DATE: October 31, 1973

TO: Distribution

FROM: M. S. Hodges

SUBJECT: Multics Change Requests

Attached are copies of all Multics Change Requests which were
approved from October 16 - October 31, 1973.

MULTICS CHANGE REQUEST

TITLE: **Updating the ARPA Network Host Table**

AUTHOR: _R. Kanodia_

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

STATUS	DATE
Written	10/9/73
Approved	10/16/73
Rejected	
Postponed	
Withdrawn	
Expires	

CLASSIFICATION		JUSTIFICATION	
	Incompatible Change		Marketing Requirement
X	Extension	X	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: **There are several new hosts in the ARPA Network and the table containing symbolic host names needs updating.**
Change host_table.

MULTICS CHANGE REQUEST	MCR 074
	Page 1 of 1 Pages

TITLE: Prformance Improvement and Bug Fixes in IMP DIM.	STATUS	DATE
	Written	10/9/73
AUTHOR: Raj Kanodia	Approved	10/16/73
	Rejected	
SOURCE: (if external) e.g., "User", "Marketing"	Postponed	
	Withdrawn	
	Expires	

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

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

REASONS:

1. Incorrect reporting of status on operator's console in some cases.
   Change imp_status.pl1 and imp_status_driver.ioc.
2. Bug in analyzing IOM Central and User Fault Status.
   Fix imp_status.pl1 and imp_status_driver.ioc.
3. Bug in statistics gathering.
   Fix imp_input_processor.pl1.
4. Bug in imp_read prevents reading of more than one message in one call.
   The next revision of the NCP (Network Control Programs) will begin
   using this feature to improve performance.
   Change imp_read.pl1.
5. Currently Host number of the Multics site is built into the NCP. This
   will cause problems when switching over to the new IMP. It is proposed
   that the host number be derived from the PRPH cards specifying
   IMP channels, and stored in the IMP DIM data segs from where the
   NCP can pick it up.
   Change imp_data.alm and imp_dcm_init.pl1

IMPLICATIONS:

A MOSN on the changes to configuration cards must be issued.

MULTICS CHANGE REQUEST

MCR   076
Page 1 of 1 Pages

TITLE:	STATUS	DATE
Fix minor bug in rename_paths_	Written	10/8/73
	Approved ⧸	10/16/73
AUTHOR: T.H. VanVleck	Rejected	
SOURCE: (if external) e.g., "User", "Marketing"	Postponed	
	Withdrawn	
	Expires	

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

Replaced by proposal MCR _____

Implemented in System _____

Objections/Comments:

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

REASONS: The program "rename_paths_" encounters an out-of-bounds copying a put with more than 1350 users.

SUMMARY: Change calculation of pat length in rename_pnt_: one-line fix.

IMPLICATIONS: None

MULTICS CHANGE REQUEST		MCR 077	
		Page 1 of 1 Pages	

TITLE: Fix error in message routing DIM	STATUS	DATE
	Written	10/5/
AUTHOR: T. H. VanVleck	Approved	10/16/73
	Rejected	
SOURCE: (if external) e.g., "User", "Marketing"	Postponed	
	Withdrawn	
	Expires	

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

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

REASONS: An error in the message routing DIM caused the initializer process to loop
in certain circumstances after an unexpected error in the initializer.
This caused ERFs 299 and 300, both of which required a system crash.

SUMMARY: A missing "else" clause in mrd_util_ caused the reset write function to
loop if output messages from more than one source appeared in a message
routing segment. (This situation is possible in the initializer.)
The unclaimed signal handler in system control issues an abort call when
a fault occurs.

Because this bug was crashing the system, the fix has been emergency-
installed at 1900 on 10/5/73.

IMPLICATIONS: None.

MULTICS CHANGE REQUEST	MCR 078
	Page 1 of 1 Pages

TITLE: REMOVE BULK STORE DEPENDENT CODE FROM EMERGENCY SHUT-DOWN	STATUS	DATE
	Written	10/8/73
	Approved ✗	10/16/73
AUTHOR: ___N.I. Morris___	Rejected	
SOURCE: (if external) e.g., "User", "Marketing"	Postponed	
Internal	Withdrawn	
	Expires	

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

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

REASONS: Device dependent code was placed in the emergency shutdown module. This

code was designed to reset a hung Bulk Store. emergency_shutdown already

has a call for resetting all page control devices. The Bulk Store DIM

should take advantage of this call to reset the Bulk Store. All Bulk

Store dependent code should be in the bulk DIM. It is a bad precedent

to scatter device-dependent all over the system.

MULTICS CHANGE REQUEST		MCR 079	
		Page 1 of 1 Pages	
TITLE: FIX BUG IN FDUMP		STATUS	DATE
		Written	10/9/73
AUTHOR: N. I. Morris		Approved ᚬ	10/16/73
		Rejected	
SOURCE: (if external) e.g., "User", "Marketing"		Postponed	
Internal		Withdrawn	
		Expires	

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

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

REASONS:

A problem was found in FDUMP which caused the appending package to overlay

FDUMP's literals. This had been causing wrong processes to be dumped.

MULTICS CHANGE REQUEST

MCR 081
Page 1 of 1 Pages

TITLE: Fix to DN355

AUTHOR: R. B. Snyder

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

STATUS	DATE
Written	10/5/73
Approved	10/16/73
Rejected	
Postponed	
Withdrawn	
Expires	

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

Replaced by proposal MCR _____

Implemented in System ___20.12b___

Objections/Comments:

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

REASONS: A bug in dn355 which has been crashing the system has been fixed.

SUMMARY: Connects which were placed in the 6180 connect queue were not being dequeued for a given channel when it was desired to stop all activity for that channel (a so called "STOP_CHANNEL" operation).

IMPLICATIONS: None

MULTICS CHANGE REQUEST	MCR 082
	Page 1 of 1 Pages

TITLE: copy_fdump not to access data beyond end of dump partition	STATUS	DATE
	Written	10/5/73
AUTHOR: R. Mullen	Approved	10/16/73
	Rejected	
SOURCE: (if external) e.g., "User", "Marketing"	Postponed	
	Withdrawn	
	Expires	

CLASSIFICATION		JUSTIFICATION		Replaced by proposal MCR _____
	Incompatible Change		Marketing Requirement	Implemented in System ___21.0___
	Extension	•	Conformance to Standard	Objections/Comments:
	Restriction		Increased Consistency	
	Performance Improvement		Simplification	
X	Reliability Improvement		Generalization	
		X	Bug Fix	

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

REASONS: data beyond end of part dump may be privileged in some way. In any case it will certainly not be of any use to the dump analysis. copy_fdump now just looks at the length of the dump as set in the dump header by BOS. This length can exceed the size of part dump.

SUMMARY: It is proposed that copy_fdump use a length which is the minimum of the length set by BOS and 1024 * number_of_records_in_part_dump (as picked up from the config deck). Also it shall not make up ptw's for the abs_seg which point beyond end of part dump.

IMPLICATIONS: No change to operations interface. This is the more urgent as the conversion of copy_fdump to output 256k segments would cause this problem to occur more frequently.

MULTICS CHANGE REQUEST

TITLE: fix printer chain images in BOS

AUTHOR: N. I. Morris

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

STATUS	DATE
Written	10/9/73
Approved ⨕	10/16/73
Rejected	
Postponed	
Withdrawn	
Expires	

CLASSIFICATION		JUSTIFICATION	
	Incompatible Change		Marketing Requirement
	Extension	X	Conformance to Standard
	Restriction		Increased Consistency
X	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: BOS has an error in the printer chain image tables. This change will
             fix the error.

 IMPLICATIONS: Change the documentation of prph card.

MULTICS CHANGE REQUEST		MCR 084	
		Page 1 of 1 Pages	
TITLE: **Change to system trace package**		STATUS	DATE
		Written	10/10/73
		Approved ✓	10/16/73
AUTHOR: R. B. Snyder		Rejected	
SOURCE: (if external) e.g., "User", "Marketing"		Postponed	
		Withdrawn	
		Expires	

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

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

REASONS: The system trace routine must be modified to be able to write tapes on MTS 400 or MTS 500 drives. In addition, tape tracing is being expanded to switch between two tapes (1 & 2) rather than writing only to 1 tape ($\emptyset$) with manual switching.

SUMMARY: Trace has been modified to use a DCW list which is compatible for both types of tapes. It has also been changed to recognize end of tape status and to write 8 EOF's on the tape & rewind it & switch to the alternate drive. Finally, code has been added to prevent trace from looping forever in the case of lost status.

IMPLICATIONS: SPS documentation will be changed to indicate the changes to the tape capability. Also, an MSB will be written to give more immediate notification to users (of the development machine).

MULTICS CHANGE REQUEST

TITLE: qedx changes	STATUS / DATE
AUTHOR: M. A. Meer	
SOURCE: (if external) e.g., "User", "Marketing"	

STATUS	DATE
Written	10/9/73
Approved ✗	10/16/73
Rejected	
Postponed	
Withdrawn	
Expires	

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

Replaced by proposal MCR _____

Implemented in System _____

Objections/Comments:

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

REASONS: fix (change to version 2 for 256k)
fix bug in substitute
extend for use on network in normal way
allow use of abbreviated names for reading message on quit and reinvocation
(consistency with edm)

SUMMARY: Version 2
fix bug
see attached sheet

IMPLICATIONS: The network can use qedx in the normal way.
Allow use of abbreviated names for reading in segments.

DETAILED PROPOSAL: See attached sheet

10/9/73

The qedx command has been changed in the following ways:

1) It has been converted to version 2 PL1;
2) It is usable on the network with its special
symbols (\c, \b, \f, \r);
3) The handling of \c in the substitute reqest (s)
has been fixed so that the syntax s/\c\c/x/ substitutes x for \c.
4) If a user QUITs out of qedx and invokes qedx in
the same process, the user will get a message that pending work
will be lost if he continues and will be asked if he wishes to continue.
If the user continues, then the qedx temporary storage in his process
directory will be truncated and its previous contents will be lost.
5) A new feature has been added which allows multiple
input arguments.

The new feature allowing multiple input arguments takes
all arguments after the first and appends them line by line to the
buffer (args). The first argument as before is the name of a qedx
macro (see qedx in the MPM).
For example the command line
qedx r x.pl1 /zilch/ d w q
will cause qedx to look for the segment r.qedx and place the
contents of that segment in buffer (exec). The rest of the arguments x.pl1,
/zilch/, d, w, and q will be appended to buffer (args). The buffer (args) will
end up as shown below.
x.pl1
/zilch/
d
w
q

The current buffer is then changed to 0, the usual current buffer,
and the commands in buffer (exec) are executed.

The additional argument feature allows users to write a
macro which will read in a segment whose path name is given on
the command line. This allows the expansion of abbreviated path names.
The macro   r \b(args)   is such a macro.
If this is the macro in r.qedx in the example above then the
effect of this macro is to read in the segment x.pl1, search
for /zilch/, delete that line, write the segment back
to x.pl1 and quit.

Ingenious users will find other uses for this feature.

MULTICS CHANGE REQUEST	MCR 086
	Page 1 of 1 Pages

TITLE: **Conversion of update_include to version two. Elimination of calls to msl and archiving of duplicates include files in >ldd >include >source**

AUTHOR: A. Scherer

STATUS	DATE
Written	10/9/73
Approved	10/16/73
Rejected	

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

local

Postponed	
Withdrawn	
Expires	

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

Replaced by proposal MCR _____

Implemented in System _____

Objections/Comments: .

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

REASONS:

1) The currently installed copy does not work, since it attempts to update a nonexistent online MSL.
   These calls to msl primitives will be removed.
2) Calls to archive to update backup include file archives in >ldd >include >source will be removed so that these archives may be deleted, conserving disk space.
3) The storage strategy for backup (replaced or deleted) include files would be changed to conform with all other online system backup procedures: i.e. the old include file will be renamed to a unique shriekname and retained in >ldd >include until it is deleted by cleanup. Currently these old include files are archived into >ldd >old. Additional names will be transformed to name.1 . . . name.n, as are the additional names on other replaced or deleted library segments. This will solve an existing problem which occurs when the hardcore updates creates a backup archive and leaves it with insufficient access for subsequent updates to be made by the online installer.
4) New acl primitives will be used to replace the old forms.

MULTICS CHANGE REQUEST	MCR 087
	Page 1 of 1 Pages

TITLE: **Modification of cleanup to handle**	STATUS	DATE
>doc >iml_info_segs. Preparation of cleanup to work	Written	10/9/73
with extended star/equals convention.	Approved ⚡	10/16/73
AUTHOR: **A. Scherer**	Rejected	
SOURCE: (if external) e.g., "User", "Marketing"	Postponed	
	Withdrawn	
Local	Expires	

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

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

REASONS:

1) Since the directory >doc >iml_info_segs was created, and is already in use, the cleanup library utility must be modified to delete old copies of into files from directory.

2) It is necessary to insert (but comment out at present) the change for cleanup to look for backup segments named "!???????????????" instead of "!***************" when cleaning up the libraries. Approval is requested for this change so that it may be "turned on" whenever the next phase of star/equals goes in.

MULTICS CHANGE REQUEST

MCR   088
Page 1 of 1 Pages

TITLE:	Increase the max length, current length and records used fields of a directory entry to 18 bits	STATUS	DATE
		Written	10/12/73
		Approved ✗	10/16/73
AUTHOR: E. Stone		Rejected	
SOURCE: (if external) e.g., "User", "Marketing"		Postponed	
		Withdrawn	
		Expires	

CLASSIFICATION		JUSTIFICATION		Replaced by proposal MCR _____
X	Incompatible Change	X	Marketing Requirement	Implemented in System ___21.0___
X	Extension	X	Conformance to Standard	Objections/Comments:
	Restriction		Increased Consistency	
	Performance Improvement		Simplification	
	Reliability Improvement	X	Generalization	
			Bug Fix	

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

REASONS:

Currently the max length of 14 bits and the current length/records used of 12 bits are 1 bit too small to allow 256k segments.

IMPLICATIONS: The system changes are mechanical for the most part, but a special salvager must be run before this change is installed.

These changes are coded, submitted and approved for installation.

It is planned to install this change with that of MCR-012.

MULTICS CHANGE REQUEST	MCR 089
	Page 1 of 1 Pages

TITLE: Increase the time record product field of a directory header to 2 words.	STATUS	DATE
	Written	10/11/73
	Approved	10/16/73
AUTHOR: Eleanor Stone	Rejected	
SOURCE: (if external) e.g., "User", "Marketing"	Postponed	
	Withdrawn	
	Expires	

Replaced by proposal MCR _____

Implemented in System ___21.0___

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

Objections/Comments:

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

REASONS: Currently updating the time record product can cause a system crash. This can occur for a large directory containing frequently used segments when the time record product has not been reset to zero for an extended period. This is a potential problem for sites that do not wish to run a program such as "the crank" very often.

IMPLICATIONS: This change involves introducing 3 new entries into ring 0 which will eventually replace 3 existing entries (hcs-$quota-get, hphcs-$quota-reload and hphcs-$quota-get-reset). Documentation has been submitted for these.

     The system changes are mechanical, but a special salvager must be run before this change is installed.

     This change is coded, submitted and approved for installation.

     It is planned to install this change with that of MCR 012.

MULTICS CHANGE REQUEST

TITLE: Fix bugs in privileged_mode_ut and wire_stack

AUTHOR: E. Stone

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

STATUS	DATE
Written	10/11/73
Approved	10/23/7
Rejected	
Postponed	
Withdrawn	
Expires	

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

Replaced by proposal MCR _____

Implemented in System _____

Objections/Comments: .

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

REASONS: Full implementation of 256k segments.

SUMMARY: Temp wire 3 pages of ring_0 stack rather than 2.

In testing 256k system it was found that this fix was necessary due to increased stack requirements of some procedures.

MULTICS CHANGE REQUEST	MCR 091
	Page 1 of 1 Pages

TITLE:		STATUS	DATE
Allow printing of large segments		Written	10/12/73
		Approved	10/23/73
AUTHOR: E. Stone		Rejected	
SOURCE: (if external) e.g., "User", "Marketing"		Postponed	
		Withdrawn	
		Expires	

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

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

REASONS: Allow full implementation of 256k segments.

SUMMARY: Remove restrictions in printer dims which prevented printing segments
greater than 64k.

These changes have been tested and are scheduled for installation.

MULTICS CHANGE REQUEST		MCR 092
		Page 1 of 1 Pages

TITLE: correct restrictions in area package which prevent creation of 256k areas	STATUS	DATE
	Written	10/12/73
AUTHOR: E. Stone	Approved	10/23/73
	Rejected	
SOURCE: (if external) e.g., "User", "Marketing"	Postponed	
	Withdrawn	
	Expires	

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

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

REASONS: Allow full implementation of 256k segments.

SUMMARY: Fix bugs in area package which disallowed 256k areas.
          These changes have been coded and tested.

IMPLICATIONS: These changes must be installed in the system that offers 256k
          segments to users.

MULTICS CHANGE REQUEST

MCR 093
Page 1 of 1 Pages

TITLE: Convert V1/PL1 modules in hardcore to V2/PL1	STATUS	DATE
	Written	10/12/73
AUTHOR: E. Stone	Approved	10/23/73
	Rejected	
SOURCE: (if external) e.g., "User", "Marketing"	Postponed	
	Withdrawn	
	Expires	

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

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

REASONS: Version 1 PL/1 will not be supported in the future.

The operator segment may be removed eventually from the system tape and placed in system_library_languares.

SUMMARY: First convert the wired procedures so that the operator segment may be unwired. Then convert the rest, since there are more than 100 modules in Version 1, this may take some time. It is planned to distribute this task among members of the Multics Development Unit and other programmers who are using the development machine.

MULTICS CHANGE REQUEST

TITLE: Offer 256k segments

AUTHOR: ___Eleanor Stone___

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

STATUS	DATE
Written	10/12/73
Approved	10/23/73
Rejected	
Postponed	
Withdrawn	
Expires	

CLASSIFICATION		JUSTIFICATION	
	Incompatible Change	X	Marketing Requirement
X	Extension	X	Conformance to Standard
	Restriction		Increased Consistency
X	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: There has been a demand for segments larger than 64k.

The support of GCOS on Multics requires 256k. There will be less use of multi-segment files and hence a performance improvement.

IMPLICATIONS:

Support of 64k multi-segment file components will be continued for 2 months, but should be removed before the standard product is released.

There may be a problem in the conversion of a single-segment file to a multi-segment file as an additional 256k must be available to perform the copy; the error code error_table_ and badmove is returned if the quota was not sufficiently large. On the other hand the use of multi-segment files will decrease drastically.

The max length of an outer ring stack will be set to 64k.

Version 1 PL/1 programs will not work for manipulating segments greater than 64k.

MULTICS CHANGE REQUEST

MCR	095
Page 1 of 1 Pages	

TITLE: Cleanup gate entries

AUTHOR: Eleanor Stone

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

STATUS	DATE
Written	10/12/73
Approved	10/23/73
Rejected	
Postponed	
Withdrawn	
Expires	

CLASSIFICATION		JUSTIFICATION	
	Incompatible Change		Marketing Requirement
	Extension		Conformance to Standard
X	Restriction		Increased Consistency
	Performance Improvement	X	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: Cleanliness.

SUMMARY: Remove obsolete entries from hcs_ and hphcs_. Delete absentee_test_ which is not used.

Move the entries that backup uses to set dates in a branch to hphcs_ and change backup to call these. Delete hcs_$ set.dates which was announced to users about a year ago.

IMPLICATIONS:

There may be some problems at MIT with the removal of hcs_$ set_dates; however this is an access violation in my view.

MULTICS CHANGE REQUEST	MCR 096
	Page 1 of 1 Pages

TITLE: Complete directory control access modifications	STATUS	DATE
	Written	10/12/73
AUTHOR: Eleanor Stone	Approved	10/23/73
	Rejected	
SOURCE: (if external) e.g., "User", "Marketing"	Postponed	
	Withdrawn	
	Expires	

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

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

REASONS: See MCB-969 and MSB-111

SUMMARY:
1) Remove CACls.
2) Remove access requirement of write permission to delete a non-directory segment.
3) Enforce directory ring brackets.
4) Remove append permission of non-directory segments. Write permission will allow the user to grow the segment up to its max length.
5) Control the length of a non-directory segment by its max length. Read permission will allow the user to read the segment up to its max length.

IMPLICATIONS:

These changes have been announced for over a year.

For a time all primitives returning access modes will return append permission if the user has write permission for purposes of compatibility.

MULTICS CHANGE REQUEST

MCR 097
Page 1 of 1 Pages

TITLE: Fix bugs in FDUMP

AUTHOR: N. I. Morris

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

STATUS	DATE
Written	10/12/73
Approved	10/23/73
Rejected	
Postponed	
Withdrawn	
Expires	

Replaced by proposal MCR _____

Implemented in System _____

Objections/Comments:

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

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

REASONS: FDUMP has several bugs:

1) It overlays and destroys some of its literals.
2) It dies trying to dump 256k segments.

SUMMARY:

FDUMP will be fixed. The PROC and APND subroutines are also being fixed
to avoid overlaying literals. An extension to the PROC subroutine will
also be made at this time to allow dumping a short dump of all processes.

MULTICS CHANGE REQUEST

MCR 098
Page 1 of 1 Pages

TITLE: **trace_init**

AUTHOR: M. J. Grady

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

STATUS	DATE
Written	10/12/73
Approved	10/23/73
Rejected	
Postponed	
Withdrawn	
Expires	

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

Replaced by proposal MCR _____

Implemented in System _____

Objections/Comments:

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

REASONS: fix bug in trace_init to cause prt300 buffer images to be loaded correctly.

SUMMARY: fix code in trace_init to turn on continue bit in the pcw supplied to the iom_manager. Also, improve code through use of iom dcw include files.

MULTICS CHANGE REQUEST	MCR 099
	Page 1 of 1 Pages

TITLE: Change measure of time spent looping on the page table lock	STATUS	DATE
	Written	10/12/73
	Approved	10/23/73
AUTHOR: Steve Webber	Rejected	
SOURCE: (if external) e.g., "User", "Marketing"	Postponed	
	Withdrawn	
	Expires	

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

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

REASONS: It is proposed that a clock reading be done before and after looping on the global page table lock to determine the amount of system time spent looping on the lock.

SUMMARY: The following programs--which currently keep track only of the number of loops while trying to lock--should be changed.

        page_fault
        privileged_mode_ut
        dsul90_control
        bulk_store_control

IMPLICATIONS: The command (tool) which measures interference of the global page table lock should be updated.

| MULTICS CHANGE REQUEST | | MCR 100 |
| | | Page 1 of 1 Pages |

TITLE: Remove reused addr (and other) traps from page control	STATUS	DATE
	Written	10/12/73
AUTHOR: Steve Webber	Approved	10/23/73
	Rejected	
SOURCE: (if external) e.g., "User", "Marketing"	Postponed	
	Withdrawn	
	Expires	

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

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

REASONS: Several traps were placed in the system to find various hardware and software bugs. It is proposed that those traps which turned out to be useless be removed.

SUMMARY: The code should be removed from the following programs:

        pc
        page_fault
        pd_util
        privileged_mode_ut
        init_sst

IMPLICATIONS: The MOSN describing the contents of the DEBG card must be brought up to date.

| MULTICS CHANGE REQUEST | MCR 101 |
| | Page 1 of 1 Pages |

TITLE: Change memory reconfiguration code to check for parity errors in use being removed	STATUS	DATE
	Written	10/12/73
AUTHOR: Steve Webber	Approved	10/23/73
	Rejected	
SOURCE: (if external) e.g., "User", "Marketing"	Postponed	
	Withdrawn	
	Expires	

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

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

REASONS: One of the reasons for performing memory reconfiguration is that a memory may be getting many parity errors. With the current design it is possible that one of these parity errors could be run into by the memory reconfiguration code in such a way that the system cannot recover. It is proposed that the memory reconfiguration code be extended to check for parity errors in any block of core which is being copies from a memory being deleted.

SUMMARY: The program privileged_mode_ut should be modified to call an already existing subroutine which checks, reports and removes any parity errors in a region of core.

IMPLICATIONS: None.

MULTICS CHANGE REQUEST

MCR __102__
Page __1__ of __1__ Pages

TITLE: Remove pre-page commands and the hard core interface.

AUTHOR: __Steve Webber__

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

STATUS	DATE
Written	10/12/73
Approved	10/23/73
Rejected	
Postponed	
Withdrawn	
Expires	

Replaced by proposal MCR _____

Implemented in System _____

Objections/Comments:

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

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

REASONS: Since the Multics system no longer pre-pages pages at process load time it is proposed that the mechanism which controls this activity be removed from the system--it doesn't do anything now anyway.

SUMMARY: The commands
            pre_page_on
            pre_page_off
            pre_page_size

        and the hardcore interface

            hcs_$pre_page_info

        should be deleted.

IMPLICATIONS: Users should be given warning and the hcs_entry should be retained (as a null program) for a while.

MULTICS CHANGE REQUEST	MCR 103
	Page 1 of 1 Pages

TITLE: Change page Multi-level removal algorithm to make pages recently faulted upon appear recently used.

AUTHOR: Steve Webber

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

STATUS	DATE
Written	10/12/73
Approved	10/23/73
Rejected	
Postponed	
Withdrawn	
Expires	

Replaced by proposal MCR _____

Implemented in System _____

Objections/Comments:

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

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

REASONS: Due to a flaw in the page multi-level removal algorithm all read_only pages placed on the paging device are removed using a FIFO removal algorithm rather than a LRU algorithm. It is proposed that the LRU mechanism be used.

SUMMARY: A simple change to page_fault to add a rethread subroutine call.

IMPLICATIONS: None.

MULTICS CHANGE REQUEST	MCR 105
	Page 1 of 1 Pages

TITLE: Simplification of performance test analysis	STATUS	DATE
	Written	10/12/73
AUTHOR: R. A. Roach	Approved	10/23/73
	Rejected	
SOURCE: (if external) e.g., "User", "Marketing"	Postponed	
MIT (PDO)	Withdrawn	
	Expires	

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

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

REASONS: It was desired to include total cpu time and total page faults on the summary of the performance test. The old method used xrdy (uninstalled) and produced at best only roughly approximate data and a worse incorrect data due to shift changes.

SUMMARY: Since the event id is only 72 bits, the new data can not be included with the virtual time and memory units previously passed. Therefore the plan is to have the controlling process assign an index to each of the test processes and to have them use this index as an index into a usage array in which they can store their usage data. This index would be passed in the event id (instead of VCPU & MU). Output summaries would be changed to print this data both as an average and total. Also the elapsed time would be changed to outputted both as seconds and minutes. Individual summaries would be printed by acceptance_test $ terminate.

modules changed: abs_control.pl 1 and acceptance_test.pl 1

IMPLICATIONS: Format of output changes, but since it is only used by one person currently, the effect is minimal.

| MULTICS CHANGE REQUEST | MCR 106 |
| | Page 1 of 1 Pages |

TITLE: fix bugs in plot_	STATUS	DATE
	Written	10/12/73
	Approved	10/23/73
AUTHOR: R. A. Roach (for J. C. Klensin)	Rejected	
SOURCE: (if external) e.g., "User", "Marketing"	Postponed	
User	Withdrawn	
	Expires	

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

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

REASONS: Fix bug where combination of points and vectors does not work.

SUMMARY: Minor fix but needed application of bin BIF to avoid decimal operations in addition to fixing above bug.

IMPLICATIONS: Should be none.

MULTICS CHANGE REQUEST

MCR __108__
Page _1_ of _1_ Pages

TITLE: **Improve tln output**

AUTHOR: R. A. Roach

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

MIT - PDO

STATUS	DATE
Written	10/12/73
Approved	10/23/73
Rejected	
Postponed	
Withdrawn	
Expires	

Replaced by proposal MCR _____

Implemented in System _____

Objections/Comments:

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

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

REASONS: The current tty_lines (tln) overlays the dialup count (by the console id) if the line is currently attached. This causes the loss of information which is needed to analyze usage of the various ports.

SUMMARY: In the output, move the console id from the count area to after the user name and project name. e.g.

TTY001   TTY37   261   5   8   5   Wolman.Multics (GE2)

IMPLICATIONS: Format of output does change, but since this is a tool used by only a very few programmers, the effect should be minimal.

| MULTICS CHANGE REQUEST | MCR 109 |
| | Page 1 of 1 Pages |

TITLE: Convert Network IOSIM "changemode" call to not require a trailing period.	STATUS	DATE
	Written	1973.10.15
	Approved	10/23/73
AUTHOR: D. Wells	Rejected	
SOURCE: (if external) e.g., "User", "Marketing"	Postponed	
	Withdrawn	
	Expires	

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, DETAILED PROPOSAL (Optional)

REASONS:

Because the TTYDIM IOSIM no longer requires a trailing period in a changemode call, users are beginning to assume that no IOSIM requires the trailing period. When users switch to logging in over the Network, their programs no longer function properly (if they have not included a trailing period in changemode calls).

The normal use of a changemode by users is to set "rawo" mode in order to send device specific graphic codes to their local terminal.

IMPLICATIONS

For correct usage of the various Network protocols (i.e., if the user does not send proscribed sequences), this change is completely upwards compatible.

MULTICS CHANGE REQUEST

TITLE: BACKUP: Consolidate and cleanup file attachment
interface for maps and error files

AUTHOR: _____ M. A. Meer _____

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

STATUS	DATE
Written	10/16/73
Approved	10/23/73
Rejected	
Postponed	
Withdrawn	
Expires	

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

Replaced by proposal MCR _____

Implemented in System _____

Objections/Comments: .

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

REASONS: Currently maps and error files are attached at several different points
and in several different modules in the backup system. It is proposed
to consolidate and simplify this code by creating a single routine to do
this online file attachment.

SUMMARY: A single routine in the backup_util_ module will be called to do all map
and error file attachment.

IMPLICATION: This would probably simplify any future changes and make current
code more readable.

DETAILED PROPOSAL: An entry will be written in backup_util_ which will be called by
reload and backup_map to create and attach files using names passed
in by the caller.

STATUS: Not yet coded.

MULTICS CHANGE REQUEST	MCR 111
	Page 1 of 1 Pages

TITLE: Backup: Additional options for catchup_dump and dumper test runs	STATUS	DATE
	Written	10/16/73
AUTHOR: M. A. Meer	Approved	10/23/73
	Rejected	
SOURCE: (if external) e.g., "User", "Marketing"	Postponed	
	Withdrawn	
	Expires	

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

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

REASONS: 1) Allow user to finish dump after catchup_dump is complete.
2) Allow user or system programmer to make a dumper test run without outputting onto tape or setting dates. All other functions are performed.

SUMMARY: Modify start_dump, backup_dump_recurse and backup_output to recognize flags set by user and act upon them.

IMPLICATIONS: Makes testing of dumper or pretesting of dumper run more complete.

DETAILED PROPOSAL: 1) When the no_output flag is recognized by the backup_output_ routine it simply returns without invoking any system tape output modules. When the flag is recognized by backup_dump_recurse the date time dumped variables are not reset.
2) start_dump terminates a catchup_dump when it finds the no_contin flag on.

STATUS: This has been coded and tested.

MULTICS CHANGE REQUEST

TITLE: Listing tape system: 7 or 9 track tape designation
more detailed comparison in merging

AUTHOR: M. A. Meer

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

STATUS	DATE
Written	10/16/7
Approved	10/23/7
Rejected	
Postponed	
Withdrawn	
Expires	

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

Replaced by proposal MCR _____

Implemented in System _____

Objections/Comments: .

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

REASONS: 1) Allow the user to specify 7 or 9 track tape input and output.
2) Allow a better ordering and elimination in merging the files.

SUMMARY: 1) While keeping 9 track as the default, allow users to specify 7 track
tapes as input or output. This is an extension to the input and output
options and the tape attachment routing.
2) An extension is made to the merge routine to compare date created when
all other fields are the same.

IMPLICATIONS: 1) Allows wider use of tapes, i.e., 7 track handlers
2) Allows more correct merging

DETAILED PROPOSAL: Change the argument handling module
Change the tape attachment routine

STATUS: THIS HAS BEEN CODED AND TESTED.

MULTICS CHANGE REQUEST

MCR __113__
Page _1_ of _1_ Pages

TITLE: **qedx: restriction on write with no pathname**

AUTHOR: **M. A. Meer**

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

STATUS	DATE
Written	10/16/73
Approved	10/23/73
Rejected	
Postponed	
Withdrawn	
Expires	

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

Replaced by proposal MCR _____

Implemented in System _____

Objections/Comments:

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

REASONS: When users read in more than one segment for editing, they sometimes get confused as to which segment is written into when write is given with no pathname. This leads to the accidental destruction of some files.

SUMMARY: If more than one segment is read in for editing then the use of write with no pathname results in the message "no pathname given" and no write is carried out. **Note:** THIS CHANGE IS IN ADDITION TO THOSE PROPOSED IN MCR-085.

IMPLICATIONS: 1) Some qedx macros may stop working
              2) Some users who usually read edit and write repeatedly in one invocation of qedx may be inconvenienced. (A new command to set up some pathname as default for both read and write could solve the latter difficulty but that would constitute a new proposal.)

DETAILED PROPOSAL: If the first read is to enter the qedx macro given as an argument when qedx is invoked then the pathname count is zeroed. On the next read the pathname count (length) is saved but on any subsequent read it is zeroed.

If the pathname count is zero then the "no pathname given" message is output control is returned to the qedx command processor.

MULTICS CHANGE REQUEST	MCR 114
	Page 1 of 1 Pages

TITLE: Provide "fast" gate entries into the hardcore	STATUS	DATE
	Written	10/17/73
AUTHOR: S. Webber	Approved	10/23/73
	Rejected	
SOURCE: (if external) e.g., "User", "Marketing"	Postponed	
	Withdrawn	
	Expires	

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

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

REASONS: Certain hardcore gate entries do much unnecessary and time consuming work. Other entries do some (but not as much) unnecessary work. It is proposed to clean up these entries by removing the unnecessary code.
Note: The most important entries that are of interest are the virtual_cpu_time_ and cpu_time_and_paging_ entries which are used to meter user ring programs.

SUMMARY: The system macro file (gate_macros in >tools) must be modified to generate the new code requences and all hardcore gates must then be expanded and assembled.

IMPLICATIONS: The program (tool) meter_gate must be changed to expect the new format.

MULTICS CHANGE REQUEST

MCR   115
Page 1 of 1 Pages

TITLE:	STATUS	DATE
Administrative exec_com for the Network Daemon	Written	10/19/73
	Approved	10/30/73
AUTHOR: Kenneth T. Pogran	Rejected	
SOURCE: (if external) e.g., "User", "Marketing"	Postponed	
	Withdrawn	
	Expires	

CLASSIFICATION		JUSTIFICATION		Replaced by proposal MCR _____
	Incompatible Change		Marketing Requirement	Implemented in System _____
	Extension		Conformance to Standard	Objections/Comments:
	Restriction		Increased Consistency	**Need Operations documentation for the network**
	Performance Improvement		Simplification	
	Reliability Improvement		Generalization	
x	**New feature**		Bug Fix	
		x	**Improved operation**	

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

REASONS:

    This installation provides the Network Daemon with an exec_com for performing debugging, maintenance, and administrative functions not coded into its operating programs (network-exec_). Initially, only a Network data base dump facility is provided.

DESCRIPTION:

    The exec_com provides three majory "entry points":

net_dump   This exec_com takes a snapshot of Network data bases, labeling the snapshot with the current date and time. It may be used by Network system programmers, as well as by the Network Daemon.

process_net_dump   This exec_com turns the "snapshot" segments into a printable, ASCII segment, and deletes the snapshot segments. It is primarily intended to be used by Network system programmers, or by operations, but may be used in the Network Daemon process under special circumstances (and then only at the direction of Network system programmers).

delete_net_dump   This exec_com deletes all segments associated with a particular network dump.

    In addition, net_dump makes use of a "subroutine" exec_com, net_dump_subr, also contained in network_exec.ec

MULTICS CHANGE REQUEST

TITLE: Add new order to teletype DIMS, e.g. tw_, ntw_, g115_

AUTHOR: M. Grady, P. Green, R. Coren

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

STATUS	DATE
Written	10/19/73
Approved #	10/30/73
Rejected	
Postponed	
Withdrawn	
Expires	

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

Replaced by proposal MCR _____

Implemented in System _____

Objections/Comments:

Also update mrd_ and oc_

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

REASONS:

It is presently not possible to "poll" user_i/o, i.e., issue a read call and get control back whether or not anything was in the read buffers. In other words, "tw_" - type DIMs always go blocked waiting for input if none is ready.

Both APL and the new I/O daemon need the ability to see if anything has been typed without going blocked. In addition, the I/O daemon would like a wakeup if and when data is finally available.

SUMMARY:

Add a new order call which checks to see if any input is available, and if so, returns a bit which indicates that the user may call ios_$read and be assured of the immediate return of data. If no data is available the order will return an event channel which the user may block on to wait for input.

IMPLICATIONS:

The user of this order should be cautious of the "window" between calls to the order and ios_$read. If the calling program loses control after a call to the order, someone else may take his data and when control is regained he will block in ios_$read. This should pose no problem for either APL or the I/O daemon, which protect themselves from unwanted user interruption. Note also that if the user blocks on the event channel supplied by the order, a call to the order should be made after a wakeup to assure that data is really present before calling ios_$read.

DETAILED PROPOSAL:

The new order will be called "read_status" and will use the order info_ptr to point to a user supplied structure which will contain the result of the order call.

Usage

        call ios_$order(stream, "read_status", info_ptr, status);

where:

1) stream   is the I/O stream, as usual. (Input)

2) "read_status"   is the order name. (Input)

3) info_ptr   is a pointer to the following information
                     structure. (Input)

        dcl 1 info_structure aligned,
            2 ev_chan fixed bin(71),
            2 input_available bit(1),

        where:

        ev_chan   is the event channel the user may
                             block on to wait for input.
                             (Output)

        input_available   is set to "1"b if data is
                             available, i.e. if a call to
                             ios_$read is made it will not cause
                             the process to block. (Output)

4) status   is standard I/O system status. (Output)

The implimentation of this order call will require changes in the following DIMs: tw_, ntw_, and g115_. Note that the change to tw_ will also require some changes to the ring 0 tty_dim.

MULTICS CHANGE REQUEST

MCR ___117___
Page _1_ of _1_ Pages

TITLE: Removal of active mode of salvaging

AUTHOR: A. Kobziar

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

STATUS	DATE
Written	10/15/73
Approved #	10/30/73
Rejected	
Postponed	
Withdrawn	
Expires	

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

Replaced by proposal MCR _____

Implemented in System _____

Objections/Comments:

In future all changes must be more explicitly described. (Even style "improvements".)

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

REASONS: A recent change to salvager not to enter active mode was overlooked with the installation of 21.0.

SUMMARY: Salvager has been changed to enter regular mode instead of active and some auditing suggestions have also been entered.

MULTICS CHANGE REQUEST

MCR __118__
Page _1_ of _1_ Pages

TITLE: Bug fix to ring_1_lock_

AUTHOR: P. Haber

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

STATUS	DATE
Written	10/24/73
Approved	10/30/73
Rejected	
Postponed	
Withdrawn	
Expires	

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

Replaced by proposal MCR _____

Implemented in System _____

Objections/Comments:

Verify that ring 0 entry points work
properly before installing.
ring_1_lock_ should have a cleanup handler.

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

REASONS: Process may lock message segment in ring_1, then lose eligibility, tying up
i/o daemon or absentee facility.

SUMMARY: Change locking procedure to give calling process guaranteed eligibility while
message segment is locked.

IMPLICATIONS: "seglock" errors from the message segment facility should disappear.

DETAILED PROPOSAL: Put in call to admin_gate$ guaranteed_eligibility_ (on off) in
ring_1_lock_.

| MULTICS CHANGE REQUEST | MCR 119 |
| | Page 1 of 1 Pages |

TITLE: Change definition of entry sequence	STATUS	DATE
	Written	10/25/73
AUTHOR: B. Wolman	Approved #	10/30/73
	Rejected	
SOURCE: (if external) e.g., "User", "Marketing"	Postponed	
	Withdrawn	
	Expires	

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

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

REASONS: In order to support the ability to call from basic programs to programs
     compiled by PL/I or Fortran or ALM, the basic runtime system must be able to
     quickly and reliably determine from the entry sequence if program was compiled
     by basic.

DETAILED PROPOSAL: Change declaration of entry_sequence to
     del 1 entry_sequence   aligned,
          2 def_relp   bit (18) unal,
          2 basic   bit (1) unal,
          2 pad   bit (17) unal;
     This change is upward compatible and is correctly handled by current binder.
     No changes are required to any programs currently installed.

IMPLICATIONS: Other language processors may want to reserve bits in the unused
     area. Documentation on standard object segment will have to be updated.

MULTICS CHANGE REQUEST

MCR 120
Page 1 of 1 Pages

TITLE:	Install new PL1_operators_	STATUS	DATE
		Written	10/25/73
AUTHOR: B. Wolman		Approved	10/30/23
		Rejected	
SOURCE: (if external) e.g., "User", "Marketing"		Postponed	
		Withdrawn	
		Expires	

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

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

REASONS: New version of PL1_operators_ containing large number of performance
   improvements and bug fixes. We cannot gain confidence in EIS instruction set
   without using this operator segment; this version of operators is required by
   EIS PL/1.

SUMMARY: changes -- use EIS instruction wherever possible
         bug fixes -- 1) return char (*) and char (*) varying work - bug #769
                      2) signal stringrange correctly identifying source of
                         signal (also stringsize, size, subscript range)
                      3) round float code corrected
                      4) fixed point mod operations give correct results- bug #790
                      5) binary mult operators detect fixed overflow - bug #771
                      6) mod (x, 0) gives x instead of zerodivide fault
         additions -- New operators for
                      1) real & complex decimal arithmetic
                      2) conversion
                      3) scaled fixed pt divide & mod
                      4) math operators

IMPLICATIONS: 1) Some string operations will run 5 - 15 times faster.
              2) Some programs will start getting correct results because of bug fixes.
              3) We may discover new EIS problems.

| MULTICS CHANGE REQUEST | MCR 121 |
| Page 1 of 5 Pages |

TITLE: Install do command/active function	STATUS	DATE
	Written	10/25/73
AUTHOR: B. Wolman	Approved	10/30/73
	Rejected	
SOURCE: (if external) e.g., "User", "Marketing"	Postponed	
	Withdrawn	
	Expires	

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

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

REASONS: Install a widely used tool which is required by Library Maintenance protocol

PROPOSAL: This version of do is a combination of the changes made by Max Smith and Gary Dixon. This proposal replaces MCR-052 of 9/25/73. This version is currently used by me.

Identification

do
Execute one-line exec-coms
B. L. Wolman & M. G. Smith
30 October 1973

Purpose

The purpose of the "do" command is to expand a command
string given as its first argument by replacing the
parameter designators "&1"..."&9" found in it with the
actual arguments supplied following the string. The
resultant expanded string is then passed to the Multics
command processor, via "cu_$cp", for execution. Options
exist to print the expanded command line, to suppress its
execution, or to pass it back as the value of an active
function.

Usage

        do "command string in quotes" arg1 arg2 arg3...

Each instance of the parameter designator "&i" (where "i" is
"1"..."9") found in the "command string in quotes" is
replaced by the corresponding actual argument "argi". If
any "argi" is not supplied, then each instance of "&i" in
the command string is replaced by the null string. Each
instance of the unique-name designator "&!" found in the
command string is replaced by a 15-character identifier
unique to the particular invocation of the "do" command.
Finally, each instance of the pair "&&" is replaced by a
single "&". Any other ampersand discovered in the command
string causes an error message to be printed and the
expansion to be terminated. Any argument supplied but not
mentioned in a parameter designator is ignored.

Upon completion of substitutions, the resultant expanded
string is passed to "cu_$cp" for execution as a Multics
command. If the user has invoked the abbreviation processor
"ab" in his process, the abbreviation processor will be
invoked by "cu_$cp" to expand any abbreviations in the
string before it goes to the command processor proper.

Usage as an Active Function

If "do" is called as an active function

        [do "string in quotes" arg1 arg2 arg3...]

then, instead of executing the resultant expanded string,
"do" passes it back as the value of the active function.

Modes

The "do" command has three modes, the "long/brief" mode, the
"nogo/go" mode, and the "absentee/interactive" mode. These
modes are kept in internal-static and are thus remembered
from call to call within one's process. The modes are set
by calls upon "do" of the form

                        do -mode

where "-mode" is one of "-long", "-lg", "-brief", "-bf",
"-nogo", "-go", "-absentee", or "-interactive".

If the "long/brief" mode is "long", then the expanded
command string is printed on the stream "error_output"
before it is executed or passed back. If the "long/brief"
mode is "brief", then the string is not printed. The
default for this mode is "brief".

If the "nogo/go" mode is "nogo", then the expanded command
string is not passed to the command processor for execution.
If the "nogo/go" mode is "go", then the expanded string is
passed to "cu_$cp" for execution, unless "do" was invoked as
an active function. If "do" is invoked as an active
function, then the "nogo/go" mode is ignored. The default
for this mode is "go".

If the "absentee/interactive" mode is "absentee", then "do"
establishes itself as a default signal handler during the
execution of the expanded command string. This is mainly of
use in an absentee environment, in which any invocation of
the standard default handler terminates the process. When
"do" is the default signal handler, any signal caught by
"do" merely terminates execution of the command string, not
the process. Four signals, however, are not caught by "do"
but are passed on for their standard Multics treatment; they
are   "command_error",   "command_query_error",
"command_question", and "record_quota_overflow". If the
"absentee/interactive" mode is "interactive", then "do" does
not catch any signals. The default for this mode is
"interactive".

Quote-doubling and Requoting

In addition to the parameter designators "&1"..."&9", the
"do" command also recognizes two more sets of parameter
designators. They are "&q1"..."&q9", to request
quote-doubling in the actual argument as it is substituted
into the expanded string, and "&r1"..."&r9", to request that
the actual argument be requoted as well as have its quotes
doubled during substitution.

Quote-doubling can be described as follows. Each parameter
designator in the input string to be expanded is found
nested a certain level deep in quotes. If a designator is
found to be not within quotes, then its quote-level is zero;
if it is found between a single pair of quotes, then its
quote-level is one; and so on. If the parameter designator
"&qi" is found nested to quote-level L, then, as "argi" is
substituted into the expanded string, each quote character
found in "argi" is multiplied by 2**L during insertion.
This permits the quote character to survive the
quote-stripping action to which the command processor will
subsequently subject the expanded string. If "&qi" is not
located between quotes, or if "argi" contains no quotes,
then the substitutions performed for "&qi" and for "&i" are
identical.

If the parameter designator "&ri" is specified, then the
substituted argument "argi" is placed between an additional
level of quotes before having its quotes doubled. More
precisely, if the parameter designator "&ri" is found nested
to quote-level L, then 2**L quotes are inserted into the
expanded string, "argi" is substituted into the expanded
string with each of its quotes multiplied by 2**(L+1), and
then 2**L more quotes are placed following it. If argument
"argi" is not supplied, then nothing is placed in the
expanded string; this provides a way to distinguish between
arguments which are not supplied and arguments which are
supplied but null. If argument "argi" is present, then the
expansions of "&ri" and of "&qi" written between an
additional level of quotes are identical.

Accessing More than 9 Arguments

In addition to the normal parameter designators in which the
argument to be substituted is specified by a single digit,
"do" also allows the designators &(d...d), &r(d...d), and
&q(d...d) where d...d denotes a string of decimal digits.
An error message will be printed and the expansion will be
terminated if any character other than "0"..."9" is found
between the parentheses.

Examples

The "do" command is particularly useful when used in
conjunction with the abbreviation processor "abbrev".
Consider the following abbreviations

        ADDPLI   do "fo &1.list;ioa_ ^1;pli &1;co"
        AUTHOR   do "ioa_$nnl &1;status -author &1"
        AX   do "if is &1 -then ""df &1"""
        FO   do "AX &1;fo &1"
        P   do "pl1 &1 list &2 &3"
        PFX   do "&1 &3 &2&3"

The command
        ADDPLI alpha
will expand to
        fo alpha.list;ioa_ ^1;pli alpha;co

The command line
        AUTHOR beta
will print the author of segment beta.

The command line
        FO gamma
will expand to
        AX gamma;fo gamma
which will be expanded to
        if is gamma -then df gamma;fo gamma
This shows how "do" may be used at several levels and how
abbreviations may be used within abbreviations.

The command line
        P alpha
will generate the expansion
        pl1 alpha list
while the command line
        P alpha table
will expand to
        pl1 alpha list table
This shows how references to unsupplied arguments get
deleted.

The utility of the abbreviation PFX is left as an exercise
for the reader.

MULTICS CHANGE REQUEST	MCR 122
	Page 1 of 1 Pages

TITLE: bcpl_library bug fix	STATUS	DATE

		STATUS	DATE
		Written	24 Oct 73
AUTHOR: R F Mabee		Approved	10/30/73
		Rejected	
SOURCE: (if external) e.g., "User", "Marketing"		Postponed	
		Withdrawn	
		Expires	

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

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

REASONS:
    repair bug in ordering character strings.

SUMMARY:
    Character string comparisons in runoff and the BCPL compiler are not in strict
alphabetic collating order. Replacement of bcpl_strings_ in bound_bcpl_library_
will fix this.

IMPLICATIONS:
    Compiler cross-references and runoff indices will be correctly sorted.

MULTICS CHANGE REQUEST

	MCR 123
	Page I of I Pages

TITLE: runoff bug fix

AUTHOR: R F Mabee

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

STATUS	DATE
Written	24 Oct 73
Approved #	10/30/73
Rejected	
Postponed	
Withdrawn	
Expires	

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

Replaced by proposal MCR _____

Implemented in System _____

Objections/Comments:

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

REASONS:
    repair bug in footnoting.

SUMMARY:
    In some cases a footnote is unnecessarily split across pages.
Installation of this change to runoff_mr3 should prevent such errors.
Also, runoff_mr4 is replaced, to set a flag governing date conversion.

IMPLICATIONS:
    Some runoff documents will have the page breaks in different places in the text,
so that footnotes can fit all on the first page.