

TO: Distribution  
FROM: M. S. Hodges  
DATE: February 6, 1974  
SUBJECT: Multics Change Requests

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

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MULTICS CHANGE REQUEST		MCR 259 Page 1 of 1 Pages
TITLE: Fix Bug in msf_manager_		STATUS
		DATE
AUTHOR: Eleanor Stone		Written
		Approved <i>W</i>
SOURCE: (if external) e.g., "User", "Marketing"		Rejected
		Postponed
		Withdrawn
		Expires

CLASSIFICATION	JUSTIFICATION	Replaced by proposal MCR _____
<input type="checkbox"/> Incompatible Change	<input type="checkbox"/> Marketing Requirement	<input type="checkbox"/> Implemented in System _____
<input type="checkbox"/> Extension	<input type="checkbox"/> Conformance to Standard	Objections/Comments:
<input type="checkbox"/> Restriction	<input type="checkbox"/> Increased Consistency	
<input type="checkbox"/> Performance Improvement	<input type="checkbox"/> Simplification	
<input checked="" type="checkbox"/> Reliability Improvement	<input type="checkbox"/> Generalization	
<input type="checkbox"/>	<input checked="" type="checkbox"/> unreported Bug Fix	

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

REASONS: There is bug in msf\_manager\_\$ adjust which causes a reference through a null pointer while saving the bit-count of a component. This occurs commonly when a msf listing segment is truncated and should be fixed quickly.

MULTICS CHANGE REQUEST		MCR 260 Page 1 of 1 Pages
TITLE: Fix bug in test_faults_ (convert to 6180)		STATUS
		DATE
AUTHOR: Steve Webber		Written 1/4/74
		Approved <input checked="" type="checkbox"/> 1/17/74
SOURCE: (if external) e.g., "User", "Marketing"		Rejected
		Postponed
		Expires 7/17/74

CLASSIFICATION	JUSTIFICATION	Replaced by proposal MCR _____
<input type="checkbox"/> Incompatible Change	<input type="checkbox"/> Marketing Requirement	Implemented in System _____
<input type="checkbox"/> Extension	<input type="checkbox"/> Conformance to Standard	Objections/Comments:
<input type="checkbox"/> Restriction	<input checked="" type="checkbox"/> Increased Consistency	
<input type="checkbox"/> Performance Improvement	<input type="checkbox"/> Simplification	
<input type="checkbox"/> Reliability Improvement	<input type="checkbox"/> Generalization	
<input type="checkbox"/>	<input checked="" type="checkbox"/> unreported Bug Fix	
<input type="checkbox"/>	<input type="checkbox"/>	

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

REASONS:  
The test\_faults\_subroutine used by meter\_fim was never converted for the followon. It causes a process termination.

SUMMARY:  
Convert it to run on follow on and cleanup the interface to meter\_fim.

MULTICS CHANGE REQUEST		MCR <u>261</u> Page <u>1</u> of <u>1</u> Pages	
TITLE: Add tool "instr_speed" to system.		STATUS	DATE
		Written	1/4/74
AUTHOR: Steve Webber		Approved <i>W</i>	4/17/74
		Rejected	
SOURCE: (if external) e.g., "User", "Marketing"		Postponed	
		Withdrawn	
		Expires	7/17/74

CLASSIFICATION	JUSTIFICATION	REASON
<input type="checkbox"/> Incompatible Change	Marketing Requirement	Replaced by proposal MCR _____
<input checked="" type="checkbox"/> Extension	Conformance to Standard	Implemented in System _____
<input type="checkbox"/> Restriction	Increased Consistency	Objections/Comments:
<input type="checkbox"/> Performance Improvement	Simplification	
<input type="checkbox"/> Reliability Improvement	Generalization	
<input checked="" type="checkbox"/> New Tool	Bug Fix	
<input type="checkbox"/>		

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

REASONS: The instr\_speed program can be used to measure the speed of the 6180 processors. It has 15 different instruction mixes and can easily be extended to contain others.

SUMMARY: Two new procedures need to be installed, instr\_speed and test\_speed.

TITLE: Extend page\_trace to handle new trace types.

Steve Webber

AUTHOR: \_\_\_\_\_

STATUS	DATE
Written	1/4/74
Approved <i>SL</i>	4/17/74
Rejected	
Postponed	
Withdrawn	
Expires	7/17/74

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

CLASSIFICATION	JUSTIFICATION	
		Replaced by proposal MCR _____
<input type="checkbox"/> Incompatible Change	<input type="checkbox"/> Marketing Requirement	Implemented in System _____
<input checked="" type="checkbox"/> Extension	<input type="checkbox"/> Conformance to Standard	Objections/Comments:
<input type="checkbox"/> Restriction	<input checked="" type="checkbox"/> Increased Consistency	
<input type="checkbox"/> Performance Improvement	<input type="checkbox"/> Simplification	
<input type="checkbox"/> Reliability Improvement	<input checked="" type="checkbox"/> Generalization	
<input type="checkbox"/>	<input type="checkbox"/> Bug Fix	
<input type="checkbox"/>	<input checked="" type="checkbox"/> Gain Insight	

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

REASONS: Several new system functions are being placed in the trace list (MCR 211). The page\_trace command should be updated to know of these.

SUMMARY: Extend page\_trace command to know of new trace types.

MULTICS CHANGE REQUEST		MCR 263 Page 1 of 1 Pages
TITLE: Add new user-settable entry to system trace list		STATUS
		DATE
AUTHOR: Steve Webber		Written
		Approved <i>SW</i>
SOURCE: (if external) e.g., "User", "Marketing"		Rejected
		Postponed
		Withdrawn
		Expires

CLASSIFICATION	JUSTIFICATION	Replaced by proposal MCR _____
<input type="checkbox"/> Incompatible Change	<input type="checkbox"/> Marketing Requirement	Implemented in System _____
<input checked="" type="checkbox"/> Extension	<input type="checkbox"/> Conformance to Standard	Objections/Comments:
<input type="checkbox"/> Restriction	<input type="checkbox"/> Increased Consistency	
<input type="checkbox"/> Performance Improvement	<input type="checkbox"/> Simplification	
<input type="checkbox"/> Reliability Improvement	<input checked="" type="checkbox"/> Generalization	
<input type="checkbox"/>	<input type="checkbox"/> Bug Fix	
<input type="checkbox"/>	<input checked="" type="checkbox"/> Gain Insight	

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

REASONS: It is often useful when trying to trace a user subsystem to gain insight about interaction with the supervisor to be able to tell exactly where in a sequence the traced events occurred. A user callable entry should be provided to allow the user subsystem to place entries in the system trace list.

SUMMARY: The entry

```

hcs_trace_marker (char(4) aligned) would make
it convient for a user to place a coded entry in the list.
This would change
    hcs_mexp
    page_fault alm (trace Program)

```

MULTICS CHANGE REQUEST

TITLE: Additional feature in list\_daemon\_requests

STATUS	DATE
Written	1/4/77
Approved <input checked="" type="checkbox"/>	1/17/77
Rejected	
Postponed	
Withdrawn	
Expires	7/17/77

AUTHOR: Robert S. Coren

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

CLASSIFICATION	JUSTIFICATION	
		Replaced by proposal MCR _____
<input type="checkbox"/> Incompatible Change	Marketing Requirement	Implemented in System _____
<input checked="" type="checkbox"/> Extension	• Conformance to Standard	Objections/Comments:
<input type="checkbox"/> Restriction	Increased Consistency	
<input type="checkbox"/> Performance Improvement	Simplification	
<input type="checkbox"/> Reliability Improvement	<input checked="" type="checkbox"/> Generalization	
<input type="checkbox"/>	Bug Fix	
<input type="checkbox"/>		

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

REASONS: Useful information

SUMMARY: Add time submitted to info printed out by "long" form of list\_daemon\_requests.

IMPLICATIONS: None

STATUS: Trivial addition to code already made.

MULTICS CHANGE REQUEST		MCR <u>265</u> Page <u>1</u> of <u>1</u> Pages	
TITLE: Install tape metering command		STATUS	DATE
		Written	1/8/74
AUTHOR: M. Grady		Approved <i>W</i>	1/17/74
		Rejected	
SOURCE: (if external) e.g., "User", "Marketing"		Postponed	
		Withdrawn	
		Expires	7/17/74

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

Replaced by proposal MCR \_\_\_\_\_  
Implemented in System \_\_\_\_\_

Objections/Comments: Coordinate with new tape DCM and new metering proposal. Install in tools library.

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

REASONS: Provide a command to display metering data taken by the ring 0 tape DCM.

SUMMARY: Write a command to extract this data from the ring 0 data segment and print it in a form consistent with other metering commands.

IMPLICATIONS: None.



MULTICS CHANGE REQUEST		MCR <u>266</u> Page <u>1</u> of <u>1</u> Pages
TITLE: <u>Bug in Dumper</u>	STATUS	DATE
AUTHOR: <u>M. A. Meer</u>	Written	<u>1/8/74</u>
	Approved <i>W</i>	<u>1/17/74</u>
	Rejected	
SOURCE: (if external) e.g., "User", "Marketing"	Postponed	
	Withdrawn	
	Expires	<u>2/17/74</u>

CLASSIFICATION	JUSTIFICATION	Replaced by proposal MCR _____
<input type="checkbox"/> Incompatible Change	<input type="checkbox"/> Marketing Requirement	<input type="checkbox"/> Implemented in System _____
<input type="checkbox"/> Extension	<input type="checkbox"/> Conformance to Standard	Objections/Comments:
<input type="checkbox"/> Restriction	<input type="checkbox"/> Increased Consistency	
<input type="checkbox"/> Performance Improvement	<input type="checkbox"/> Simplification	
<input type="checkbox"/> Reliability Improvement	<input type="checkbox"/> Generalization	
<input type="checkbox"/>	<input checked="" type="checkbox"/> Bug Fix #184	
<input type="checkbox"/>	<input type="checkbox"/>	

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

REASONS:     Wakeup\_dump does not clear previously set alarms causing multiple cycles

SUMMARY:     Create a new entry for internal wakeup and delete and create a new channel for external calls.

IMPLICATIONS:     None.

MULTICS CHANGE REQUEST		MCR <u>267</u> Page <u>1</u> of <u>1</u> Pages
TITLE: Bug in Backup  AUTHOR: <u>M. A. Meer</u>	STATUS	DATE
	Written	<u>1/2/74</u>
	Approved <i>JK</i>	<u>1/17/74</u>
	Rejected	
SOURCE: (if external) e.g., "User", "Marketing"	Postponed	
	Withdrawn	
	Expires	<u>7/17/74</u>

CLASSIFICATION	JUSTIFICATION	REASON
<input type="checkbox"/> Incompatible Change	<input type="checkbox"/> Marketing Requirement	Replaced by proposal MCR _____
<input type="checkbox"/> Extension	<input type="checkbox"/> Conformance to Standard	Implemented in System _____
<input type="checkbox"/> Restriction	<input type="checkbox"/> Increased Consistency	Objections/Comments:
<input type="checkbox"/> Performance Improvement	<input type="checkbox"/> Simplification	
<input type="checkbox"/> Reliability Improvement	<input type="checkbox"/> Generalization	
<input type="checkbox"/>	<input type="checkbox"/> Unreported	
<input type="checkbox"/>	<input checked="" type="checkbox"/> Bug Fix	

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

REASONS: Causes linkage error after a cold boot

SUMMARY: Change "print\_switch" in reload to disable attempt to print on cold boot.

IMPLICATIONS: None.

MULTICS CHANGE REQUEST

MCR 268  
Page 1 of 1 Pages

TITLE: Install new PL/I compiler and runtime

STATUS DATE

Written 1/8/74

AUTHOR: R. A. Barnes

Approved *[initials]* 4/17/74

Rejected

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

Postponed

Withdrawn

Expires 7/17/74

CLASSIFICATION

JUSTIFICATION

Replaced by proposal MCR \_\_\_\_\_

X Incompatible Change

Marketing Requirement

Implemented in System \_\_\_\_\_

Extension

Conformance to Standard

Objections/Comments:

Restriction

X Increased Consistency

X Performance Improvement

Simplification

Reliability Improvement

Generalization

X Bug Fix

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

REASONS: We wish to install this compiler in order to make our PL/I implementation of I/O compatible with iox\_.

SUMMARY: Besides making PL/I compatible with iox\_, the new compiler reimplements many of the math builtin functions as calls to p11\_operators\_ rather than as external procedure calls for improved performance. This compiler also fixes the bugs marked with a ~ on the accompanying sheet.

IMPLICATIONS: iox\_ must be installed before this compiler.

361 71.01 03 rab descriptor ptrs in definition section for star\_extent parameters  
 built incorrectly/ screws up new version of trace\_stack  
 362 71.01 05 rab put list(sign(decimal)); fails because result of  
 sign not saved (mprf 0071).  
 363 73.12.31 gdc Use of 220 initial items in init attribute causes ERROR  
 204 which states that 206 is the limit. Message should refer to limit  
 \c1  
 373 73.12.31 rab mbounm bif does not work for parameter arrays when calling prog  
 has large stack frame. Bug in call\_op caused spurious argv init;  
 375 73.12.23 gdc pointer\_variable = addr(entry\_point); the ERROR 102 msg  
 mentions the builtin tests73 instead of the builtin addr  
 371 73.12.23 gdc Use of aggregates as operands to divide builtin causes fault  
 376 73.12.27 gdc z = z + a(i,k)\*b(k,j); faults in prepare\_operand when a is 15th arg  
 \c1  
 Caused by unprocessed tree. See test case. (mprf 0170).  
 367 73.12.27 rab a, b = packed\_ptr gets ERROR 310 and 310 if a or b is a packed  
 ptr on a non-word boundary (assign\_op bug) (mprf 0001).  
 368 73.12.27 rab if an element of a char(\*) array is passed as arg, and another entry pt  
 of this procedure does not expect descriptors, the compiled code will  
 362 73.12.20 gdc decimal exponentiation gives bad results. Suspect decimal\_exp\_.  
 361 73.12.20 rab decl 1 st, 2 chars char(n) \_arg1, 2 bit bit(1) \_arg1; fails bad offset  
 366 73.12.18 gdc substr(aggregate, 2, 1) = "1 b; doesn't mark the aggregate as "set".  
 367 73.12.18 gdc decl 1 a(3), 2b(4), 3 c fixed bin; decl p entry (1, 2(1), 3 fixed bin);  
 call p(a(1)); gets ERROR 269.  
 366 73.12.17 gdc warning 76 for arrays declared like a structure with entry.  
 360 73.12.14 rab if char\_star = "" then if length(char\_star) = 0 ... can produce bad code  
 \c1  
 361 73.12.14 gdc diagnostic should not be given for p"99.99", pic"99.99".  
 365 73.12.15 gdc Use of sum builtin in a program with a default statement can cause  
 WARNING 206.  
 363 73.12.12 gdc isub defined arrays are not properly passed as arguments.  
 They should be passed by value.  
 364 73.12.12 gdc label array constant is not properly passed as arguments.  
 365 73.12.09 gdc before(a,c) || before(b,c) fails because temp for ||  
 built before the builtins were called, thus the descriptors were not  
 363 73.12.04 gdc ext: proc returns(char(\*)); decl foo entry returns(char(\*)); return(foo  
 \c1;  
 gets ERROR 313. Problem due to bad reference count on result of  
 365 73.12.01 gdc allocate <based> in(<area>) set(<offset>); where <offset> has no default  
 \c1  
 area gets ERROR 435. This is legal statement! (mprf 0090)  
 366 73.08.10 gdc decl array(0:9, 0:19) float based(p) init((10\*20) 0.0); allocate array;   
 \c1 n rates  
 bad initialization code. It tries to accomplish the initialization thr  
 \c1  
 361 72.11 04 gdc errors 123 & 318 when using table option (mprf 0109) (has array assign  
 \c1 nt)  
 Caused by improper call to expression\_semantics by expand\_assign.

MULTICS CHANGE REQUEST

MCR 269  
Page 1 of 1 Pages

TITLE: change to test\_timer\_manager

STATUS	DATE
Written	1/9/74
Approved <input checked="" type="checkbox"/>	1/17/74
Rejected	

AUTHOR: S. Herbst

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

Postponed	
Withdrawn	
Expires	7/17/74

CLASSIFICATION	JUSTIFICATION	
<input type="checkbox"/> Incompatible Change	<input type="checkbox"/> Marketing Requirement	Replaced by proposal MCR _____
<input type="checkbox"/> Extension	<input type="checkbox"/> Conformance to Standard	Implemented in System _____
<input type="checkbox"/> Restriction	<input type="checkbox"/> Increased Consistency	Objections/Comments:
<input checked="" type="checkbox"/> Performance Improvement	<input type="checkbox"/> Simplification	
<input type="checkbox"/> Reliability Improvement	<input checked="" type="checkbox"/> Generalization	
<input type="checkbox"/>	<input type="checkbox"/> Bug Fix	
<input type="checkbox"/>	<input type="checkbox"/>	

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

REASONS: Want test\_timer\_manager to be able to set up a call to any program. As of now it can only call one of 4 routines in test\_timer\_manager\_.

SUMMARY: Accept a call name for external calls, which can be a pathname or a refname, with or without a \$ entry.

IMPLICATIONS: Change SPS writeup.

MULTICS CHANGE REQUEST		MCR <u>270</u> Page <u>1</u> of <u>1</u> Pages
TITLE: "abbrev_set_cp" entry in abbrev		STATUS
		DATE
AUTHOR: <u>S. Herbst</u>		Written <u>1/9/74</u>
		Approved <u>[initials]</u>
		Rejected
SOURCE: (if external) e.g., "User", "Marketing"		Postponed
		Withdrawn
		Expires <u>7/17/74</u>

CLASSIFICATION	JUSTIFICATION	Replaced by proposal MCR _____
<input type="checkbox"/> Incompatible Change	<input type="checkbox"/> Marketing Requirement	<input type="checkbox"/> Implemented in System _____
<input type="checkbox"/> Extension	<input type="checkbox"/> Conformance to Standard	Objections/Comments:
<input type="checkbox"/> Restriction	<input type="checkbox"/> Increased Consistency	
<input checked="" type="checkbox"/> Performance Improvement	<input type="checkbox"/> Simplification	
<input type="checkbox"/> Reliability Improvement	<input checked="" type="checkbox"/> Generalization	
<input type="checkbox"/>	<input type="checkbox"/> Bug Fix	
<input type="checkbox"/>	<input type="checkbox"/>	

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

REASONS: Want abbrev to be able to call a command processor of our choosing.

SUMMARY: entry "abbrev\_set\_cp" takes an entry as argument & specified it as the command processor to be called.

IMPLICATIONS: None.

MULTICS CHANGE REQUEST

MCR 271  
Page 1 of 1 Pages

TITLE: Install new BASIC

STATUS	DATE
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Written	1/9/74
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AUTHOR: B. Wolman

Approved	4/17/74
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Rejected	
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SOURCE: (if external) e.g., "User", "Marketing"

Postponed	
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Withdrawn	
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Expires	7/17/74
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CLASSIFICATION

JUSTIFICATION

Replaced by proposal MCR \_\_\_\_\_

<input checked="" type="checkbox"/>	Incompatible Change
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<input checked="" type="checkbox"/>	Marketing Requirement
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Implemented in System \_\_\_\_\_

<input checked="" type="checkbox"/>	Extension
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<input checked="" type="checkbox"/>	Conformance to Standard
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Objections/Comments: Depends on prior installation of EIS operator and iox\_.

<input type="checkbox"/>	Restriction
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<input type="checkbox"/>	Increased Consistency
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<input checked="" type="checkbox"/>	Performance Improvement
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<input type="checkbox"/>	Simplification
--------------------------	----------------

<input checked="" type="checkbox"/>	Reliability Improvement
-------------------------------------	-------------------------

<input type="checkbox"/>	Generalization
--------------------------	----------------

<input type="checkbox"/>	Bug Fix
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Use these headings: REASONS, SUMMARY, IMPLICATIONS, DETAILED PROPOSAL (Optional)

REASONS: Multics product requires a BASIC compiler that is shareable, produces Multics standard object segments.

SUMMARY: Install new BASIC that meets requirements given above. The new BASIC has been available in experimental library for several months. The new BASIC is generally compatible with v 6 basic - the few incompatibilities are documented in an info file that is already installed.

IMPLICATIONS: Some users may have to correct their programs.

MULTICS CHANGE REQUEST		MCR <u>272</u> Page <u>1</u> of <u>1</u> Pages
TITLE: <u>bound_Fortran_</u>	STATUS	DATE
AUTHOR: <u>D. Levin</u>	Written	<u>1/9/74</u>
SOURCE: (if external) e.g., "User", "Marketing"	Approved <u>#</u>	<u>1/17/74</u>
	Rejected	
	Postponed	
	Withdrawn	
	Expires	<u>7/17/74</u>

CLASSIFICATION	JUSTIFICATION	
	<input checked="" type="checkbox"/> Marketing Requirement	Replaced by proposal MCR _____
<input type="checkbox"/> Incompatible Change	<input checked="" type="checkbox"/> Conformance to Standard	Implemented in System _____
<input checked="" type="checkbox"/> Extension	<input type="checkbox"/> Increased Consistency	Objections/Comments: Depends on prior installation of EIS operator.
<input checked="" type="checkbox"/> Restriction	<input type="checkbox"/> Simplification	
<input checked="" type="checkbox"/> Performance Improvement	<input type="checkbox"/> Generalization	
<input checked="" type="checkbox"/> Reliability Improvement	<input checked="" type="checkbox"/> See # below Bug Fix	
	<input checked="" type="checkbox"/> Unreported bugs	

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

REASONS: This constitutes the "finalized" version of the Multics Fortran compiler. This change will fix most known bugs in the compiler. It will also restrict the use of certain Fortran Y features.

- IMPLICATIONS:
1. Certain math functions are now in the operator segment rather than in bound\_math\_ (cos, sin, sqrt, log, log10, exp, atan, dcos, dsin, dsqrt, dlog, dlog10, dexp, datan, datan2, atan2, exponentiation).
  2. The algorithms used to compute dexp, dlog, dsqrt, exp, log, sin, sqrt, exponentiation have been changed.

Bug Nos. 42,43,47,48,49,50,51,52,53,54,55,56,57-60.



MULTICS CHANGE REQUEST		MCR <u>273</u> Page <u>1</u> of <u>1</u> Pages	
TITLE: <u>bound_Fortran_io_</u>		STATUS	DATE
AUTHOR: <u>D. Levin</u>		Written	<u>1/9/74</u>
SOURCE: (if external) e.g., "User", "Marketing"		Approved <u>OK</u>	<u>1/17/74</u>
		Rejected	
		Postponed	
		Withdrawn	
		Expires	<u>7/17/74</u>

CLASSIFICATION	JUSTIFICATION	
<input checked="" type="checkbox"/> Incompatible Change	<input checked="" type="checkbox"/> Marketing Requirement	Replaced by proposal MCR _____
<input checked="" type="checkbox"/> Extension	<input checked="" type="checkbox"/> Conformance to Standard	Implemented in System _____
<input type="checkbox"/> Restriction	<input type="checkbox"/> Increased Consistency	Objections/Comments: Depends on prior installation of EIS operator and iox_.
<input checked="" type="checkbox"/> Performance Improvement	<input type="checkbox"/> Simplification	
<input checked="" type="checkbox"/> Reliability Improvement	<input type="checkbox"/> Generalization	
	<input checked="" type="checkbox"/> #37-39,41,44,46 Bug Fix	
	<input checked="" type="checkbox"/> Unreported bugs	

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

REASONS: This I/O system interfaces with iox\_not ios\_. It implements direct-access files and changes certain user interface conventions (see implications).

- IMPLICATIONS:
1. A file opened as a result of a Fortran read statement is opened for input only. The file must be closed and opened in order to write.
  2. A "+" carriage control char is ignored if the target file is the user console.
  3. Old unformatted files cannot be read.
  4. Each unformatted write creates 1 variable length record.
  5. Each unformatted read reads 1 variable length record.
  6. Formatted output creates a record of any length (length limited to 1 segment.)
  7. When a sequential file is being written, a write redefines the end of file. No information exists beyond the last record written.

MULTICS CHANGE REQUEST		MCR <u>274</u> Page <u>1</u> of <u>1</u> Pages
TITLE: Argument descriptors	STATUS	DATE
	Written	1/10/74
AUTHOR: <u>R. Freiburghouse</u>	Approved <i>AF</i>	4/17/74
	Rejected	
SOURCE: (if external) e.g., "User", "Marketing"	Postponed	
	Withdrawn	
	Expires	2/11/74

CLASSIFICATION	JUSTIFICATION	Replaced by proposal MCR _____
<input checked="" type="checkbox"/> Incompatible Change	Marketing Requirement	Implemented in System _____
<input type="checkbox"/> Extension	<input checked="" type="checkbox"/> Conformance to Standard	Objections/Comments:
<input type="checkbox"/> Restriction	<input checked="" type="checkbox"/> Increased Consistency	
<input type="checkbox"/> Performance Improvement	Simplification	
<input type="checkbox"/> Reliability Improvement	Generalization	
<input type="checkbox"/>	Bug Fix	
<input type="checkbox"/>		

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

REASONS: Conformance to Multics Standards.

SUMMARY: Change the command processor so that it generates Version II argument descriptors instead of Version I argument descriptors.

IMPLICATIONS: Any program that inspects its argument descriptors without using "decode\_descriptor" may not function correctly.

All standard PL/I programs will continue to work correctly as well as all programs that inspect their argument descriptors via "decode\_descriptor".

We must make this change before we get too many users at other installations. We should have done it a year ago!

DETAILED PROPOSAL: Implemented with iox\_ version of command loop.  
Documented in pending changes.

MULTICS CHANGE REQUEST		MCR <u>275</u> Page <u>1</u> of <u>1</u> Pages
TITLE: Fix RUNCOM problem in BOS		STATUS
		DATE
AUTHOR: <u>N. I. Morris</u>		Written <u>1/11/74</u>
		Approved <u>H 1/22/74</u>
SOURCE: (if external) e.g., "User", "Marketing"		Rejected
		Postponed
		Withdrawn
		Expires <u>7/22/74</u>

CLASSIFICATION	JUSTIFICATION	Replaced by proposal MCR _____
<input type="checkbox"/> Incompatible Change	Marketing Requirement	Implemented in System _____
<input type="checkbox"/> Extension	Conformance to Standard	Objections/Comments:
<input type="checkbox"/> Restriction	Increased Consistency	
<input type="checkbox"/> Performance Improvement	Simplification	
<input checked="" type="checkbox"/> Reliability Improvement	Generalization	
<input type="checkbox"/>	unreported Bug Fix	
<input type="checkbox"/>	<input checked="" type="checkbox"/>	

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

REASONS: A bug in BOS caused RUNCOM to loop occasionally.

Summary: The bug was found to be a du modifier that should have been a dl.

Implications: The fix was installed as an emergency fix.

MULTICS CHANGE REQUEST		MCR 276 Page 1 of 1 Pages
TITLE: bugs in walk_subtree	STATUS	DATE
	Written	1/10/74
AUTHOR: Steve Herbst	Approved #	1/22/74
	Rejected	
SOURCE: (if external) e.g., "User", "Marketing"	Postponed	
	Withdrawn	
	Expires	7/22/74

CLASSIFICATION	JUSTIFICATION	REASON
<input type="checkbox"/> Incompatible Change	<input type="checkbox"/> Marketing Requirement	Replaced by proposal MCR _____
<input type="checkbox"/> Extension	<input type="checkbox"/> Conformance to Standard	Implemented in System _____
<input type="checkbox"/> Restriction	<input type="checkbox"/> Increased Consistency	Objections/Comments:
<input checked="" type="checkbox"/> Performance Improvement	<input type="checkbox"/> Simplification	
<input checked="" type="checkbox"/> Reliability Improvement	<input type="checkbox"/> Generalization unreported	
<input type="checkbox"/>	<input checked="" type="checkbox"/> Bug Fix	
<input type="checkbox"/>	<input type="checkbox"/>	

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

REASONS: 1) walk\_subtree executes in the subdirectories of a Multi-Segment File.

2) cwd in the command line interferes with the walking:

SUMMARY: 1) Test bit count of directories. If ≠ 0 then don't execute in subdirectories.

2) Store working directory and use concatenation instead of expand\_path\_ to change it.

MULTICS CHANGE REQUEST		MCR 277 Page 1 of 1 Pages
TITLE: Process overseer for card-reading daemon		STATUS
AUTHOR: Robert S. Coren		DATE
SOURCE: (if external) e.g., "User", "Marketing"		Written 1/11/74
		Approved # 1/22/74
		Rejected
		Postponed
		Withdrawn
		Expires 7/22/74

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

Replaced by proposal MCR \_\_\_\_\_  
Implemented in System \_\_\_\_\_

Objections/Comments:  
With provision that process group ID is IO.SysDaemon

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

REASONS: Card-reading function has been removed from I/O daemon, but some mechanism to allow operations to read in user card decks is needed.

Summary: Supply process overseer for a new daemon (to be called Cards.SysDaemon) which attaches card-reader and establishes itself as condition handler to prevent SysDaemon process from reaching command level.

Implications: No effect on user interface. Operations must be advised of new method for reading cards. (Operator action required is minimal.)

Detailed Proposal: Install cards-overseer\_in >tools and register Cards.SysDaemon with process overseer of cards\_overseer\_, which will call existing read\_cards to do actual work.

Note: This MCR has no effect on security violation whereby cards daemon puts link in requestors home directory. Suggest that this be fixed when new secure "mail" facility exists.

MULTICS CHANGE REQUEST		MCR 278 Page 1 of 1 Pages
TITLE: Reinstall ftp_mail_		STATUS
		DATE
AUTHOR: A. Kobziar		Written
		Approved <i>H</i>
SOURCE: (if external) e.g., "User", "Marketing"		DATE
		1/22/74
		Postponed
		Withdrawn
		Expires
		7/22/74

CLASSIFICATION	JUSTIFICATION	REASON
<input type="checkbox"/> Incompatible Change	<input type="checkbox"/> Marketing Requirement	Replaced by proposal MCR _____
<input type="checkbox"/> Extension	<input type="checkbox"/> Conformance to Standard	Implemented in System _____
<input type="checkbox"/> Restriction	<input type="checkbox"/> Increased Consistency	Objections/Comments:
<input type="checkbox"/> Performance Improvement	<input type="checkbox"/> Simplification	
<input type="checkbox"/> Reliability Improvement	<input type="checkbox"/> Generalization	
<input type="checkbox"/>	<input type="checkbox"/> unreported	
<input type="checkbox"/>	<input checked="" type="checkbox"/> Bug Fix	

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

REASONS: A version of ftp\_mail\_ which contained errors was installed (as part of MCR096) because I made a typo in updating object archive. This resulted in new source but old object being installed.

Summary: New object has been installed as an emergency fix.

MULTICS CHANGE REQUEST

MCR 279  
Page 1 of 1 Pages

TITLE: Delete obsolete library procedures

STATUS	DATE
Written	01/10/74
Approved #	1/22/74
Rejected	
Postponed	
Withdrawn	
Expires	7/22/74

AUTHOR: Jordan

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

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

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

REASONS: A number of no-longer used procedures remain in the libraries. Assuming that no one needs them they should be deleted.

Detail Proposal:

Delete the following from the libraries:

- acm\_, ad, adjust\_device, bound\_force\_detach\_, changewdir,
- deletedir, force\_printer\_detach, force\_tape\_detach, make\_obj\_map,
- moveb, phd, pom,
- print\_object\_map, printhomedir, printwdir, read\_list
- sethomedir, shd, write\_list

MULTICS CHANGE REQUEST		MCR <u>280</u> Page <u>1</u> of <u>2</u> Pages
TITLE: ACI and BCI Pseudo-ops for Alm that can specify character count	STATUS	DATE
AUTHOR: <u>John K. Rhodes</u>	Written	<u>73/12/20</u>
	Approved #	<u>1/22/74</u>
	Rejected	
SOURCE: (if external) e.g., "User", "Marketing"	Postponed	
	Withdrawn	
	Expires	<u>7/22/74</u>

CLASSIFICATION	JUSTIFICATION	REASON
<input type="checkbox"/> Incompatible Change	<input type="checkbox"/> Marketing Requirement	Replaced by proposal MCR _____
<input type="checkbox"/> Extension	<input type="checkbox"/> Conformance to Standard	Objections/Comments:  Note: That ASCII characters NL (012) and; (semi-colon) both act as a new-line characters in the current ALM implementation.
<input type="checkbox"/> Restriction	<input type="checkbox"/> Increased Consistency	
<input checked="" type="checkbox"/> Performance Improvement	<input type="checkbox"/> Simplification	
<input type="checkbox"/> Reliability Improvement	<input checked="" type="checkbox"/> Generalization	
<input type="checkbox"/>	<input type="checkbox"/> Bug Fix	
<input type="checkbox"/>	<input type="checkbox"/>	

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

**REASONS:** When typing in either an ASCII or BCI character string in ALM, it becomes difficult to accurately keep track of trailing blanks because of the fact that all characters must be typed in literally. This problem came up during the development of the MULTICS on-line testing system TOLTS. Test pages, written in a test and diagnostic language (TDL) consist of up to 100 lines of ASCII or BCI data with a fixed length (54 or 56 characters). Some of these "lines" contain only two or three non-blank characters at the start of the line. Thus, typing in such a line using the ACI pseudo-op requires typing in 3 non-blank characters followed by perhaps 50 ASCII blanks. It is difficult to accurately count these characters and get them right, not to mention the extra time required and the wasted file space required to store these characters.

**SUMMARY:** An optional format for the ACI, ACC, and BCI pseudo-ops is needed so that trailing blanks might be specified to be appended to the right of the input string.

**IMPLICATIONS:** Considerable wasted file space and operator time can be eliminated by this implementation as well as an improved accuracy in typing in ASCII and BCI strings.



DETAILED PROPOSAL: The ACI, ACC, BCI and BCI by count (if such) pseudo-ops should have an optional format recognizable by the ALM compiler. In example, the present format and the new proposed optional format is given below for what should be two identical lines:

ACI "WTB

"

ACI 56,WTB

The latter format is the proposed new optional format. It specifies exactly 56 characters should be used as the character string starting with the "W". If a new-line character is encountered before scanning 56 characters, trailing blanks should be added to pad out to 56 characters. If a new-line character is not encountered, the 56 characters so scanned should be used.

MULTICS CHANGE REQUEST		MCR <u>282</u> Page <u>1</u> of <u>1</u> Pages
TITLE: bugs in timer_manager_	STATUS	DATE
	Written	1/9/74
AUTHOR: Steve Herbst	Approved #	1/22/74
	Rejected	
SOURCE: (if external) e.g., "User", "Marketing"	Postponed	
	Withdrawn	
	Expires	7/22/74

CLASSIFICATION	JUSTIFICATION	Replaced by proposal MCR _____
<input type="checkbox"/> Incompatible Change	Marketing Requirement	Implemented in System _____
<input type="checkbox"/> Extension	• Conformance to Standard	Objections/Comments:
<input type="checkbox"/> Restriction	Increased Consistency	
<input checked="" type="checkbox"/> Performance Improvement	Simplification	
<input type="checkbox"/> Reliability Improvement	Generalization	
<input type="checkbox"/>	<input checked="" type="checkbox"/> Bug Fix 239&238	
<input type="checkbox"/>		

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

REASONS: 1) If the stack is unwound or a non-local go to occurs, before returning from a call with interrupts inhibited, the interrupts are never turned back on.

2) When resetting a timer, only the first pointer of each call entry is looked at. Several calls with the right name but different activation pointers may exist, and the latest of these is always the one that gets reset.

SUMMARY: 1) Cleanup handler in timer\_manager\_ resets interrupts from ips\_temp in the machine conditions.

2) The activation pointer of each call is also looked at. Only when it matches is a timer reset.

MULTICS CHANGE REQUEST		MCR <u>283</u> Page <u>1</u> of <u>1</u> Pages
TITLE: Modify tape DCM to support 2 channels		STATUS
		DATE
AUTHOR: <u>N.I. Morris</u>		Written <u>1/2/74</u>
		Approved <u>H 1/22/74</u>
SOURCE: (if external) e.g., "User", "Marketing"		Rejected
		Postponed
		Withdrawn
		Expires <u>7/22/74</u>

CLASSIFICATION	JUSTIFICATION	Replaced by proposal MCR _____
<input type="checkbox"/> Incompatible Change	<input checked="" type="checkbox"/> Marketing Requirement	Implemented in System _____
<input type="checkbox"/> Extension	<input type="checkbox"/> Conformance to Standard	Objections/Comments:
<input type="checkbox"/> Restriction	<input type="checkbox"/> Increased Consistency	
<input checked="" type="checkbox"/> Performance Improvement	<input type="checkbox"/> Simplification	
<input type="checkbox"/> Reliability Improvement	<input type="checkbox"/> Generalization	
<input type="checkbox"/>	<input type="checkbox"/> Bug Fix	
<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>	<input type="checkbox"/>	

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

REASONS: Use of 2 physical channels will allow greater throughput on tapes.

Summary: The data base used by the tape DCM will be broken into 3 parts.

- 1) common
- 2) per channel data
- 3) per handler data

The code will be modified to allow running more than one channel simultaneously. Several security holes in the tape DCM will also be plugged. These holes allowed a user to access data from other tape drives.

Entries will be added to tape DCM to dynamically add and remove the second channel.

IMPLICATIONS: 2080 words more wired-down core will be needed to support simultaneous channels. However, if the second channel is not to be used, the unneeded wired-down buffer space will be released during system initialization.

MULTICS CHANGE REQUEST		MCR 284 Page <u>1</u> of <u>1</u> Pages
TITLE: Addition of entry tdc <sub>m</sub> _promote to hcs <sub>_</sub>		STATUS
AUTHOR: <u>Dennis Capps</u>		DATE
SOURCE: (if external) e.g., "User", "Marketing"		Written <u>1/14/74</u>
		Approved <u>H</u> <u>1/22/74</u>
		Rejected
		Postponed
		Withdrawn
		Expires <u>7/22/74</u>

CLASSIFICATION	JUSTIFICATION	REASON
<input type="checkbox"/> Incompatible Change	Marketing Requirement	Replaced by proposal MCR _____
<input checked="" type="checkbox"/> Extension	Conformance to Standard	Implemented in System _____
<input type="checkbox"/> Restriction	Increased Consistency	Objections/Comments:
<input checked="" type="checkbox"/> Performance Improvement	Simplification	
<input checked="" type="checkbox"/> Reliability Improvement	Generalization	
<input type="checkbox"/>	Bug Fix	
<input type="checkbox"/>		

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

REASONS:            SUMMARY:

Use of the new tape mount package will be enforced in part by the following mechanism which is already a part of tdc<sub>m</sub> (MCR-018): When a drive is assigned by tdc<sub>m</sub>, the validation level of the caller is recorded and no subsequent call is honored from higher numbered rings. The entry tdc<sub>m</sub>\$tdc<sub>m</sub>\_promote allows a caller at or below the recorded validation level to raise or lower the recorded value.

It was originally thought that this entry should be available only in ring1. Thus the gate admin\_gate\_ has an entry tdc<sub>m</sub>\_promote. But since tdc<sub>m</sub> is careful to verify the caller's right to promote the drive in question, it is now seen to be simpler and more general to let this be available in all user rings. This would allow, for example, a user to build an environment in which ring4 programs would mount tapes for users running in ring5.

The first step is to add the entry tdc<sub>m</sub>\_promote to hcs<sub>\_</sub>. Following that, when programs have been changed, the other entry can be removed from admin\_gate\_.

IMPLICATIONS: None.

DETAILED PROPOSAL: to add to hcs<sub>\_</sub> the entry:  
                   hgate            tdc<sub>m</sub>\_promote, tdc<sub>m</sub>, tdc<sub>m</sub>\_promote, 4

MULTICS CHANGE REQUEST

MCR 286  
Page 1 of 1 Pages

TITLE: Fix Setacl to work with star convention

STATUS	DATE
Written	1/15/74
Approved #	1/22/74
Rejected	

AUTHOR: A. Kobziar

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

Postponed	
Withdrawn	
Expires	7/22/74

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

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

REASONS: If setacl is given a star pathname, it will perform the requested operation only on the first segment in a directory. This bug was introduced by speed up changes to acl\_commands under MCR 230.

Summary: Fix acl\_commands to retain number of input names as the procedure processed every star matching name. (The re-setting of this number caused setacl to assume no input given.)

MULTICS CHANGE REQUEST		MCR 287 Page 1 of 1 Pages	
TITLE: Fix PL/1 Bug in Salv_Rebuild_Directory		STATUS	DATE
		Written	1/15/74
		Approved #	1/22/74
		Rejected	
AUTHOR: A. Kobziar		Postponed	
		Withdrawn	
		Expires	7/22/74
SOURCE: (if external) e.g., "User", "Marketing"		Postponed	
		Withdrawn	
		Expires	7/22/74

CLASSIFICATION	JUSTIFICATION	REASON
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	
	unreported	
	x Bug Fix	

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

REASONS: Use of unspec building on a structure member looses member's offset at second invocation. This resulted in the tag overwriting the first letter of the bit count author's name.

Summary: This problem is reportedly fixed in eis compiler. Therefore use temporarily an automatic variable to act as intermediary when copying tag into a structure.

Implications: On-line salvaging will result in erroneous bit-count author names. If a sufficient number of these names require new allocations in the director, thus causing it to grow across a page boundary than system will crash (syserr a call)

MULTICS CHANGE REQUEST		MCR 288 Page 1 of 1 Pages	
TITLE: Corrections to nstd_dim		STATUS	DATE
		Written	1/16/74
AUTHOR: Susan Barr		Approved #	1/22/74
		Rejected	
SOURCE: (if external) e.g., "User", "Marketing"		Postponed	
		Withdrawn	
		Expires	7/22/74

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

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

REASONS:

- a. If an attach request failed, the stream name remained attached.
- b. Fixed\_reocrd\_length option (asynchronous, buffered io) had the following bugs:
  1. It resets the hardware mode to binary.
  2. It initiates the first read when it receives the fixed\_record length order. If the access is "rw" it changes the order to synchronous since the user might write first.
  3. If a read was requested and was followed by a write request or write eof request, nstd\_ did not reposition the tape to reflect the actual no. of records the user requested. The tape was left at the end of the next set of records read, but not yet requested by the caller.
  4. The recovery for io error did not work. Instead of backspacing to retry the io, an erase command was given. A character string was used instead of a bit string to cause this error.
  5. Only one file of data could be read. A flag for end of file mark did not get reset.

Summary: A. If attachment fails, the stream name is detached.

- B. 1. The default hardware mode is set when the attach call is made.
- 2. The first read is made when the first read call is requested. "rw" access does not change the io to synchronous.
- 3. The tape is repositioned after the last record the caller requested.
- 4. The recovery for io errors was corrected.
- 5. One or more files can be read.

Implications: When `fixed_record_length` option is requested it stays in effect for as long as one type of data io is requested and no irrecoverable io errors occur. Any order request (rewind, status) or a change in type of io (ex. from reading to writing) causes a change to synchronous io.



TITLE: Creation of New Library for ARPA Network Software	STATUS	
	Written	74.1.14
AUTHOR: D. Wells	Approved	# 1/22/74
	Rejected	
SOURCE: (if external) e.g., "User", "Marketing"	Postponed	
	Withdrawn	
	Expired	7/22/74

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

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

**REASONS:**  
 Because software associated with the ARPA Network interface is currently being maintained by Project MAC (rather than CISL), a desire has been expressed to not ship this software as part of the standard product. In effect, this is a need to be able to distinguish this software from other parts of Multics.

**SUMMARY**  
 This MCR proposes the creation of a new library called the "Network Library." This new library will contain all Network-related software in the Online System. (Those parts of the Network software which are in the hardcore system -- currently the NCP and the IMPDIM -- will not be affected.) For efficiency, this new library will exist in the same directory as the Author Maintained Library.

**IMPLICATIONS**  
 Because all installed Network software is either 1) not directly invoked by users, or 2) not documented to users, there are no major changes visible to users. However, a notice should be placed in the pending\_changes info file to allow any users who do have links to the affected segments can change them and to allow users to change their search rules if they desire.

- DETAILED PROPOSAL**
- 1) The name "system\_library\_network" will be added to the directory " system\_library\_auth\_maint".
  - 2) A New logical library will be created for use of the installation tools corresponding to the above library.
  - 3) All network-related software will be moved to the new Network Library. Because

DETAILED PROPOSAL (cont.)

this action will require several small changes (particularly to the Answering Service, this movement will be performed by installation submissions and deletions.

MISCELLANEOUS

It is understood that documentation for network-related software will continue to be placed in the SPS when appropriate.

No plan yet exists for changes to the various manuals (such as the Operators' Manual and the System Administrators Manual) where certain sections now refer to operation of the Network.

This MCR alters MCRs 226 and 227; this MCR withdraws MCR 225.

MULTICS CHANGE REQUEST		MCR 293 Page 1 of 1 Pages	
TITLE: Addressing bug in qedx		STATUS	DATE
		Written	1/16/74
AUTHOR: <u>M.A. Meer</u>		Approved <b>#</b>	<b>1/22/74</b>
		Rejected	
SOURCE: (if external) e.g., "User", "Marketing"		Postponed	
		Withdrawn	
		Expires	<b>7/22/74</b>

CLASSIFICATION	JUSTIFICATION	Replaced by proposal MCR _____
<input type="checkbox"/> Incompatible Change	<input type="checkbox"/> Marketing Requirement	Implemented in System _____
<input type="checkbox"/> Extension	<input type="checkbox"/> Conformance to Standard	Objections/Comments:
<input type="checkbox"/> Restriction	<input type="checkbox"/> Increased Consistency	
<input type="checkbox"/> Performance Improvement	<input type="checkbox"/> Simplification	
<input type="checkbox"/> Reliability Improvement	<input type="checkbox"/> Generalization	
<input type="checkbox"/>	<input checked="" type="checkbox"/> Bug Fix 251	
<input type="checkbox"/>	<input type="checkbox"/>	

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

REASONS: qedx addresses lines incorrectly.

Summary: Qedx addresses bugs incorrectly in the case where a numerical address is followed by a search and another numerical address.  
Cause: A temporary register is not zeroed before processing the second numerical address.

Implications: None

MULTICS CHANGE REQUEST	MCR <u>295</u> Page <u>1</u> of <u>1</u> Pages								
TITLE: Bug in archive_util_	<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <th style="width: 50%;">STATUS</th> <th style="width: 50%;">DATE</th> </tr> <tr> <td>Written</td> <td>1/15/74</td> </tr> <tr> <td>Approved <input checked="" type="checkbox"/></td> <td>1/26/74</td> </tr> <tr> <td>Rejected</td> <td></td> </tr> </table>	STATUS	DATE	Written	1/15/74	Approved <input checked="" type="checkbox"/>	1/26/74	Rejected	
STATUS	DATE								
Written	1/15/74								
Approved <input checked="" type="checkbox"/>	1/26/74								
Rejected									
AUTHOR: <u>Steve Herbst</u>	<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td>Postponed</td> <td></td> </tr> <tr> <td>Withdrawn</td> <td></td> </tr> <tr> <td>Expires</td> <td>2/26/74</td> </tr> </table>	Postponed		Withdrawn		Expires	2/26/74		
Postponed									
Withdrawn									
Expires	2/26/74								
SOURCE: (if external) e.g., "User", "Marketing"									

CLASSIFICATION	JUSTIFICATION	REASON
<input type="checkbox"/> Incompatible Change	<input type="checkbox"/> Marketing Requirement	Replaced by proposal MCR _____
<input type="checkbox"/> Extension	<input type="checkbox"/> Conformance to Standard	Implemented in System _____
<input type="checkbox"/> Restriction	<input type="checkbox"/> Increased Consistency	Objections/Comments:
<input type="checkbox"/> Performance Improvement	<input type="checkbox"/> Simplification	
<input checked="" type="checkbox"/> Reliability Improvement	<input type="checkbox"/> Generalization	
<input type="checkbox"/>	<input checked="" type="checkbox"/> Bug Fix 249	
<input type="checkbox"/>		

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

REASONS: Archive\_util\_\$search changes the archive pointer (1st arg.)

Summary: Save and restore archive pointer

MULTICS CHANGE REQUEST		MCR <u>296</u> Page <u>1</u> of <u>1</u> Pages	
TITLE: Bug fix for tape_		STATUS	DATE
		Written	1/18/74
AUTHOR: <u>Bill Silver</u>		Approved <input checked="" type="checkbox"/>	7/26/74
		Rejected	
SOURCE: (if external) e.g., "User", "Marketing"		Postponed	
		Withdrawn	
		Expires	7/26/74

CLASSIFICATION	JUSTIFICATION	Replaced by proposal MCR _____
<input type="checkbox"/> Incompatible Change	<input type="checkbox"/> Marketing Requirement	Implemented in System _____
<input type="checkbox"/> Extension	<input type="checkbox"/> Conformance to Standard	Objections/Comments:
<input type="checkbox"/> Restriction	<input type="checkbox"/> Increased Consistency	
<input type="checkbox"/> Performance Improvement	<input type="checkbox"/> Simplification	
<input type="checkbox"/> Reliability Improvement	<input type="checkbox"/> Generalization	
<input type="checkbox"/>	<input type="checkbox"/> unreported	
<input type="checkbox"/>	<input checked="" type="checkbox"/> Bug Fix	

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

REASONS: Fix bug in tape\_ (tape\_xmt\_). A counter was not reset correctly when writing past the End of Tape reflector.

MULTICS CHANGE REQUEST		MCR <u>297</u> Page <u>1</u> of <u>1</u> Pages	
TITLE: Increase size of IOAT		STATUS	DATE
		Written	1/21/74
AUTHOR: <u>D.R. Vinograd</u>		Approved <input checked="" type="checkbox"/>	1/26/74
		Rejected	
SOURCE: (if external) e.g., "User", "Marketing"		Postponed	
		Withdrawn	
		Expires	7/26/74

CLASSIFICATION	JUSTIFICATION	Replaced by proposal MCR _____
<input type="checkbox"/> Incompatible Change	<input type="checkbox"/> Marketing Requirement	<input type="checkbox"/> Implemented in System _____
<input type="checkbox"/> Extension	<input type="checkbox"/> Conformance to Standard	Objections/Comments:
<input type="checkbox"/> Restriction	<input type="checkbox"/> Increased Consistency	
<input type="checkbox"/> Performance Improvement	<input type="checkbox"/> Simplification	
<input checked="" type="checkbox"/> Reliability Improvement	<input type="checkbox"/> Generalization	
<input type="checkbox"/>	<input checked="" type="checkbox"/> Bug Fix 224	
<input type="checkbox"/>	<input type="checkbox"/>	

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

REASONS: At the present time the I/O Assignment Table (IOAT) has a default size of 4 pages. If more than 75 interactive user try to use the system the table overflows and the system fails.

Summary: Increase the size of the IOAT to 16 pages by specifying for the IOAT in the system header file a cur\_length of 16.

Implications: This change has already been made in the Phoenix system without any problems.

MULTICS CHANGE REQUEST		MCR <u>298</u> Page <u>1</u> of <u>1</u> Pages
TITLE: Fix bug in update option during system start up.	STATUS	DATE
	Written	1/21/74
	Approved <input checked="" type="checkbox"/>	1/26/74
AUTHOR: <u>D.R. Vinograd</u>	Rejected	
	Postponed	
	Withdrawn	
SOURCE: (if external) e.g., "User", "Marketing"	Expires	7/26/74

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

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

REASONS: As part of the update procedure used to install new systems in Phoenix the executable system libraries have in the past been retrieved. This has allowed two copies of the same module to appear in different on-line libraries with very interesting results. This occurred because a newer copy of the module was installed at MIT in a different library and the retrieve function does not operate in "trim" mode.

Summary: Modify the update option to perform a reload.

Implications: At any site which uses the update function all files installed by that site in the transmitted libraries will be deleted .

MULTICS CHANGE REQUEST		MCR <u>300</u> Page <u>1</u> of <u>1</u> Pages
TITLE: BOS command to search for parity errors.		STATUS
		DATE
AUTHOR: <u>J. Hannigan</u>		Written <u>1/14/74</u>
		Approved <input checked="" type="checkbox"/> <u>1/24/74</u>
SOURCE: (if external) e.g., "User", "Marketing"		Rejected
		Postponed
		Withdrawn
		Expires <u>7/24/74</u>

CLASSIFICATION	JUSTIFICATION	Replaced by proposal MCR _____
<input type="checkbox"/> Incompatible Change	<input type="checkbox"/> Marketing Requirement	Implemented in System _____
<input checked="" type="checkbox"/> Extension	<input type="checkbox"/> Conformance to Standard	Objections/Comments:
<input type="checkbox"/> Restriction	<input checked="" type="checkbox"/> Increased Consistency	
<input checked="" type="checkbox"/> Performance Improvement	<input checked="" type="checkbox"/> Simplification	
<input type="checkbox"/> Reliability Improvement	<input type="checkbox"/> Generalization	
<input type="checkbox"/>	<input type="checkbox"/> Bug Fix	

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

REASONS: Add program to BOS to search memory for parity errors, report same and rewrite bad cell. This is currently done by hand.

Justification: Many crashes are caused by memory parity problems. Manual checking is slow and often causes more problems than are cured. With a program the check can be done quickly with no manual intervention.

Summary: Program is in operation on Waltham 645 and will be recoded for 6180 by Waltham. It reads every memory cell and reports the address and contents of those that have parity errors. The contents of such cells are restored to memory to eliminate the parity error. This program is run as the first program of a CRASH RUNCOM.



MULTICS CHANGE REQUEST		MCR 301 Page 1 of 1 Pages
TITLE: BOS command to read registers of non-bootload CPU		STATUS
		DATE
AUTHOR: J. Hannigan		Written 1/14/74
		Approved <i>h</i> 1/24/74
SOURCE: (if external) e.g., "User", "Marketing"		Rejected
		Postponed
		Withdrawn
		Expires 1/24/74

CLASSIFICATION	JUSTIFICATION	Replaced by proposal MCR _____
Incompatible Change	Marketing Requirement	Implemented in System _____
<input checked="" type="checkbox"/> Extension	Conformance to Standard	Objections/Comments:  Implications include modification of fdump, etc. Discuss implementation with N. Morris and S. Webber.
Restriction	Increased Consistency	
<input checked="" type="checkbox"/> Performance Improvement	Simplification	
Reliability Improvement	Generalization	
	Bug Fix	

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

**REASONS:** Add program to BOS to read DBR and registers from non-bootload processor (dual processor system) for dumping second CPU.  
**Justification:** Current standard way of dumping second CPU in dual CPU configuration is for operator to read DBR off maintenance panel and typing it in. This is slow and often leads to errors. Program would do it without manual intervention.

**Summary:** Program gets second CPU to store DBR and registers by manipulating fault vector for connect fault in BOS and issuing connect to second CPU. Dump program is modified to accept DBR as an argument.

**Status:** This is fully implemented on 645 and will be implemented on Waltham 6180 by Waltham. It provides the added advantage of allowing the index registers, associative memory, and base registers to be dumped for second CPU.

MULTICS CHANGE REQUEST

TITLE: Gate Macro Fix

STATUS	DATE
Written	1/21/74
Approved <input checked="" type="checkbox"/>	1/26/74
Rejected	
Postponed	
Withdrawn	
Expires	1/26/74

AUTHOR: P. Haber

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

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

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

REASONS: The macro for creating a non-hardcore gate creates gate which fetches argument count incorrectly.

Summary: Correct Macro

Implications: None

MULTICS CHANGE REQUEST

FCR 303  
Page 1 of 1

TITLE: **Securable access to metering data**

STATUS	
Written	17 Jan 74
Approved	<i>[Signature]</i>
Rejected	
Postponed	
Withdrawn	
Expires	7/26/74

AUTHOR: R F Mabee

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

CLASSIFICATION	JUSTIFICATION	
<input checked="" type="checkbox"/> Incompatible Change	Marketing Requirement	Replaced by proposal MCP _____
<input type="checkbox"/> Extension	Conformance to Standard	Implemented in System _____  Objections/Comments:
<input type="checkbox"/> Restriction	Increased Consistency	
<input type="checkbox"/> Performance Improvement	Simplification	
<input checked="" type="checkbox"/> Reliability Improvement	<input checked="" type="checkbox"/> Generalization	
<input type="checkbox"/>	Bug Fix	
<input type="checkbox"/>		

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

REASONS:

Currently, access to examine hardcore meters cannot be separated from access to examine such sensitive hardcore data segments as I/O buffers. Thus anyone who wishes to measure system performance must convince the system administrators that he will not misuse his ability to steal other users' passwords.

SUMMARY:

A new gate will be provided, to permit access to only certain data. The old gate can be restricted to system programmers, who are, of course, trusted.

Step I: install ring\_zero\_peek\_online (calls whichever gate works and doesn't mind if one is missing).

Step II: change installed metering commands to use ring\_zero\_peek\_.

Step III: install gates, data segment, command, and filter program used by this mechanism.

Step IV: add a line to the answering service startup file to initialize filter.

Step V: reduce access to phcs\_ at discretion of IPC.

IMPLICATIONS:

Uninstalled tools using phcs\_\$ring\_0\_peek may require modification.

DETAILED PROPOSAL was distributed as MTB-030.

MULTICS CHANGE REQUEST

MCR 304

TITLE: Fix bugs in answering service 7.4

STATUS DATE

AUTHOR: VanVleck

Written 11/24/74

Approved 1/24/74

Rejected

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

Postponed

Withdrawn

Expires 7/26/74

CLASSIFICATION JUSTIFICATION

Replaced by proposal MCR

Incompatible Marketing

Change Requirement Implemented in System

Extension to Standard

Objections/Comments:

Restriction Increased

Performance Consistency

Improvement Simplification

Reliability

Improvement Generalization

Bug Fix #237

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

REASONS: Several bugs were introduced in the version of the answering service which caused the initializer to block instead of wait in a loop during process destruction.

These were:

1. Process terminations printed message and then hung up, leaving user counted as logged in and listed in whotab. (His process was destroyed and accounted for.)
2. When a daemon process issued a new\_proc, a logout resulted.
3. Absentee users were not being logged out correctly.

SUMMARY: Fixes were made to dialup\_, absentee\_user\_manager, and daemon\_user\_manager\_. Problem 1 was a ttydm peculiarity with the writing of zero-length messages. Problem 2 was a misplaced label. Problem 3 was caused by a validity check that rejected some valid wakeups coming from the hardware because the process ID appeared invalid. Code was also added to insure that the system will not be affected if the "process has terminated" signal arrives after the "process destruction complete" signal.

IMPLICATIONS: Process terminations will work correctly, and the login control tables and "who" will be correct. Daemon processes will be able to issue new\_proc. Absentee processes will log out correctly.

MULTICS CHANGE REQUEST		MCR <u>305</u>
TITLE: Message Coordinator Improvements		STATUS
AUTHOR: T. H. Van Vleck		DATE
SOURCE: (If external: e.g., "User", "Marketing")		Written <u>01/17/74</u>
		Approved <u>1/26/74</u>
		Rejected
		Postponed
		Withdrawn
		Expires <u>1/26/74</u>
CLASSIFICATION	JUSTIFICATION	
<input type="checkbox"/> Incompatible	<input type="checkbox"/> Marketing	Replaced by proposal MCP
<input type="checkbox"/> Change	<input type="checkbox"/> Requirement	Implemented in System
<input checked="" type="checkbox"/> Extension	<input type="checkbox"/> Conformance	Objections/Comments:
<input type="checkbox"/> Restriction	<input type="checkbox"/> to Standard	
<input type="checkbox"/> Performance	<input type="checkbox"/> Increased	
<input type="checkbox"/> Improvement	<input type="checkbox"/> Consistency	
<input checked="" type="checkbox"/> Reliability	<input type="checkbox"/> Simplification	
<input type="checkbox"/> Improvement	<input type="checkbox"/> Generalization	
	<input type="checkbox"/> Bug Fix	

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

REASONS:

Systems with multiple operator consoles in different locations find that a command input from one terminal may cause output on another terminal with no indication of what command produced the output. Also, such sites may wish to communicate between terminal locations (especially during system startup), and although this facility can be set up by using complicated routings, a simpler method is desirable.

SUMMARY:

Each terminal run by the message coordinator has an entry in the "mc\_anstbl" data base. Add to the per-terminal entry a BROADCAST LIST, which other specifies which other terminals will get a copy of this terminal's input. Each command line read by system\_control\_ will be reported to a new entry in the message coordinator by a call like

```
call message_coordr_note_input (tty_id, lp, ll);
```

Each terminal in the broadcast list for tty\_id will have a message formatted and queued for output of the form

```
1102 from tty123: r bk inc004
```

The "accept" command and its entry in message\_coordr\_ will be modified to

accept an optional list of terminals to broadcast to. The default broadcast list will be all terminals except the IOM console. Input will never be broadcast back to the terminal issuing a command. All input commands will be recorded in the system log.

The modification for inter-terminal communication will use part of the above changes: a new command, "intercom" ("ic") will be added to system\_control\_, which will pass the line input to the new entry point message\_coordr\_\$intercom. This entry point will work like "reply" in that the target identifier (a terminal name instead of a source id) will be extracted and looked up, and the line formatted and queued.

#### IMPLICATIONS:

Operational smoothness should be improved.

MULTICS CHANGE REQUEST		MCR 306
TITLE: Change entry definition in object segment.		STATUS   DATE
AUTHOR: T. H. Van Vleck, R. A. Barnes		Written   01/18/74
SOURCE: (if external; e.g., "User", "Marketing")		Approved   1/24/74
		Rejected
		Postponed
		Withdrawn
		Expires   1/24/74
CLASSIFICATION	JUSTIFICATION	
Incompatible	Marketing	Replaced by proposal MCR
Change	Requirement	Implemented in System
<input checked="" type="checkbox"/> Extension	Conformance to Standard	Objections/Comments:
Restriction	Increased Consistency	
Performance		
Improvement	Simplification	
Reliability		
Improvement	Generalization	
	<input checked="" type="checkbox"/> Unreported Bug Fix	

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

REASONS:

The standard object segment, described in MPM SWG section 11.3, is supposed to have a flag which says whether an entry point has an associated list of descriptors for the input arguments expected. These descriptors were provided for the use of the binder and the debugging tools. The version 2 PL/I compiler set this flag and produced the descriptors in the object segment, but it produced garbage in the list of pointers to the descriptors in the entry definition for every parameter with a star extent. Since this garbage looks like a valid pointer to a descriptor (and indeed may sometimes point to a descriptor), the effect of this bug is to make the entire list of descriptors useless.

The bug has been corrected in the EIS compiler, but no program can trust a descriptor list in the object segment.

SUMMARY:

There is some extra space in the word which contains the "has descriptors" bit. Define one of these bits as the "has valid descriptors" bit, and rename the old "has descriptors" flag to "has argument count". Modify the compilers which produce valid descriptor pointers to set this new bit on.

Install a new library program in bound\_debug\_util\_ called "get\_entry\_arg\_descs\_", which, given an entry pointer, returns an array of

pointers to the descriptors and the count of arguments, if the entry point has valid descriptors; if the program was compiled by the old version 2 PL/I, return null pointers but a correct argument count.

#### IMPLICATIONs4

The binder, trace\_stack, and debug can be modified to access this information when it is available. Warning messages can be produced for mismatches in the number or attributes of arguments. A simple command can be written for users which lists the attributes of the arguments to any subroutine entrypoint.



MULTICS CHANGE REQUEST		MCR <u>307</u>
TITLE: Fix bugs in memo command.		STATUS   DATE
AUTHOR: Paul A. Green		<u>Written</u>   <u>01/17/74</u>
SOURCE: (if external; e.g., "User", "Marketing") local		<u>Approved</u>   <u>1/24/74</u>
		<u>Rejected</u>
		<u>Postponed</u>
		<u>Withdrawn</u>
		<u>Expires</u>   <u>7/24/74</u>
CLASSIFICATION	JUSTIFICATION	
<input type="checkbox"/> Incompatible	<input type="checkbox"/> Marketing	<u>Replaced by proposal MCR</u>
<input type="checkbox"/> Change	<input type="checkbox"/> Requirement	<u>Implemented in System</u>
<input type="checkbox"/> Extension	<input type="checkbox"/> Conformance	Objections/Comments:
<input type="checkbox"/> Restriction	<input type="checkbox"/> to Standard	
<input type="checkbox"/> Performance	<input type="checkbox"/> Increased	
<input type="checkbox"/> Improvement	<input type="checkbox"/> Consistency	
<input type="checkbox"/> Reliability	<input type="checkbox"/> Simplification	
<input type="checkbox"/> Improvement	<input type="checkbox"/> Generalization	
	<input checked="" type="checkbox"/> #244, 245, 246	
	<u>Bug Fix</u>	

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

REASONS:

- Several bugs have been reported by users of memo. Memo did not:
1. diagnose non-existence of memo #11 in "memo -dl 5 11", when memo 5 existed and memo 11 didn't. (mprf 6374 & 6015, bug 246).
  2. properly handle memos with both the -call and -alarm attributes (it called them twice). (mprf 6129, bug 245).
  3. properly handle more than 20 memos (it only selected the first 20).
  4. define the setting of alarms in a very consistent manner (it caused alarms to be turned on with any invocation except "memo -off": thus, an absentee job could not set a memo without risking turning on alarm memos).
  5. did not allow selection of -call memos (only -alarms).
  6. did not give very good diagnostics for various illegal combinations of arguments. (mprf 6389, bug 244).

SUMMARY

These changes will fix the above bugs in memo. An updated info file has also been prepared, and the MPM documentation has been modified appropriately.

IMPLICATIONS

Points 1, 2, 3, and 6 are bug fixes, and are compatible. Point 5 is a new feature, and is compatible. The solution to point 4 defines "turning on alarm memos" in the following manner:

Alarms are either on or off. ("memo -on" and "memo -off", resp.)

A normal memo print turns alarms on. ("memo" and "memo -bf").  
Everything else leaves the state alone. (setting, selecting via  
"memo -print", "memo -list", or "memo -delete").

Thus, the normal interactive start\_up.ec action will cause alarms to be  
activated, and the -on and -off arguments may be used to effectively  
control alarms. This change is upwards compatible.

DETAILED PROPOSAL

Coded, tested, and ready for submission.

MULTICS CHANGE REQUEST

MCR 308  
Page 1 of 1 Pages

TITLE: Fix bugs in fault info routines

STATUS	DATE
Written	1/23/74
Approved <i>SW</i>	1/26/74
Rejected	

AUTHOR: M. Weaver

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

Postponed	
Withdrawn	
Expires	7/26/74

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

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

REASONS: Among other bugs, incorrect information is often returned when a condition is signalled from `PLl_operators_` and nine-bit rather than ten-bit opcodes are used.

Summary: Fix `interpret_op_ptr_` to be more knowlegeable about stack frames involved when `PLl_operators_` has signalled a condition. Fix `get_link_ptr_` and `find_operator_name_` to use ten-bit opcodes. Fix `find_condition_frame_` to avoid loop. Fix `find_condition_info_` to return exact length for conditon name.

Implications: None