TO: Distribution

FROM: M. S. Hodges

DATE: September 5, 1974

SUBJECT: Multics Change Requests

Enclosed are copies of Multics Change Requests which were approved
from August 16 to August 31, 1974.

MULTICS CHANGE REQUEST		MCR 635
		Page 1 of 1 Pages

TITLE: Modifications to NCP to standardize access control and handle process termination conditions. AUTHOR: D. Wells	STATUS	DATE
	Written	74.06.
	Approved H	8/27/
	Rejected	
SOURCE: (if external) e.g., "User", "Marketing"	Postponed H	7/2/7
	Withdrawn	
	Expires	2/27/7

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	Needs further design review.
X	Reliability Improvement		Generalization	
			Bug Fix	

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

REASONS: The Network Control Program does not currently properly close out connections when a process terminates.

The Network Control Program is not properly turned off when the Network Daemon process terminates.

Access o6 the "connect" function is determined in a non-standard manner -- i.e., a segment in the hierarchy is checked to see if the user had access to that segment. This requires that the Ring 0 NCP know about at least one pathname in the onli e hierarchy.

SUMMARY:

The Network Control Program will be modified to use the I/O Assignment Manager to properly close and deactivate any connections that a user had when his process terminated.

The Network Control Program will be modified to use the I/O Assignment Manager to shut down the Network when the Network Daemon process terminates.

Access to the "connect" function will be determined by a gate to be added. Acces to this gate will be dynamically modified via a privileged call to the NCP. The Netwo: Daemon process overseer will be modified to initialize this access when it initializes the Network Control Program.

IMPLICATIONS:

The number of IOAT entries will have to be increased to support this function. These entries ar wired down (though the NCP use of them does not intrinsically require that they be wired down) -- thus decreasing the size of the paging pool. Because the size of the IOAT is to be determined by a configuration card, this can be managed by system maintenance personnel.

MULTICS CHANGE REQUEST

MCR _____ 710

Page 1 of 1

TITLE: Fix Bugs Reading HALF/FULL switch in BOS and Multics

AUTHOR: Noel I. Morris and Bernard S. Greenberg

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

Internal

STATUS	
Written	8/12/74
Approved	8-20-74
Rejected	
Postponed	
Withdrawn	
Expires	2-20-75

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	
		☒	Unreported Bug Fix	

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

REASONS:

Improper documentation has led to the use of the wrong RSW instruction in determining the setting of HALF/FULL switches for memory on the CPU configuration panel. This bug exists both in the BOS subroutine, getportinfo, and in the Multics initialization primitive, scas_init.

Summary:
Correct the code to use the proper RSW instruction.

| MULTICS CHANGE REQUEST | MCR 711 |
| | Page 1 of 1 |

TITLE: Make a branch for configuration deck in system_library_1	STATUS	
	Written	8/12/74
AUTHOR: Noel I. Morris	Approved	8/20/74
	Rejected	
SOURCE: (if external) e.g., "User", "Marketing"	Postponed	
In ternal	Withdrawn	
	Expires	2/20/75

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	Correct ACL should be placed in header so users don't have access to this.
	Reliability Improvement	☒	Generalization	
			Bug Fix	

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

REASONS:
Many outer ring programs need access to the Multics configuration deck (e.g.
on-line TandD). If a branch is created for the config deck in system_library_1,
then the segment "config_deck" can be initiated and read without having to
call into ring 0 to copy it out. This mechanism has already been used for
the SLT segment and its name table.

Summary:
Change the SLT template include files to cause a branch to be created for
"config_deck".

MULTICS CHANGE PROJECT	MCR 712
	Page 1 of 1

TITLE: Make a segment for the BOS toehold	STATUS	Date
	Written	8/12/74
	Approved	8/20/74
AUTHOR: Noel I. Morris	Rejected	
SOURCE: (if external) e.g., "User", "Marketing"	Postponed	
Internal	Withdrawn	
	Expires	2/20/75

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

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

REASONS:

Multics initialization primitives currently "know" that the 1024 word block of core which contains the BOS toehold should not be assigned for paging. Programs which return to BOS also "know" the absolute location of the toehold. These wired in values can be removed from all but one program if a 1 page segment containing the BOS toehold is constructed during system initialization by bootstrap1.

Summary:

Modify bootstrap1 to construct the segment "bos_toehold" when it sets up the initial descriptor segment. Change the SLT template include files to include this new segment.

Implications:

Unless segments are shuffled slightly, the segment numbers of emergency_shutdown and the sst_seg will change.

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'.:o "

MULTICS CHANGE REQUEST

TITLE: vfile_ bugs

AUTHOR: M.D. MacLaren

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

STATUS	
Written	8/8/74
Approved	8/20/74
Rejected	
Postponed	
Withdrawn	
Expires	2/20/75

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

Replaced by proposal MCR _____

Implemented in System _____

Objections/Comments:

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

REASONS: Recent installation of vfile_ has compiler-caused
        *bug that prevents use of sequential files. Testing
        uncovered an unrelated bug in the program that results
        in an error when attempt is made to backspace beyond
        beginning of a segment.

SUMMARY: Replace open_seg_file in bound_vfile_ with a corrected
        version compiled using the experimental compiler (in which
        compiler bug is fixed).

IMPLICATIONS: Sequential files will have correct format (instead
        of slightly incorrect format). Old files will work as well
        as they do now.

NOTE: It is not feasible to change the program to get around the
        compiler bug. The only alternatives to using the exl
        compiler are to reinstall the old open_seg_file (complete
        with bug) or compile using the old non_EIS compiler).

        *   Compiler bug #1203

MULTICS CHANGE REQUEST	MCR ___714__

TITLE: Make changes to Answering Service to Implement Access Isolation Mechanism	STATUS	DATE
	_Written__	08/12/74
AUTHOR: Paul A. Green	_Approved_	8/20/74
	Rejected	
SOURCE: (if external; e.g., "User", "Marketing")	_Postponed_	
	Withdrawn	
	_Expires__	2/20/75

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

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

REASONS
See MTB-078.

SUMMARY
Modify answering service include files and programs, and administrative tools, as outlined in MTB-078 (as modified by MTB-100 terminology) to provide AIM attributes for persons, projects, terminals, etc.

IMPLICATIONS
Covered by MTB-078 and a previous design review. Adds new features and complexity to the answering service.

Memo to: Multics Change Review Board
From: Paul Green
Re: Summary of Changes to Answering Service for AIM

The proposed changes will:
. record an authorization attribute (bit (72) aligned) for each entry
   in the PNT (per person), SAT (per project), PDT (per user), and CCT
  (per terminal; new table, called the Channel Control Table).

. provide tools to update and maintain these fields, under the control
  of the System Security Administrator.

. compute the access authorization of a process based on the attributes
  of the person, project, user, terminal, and login options.

. print the computed authorization of the process at login time (if it
  is greater than unclassified).

. provide options to the login and new_proc commands to specify the
  requested authorization, provide a login option to set the default
  authorization.

. provide the ability (on a per-person basis, in the PNT) to have the
  system assign passwords when the -change_password login option is
  given.

. be documented in the style of the MPM/SPS/or PLM, as appropriate.

The individual programs and include files which will be changed are
rather numerous, and so are not specified in the MCR or this note.

The above xxqxx requirements are from Honeywell's proposal to the Air
Force; as time goes by we may add more changes to the above list.

MULTICS CHANGE PROJECT

MCR _____ 715 _____
Page __ 1 __ 1 __

TITLE: Add name tdcm_ to hcs_

AUTHOR: Bill Silver

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

STATUS	
Written	8-12-74
Approved	8/20/74
Rejected	
Postponed	
Withdrawn	
Expires	2/20/75

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 MCP _____

Implemented in System _____

Objections/Comments:

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

REASONS: Adding the name tdcm_ to the gate hcs_ is a first step in the plan to remove all hcs_ entries which reference tdcm. This is being done for reasons of security and to allow tdcm to be removed from ring zero once ioi_ is installed.

SUMMARY: The name tdcm_ will be added to the gate hcs_. All calls in the tape I/O modules tape_ and nstd_ which are of the form hcs_$tdcm_xxxx must be changed to calls of the form tdcm_$tdcm_xxxx.

IMPLICATIONS: When all system maintained and user programs have been changed to call tdcm_ rather than hcs_, the entry points in hcs_ which reference tdcm can be deleted. At this time a higher ring tdcm_ or a new gate tdcm_ will have to be installed.

MULTICS CHANGE PROJECT

MCR ___716___

Page __1__ of __1__

TITLE: Deletion of set file protect on tape detach

AUTHOR: Bill Silver

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

STATUS	
Written	8-12-74
Approved	8/20/74
Rejected	
Postponed	
Withdrawn	
Expires	2/20/75

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	
X	Reliability Improvement		Generalization	
		X	unreported Bug Fix	

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

REASONS: tdcm currently issues a set file protect command
        whenever it rewinds and unloads a tape. This forces the
        operators to remove the tape reel from the handler in
        order to turn on write permit. This is an unnecessary
        inconvenience. Handler malfunctions sometimes compound
        the problem.

SUMMARY: Stop tdcm from issuing the set file protect command.

IMPLICATIONS: This operational problem will be solved.

DETAILED PROPOSAL: The set file protect command set up in tape_data
        will be changed to a reset status command.

MULTICS CHANGE REQUEST

TITLE: Fix BOS to run with Reader on any channel	STATUS	
	Written	8/9/74
	Approved	8/20/74
AUTHOR: _____ N. I. Morris _____	Rejected	
SOURCE: (if external) e.g., "User", "Marketing"	Postponed	
Internal	Withdrawn	
	Expires	2/20/7

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	
			Bug Fix	

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

REASONS:
BOS currently can only run with a card reader configured to IOM channel 16_8. With
the increased use of URMPC's, this becomes a serious restriction.

Summary:
The card reader channel number is deposited in memory when a card is read via
the IOM bootload mechanism. A simple change to the BOSLDR 5-card loader can
enable this channel number to be preserved. The BOS loader program, LOADDM,
can then pick up this channel number and save it in BOS common. This saved
channel number can be used by BOS whenever cards are to be read.
Change the CARDS command to accept an optional argument which is a card reader
channel number. This will enable changing the card reader channel during BOS
operation.

MULTICS CHANGE REQUEST	MCR ___718__

	STATUS	DATE
TITLE: Prepare library programs for unbundled library		
	Written	08/08/74
AUTHOR: Arlene J. Scherer	Approved	8/20/74
	Relctea	
SOURCE: (if external; e.g., "User", "Marketing")	Postponed	
	Withdrawn	
	Expires	2/20/75

CLASSIFICATION	JUSTIFICATION	
		Replaces by proposal MCR _____
[ ] Incompatible Change	[X] 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, and optionall,
DETAILED PROPOSAL

REASON:

PART ONE: Add the unbundled library to all programs which look at the
system libraries. Programs involved are:
        get_library_segment and related control files
        submission_test
        update_seg (subroutine upd_doc_task_)
        the   uninstalled   Multics   library   descriptor
(library_print).

PART TWO: Part Two modifies the request expressed in Part Four of MCR
684 to add a "-sys" option to submission test calls for the purpose of
allowing a Subsystem or other non-standard library to be used for
comparison of source and bindfiles.   Upon further thought, a
"-control_dir" ("-ct") argument will better serve this need by
allowing the user to specify a control_dir in which his own version of
the gls control segments may be found, enabling him to use any
arbitrary set of paths.

SUMMARY:
        These changes need to be implemented ahead of any actual
unbundled library installations. In addition, users and staff should be
notified (perhaps via an MTB) of the intended establishment of the
unbundled library, and what its planned contents are.

MULTICS CHANGE PROJECT	MCP 719
	Page 1 of 1

TITLE: Install compare_object	STATUS	
	Written	8-14-74
	Approved	8/20/74
AUTHOR: Richard Barnes	Rejected	
SOURCE: (if external) e.g., "User", "Marketing"	Postponed	
	Withdrawn	
	Expires	2/20/75

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

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

REASONS: compare_object enables a user to determine if two object
segments, possibly compiled by different versions of a compiler,
are essentially identical. This enables installation personnel
to ensure that a submitted source segment produced a submitted
object segment with a current compiler.

SUMMARY: compare_object (cob) compares the text, link, and defi-
nition sections of two object segments. The user can also
specify that certain sections should not be compared. Another
entry point, compare_object_, is provided so that this comparison
can be achieved from a program. compare_object_ is a function
returning bit (1) aligned.

MULTICS CHANGE REQUEST

MCP	720
Page	1 of 1

TITLE:	Implement new matching strategy in acl_commands	STATUS	
		Written	8-14
		Approved	8/20/74
AUTHOR:	Steve Herbst	Rejected	
SOURCE:	(if external) e.g., "User", "Marketing"	Postponed	
		Withdrawn	
		Expires	2/20/75

Replaced by proposal MCR _____

Implemented in System _____

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

Objections/Comments:

Make sure that this is properly documented.

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

REASONS: A redefinition of the matching strategy for missing components in acl names was proposed in MTB-092. The new extended_access_commands uses this new matching strategy. The regular acl commands should use it too.

SUMMARY: Change acl_commands to call find_common_acl_names_.

IMPLICATIONS: Change in user interface. Users must be warned in advance.

TITLE: Bind together debug, trace_stack, and trace		STATUS	
		Written	740815
AUTHOR: Barry L. Wolman		Approved	8/20/74
		Rejected	
SOURCE: (if external) e.g., "User", "Marketing"		Postponed	
		Withdrawn	
		Expires	2/20/75

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

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

REASONS: The three debugging programs debug, trace_stack, and trace now
have a number of common modules; the number of common modules will be
increased if debug and trace_stack are changed to use the new argument
list printing program developed for trace. This argument list printing
program is an extension of the program currently used by trace_stack;
it was specifically written to be usable by all three debugging programs.

SUMMARY: Change debug and trace_stack to call print_arg_list_, the new
program mentioned above, and combine the three debuggers into a single
bound segment. This work has already been done in a private version.

IMPLICATIONS: The output produced by trace_stack and by the .a request
of debug will be slightly different. debug will be able to print the
value of an argument of any PL/I scalar type. The documentation of
debug will have to be updated.

MULTICS CHANGE PROJECT

MCR _____ 722 _____
Page 1 of 1

TITLE: New ring 1 gate macros.

AUTHOR: P.A. Janson

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

CSR

STATUS	
Written	8-16
Approved	8/20/74
Rejected	
Postponed	
Withdrawn	
Expires	2/20/75

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

Replaced by proposal MCR _____

Implemented in System _____

Objections/Comments:

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

REASONS: Ring 1 gates, according to the current version of gate_macros.incl.mexp, set their linkage pointer (lp) by picking it up from the LOT of the ring they were invoked from. Firstly, this is a security violation: ring 1 gates should not trust the content of a LOT entry in an outer ring. Secondly, it is inconsistent with what hard-core gates do and any user ring gate should do.

SUMMARY: This MCR proposes to change a few lines of code in gate_macros.incl.mexp and to recompile ring 1 gates (deh_test_gate_, installation_tools_, message_segment_, tape_admin_) so as to have them pick their lp from the ring 1 LOT entry.

IMPLICATIONS: The change is fully compatible with what the current linker does. It also sets the LOT entry in ring 1 when snapping a link to a ring 1 gate. In addition the change will make ring 1 gates compatible with the design of the future user ring linker which will no longer maintain the LOT entry in the outer rings for the ring 1 gates.

TITLE: Fix bugs in basic

AUTHOR: Barry L. Wolman

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

STATUS	
Written	740815
Approved	8/20/7?
Rejected	
Postponed	
Withdrawn	
Expires	2/20/7?

Replaced by proposal MCP _____

Implemented in System _____

Objections/Comments:

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

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

REASONS: The following bugs exist in the installed basic:
  No. 32: source program longer than 1000 lines causes fault in basic_lex
  No. 33: bad code is generated for $(1 + a(i))^2$
  No. 34: return without previous gosub sometimes causes fault
  No. 35: math functions not setting indicators properly; this causes problems with statements such as
           if sin(x) = 0 then ...
  No. 36: an array name appearing in more than one dim-statement is not diagnosed
  No. 37: use of   operator with fractional values can cause process termination
  No. 38: instruction after instruction that causes underflow fault gets skipped due to change in behavior of FIM
  No. 39: underscore not allowed in subprogram name
  No. 40: illegal subprogram name in sub-statement causes fault if the sub-statement is the first statement in the program
  No. 41: char(*) arg not accepted in call of basic subprogram from PL/I program
  No. 42: subprogram name not properly supplied in error messages relating to incorrect call of subprogram
  No. 43: on num goto ... not properly split into tokens
  No. 44: store of control variable in for-next loop occurs after test is made instead of before as specified by manual.
  No. 45: for i = 0 to t step ... not properly split into tokens by EXL basic due to error in fix for bug 43
  No. 46: references to global variables are not correct if a function is called from another function that was called from another subprogram.

SUMMARY: Fix the bugs.

MULTICS CHANGE REQUEST
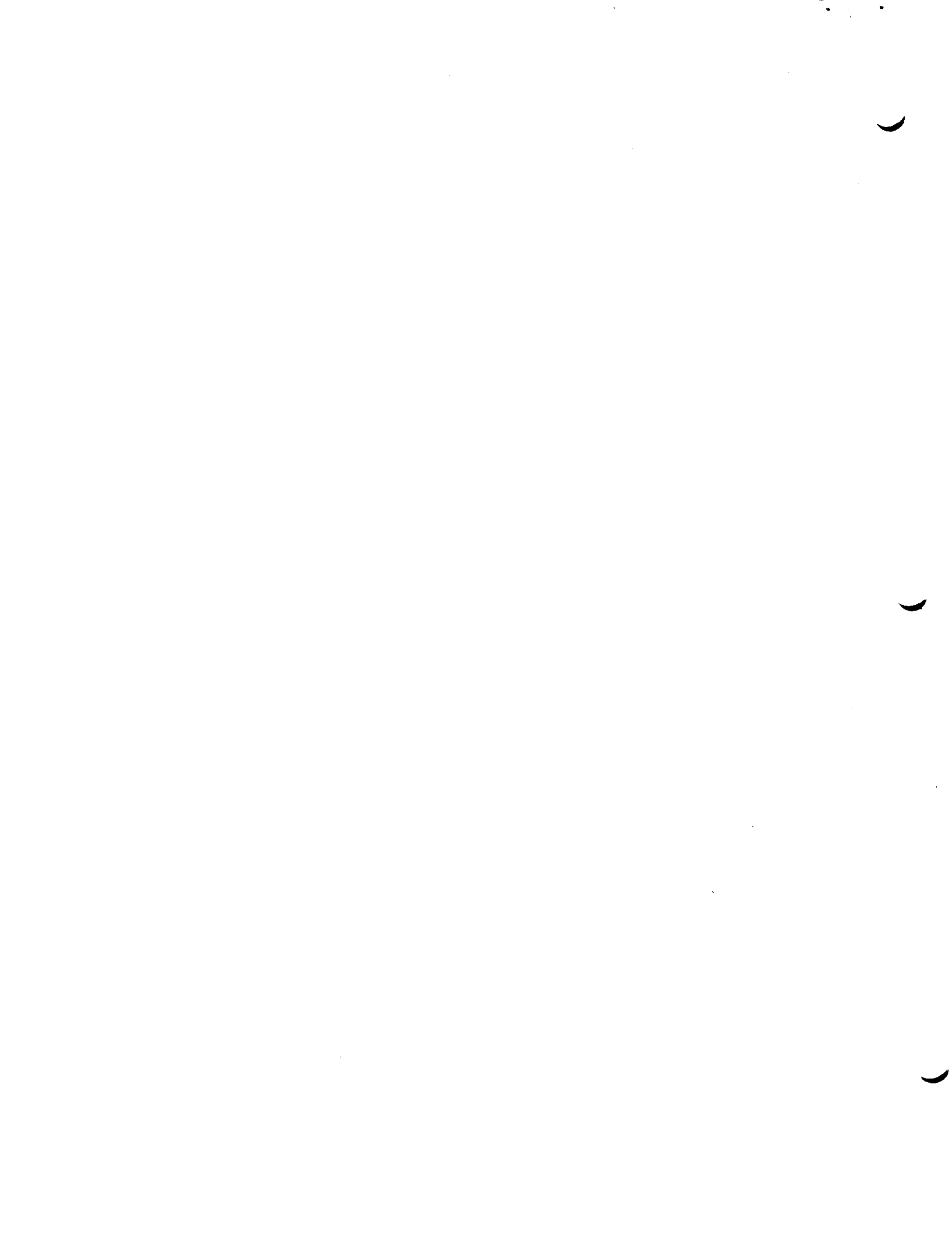
TITLE: Install new version of basic

AUTHOR: Barry L. Wolman

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

STATUS	
Written	740815
Approved	8/20/74
Rejected	
Postponed	
Withdrawn	
Expires	2/20/75

CLASSIFICATION		JUSTIFICATION		
	Incompatible Change		Marketing Requirement	
x	Extension		Conformance to Standard	
	Restriction		Increased Consistency	
x	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:

1. The current version of basic uses fixed size tables for recording line numbers, data elements, and constants. These fixed size tables place a limit on the size of the program that can be compiled, and some relatively small programs can exceed a table size. Using very large sizes for these tables causes unncessary page faults when compiling small programs.

2. In current version of basic, about 20% of compiler's time is spent in the procedure basic_, which does little more than loop calling the external procedures basic_lex and basic_statement. Making basic_lex and basic_statement be quick internal procedures of basic_ yields a 15% increase in speed of the compiler.

SUMMARY:

1. Change basic to use a storage strategy for its tables in which the tables are initially small and are located in the stack. When a table becomes full, it is copied into a pre-determined place in an external segment; if necessary, tables occuring after it in this segment are moved. Tables can continue to grow until the entire segment becomes full. This should allow programs of very large size to be compiled while enabling small programs to be compiled more efficiently.

2. Combine basic_, basic_lex, basic_statement, basic_object, basic_subprogram, and basic_error into a single program basic_. Storage formerly placed in an external segment for communication between these programs will be located in stack frame of basic_.

The time required to compile the combined version is 50% greater

than the time required to compile basic_statement, which was the module that was usually re-compiled to fix bugs.

These changes have been checked out and are currently installed in the EXL version of basic_. The anticipated reduction in page faults and increase in speed have been verified. Compiling a real 1350 line program, the compiler speed went from 21,000 lines per minute to 24,000 lines per minute; a 10,000 line "toy" program was compiled in 20 seconds, which places an upper bound of 30,000 lines per minute on speed of compiler in present form.

IMPLICATIONS: The external interface of basic_ remains unchanged, so there should be no noticable change to any program that calls basic_.

MULTICS CHANGE REQUEST	MCP 725
	Page 1 of 1

TITLE: Error Checking by indent command	STATUS	
	Written	8-19-74
AUTHOR: T. Casey	Approved	8/27/74
	Rejected	
SOURCE: (if external) e.g., "User", "Marketing"	Postponed	
	Withdrawn	
	Expires	2/27/75

CLASSIFICATION		JUSTIFICATION		Replaced by proposal MCP _____
	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: One of the errors that indent detects is unbalanced quotes
("Program ends in a string"). Unfortunately, from the point of
the missing quote to the end of the program, the indentation is
performed on the contents of what should have been quoted strings
changing the white space in them in some way. These changes are
often inconvenient to undo. The only way to protect against this
currently is to always have the indented source put in a new
segment, but this also involves some inconvenience, added to
every use of indent (rename, delete, etc.) to obtain a single
copy of the source after verifying that it is a good copy.

SUMMARY: Change indent so that, when the original segment is to be
replaced, and errors have been detected, the input segment will
not be replaced. Instead, a message will be printed on
error_output, informing the user of this, and giving the path-
name of the temporary segment containing the indented copy of the
program.

IMPLICATIONS: This is an incompatible change from the present method of
operation. However, since the most likely response of a user to
errors during indentation is to fix the errors and indent again,
this change should not cause any inconvenience.

MULTICS CHANGE PROJECT

MCP	726
Page 1 of 1

TITLE: Implement status "names" option	STATUS	

	Written	8-19-
	Approved	8/27/74
AUTHOR: Steve Herbst	Rejected	
SOURCE: (if external) e.g., "User", "Marketing"	Postponed	
	Withdrawn	
	Expires	2/27/75

CLASSIFICATION		JUSTIFICATION		Replaced by proposal MCP _____
	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: The status command should accept "-names" as well as "-name" to print an entry's multiple names.

SUMMARY: Recognize "-names" as a pseudonym for "-name".

MULTICS CHANGE REQUEST

MCR _____727_____
Page __1__ of __1__

TITLE: Install pll_operators, any_to_any, and dec_ops_

AUTHOR: R.A. Barnes

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

STATUS	
Written	8-16-74
Approved	8/27/74
Rejected	
Postponed	
Withdrawn	
Expires	2/27/75

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 _____

Objections/Comments:

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

REASONS: To fix PL/I bugs: 1088, 1099, 1112, 1126, 1129, 1133,
       1150, 1170, 1171, 1189, 1192, 1201, and 1202.

SUMMARY: Major fixes include proper signalling of conversion when
       converting from character string, return (bit(*)) which
       used to return all zeroes, and freeing of controlled storage.

IMPLICATIONS: None, except that this installation must precede next
       PL/I installation.

MULTICS CHANGE PROJECT

MCP ___728___
Page __1__ of __1__

TITLE: Add a wait for rewind completion to the detach entry for the nstd_ tape dim

AUTHOR: _____Susan Barr_____

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

STATUS	
Written	8-5-7
Approved	8/27/74
Rejected	
Postponed	
Withdrawn	
Expires	2/27/75

CLASSIFICATION		JUSTIFICATION		Replaced by proposal MCP _____
	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: If the user of the nstd_ dim issues a rewind order and then tries to detach the tape, the error code device busy is returned.

DETAILED PROPOSAL: Add code to the detach entry to check if the tape is rewinding, and if so, to go blocked until completion of the rewind, and then to send the unload order.

A similar check is already made for data transfer requests and order calls.

MULTICS CHANGE REQUEST

		STATUS	
TITLE:	Fix bug in mseg_access_	Written	8-20-74
		Approved	8/27/74
AUTHOR:	Steve Herbst	Rejected	
SOURCE:	(if external) e.g., "User", "Marketing"	Postponed	
		Withdrawn	
		Expires	2/27/75

CLASSIFICATION		JUSTIFICATION		Replaced by proposal MCP _____
	Incompatible Change		Marketing Requirement	Implemented in System _____
	Extension		Conformance to Standard	Objections/Comments:
	Restriction		Increased Consistency	Ensure that all arguments are copied and referenced only once.
X	Performance Improvement		Simplification	
	Reliability Improvement		Generalization	
		X	Bug Fix Unreported	

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

REASONS: mseg_access_$adelete copies the input ACL to a condensed ACL structure
with which to call hcs_$delete_acl_entries. Per-entry error codes are
placed in this condensed ACL structure. They are never copied out to the
caller's ACL structure.

SUMMARY: Copy back the per-entry error codes before returning.

MULTICS CHANGE REQUEST

MCR _____730_____
Form _____

TITLE: Change mechanism of calling initial procedure in a new process.

AUTHOR: Steve Webber

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

STATUS	
Written	8-20.
Approved	8/27/74
Rejected	
Postponed	
Withdrawn	
Expires	2/27/75

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

Replaced by proposal MCP _____

Implemented in System _____

Objections/Comments:

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

REASONS: Some deficiencies exist in the current "init_admin_"
"process_overseer_" mechanisms. In particular, the "direct" feature is not
fully operational (the feature that allows a user to replace init_admin_
rather than process_overseer_). Also, it is convenient for users to have
a working directory established early in their process.

SUMMARY: see attached

IMPLICATIONS: Users will be able (if PDT, etc. say ok) to replace init_admin_ and
therefore perform their own I/O attachments. Knowledge of how to do this
is transient and users so doing it should be warned.

SUMMARY:

Today the answering service will accept a process overseer from a user logging in and pass it on to the newly created process (if allowed to by the PDT) in the pit. In addition, the answering service will pass on a request to have this program called directly rather than through "init_admin_". (The mechanism for "direct" calling is not fully operational.)

The disadvantages with the current scheme are:

1) The "direct" feature is not fully operational,

2) The different kinds of processes (absentee, daemon, user, etc.) would probably best be served with separate "init_admin_" programs, and

3) Due to a coding oversight, the init_admin_ stack frame is not abandoned as it once was.

It is proposed that the above mechanism be replaced by the following:

1) init_proc (the initial program in a new process) which runs in ring 0 and sets up the KST via a call to initialize_kst and determines the init_admin_ to use should be changed to

   a) get a pointer to the PIT

   b) determine from the PIT the process type and call either daemon_init_admin_, absentee_init_admin_, or user_init_admin_ unless a direct process overseer has been specified in which case it is called.

2) The program init_admin_ should be (logically) split into the 3 programs mentioned above.

3) The program real_init_admin_ should be split into the appropriate parts.

4) The replacements to init_admin_ should release their stack frame before calling the process overseer or at least have a small stack frame.

The reason for having user_init_admin_ and process_overseer_ two distinct programs is so that users can generate their own process overseers without being told about the internal interfaces in user_init_admin_. Any direct process overseer, therefore, must have knowledge of internal interfaces which, by definition, are subject to change.