

To: Distribution
From: M. S. Hodges
Date: October 21, 1974
Subject: Multics Change Requests

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MULTICS CHANGE REQUEST		MCR <u>683</u>
TITLE: Install lex_string_ and reduction_compiler	STATUS	DATE
AUTHOR: Gary C. Dixon	Written	07/23/74
	Approved	10-8-74
	Rejected	
SOURCE: (If external; e.g., "User", "Marketing") Library maintenance tools	Postponed	7-30-74
	Withdrawn	
	Expires	4-8-75
CLASSIFICATION	JUSTIFICATION	
Incompatible	Marketing	Replaced by proposal MCR
Change	Requirement	Implemented in System
Extension	Conformance	
Restriction	to Standard	Objections/Comments:
Performance	Increased	For further evaluation.
Improvement	Consistency	
Reliability	Simplification	
Improvement	Generalization	
	Bug Fix	

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

SUMMARY

- 1) Install lex_string_ and its support routines, lex_error_ and smart_alloc_ in >sss>bound_io_commands_ (the current home of parse_file_). smart_alloc_ would be moved from its current home, >tools>bound_utility_tools_, to >sss>bound_io_commands_.
- 2) Install reduction_compiler and reduction_compiler_ in >tools>bound_misc_translatrs_ (the current home of translate_gate and message_table_compiler).
- 3) document the above commands and subroutines as tools in the System Tools PLM.

REASONS:

- 1) These tools must be installed to support several translators which are currently under development. These translators include: cv_pmf - convert project master file, a project administration tool; tape_in and tape_out - a storage system to tape file copier being developed for IML; library_descriptor_compiler - a data base compiler being developed in conjunction with the new library maintenance tools.
- 2) lex_string_ and its support routines must be installed in >sss so that they will be in the search rules of most users. They must be in the search rules of project administrators so that the new cv_pmf will work. They must also be in the search rules of the users of a proposed new command, compare_pl1_source, which will compare two PL/I source programs token by token and statement by statement, rather than line by line as in compare_ascii. compare_pl1_source will be used

mainly to compare two versions of a source program which have been indented or commented differently, but which are otherwise similar. Only the tokens seen by the PL/I compiler will be compared.

IMPLICATIONS:

Two new facilities will be provided, both of which simplify and standardize the creation of special-purpose parsing and translation routines. In particular, translators created by the reduction compiler all have a similar, easy to understand organization, and they are easier to write, debug, and maintain than adhoc translators.

MULTICS CHANGE REQUEST

MCR 742
Page 1 of 1

TITLE: Boundfault/Hardware Bug

STATUS: ENCL

Written: 8-29-74

AUTHOR: M.A. Meer

Approved: 10-8-74

Rejected: _____

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

Postponed: 9-10-74

Withdrawn: _____

Expires: 4-8-75

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	
Reliability Improvement	Generalization	
	X Bug Fix <u>Unreported</u>	

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

REASONS: Boundfaults are handled incorrectly on decimal EIS instructions due to both hardware and software bugs.

FLX: Part I: A hardware bug in the 6180 processor caused the SCU data stored for out-of-bound faults to be incorrect. Until this is fixed at all sites, the software can be changed to assume the page referenced in one more than that indicated by the SCU data. It turns out the software can safely do this at the expense of occasionally using a larger ASTE than is necessary.

Part II: When the hardware is fixed, the software should again be fixed to use the SCU data to determine the actual page referenced.

MULTI-CHANGE REQUEST		MCR <u>778</u> Page <u>1</u> of <u>1</u>
TITLE: Upgrade tty_dim to use ioam_detach functions		STATUS
AUTHOR: <u>M. J. Grady</u>		Written 9-20-74
SOURCE: (if external) e.g., "User", "Marketing"		Approved 10/8/74
		Rejected
		Postponed
		Withdrawn
		Expires 4/8/75

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 checked="" type="checkbox"/> Reliability Improvement	<input 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: Certain types of devices which are controlled by the tty_dim, i.e. MDS2400, can be "lost" if the owning process terminates abnormally. This has not been a problem before since all "teletypes" were owned by the answering_service, which never terminates abnormally. However, the MDS2400 is owned by the Daemon driver process which is running it, and if the process terminates the MDS2400 cannot be used for the remainder of the session.

SUMMARY: Add an ioam_detach entry to tty_index which will be called by ioam_ when a process terminates. If the process owns any of the MDS type devices, they will be detached and made available for further use.

MULTICS CHANGE REQUEST	MCP <u>779</u> Page <u>1</u> of <u>1</u>														
TITLE: Change g115_ DIM operator intervention condition	<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="text-align: center;">STATUS</td> <td style="text-align: center;">DATE</td> </tr> <tr> <td>Written</td> <td style="text-align: center;">9-20-74</td> </tr> <tr> <td>Approved</td> <td style="text-align: center;">10/8/74</td> </tr> <tr> <td>Rejected</td> <td></td> </tr> <tr> <td>Postponed</td> <td></td> </tr> <tr> <td>Withdrawn</td> <td></td> </tr> <tr> <td>Expires</td> <td style="text-align: center;">4/8/75</td> </tr> </table>	STATUS	DATE	Written	9-20-74	Approved	10/8/74	Rejected		Postponed		Withdrawn		Expires	4/8/75
STATUS	DATE														
Written	9-20-74														
Approved	10/8/74														
Rejected															
Postponed															
Withdrawn															
Expires	4/8/75														
AUTHOR: <u>M. J. Grady</u>															
SOURCE: (if external) e.g., "User", "Marketing"															

CLASSIFICATION	JUSTIFICATION	REASON
Incompatible Change	Marketing Requirement	Replaced by proposal MCP _____ 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: In order to improve the operator interface to the remote I/O Driver process, it is desired to change the condition signalled as a result of pressing the "ABORT" button on the MDS2400 from "quit" to "device_quit".

SUMMARY: This change will allow the Daemon to identify the source of the "quit", either the MDS2400 or the initializer quit command.

IMPLICATIONS: Simultaneous installation of the new Daemon and new DIM may be required.

MULTIPLE CHANGE REQUEST		MCR <u>781</u> Page <u>1</u> of <u>1</u>
TITLE: <u>Fix bug in delete_</u>		STATUS
AUTHOR: <u>Steve Herbst</u>		Written <u>9-19-74</u>
SOURCE: (if external) e.g., "User", "Marketing"		Approved <u>10/8/74</u>
		Rejected
		Postponed
		Withdrawn
		Expires <u>4/8/75</u>

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 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 #334	
<input type="checkbox"/>	<input type="checkbox"/>	

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

REASONS: delete_\$ptr gets a linkage fault referencing the nonexistent error code error_table_\$badsegno when its input argument is a null pointer.

SUMMARY: Replace reference to error_table_\$badsegno with reference to error_table_\$invalidsegno.

MULTI-STEP CHANGE REQUEST		MCP <u>783</u> Form <u>1 of 1</u>
TITLE: <u>Fix bug in terminate_process_</u>		STATUS <u> </u>
AUTHOR: <u>M. Weaver</u>		Written <u>9-24-74</u>
SOURCE: (if external) e.g., "User", "Marketing"		Approved <u>10/8/74</u>
		Rejected <u> </u>
		Postponed <u> </u>
		Withdrawn <u> </u>
		Expires <u>4/8/75</u>

CLASSIFICATION	JUSTIFICATION	
<input type="checkbox"/> Incompatible Change	<input type="checkbox"/> Marketing Requirement	Replaced by proposal MCP _____
<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 type="checkbox"/> Unreported	
<input type="checkbox"/>	<input checked="" type="checkbox"/> Bug Fix	

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

REASONS: Since the installation of the finish condition handler, the logout message has not appeared in absentee absout files; absentee processes have overflowed the stack.

SUMMARY: Change terminate_process_ to signal finish after printing absentee logout info.

IMPLICATIONS: Message will appear again in absout files.

DETAILED PROPOSAL: Emergency fix; already installed.

MULTICS CHANGE REQUEST		MCR <u>785</u>
TITLE: Fix bugs in dprint		STATUS
AUTHOR: VanVleck		DATE
SOURCE: (if external; e.g., "User", "Marketing") /		Written <u>09/24/74</u>
		Approved <u>10/8/74</u>
		Rejected _____
		Postponed _____
		Withdrawn _____
		Expires <u>4/8/75</u>
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 type="checkbox"/> Performance Improvement	<input type="checkbox"/> Simplification	
<input checked="" type="checkbox"/> Reliability Improvement	<input type="checkbox"/> Generalization	
	<input checked="" type="checkbox"/> (Unreported) Bug Fix	

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

REASONS:

Two bugs were introduced in the new version of dprint.

1. If a user's segment cannot be found, the indentation, page and line lengths are not reset before the error message is printed. This results in some mighty funny-looking head sheets.

2. Users who call dprint_ with a version 2 structure find that it is treated as if it were version 3; if they have not set the page length correctly, problems will occur.

SUMMARY:

Fix the bugs.

MULTICS CHANGE REQUEST

MCR 786
Page 1 of 1 Pages

TITLE: change delete_ to work with the Access Isolation Mechanism

STATUS	DATE
Written	9/25/74
Approved	10/8/74
Rejected	
Postponed	
Withdrawn	
Expires	4/8/75

AUTHOR: Jerold C. Whitmore

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

CLASSIFICATION	JUSTIFICATION	Replaced by proposal MCR _____
<input type="checkbox"/> Incompatible Change	<ul style="list-style-type: none"> Marketing Requirement 	Implemented in System _____
<input checked="" type="checkbox"/> Extension	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	

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

REASONS: When delete_ attempts to delete a directory, it first tries to reference its contents. This causes an access violation error on an upgraded directory.

Summary: Change delete_ to first call hcs_\$delentry_file. If the directory is empty we stop here. If the fuldir error is returned, then call hcs_\$del_dir_tree to delete the contents, as done now.

Implications: None to current users. Deletedir will work for the current system and multi-level sites.

The program is coded and tested.

MULTICS CHANGE REQUEST		MCR <u>787</u> Page <u>1</u> of <u>1</u> Pages
TITLE: Fix bug in "MAP" function of Network login protocol. AUTHOR: D. Wells		STATUS
		DATE
		Written 09.26
		Approved 10/8/74
		Rejected
SOURCE: (if external) e.g., "User", "Marketing"		Postponed
		Withdrawn
		Expires 4/8/75

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 checked="" 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 Network IOSIM installed at MIT recently does not update the default menu at initialization to those setup by the Answering Service process.

SUMMARY: Fix the bug.

MULTIPLE CHANGE REQUEST

MCP 788
Page 1 of 1

TITLE: Fix crecho bug in tty_ctl

STATUS: _____

AUTHOR: M.J. Grady

Written 9-26-74

Approved 10/8/74

Rejected _____

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

Postponed _____

Withdrawn _____

Expires 4/8/75

CLASSIFICATION	JUSTIFICATION	Replaced by proposal MCP _____
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: A bug was discovered which caused system crashes when crecho mode used on a model 37 TTY.

SUMMARY: Fix the bug.

IMPLICATIONS: None.

MULTI-CR CHANGE REQUEST		MCR <u>789</u> Page <u>1</u> of <u>1</u>
TITLE: <u>Fix a bug in dn355\$get_devx</u>		STATUS
AUTHOR: <u>M. J. Grady</u>		Written <u>9-26/74</u>
SOURCE: (if external) e.g., "User", "Marketing"		Approved <u>10/8/74</u>
		Rejected
		Postponed
		Withdrawn
		Expires <u>4/8/75</u>

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 type="checkbox"/> Performance Improvement	<input type="checkbox"/> Simplification	
<input checked="" type="checkbox"/> Reliability Improvement	<input type="checkbox"/> Generalization	
	<input type="checkbox"/> Unreported	
	<input checked="" type="checkbox"/> Bug Fix	

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

REASONS: In certain cases when the tty DIM asked dn355\$get_devx for the devx of a particular line, it would return the devx of a different line, with no error code.

SUMMARY: Fix the bug.

IMPLICATIONS: None.

MULTICS CHANGE REQUEST

MCR 790

TITLE: Add active function to dump ring zero.	STATUS	DATE
AUTHOR: VanVleck	Written	09/26/74
SOURCE: (if external; e.g., "User", "Marketing")	Approved	10/8/74
	Rejected	
	Postponed	
	Withdrawn	
	Expires	4/8/75

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 checked="" type="checkbox"/> Simplification	
<input checked="" type="checkbox"/> Reliability Improvement	<input checked="" type="checkbox"/> Generalization	
	<input checked="" type="checkbox"/> (Unreported)	
	<input type="checkbox"/> Bug Fix	

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

REASONS:

Some sites find bugs in the supervisor which can be avoided by patching ring zero in the system_start_up.ec. But if the system is changed before this ec is updated, havoc results from bad patches. This situation has occurred several times.

SUMMARY:

Add a new active function to TOOLS, "ring_zero_peek_af". The value of

```
[ring_zero_peek_af segno offset]
```

will be the contents of the word at segno!offset. Then, lines like

```
&if [and [equal [ring_zero_peek_af ?? 0] 062063056061]
[equal [ring_zero_peek_af ?? 1] 071141040040]]
&then answer yes prz .....
&else &print System is not 23.19a!!!!
```

can be added to the system_start_up.ec or to a special patch ec which might be distributed to all sites if necessary.

MULTIPLE CHANGE REQUEST		MCR <u>791</u> Page <u>1</u> of <u>1</u>														
TITLE: Installation of ms_create in bound_access_commands	AUTHOR: <u>Steve Herbst</u>	<table border="1"> <tr> <th>STATUS</th> <th>DATE</th> </tr> <tr> <td>Written</td> <td>9-20/74</td> </tr> <tr> <td>Approved</td> <td>10/8/74</td> </tr> <tr> <td>Rejected</td> <td></td> </tr> <tr> <td>Postponed</td> <td></td> </tr> <tr> <td>Withdrawn</td> <td></td> </tr> <tr> <td>Expires</td> <td>4/8/75</td> </tr> </table>	STATUS	DATE	Written	9-20/74	Approved	10/8/74	Rejected		Postponed		Withdrawn		Expires	4/8/75
STATUS	DATE															
Written	9-20/74															
Approved	10/8/74															
Rejected																
Postponed																
Withdrawn																
Expires	4/8/75															
SOURCE: (if external) e.g., "User", "Marketing"																

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 checked="" 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"/>	

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

REASONS: Technically, the new mailbox commands are supposed to be a standard system feature and the queue message segment commands are supposed to be tools. However, all these commands are implemented by the same program. Also, they use `find_common_acl_names`, which is used by the new acl commands (`set_acl`).

SUMMARY: Install `ms_create`, the program that implements all message segment and mailbox commands, in `bound_access_commands` along with `set_acl` and `find_common_acl_names`.

MULTI-CHANGE REQUEST		MCR <u>792</u> Page <u>1</u> of <u>1</u>
TITLE: <u>Clean up bound_math_</u>		STATUS
AUTHOR: <u>David S. Levin</u>		Written <u>9-27-74</u> Approved <u>10-8-74</u> Rejected Postponed Withdrawn Expires <u>4-8-75</u>
SOURCE: (if external) e.g., "User", "Marketing"		

CLASSIFICATION	JUSTIFICATION	
Incompatible Change	Marketing Requirement	Replaced by proposal MCP _____
Extension	Conformance to Standard	Implemented in System _____
Restriction	X Increased Consistency	Objections/Comments: Provide list of math functions actually changed.
X Performance Improvement	X Simplification	
Reliability Improvement	Generalization	
	X Bug Fix Unreported	

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

REASONS: Some of the math functions are now available thru operator calls. The algorithms used in the operators differ in some cases from those in the segment bound_math_. Those procedures will be fixed by simply invoking the operator segment algorithm.

In other cases, math functions which formerly required out of line code can now be done either in line or by the procedure complex_binary_op. Therefore, the inline code could (and should) be used.

Finally, some of the math procedures invoke functions using explicit external calls, whereas, many of these external calls can be replaced by operator calls.

IMPLICATIONS: Because some of the algorithms will change, programs compiled before April 1974 may produce slightly different answers. The new algorithms have been chosen because they are more accurate than their predecessors.

MULTICS CHANGE REQUEST		MCR <u>793</u> Page <u>1</u> of <u>1</u> Pages
TITLE: Update test tape to handle MTS 500	STATUS	DATE
	Written	9/2/77
AUTHOR: <u>Grace Ackerman-Lewis</u>	Approved	10/8/77
	Rejected	
SOURCE: (if external) e.g., "User", "Marketing"	Postponed	
	Withdrawn	
	Expires	4/8/75

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	Generalization	
<input type="checkbox"/>	Unreported	
<input type="checkbox"/>	<input checked="" type="checkbox"/> Bug Fix	

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

REASONS: To allow test_tape to run on the new 500 drives and add the capability of specifying volume id and setting the density.

SUMMARY: Add new parameters -dens and -vllid to test_tape and modify the parameter handling so that the parameters need not appear in any specific order.

IMPLICATIONS: Will require a new writeup describing the use of the new parameters.

MULTI-CHANGE REQUEST

MCR 794
Page 1 of 1

TITLE: Fix bug in "detach - attach" sequence for remote device driver

STATUS	
Written	10-1-74
Approved	10/8/74
Rejected	
Postponed	
Withdrawn	
Expires	4/8/75

AUTHOR: Robert S. Coren

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

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	
Reliability Improvement	Generalization	
	Unreported	
	X Bug Fix	

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

REASONS: If a "detach" command is sent to an I/O Daemon Driver for a remote device, a subsequent "attach" fails because of an incorrect mode specification.

SUMMARY: Add check to input_cmd_ for remote device when "detach" or "attach" specified, and call entries in remote_ to handle these commands.

MULTI-CHANGE REQUEST		MCR <u>795</u> Page <u>1</u> of <u>1</u>
TITLE: <u>Modify Card Reader and Card Punch DIMs to use I/O Interfacer</u>		STATUS
AUTHOR: <u>Noel I. Morris</u>		Written <u>10/1/74</u>
SOURCE: (if external) e.g., "User", "Marketing" <u>Internal</u>		Approved <u>10/8/74</u>
		Rejected
		Postponed
		Withdrawn
		Expires <u>4/8/75</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 checked="" type="checkbox"/> Increased Consistency	Objections/Comments:
<input checked="" type="checkbox"/> Performance Improvement	<input checked="" type="checkbox"/> Simplification	
<input checked="" type="checkbox"/> Reliability Improvement	<input checked="" type="checkbox"/> Generalization	
	Bug Fix	

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

REASONS:

When the I/O Interfacer is installed, the GIM will be removed. Since the current reader and punch software use the GIM to perform I/O, it is imperative that they be recoded to use the I/O Interfacer. (The GIM is an obsolete interface which simulates GIOC operation.)

Summary:

The reader and punch DIMs will be recoded to use the I/O Interfacer for operation of the respective devices. No basic changes will be made to the overall algorithms in these DIMs. They will, however, be upgraded at this time to allow for operation of URMPC peripherals as well as common peripheral devices.

MULTI-CHANGE REQUEST

MCR 796

Page 1 of 1

TITLE: Modify Tape DCM to use I/O Interfacer

STATUS	
Written	10/1/74
Approved	10/8/74
Rejected	
Postponed	
Withdrawn	
Expires	4/8/75

AUTHOR: Noel I. Morris

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

CLASSIFICATION	JUSTIFICATION	
<input type="checkbox"/> Incompatible Change	<input 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 checked="" 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"/> Bug Fix	

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

REASONS:

The installation of the I/O Interfacer will make it possible to perform I/O on tapes from an outer ring. The ring 0 tape DCM can thus be eliminated, decreasing the size of the security kernel. Since many programs rely on the tape DCM interface, a writearound is to be provided. This writearound will reside in the user ring and provide the TDCM user with an identical interface. It will call the I/O Interfacer to perform tape I/O.

Summary:

The basic "iocall" code of the TDCM will be moved to an outer ring. New code will be written around this code for attaching and detaching tapes. The portion of the TDCM concerned with tape assignment and unassignment will remain in Ring 0 for the time being.

Implications:

Since I/O will be performed from an outer ring DCM, the wait and notify mechanism will no longer be used. Thus, a tape user will no longer tie up an eligibility slot while tape I/O is in progress. Certain tape metering information is no longer available.

MULTI-CHANGE REQUEST		MCR <u>797</u> Page <u>1</u> of <u>1</u>
TITLE: <u>Fix bug in sys_full_report</u>		STATUS: <u>10-2</u>
AUTHOR: <u>T. Casey</u>		Approved <u>10/8/74</u>
SOURCE: (if external) e.g., "User", "Marketing"		Rejected
		Postponed
		Withdrawn
		Expires <u>4/8/75</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 checked="" 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: If no user has been refused login due to a full system during the entire month, sys_full_report blows up trying to divide by zero during the monthly billing run.

SUMMARY: Fix the bug.

MULTI-CHANGE PROJECT	MCP <u>798</u> Page <u>1</u> of <u>1</u>														
TITLE: <u>Fix bug in convert_binary_integer</u>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th style="text-align: left;">STATUS</th> <th style="text-align: left;">DATE</th> </tr> <tr> <td>Written</td> <td>10-2-74</td> </tr> <tr> <td>Approved</td> <td>10/8/74</td> </tr> <tr> <td>Rejected</td> <td></td> </tr> <tr> <td>Postponed</td> <td></td> </tr> <tr> <td>Withdrawn</td> <td></td> </tr> <tr> <td>Expires</td> <td>4/8/75</td> </tr> </table>	STATUS	DATE	Written	10-2-74	Approved	10/8/74	Rejected		Postponed		Withdrawn		Expires	4/8/75
STATUS	DATE														
Written	10-2-74														
Approved	10/8/74														
Rejected															
Postponed															
Withdrawn															
Expires	4/8/75														
AUTHOR: <u>Steve Herbst</u>															
SOURCE: (if external) e.g., "User", "Marketing"															

CLASSIFICATION	JUSTIFICATION	REASON
<input type="checkbox"/> Incompatible Change	<input type="checkbox"/> Marketing Requirement	Replaced by proposal MCP _____
<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 type="checkbox"/> Generalization	
<input type="checkbox"/>	<input checked="" type="checkbox"/> Bug Fix #332	
<input type="checkbox"/>		

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

REASONS: Octal 40000000000 is a legal hardware number but `convert_binary_integer` gets a fixed point overflow trying to convert it. The offending operation is:

if number < 0 then number = -number; which produces a result one larger than the largest number.

SUMMARY: Special case for 40000000000 in single precision entries and 400000000000000000000000 in double precision entries. Test for these values and return the appropriate string.

MULTICS CHANGE REQUEST		MCR <u>799</u> Page <u>1</u> of <u>1</u> Pages
TITLE: Bug Fix in imp_input_processor	STATUS	DATE
	Written	10/2/77
AUTHOR: <u>Kenneth T. Pogran</u>	Approved	<u>10/2/77</u>
	Rejected	
SOURCE: (if external) e.g., "User", "Marketing"	Postponed	
	Withdrawn	
	Expires	<u>4/8/75</u>

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 checked="" 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: imp_input_processor, executing at interrupt time, processes certain Host-Host Protocol control commands contained in messages received on control links from other Network hosts. Messages which contain control commands which are not processed at interrupt time are left to be processed by the NCP. When a message contains both types of commands, the message must be left for the NCP, but to avoid duplicate processing, the op-codes of commands processed at interrupt time are replaced by special op-codes which the NCP treats as exotic NO-OPs. Unfortunately, due to a PL/1 coding error, this op-code replacement is done incorrectly and a zero is stored instead of the special op-code. Zero is the op-code for the standard NO-OP command, and, since Host-Host commands vary in length, their length being determined by their op-codes, the NCP becomes confused when it attempts to process commands which follow a command processed at interrupt time whose length is greater than one byte and whose op-code has been replaced with that of a standard NO-OP whose length is one byte. Thus, some commands become "lost", resulting in "half-open connections", "lost allocates", and other similar anomalies which we have been observing for quite some time.

SUMMARY: Change declaration of special op-code constants from fixed bin (17) to fixed bin (8) so that taking bit() of the constant will result in a bit string of the correct length which will not be truncated.

NOTE: This fix has been installed as an "emergency fix" so that is correct functioning (and elimination of the anomalies described above) can be determined before the submission of the modified IMP DIM with the new (8-packet message) buffering strategy.

MULTI-CHANGE REQUEST	MCR <u>800</u> Page <u>1</u> of <u>1</u>
TITLE: Enforce "rw" for message segments	STATUS: <u> </u>
AUTHOR: <u>Steve Herbst</u>	Written: <u>10-2-74</u>
SOURCE: (if external) e.g., "User", "Marketing"	Approved: <u>10/8/74</u>
	Rejected: <u> </u>
	Postponed: <u> </u>
	Withdrawn: <u> </u>
	Expires: <u>4/8/75</u>

CLASSIFICATION	JUSTIFICATION	Replaced by proposal MCR <u> </u>
<input type="checkbox"/> Incompatible Change	<input type="checkbox"/> Marketing Requirement	<input type="checkbox"/> Implemented in System <u> </u>
<input type="checkbox"/> Extension	<input type="checkbox"/> Conformance to Standard	Objections/Comments:
<input checked="" 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 type="checkbox"/> Bug Fix	
<input type="checkbox"/>	<input type="checkbox"/>	

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

REASONS: ACL entries on message segments currently have "rew" real access. They should have "rw"; a message segment is never executable.

SUMMARY: Have the message segment primitives enforce "rw" real access.

MULTICS CHANGE REQUEST		MCR <u>802</u> Page <u>1</u> of <u>1</u> Pages
TITLE: <u>Emergency fix to exists active function</u>	STATUS	DATE
	Written	<u>74100</u>
AUTHOR: <u>Paul A. Green</u>	Approved	<u>10/8/74</u>
	Rejected	
SOURCE: (if external) e.g., "User", "Marketing" <u>MIT IPC</u>	Postponed	
	Withdrawn	
	Expires	<u>4/8/75</u>

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	Generalization	
<input type="checkbox"/>	Bug Fix	
<input type="checkbox"/>	<input checked="" type="checkbox"/> fix incompatibility with old program.	

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

REASONS:

The implementation of a recent change to exists (MCR 690) accidentally created a compatibility problem for users of exists. The old version would recognize multisegment files using the directory keyword, but the new one would not. Since the new one had no keyword for multisegment files, the only way to recognize and multisegment file was to notice that it was not a directory, segment, or link. It is claimed that since users need the ability to recognize multisegment files, exists should support this capability.

SUMMARY:

Add "msf" keyword which returns "true" if a multisegment file of the specified entryname exists, "false" otherwise. Add "file" keyword which returns "true" if a segment or multisegment file exists, "false" otherwise. (Similar to the arguments to the list command; -msf and -file).

IMPLICATIONS:

Solves user compatibility problem. Adds new capability to exists.

DETAILED PROPOSAL:

Coded, tested, and submitted as an emergency fix at MIT.

MULTICS CHANGE REQUEST

MCR 803

Page 1 of 2

TITLE: Add sst name table to system

STATUS

Written 10-2-74

AUTHOR: _____ Webber, Greenberg

Approved 10/8/74

Rejected

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

Postponed

Withdrawn

Expires 4/8/75

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

Reliability Improvement

Generalization

Bug Fix

Debugging Aid

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

REASONS: In order to analyze dumps, it is useful to know the full pathnames of active segments. This allows identification of the contents of core, cache, and the AST. This information, although it could be acquired at crash time, is valuable while Multics is running for performance analysis among other reasons. The mechanism will be under control of a DEBG card. If the DEBG card says we're not keeping track of the segment names, BOS can fill in the data at FDUMP time.

SUMMARY: A segment will be placed in the hardcore during initialization. (Disk addresses will be reserved for it whether the mechanism is being used or not via the "don't null zero pages" mechanism of page control.) This segment will consist of an array of char (32) names (after a header), containing the primary name of each segment (activation time), paralleling the AST entries as they are laid out in the SST. Thus, given an SST, the names are easily found - given the parent pointers in the ASTE's pathnames can be generated.

Whenever a segment is activated, and the DEBG card says to save the name, the primary name is copied from the branch into this sst name table.

IMPLICATIONS: An extra page reference at activate time
- when DEBG card says so.

Also, much easier dump analysis tools;
better dump print out;
better cache dumping (impossible to do this
online without this feature).

MULTICHANGE REQUEST

MCR 804

Page 1 of 1

TITLE: Fix process page fault reporting.

Bernard Greenberg

AUTHOR: _____

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

STATUS	
Written	10/2/74
Approved	10/8/74
Rejected	
Postponed	
Withdrawn	
Expires	4/8/75

CLASSIFICATION	JUSTIFICATION	
Incompatible Change	Marketing Requirement	Replaced by proposal MCF _____
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:

get_process_usage currently returns the process' page fault count from its APT Entry. This quantity is updated only when a pass is made through the traffic controller by the process.

SUMMARY: Obtain page fault count from pds\$page_waits.

MULTI-CHANGE REQUEST		MCR <u>1 1 805</u> Page <u>1 of 1</u>
TITLE: <u>Fix Segfault/Boundfault interaction</u>		STATUS
AUTHOR: <u>Bernard Greenberg</u>		Written <u>10/1/74</u>
SOURCE: (if external) e.g., "User", "Marketing"		Approved <u>10/8/74</u>
		Rejected
		Postponed
		Withdrawn
		Expires <u>4/8/75</u>

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

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

REASONS: When a segment fault is taken on a segment, where the address being referenced is higher than the current length of the segment, seg_fault improperly grants an AST entry large enough to contain the current length of the segment. As soon as the segfault is restarted, a boundfault results. This causes AST thrashing, unnecessary locking, etc. This happens twice, for instance, in process creation.

SUMMARY: Fix segfault to grant an AST entry large enough to accommodate the max of the referenced address and the current length. The referenced address is already checked against the max length.

30919

MULTICS CHANGE REQUEST

MCR 806

TITLE: Convert language library to unbundled library

STATUS DATE

Written 10/01/74

AUTHOR: Arlene J. Scherer

Approved 10/8/74

Rejected

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

Postponed

Withdrawn

Expires 4/8/75

CLASSIFICATION JUSTIFICATION

Replaced by proposal MCR

Incompatible Marketing

Change Requirement Implemented in System

Extension Conformance

Objections/Comments:

to Standard

Increased

Restriction Consistency

Performance

Improvement Simplification

Reliability

Improvement Generalization

Bug Fix

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

REASON:

Because Honeywell wants to "unbundle" compilers and language processors other than PL1, (with perhaps some exceptions), an unbundled library is being created from the current "lang" library.

SUMMARY: Move the PL1 compiler and other "bundled" language processors to >idd>lang>s for source, >idd>lang>object for object, and to >sss for executable code (the name >lang will be added to >sss).

Rename the present languages libraries to unb and leave their contents intact if they are designated as unbundled.

MULTICS CHANGE REQUEST		MCR <u>807</u>
TITLE: Incorporate max length attribute setting into online installation tools.		STATUS
AUTHOR: P. Kelley		DATE
SOURCE: (if external; e.g., "User", "Marketing")		Written <u>09/04/74</u>
		Approved <u>10/15/74</u>
		Rejected
		Postponed
		Withdrawn
		Expires <u>4/15/75</u>
CLASSIFICATION	JUSTIFICATION	
Incompatible	Marketing	Replaced by proposal MCR
Change	Requirement	Implemented in System
Extension	Conformance	Objections/Comments:
Restriction	to Standard	
Performance	Increased	
Improvement	Consistency	
Reliability	Simplification	
Improvement	Generalization	
	Bug Fix	

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

Summary:

Provide the online updating tools with the capability to set the max length segment attribute.

Detailed Proposal:

The default max length for a segment will be set to the nearest upper page boundary of its current length. A "-max_length" option will enable the installer to explicitly specify a different max length if necessary, subject to the constraint:

$$\text{current length} \leq x \leq \text{sys_info\$max_seg_size.}$$

Implications:

The installer will have to be aware of segments which can "grow", and set their max length accordingly.

MULTIPLE CHANGE PROPOSALS		MCP 808 Page 1 of 1
TITLE: Fix a bug in g115_ DIM printer conversion routine		STATUS: <input type="checkbox"/> Pending
AUTHOR: M. J. Grady		Written: 10-4-74
		Approved: 10/15/74
		Rejected: <input type="checkbox"/>
SOURCE: (if external) e.g., "User", "Marketing"		Postponed: <input type="checkbox"/>
		Withdrawn: <input type="checkbox"/>
		Expires: 4/15/75

CLASSIFICATION	JUSTIFICATION	
<input type="checkbox"/> Incompatible Change	<input type="checkbox"/> Marketing Requirement	Replaced by proposal MCP _____
<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 checked="" type="checkbox"/>	<input type="checkbox"/> Bug Fix	

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

REASONS: A bug exists in the g115_ DIM printer conversion routines which causes two characters to be dropped when the line is longer than 132 characters.

SUMMARY: Fix the bug.

IMPLICATIONS: None

DETAILED PROPOSAL: Coded and Tested. Ready for submission.

MULTIPLE CHANGE REQUEST		MCR <u>809</u> Page <u>1 of 1</u>
TITLE: <u>Fix bug in mseg_ and mseg_own_</u>		STATUS
AUTHOR: <u>Steve Herbst</u>		Written <u>10-9-</u>
SOURCE: (if external) e.g., "User", "Marketing"		Approved <u>12/15/74</u>
		Rejected
		Postponed
		Withdrawn
		Expires <u>4/15/75</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 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: Calling a file entry in either mseg_ or mseg_own_ with the name of a nonexistent message segment causes a reference through null pointer.

SUMMARY: Fix bug in both programs.

IMPLICATIONS: None

MULTI-CHANGE REQUEST

MCR 813

Page 1 of 1

TITLE: Add New Options to create_dir for Support of the Access Isolation Mechanism

STATUS	
Written	10/04/74
Approved	10/15/74
Rejected	
Postponed	
Withdrawn	
Expires	4/5/75

AUTHOR: Jerold C. Whitmore

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

CLASSIFICATION	JUSTIFICATION
<input type="checkbox"/> Incompatible Change	<input checked="" type="checkbox"/> Marketing Requirement
<input checked="" type="checkbox"/> Extension	<input type="checkbox"/> Performance to Standard
<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 type="checkbox"/>

Replaced by proposal MCR _____

Implemented in System _____

Objections/Comments:

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

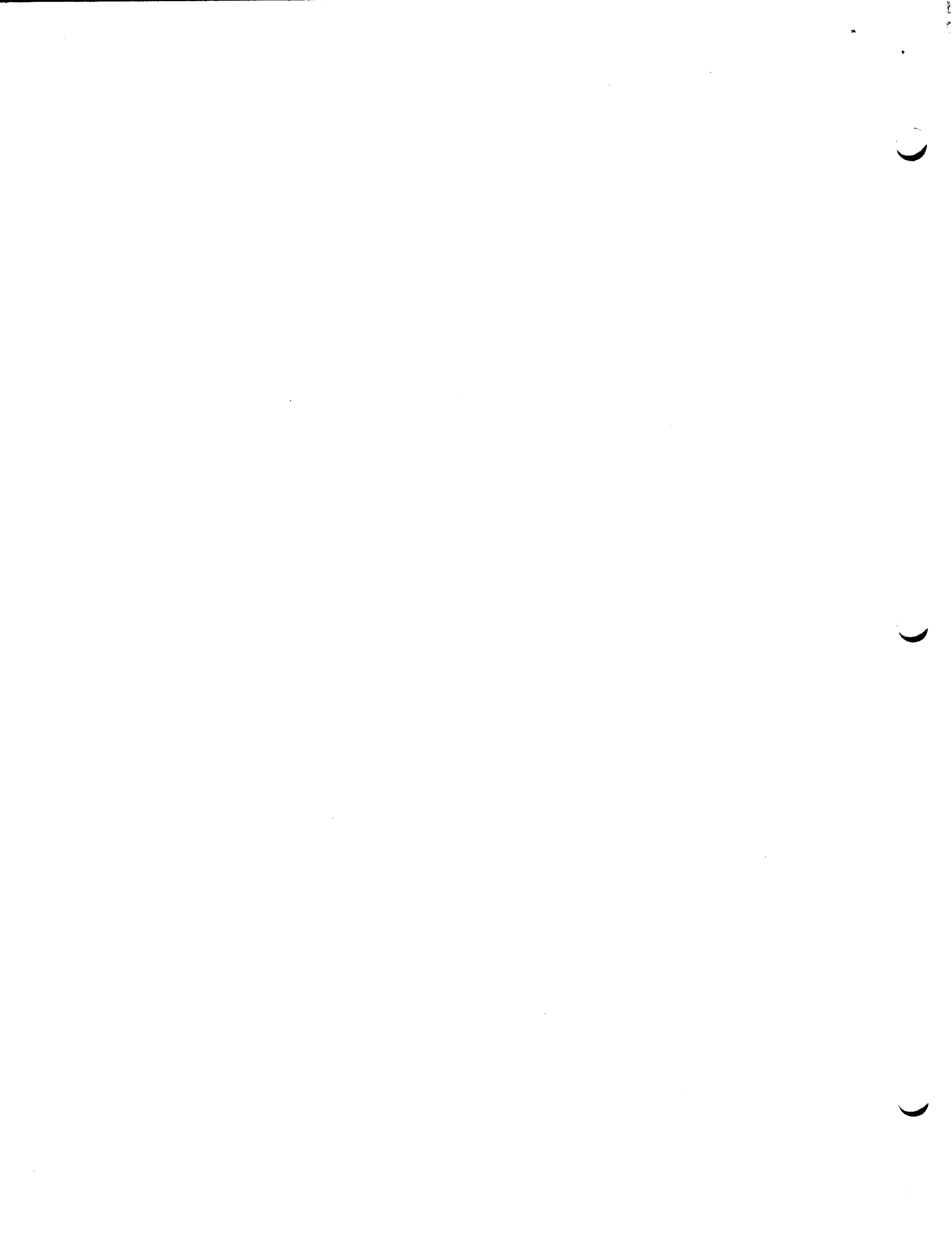
REASONS: Users must be able to create an upgraded directory to work within the Access Isolation Mechanism.

Summary: Two options will be added to create_dir: -class <access_class> and -quota <n>. These will operate as described in the attached command description. The two options will operate independently.

Implications: none. The command will operate exactly as it does today if no options are specified.

Installation: This change cannot be installed until after the hcs_create_upgraded_dir primitive (MCR 619) has been installed.

Documentation: The MPM will be changed to document the options.



Command
9/26/73**Name:** createdir, cd

The createdir command causes a storage system directory branch of specified name to be created in a specified directory (or in the working directory). That is, it creates a storage system entry for an empty subdirectory. See the write-up of the create command for creation of segments.

Usage

```
createdir path1 ... pathn -control_args-
```

where:

1. path₁ specifies the name of the subdirectory to be created.
2. control_args is one of the following argument pairs:
 - class <access class> This option will cause each directory created to be upgraded to the specified access class. If the -quota option is not specified, a quota of 1 is assumed (see notes). This option applies to each path₁. The access class may be specified with either long or short names.
 - quota <n> This option will cause a quota of n to be moved to the created directory. The parent directory must have an unused quota greater than n. The value of n must be a decimal number greater than 0. This option applies to each path₁.

Notes

The user must have an effective append access for the directories in question.

If the creation of a new subdirectory would introduce a duplication of names within the directory, and if the old subdirectory has only one name, the user is interrogated as to whether he wishes the subdirectory bearing the old instance of the name to be deleted. (If the old subdirectory has multiple names, the conflicting name is removed and a message to that effect issued to the user.)

The user is given sma access for the subdirectory created.

All superior directories specified in path_i must already exist. That is, only a single level of storage system hierarchy can be created with one invocation of this command.

Each upgraded directory must have an quota greater than zero and must have an access class which is greater than its parent. The specified access class must also be less than or equal to the maximum access authorization of the process. (See MPM section xxxx for further details.)

Examples

```
createdir sub >my_dir>alpha>new
```

would create the subdirectory sub immediately inferior to the current working directory and the subdirectory new immediately inferior to the directory >my_dir>alpha. As noted above, the directories my_dir and alpha must already exist. Both directories would be assigned the access class of their parent directory.

```
createdir subA -class a,c1,c2 -quota 5
```

would create the subdirectory subA with an access class of a,c1,c2 and a quota of 5 pages. The directory subA would be created immediately inferior to the working directory.

MULTIPLY CHANGE REQUEST		MCR <u>814</u> Page <u>1</u> of <u>1</u>
TITLE: <u>Delete mount package code from tape_</u>	STATUS	DATE
AUTHOR: <u>Bill Silver</u>	Written	<u>10-10-74</u>
	Approved	<u>10/15/74</u>
SOURCE: (if external) e.g., "User", "Marketing"	Rejected	
	Postponed	
	Withdrawn	
	Expires	<u>4/15/75</u>

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

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

REASONS: Code currently exists in the Multics standard tape I/O module, tape_, which involves the tape mount package. The tape mount package is not now installed and thus this code is not used. tape_ is an ios_ DIM. It calls tdcm. With the advent of ioi_ tdcm has been moved to a higher ring and is now tdcm. When the tape mount package is installed, regardless of what form it takes, the interface to it should be made from tdcm. Thus the tape mount package code in tape_ will never be used. It should be removed since it takes up space (an extra 1k in bound tape_) and because some execution time is wasted checking to see if the mount package is available. Since tape_ will be used as the model for building the new iox_ tape_mult_ I/O module this code should be removed in order to simplify the logic of tape_ and to ensure that this never-to-be-used code is not propagated in other I/O modules.

MULTICS CHANGE REQUEST		MCR <u>815</u> Page <u>1</u> of <u>1</u>
TITLE: <u>Create initial version of tape_mult_</u>		STATUS
AUTHOR: <u>Bill Silver</u>		Written <u>10-10-74</u>
SOURCE: (if external) e.g., "User", "Marketing"		Approved <u>10/15/74</u>
		Rejected
		Postponed
		Withdrawn
		Expires <u>4/15/75</u>

CLASSIFICATION	JUSTIFICATION	
<input 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 checked="" type="checkbox"/> Increased Consistency	Objections/Comments:
<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 type="checkbox"/>	

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

REASONS:

An iox_ compatible Multics standard tape I/O module is needed to support Multics tape utility subsystems that will be converted from using ios_ to using iox_.

SUMMARY:

The current version of tape_ will be converted to support the iox_ interface. Only those changes absolutely required for this conversion will be made to tape_.

DETAILED PROPOSAL: tape_mult_ will support unstructured files. It will support the stream_input and stream_output opening modes. It will support the iox_ entry points:

attach, detach, open, close, get_chars, put_chars, control, and position (for rewind only).

MULTI-CHANGE REQUEST

MCR 816

Page 1 of 1

TITLE: Fix bug in full_ipc_

STATUS DATE

Written 10-10-74

Approved 10/15/74

Rejected

AUTHOR: Bill Silver

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

Postponed

Withdrawn

Expires 4/15/75

CLASSIFICATION	JUSTIFICATION	
Incompatible Change	Marketing Requirement	Replaced by proposal MCP _____
Extension	Conformance to Standard	Implemented in System _____
Restriction	Increased Consistency	Objections/Comments: Problem first uncovered by On-Line T & D programs.
Performance Improvement	Simplification	
X Reliability Improvement	Generalization	
	X Unreported Bug Fix	

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

REASONS: ipc_inhibit counter was not being updated correctly during a cutoff or a reconnect.

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9191

MULTICS CHANGE REQUEST		MCR 817
TITLE: Emergency fix to cleanup command	STATUS	DATE
AUTHOR: Arlene J. Scherer	Written	10/09/74
SOURCE: (if external; e.g., "User", "Marketing")	Approved	0/15/74
	Rejected	
	Postponed	
	Withdrawn	
	Expires	4/15/75

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

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

REASON:

The cleanup command suddenly began getting a fault_tag_1 due to uninitialized pointer variables. The pointers were initialized to null and the fixed version installed to allow cleanup to operate on schedule. This change was also incorporated in the version of cleanup that is awaiting installation.

MULTICS CHANGE REQUEST

MCR 818
Page 1 of 1 Pages

TITLE: Correct percentage computation for monthly usage reports.

STATUS	DATE
Written	10/10/74
Approved	10/15/74
Rejected	
Postponed	
Withdrawn	
Expires	4/15/75

AUTHOR: F. C. Smith

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	x Increased Consistency	
Performance Improvement	Simplification	
x Reliability Improvement	Generalization	
	Bug Fix	

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

REASONS: The percentage changes in statistical quantities printed in the monthly usage reports are non-standard. The denominator used in computing them is the figure for the old month, rather than the new month.

Summary: Modify system_monthly_report to use the figure for the old month as the denominator in the percentage changes.

Implications: In the future, when new items are added to the file, checks for zero values will have to be included in the program.

MULTICS CHANGE REQUEST

MCR 819

TITLE: online updating tools: modify
documentation strategy

STATUS DATE

AUTHOR: P. Kelley

Written 10/10/74

Approved 10/15/74

Rejected

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

Postponed

Withdrawn

Expires 4/15/75

CLASSIFICATION JUSTIFICATION

Replaced by proposal MCR

Incompatible Marketing

Implemented in System

Change Requirement

Conformance

Extension to Standard

Objections/Comments:

Increased

Restriction Consistency

Performance

Improvement Simplification

Reliability

Improvement Generalization

(Unreported)

Bug Fix

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

Summary:

There is a bug in the documentation task of the online updating tools which very infrequently causes the "area" condition to be raised when attempting to update an info file (i.e. news.info). This condition causes the installation to back itself up.

Proposal:

Modify the strategy for updating the info file by, 1) requiring less temporary storage thereby reducing the probability of an "area" condition, and, 2) introducing an "area" handler in this task to recover gracefully without forcing the installation to back up.

Implications:

Since the documentation task is the last and least important task the online updating tools perform, the prevention of a fatal error occurring at this point is worthwhile.

MULTICS CHANGE REQUEST

MCR 820

TITLE: Implement phase I of protection auditing in the syserr log.

STATUS DATE

AUTHOR: L. Scheffler

Written 10/10/74

Approved 10/15/74

Rejected _____

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

Postponed _____

Withdrawn _____

Expires 4/15/75

CLASSIFICATION JUSTIFICATION

Replaced by proposal MCR

Implemented in System

Objections/Comments:

- | | |
|--|---|
| <input type="checkbox"/> Incompatible Change | <input checked="" type="checkbox"/> Marketing Requirement |
| <input checked="" type="checkbox"/> Extension | <input type="checkbox"/> Conformance to Standard |
| <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"/> Bug Fix |

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

REASONS:

Refer to MTBs 103 and 118. Install mechanism to optionally log protection events (involving ACLs, ring brackets, or access isolation mechanism) occurring in rings 0 and 1 in the syserr log.

SUMMARY:

Implementation will be in two phases, one to install the basic mechanism, and one to add features possible only after the KST changes of MTB-104. The second phase will be described in a subsequent MCR.

1. Create a new ring 0 module "protection_audit_" as the central module for auditing in the syserr log.
2. Add conditional audit calls in fim, illegal_procedure, and dir_control_error to audit protection-related faults and instances of access denied.
3. Add a mechanism for syserr_logger to wakeup the Initializer process to copy the paged syserr log into the storage hierarchy to prevent log overflows from auditing.
4. Add audit selectivity flags (checked before each audit call) to the PDS, and an entry in admin_gate_ for ring 1 programs to

Implement phase I of protection auditing
in the syserr log.

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examine them.

5. Add meters to fim, dir_control_error, and protection_audit_ to obtain concrete auditing performance data.

IMPLICATIONS:

At sites with all optional auditing disabled, no additional messages will appear in the syserr log. Performance change (increased CPU and paging overhead) is expected to be unmeasurably small.

At sites using auditing, the frequency of auditable protection events and the selectivity of System Security Administrators in enabling auditing will govern the amount of new overhead involved.

DETAILED PROPOSAL:

fim: Add about 30 instructions to conditionally audit protection-related access violation and illegal procedure faults. Add an aos to generate a fault frequency histogram in wired_hardcore_data.

illegal_procedure: Add a conditional audit call to audit bona fide illegal procedure faults (those not involving legal EIS instructions or instructions being simulated). This cannot be done conveniently by fim.

audit_flags.incl.alm: Masks used by fim for auditing faults.

wired_hardcore_data: 70(8) fixed bin (35) buckets will hold a fault frequency histogram.

dir_control_error: A 3-instruction conditional and a 12-instruction call will audit access denials to directories and segments.

protection_audit_: Add this new module (1.5 pages of code, 500(10) words of automatic storage) to the end of bound_system_faults (where most of its callers reside). It calls fs_get, access_mode, level, and lock as necessary to obtain information for the log. It calls syserr to log each message.

audit_flags.incl.pll: This contains a structure for referencing individual PDS audit selectivity flags.

syserr_real: Increase the length of a message buffer in automatic storage to allow single syserr messages to be longer than 80 characters.

Implement phase I of protection auditing
in the syserr log.

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syserr_logger: Add code to wakeup the Initializer to copy the paged syserr log into the hierarchy when it is in danger of wrapping around. Add a "copy_init" entry point to be called via hphcs_ during answering service initialization to store away the event call channel number for sending log copying wakeups to the Initializer; and to initialize thresholds in syserr_log at which log copying wakeups are sent.

as_init: Add code to establish the log copying event call channel, and hphcs_\$copy_syserr_log as the entry called. Store the channel number in the syserr_log header via hphcs_\$syserr_copy_init.

syserr_log_copy: Create this module to be invoked in the Initializer process by a wakeup from syserr_logger to copy the paged syserr log into the hierarchy.

hphcs_: Add entry "copy_syserr_log" to call syserr_log_copy. Add entry "syserr_copy_init" to call syserr_logger\$copy_init.

syserr_log: Add log size copying thresholds to the header.

print_syserr_log: Modify to know about the copy of the syserr log in the hierarchy.

admin_gate_: Add entry "get_audit_flags" to call protection_audit_\$get_flags, to allow ring 1 programs to get the PDS audit selectivity flags.