

TO: Distribution
FROM: Betsy
DATE: February 7, 1975
SUBJECT: Multics Change Requests

Attached are copies of the Multics Change Requests which were approved from January 15 - 31, 1975.

Multics Change Request

TITLE: Handling of device class arguments by dprint/dpunch AUTHOR: Jerry A. Stern		STATUS Written Status Expires	DATE 01/10/75 P 1/21/75, A 1/28/75 7/28/75
-Coded in: <input checked="" type="checkbox"/> PL/I <input type="checkbox"/> ALM <input type="checkbox"/> other- explain in DETAILED PROPOSAL -Planned for System MR 3.0 -Fixes Bug Number(s) _____ -Documented in MTB _____ -User/Operations-visible Interface change? <input checked="" type="checkbox"/> yes <input type="checkbox"/> no -Incompatible change? <input type="checkbox"/> yes <input checked="" type="checkbox"/> no -Performance: <input type="checkbox"/> Better <input checked="" type="checkbox"/> Same <input type="checkbox"/> Worse -Replaces MCR _____	Category (Check One) Lib. Maint. Tools Sys. Anal. Tools Sys. Prog. Tools 355 BOS Salvager Ring Zero Ring One SysDaemon/Admin. Runtime <input checked="" type="checkbox"/> User Cmnd/Subr.	DOCUMENTATION CHANGES Document Specify One or More MPM (Vol, Sect.) PLMS (AN #) AN58 MOSN (Sect.) 6.4.3.2, Sect. III MPAM (Sect.) MSAM (Sect.) Info Segs Other (Name) None (Reason)	
	Objections/Comments: Awaiting interface documentation		

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

SUMMARY: The dprint and dpunch commands face two problems with regard to the device class argument. First, if no device class is specified, what is the default device class? And second, if a device class is specified, is it really a device class which this command is intended to use?

The current solution to the first problem is to have the names "default" and "pun_dflt" known to dprint and dpunch respectively. These are not device class names, but rather additional names placed on the print and punch queues by the create_daemon_queues command. It is proposed that this convention be discarded and that the default queues for each command be identified in the IO daemon parms file. A new keyword, "default_command", would be placed below the "Queue_group" keyword indicating that the preceding queue group is the default for the specified command.

The second problem is currently solved by having dpunch insist that all its device class names begin with "pu" and by having dprint insist that its device class names not begin with "pu". It is proposed instead that a second new keyword, called "command," be used to identify in the parms file which command is intended to use a given queue group.

Thus, for each queue group, there must appear either a command or default_command specification. Both of these indicate which command is intended to use a given queue group. The default_command further indicates that a given queue group is the default for the command.

Reasons: A principal purpose of all the current work on the I/O daemon has been to generalize its structure so that new drivers can be easily added. The current scheme for determining default queues does not generalize. Each time a new driver is added with a new set of queues, the `create_daemon_queues` command must be modified to recognize yet another default queue name. Furthermore, each of these defaults must be explicitly specified as arguments to `create_daemon_queues` which could become cumbersome. Also, it requires the user of `create_daemon_queues` to remember all the device class names which are to receive additional default names. It would be cleaner, simpler, and more general to automate this task by including the information in IO daemon parms.

The convention which requires all punch queues to begin with "pu" is unnecessarily restrictive. Also, the person who prepares the parms file is required to know this obscure fact. As new driver types are added, there will be more such conventions to remember. If even one new driver type is added, e.g., a plotter driver, the `dprint` algorithm will fail since it only knows not to use punch queues.

Implications: Callers of `dprint` may depend on the "default" and "pun_dflt" convention. Therefore, `dprint` will continue to recognize these names for downwards compatibility.

Detailed Proposal:

- 1) Change `iodc_parse_parms` to recognize the new keywords.
- 2) Change `dprint` not to use "default" and "pun_dflt."
- 3) Discard `get_iod_defaults`.
- 4) Change `dprint` to get defaults from the parms file. (It already must look there.)
- 5) Change `print_io_devices`, which identifies default device classes, to find defaults in the parms file.

Multics Change Request

TITLE: Backup Bug Fixes
AUTHOR: R. Mullen

STATUS: Written 1/16/75
Status: A 1/21/75
Expires: 7/21/75

-Coded in: PL/I ALM other-
explain in DETAILED PROPOSAL
-Planned for System MR 2.1
-Fixes Bug Number(s) 343,349
-Documented in MTB
-User/Operations-visible
Interface change? yes no
-Incompatible change? yes no
-Performance: Better Same
 Worse
-Replaces MCR

Category (Check One)
 Lib. Maint. Tools
 Sys. Anal. Tools
 Sys. Prog. Tools
 355
 BOS
 Salvager
 Ring Zero
 Ring One
 Sys Daemon/Admin.
 Runtime
 User Cmmd/Subr.

DOCUMENTATION CHANGES
Document Specify One or More
MPM (Vol, Sect.)
PLMS (AN #)
MOSN (Sect.)
MPAM (Sect.)
MSAM (Sect.)
Info Segs
Other (Name)
None (Reason) no change

Objections/Comments:

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

SUMMARY: Backup stops when fault is taken accessing users' segments.
REASONS:
1. Backup's fault catcher is not enabled while referencing user segments, due to programming error.
2. Furthermore, certain oob's can be avoided entirely by not attempting to copy data beyond the max_length of a user's segment.
IMPLICATIONS:
Backup will be considerably more reliable than at present.
DETAILED PROPOSAL:
1. enable fault catcher correctly
2. copy min (current_length * 1024, max_length) and pad with zeroes as needed.

Multics Change Request

TITLE: Fix bug in BOS RESTOR Command		STATUS	DATE
AUTHOR: Noel I. Morris		Written	1/13/75
-Coded in: <input type="checkbox"/> PL/I <input checked="" type="checkbox"/> ALM <input type="checkbox"/> other- explain in DETAILED PROPOSAL -Planned for System MR 2.1 -Fixes Bug Number(s) _____ -Documented in MTB _____ -User/Operations-visible Interface change? <input type="checkbox"/> yes <input checked="" type="checkbox"/> no -Incompatible change? <input type="checkbox"/> yes <input checked="" type="checkbox"/> no -Performance: <input type="checkbox"/> Better <input checked="" type="checkbox"/> Same <input type="checkbox"/> Worse -Replaces MCR _____		Status	9/21/75
		Expires	7/21/75
		DOCUMENTATION CHANGES	
Category (Check One) <input type="checkbox"/> Lib. Maint. Tools <input type="checkbox"/> Sys. Anal. Tools <input type="checkbox"/> Sys. Prog. Tools <input type="checkbox"/> 355 <input checked="" type="checkbox"/> BOS <input type="checkbox"/> Salvager <input type="checkbox"/> Ring Zero <input type="checkbox"/> Ring One <input type="checkbox"/> SysDaemon/Admin. <input type="checkbox"/> Runtime <input type="checkbox"/> User Cmmd/Subr.		Document	Specify One or More
Objections/Comments:		MPM (Vol, Sect.)	
		PLMS (AN #)	
		MOSN (Sect.)	
		MPAM (Sect.)	
		MSAM (Sect.)	
		Info Segs	
		Other (Name)	
		X None (Reason)	X

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

SUMMARY:

AFDSC reported a problem with the BOS SAVE/RESTOR mechanism which caused problems when trying to restore the disk contents on a 14 disk system. The problem was traced to the RESTOR command which reads only the first 20K(8) words of the fsdct image placed on all SAVE tapes.

Proposal:

RESTOR will be changed to read the entire fsdct image from tape.

Ver. 3
741022

MULTICS CHANGE REQUEST

MCR 980

TITLE: Move copy entry from syserr_logger to
syserr_log_copy.

AUTHOR: L. Scheffler

STATUS	DATE
Written	01/14/75
Status	B 1 (2) 75
Expires	07/14/75

Planned for System: not applicable
Fixes Bug Number(s): not applicable
Documented in MTB: not applicable
Incompatible Change: no
User/Operations-visible Interface Change: no
Coded in: PL/I ALM other-see below
Performance: better same worse

CATEGORY (check one)
 Lib. Maint. Tools
 Sys. Anal. Tools
 Sys. Prog. Tools
 355
 BOS
 Salvager
 Ring Zero
 Ring One
 SysDaemon/Admin
 Runtime
 User Command/Subr

DOCUMENTATION CHANGES (specify one or more)

MPM (vol,sect) MPAM (sect)
MOSN (sect) MSAM (sect)
PLMs (AN#) AN- 65
Info Segs
Other

OBJECTIONS/COMMENTS:

Headings are: SUMMARY, REASONS, IMPLICATIONS, DETAILED PROPOSAL (optional)

SUMMARY: Remove "copy" entry from syserr_logger and replace it with the
entry "syserr_log_copy\$unlocked". (See MCR 820.)

REASONS: syserr_logger is wired. The code in syserr_logger\$copy does not
need to be wired.

IMPLICATIONS: Less wired code.

TITLE: Fix bug in new_user		STATUS	DATE
AUTHOR: T. Casey		Written	1/14/75
-Coded in: <input checked="" type="checkbox"/> PL/I <input type="checkbox"/> ALM <input type="checkbox"/> other- explain in DETAILED PROPOSAL -Planned for System MR 2.1 -Fixes Bug Number(s) ANS-51 -Documented in MIB -User/Operations-visible Interface change? <input type="checkbox"/> yes <input checked="" type="checkbox"/> no -Incompatible change? <input type="checkbox"/> yes <input checked="" type="checkbox"/> no -Performance: <input type="checkbox"/> Better <input checked="" type="checkbox"/> Same <input type="checkbox"/> Worse -Replaces MCR		Status	A 1/21/75
		Expires	7/21/75
		DOCUMENTATION CHANGES	
		Document	Specify One or More
		MFM (Vol, Sect.)	
		PLMS (AN #)	
		MOSN (Sect.)	
		MPAM (Sect.)	
		MSAM (Sect.)	
Objections/Comments:		Info Segs	
		Other (Name)	
		None (Reason)	

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

SUMMARY: Fix bug that causes new_user to reject a default project id of 9 characters (like SysDaemon), claiming it is longer than 9 characters.

REASONS: This bug makes it hard to register the daemons at a new installation.

IMPLICATIONS: The daemon will be able to be registered.

Multics Change Request

MCR 984

Page 1 of 1

TITLE: Change link chasing in append		STATUS	DATE	
AUTHOR: S. Herbst		Written	1/15/75	
<input checked="" type="checkbox"/> Coded in PL/I <input type="checkbox"/> ALM <input type="checkbox"/> other- explain in DETAILED PROPOSAL <input type="checkbox"/> Planned for System MR <input type="checkbox"/> Fixes Bug Number(s) _____ <input type="checkbox"/> Documented in MTB _____ <input type="checkbox"/> User/Operations-visible Interface change? <input type="checkbox"/> yes <input checked="" type="checkbox"/> no <input type="checkbox"/> Incompatible change? <input type="checkbox"/> yes <input checked="" type="checkbox"/> no Performance: <input checked="" type="checkbox"/> Better <input checked="" type="checkbox"/> Same <input type="checkbox"/> Worse <input type="checkbox"/> Replaces MCR _____	Category (Check One)		Status	
		Lib. Maint. Tools	Expires	
		Sys. Anal. Tools	DOCUMENTATION CHANGES	
		Sys. Prog. Tools	Document	Specify One or More
		355		
		BOS		
		Salvager	MPM (Vol, Sect.)	
		X Ring Zero	PLMS (AN #)	
		Ring One	MOSN (Sect.)	
		SysDaemon/Admin.	MPAM (Sect.)	
	Runtime	MSAM (Sect.)		
	User Cmmd/Subr.			
Objections/Comments:		Info Segs		
		Other (Name)		
		None (Reason) no interface change		

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

SUMMARY: Make append chase links using an **iterative** loop instead of by recursive calls to the entry append\$branchr, which exists especially for this purpose.

REASONS: This will make creating through a link much faster, make the program simpler and remove an entry.

Multics Change Request

TITLE: Emergency Fix to PL/I I/O to Add a Finish Handler
AUTHOR: R. Barnes

STATUS	DATE
Written	1/17/75
Status	A 1/21/75
Expires	7/21/75

-Coded in: PL/I ALM other-
 explain in DETAILED PROPOSAL
 -Planned for System MR 2.1
 -Fixes Bug Number(s) _____
 -Documented in MTB _____
 -User/Operations-visible
 Interface change? yes no
 -Incompatible change? yes no
 -Performance: Better Same
 Worse
 -Replaces MCR _____

Category (Check One)	
<input type="checkbox"/> Lib. Maint. Tools	
<input type="checkbox"/> Sys. Anal. Tools	
<input type="checkbox"/> Sys. Prog. Tools	
<input type="checkbox"/> 355	
<input type="checkbox"/> BOS	
<input type="checkbox"/> Salvager	
<input type="checkbox"/> Ring Zero	
<input type="checkbox"/> Ring One	
<input type="checkbox"/> SysDaemon/Admin.	
<input checked="" type="checkbox"/> Runtime	
<input type="checkbox"/> User Ccmd/Subr.	

DOCUMENTATION CHANGES	
Document	Specify One or More
MPM (Vol, Sect.)	
PLMS (AN #)	
MOSN (Sect.)	
MPAM (Sect.)	
MSAM (Sect.)	
Info Segs	
Other (Name)	SRB for 2.0
None (Reason)	

Objections/Comments:

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

SUMMARY: A change must be made to PL/I I/O (bound_plio2_) so that all PL/I files are properly closed when the finish condition is signalled. Currently iox_will close the files, but the PL/I buffers are not emptied, therefore creating the possibility that the files will be left in an undefined state.

ETAILED PROPOSAL:

plio2_open_ is changed to call default_error_handler_\$add_finish_handler with plio2_open_\$close_all_ as an argument the first time it is invoked.

Multics Change Request

TITLE: Delete hphcs_\$star_no_acc_ck		STATUS	DATE
AUTHOR: Paul Green		Written	750107
<input checked="" type="checkbox"/> PL/I <input type="checkbox"/> ALM <input type="checkbox"/> other- explain in DETAILED PROPOSAL <input type="checkbox"/> Planned for System MR <input type="checkbox"/> Fixes Bug Number(s) _____ <input type="checkbox"/> Documented in MFB _____ <input type="checkbox"/> User/Operations-visible Interface change? <input type="checkbox"/> yes <input checked="" type="checkbox"/> no <input type="checkbox"/> Incompatible change? <input type="checkbox"/> yes <input checked="" type="checkbox"/> no <input type="checkbox"/> Performance: <input type="checkbox"/> Better <input checked="" type="checkbox"/> Same <input type="checkbox"/> Worse <input type="checkbox"/> Replaces MCR _____	Category (Check One)		Expires
	Lib. Maint. Tools		A 1/2/75
	Sys. Anal. Tools		7/21/75
	Sys. Prog. Tools		DOCUMENTATION CHANGES
	355		Document Specify One or More
	POS		MPM (Vol, Sect.)
	X Salvager		PLMS (AN #)
	X Ring Zero		MOSN (Sect.)
	Ring One		MPAM (Sect.)
	SysDaemon/Admin.		MSAM (Sect.)
Runtime		Info Segs	
User Cmmnd/Subr.		Other (Name) OLD SFS	
Objections/Comments:		None (Reason)	

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

SUMMARY: Delete gate entry hphcs_\$star_no_acc_ck and the code in star_ which supports it.

REASONS: This entry was formerly used by adjust_device; a program which disappeared long ago. Further, this entry will list a directory without requiring status permission...effectively coding system-wide access into the access on hphcs_. (Any program with access to hphcs_ can force access if it wishes to list a directory; this change doesn't remove a capability, just makes it a little harder to code).

IMPLICATIONS: Currently this entry is unused.

DETAILED PROPOSAL: Edit hphcs_.mexp and star_.pll to remove the code.

Multics Change Request

TITLE: New Page Control, Phase I: Continued development and ultimate installation thereof.	STATUS	DATE 1/17/75
AUTHOR: Bernard S. Greenberg	Written	1/17/75

-Coded in: <input checked="" type="checkbox"/> PL/I <input checked="" type="checkbox"/> ALM <input type="checkbox"/> other- explain in DETAILED PROPOSAL -Planned for System MR 3 -Fixes Bug Number(s) _____ -Documented in MTB 105 -User/Operations-visible Interface change? <input type="checkbox"/> yes <input checked="" type="checkbox"/> no -Incompatible change? <input type="checkbox"/> yes <input checked="" type="checkbox"/> no -Performance: <input checked="" type="checkbox"/> Better <input type="checkbox"/> Same <input type="checkbox"/> Worse -Replaces MCR _____	Category (Check One) <input type="checkbox"/> Lib. Maint. Tools <input type="checkbox"/> Sys. Anal. Tools <input type="checkbox"/> Sys. Prog. Tools <input type="checkbox"/> 355 <input type="checkbox"/> BOS <input checked="" type="checkbox"/> Salvager <input checked="" type="checkbox"/> Ring Zero <input type="checkbox"/> Ring One <input type="checkbox"/> SysDaemon/Admin. <input type="checkbox"/> Runtime <input type="checkbox"/> User Cmnd/Subr.	Status A 1/21/75 Expires 4/21/75 DOCUMENTATION CHANGES Document Specify One or More MPM (Vol, Sect.) PLMS (AN #) 60 MOSN (Sect.) MPAM (Sect.) MSAM (Sect.)
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Objections/Comments:

Info Segs
Other (Name)
None (Reason)

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

SUMMARY: Continue development of so-called 'new' page control. Install a version of same when in a consistent state.

REASONS: MTB 105 proposed a large number of radical changes to the operation of the current page/core control subsystem. The nature of system performance in this area is such that the only reasonable way to determine the benefits or losses of a proposed change, for a large class of changes, is to implement it, and measure it. All of the proposed changes (other than core accounting), and others being proposed, are entirely for performance improvement, not for change in functionality.

Hence, this MCR seeks to authorize further development and coding of performance-oriented changes, which may even be discarded if not worthwhile. The installation of some form of this page control, at a state where reasonable performance benefits have been observed, is proposed.

DETAILED PROPOSAL:

The current experimental page control contains the following features:

- 1) Overlapped bulk store operation. The full power of the Controller's hardware queuing facility is utilized, at the expense of a complex DIM. The current page control loops awaiting I/O completion, and cannot overlap.
- 2) Seek-then read-then housekeep strategy. The find-core algorithm is trivialized, without modifying the replacement strategy. Hence, page reading is started as soon as possible in the page fault cycle. Write queuing and zero-checking is done during the read transfer. Clearly, this is only possible with improvement 1).
- 3) Internal protocols simplified. Previously unused space in core map entries is used to save AST entry pointers, eliminating the expensive

and common `get_astept_givertp` operation, performed at interrupt time. A redefinition of the protocol defining the meaning of a PTW address ~~trivializes~~ an expensive operation at boundfault time, at almost no expense.

- 4) Overlapped paging device update. In order to allow `find_core` to operate at maximum speed, decisions concerning the update-write of pure pages to the paging device cannot be made at `find_core_time`. The overlapped Bulk Store Dim allows pages to be written to the paging device while they are in use, without tying up page control. Hence, writing all pages to the PD as soon as they are read in from disk greatly simplifies the cost of replacing pages in core, while fully overlapping use of the page with PD update.
- 5) Miscellaneous cleanups and bug fixes.

It is felt that the protocol cleanups and bulk store dim are essential to any of the more sophisticated proposals stated in the MTB. The ideas presented in this MCR are conservative in comparison, and represent performance improvements. This page control should be installed when sufficient confidence ^{in it} is reached.

Multics Change Request

TITLE: Emergency fix to Fortran I/O to Add a finish Handler	STATUS	DATE
AUTHOR: D. Levin	Written	1/17/75
	Status	A/2/75
	Expires	7/21/75

- Coded in: PL/I ALM other- explain in DETAILED PROPOSAL
- Planned for System MR 2.1
- Fixes Bug Number(s) _____
- Documented in MTB _____
- User/Operations-visible
- Interface change? yes no
- Incompatible change? yes no
- Performance: Better Same Worse
- Replaces MCR _____

Category (Check One)	
<input type="checkbox"/>	Lib. Maint. Tools
<input type="checkbox"/>	Sys. Anal. Tools
<input type="checkbox"/>	Sys. Prog. Tools
<input type="checkbox"/>	355
<input type="checkbox"/>	BOS
<input type="checkbox"/>	Salvager
<input type="checkbox"/>	Ring Zero
<input type="checkbox"/>	Ring One
<input type="checkbox"/>	SysDaemon/Admin.
<input checked="" type="checkbox"/>	Runtime
<input type="checkbox"/>	User Cmnd/Subr.

DOCUMENTATION CHANGES	
Document	Specify One or More
MPM (Vol, Sect.)	
PLMS (AN #)	
MOSN (Sect.)	
MPAM (Sect.)	
MSAM (Sect.)	
Info Segs	
Other (Name)	
None (Reason)	

Objections/Comments:

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

SUMMARY: A change must be made to Fortran I/O (bound fortran_io) so that all Fortran files are properly closed when the finish condition is signalled. Currently iox will close the files, but the Fortran buffers are not emptied, therefore creating the possibility that the files will be left in an undefined state.

DETAILED PROPOSAL:

ftn_io control is changed to call default_error_handler \$add_finish_handler with finish_handler as an argument the first time it is called.

Multics Change Request

TITLE: Modify tape attachment module to rotate assignment AUTHOR: of tape drives Noel I. Morris		STATUS	DATE
		Written	1/17/75
		Status	A 1/21/75
		Expires	7/21/75
-Coded in: <input checked="" type="checkbox"/> PL/I <input type="checkbox"/> ALM <input type="checkbox"/> other- explain in DETAILED PROPOSAL		Category (Check One)	
-Planned for System MR 2.1		<input type="checkbox"/> Lib. Maint. Tools	
-Fixes Bug Number(s) _____		<input type="checkbox"/> Sys. Anal. Tools	
-Documented in MFB _____		<input type="checkbox"/> Sys. Prog. Tools	
-User/Operations-visible		355	
Interface change? <input checked="" type="checkbox"/> yes <input type="checkbox"/> no		BOS	
-Incompatible change? <input type="checkbox"/> yes <input checked="" type="checkbox"/> no		Salvager	
-Performance: <input type="checkbox"/> Better <input checked="" type="checkbox"/> Same		<input checked="" type="checkbox"/> Ring Zero	
<input type="checkbox"/> Worse		Ring One	
-Replaces MCR _____		SysDaemon/Admin.	
		Runtime	
		User Cmmd/Subr.	
		MPAM (Sect.)	
		MSAM (Sect.)	
Objections/Comments:		DOCUMENTATION CHANGES	
		Document Specify One or More	
		MPM (Vol, Sect.)	
		PLMS (AN #)	
		MOSN (Sect.)	
		MPAM (Sect.)	
		MSAM (Sect.)	
		Info Segs	
		Other (Name)	
		None (Reason)	

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

SUMMARY:

In certain cases, especially when performing a reload, it is desirable to assign a tape drive which is guaranteed to be different from the last tape drive assigned. This will remove the necessity of having to wait for a tape to rewind and unload before proceeding with the next tape of a multi-reel sequence.

Proposal:

"tape_attach", the hardcore tape assignment module, will be modified. A new entry will be provided through hphcs_ to set tape assignment on a rotational basis. The normal mode will be to assign tapes in the manner in which they are currently assigned.

```
declare hphcs_$rotate_tape_drives entry (bit (1)aligned);
call hphcs_$rotate_tape_drives (rotate_sw);
```

If "rotate_sw" is "1", assignment of tape drives will be rotated. If it is "0", tape drive assignment will not be rotated.

The reloader will be modified to set tape assignment rotation when it commences operation and to reset it at the end of a reloader.

Implications:

This facility is temporary and will be removed when peripheral resource allocation mechanism is implemented.

Multics Change Request

TITLE: New default Multics standard tape record size.

AUTHOR: B. Silver

STATUS	DATE
Written	01/21/75
Status	A 1/28/75
Expires	7/28/75

- Coded in: PL/I ALM other-
explain in DETAILED PROPOSAL
- Planned for System MR 2.1
- Fixes Bug Number(s) _____
- Documented in MTB _____
- User/Operations-visible
- Interface change? yes no
- Incompatible change? yes no
- Performance: Better Same
 Worse
- Replaces MCR _____

Category (Check One)

- Lib. Maint. Tools
- Sys. Anal. Tools
- Sys. Prog. Tools
- 355
- BOS
- Salvager
- Ring Zero
- Ring One
- SysDaemon/Admin.
- Runtime
- User Cmmd/Subr.

DOCUMENTATION CHANGES

- Document Specify One or More
- MPM (Vol, Sect.)
- PLMS (AN #)
- MOSN (Sect.)
- MPAM (Sect.)
- MSAM (Sect.)

Objections/Comments:

- Info Segs ^{mstrds.info;} pending.changes.info
- Other (Name)
- None (Reason)

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

SUMMARY: Change the default Multics standard tape record size from 256 words to 1024 words.

REASONS: The longer record size will make tape processing more efficient. (See MTB-003.)

IMPLICATIONS: To the average tape user this change involves no implications. However, anyone who wants small Multics standard tape records (256 words) will have to use the mstrds command. Note that this change will affect any existing procedures (depending upon default 256 word length) for transferring Multics files to other (foreign) computers.

DETAILED PROPOSAL: The size of Multics **standard** records is maintained on a per process basis in the program tape_dim_data. This program will be changed so that the initial value for this record size will be 1024 rather than 256.

Multics Change Request

TITLE: Implement "-long" option for initiate		STATUS	DATE	
AUTHOR: S. Herbst		Written	1/17/75	
-Coded in: <input checked="" type="checkbox"/> PL/I <input type="checkbox"/> ALM <input type="checkbox"/> other- explain in DETAILED PROPOSAL -Planned for System MR _____ -Fixes Bug Number(s) _____ -Documented in MTB _____ -User/Operations-visible Interface change? <input checked="" type="checkbox"/> yes <input type="checkbox"/> no -Incompatible change? <input type="checkbox"/> yes <input checked="" type="checkbox"/> no -Performance: <input type="checkbox"/> Better <input checked="" type="checkbox"/> Same <input type="checkbox"/> Worse -Replaces MCR _____	Category (Check One)			
	<input type="checkbox"/> Lib. Maint. Tools	DOCUMENTATION CHANGES		
	<input type="checkbox"/> Sys. Anal. Tools	Document	Specify One or More	
	<input type="checkbox"/> Sys. Prog. Tools	MPM (Vol, Sect.)		
	<input type="checkbox"/> 355	PLMS (AN #)		
<input type="checkbox"/> BOS	MOSN (Sect.)			
<input type="checkbox"/> Salvager	MPAM (Sect.)			
<input type="checkbox"/> Ring Zero	MSAM (Sect.)			
<input type="checkbox"/> Ring One	Info Segs			
<input type="checkbox"/> SysDaemon/Admin.	Other (Name)			
<input type="checkbox"/> Runtime	None (Reason) MPM OK			
<input checked="" type="checkbox"/> User Cmnd/Subr.				
Objections/Comments:				

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

SUMMARY: Make the initiate command accept "-long" and "-lg" as synonymous control arguments to "-s".

REASON: The documentation says it does.

Ver. 3
741022

MULTICS CHANGE REQUEST

MCR 994

TITLE: Remove un-documented special characters
from TTY and printer dims.
AUTHOR: VanVleck

STATUS	DATE
Written	01/30/75
Status	A \128/75
Expires	07/30/75

Planned for System: not applicable
Fixes Bug Number(s): not applicable
Documented in MTB: not applicable
Incompatible Change: no
User/Operations-visible Interface Change: no
Coded in: ()PL/I ()ALM ()other-see below
Performance: ()better ()same ()worse

CATEGORY (check one)

- () Lib. Maint. Tools
- () Sys. Anal. Tools
- () Sys. Prog. Tools
- () 355
- () BOS
- () Salvager
- () Ring Zero
- () Ring One
- () SysDaemon/Admin
- () Runtime
- () User Command/Subr

DOCUMENTATION CHANGES (specify one or more)

MPM (vol,sect) MPAM (sect)
MOSN (sect) MSAM (sect)
PLMs (AN#)
Info Segs news, pending_changes
Other

OBJECTIONS/COMMENTS:

Headings are: SUMMARY, REASONS, IMPLICATIONS, DETAILED PROPOSAL (optional)

SUMMARY:

Remove the two-character escape sequences \f, \b, \c, and \r from the input translation side of the TTY dim. Typing escape and one of these letters will result in two characters being placed in the user's input, instead of mapping the two-character sequence into a control character. Modify other system programs to make this change transparent to almost all users.

Change the output conversion side of the TTY dim and the printer conversion package at the same time as the input side.

No modifications are needed to qedx or to the network software.

REASONS:

These "escape" sequences were put into the system during its early development to support the old BCPL-coded qed. User documentation has never mentioned these translations because we have always intended to remove the feature.

IMPLICATIONS:

FORTRAN I/O has a facility which allows the user to cause an end-of-file to be simulated from terminal files by typing \f. The fortran_io programs will have to be modified to accept the two-character form.

Users who have qedx macros containing the control characters will find that they still work fine.

All qedx macros and exec_coms which run qedx suddenly print out differently.

Ver. 3 741022	MULTICS CHANGE REQUEST	MCR 995
TITLE: Minor fix to indent		STATUS
AUTHOR: VanVleck		DATE
Planned for System: not applicable		Written 01/17/75
Fixes Bug Number(s): not applicable		Status A 1/28/76
Documented in MTB: not applicable		Expires 07/17/75
Incompatible Change: no		CATEGORY (check one)
User/Operations-visible Interface Change: no		() Lib. Maint. Tools
Coded in: (X) PL/I () ALM () other-see below		() Sys. Anal. Tools
Performance: () better (X) same () worse		() Sys. Prog. Tools
DOCUMENTATION CHANGES (specify one or more)		() 355
MPM (vol,sect) indent	MPAM (sect)	() BOS
MOSN (sect)	MSAM (sect)	() Salvager
PLMs (AN#)		() Ring Zero
Info Segs		() Ring One
Other		() SysDaemon/Admin
		() Runtime
		(X) User Command/Subr
OBJECTIONS/COMMENTS:		

Headings are: SUMMARY, REASONS, IMPLICATIONS, DETAILED PROPOSAL (optional)

SUMMARY:

Change indent so that the indentation of IF-statements is more sensible. Delay the extra five spaces of indentation until the THEN is seen: this will cause corresponding IF, THEN, and ELSE statements which begin a line to indent to the same column.

For example,

```

if a
then do;
    aa = 1;
end;

```

instead of

```

if a
    then do;
    aa = 1;
end;

```

REASONS:

This change will make a certain set of users happier with what indent does to their programs. The convention of delaying the indentation for IF-statements until the THEN makes more sense, and was figured out by examining user programs which indent seemed to mess up.

IMPLICATIONS:

Some programs will indent differently. These should all improve in appearance and understandability.

Ver. 3 741022	MULTICS CHANGE REQUEST	MCR <u>997</u>																							
TITLE: Describe printed output modes on tail sheet.	AUTHOR: VanVleck	<table border="1"> <tr> <td>STATUS</td> <td>DATE</td> </tr> <tr> <td>Written</td> <td>01/17/75</td> </tr> <tr> <td>Status</td> <td>A 1/28/75</td> </tr> <tr> <td>Expires</td> <td>07/17/75</td> </tr> </table>	STATUS	DATE	Written	01/17/75	Status	A 1/28/75	Expires	07/17/75															
STATUS	DATE																								
Written	01/17/75																								
Status	A 1/28/75																								
Expires	07/17/75																								
Planned for System: not applicable Fixes Bug Number(s): not applicable Documented in MTB: not applicable Incompatible Change: no User/Operations-visible Interface Change: no Coded in: <input checked="" type="checkbox"/> PL/I <input type="checkbox"/> ALM <input type="checkbox"/> other-see below Performance: <input type="checkbox"/> better <input checked="" type="checkbox"/> same <input type="checkbox"/> worse	<table border="1"> <tr> <td colspan="2">CATEGORY (check one)</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Lib. Maint. Tools</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Sys. Anal. Tools</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Sys. Prog. Tools</td> </tr> <tr> <td><input type="checkbox"/></td> <td>355</td> </tr> <tr> <td><input type="checkbox"/></td> <td>BOS</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Salvager</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Ring Zero</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Ring One</td> </tr> <tr> <td><input checked="" type="checkbox"/></td> <td>SysDaemon/Admin</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Runtime</td> </tr> <tr> <td><input type="checkbox"/></td> <td>User Command/Subr</td> </tr> </table>	CATEGORY (check one)		<input type="checkbox"/>	Lib. Maint. Tools	<input type="checkbox"/>	Sys. Anal. Tools	<input type="checkbox"/>	Sys. Prog. Tools	<input type="checkbox"/>	355	<input type="checkbox"/>	BOS	<input type="checkbox"/>	Salvager	<input type="checkbox"/>	Ring Zero	<input type="checkbox"/>	Ring One	<input checked="" type="checkbox"/>	SysDaemon/Admin	<input type="checkbox"/>	Runtime	<input type="checkbox"/>	User Command/Subr
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<input checked="" type="checkbox"/>	SysDaemon/Admin																								
<input type="checkbox"/>	Runtime																								
<input type="checkbox"/>	User Command/Subr																								
DOCUMENTATION CHANGES (specify one or more)																									
MPM (vol,sect)	MPAM (sect)																								
MOSN (sect)	MSAM (sect)																								
PLMs (AN#)	io daemon																								
Info Segs																									
Other																									
OBJECTIONS/COMMENTS:																									

Headings are: SUMMARY, REASONS, IMPLICATIONS, DETAILED PROPOSAL (optional)

SUMMARY:

Add a representation of any non-default printing modes used to print an output file to the tail sheet.

REASONS-

Multics Change Request

TITLE: Extension to user_info_	STATUS	DATE
THOR: F. C. Smith	Written	1/22/75

-Coded in: <input checked="" type="checkbox"/> PL/I <input type="checkbox"/> ALM <input type="checkbox"/> other- explain in DETAILED PROPOSAL -Planned for System MR NA -Fixes Bug Number(s) _____ -Documented in MTB _____ -User/Operations-visible Interface change? <input checked="" type="checkbox"/> yes <input type="checkbox"/> no -Incompatible change? <input type="checkbox"/> yes <input checked="" type="checkbox"/> no -Performance: <input type="checkbox"/> Better <input checked="" type="checkbox"/> Same <input type="checkbox"/> Worse -Replaces MCR _____	Category (Check One) <input type="checkbox"/> Lib. Maint. Tools <input type="checkbox"/> Sys. Anal. Tools <input type="checkbox"/> Sys. Prog. Tools <input type="checkbox"/> 355 <input type="checkbox"/> BOS <input type="checkbox"/> Salvager <input type="checkbox"/> Ring Zero <input type="checkbox"/> Ring One <input type="checkbox"/> SysDaemon/Admin. <input type="checkbox"/> Runtime <input checked="" type="checkbox"/> User Cmnd/Subr.	Expires 7/28/75 DOCUMENTATION CHANGES Document Specify One or More MPM (Vol, Sect.) Vol 2, Sect. 10 PLMS (AN #) MOSN (Sect.) MPAM (Sect.) MSAM (Sect.)
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Objections/Comments:	Info Segs
	Other (Name)
	None (Reason)

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

SUMMARY: Modify user_info_usage_data to return the memory units and terminal i/o operations from previous processes in the current login session, in addition to the information it now returns. Memory units and terminal i/o will soon be added to the PIT. (MCR 935)

Reasons: Procedures which obtain information about resources used by previous processes in the current session can obtain only the figure for CPU time. Multics also charges for memory units and will soon start to charge for terminal i/o.

Implications: Users will be able to obtain accurate figures for resource consumption during a login session. Existing programs will continue to work as they do at present, as user_info_counts its arguments and does not attempt to return more values than there are arguments.

Multics Change Request

TITLE: Remove page control from ring 0.		STATUS	DATE
AUTHOR: S. Webber		Written	1/24/75
-Coded in: <input checked="" type="checkbox"/> PL/I <input checked="" type="checkbox"/> ALM <input type="checkbox"/> other- explain in DETAILED PROPOSAL -Planned for System MR 3.0 -Fixes Bug Number(s) _____ -Documented in MTB _____ -User/Operations-visible Interface change? <input type="checkbox"/> yes <input checked="" type="checkbox"/> no -Incompatible change? <input type="checkbox"/> yes <input checked="" type="checkbox"/> no -Performance: <input type="checkbox"/> Better <input type="checkbox"/> Same <input checked="" type="checkbox"/> Worse -Replaces MCR _____		Status	A 1/28/75
		Expires	4/01/75
Category (Check One)		DOCUMENTATION CHANGES	
<input type="checkbox"/> Lib. Maint. Tools		Document Specify One or More	
<input type="checkbox"/> Sys. Anal. Tools		MPM (Vol, Sect.)	
<input type="checkbox"/> Sys. Prog. Tools		PLMS (AN #) AN60	
<input type="checkbox"/> 355		MOSN (Sect.)	
<input type="checkbox"/> BOS		MPAM (Sect.)	
<input type="checkbox"/> Salvager		MSAM (Sect.)	
<input checked="" type="checkbox"/> Ring Zero		Info Segs	
<input type="checkbox"/> Ring One		Other (Name)	
<input checked="" type="checkbox"/> SysDaemon/Admin.		None (Reason)	
<input type="checkbox"/> Runtime			
<input type="checkbox"/> User Cmnd/Subr.			

Objections/Comments:

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

SUMMARY: Remove the functionality of paging from ring 0.

- REASONS:
1. paging has a direct bearing on resource utilization and should, therefore, be under immediate control of user ring algorithms.
 2. In removing the paging function from ring 0 we will convert it to PL/I and, therefore, make the algorithms much more readable.
 3. In addition, the user will now have the capability of trying new and different removal algorithms for the paging device and main memory as well as new allocation mechanism for disks.
 4. Since most files are shared anyway the problems of reused addresses and the like are only of marginal interest since it won't matter that much if a little more data is shared. In fact, sharing should be encouraged to minimize working sets.
 5. By allowing user ring (replaceable) code new meters can be easily inserted as anomalous behavior is noted.

IMPLICATIONS: Very few, since the paging interface is completely invisible to users today, they need not be warned of the pending change. There will, however, likely be a performance degradation as PL/I code is introduced and an increased number of calls to ring 0 is required to start and stop I/O. New hcs_ interfaces will be provided so users can have the most freedom.

DETAILED PROPOSAL: See MTB-324.

Multics Change Request

TITLE: Fix bugs in print_disk and disklow STATUS DATE

AUTHOR: T. Casey Written 1/23/75

-Coded in: PL/I ALM other- explain in DETAILED PROPOSAL Status A 1/28/75

-Planned for System MR 2.1 Expires 7/28/75

-Fixes Bug Number(s) unreported

-Documented in MTB

-User/Operations-visible Interface change? yes no

-Incompatible change? yes no

-Performance: Better Same Worse

-Replaces MCR

Category (Check One)		DOCUMENTATION CHANGES
<input type="checkbox"/>	Lib. Maint. Tools	Document Specify One or More
<input type="checkbox"/>	Sys. Anal. Tools	MPM (Vol, Sect.)
<input type="checkbox"/>	Sys. Prog. Tools	PLMS (AN #)
<input type="checkbox"/>	355	MOSN (Sect.)
<input type="checkbox"/>	BOS	MPAM (Sect.)
<input type="checkbox"/>	Salvager	MSAM (Sect.)
<input type="checkbox"/>	Ring Zero	Info Segs
<input type="checkbox"/>	Ring One	Other (Name)
<input checked="" type="checkbox"/>	SysDaemon/Admin.	None (Reason)
<input type="checkbox"/>	Runtime	
<input type="checkbox"/>	User Cmmnd/Subr.	

Objections/Comments:

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

SUMMARY: Certain temporary variables in print_disk and disklow are declared with too small a precision to hold the large disk usage values that are sometimes found in proj file. The large values overflow into the sign bit and cause large negative numbers to be printed for disk usage values. This bug will be fixed.

Multics Change Request

TITLE: Prevent an attempt to free non-allocated storage in check_info_segs AUTHOR: S. Barr		STATUS Written Status A Expires 3/28/75	DATE 1/14/75 1/28/75 3/28/75
-Coded in <input checked="" type="checkbox"/> PL/I <input type="checkbox"/> ALM <input type="checkbox"/> other- explain in DETAILED PROPOSAL -Planned for System MR _____ -Fixes Bug Number(s) _____ -Documented in MTB _____ -User/Operations-visible Interface change? <input type="checkbox"/> yes <input checked="" type="checkbox"/> no -Incompatible change? <input type="checkbox"/> yes <input checked="" type="checkbox"/> no -Performance: <input type="checkbox"/> Better <input checked="" type="checkbox"/> Same <input type="checkbox"/> Worse -Replaces MCR _____	Category (Check One) <input type="checkbox"/> Lib. Maint. Tools <input type="checkbox"/> Sys. Anal. Tools <input type="checkbox"/> Sys. Prog. Tools <input type="checkbox"/> 355 <input type="checkbox"/> BOS <input type="checkbox"/> Salvager <input type="checkbox"/> Ring Zero <input type="checkbox"/> Ring One <input type="checkbox"/> SysDaemon/Admin. <input type="checkbox"/> Runtime <input checked="" type="checkbox"/> User Cmnd/Subr.	DOCUMENTATION CHANGES Document Specify One or More MPM (Vol, Sect.) none PLMS (AN #) MOSN (Sect.) MPAM (Sect.) MSAM (Sect.)	
Objections/Comments:		Info Segs Other (Name) None (Reason)	

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

SUMMARY: check_info_segs has a cleanup handler that attempts to free storage that may or may not have been allocated by a call to hcs_\$star_list_.

PROPOSAL: The pointers that will be used for the storage allocation should be set to null initially. Then the cleanup handler can check the pointers before attempting to free the storage.

IMPLICATIONS: none

Ver. 3
741022

MULTICS CHANGE REQUEST

MCR 1006

TITLE: Fix bugs in trace_stack

AUTHOR: VanVleck

STATUS	DATE
Written	01/23/75
Status	A 1/28/75
Expires	07/23/75

Planned for System: not applicable
Fixes Bug Number(s): not applicable
Documented in MTB: not applicable
Incompatible Change: no
User/Operations-visible Interface Change: no
Coded in: ()PL/I ()ALM ()other-see below
Performance: ()better ()same ()worse

CATEGORY (check one)
() Lib. Maint. Tools
() Sys. Anal. Tools
() Sys. Prog. Tools
() 355
() BOS
() Salvager
() Ring Zero
() Ring One
() SysDaemon/Admin
() Runtime
() User Command/Subr

DOCUMENTATION CHANGES (specify one or more)

MPM (vol,sect) MPAM (sect)
MOSN (sect) MSAM (sect)
PLMs (AN#)
Info Segs
Other
None (reason) NC

OBJECTIONS/COMMENTS:

Headings are: SUMMARY, REASONS, IMPLICATIONS, DETAILED PROPOSAL (optional)

SUMMARY:

Modify trace_stack to handle the PL/I condition "error" in a special fashion in order to get a more sensible error message.

REASONS:

The trace_stack command now determines where to start its trace by scanning the stack backwards until it finds the most recent signal frame. If this frame is for the "error" condition signalled as a result of some other condition, such as "subscriptrange", trace_stack prints a nonsense explanation for the fault and lists four system-machinery frames before it lists the first frame of interest to the user.

The command already attempts to conceal the details of how the system gets back to command level; this policy should be implemented consistently.

IMPLICATIONS:

The output of trace_stack will be more understandable for those conditions which cause "error" to be raised.

DETAILED PROPOSAL:

Modify the scan for the frame to start from so that

1. If the top condition frame is for "error" and the info pointer is null, go back to the previous condition frame.
2. If the condition was signalled from a procedure with the "support" flag on in its stack frame, like `pl1_signal_from_ops_`, search backward for the nearest non-support procedure.
3. Use `reinterpret_condition_` instead of `condition_interpreter_` for printing the error message. The difference is that `reinterpret_condition_` accepts a stack frame pointer which will point to the frame owned by the non-support procedure. (Must change `bindfile` for `bound_error_handlers_` to retain `entrypoint`.)
4. Also fix unrelated bug in `list_frame_args_` which causes garbage message about argument mismatch when a program which expects char (*) arguments is called with descriptors.
5. Improve output from `interpret_ptr_` for the case where the pointer points into the combined linkage of a bound segment: extract the component name from the `bindmap` and show the name and relative offset in parentheses.

Users who wish to see the mechanism used to get to command level may hit QUIT and then use `trace_stack`, since this change affects only the search for the starting point of the trace.