPLICATION: sa \*\* in the user's home directory prints an error message for the ring 1 mailbox.

Multics Change Request

TITLE: Prevent lost notifies during process loading		STATUS	DATE
AUTHOR: R. Mullen		Written	6/13/75
-Coded in: <input type="checkbox"/> PL/I <input checked="" type="checkbox"/> ALM <input type="checkbox"/> other- explain in DETAILED PROPOSAL -Planned for System MR -Fixes Bug Number(s) <u>hrd0014p</u> -Documented in MTB -User/Operations-visible Interface change? <input type="checkbox"/> yes <input checked="" type="checkbox"/> no -Incompatible change? <input type="checkbox"/> yes <input checked="" type="checkbox"/> no -Performance: <input checked="" type="checkbox"/> Better <input type="checkbox"/> Same <input type="checkbox"/> Worse -Replaces MCR _____		Status	A 06/19/75
		Expires	12/19/75
		DOCUMENTATION CHANGES	
		Document	Specify One or More
		MPM (Vol, Sect.)	
		PLMS (AN #)	73
		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:** PXSS must validate events returned by wired plm\$load. If the event has already occurred, it will not be waited for.

**REASONS:** If the event is not valid then the user's process hangs for 90 seconds. Eventually a NOTIFY TIMEOUT occurs.

**IMPLICATIONS:** It is now understood how the notifies came to be lost, and that this validation will prevent their loss.

Ver. 3	MULTICS CHANGE REQUEST	MCR 1226
741022		
TITLE: Fix lex_string_ to handle break characters properly.		STATUS: DATE
AUTHOR: Gary C. Dixon		Written: 06/11/75
		Status: A 06/19/75
		Expires: 12/11/75
Planned for System: MR 2.2		
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		( <input checked="" type="checkbox"/> ) Sys. Prog. Tools
Coded in: ( <input checked="" type="checkbox"/> ) PL/I ( ) ALM ( ) other-see below		( ) 355
Performance: ( ) better ( <input checked="" type="checkbox"/> ) 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#)		( ) Runtime
Info Segs		( ) User Command/Subr
None (reason) No user-visible change, other than bug fix.		
OBJECTIONS/COMMENTS:		

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

**SUMMARY:**

When the first character of a quote opening, comment opening, or statement delimiter is not also defined as a break character, a bug in lex\_string\_ causes it to be treated partially as a break character by treating any characters appearing before such a character as a separate token. For example, if /\* is the comment opening delimiter but / is not a break character, and if ; and ; are break characters, then the statement:

Date: 03/05/75;

would be parsed as:

Date : 03 /05 /75 ;

Instead of as:

Date : 03/05/75 ;

**REASONS:**

This bug needs to be fixed so that cv\_pmf will work in Multics System 2.2.

**IMPLICATIONS:**

The bug will be fixed, and cv\_pmf will work properly.

TITLE: Multics Graphics System

STATUS

DATE

THOR: C. D. Tavares

Written

05.19.75

Status

A 06/19/75

Expires

12/19/75

Category (Check One)

Lib. Maint. Tools

Sys. Anal. Tools

Sys. Prog. Tools

355

ROS

Salvager

Ring Zero

Ring One

Sys Daemon/Admin.

Runtime

X User Cmd/Subr.

DOCUMENTATION CHANGES

Document

Specify One or More

MPM (Vol, Sect.)

PLMS (AN #)

MOSN (Sect.)

MPAM (Sect.)

MSAM (Sect.)

Info Segs <sup>graphics changes.info</sup>  
setup graphics.info

Other (Name) MPM GUS

None (Reason)

Objections/Comments:

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

## SUMMARY:

This installation reflects many changes and improvements, specifically:

Graphic system has been rewritten to use `iox_` in place of `ios_` in all places;

System now implements and supports the use of multiple graphic I/O streams in a process;

Graphic input is now performed reliably; as shown by documentation, it is an "addition" to the system capabilities;

Include files were improved and consolidated;

Support for `imlac` terminals was de-installed;

Several restrictions on the depth of graphic structures were removed;

A few performance improvements were installed;

A number of small bugs were found and repaired.

## REASONS:

Support for `IMLAC` terminals was de-installed because the support offered by the system applied to only one `IMLAC` console, owned by MIT Architecture, which was modified and looks like no other `IMLAC` currently in existence. The action serves to prevent potential users from overestimating the system's current support for these terminals.

Reasons for other actions seem obvious.

IMPLICATIONS: The graphic system is no longer usable from `ios_` level. No known cases exist of users currently using it from this level. The system remains internally consistent in its use of `iox_`.

Detailed Proposal: (pardon the previous past tense) Details may be found in the submitted copy of `graphics_changes.info`.

05/28/75

Name: remove\_graphics, rg

The remove\_graphics command is used to terminate a session of working with the graphic system. It detaches graphic streams which were set up by setup\_graphics.

Usage

```
remove_graphics [switch_1] ... [switch_N]
remove_graphics -all <OR> remove_graphics -a
remove_graphics
```

If given, the optional arguments "switch\_1" to "switch\_N" specify the streams to be detached. The second and third forms detach all graphic streams known to setup\_graphics, including online streams.

05/28/75

Name: setup\_graphics, sg

The setup\_graphics command is used to attach and manipulate graphic I/O switches. Its simplest use is to inform the graphic system as to which type of graphic device is being used.

#### Usage

```
setup_graphics -control_args-  
sg -control_args-
```

"-control\_args-" consists of some combination of the following control arguments:

-table gdt\_name, -tb gdt\_name  
causes the graphic device table named "gdt\_name" to be associated with the graphic switches set up on this invocation of the command. This option must appear in the command line, as it serves to describe the device in use.

-from switchname [mode\_spec], -fm switchname [mode\_spec]  
specifies the graphic switches to be attached. More than one set of "-from" control arguments may be given to the command. The optional "mode\_spec" argument specifies one of the opening modes defined by the I/O system (iox\_). If any "mode\_spec" arguments are not supplied, "stream\_input\_output" will be assumed. If no "-from" options appear in an invocation of the command, the assumed default is: "-from graphic\_output stream\_output -from graphic\_input stream\_input".

-to switch\_name  
specifies the target switch name to which all the switches mentioned in "-from" options are to be attached, though graphic\_dim\_. If this option is not given in the command line, the assumed default is: "-to tty\_i/o -online".

-online  
specifies that the switch "user\_i/o", as well as all the switches mentioned in "-from" options, is to be channelled through the graphic\_dim\_. This is the normal mode of operation for online (i.e. teletype-like) devices.

#### Examples:

A user sitting at a Tektronix 4014 terminal can prime the graphic system to use his device by issuing:

```
setup_graphics -tb tek_4014
```

A user wishing to use an offline CalComp 915/1036 plotter with the graphic system can express this with the command:

```
setup_graphics -tb calcomp_915 -to offline_graphics_
```

Features for Upwards-Compatibility:

If the first argument to `setup_graphics` does not begin with the character "-", it is assumed to be a GDT name. If `setup_graphics` is invoked in this way, it will automatically invoke `remove_graphics` before proceeding to attach the switches. This will cause all known graphic switches to be detached prior to the new attachments being made. This is for compatibility with previous releases. It is expected that this feature will go away after users have had enough time to acclimate themselves to the new argument format.

The "-stream" and "-switch" control arguments are synonymous to "-to". These control arguments are also expected to go away after an acclimatization period.

TITLE: Graphic Editor for Multics Graphics System		STATUS	DATE
AUTHOR: C. DV Tavares		Written	05.19.75
-Coded in: <input checked="" type="checkbox"/> PL/I <input type="checkbox"/> ALM <input type="checkbox"/> other- explain in DETAILED PROPOSAL -Planned for System MR 2.2 -Fixes Bug Number(s) _____ -Documented in MTB _____ -User/Operations-visible Interface change? <input checked="" type="checkbox"/> yes <input type="checkbox"/> no -Incompatible change? <input checked="" type="checkbox"/> yes <input type="checkbox"/> no -Performance: <input type="checkbox"/> Better <input checked="" type="checkbox"/> Same <input type="checkbox"/> Worse Addition -Replaces MCR _____		Status	A 06/19/75
		Expires	12/19/75
Category (Check One)		DOCUMENTATION CHANGES	
Lib. Maint. Tools		Document Specify One or More	
Sys. Anal. Tools		MPM (Vol, Sect.)	
Sys. Prog. Tools		PLMS (AN #)	
355		MOSN (Sect.)	
BOS		MPAM (Sect.)	
Salvager		MSAM (Sect.)	
Ring Zero		Info Segs graphic_editor.info	
Ring One		Other (Name) MPM GUS	
SysDaemon/Admin.		None (Reason)	
Runtime			
XX User Cmmd/Subr.			
Objections/Comments:			

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

**SUMMARY:** This MCR implements the graphic editor, as described in MTB 175 with a few minor additions. Specifically, these additions are implementation of the "input" command (which was documented as "not yet implemented"), and addition of capabilities for handling the "color" graphic element.

**REASONS:** Users may now create, store, edit, and manipulate graphic structures through a reasonable interactive interface, rather than having to create and compile programs to perform these operations on simple test cases, or, for that matter, on large applications. The reasons are outlined more specifically in the MTB, if this is necessary.

**IMPLICATIONS:** This is an additional graphic system capability, located in a separate bound segment, whose bundling status should be logically associated with that of the rest of the graphic system.

**DETAILED PROPOSAL:** Four modules are to be added to the system. They are: graphic\_editor, the command interface, which handles and dispatches on user input lines; ge\_parse, which performs actual terminal or file input and parses tokens in the command lines, as well as performing macro expansions; ge\_eval, which interprets the tokens and performs assignments, evaluations, and tuple formations, as well as (by performing these) creating and editing graphic structures; and ge\_interpret, which interprets graphic structures and prints them out to the user in various interpretable forms. These four modules are to be located in bound\_graphic\_editor.



05/02/75

Name: graphic\_editor, ge

The graphic\_editor is an interactive tool which may be used to create and edit graphic structures. It is capable of storing these structures into, and retrieving them from, permanent graphic segments (PGS's).

Usage:

graphic\_editor [seg1] [seg2] ... [seg<sub>n</sub>]

1) seg<sub>i</sub> (optional) is a pathname specifying a segment to be read into the graphic editor. This segment must have a suffix of ".ge". If the suffix is not explicitly stated in the command line, it will be assumed. This segment may contain a list of editor commands or assignments, in the same format as they might have been typed into the editor interactively. The segments will be interpreted by the editor in the order specified.

Requests fall into two categories: commands and assignments. In general, commands may be terminated with either a semicolon ";" or a newline. Assignments (due to their ability to be quite lengthy) may be terminated only with a semicolon. Sometimes one or more of the arguments of a command may be an assignment. In these cases, only the semicolon is accepted as a terminator.

A complete specification of the assignment language and descriptions of complex operations is too lengthy to place into an info file. The interested user may find this information in the MPM Graphics Users' Supplement.

A list of defined system symbols (known graphic elements) follows. (The list of editor commands will be found after the list of system symbols.)

#### Defined System Symbols

#### Positional Elements

All positional elements take arguments of the form "x y z". If any of these arguments are not supplied, it will be assumed to be zero. It is possible to supply no arguments, only "x", only "x y", or all of "x y z". No other combinations (e.g. "x z") are parsable.

>--->	setposition	(sps)
	setpoint	(spt)
	vector	(vec)
	shift	(sft)
	point	(pnt)

#### Modal Elements

In general, non-numeric values for mode settings may be any string which is used in the include file

"graphic\_enames.incl.pl1" to describe that particular mode. Values shown here represent the strings currently recognized.

>---> intensity (int)  
Argument: Integer, 0 through 7, or "off" (0), "on" (7), or "full" (7).

>---> linetype (lin)  
Argument: Integer, 1 through 5, or:  
"solid" (0)  
"dashed" (1)  
"dotted" (2)  
"dash\_dotted" (3)  
"long\_dashed" (4)

>---> blink (blk)  
Arguments may be any from the following correspondence list:  
"steady" 0  
"blinking" 1

>---> sensitivity (sns)  
Arguments may be any from the following correspondence list:  
"insensitive" 0  
"sensitive" 1

>---> color  
Arguments (up to three) must be of the form:  
<color\_spec> [<intensity>]

The <color\_spec> may be "red", "blue", or "green". Intensities may be any integer from 0 to 63. If a <color\_spec> is not followed by an intensity, 63 will be assumed.

#### Mapping Elements

>---> rotation (rot)  
Arguments: "x\_rotation y\_rotation z\_rotation" in floating or integer degrees.

>---> scaling (scl)  
Arguments: "x\_scale y\_scale z\_scale" in integer or floating notation.

#### Miscellaneous Elements

>---> null  
No arguments. This element represents the "zero node". It is a placeholder, or a graphic no-op.

>---> text "string" [position]  
"string" [position]  
The second form of the text string is implicitly understood. If the first (explicit) form is used, the string need not be enclosed in quotes. The optional argument [position] specifies the string alignment. The argument may be either an integer or a string, from the following correspondence list:

upper\_left ul 1

upper_center	uc	2
upper_right	ur	3
left	l	4
center	c	5
right	r	6
lower_left	ll	7
lower_center	lc	8
lower_right	lr	9

>--->     datablock <element>  
          data <element>  
creates a datablock containing the element <element>.

A list of editor commands follows.  
                                  Commands

>--->     display <exprn>  
          di <exprn>  
causes the screen to be erased and the graphic structure specified to be displayed. If the argument is a tuple, no erase is performed between each element of the tuple. The tuple is not collected into an implicit array, but is displayed one element at a time. This means that the current graphic position will revert to (0, 0, 0) before displaying each new element.

>--->     list [control\_args]  
          ls [control\_args]  
will list selected symbol tables. Any number of control arguments may be specified. The following control arguments are allowed:

- commands -com list the editor commands and their abbreviations.
- system -sys list the available system symbols and their abbreviations.
- macros -mc list the defined macros.
- symbols -sym list the user symbols.
- all -a list all of the above.

If no control arguments are given, "-symbols -macros" is assumed, with the listing of macros suppressed if there are none.

>--->     execute <command\_line>  
          exec <command\_line>  
causes the <command\_line> to be passed to the command processor.

>--->     show <exprn>  
causes an abbreviated description of the tuple <exprn> to be printed to the user's terminal.

>--->     replay <exprn>  
like show, except that the entire graphic subtree inferior to the

chosen node is described in assignment notation, along with nested assignments where appropriate. This command allows a user to "replay" a graphic structure in a form acceptable as input to the graphic\_editor.

>--->        remove <symbol1> [symbol2] ... [symboln]  
causes those elements named to be removed from the table of known user symbols.

>--->        use [pathname]  
causes the permanent graphic segment (PGS) specified by [pathname] to be loaded into the WGS. This allows the editor to use a previously-constructed set of graphic structures.

>--->        save [pathname]  
causes the contents of the WGS to be saved in a PGS specified by [pathname]. If [pathname] is not supplied, graphic\_editor will use the pathname which was last supplied to a "use" or "save" command.

>--->        get [mode] [(pathname)] <sym1> [sym2] ... [symn]  
gets the structures (or macros) named <sym1> ... [symn] from the PGS specified by [(pathname)]. (The "pathname", if it is given, must be within parentheses.) The [mode] argument determines what action is taken on attempts to redefine an existing name:

-safe        leave the old symbol as is and print an error message.

-force        redefine the symbol and all subsidiary symbols.

-replace\_only

-rpo        redefine the symbol. If subsidiary symbols are duplicated in the WGS, use the copies in the WGS. For any subsidiary symbols not so duplicated, create null (empty) symbols.

-replace\_all

-rpa        redefine the symbol. If subsidiary symbols are duplicated in the WGS, use the copies in the WGS. For any subsidiary symbols which do not exist in the WGS, use the ones in the PGS.

If [mode] is not specified, "-safe" will be assumed. The [mode] and [(pathname)] arguments, if present, may occur in either order, but must precede any symbol names.

>--->        put [mode] [(pathname)] <sym1> [sym2] ... [symn]  
stores the structures (or macros) named <sym1> ... [symn] into the PGS specified by [(pathname)]. The [mode] argument determines what action is taken on attempts to redefine existing names. Allowable modes are the same as for "get", and are analogous.

>--->        read <pathname>

causes the file specified by <pathname> to be interpreted as a set of editor commands. If the suffix ".ge" is not explicitly provided in <pathname>, it will be assumed.

>---> quit  
is used to exit from the editor.

>---> restart  
will re-initialize the editor, the working graphic segment, and all associated symbol tables.

>---> help  
?  
directs the user to relevant documentation.

>---> macro <name> [arg1] ... [argg] = <exprn>  
macro show <name1> ... [nameg]  
macro replay <name1> ... [nameg]

The first form defines a macro with name <name>, and arguments [arg1] ... [argg]. The other forms do for macros what "show" and "replay" do for symbols.

>---> input (<device\_name>) <sym1> ... <symg>  
requests that one or more "what" inputs be requested from device (<device\_name>). The device names currently recognized are:  
"any"  
"joystick"  
"keyboard"  
"lightpen"  
"mouse"  
"pen\_tablet"  
"terminal\_program"  
"trackball"

Multics Change Request

TITLE: Emergency change to pll's handling of fixed( decimal_constant ...)		STATUS	DATE
AUTHOR: R. A. Barnes		Written	06.11.75
-Coded in: <input checked="" type="checkbox"/> PL/I <input type="checkbox"/> ALM <input type="checkbox"/> other- explain in DETAILED PROPOSAL -Planned for System MR 2.2 -Fixes Bug Number(s) -Documented in MTB -User/Operations-visible Interface change? <input checked="" type="checkbox"/> yes <input type="checkbox"/> no -Incompatible change? <input type="checkbox"/> yes <input checked="" type="checkbox"/> no -Performance: <input type="checkbox"/> Better <input checked="" type="checkbox"/> Same <input type="checkbox"/> Worse -Replaces MCR		Status	A 66/19/75
		Expires	12/19/75
		DOCUMENTATION CHANGES	
Category (Check One)		Document	Specify One or More
<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			MPM (Vol, Sect.)
<input type="checkbox"/> Ring Zero			PLMS (AN #)
<input type="checkbox"/> Ring One			MOSN (Sect.)
<input type="checkbox"/> SysDaemon/Admin.			MPAM (Sect.)
<input type="checkbox"/> Runtime			MSAM (Sect.)
<input checked="" type="checkbox"/> User Cmnd/Subr.			
Objections/Comments:		Info Segs	
		Other (Name) compiler warning	message
		None (Reason)	

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

**SUMMARY:** pll's handling of fixed(<decimal\_integer\_constant>...) will be temporarily changed so that a binary result will be (incorrectly) generated and a warning issued.

**REASONS:** In the last release of pll, a longstanding bug was fixed in which fixed(<decimal\_integer\_constant>...) erroneously produced a binary result instead of the correct decimal result. Unfortunately, many Ring 0 programs use constructs such as bit(fixed(7,3),3) which now produce calls to any\_to\_any\_ which cannot be allowed.

**IMPLICATIONS:** Programs which compiled without warning before, may now get warnings. The bug will be temporarily unfixed.

DETAILED PROPOSAL:

1. An emergency installation has been submitted in which the compiler produces a binary result for fixed(<decimal\_integer\_constant>...), but warns the user that the compiler will soon be changed to produce a decimal result for that construct and suggests that he/she use the binary builtin.
2. The next regularly installed compiler will produce a decimal result for the construct and issue a warning suggesting that binary be used.

TITLE: Fix zeroing E191 reused addresses bug in Salvager		STATUS	DATE
AUTHOR: A. Kobziar		Written	06.13.75
-Coded in: <input type="checkbox"/> PL/I <input type="checkbox"/> ALM <input type="checkbox"/> other- explain in DETAILED PROPOSAL -Planned for System MR -Fixes Bug Number(s) <u>unreported</u> -Documented in MTB -User/Operations-visible Interface change? <input type="checkbox"/> yes <input checked="" type="checkbox"/> no -Incompatible change? <input type="checkbox"/> yes <input checked="" type="checkbox"/> no -Performance: <input type="checkbox"/> Better <input checked="" type="checkbox"/> Same <input type="checkbox"/> Worse -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 checked="" type="checkbox"/> Salvager	MPAM (Sect.)	
	<input 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) Bug fix	
	<input type="checkbox"/> User Cmnd/Subr.		
Objections/Comments:			

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

SUMMARY:

Add a new segment to the salvager header, "reused\_addr\_seg", to be used in zeroing the contents of reused addresses. Change salv\_check\_map.pll to use this seg rather than salv\_temp\_dir.

REASONS:

If reused addresses occur on a device other than the one containing the salvager partition, the second call to pc\$cleanup will crash the salvager with a "out of E191" error, as the salvager does not have the second device in its fsdct. Rather than save and restor the did and first page address of salv\_temp\_dir, the more visible approach of using an appropriately named window segment was chosen.

TITLE: Fix message segment deletion bug		STATUS	DATE
AUTHOR: Jerry A. Stern		Written	6/16/75
-Coded in: <input checked="" type="checkbox"/> PL/I <input type="checkbox"/> ALM <input type="checkbox"/> other- explain in DETAILED PROPOSAL -Planned for System MR 3.0 -Fixes Bug Number(s) -Documented in MTB -User/Operations-visible Interface change? <input type="checkbox"/> yes <input checked="" type="checkbox"/> no -Incompatible change? <input type="checkbox"/> yes <input checked="" type="checkbox"/> no -Performance: <input type="checkbox"/> Better <input checked="" type="checkbox"/> Same <input type="checkbox"/> Worse -Replaces MCR		Status	A 06/24/75
		Expires	12/24/75
		DOCUMENTATION CHANGES	
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 checked="" type="checkbox"/> Ring One <input type="checkbox"/> SysDaemon/Admin. <input type="checkbox"/> Runtime <input 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)	<input checked="" type="checkbox"/>

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

Summary: Fix a bug in the procedure mseg\_ that causes a message segment not to be unlocked after an unsuccessful attempt to delete it.

Reasons: An attempt to delete a message segment may be denied by ring 0 for reasons such as safety switch on, no modify permission on parent directory, etc. In these cases, the message segment is not unlocked as it should be. The next attempt to lock the message segment will force the message segment salvager to be called.

Detailed Proposal: Change mseg\_ to unlock a message segment after an unsuccessful deletion attempt.



TITLE: Fix ec bug erroneously complaining about unbalanced brackets in &if construct		STATUS	DATE
AUTHOR: S. Webber		Written	06.16.75
-Coded in: <input checked="" type="checkbox"/> PL/I <input type="checkbox"/> ALM <input type="checkbox"/> other- explain in DETAILED PROPOSAL -Planned for System MR _____ -Fixes Bug Number(s) _____ -Documented in MTB _____ -User/Operations-visible Interface change? <input type="checkbox"/> yes <input checked="" type="checkbox"/> no -Incompatible change? <input type="checkbox"/> yes <input checked="" type="checkbox"/> no -Performance: <input type="checkbox"/> Better <input checked="" type="checkbox"/> Same <input type="checkbox"/> Worse -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 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) Bug fix only		
<input checked="" type="checkbox"/> User Cmmnd/Subr.			
Objections/Comments:			

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

SUMMARY:

Fix bug in abs\_io\_ which erroneously complained about unbalanced brackets in &if clauses.

REASONS:

Fix bug.

Multics Change Request

TITLE: Fix index_set active function		STATUS	DATE
AUTHOR: S. Herbst		Written	06.18.75
-Coded in: <input checked="" type="checkbox"/> PL/I <input type="checkbox"/> ALM <input type="checkbox"/> other- explain in DETAILED PROPOSAL -Planned for System MR -Fixes Bug Number(s) _____ -Documented in MTB _____ -User/Operations-visible Interface change? <input checked="" type="checkbox"/> yes <input type="checkbox"/> no -Incompatible change? <input type="checkbox"/> yes <input checked="" type="checkbox"/> no -Performance: <input type="checkbox"/> Better <input checked="" type="checkbox"/> Same <input type="checkbox"/> Worse -Replaces MCR _____		Status	A 06/24/75
		Expires	12/24/75
		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 change	

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

SUMMARY:

Fix index\_set to work correctly for any number such that the resulting character string will fit into the return argument.

REASON:

There is no documented limit on the size of the argument but index\_set currently complains if the number is greater than 300 and produces a storage condition for arguments less than 300 and greater than 228.

TITLE: Change segs to return null string instead of ""		STATUS	DATE
AUTHOR: S. Herbst		Written	06.18.75
-Coded in <input checked="" type="checkbox"/> PL/I <input type="checkbox"/> ALM <input type="checkbox"/> other- explain in DETAILED PROPOSAL -Planned for System MR _____ -Fixes Bug Number(s) _____ -Documented in MTB _____ -User/Operations-visible Interface change? <input checked="" type="checkbox"/> yes <input type="checkbox"/> no -Incompatible change? <input checked="" type="checkbox"/> yes <input type="checkbox"/> no -Performance: <input type="checkbox"/> Better <input checked="" type="checkbox"/> Same <input type="checkbox"/> Worse -Replaces MCR _____		Status	A 06/24/75
		Expires	12/24/75
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 Cmmnd/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) No change	

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

PROPOSAL:

Change segs and related active functions to return null string rather than "" (i.e., a pair of literal quotes) when no match is found for a starname.

REASON:

([segs starname]) should be a null iteration set when there is no match for starname. Currently, however, it is an iteration with one element, "". There is no good reason for returning the string "".

IMPLICATIONS:

This is a minor incompatible change that may affect the use of segs, etc., by exec\_coms. See attached changes notice.

MCR 1235  
Attachment

For pending\_changes\_info:

The following star name active functions have been changed to return null string instead of the string "" when no match is found for a star name:

branches, nonlinks  
directories, dirs  
files  
links  
nondirectories, nondirs  
nonsegments, nonsegs  
segments, segs

Multics Change Request

TITLE: Upgrade online_dump for sst_names_		STATUS	DATE
AUTHOR: B. Greenberg		Written	06.19.75
-Coded in: <input checked="" type="checkbox"/> PL/I <input type="checkbox"/> AIM <input type="checkbox"/> other- explain in DETAILED PROPOSAL -Planned for System MR 3 -Fixes Bug Number(s) _____ -Documented in MTB _____ -User/Operations-visible Interface change? <input type="checkbox"/> yes <input checked="" type="checkbox"/> no -Incompatible change? <input checked="" type="checkbox"/> yes <input type="checkbox"/> no -Performance: <input type="checkbox"/> Better <input checked="" type="checkbox"/> Same <input type="checkbox"/> Worse -Replaces MCR _____	Category (Check One)		
	<input type="checkbox"/> Lib. Maint. Tools	Status	A 06/24/75
	<input checked="" type="checkbox"/> Sys. Anal. Tools	Expires	12/24/75
	<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 #)	53	
<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 type="checkbox"/> User Cmnd/Subr.	Other (Name)		
	None (Reason)		
Objections/Comments:			

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

SUMMARY:

Remove dependency of online\_dump on KST, and use SST name table.

REASONS:

Very shortly, pathnames of directories will no longer be available in the KST. online\_dump, which is used to print fdumps, currently uses these pathnames.

IMPLICATIONS:

Full pathnames of segments as opposed to reference names, or nothing will be printed in FDUMPs.

DETAILED PROPOSAL:

Make online\_dump use new subroutine, get\_ast\_name\_, to compute pathnames of active segments. This interface will be accessible in tools (see writing).

NOTE: This version of online\_dump must be installed any time after BOS 1-44, and before the path-name associative memory.

Name:           get\_ast\_name\_

```
dcl get_ast_name_entry  
    (ptr, ptr, ptr, char(*));
```

Use:            call get\_ast\_name\_ (astep, sstp, sstup,  
                  retstring);

astep        is a pointer to an AST entry for  
              which a pathname is sought (Input)

sstp         is a pointer to the copy of the  
              SST segment in which the AST  
              entry pointed to by astep exists.  
              (Input)

sstup        is a pointer to the corresponding  
              copy at the SST name table. (Input)

retstring    is the pathname of the segment  
              whose AST entry is pointed to by  
              astep. (Output)

TITLE: Fix page control bugs		STATUS	DATE
AUTHOR: B. Greenberg		Written	06.19.75
-Coded in: <input checked="" type="checkbox"/> PL/I <input checked="" type="checkbox"/> ALM <input type="checkbox"/> other- explain in DETAILED PROPOSAL -Planned for System MR 3 -Fixes Bug Number(s) _____ -Documented in MTB _____ -User/Operations-visible Interface change? <input type="checkbox"/> yes <input checked="" type="checkbox"/> no -Incompatible change? <input type="checkbox"/> yes <input checked="" type="checkbox"/> no -Performance: <input type="checkbox"/> Better <input checked="" type="checkbox"/> Same <input type="checkbox"/> Worse -Replaces MCR _____	Category (Check One)	Status	A 06/24/75
	<input type="checkbox"/> Lib. Maint. Tools	Expires	12/24/75
	<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 #)	60
	<input checked="" 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 type="checkbox"/> User Cmmnd/Subr.	Other (Name)		
	None (Reason)		

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

PROPOSAL:

Fix old and new page control bugs.

REASONS:

Four known problems have been observed and found.

IMPLICATIONS:

Better reliability.

DETAILED PROPOSAL:

1. (Ancient bug) Shutdown sometimes leaves segments "active", due to Paging Device flush bug. Wired-shutdown should stop page-multilevel activity before flushing the Paging Device.
2. (New bug) Deconfiguring the entire paging device fails. page\_fault\$allocate\_pd should check pd\_using.
3. (New bug) Quota can be depleted by deactivating segments containing unmodified zero in-core pages. pc\$cleanup should account for such pages.
4. (New bug). Pages faulted in from disk, and modified before potential eviction, are not updated to the paging device at write\_page time. This causes an excess of disk traffic.

TITLE: Improve check_sst		STATUS	DATE	
AUTHOR: B. Greenberg		Written	06.19.75	
-Coded in: <input checked="" type="checkbox"/> PL/I <input type="checkbox"/> ALM <input type="checkbox"/> other- explain in DETAILED PROPOSAL -Planned for System MR 3 -Fixes Bug Number(s) _____ -Documented in MTB _____ -User/Operations-visible Interface change? <input type="checkbox"/> yes <input checked="" type="checkbox"/> no -Incompatible change? <input type="checkbox"/> yes <input checked="" type="checkbox"/> no -Performance: <input type="checkbox"/> Better <input checked="" type="checkbox"/> Same <input type="checkbox"/> Worse -Replaces MCR _____	Category (Check One)		Status A 06/24/75	
		Lib. Maint. Tools	Expires 12/24/75	
		Sys. Anal. Tools	DOCUMENTATION CHANGES	
		<input checked="" type="checkbox"/> Sys. Prog. Tools	Document	Specify One or More
	355	MPM (Vol, Sect.)		
	BOS	PLMS (AN #)	53	
	Salvager	MOSN (Sect.)		
	Ring Zero	MPAM (Sect.)		
	Ring One	MSAM (Sect.)		
	SysDaemon/Admin.	Info Segs		
	Runtime	Other (Name)		
	User Cmmd/Subr.	None (Reason)		
Objections/Comments:				

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

SUMMARY:

Update check\_sst to 25-5 page control, fix bugs, improve same.

REASONS:

The hardcore debugging tool check\_sst, used to analyze page control problems, has some dependencies on pre-25-5 page control and some minor protocol errors. Fix all this, display more and better checks, and more meters.

IMPLICATIONS:

None.

DETAILED PROPOSAL:

n/a



TITLE: Delete no_old_alm option from binder		STATUS	DATE
AUTHOR: M. Weaver		Written	06.20.75
-Coded in: <input checked="" type="checkbox"/> PL/I <input type="checkbox"/> ALM <input type="checkbox"/> other- explain in DETAILED PROPOSAL -Planned for System MR _____ -Fixes Bug Number(s) _____ -Documented in MTB _____ -User/Operations-visible Interface change? <input checked="" type="checkbox"/> yes <input type="checkbox"/> no -Incompatible change? <input checked="" type="checkbox"/> yes <input type="checkbox"/> no -Performance: <input type="checkbox"/> Better <input checked="" type="checkbox"/> Same <input type="checkbox"/> Worse -Replaces MCR _____	Category (Check One)		DOCUMENTATION CHANGES Document Specify One or More MPM (Vol, Sect.) PLMS (AN #) MOSN (Sect.) MPAM (Sect.) MSAM (Sect.) Info Segs Pending changes Other (Name) None (Reason)
	Lib. Maint. Tools		
	Sys. Anal. Tools		
	Sys. Prog. Tools		
	355		
	BOS		
	Salvager		
	Ring Zero		
	Ring One		
	SysDaemon/Admin.		
Runtime			
<input checked="" type="checkbox"/> User Cmmnd/Subr.			
Objections/Comments:			

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

SUMMARY:

Delete undocumented control argument -no\_old\_alm and undocumented bindfile keyword No\_Old\_Alm from binder. Refuse to bind "old" alm segments.

REASONS:

"Old" alm segments have never been produced on the 6180. The no\_old\_alm option was used as a check before moving from the 645.

IMPLICATIONS:

There may still be some old alm segments; these will have to be reassembled before being rebound. (The system itself probably doesn't have any old alm segments.)

DETAILED PROPOSAL:

This will be done in conjunction with MCR 1222.

MCR 1239  
Attachment

add to binder\_changes.info

6/21/75

The following changes have been installed:

- binder bugs 8, 9, and 10 have been fixed,
- the binder now refuses to bind nonstandard alm segments and no longer accepts the control argument -no\_old\_alm or the bindfile keyword No\_Old\_Alm,
- components with separate static sections can now be bound; the bound segment will have a separate static section only if all nonzero length static sections are separate.