DATE: December 19, 1973

TO: Distribution

FROM: M. S. Hodges

SUBJECT: Multics Change Requests

Attached are copies of Multics Change Requests which were approved
from December 1 through December 15, 1973.

MULTICS CHANGE REQUEST	MCR	176
	Page 1 of 2 Pages	

TITLE: Install "iox_" I/O interface (MSB-113).	STATUS	DATE
	Written	11/16/73
	Approved *H*	12/4/73
AUTHOR: M. G. Smith	Rejected	
SOURCE: (if external) e.g., "User", "Marketing"	Postponed	11/27/73
	Withdrawn	
	Expires	6/4/74

CLASSIFICATION		JUSTIFICATION		Replaced by proposal MCR _____
	Incompatible Change	X	Marketing Requirement	Implemented in System _____
X	Extension	•	Conformance to Standard	Objections/Comments:
	Restriction	X	Increased Consistency	Postponed for further details.
X	Performance Improvement	X	Simplification	****** Approved subject to the usual performance and documentation requirements. A plan for
	Reliability Improvement		Generalization	subsequent related installations is being published. An additional MTB is being
			Bug Fix	published.

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

REASONS: There is a marketing requirement that Multics provide to its customers (1) very efficient implementation of conventional (i.e., PL/I, FORTRAN, and COBOL) I/O access methods to (2) record files, both indexed and unindexed, which reside interchangeably (3) in the Multics file system or on demountable user tape and disk volumes.

In addition, there is an internal requirement (for the efficient design and implementation of language I/O) for a rigidly-specified common I/O interface to be used by all language processors.

The existing I/O switch interface and mechanism are deficient for these purposes in that they (1) involve unnecessary overhead (a table look-up and an extra complete push/call sequence); (2) do not accommodate the necessary operations for indexed files; (3) are so loosely-specified as to be unusable (e.g., any DIM can choose not to support any entry; any DIM can choose to redefine the meaning of any entry; any DIM can choose not to support any element sizes, breaks, delimiters, pointers); (4) do not decouple the operations of attachment and opening (necessary if programs are to be device-independent); and (5) require, for the construction of IOSIMs, that the customer use assembly language, which we wish strongly to discourage.

SUMMARY: (1) Install a new I/O system interface, known as "iox_", as described in MSB-113 and MTB-010, alongside the existing "ios_" system.
(2) Replace the existing "ios_" implementation with one which, as appropriate, (a) maps old calls into new ones (so that existing unconverted programs can use converted DIMs); (b) maps new calls into old ones (so that converted programs can use existing unconverted DIMs); and (c) passes old calls straight through (so that existing unconverted programs can continue to use existing unconverted DIMs).
(3) Convert the most common system procedures (command loop, "ioa_", "file_output") to call the new I/O system interface.
(4) Provide a new file DIM which implements very efficient access to stream and unindexed record files stored in the Multics hierarchy (the other new DIMs mentioned in MSB-113 are not a part of this MCR, and are to be separately proposed).

IMPLICATIONS: (1) All existing software, both system and user, will continue
to work unchanged. The provision of the new I/O interface alongside the old will
in no way interfere with the functioning of programs or DIMs making use of the
old interface.
(2) On an as-needed or as-convenient basis, any existing programs or DIMs can be
converted to use the new interface directly, when they desire to secure the
additional efficiency or functionality.
(3) The installation of the new I/O interface is a prerequisite to the availability
of record I/O in our PL/I and FORTRAN implementations.
(4) While ultimately the new I/O interface is designed for a level of performance
exceeding that attainable with the current interface, in the interim period (before
existing programs and existing DIMs are converted over to use the new interface),
existing programs may notice a performance degradation of 1.5 milliseconds/call
due to the write-arounds involved. See the timing discussion included as an
appendix to this MCR.

DETAILED PROPOSAL: Replace "ios_" (as described above), "real_init_admin_" and
"process_overseer_" (to bring up processes with the new I/O system), "get_at_entry_"
and "print_attach_table" (to extract the old information from new sources). Add
"iox_", composed principally of the modules "attach" (new attach command),
"attach_syn", "attach_tty" (which includes "attach_net", "attach_abs", "attach_mrd",
"attach_oc", "attach_tek", and "attach_ec", and which implement the new I/O
interface by calling the existing DIMs), "find_iocb", "io_call", "ios_call" (an
ALM utility to allow PL/I calls to the transfer vectors of unconverted DIMs),
"piocb" (a utility for printing the contents of I/O control blocks), "propagate",
"attach_file" (the new file DIM), and "tw" (a write-around package which maps old
I/O calls into new ones for typewriter-like DIMs). Change "file_output",
"get_to_cl_", "lsn_util_" "real_sdh_", and "rest_of_ioa_" to call the new I/O
interface.

APPENDIX: Some tests were made to ensure that system performance will not be
adversely affected by this installation.
(1) Null command test. The c.p.u. time to go once around the command loop
(execution of a "nothing" command) was metered. Existing command loop and "ios_"
took 20.8+1.8 milliseconds per trip around the loop. The new command loop (MCR-037)
but still the old "ios_" took 22.3+1.1 msec on the same test. The new command loop
(but not modified to call "iox_": i.e., using the old-to-new write-arounds) and the
new "iox_" took 23.9+2.4 msec on the same test, an increase of 1.6 msec/trip,which
is less than the standard deviation of the observed times. Note: It is not con-
venient to meter the old command loop with the new I/O system because "ios_" is
bound with the old command loop.
(2) Null DIM test. The time to go once around an "ios_$write" call loop (execution
of "ioa_$ioa_stream" through the "discard_output_" DIM) was metered. Existing "ios_"
took 4.3 msec/trip. Replacement "ios_" took 5.7 msec/trip, an increase of 1.4
msec/trip. Inasmuch as neither the DIM nor the program had any significant process-
ing to perform, this test represents the worst-cast performance degradation to
existing software due to installation of the replacement "ios_", namely a 33%
increase in c.p.u. time.
(3) New file DIM test. The time to "ioa_" several thousand lines to a file via
"file_output" was metered. The existing system took 10.4 msec/line. The new I/O
system (including the new file DIM, but with an unconverted "ioa_" as caller) took
10.2 msec/line, a decrease of 2% in c.p.u. time expended.
(4) "ioa_" test. The existing system took 24.1 msec/line to "ioa_" several thousand
lines to the console. The new I/O system (but using an unconverted "ioa_" and a
teletype DIM write-around which called the old DIM) took 25.0 msec/line, an increase
of 4% in c.p.u. time expended.
(5) "print" test. The existing system took 22.3 msec/line to print a large file with
long lines onto the console. The new (but again unconverted "print" command and
write-around DIM) took 23.5 msec/line, an increase of 5% in c.p.u. time.
In conclusion, the tests do not indicate any problematic decrease in performance
during the interim period.

MULTICS CHANGE REQUEST		MCR 180
		Page 1 of 1 Pages

TITLE: Correction to ARPA Network Self-identification Processing	STATUS	DATE
	Written	11/26/73
AUTHOR: D. Wells	Approved H	12/4/73
	Rejected	
SOURCE: (if external) e.g., "User", "Marketing"	Postponed	
	Withdrawn	
	Expires	6/4/74

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	X	Generalization	
		X	Bug Fix	

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

REASONS:

MCR 174 included some changes to the ARPA Network Software to allow the NCP (Network Control Program) to determine the identifying number of the host where it was running by a named reference to the IMP DIM's data base. At that time, all known host number dependencies were altered to utilize this mechanism. Now that test facilities have become available, an additional dependency has been found.

SUMMARY: This MCR proposes the correction of this newly found host number dependency. The mechanism has now been tested and the MIT multics machine has now been operational on the Network as both host 6 and as host 44.

IMPLICATIONS:
MOSM D0.3 Revision 0 has been issued describing the use of the CONFIG card for the ARPA Network.

The MIT multics is currently scheduled (as announced to the Network Community by RFC 500) to switch from being host 6 (on the MIT-MAC IMP) to being host #4 (decimal) (on the MIT-IPC IMP) on Monday, December 17, 1973. This bug fix should be installed before that time; arrangements have already been made with MIT-IPC to facilitate this installation.

MULTICS CHANGE REQUEST

MCR	181
Page 1 of 1 Pages	

		STATUS	DATE
TITLE: Fix to DN 355		Written	11/21
		Approved ⰍH	12/4/73
AUTHOR: R. B. Snyder		Rejected	
SOURCE: (if external) e.g., "User", "Marketing"		Postponed	
		Withdrawn	
		Expires	6/4/74

CLASSIFICATION		JUSTIFICATION		Replaced by proposal MCR _____
	Incompatible Change		Marketing Requirement	Implemented in System _____
	Extension	•	Conformance to Standard	Objections/Comments:
	Restriction		Increased Consistency	
X	Performance Improvement		Simplification	
	Reliability Improvement		Generalization	
		X	Bug Fix #213	

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

REASONS: Fix being made to prevent 355 crashes

SUMMARY: A bug exists wherein dn355 can pick up status words from the Datanet 355 out of order. The fix is to supply sequence numbers with the status words. (This fix had already gone in en an emergency basis.

IMPLICATIONS: Fewer crashes.

MULTICS CHANGE REQUEST

730919

TITLE:	Fix to system_trace	STATUS	DATE
		Written	11/21/73
AUTHOR: R. B. Snyder		Approved 12	12/4/73
		Rejected	
SOURCE: (if external) e.g., "User", "Marketing"		Postponed	
		Withdrawn	
		Expires	6/4/74

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

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

REASONS: System trace needs a lock since two cpu's can attempt to write in trace at the same time.

SUMMARY: A lock will be used to prevent two cpu's from writing in system trace segment at the same time.

IMPLICATIONS: None.

MULTICS CHANGE REQUEST

TITLE:

Rewrite edm for speed and clarity

AUTHOR: Robert Mullen

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

STATUS	DATE
Written	11/27
Approved	## 12/4/73
Rejected	
Postponed	
Withdrawn	
Expires	6/4/74

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

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

REASONS: edm with eis is slower than the more complicated qedx
in some cases.

SUMMARY: Use of structures for some variables will generate copying
of them with MLR's.
Use of label variables can be replaced by internal procedures.
Some character operations are currently performed one at a time
in loops.
Several pieces of common code can be placed in internal procs.
The strategy for certain requests has become wastefully memory
intensive now that string operations have become relatively cheaper.
Further improvements will become apparent as code is cleaned up.

IMPLICATIONS: No user interface to be changed.

DETAILED PROPOSAL: as above.

| MULTICS CHANGE REQUEST | MCR 184 |
| | Page 1 of 1 Pages |

TITLE: New GCOS Simulator	STATUS	DATE
	Written	11/27/73
	Approved #	12/4/73
AUTHOR: T. Casey	Rejected	
SOURCE: (if external) e.g., "User", "Marketing"	Postponed	
	Withdrawn	
	Expires	6/4/74

CLASSIFICATION		JUSTIFICATION		Replaced by proposal MCR _____
	Incompatible Change	X	Marketing Requirement	Implemented in System _____
X	Extension		Conformance to Standard	Objections/Comments:
	Restriction		Increased Consistency	Modify 355 software installation tools as required.
	Performance Improvement		Simplification	
	Reliability Improvement	X	Generalization	
			Bug Fix	

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

REASONS: Install experimental version of GCOS simulator.

SUMMARY: Implemented 32 more control cards than currently installed simulator
supports, along with new software to support 7 new activity cards.
Converted for 256K segments, max length, and eliminated append permission.
Fixed many bugs. Changed error handling to be more like the real GCOS.
Added $ SELECTD card, and prepared for a future change to the $ SELECT card.

IMPLICATIONS: The $ SELECT card is used by the 355 software installation tools, in
a context that would be incorrect in the real GCOS. They will have to be
changed to use the $ SELECTD card instead. The two cards will be processed
identically in the version to be installed. In the next version, the
$ SELECT card will not work in this incorrect context. The installation
tools should therefore be changed soon after this installation.

MULTICS CHANGE REQUEST

MCR _____ 185 _____

Page 1 of 1 Pages

TITLE: Fix to BOS BLAST command

AUTHOR: R. B. Snyder

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

STATUS	DATE
Written	11/28
Approved #	12/4/73
Rejected	
Postponed	
Withdrawn	
Expires	6/4/74

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

Replaced by proposal MCR _____

Implemented in System _____

Objections/Comments:

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

REASONS: The BOS BLAST command needs to wait until the 355 has completed sending
the BLAST message to prevent that message from being clobbered by subsequent
BOS commands.

SUMMARY: The BLAST command will loop for the time required to send the BLAST message
out to a 110 baud terminal (the slowest).

IMPLICATIONS: None.

MULTICS CHANGE REQUEST

MCR ___186___
Page _1_ of _1_ Pages

TITLE: Place check in stop_process to crash system if called
by initializer

AUTHOR: S. Webber _____

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

STATUS	DATE
Written	11/28/73
Approved	12/4/73
Rejected	
Postponed	
Withdrawn	
Expires	6/4/74

CLASSIFICATION		JUSTIFICATION	
	Incompatible Change		Marketing Requirement
	Extension		Conformance to Standard
	Restriction		Increased Consistency
	Performance Improvement		Simplification
	Reliability Improvement		Generalization
			Bug Fix
		X	Search for bug

Replaced by proposal MCR _____

Implemented in System _____

Objections/Comments:

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

REASONS: It is possible for a user ring program to call hcs_$ stop_process to have
its process stopped. However, if this program gets invoked by the initializer things
get very confusing and it is hard or impossible to find out why the initializer wanted
to stop itself. Since the system will crash anyway if the initializer gets stopped I
propose we crash it early so we find out why.

SUMMARY: Make simple check in stop_process.

IMPLICATIONS: None.

Ver. 2
7309191

MULTICS CHANGE REQUEST	MCR ___187___

TITLE: make the date_time active functions operate as commands	STATUS	DATE
	Written	11/26/73
AUTHOR: Gary C. Dixon	Approved	12/4/73
	Rejected	
SOURCE: (if external: e.g., "User", "Marketing") local	Postponed	
	Withdrawn	
	Expires	6/4/74

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

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

REASONS:
    Make the following active functions perform as commands:
date, date_time, day, day_name, hour, long_date, minute, month,
month_name, time, year.

SUMMARY:
    If cu_$af_return_arg returns error_table_$not_act_fnc, then
output the date/time string on the user_output stream instead of
returning it as the active function value.

IMPLICATIONS:
    The date/time active functions will operate as commands,
eliminating the need for commands to perform the equivalent
function.

MULTICS CHANGE REQUEST	MCR ___189___

TITLE: Online Installation documentation	STATUS	DATE
	Written	11/19/73
AUTHOR: P. Kelley	Approved	12/4/73
	Rejected	
SOURCE: (if external; e.g., "User", "Marketing") local	Postponed	
	Withdrawn	
	Expires	6/4/74

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

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

Reasons:
    There are four areas of the online documentation program
which require changing. They are: 1) add capability to produce
formatted documentation for info files and include files; 2)
reformat output to include time of installation along with a
brief prose section specifying MCR number(s) and reason(s) for
change; 3) add capability to update news.info at the time of
installation; 4) specify an absolute pathname for the
documentation log segment.

Summary:
    Modifications will be made to the update_seg command to
accept the optional argument "-log" when initiating an
installation. The presence of this argument will ask for line
input to be entered describing the installation. This variable
length information will be passed to upd_doc_task_ at the time
when documentation takes place during an installation.
    Create the entry upd_doc_task_$write_prose to accept this
line input string, call a subroutine to format it, append it to
the documentation log segment, and insert it in news.info.
    Modify upd_doc_task_ to produce formatted output for info
and include files, and to include the time of installation.
Also, the pathname >ldd>online_installations>utility will be
explicitly specified as the residence of the documentation log
segment (instead of the current "working_dir").

Alter the relationship between upd_log_task_ and upd_doc_task_ so that upd_log_task_ is called by entries in upd_doc_task_ to create (if necessary) and lock the documentation log segment and news.info while appending information.

Implications:

This implementation will provide more accurate documentation (needed for publishing), improved readability, a permanent residence for documentation log, and an immediate update of news.info when an installation has taken place.

TASK DESCRIPTION	PERSONNEL	START	FINISH	M-W	CHANGES-STATUS
update_seg: add -log option and code to accept typed line input describing installation	Kelley			1	
upd_doc_task_: produce formatted documentation for info & include files	Kelley			.2	
upd_doc_task_: add entry $write_prose to format/add prose to the documentation log & news.info	Kelley			1	
upd_log_task_: revise interface with upd_doc_task_	Kelley			.4	
upd_install_task_: add code to call upd_doc_task_$write_prose	Kelley			.2	

TITLE: Installation of TTYM		STATUS	DATE
		Written	11/28/73
AUTHOR: R. B. Snyder		Approved	12/4/73
		Rejected	
SOURCE: (if external) e.g., "User", "Marketing"		Postponed	
		Withdrawn	
		Expires	6/4/74

CLASSIFICATION		JUSTIFICATION		Replaced by proposal MCR _____
	Incompatible Change		Marketing Requirement	
				Implemented in System _____
	Extension	•	Conformance to Standard	Objections/Comments:
	Restriction		Increased Consistency	
X	Performance Improvement		Simplification	
	Reliability Improvement		Generalization	
			Bug Fix	
		X	Need to meter ttydim	

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

REASONS: The uninstalled ttydim metering command TTYM will be converted to run on the 6180 and installed.

SUMMARY: TTYM needs a small bit of converting and in addition, a new subroutine entry meter_gate will be added to the command meter_gate to allow routines (TTYM in this case) to get gate metering data for an array of entry names. In addition, the include file tty.incl.pl1 will be modified to change the declarations of tty_buf and tty_ctl from ext static to based so that TTYM can use the include file to get out the meters.

IMPLICATIONS: The other users of the include file (tty_inter, tty_write, etc) will have to be changed to initialize a ptr to use the based overlays.

MULTICS CHANGE REQUEST	MCR _192____	

TITLE: Fix bug in operator SUBSTTY command.	STATUS	DATE
	Written	11/29/73
AUTHOR: Dennis Capps	Approved#	12/11/73
	Rejected	
SOURCE: (if external; e.g., "User", "Marketing")	Postponed	
	Withdrawn	
	Expires	6/11/74

CLASSIFICATION	JUSTIFICATION	
		Replaced by proposal MCR _____
	Incompatible		Marketing	Implemented in System _____
|_| Change	|_| Requirement	
			Conformance	Objections/Comments:
|_| Extension	|_| to Standard	
			Increased	
|_| Restriction	|_| Consistency	
		Performance		
|_| Improvement	|_| Simplification	
|※| Reliability			
|_| Improvement	|_| Generalization	
		|※|	
|_|_____	|_| Bug Fix #215	
|·|			
|_|_____	|_| _____	

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

REASONS:

System bug 215 is a bug in the message coordinator which causes
the message coordinator to malfunction when an attempt is made to
substitute one terminal for another. The substitution appears to
work, and output messages come out on the new terminal for a
while; then they stop, and further output lines from the system
service processes "pile up" in the device queue. Manual
intervention is necessary to get output started again.

SUMMARY:

The code which copies pending untyped output lines from the old
terminal's queue to the new terminal's queue had an incorrect
assumption about the value of a DO index when the loop exits.
This caused mis-threading of the terminal queue which did not
lose messages, but which caused the system to think that it did
not need to send a device driver wakeup in some cases where this
wakeup was actually needed.

IMPLICATIONS:

MULTICS CHANGE REQUEST

TITLE: **Modifications to network_exec_**

AUTHOR: Kenneth T. Pogran

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

STATUS	
Written	11/30/73
Approved #	12/11/73
Rejected	
Postponed	
Withdrawn	
Expires	6/11/74

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

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

REASONS:

network_exec_ is being changed to:

1. Aid in tracking down severe Network hardware and software problems

2. Enforce a minimum time interval between re-initialization attempts during hardware problems, to avoid tying up the BOS console (and hence the system) with IMP DIM status messages.

3. Provide a functioning default handler for the Network Daemon process.

4. Add a call to ios_$resetread upon entry to "exec" mode in the Network Daemon process.

MULTICS CHANGE REQUEST

MCR 195
Page 1 of 1 Pages

TITLE: Allow EAQ output in floating point

AUTHOR: B. Wolman

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

STATUS	DATE
Written	12/3/
Approved	# 12/11/73
Rejected	
Postponed	
Withdrawn	
Expires	6/11/74

CLASSIFICATION		JUSTIFICATION		
	Incompatible Change		Marketing Requirement	
	Extension	•	Conformance to Standard	
	Restriction		Increased Consistency	
	Performance Improvement		Simplification	
	Reliability Improvement		Generalization	
			Bug Fix	
		X	Convenience	

Replaced by proposal MCR _____

Implemented in System _____

Objections/Comments:

MPM writeup must be updated immediately to reflect this change.

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

REASONS: Debugging programs which do floating-point calculations is complicated by the fact that EAQ register cannot be printed by debug command in floating-point format.

SUMMARY: Add "$eaq" name to list of registers recognized by debug. The $eaq request will display contents of floating accumulator in E format.

IMPLICATIONS: eaq will no longer be usable as a user register name.

STATUS: This fix is currently being used by me. It is ready to be installed.

| MULTICS CHANGE REQUEST | MCR 196 |
| | Page 1 of 1 Pages |

TITLE: Put time out mechanism on waiting processes	STATUS	DATE
	Written	11/29/73
AUTHOR: S. Webber	Approved ⊬	12/11/73
	Rejected	
SOURCE: (if external) e.g., "User", "Marketing"	Postponed	
	Withdrawn	
	Expires	6/11/74

CLASSIFICATION		JUSTIFICATION		Replaced by proposal MCR _____
	Incompatible Change		Marketing Requirement	Implemented in System _____
	Extension		Conformance to Standard	Objections/Comments:
	Restriction		Increased Consistency	1. Assume no measurable degradation of system performance.
	Performance Improvement		Simplification	2. Another MCR expected to trace and locate actual problem.
X	Reliability Improvement		Generalization	
			Bug Fix	

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

REASONS: Change pxss to "time out" on events being waited for. If a process "waits" (state 3) for more than say 30 seconds, pxss should give him a notify (zero the wait event, set the state to "ready") and print a message on-line. This will allow the system to automatically recover from "lost notifies".

SUMMARY: Minor changes to pxss to see if current time differs too much from "time state last changed" when a process is waiting.

IMPLICATIONS: None.

MULTICS CHANGE REQUEST

MCR 197
Page 1 of 1 Pages

TITLE: QEDX default path

AUTHOR: M. Meer

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

STATUS	DATE
Written	12/4
Approved	12/11/73
Rejected	
Postponed	
Withdrawn	
Expires	6/11/74

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

Replaced by proposal MCR _____

Implemented in System _____

Objections/Comments:

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

REASONS: Objections to current implementation of default pathname.

SUMMARY: Change output default pathname handling to make it easier to use.

IMPLICATIONS: Incompatible with current and past usage. May affect exec coms.

DETAILED PROPOSAL:
1) There will be one default pathname per buffer.
2) It will be set when a) reading into an empty buffer
                       b) writing using a pathname
3) It will be set to null when reading into a non_empty buffer even if the same read pathname is used.
4) It will initially be set to null.

I would appreciate advice on 3). Some people strongly object to ever losing the default. Possibly asking a question about resetting the default name and letting the user determine what is to be done.

The status command, x, will print the default together with the other information it already gives.

MULTICS CHANGE REQUEST	MCR 198
	Page 1 of 1 Pages

TITLE: Improvements to debug command	STATUS	DATE
	Written	12/4/73
	Approved # 12/11/73	
AUTHOR: Robert S. Coren	Rejected	
SOURCE: (if external) e.g., "User", "Marketing"	Postponed	
	Withdrawn	
	Expires	6/11/74

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

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

REASONS: Improve accuracy of information provided by debug, make it consistent with trace_stack, new listener (MCR-037).

SUMMARY:
1. Use bound_debug_utils_ (MCR-055).
2. Start stack trace with actual first frame (instead of second as at present).
3. Increase reliability of segment/entry names as used by debug.
4. Correct improper reporting of sblaq, ssq, dfdi opcodes.
5. Make stack depth numbers decimal rather than octal.

IMPLICATIONS: Item 2) above will cause normal stack frame indices to increase by 1.

A version that incorporates item 1) and 3) above has been >udd>m>lib>e since July.

This change depends on the installation of bound_debug_utils_ (MCR-055).

MULTICS CHANGE REQUEST

MCR	199
Page 1 of 1 Pages	

	STATUS	DATE
TITLE: Remove obsolete tape software	Written	12/ /73
	Approved	12/11/73
AUTHOR: N. Morris	Rejected	
SOURCE: (if external) e.g., "User", "Marketing"	Postponed	
	Withdrawn	
Internal	Expires	6/11/74

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

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

REASONS: tdsm_ is an obsolete version of tape_, the Multics Standard Tape DSM.
was replaced more than a year ago and was left in the system for
compatibility. With the installation of tape reel management and MTS-500
software, tdsm_ will become unusable.

IMPLICATIONS: Any obsolete programs (there should be none) invoking tdsm_ will cease
to work. (They probably don't work anyway since parts of tdsm_ were
last compiled in March, 1972 in V1PL1.)

MULTICS CHANGE REQUEST

MCR	200
Page 1 of 1 Pages	

TITLE: Avoid hardware bug in slt_manager		STATUS	DATE
		Written	12/04/73
AUTHOR: David M. Jordan		Approved #	12/11/73
		Rejected	
SOURCE: (if external) e.g., "User", "Marketing"		Postponed	
		Withdrawn	
		Expires	6/11/74

CLASSIFICATION		JUSTIFICATION		Replaced by proposal MCR _____
	Incompatible Change		Marketing Requirement	Implemented in System __21.5a__
	Extension		Conformance to Standard	Objections/Comments: .
	Restriction		Increased Consistency	
X	Performance Improvement		Simplification	Retain system tape which fails as a "test case" and push to repair hardware.
X	Reliability Improvement		Generalization	
			Bug Fix	
		X	Hardware bug avoidance	

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

REASONS: CPU B does not properly handle page faults during the execution of RPD instructions.

SUMMARY: Modify slt_manager to remove a RPD loop in the comparison of segment names. Replace the RPD loop with a CMPC instruction.

IMPLICATIONS: None (Bootloads on a CPU B development system will now work)

MULTICS CHANGE REQUEST

MCR 201
Page 1 of 1 Pages

		STATUS	DATE
TITLE: Qedx addressing			
		Written	12/ 74
		Approved #	12/11/73
AUTHOR: M. Meer		Rejected	
SOURCE: (if external) e.g., "User", "Marketing"		Postponed	
		Withdrawn	
		Expires	6/11/74

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	X	Generalization	
		X	Bug Fix	

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

REASONS: Fix bug, user request

SUMMARY: Fix addressing bug which gave error on 0a in an empty buffer.
Extend addressing by putting off evaluation of complex numerical
addressing as late as possible.

IMPLICATIONS: None

DETAILED PROPOSAL: Examples for a buffer with 5 lines
1+10 - 7 p prints line 4
1+10 - 7 /x/ p starts searching for x at line 4
if . is set to line 2 then
      .6 - 4 p prints line 4
      .6 -4, .6 - 3 p prints lines 4 and 5

All these would currently give address-out-of-buffer errors.

MULTICS CHANGE REQUEST	MCR 202
	Page 1 of 1 Pages

TITLE: Bugs in listing tape system	STATUS	DATE
	Written	12/4/73
AUTHOR: M. Meer	Approved #	12/11/73
	Rejected	
SOURCE: (if external) e.g., "User", "Marketing"	Postponed	
	Withdrawn	
	Expires	6/11/74

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	
		X	Unreported Bug Fix	

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

REASONS: Bug fix

IMPLICATIONS: None

DETAILED PROPOSAL:

1) Incorrect argument processing caused by incorrect usage of the initial attribute in a declare statement. Module is listing_tape_print.pl1.

2) The print_these internal procedure in lts_output_.pl1 was bumping an index too soon causing incorrect sequencing and out of sync errors when going from one reel to the next while printing.

MULTICS CHANGE REQUEST	MCR 203
	Page 1 of 1 Pages

TITLE: Repair defective tape software	STATUS	DATE
	Written	12/5
AUTHOR: N. Morris	Approved ✗	12/11/73
	Rejected	
SOURCE: (if external) e.g., "User", "Marketing"	Postponed	
	Withdrawn	
	Expires	6/11/74

Replaced by proposal MCR _____

Implemented in System _____

Objections/Comments:

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

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

REASONS: tape_mount_label_ was written in such a way that it did not conform to the standard format for Multics Standard Tapes. This caused certain tapes to be unreadable.

PROPOSAL: Fix tape_mount_label_ and upgrade it at the same time to allow use of MTS-500 on Multics.