

To: Distribution  
From: Joan Scott  
Date: 30 June 76  
Subject: Multics Change Requests

Enclosed are the Multics Change Requests which were approved from 16 June 76 to 30 June 76.

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Multics Change Request

TITLE: Update ol_dump for the New Storage System (NSS)		STATUS	DATE
AUTHOR: J. Bush		Written	05/25/76
-Coded in: <input type="checkbox"/> PL/I <input type="checkbox"/> ALM <input type="checkbox"/> other- explain in DETAILED PROPOSAL -Planned for System MR 4.0 -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 checked="" type="checkbox"/> Same <input type="checkbox"/> Worse -Replaces MCR _____		Status	A 06/21/76
		Expires	12/21/76
		DOCUMENTATION CHANGES	
		Document	Specify One or More
		MPM (Vol, Sect.)	
		PLMS (AN #)	53
		MOSN (Sect.)	
		MPAM (Sect.)	
		MSAM (Sect.)	
Objections/Comments:		Info Segs	
Rewrite in more descriptive form		Other (Name)	
		None (Reason)	

Use these headings: Summary of Proposal, Reasons for Proposal, Implications, Detailed Proposal.

SUMMARY:

Make ol\_dump compatible with the New Storage System (NSS).

REASON:

Several system include files have been changed, making the current version of ol\_dump incompatible.

IMPLICATIONS:

The updated version of ol\_dump will be more helpful in analyzing NSS dumps.

Multics Change Request

TITLE: Fix plus active function to take one arg.  
AUTHOR: Steve Herbst TVV

STATUS	DATE
Written	6/2/76
Status	6/8/76 A 06/22/76
Expires	12/22/76

- Coded in:  PL/I  ALM  other-  
explain in DETAILED PROPOSAL
- Planned for System MR 5.0
- 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 type="checkbox"/>	Runtime
<input checked="" 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)	doc OK

Objections/Comments:

Use these headings: Summary of Proposal, Reasons for Proposal, Implications, Detailed Proposal.

SUMMARY: Fix the plus active function to accept a single argument and return the value of that argument:

[plus 2] returns "2".

REASON: Using &f in an exec\_com, a variable number of arguments can be passed. The plus operation is trivially defined for one argument, but currently says:

"plus: Wrong number of arguments supplied."

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### LOGICAL ACTIVE FUNCTIONS.

The logical active functions described below return a character string value of either true or false. They are intended to be used with the &if control statement of the exec\_com command.

In the descriptions of logical active functions, the term decimal number is used. This includes integers (such as 5 and 1024), real numbers (such as 1.37 and .5), and floating point numbers (such as -1.3e+4 and 12.556e+0).

Name: and

#### Usage

[and args]

where args are character strings that must have one of the values true or false (if not, an error diagnostic is issued and the value is undefined). If all the args = true, then true is returned; otherwise, false is returned.

[ If no args are specified, the value true (the identity element for the and operation) is returned. ]

Name: not

Usage

[not A]

where A is a character string. If A = true, then false is returned. If A = false, then true is returned; otherwise, an error diagnostic is issued.

Name: or

Usage

[or args]

where args are character strings that must have one of the values true or false, (if not, an error diagnostic is issued and the value is undefined). If any arg = true, then true is returned; otherwise false is returned.

*If no args are specified, the value false (the identity element for the or operation) is returned.*

Example

The following example illustrates the use of one of the active functions discussed in this description. It involves the use of the &if control statement of the exec\_com command. (See the description of the exec\_com command.)

```
&if [equal [wd] [home_dir]]
```

```
&then &goto elsewhere
```

```
&else change_wdir [home_dir]
```

This example compares the pathname of the working directory with the pathname of the home directory, and if they are not the same, changes the working directory to be the home directory.

### ARITHMETIC ACTIVE FUNCTIONS

The following active functions all perform some arithmetic operation on their arguments and return the character string representation of the result.

In the descriptions of arithmetic active functions, the term decimal number is used. This includes integers (such as 5 and 1024), real numbers (such as 1.37 and .5), and floating point numbers (such as -1.3e+4 and 12.556e+0).

Name: minus

Usage

[minus A B]

where A and B are character strings representing decimal numbers. The value returned is  $A - B$ .

*If A is also not specified, the value returned is -A. If B is not specified, the value returned is zero.*

Name: mod

Usage

[mod A B]

where A and B are character strings representing decimal numbers. The value returned is A modulo B.

Name: plus

Usage

[plus args]

where args are character strings representing decimal numbers. The value returned is the sum of args.

*If ~~no~~ no args are specified, the value returned is zero.*

Name: quotient

Usage

[quotient A B]

where A and B are character strings representing decimal numbers. The value returned is  $A / B$ .

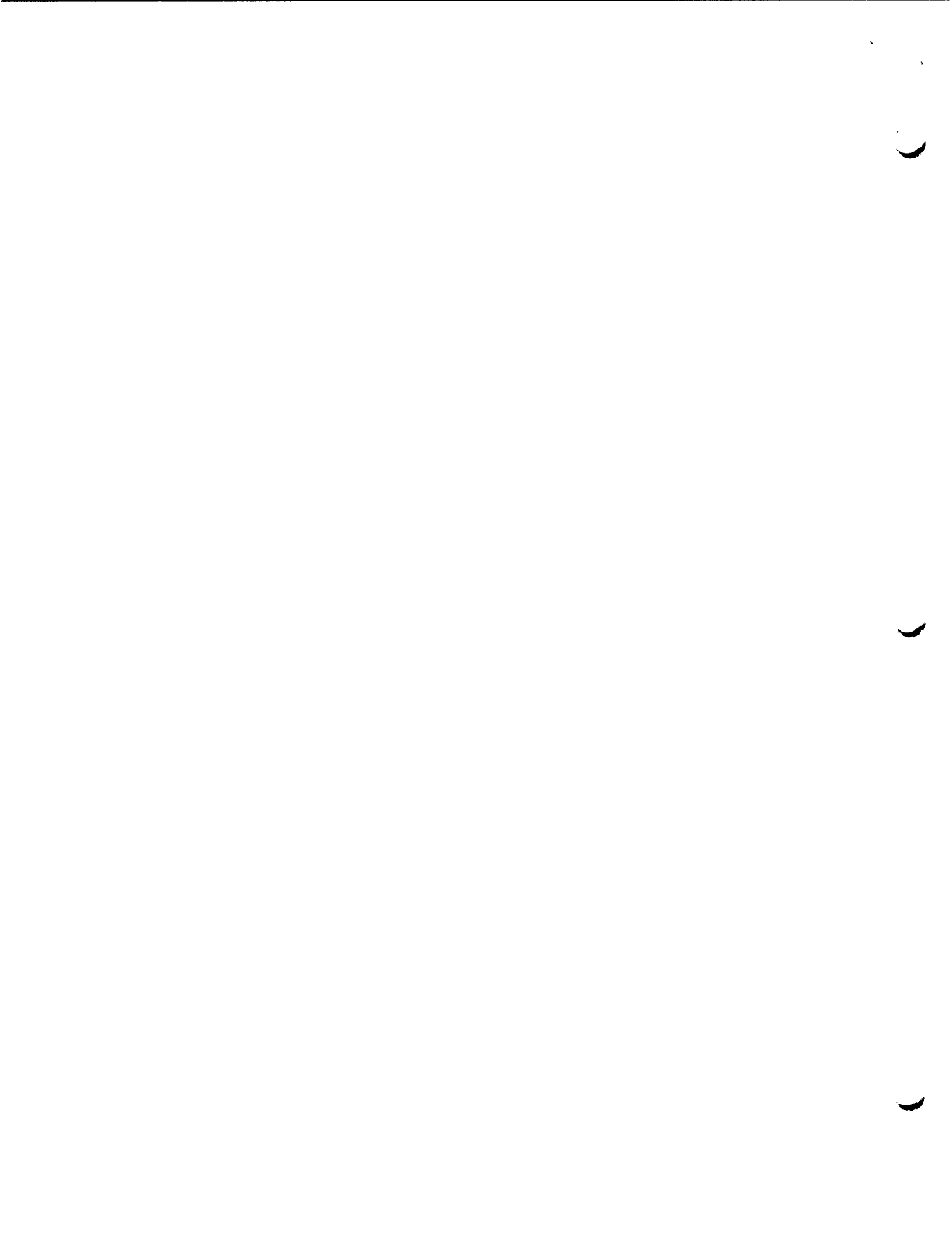
Name: times

Usage

[times A B]

where A and B are character strings representing decimal numbers. The value returned is  $A * B$ .

*If B is not specified, the value returned is A. If A is also not specified, the value returned is one.*



Ver. 3 741022	MULTICS CHANGE REQUEST	MCR 1940
TITLE: Create phcs_\$terminate_noname		STATUS DATE
AUTHOR: Bernard Greenberg		Written 06/03/76
Planned for System: MR 4.0 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		Status <del>6/15/76</del> 6/22/76
		Expires 12/03/76
		CATEGORY (check one)
DOCUMENTATION CHANGES (specify one or more)		( <input type="checkbox"/> ) Lib. Maint. Tools
MPM (vol,sect) MPAM (sect)		( <input type="checkbox"/> ) Sys. Anal. Tools
MOSN (sect) MSAM (sect)		( <input type="checkbox"/> ) Sys. Prog. Tools
PLMs (AN#) 61		( <input type="checkbox"/> ) 355
Info Segs		( <input type="checkbox"/> ) BOS
Other		( <input 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 Command/Subr
OBJECTIONS/COMMENTS:		

TVV

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

SUMMARY: Create a gate to the terminate primitive to terminate a segment at zero validation level.

REASONS: Outer-ring tools that initiate directories have no way of cleaning up. In the case of tools that walk many directories, KST overflow begins to be a problem.

IMPLICATIONS: Ability to list VTOC's without new\_proc'ing every few hundred segments, etc.

DETAILED PROPOSAL: Implement phcs\_\$terminate\_seg, phcs\_\$terminate\_noname, identical to hcs\_ counterparts, but operating at a validation level of 0.



Ver. 3 741022	MULTICS CHANGE REQUEST	MCR <u>1951</u>
TITLE: Fix bug in tty_		STATUS   DATE
AUTHOR: Paul Green		Written   <u>06/08/76</u>
	DRV	Status   <u>06/22/76</u>
		Expires   <u>12/08/76</u>
Planned for System: not applicable		
Fixes Bug Number(s): not applicable		CATEGORY (check one)
Documented in MTB: not applicable		( ) Lib. Maint. Tools
Incompatible Change: no		( ) Sys. Anal. Tools
User/Operations-visible Interface Change: no		( ) Sys. Prog. Tools
Coded in: <input checked="" type="checkbox"/> PL/I ( ) ALM ( ) other-see below		( ) 355
Performance: ( ) better <input checked="" type="checkbox"/> same ( ) worse		( ) BOS
		( ) Salvager
DOCUMENTATION CHANGES (specify one or more)		( ) Ring Zero
MPM (vol,sect)                      MPAM (sect)		( ) Ring One
MOSN (sect)                         MSAM (sect)		( ) SysDaemon/Admin
PLMs (AN#)		( ) Runtime
Info Segs		<input checked="" type="checkbox"/> User Command/Subr
Other		
None (reason) <u>no change</u>		
OBJECTIONS/COMMENTS:		

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

SUMMARY:

Fix tty\_.pl1 to stop looking for an ASCII new line character when reading in raw input mode.

REASONS:

So v2apl can read from 2741s.

IMPLICATIONS:

v2apl will work again. Reading will conform to documentation again.

DETAILED PROPOSAL:

Replace tty\_ (submitted as emergency fix to MIT & Phoenix).

Multics Change Request

TITLE:	Install edit_data_model and edit_data_submodel commands	STATUS	DATE
AUTHOR:	R. Luebke and R. Lackey	Written	06/07/76
		Status	A 06/21/76
		Expires	12/07/76

-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 <u>4.0</u>	<input type="checkbox"/> Lib. Maint. Tools	
-Fixes Bug Number(s) _____	<input type="checkbox"/> Sys. Anal. Tools	
-Documented in MTB _____	<input type="checkbox"/> Sys. Prog. Tools	
-User/Operations-visible	<input type="checkbox"/> 355	DOCUMENTATION CHANGES
Interface change? <input type="checkbox"/> yes <input checked="" type="checkbox"/> no	<input type="checkbox"/> BOS	Document Specify One or More
-Incompatible change? <input type="checkbox"/> yes <input checked="" type="checkbox"/> no	<input type="checkbox"/> Salvager	MPM (Vol, Sect.)
-Performance: <input type="checkbox"/> Better <input type="checkbox"/> Same	<input type="checkbox"/> Ring Zero	PLMS (AN #)
<input type="checkbox"/> Worse	<input type="checkbox"/> Ring One	MOSN (Sect.)
-Replaces MCR _____	<input type="checkbox"/> SysDaemon/Admin.	MPAM (Sect.)
	<input type="checkbox"/> Runtime	MSAM (Sect.)
	<input type="checkbox"/> User Cmmd/Subr.	
	<input checked="" type="checkbox"/> Unbundled	

Objections/Comments:

	Info Segs
	Other (Name) Commands descriptions for MRDS. Ref. manual
	None (Reason)

Use these headings: Summary of Proposal, Reasons for Proposal, Implications, Detailed Proposal.

SUMMARY:

Install edit\_data\_model and edit\_data\_submodel commands in the unbundled library along with the rest of the Multics Relational Data Store (MRDS).

REASON:

The dmd\_ and dsmd\_ subroutine interfaces to MRDS are intended as internal interfaces and not as user level interfaces, as they require knowledge of Multics descriptor formats. These commands allow definition of a data base in terms of pl/1 data types.

Name: edit\_data\_model, edmd

The edmd editor can be used to create or examine a data model for the Multics Relational Data Store (MRDS). The edmd editor may not be called recursively.

### Usage

edmd

This command invokes the editor and puts it in edit mode ready to respond to user requests.

### Requests

Editor requests are listed below. Either the long name or the short name may be used.

Long_name	Short_name
create	cr
close	cl
domain	dom
execute	e
inspect	i
list_domains	ld
list_relations	lr
print	pr
relation	rel
quit	q
.	.

A description of each request follows.

#### Create

Format: create path

Purpose: To create the data base with the pathname specified, and open the data model for creation. All editor requests from this point until the next close request will refer to this data base.

#### Close

Format: close

Purpose: To close the currently open data model.

Note: After a create or inspect request, a close request must be issued before a quit request will be honored.

### Domain

Format: domain name declaration

Purpose: To define a domain by name and attach a type definition to it prior to defining relations using the domain definition.

name is the name of the domain to be defined. It must be 1 to 32 characters long and may be composed of alphanumeric characters and underscore (\_).

declaration is a data type declaration using PL/I syntax.

Examples: domain employee\_number fixed decimal (6)  
domain last\_name char (20) aligned

### Execute

Format: execute command\_line

Purpose: To allow calling any Multics command from within the editor.

### Inspect

Format: inspect path

Purpose: To open the data model of a specified data base for inspection purposes. All editor requests from this point until the next close request will refer to this data model.

Note: Only the print, execute, and list\_relations requests may be used while an inspect opening is in effect.

### List\_domains

Format: list\_domains

Purpose: To list the currently defined domains and their type definitions.

## List\_Relations

Format: list\_relations

Purpose: To list the names of all the relations in the current data model.

## Print

Format: print relation\_name -control\_arg-

Purpose: To print information about relations in the data model.

relation\_name is the name of the relation about which information is to be printed. If relation\_name is "-all" then information about all the relations is printed.

The following control argument may be specified:

-long, -lg prints bit offset and length information about each attribute in addition to the information normally printed.

## Relation

Format: relation relation\_expression

Purpose: To define a relation in the data model.

relation\_expression is a relation expression as defined in the section "Relation Expressions" which defines the desired relation.

Note: All domain names included in the relation expression must have been previously defined by a domain request.

## Quit

Format: quit

Purpose: To exit the editor and return to Multics command level.

## Qq1

Format: .

Purpose: To print "edit\_data\_model" on user\_output to indicate that control is within the editor.

### Data Type Declarations

The data type of a domain is declared using a subset of the PL/1 declare statement syntax. The following PL/1 declaration attributes are supported:

aligned	
binary	bin
bit	
character	char
complex	cplx
decimal	dec
fixed	
float	
nonvarying	
precision	prec
real	
unaligned	unal
varying	var

A semicolon must not follow the end of the type declaration.

### Relation Expressions

When defining a relation it is necessary to specify which attributes are to be used as components of the primary key (i.e., key attributes). Each tuple must be identifiable by some non-null primary key value which must be unique for any one relation.

The expression for defining a relation and its attributes resembles the format used in most of the literature (i.e., relation\_name (attribute\_one attribute\_two ... ) where the underscore denotes a key attribute). In the following syntax the underscore is replaced by a following asterisk. It is also possible to rename data sub-model attributes so that they may differ from the corresponding data model attribute names.

The relation definition expression provides a method for defining a relation and its attributes.

## Formal Syntax:

<relation\_definition expression> ::= <relation expression>  
<attribute expression>

<relation expression> ::= <identifier>

<attribute expression> ::= (<attribute definition> [<attribute  
definition> ... ])

<attribute definition> ::= <attribute> [<key indicator>]

<key indicator> ::= \*

<attribute> ::= <domain>[:<role>]

<domain> ::= <identifier>

<role> ::= <identifier>

<identifier> ::= <letter> [<letter> | <digit> | \_] ...

<letter> and <digit> are as defined in the PL/I Language Manual.

Attributes must be no longer than 32 characters.

Name: edit\_dsm, edsm

The edsm editor can be used to create and edit a data submodel (.dsm) associated with the Multics Relational Data Store (MRDS) subsystem. The edsm editor cannot be called recursively.

All data submodels will have the suffix .dsm on the segment names, however, user references to data submodel need not include the .dsm suffix.

### Usage

edsm [-optional dsm pathname -

where:

- optional dsm pathname - is an optional argument and, if present, specifies the pathname of a previously created data submodel that the user wishes to operate upon. The editor will, if necessary, concatenate the suffix .dsm to the pathname to obtain the complete data submodel pathname.

Once the edsm editor is invoked, the user can immediately begin to issue edsm requests from his terminal. Requests fall into one of four general categories: read and create requests, write requests, modify and display requests and special editor commands. The edsm editing functions are not performed directly on the target data submodel but in a temporary copy of the target data submodel. The temporary copy is made permanent when a write request is executed.

The edsm editor is designed to allow the user to abort any editor command by pressing the interrupt button on his terminal. This will cause the Multics system to print QUIT on the user's terminal and establish the user at Multics command level. To return to the edsm editor, the user should issue the Multics program\_interrupt (pi) command which will place the user back to the edsm editor command level.



To create a new data submodel, a user might perform the following steps:

1. Invoke the edsm editor by typing the Multics command 'edsn'.
2. Request that a new dsm be created by typing the 'create' command followed by the relative pathname where the dsm will be permanently stored.
3. Specify the pathname of the database with which this data submodel is to be associated by typing 'database\_path' followed by the absolute pathname of the database.
4. Define a relation for the data submodel by typing the 'relation' command followed by the relation definition expression.
5. Inspect the contents of the dsm by typing the 'print' command.
6. Write the contents of the temporary data submodel to permanent storage by typing the 'write' command.
7. Exit from the editor using the 'quit' command.

To edit an existing data submodel, a user might perform the following steps:

1. Invoke the edsm editor by typing the Multics command 'edsm'.
2. Read the existing data submodel on to temporary storage by typing 'read' followed by the relative pathname of the existing dsm.
3. Editing the data submodel using the 'delete', 'relation' or 'database\_path' commands.
4. Using the 'write' request, write the contents of the temporary data submodel either into the original segment or, into a segment specified by a pathname.
5. Exit from the editor using the 'quit' request.

The user can create and edit any number of data submodels with a single invocation of the editor, providing the contents of the temporary dsm is written prior to making a new read or create request.

#### Note

While most users interact with the edsm editor through a terminal, the editor is designed to accept input through the user\_input I/O switch and transmit output through the user\_output switch. These switches can be controlled (using the iox\_ subroutines described in the MPM Subroutines) to interface with other devices/files in addition to the user's terminal. For convenience, the edsm editor description assumes that the user's input/output device is a terminal.

All edsm editor error messages will be directed to the error\_output switch.

## List of Editor Requests

In the list given below, edsm editor requests are divided into four categories: read and create requests, edit and display requests, write requests and special requests. The create, read, write, edit and display requests are sufficient to create and edit data submodels. The special requests allow the user to determine the status of the temporary dsm, to execute Multics commands without leaving the editor and to list the long and brief forms of the editor commands.

All edsm editor requests must be separated from their arguments with at least one blank or tabulation. Only one editor request is allowed per input line. The relation request is treated somewhat differently in that once the 'relation' command has been given, any further text on that input line and subsequent input lines will be treated as the relation expression. The first right parenthesis encountered following the relation command will terminate the relation expression. Return to the editor command level occurs when either this terminator is found or an invalid relation expression format is detected.

Except for create, those request that reference a current data submodel when one has not been established (i.e., a prior read or create request has not been executed) the editor will issue the message "No data submodel open."

In the following description the characters given in parentheses are the brief forms of the editor commands or request.

### CREATE AND READ REQUESTS

create (cr) <dsm pathname> creates a temporary data submodel. The pathname is a relative pathname of the segment where the data submodel will be stored with a subsequent write request. If the segment name does not end with the suffix .dsm it will be appended by the editor to form the complete pathname. If a segment already exist by the name specified in dsm pathname, the create request will not be allowed. Also the create request will not be allowed if a current temporary dsm exists and has been modified since it was last written.

read (r) <dsm pathname> reads an existing data submodel residing in the segment specified by the relative dsm pathname. If the pathname does not contain the suffix .dsm the editor will append the .dsm suffix prior to attempting to read the dsm. Checks are performed to insure that the object being read is indeed a data submodel. The Read command will not be allowed if a current temporary dsm exists and has been modified since it was last written.

#### WRITE REQUESTS

write (w) <optional pathname> copies the temporary data submodel into the user's specified segment. If no pathname is supplied with the write request the pathname that was supplied with the last prior read or create request is used. If a pathname is supplied with the write request it is used for the write operation. If the segment being written does not exist, it will be created. If it does exist, its contents will be overwritten with contents of the temporary data submodel. If no database pathname has been specified a warning message will be issued by the editor but the write will still be completed. If no temporary data submodel exists (i.e., a prior read or create request had not been done) the editor will issue the message "No data submodel open".

#### EDIT AND DISPLAY REQUESTS

database\_path (dbp) <database pathname> adds or modifies the database pathname to which the current temporary data submodel is associated. The database pathname must be an absolute pathname and is stored in the header of the dsm.

delete (dl) <relation name> deletes the relation specified by the relation name from the current temporary dsm. If the relation does not exist in the dsm the message "Relation rrrrr not found" where rrrrr is the relation name supplied with the delete request.

relation (rel) <relation expression> adds a new relation to the current temporary dsm. If a relation already exists by the name supplied with the relation request, the message "Relation rrrrr has been previously defined." where rrrrr is the name of the relation supplied in the relation expression. The relation expression may be continued on more than one line. Once the relation request has been issued, the input expected is a relation expression and subsequent input will be treated as part of the relation expression until the right parenthesis terminating character of the expression is found or a relation expression parsing error is encountered. If a relation parsing error is encountered an explanatory error message will be issued and control returned to the editor command level.

A detailed description of the relation expression is supplied later in the document.

list\_relations (lr) Prints an alphabetical list of the relations in the current temporary data submodel preceded by a header specifying the submodel pathname associated with the current dsm. If no relation exists in the dsm, the header is printed followed by the message "No relations in data submodel."

print (pr) <optional arg> if no arguments are supplied with the print request an alphabetically ordered list of the existing dsm relations and their associated attribute names is printed preceded the current submodel pathname and the current dsm header information.

If a relation name is supplied as the optional argument, only the specified relation and its associated attribute names is printed. The error message "Relation rrrrr not found." is printed if the relation does not exist, where rrrrr is the relation name supplied with the print request.

If the optional argument is -header or -hd, only the header information for the current temporary dsm is printed.

#### SPECIAL REQUESTS

commands (com) <optional arg> if no optional arguments are supplied a list of the long form of the edsm editor commands is printed.

If the optional argument -brief or -bf is supplied a list of the brief or short form of the edsm editor commands is printed.

dot (.) prints the name 'edsm' on the user's terminal. Its purpose is to allow the user to determine if he is currently in the edsm editor.

execute (e) passes the remainder of the request line to the Multics command processor (i.e., escapes to to execute other Multics commands).

Quit (Q) when spelled with a capital, exits from the editor returning the user to Multics command level. The current temporary dsm, if any, is deleted.

quit (q)

when spelled with lower case, will exit from the editor only if the temporary data submodel, if any, has not been modified since it was last written. If the current temporary dsm has been modified since it was last written the message "The data submodel xxxxx has been modified since last write, quit rejected." will be printed on the user's terminal.

status (st)

prints the pathname of the current data submodel. If the dsm has been modified since it was last written the pathname will be prefixed with [modified]. If no dsm is open the message "No data submodel open." will be printed on the user's terminal.

The following is a table of the edsm editor commands, and a brief description of their function. The brief form for each command is included in parentheses.

commands (com)	prints a list of the edsm editor commands.
create (cr)	creates a temporary data submodel.
database_path (dbp)	adds or modifies the database pathname to which the current temporary data submodel is associated.
delete (dl)	deletes a relation from the temporary data submodel.
dot (.)	print the name "edsm" on the users terminal.
execute (e)	escapes to execute Multics command level commands.
list_relations (lr)	prints a list of the names of the relation in the current data submodel.
print (pr)	prints the relations in the current data submodel.
Quit (Q)	exits from the editor with out any modification checking.
quit (q)	exits from the editor with modification checking.
read (r)	reads an existing data submodel in to temporary storage making it the current data submodel.
relation (rel)	adds a new relation to the current data submodel.
status (st)	prints the pathname of the current data submodel.
write (w)	copies the current temporary data submodel in to users storage.



Data\_Submodel\_Relation\_Expressions

The function of a data submodel relation expression is to associate the user's view of a database with the actual database description (i.e., the data model). This association is accomplished by equating the user's name for a relation term to the data model's name for the same term.

The major components of a data submodel relation expression are the relation names and the attribute names. The general form of a data submodel relation expression is as follows:

relation name (attribute names)

The first attribute name must be separated from the relation name with a left parenthesis and the last attribute name must be followed with the right parenthesis expression terminator. Attribute names must be separated with at least one blank except the case where attribute names are equated, see below.

If the user's view of a relation name differs from that specified in the data model, the user's relation name is equated to the data model specified name with an equal sign in the following manner:

user\_rel\_name = data\_model\_rel\_name (attribute names)

If only one relation name is supplied in the dsm relation expression, it is assumed that the user does not require a different relation name from that specified in the data submodel (i.e., the data submodel and data model relation names are the same).

The same is true for the user's view of attribute names:

relation\_name (user\_attr\_name\_1 = dm\_attr\_name\_1 .....)

If the user's attribute name is the same as the data model attribute name, only a single name is required. The following data submodel expressions are equivalent:

x (a=b c d)  
x=x (a=b c=c d=d)

If an invalid data submodel relation expression is detected, the relation definition will be aborted, an explanatory error message will be issued and control returned to the editor command level.

Example

The following example creates a data submodel by the name location.dsm and is built using the data model relation below:

```
phone_book (name phone mail_station room bldg dept_code)
```

Terminal input lines are prefixed with the symbols "!".

! edsm

! cr location

! pr -hd

```
Version_number = 1
date_time_generated = 03/05/76 1109.1 mst Fri
Database pathname = *****NO-DATABASE-PATHNAME*****
Number of relations = 0
```

! db >udd>m>rdl>test>telephone\_info

! rel

```
! location = phone_book
! (building = bldg
! office=room
! person=name)
```

! list

Edsm does not recognize the command 'list'

! tr

Data Submodel relation names for >udd>m>rdl>dsm\_i>location.dsm

location

! st (modified) >udd>m>rdl>dsm\_i>location.dsm

-----  
edsm  
-----

DRAFT

-----  
edsm  
-----

! pr.

Data Submodel >udd>m>rdl>dsm\_i>location.dsm

Version\_number = 1  
Date\_time\_generated = 03/05/76 1109.5 mst Fri  
Database pathname = >udd>m>test>telephone\_info  
Number of relations = 1

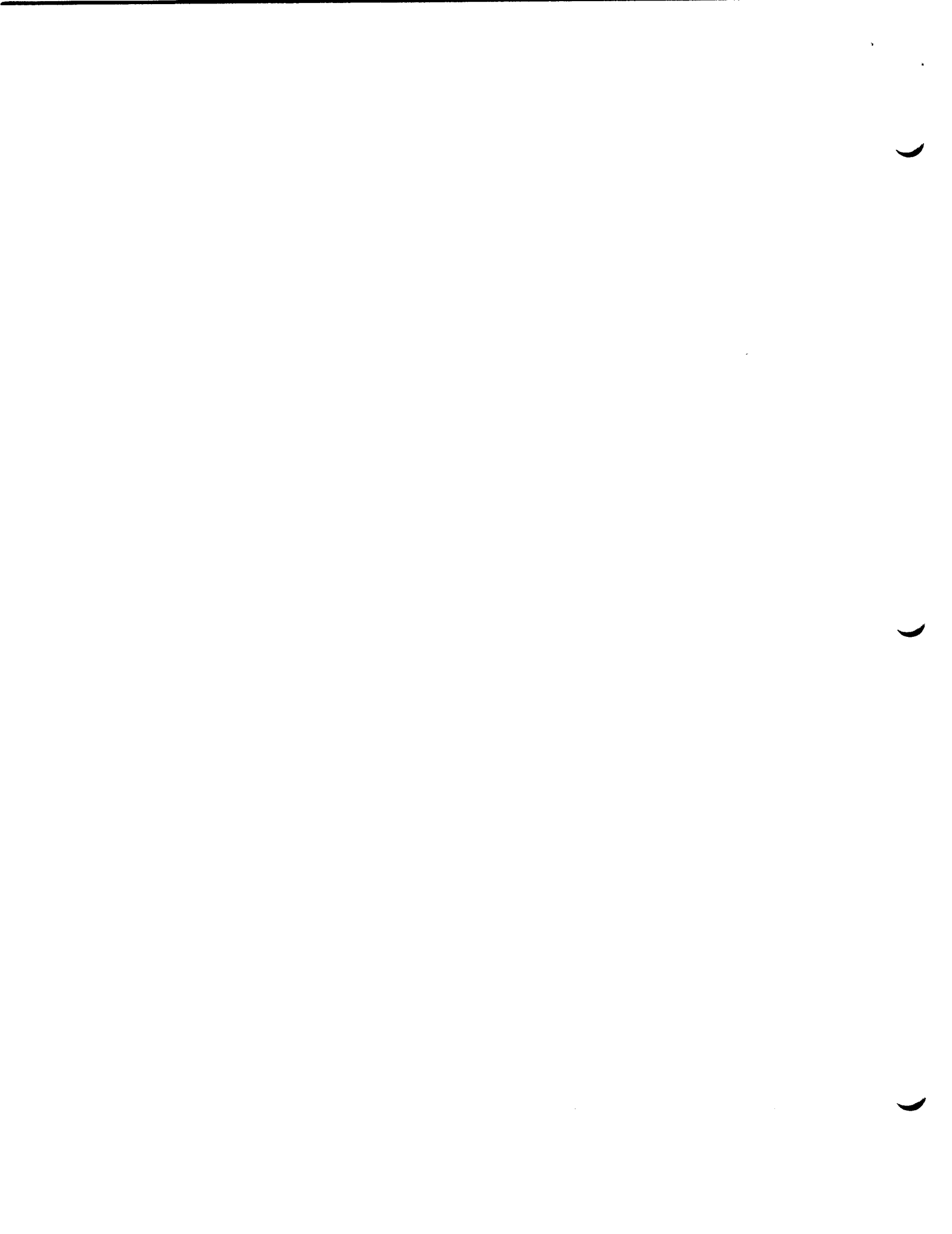
SUBMODEL RELATION NAME	----	MODEL RELATION NAME
location		phone_book

SUBMODEL ATTRIBUTES		MODEL ATTRIBUTES
building		bdg
office		room
person		name

! w

! st >udd>n>rdl>dsm\_i>location.dsm

! quit



Ver. ? 74102	MULTICS CHANGE REQUEST	MCR <u>1953</u>
TITLE: Fix stringsize signalling on zero-length moves.		STATUS: DATE
AUTHOR: Bernard Greenberg		Written: 06/14/76
	SHW	Status: <u>06/22/76</u>
		Expires: 12/14/76
Planned for System: MR 4.0		
Fixes Bug Number(s): not applicable		CATEGORY (check one)
Documented in MTB: not applicable		( ) Lib. Maint. Tools
Incompatible Change: no		( ) Sys. Anal. Tools
User/Operations-visible Interface Change: no		( ) Sys. Prog. Tools
Coded in: (X) PL/I ( ) ALM ( ) other-see below		( ) 355
Performance: ( ) better (X) same ( ) worse		( ) BOS
		( ) Salvager
DOCUMENTATION CHANGES (specify one or more)		(X) Ring Zero
MPM (vol,sect) MPAM (sect)		( ) Ring One
MOSN (sect) MSAM (sect)		( ) SysDaemon/Admin
PLMs (AN#) 78		( ) Runtime
Info Segs		( ) User Command/Subr
Other		
OBJECTIONS/COMMENTS:		

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

SUMMARY: EIS moves into zero length targets are currently simulated by a hardcore procedure to be an effective no-op. However, in the case where the "enablefault" bit is on in the instruction (compiled by PL/I if stringsize is enabled), an illegal-procedure fault is signalled. Change the FIM to signal stringsize instead in this case.

REASON: Adherence to PL/I specification vs. arbitrary behavior.

IMPLICATIONS: This is all unnecessary when the hardware fix for zero-target-length moves is propagated.

DETAILED PROPOSAL: Implement a new return protocol between the FIM and hardcore fault handlers, whereby a certain bit in the machine conditions (mc.resignal) will cause the FIM to signal a condition of the fault handler's choice instead of the FIM's original choice. Change illegal\_procedure to use this to cause stringsize to be signalled instead of illegal\_procedure. Change seg\_fault, recently changed to signal out\_of\_bounds in certain cases via an ad-hoc method, to use this general method instead, to signal out\_of\_bounds instead of seg\_fault\_error. Do not signal anything if both source and target string length are zero.

Ver. 3 741022	MULTICS CHANGE REQUEST	MCR <u>1954</u>
TITLE: Fix negative 'te' problem.		STATUS   DATE
AUTHOR: Bernard Greenberg	<i>SHW</i>	Written   06/14/76
		Status   <u>A0622/7</u>
		Expires   12/14/76
Planned for System: MR 4.0		CATEGORY (check one)
Fixes Bug Number(s): not applicable		( ) Lib. Maint. Tools
Documented in MTB: not applicable		( ) Sys. Anal. Tools
Incompatible Change: no		( ) Sys. Prog. Tools
User/Operations-visible Interface Change: no		( ) 355
Coded in: ( <input checked="" type="checkbox"/> ) PL/I ( ) ALM ( ) other-see below		( ) BOS
Performance: ( ) better ( <input checked="" type="checkbox"/> ) same ( ) worse		( ) Salvager
DOCUMENTATION CHANGES (specify one or more)		( <input checked="" type="checkbox"/> ) Ring Zero
MPM (vol,sect)                      MPAM (sect)		( ) Ring One
MOSN (sect)                              MSAM (sect)		( ) SysDaemon/Admin
PLMs (AN#)                      73		( ) Runtime
Info Segs		( ) User Command/Subr
Other		
OBJECTIONS/COMMENTS:		

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

SUMMARY: Miscellaneous errors and oversights in virtual time accounting can cause the traffic controller's cumulated eligibility time to go negative. This has disastrous consequences, putting the system in a preem loop. Cause the traffic controller to ignore negative cumulations of eligibility time.

REASONS: More reliable operation. Contributes to lost timers and system loops.

IMPLICATIONS: n/a. Negative-te processes will go through a nugatory eligibility loss.

THOUGHT: The many various virtual-time accounting bugs are being found and fixed, and 4.1 has a better policy on this altogether. This MCR fixes what is now a serious bug.

Ver. 3 741022		MULTICS CHANGE REQUEST		MCR <u>1955</u>	
TITLE: Fix UDSK card bug				STATUS	DATE
AUTHOR: B. Silver				Written	06/14/76
TVV				Status	<u>406/22/76</u>
				Expires	12/22/76
Planned for System: MR 4.0				CATEGORY (check one)	
Fixes Bug Number(s): not applicable				<input type="checkbox"/> Lib. Maint. Tools	
Documented in MTB: not applicable				<input type="checkbox"/> Sys. Anal. Tools	
Incompatible Change: no				<input type="checkbox"/> Sys. Prog. Tools	
User/Operations-visible Interface Change: yes				<input type="checkbox"/> 355	
Coded in: <input checked="" type="checkbox"/> PL/I <input type="checkbox"/> ALM <input type="checkbox"/> other-see below				<input type="checkbox"/> BOS	
Performance: <input type="checkbox"/> better <input checked="" type="checkbox"/> same <input type="checkbox"/> worse				<input type="checkbox"/> Salvager	
DOCUMENTATION CHANGES (specify one or more)				<input checked="" type="checkbox"/> Ring Zero	
MPM (vol,sect)		MPAM (sect)		<input type="checkbox"/> Ring One	
MOSN (sect)		MSAM (sect)		<input type="checkbox"/> SysDaemon/Admin	
PLMs (AN#)				<input type="checkbox"/> Runtime	
Info Segs				<input type="checkbox"/> User Command/Subr	
Other					
None (reason) Fix makes it work as documented					
OBJECTIONS/COMMENTS:					

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

SUMMARY:

Fix bug that ignores all but the first pair of disk drives on a UDSK card.

REASONS:

Fix needed to allow non-consecutive disk drives to be defined as user disk drives.

IMPLICATIONS:

Non-consecutive drives may be used as user disk drives.

DETAILS:

Fix bug in rcp\_init.

TITLE: Fix bug in link_unsnap_		STATUS	DATE
AUTHOR: M. Weaver		Written	06/11/76
SHW		Status	A 06/22/76
-Coded in: <input checked="" type="checkbox"/> PL/I <input type="checkbox"/> ALM <input type="checkbox"/> other- explain in DETAILED PROPOSAL		Expires	12/22/76
-Planned for System MR 4.0		DOCUMENTATION CHANGES	
-Fixes Bug Number(s) _____		Document	Specify One or More
-Documented in MTB _____		MPM (Vol, Sect.)	
-User/Operations-visible		PLMS (AN #)	
Interface change? <input type="checkbox"/> yes <input checked="" type="checkbox"/> no		MOSN (Sect.)	
-Incompatible change? <input type="checkbox"/> yes <input checked="" type="checkbox"/> no		MPAM (Sect.)	
-Performance: <input type="checkbox"/> Better <input checked="" type="checkbox"/> Same		MSAM (Sect.)	
<input type="checkbox"/> Worse		Info Segs	
-Replaces MCR _____		Other (Name)	
Category (Check One)		None (Reason)	internal bug fix
<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.			
Objections/Comments:			

Use these headings: Summary of Proposal, Reasons for Proposal, Implications, Detailed Proposal.

SUMMARY:

Fix link\_unsnap\_ to not unsnap all links.

REASONS:

When the segment being terminated does not have separate static, all links in the process are unsnapped. This significantly degrades system performance.

Emergency fix - already installed.



Ver. 3 741022	MULTICS CHANGE REQUEST	MCR 1957
TITLE: Install check_mdcs command		STATUS
AUTHOR: Larry Johnson THVV		DATE
Planned for System: MR 4.0		Written 06/11/76
Fixes Bug Number(s): not applicable		Status <b>A 06/22/76</b>
Documented in MTB: not applicable		Expires 12/11/76
Incompatible Change: no		CATEGORY (check one)
User/Operations-visible Interface Change: no		( ) Lib. Maint. Tools
Coded in: (X)PL/I ( )ALM ( )other-see below		(X) Sys. Anal. Tools
Performance: ( )better (X)same ( )worse		( ) Sys. Prog. Tools
DOCUMENTATION CHANGES (specify one or more)		( ) 355
MPM (vol,sect)	MPAM (sect)	( ) BUS
MOSN (sect)	MSAM (sect)	( ) Salvager
PLMs (AN#)		( ) Ring Zero
Info Segs		( ) Ring One
Other		( ) SysDaemon/Admin
None (reason)		( ) Runtime
OBJECTIONS/COMMENTS:		( ) User Command/Subr

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

Summary

The check\_mdcs command calls an existing ring1 procedure that validates the format of the MDCS and the uidpath names it contains.

Detailed proposal

Name: check\_mdcs

The check\_mdcs command check the MDCS for a given volume for valid format, and for invalid UID pathnames. Any errors found are reported via the syserr log, and if possible, corrected.

Usage

check\_mdcs volume

where volume is the name of a storage system volume.

Notes

Access to the gate mdc\_priv\_ is required to use this command.

Ver. 3 741022	MULTICS CHANGE REQUEST	MCR 1958
TITLE: Turn off ioi error logging for T&D attachments		STATUS   DATE
AUTHOR: Larry Johnson	NIM	Written   06/11/76
		Status   <del>ROO/82/76</del>
		Expires   12/11/76
Planned for System: MR 4.1		CATEGORY (check one)
Fixes Bug Number(s): not applicable		( ) Lib. Maint. Tools
Documented in MTB: not applicable		( ) Sys. Anal. Tools
Incompatible Change: no		( ) Sys. Prog. Tools
User/Operations-visible Interface Change: no		( ) 355
Coded in: ( <input checked="" type="checkbox"/> ) PL/I ( ) ALM ( ) other-see below		( ) BOS
Performance: ( ) better ( <input checked="" type="checkbox"/> ) same ( ) worse		( ) Salvager
DOCUMENTATION CHANGES (specify one or more)		( <input checked="" type="checkbox"/> ) Ring Zero
MPM (vol,sect) MPAM (sect)		( ) Ring One
MOSN (sect) MSAM (sect)		( ) SysDaemon/Admin
PLMs (AN#)		( ) Runtime
Info Segs		( ) User Command/Subr
Other		
None (reason)		
OBJECTIONS/COMMENTS:		

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

Summary

Modify ioi\_ to not log errors which occur during a privileged attachment

Reasons

Privileged attachments are used only by T&D programs. Errors generated by these programs would not be of interest to HEALS. In addition, one T&D program managed to generate over 30000 syserr messages in an hour attempting to diagnose a printer problem.

Ver. 3	MULTICS CHANGE REQUEST	MCR 1959
741022		
TITLE: New version of BLAST command		STATUS   DATE
AUTHOR: Robert S. Coren		Written   06/14/76
	MJG	Status   10/22/76
		Expires   12/14/76
Planned for System: MR 5.0		CATEGORY (check one)
Fixes Bug Number(s): 393		( ) Lib. Maint. Tools
Documented in MTB: not applicable		( ) Sys. Anal. Tools
Incompatible Change: no		( ) Sys. Prog. Tools
User/Operations-visible Interface Change: no		( ) 355
Coded in: ( ) PL/I (X) ALM ( ) other-see below		( ) BOS
Performance: ( ) better (X) same ( ) worse		( ) Salvager
DOCUMENTATION CHANGES (specify one or more)		( ) Ring Zero
MPM (vol,sect) MPAM (sect)		( ) Ring One
MOSN (sect) MSAM (sect)		( ) SysDaemon/Admin
PLMs (AN#) 85		( ) Runtime
Info Seqs		( ) User Command/Subr
Other		(X) BOS & 355
OBJECTIONS/COMMENTS:		

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

SUMMARY: Change BOS BLAST command to send one message to the 355 (in ASCII, EBCDIC, and correspondence) instead of sending individual ones for each configured communications channel. The 355 will then distribute the message only to those lines that are dialed up at the time.

REASONS: Present version often causes 355 to crash while doing BLAST, particularly if many more lines are configured than are actually dialed up.

IMPLICATIONS: Because the 355 cannot distinguish EBCDIC from Correspondence terminals, the message will be sent to IBM-type terminals in both codes.

DETAILED PROPOSAL: Invent a new mailbox opcode, "blast", which is sent by BOS to the 355 along with the address of the blast message. The 355 reads the message and then sends to all terminals which have dataset-ready and carrier-detect up.

NOTE: Portions coded in 355map.

Ver. 3 741022	MULTICS CHANGE REQUEST	MCR _____ 1960 _____
TITLE: Interim fix to ld355		STATUS _____ DATE _____ Written   06/14/76 Status   <b>A 06/22/76</b> Expires   12/14/76
AUTHOR: Robert S. Coren	<b>MJG</b>	
Planned for System: MR 5.0		
Fixes Bug Number(s): not applicable		CATEGORY (check one)
Documented in MTB: not applicable		( ) Lib. Maint. Tools
Incompatible Change: yes		( ) Sys. Anal. Tools
User/Operations-visible Interface Change: no		( ) Sys. Prog. Tools
Code in: ( ) PL/I (X) ALM ( ) other-see below		( ) 355
Performance: ( ) better (X) same ( ) worse		(X) BOS
		( ) Salvager
DOCUMENTATION CHANGES (specify one or more)		( ) Ring Zero
MPM (vol,sect)                      MPAM (sect)		( ) Ring One
MOSN (sect)                              MSAM (sect)		( ) SysDaemon/Admin
PLMs (AN#)		( ) Runtime
Info Seqs		( ) User Command/Subr
Other		
None (reason) <u>ld355 is going away</u>		
OBJECTIONS/COMMENTS:		

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

SUMMARY: Modify BOS ld355 command to look for status in word 6 of mailbox instead of word 1, and to ignore status sent by 355 when initialization program is entered.

REASONS: New 355 init for bootload with Multics sends status when entered and puts status in word 6. Making these changes to ld355 enables us to install the new 355 software (whose core image is made with bind\_fnp rather than build355) before 355 bootload from Multics is ready. Once the 355 is booted from Multics, ld355 will no longer be needed.

IMPLICATIONS: New ld355 won't work with old (build355) MCS, nor will new (bind\_fnp) MCS work with old ld355.

Ver. 3 741022	MULTICS CHANGE REQUEST	MCP <u>1961</u>
TITLE: Fix bug in define_area_ causing random null pointer references.		STATUS: <u>Written</u>
AUTHOR: Steve Webber		DATE: <u>06/11/76</u>
Planned for System: MR 4.0		Status: <u>A 06/22/76</u>
Fixes Bug Number(s): unreported		Expires: <u>12/11/76</u>
Documented in MTR: not applicable		CATEGORY (check one)
Incompatible Change: no		( ) Lib. Maint. Tools
User/Operations-visible Interface Change: no		( ) Sys. Anal. Tools
Coded in: (X) PL/I ( ) ALM ( ) other-see below		( ) Sys. Proc. Tools
Performance: ( ) better (X) same ( ) worse		( ) 355
DOCUMENTATION CHANGES (specify one or more)		( ) BOS
MPM (vol,sect)	MPAM (sect)	( ) Salvager
MOSN (sect)	MSAM (sect)	( ) Ring Zero
PLMs (AN#)		( ) Ring One
Info Segs		( ) SysDaemon/Admin
Other		( ) Runtime
None (reason) <u>no change</u>		(X) User Command/Subr
OBJECTIONS/COMMENTS:		

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

SUMMARY:

Fix bug in define\_area\_ resulting in null pointer references later on when the area is released.

REASONS:

Bug fix.

DETAILED PROPOSAL:

Change define\_area\_ to save the name of the program requesting the area even if the area is not extensible. This is needed by subsequent calls to release\_temp\_segments\_ when (if) release\_area\_ is called on the area. The name is saved in the standard extend\_block used for extensible areas and is allocated in the very area.

Ver. 3 741022	MULTICS CHANGE REQUEST	MCR <u>1962</u>
TITLE: Delete the old message facility		STATUS   DATE
AUTHOR: S. Herbst		Written   06/14/76
	JWG	Status   <u>06/22/76</u>
		Expires   12/22/76
Planned for System: MR 5.0		CATEGORY (check one)
Fixes Bug Number(s): not applicable		( ) Lib. Maint. Tools
Documented in MTB: not applicable		( ) Sys. Anal. Tools
Incompatible Change: no		( ) Sys. Prog. Tools
User/Operations-visible Interface Change: no		( ) 355
Coded in: (X) PL/I ( ) ALM ( ) other-see below		( ) BOS
Performance: ( ) better (X) same ( ) worse		( ) Salvager
DOCUMENTATION CHANGES (specify one or more)		( ) Ring Zero
MPM (vol,sect)                      MPAM (sect)		( ) Ring One
MOSN (sect)                         MSAM (sect)		( ) SysDaemon/Admin
PLMs (AN#)		( ) Runtime
Info Segs		(X) User Command/Subr
Other		
None (reason) doc ok		
OBJECTIONS/COMMENTS:		

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

SUMMARY: Delete the old message facility several months after the old message facility is deleted.

REASON: Most users should be converted to the new facility by now.

DETAILED: Delete old\_message\_facility and change new\_message\_facility not to print con\_msgs messages when printing messages.

TITLE: Delete old mail facility

AUTHOR: S. Herbst

JWG

STATUS

DATE

Written

6/10/76

Status

A 06/22/76

Expires

12/22/76

-Coded in:  PL/I  AIM  other-  
explain in DETAILED PROPOSAL

Category (Check One)

-Planned for System MR 5,0

Lib. Maint. Tools

-Fixes Bug Number(s)

Sys. Anal. Tools

-Documented in MTB

Sys. Prog. Tools

-User/Operations-visible

355

Document

Specify One or More

Interface change?  yes  no

BOS

MPM (Vol, Sect.)

-Incompatible change?  yes  no

Salvager

PLMS (AN #)

-Performance:  Better  Same

Ring Zero

MOSN (Sect.)

Worse

Ring One

-Replaces MCR

SysDaemon/Admin.

MPAM (Sect.)

Runtime

MSAM (Sect.)

X User Cmmd/Subr.

Objections/Comments:

Info Segs

Other (Name)

None (Reason) documentation ok.

Use these headings: Summary of Proposal, Reasons for Proposal, Implications, Detailed Proposal.

SUMMARY:

De-install the obsolete old mail facility.

REASON:

New mail has been running for several months and most users have no more use for old mailboxes.

DETAILED PROPOSAL:

Remove the command old\_mail.

TITLE: Fix bug in find_command_ and full_find_command_		STATUS	DATE
AUTHOR: S. Herbst		Written	6/10/76
-Coded in: <input checked="" type="checkbox"/> PL/I <input type="checkbox"/> ALM <input type="checkbox"/> other- explain in DETAILED PROPOSAL		Status	A 06/22/76
-Planned for System MR 5.0		Expires	12/22/76
-Fixes Bug Number(s)		DOCUMENTATION CHANGES	
-Documented in MTB		Document	Specify One or More
-User/Operations-visible		MPM (Vol, Sect.)	
Interface change? <input type="checkbox"/> yes <input checked="" type="checkbox"/> no		PLMS (AN #)	
-Incompatible change? <input type="checkbox"/> yes <input checked="" type="checkbox"/> no		MOSN (Sect.)	
-Performance: <input type="checkbox"/> Better <input checked="" type="checkbox"/> Same		MPAM (Sect.)	
<input type="checkbox"/> Worse		MSAM (Sect.)	
-Replaces MCR		Info Segs	
Objections/Comments:		Other (Name)	
		None (Reason) Documentation o.k.	

Use these headings: Summary of Proposal, Reasons for Proposal, Implications, Detailed Proposal.

SUMMARY:

1. Change find\_command\_\$fc\_no\_message to call full\_find\_command\_\$fc\_no\_message instead of full\_find\_command\_.
2. Add the entry point name \$fc\_no\_message to full\_find\_command\_\$fc\_print\_message. This entry point suppresses printing of error messages as does find\_command\_\$fc\_no\_message.
3. Fix bug in full\_find\_command\_ causing the wrong message  
"segment\_uu not found."  
when the command name is ">".

REASONS:

1. Fix bug where find\_command\_\$fc\_no\_message prints messages.
2. Better mnemonic name for the entry point and analogous to find\_command\_\$fc\_no\_message.
3. The correct error message in this case is  
"This operation is not allowed for a directory."



TITLE: Fix bug in check_vtoce_branch		STATUS	DATE
AUTHOR: A. Kobziar		TVV	6/14/76
-Coded in: <input checked="" type="checkbox"/> PL/I <input type="checkbox"/> ALM <input type="checkbox"/> other- explain in DETAILED PROPOSAL		Category (Check One)	Status A 06/22/76
-Planned for System MR 4.0		Lib. Maint. Tools	Expires 12/22/76
-Fixes Bug Number(s) _____		Sys. Anal. Tools	DOCUMENTATION CHANGES
-Documented in MTB _____		Sys. Prog. Tools	
-User/Operations-visible		355	Document Specify One or More
Interface change? <input type="checkbox"/> yes <input checked="" type="checkbox"/> no		BOS	MPM (Vol, Sect.)
-Incompatible change? <input type="checkbox"/> yes <input checked="" type="checkbox"/> no		X Salvager	PLMS (AN #)
-Performance: <input type="checkbox"/> Better <input checked="" type="checkbox"/> Same		Ring Zero	MOSN (Sect.)
<input type="checkbox"/> Worse		Ring One	MPAM (Sect.)
-Replaces MCR _____		SysDaemon/Admin.	MSAM (Sect.)
Objections/Comments:		Runtime	Info Segs
		User Cmnd/Subr.	Other (Name)
			None (Reason) Bug fix

Use these headings: Summary of Proposal, Reasons for Proposal, Implications, Detailed Proposal.

## SUMMARY:

Fix bug which may occur when volume salvaging with the -check\_dir option caused by the use of the same automatic variable by internal procedures. The bug causes an execution of ascii data and a crawlout.

Multics Change Request

TITLE: PL/I and the New Area Package		STATUS	DATE	
AUTHOR: R. A. Barnes		Written	6/10/76	
-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 <u>5.0</u> -Fixes Bug Number(s) <u>unnumbered</u> -Documented in MFB _____ -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 checked="" type="checkbox"/> Better <input type="checkbox"/> Same <input type="checkbox"/> Worse -Replaces MCR _____	Category (Check One)		Status	
		Lib. Maint. Tools	Expires	
		Sys. Anal. Tools	A 06/22/76	
		Sys. Prog. Tools	12/28/76	
		355	DOCUMENTATION CHANGES	
	BOS	Document	Specify One or More	
	Salvager	MPM (Vol, Sect.)		
	Ring Zero	PLMS (AN #)		
	Ring One	MOSN (Sect.)		
	SysDaemon/Admin.	MPAM (Sect.)		
	<input checked="" type="checkbox"/> Runtime	MSAM (Sect.)		
	<input checked="" type="checkbox"/> User Cmmd/Subr.			
Objections/Comments:		Info Segs	<u>p/i new-features</u>	
		Other (Name)	<u>AG94,</u>	
		None (Reason)		

Use these headings: Summary of Proposal, Reasons for Proposal, Implications, Detailed Proposal.

SUMMARY:

Re-implement the PL/I allocate statement, free statement, and empty builtin to generate transfers to p11\_operators rather than subroutine calls.

REASONS:

Better performance and only way to get full ANSI implementation of allocate statement and area condition.

DETAILED PROPOSAL:

1. Implement the operator interface in alloc and p11\_operators for allocate, free and empty.
2. Fix a bug in alloc that caused allocation not to be retried after return from an area on-unit.
3. Remove a restriction that prevented reevaluation of the in option of an allocate statement during allocate retry after return from an area on-unit.
4. Make changes to p11 to generate direct transfers to p11\_operators for allocate, free, and empty.

In the following discussion, error\_output is understood to be the Multics data stream attached to the name "error\_output".

Although the description of each condition states when the condition occurs, the following conditions may occur anytime during execution of the program:

underflow  
overflow  
fixedoverflow  
zerodivide  
size  
stringsize  
storage  
area  
error

These conditions occur when the compiled code or any of its supporting subroutines exceed one or more of their limitations or when they detect an error. Execution of a valid program does not normally cause these unexpected conditions to occur.

#### 10.4.1 The Area Condition

Syntax:

<area condition name> ::= area

This condition occurs when an <allocate statement> attempts to allocate a generation of a based variable in an area whose size is insufficient to contain the generation, or when an <assignment statement> assigns an area to an area whose size is insufficient to contain the assigned area. If an <on unit> returns to the point where the condition was detected and the condition was signalled by the execution of an <assignment statement>, the program is in error. If the condition was signalled by the execution of an <allocate statement>, the allocation is retried. Unless the <on unit> has freed sufficient storage in the area, the condition will occur again.

The default <on unit> writes a comment on error\_output and signals the error condition.

#### 10.4.2 The Conversion Condition

Syntax:

*including reevaluation of the <in option> of the <allocation>.*

*or caused the value of the <in option> to change to an area that had sufficient storage,*

TITLE: Update program to print vtoc man metering info		STATUS	DATE
AUTHOR: A. Bensoussan		Written	06/10/76
-Coded in: <input checked="" type="checkbox"/> PL/I <input type="checkbox"/> ALM <input type="checkbox"/> other- explain in DETAILED PROPOSAL		Status	A 06/22/76
-Planned for System MR 4.0		Expires	12/22/76
-Fixes Bug Number(s) _____		DOCUMENTATION CHANGES	
-Documented in MTB _____		Document	Specify One or More
-User/Operations-visible		MPM (Vol, Sect.)	
Interface change? <input type="checkbox"/> yes <input checked="" type="checkbox"/> no		PLMS (AN #)	
-Incompatible change? <input type="checkbox"/> yes <input checked="" type="checkbox"/> no		MOSN (Sect.)	
-Performance: <input type="checkbox"/> Better <input checked="" type="checkbox"/> Same		MPAM (Sect.)	
<input type="checkbox"/> Worse		MSAM (Sect.)	
-Replaces MCR _____		Info Segs	
Objections/Comments:		Other (Name)	
		None (Reason)	

Use these headings: Summary of Proposal, Reasons for Proposal, Implications,  
Detailed Proposal.

**SUMMARY:**

Modify "vtoc\_buffer\_meters" to be compatible  
with the new vtoc manager.

.Ver. 3 741022		MULTICS CHANGE REQUEST		MCR <u>1971</u>	
TITLE: Fix verify_lock unlock-failure bug.				STATUS	DATE
AUTHOR: Bernard Greenberg				Written	06/14/76
				Status	<u>06/22/76</u>
				Expires	12/14/76
Planned for System: MR 4.0				CATEGORY (check one)	
Fixes Bug Number(s): not applicable				<input type="checkbox"/> Lib. Maint. Tools	
Documented in MTB: not applicable				<input type="checkbox"/> Sys. Anal. Tools	
Incompatible Change: no				<input type="checkbox"/> Sys. Prog. Tools	
user/Operations-visible Interface Change: no				<input type="checkbox"/> 355	
Coded in: <input checked="" type="checkbox"/> PL/I <input type="checkbox"/> ALM <input type="checkbox"/> other-see below				<input type="checkbox"/> BOS	
performance: <input type="checkbox"/> better <input checked="" type="checkbox"/> same <input type="checkbox"/> worse				<input type="checkbox"/> Salvager	
DOCUMENTATION CHANGES (specify one or more)					
MPM (vol,sect)		MPAM (sect)		<input checked="" type="checkbox"/> Ring Zero	
MOSN (sect)		MSAM (sect)		<input type="checkbox"/> Ring One	
PLMs (AN#) 61				<input type="checkbox"/> SysDaemon/Admin	
Info Segs				<input type="checkbox"/> Runtime	
Other				<input type="checkbox"/> User Command/Subr	
OBJECTIONS/COMMENTS:					

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

SUMMARY: A bug in verify\_lock causes it not to unlock directories after invoking the online-salvager on them. Stop this behavior.

REASONS: This is a bug.

IMPLICATIONS: Fewer notify-timeouts, mylocks, etc.

Ver. 3 741022	MULTICS CHANGE REQUEST	MCR 1972
TITLE: Fix bug in dprint		STATUS : DATE Written : 06/16/76 Status : <u>06/22/76</u> Expires : 12/16/76
AUTHOR: VanVleck		
Planned for System: not applicable		
Fixes Bug Number(s): not applicable		CATEGORY (check one)
Documented in MTB: not applicable		( ) Lib. Maint. Tools
Incompatible Change: no		( ) Sys. Anal. Tools
User/Operations-visible Interface Change: no		( ) Sys. Prog. Tools
Coded in: (X) PL/I ( ) ALM ( ) other-see below		( ) 355
Performance: ( ) better (X) same ( ) worse		( ) BOS
		( ) Salvager
DOCUMENTATION CHANGES (specify one or more)		( ) Ring Zero
MPM (vol,sect) MPAM (sect)		( ) Ring One
MOSN (sect) MSAM (sect)		( ) SysDaemon/Admin
PLMs (AN#)		( ) Runtime
Info Segs		(X) User Command/Subr
Other		
None (reason) bug fix		
OBJECTIONS/COMMENTS:		

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

SUMMARY:

The entry name is not printed in the dprint error message  
 dprint: >udd>m>vv> not found. Do you still wish request?  
 due to a missing ^a. Cause the name to be printed.

REASONS:

The message is more helpful if the entry name is printed, especially if more than one nonexistent segment is requested in a command invocation, or if dprint is called from an exec\_com.

Ver. 3 741022	MULTICS CHANGE REQUEST	MCR <i>1965</i>
TITLE: FIX GCOS ASCII-BCD TRANSLITERATION TABLES		SIATUS   DATE
AUTHOR: RH MORRISON		Written   06/04/76
		Status   <i>A 6/28/76</i>
		Expires   12/04/76
Planned for System: MR 4.0		
Fixes Bug Number(s): 73		CATEGORY (check one)
Documented in MTB: not applicable		<input type="checkbox"/> Lib. Maint. Tools
Incompatible Change: no		<input type="checkbox"/> Sys. Anal. Tools
User/Operations-visible Interface Change: no		<input type="checkbox"/> Sys. Prog. Tools
Coded in: <input checked="" type="checkbox"/> PL/I <input checked="" type="checkbox"/> ALM <input type="checkbox"/> other-see below		<input type="checkbox"/> 355
Performance: <input type="checkbox"/> better <input checked="" type="checkbox"/> same <input type="checkbox"/> worse		<input type="checkbox"/> BOS
		<input type="checkbox"/> Salvager
DOCUMENTATION CHANGES (specify one or more)		<input type="checkbox"/> Ring Zero
MPM (vol,sect) MPAM (sect)		<input type="checkbox"/> Ring One
MOSN (sect) MSAM (sect)		<input type="checkbox"/> SysDaemon/Admin
PLMs (AN#)		<input type="checkbox"/> Runtime
Info Segs		<input checked="" type="checkbox"/> User Command/Subr
Other		
None (reason) bug fix		
OBJECTIONS/COMMENTS:		

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

**SUMMARY:** Change transliteration tables in the GCOS Environment to translate the bcd up-arrow to ascii circumflex and the converse as is done in real GCOS.  
Re-compile procedures using the include file gcos\_xlate\_bcd\_ascii\_incl.pl1

**REASON:** GCOS programs transferred to Multics are aborting because of the difference between the translation rules for GCOS and the current simulator rules.

**IMPLICATIONS:** Bug will be fixed.

**DETAILED PROPOSAL:**

Replace:

```

gcos_xlate_bcd_ascii_incl.pl1
gcos_cv_bcd_ascii_alm
gcos_cv_ascii_bcd_alm
gcos_syspunch.pl1
gcos_sys_xlate_alm
cv_bcd_to_ascii_alm
cv_bin_to_ascii.pl1
cv_bin_to_bcd.pl1
cv_ascii_to_bcd.pl1

```

Re-compile:

```

gcos_mme_bort.pl1
gcos_mme_fadd.pl1
gcos_mme_fcon.pl1

```

gcos\_mme\_inos\_.pl1  
gcos\_mme\_more\_.pl1  
gcos\_mme\_rels\_.pl1  
gcos\_mme\_syot\_.pl1  
gcos\_card\_utility\_.pl1



Ver. 3 741022	MULTICS CHANGE REQUEST	MCR <u>1974</u>
TITLE: Fix bug in get_system_free_area_		STATUS   DATE
AUTHOR: Larry Johnson	THVV	Written   06/16/76
		Status   <u>06/29/76</u>
		Expires   12/16/76
Planned for System: MR 4.0		CATEGORY (check one)
Fixes Bug Number(s): not applicable		( ) Lib. Maint. Tools
Documented in MTB: not applicable		( ) Sys. Anal. Tools
Incompatible Change: no		( ) Sys. Prog. Tools
User/Operations-visible Interface Change: no		( ) 355
Coded in: ( <input checked="" type="checkbox"/> ) PL/I ( ) ALM ( ) other-see below		( ) BOS
Performance: ( ) better ( <input checked="" type="checkbox"/> ) same ( ) worse		( ) Salvager
DOCUMENTATION CHANGES (specify one or more)		( ) Ring Zero
MPM (vol,sect)                      MPAM (sect)		( ) Ring One
MOSN (sect)                         MSAM (sect)		( ) SysDaemon/Admin
PLMs (AN#)		( ) Runtime
Info Segs		( <input checked="" type="checkbox"/> ) User Command/Subr
Other		
None (reason)		
OBJECTIONS/COMMENTS:		

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

Summary

The program get\_system\_free\_area\_ does not set the validation level before creating system\_free\_n\_. This causes system\_free\_1\_ to be created with ring brackets of 4,4,4. It should be changed to set the validation level before creating the segment.

Reasons

This is a security problem.

Ver. 3 741022	MULTICS CHANGE REQUEST	MCR <u>1975</u>
TITLE: Change format of syserr log		STATUS   DATE
AUTHOR: Larry Johnson	NIM	Written   06/18/76
		Status   <u>06/29/76</u>
		Expires   12/18/76
Planned for System: MR 5.0		CATEGORY (check one)
Fixes Bug Number(s): not applicable		( ) Lib. Maint. Tools
Documented in MTB: not applicable		( ) Sys. Anal. Tools
Incompatible Change: no		( ) Sys. Prog. Tools
User/Operations-visible Interface Change: no		( ) 355
Coded in: ( <input checked="" type="checkbox"/> ) PL/I ( ) ALM ( ) other-see below		( ) BOS
Performance: ( ) better ( <input checked="" type="checkbox"/> ) same ( ) worse		( ) Salvager
DOCUMENTATION CHANGES (specify one or more)		( <input checked="" type="checkbox"/> ) Ring Zero
MPM (vol,sect) MPAM (sect)		( ) Ring One
MOSN (sect) MSAM (sect)		( ) SysDaemon/Admin
PLMs (AN#)		( ) Runtime
Info Segs		( ) User Command/Subr
Other		
None (reason)		
OBJECTIONS/COMMENTS:		
Requires SRB warning. (Please copy this command onto the yellow form)		

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

Summary: The syserr log seems to be extremely prone to damage on crashes where ESD fails. This is probably due to the fact that pages of the log are in core and being updated at the time of the crash (logging the reason for the crash) and can't be written out to disk. This may cause threading problems in the log, especially if the new messages cross a page boundary. The log should be reformatted slightly to eliminate this problem.

Reasons: Greater reliability of the syserr log, which is coming into greater use because of HEALS.

#### Detailed Proposal

1. Never log a message across a page boundary. If the message will not fit in the current page, skip to the next page.
2. When the log wraps around, move the first message pointer ahead one full page, instead of a message at a time.
3. Increase the syserr header to include a date time modified for each page, and, as each page is filled, a checksum.
4. Modify the system initialization procedure that checks the log to validate the times and checksums for each page. If discrepancies are found, simply unthread the bad page so that outer ring procedures will never see it. The bad page will be reused when the log wraps around to that point again.

Implications: Slightly fewer messages will fit in the log. All messages in the ring0 log when this system is installed will be deleted. No changes will be necessary to ring 4 procedures that examine the log.

Ver. 3 741022	MULTICS CHANGE REQUEST	MCR <u>1976</u>
TITLE: Fix spelling errors in mac_		STATUS: <u>DATE</u> <u>Written</u> <u>06/17/76</u> <u>Status</u> <u>A06/29/76</u> <u>Expires</u> <u>12/17/76</u>
AUTHOR: Larry Johnson	THVV	
Planned for System: MR 4.0		
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		
DOCUMENTATION CHANGES (specify one or more)		CATEGORY (check one)
MPM (vol,sect) MPAM (sect)		<input type="checkbox"/> Lib. Maint. Tools
MOSN (sect) MSAM (sect)		<input type="checkbox"/> Sys. Anal. Tools
PLMs (AN#)		<input type="checkbox"/> Sys. Prog. Tools
Info Segs		<input type="checkbox"/> 355
Other		<input type="checkbox"/> BOS
None (reason)		<input type="checkbox"/> Salvager
OBJECTIONS/COMMENTS:		<input type="checkbox"/> Ring Zero
		<input type="checkbox"/> Ring One
		<input type="checkbox"/> SysDaemon/Admin
		<input type="checkbox"/> Runtime
		<input checked="" type="checkbox"/> User Command/Subr

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

#### Summary

Two external references, one of an error\_table\_code, and one of an admin\_gate\_entry, were misspelled by bound\_mair\_control in 28-8. These must be corrected. These changes will be included in 28-8a.

Ver. 3 741022	MULTICS CHANGE REQUEST	MCR <u>1977</u>
TITLE: Install patch_firmware and dump_firmware tools		STATUS   DATE
AUTHOR: Larry Johnson	NIM	Written   06/21/76
		Status   <u>06/29/76</u>
		Expires   12/21/76
Planned for System: MR 4.1		CATEGORY (check one)
Fixes Bug Number(s): not applicable		( ) Lib. Maint. Tools
Documented in MTB: not applicable		( ) Sys. Anal. Tools
Incompatible Change: no		( <input checked="" type="checkbox"/> ) Sys. Prog. Tools
User/Operations-visible Interface Change: no		( ) 355
Coded in: ( <input checked="" type="checkbox"/> )PL/I ( )ALM ( )other-see below		( ) BOS
Performance: ( )better ( <input checked="" type="checkbox"/> )same ( )worse		( ) Salvager
DOCUMENTATION CHANGES (specify one or more)		( ) Ring Zero
MPM (vol,sect) MPAM (sect)		( ) Ring One
MOSN (sect) MSAM (sect)		( ) SysDaemon/Admin
PLMs (AN#)		( ) Runtime
Info Segs		( ) User Command/Subr
Other Hardware Diagnostic Aids		
OBJECTIONS/COMMENTS:		
Resolve third paragraph under "Notes" (patch_firmware writeup). New MCR required if new control argument needed.		

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

### Summary

Install commands that can patch and dump segments containing MPC firmware.

### Reasons

It is occasionally necessary to patch firmware. (MR4.0 will be released with patched firmware.) This is a tedious process by hand because 1) addresses and data are given in hexadecimal, 2) firmware is packed 2 MPC words per Multics word, using only 8 bits of each 9-bit byte, and 3) a new checksum must be computed.

### Detailed Proposal

Install a program which can deal with firmware segments. Its two entries, patch\_firmware, and dump\_firmware, are described on the following pages.

---

patch\_firmware

---

---

patch\_firmware

---

Name: patch\_firmware

The patch\_firmware command is used to patch a segment containing an image of a firmware module for an MPC.

Usage

patch\_firmware path mem addr word<sub>1</sub> ... word<sub>n</sub>

where:

1. path is the path name of the segment containing the firmware.
2. mem is the memory overlay to patch. This argument may be "cs" to patch the control store overlay, or "rw" to patch the read/write memory overlay.
3. addr is the starting address to patch, in hexadecimal.
4. word<sub>i</sub> are new MPC words, in hexadecimal. All word<sub>i</sub> must be in the range 0-FFFF. Up to 16 words can be patched with one patch\_firmware command.

Notes

The patch\_firmware command will display the old and new contents of each firmware word patched, as well as the checksum, before the patch is made. The user is then asked whether the patch is correct. The patch will not be made unless the user answers yes.

Firmware modules may be retrieved from the firmware tape using the load\_firmware\_file command. Normally, firmware modules are kept in the archive >ldd>firmware>firmware.archive.

Firmware patches are usually given as absolute memory addresses in the MPC. Since the first 512 words (200 hex) are not supplied in the distributed firmware modules (they are hard-wired in the MPC), it may be necessary to relocate patches by subtracting 200 hex from the address given.

---

dump\_firmware

---

---

dump\_firmware

---

Name: dump\_firmware

The dump\_firmware command is used to dump the contents of a segment containing MPC firmware.

Usage

dump\_firmware path mem addr count

where:

1. path is the path name of the segment containing the firmware.
2. mem must be "cs" to dump the control store overlay, "rw" to dump the read/write overlay, or "size" to print the locations and lengths of overlays in the module. If this argument is size, no further arguments need be given.
3. addr is the starting address to dump, in hexadecimal.
4. count is the number of words to dump, in decimal.

Notes

Firmware modules may be retrieved from the firmware tape using the load\_firmware\_file command. Normally, firmware modules are kept in the archive >ldd>firmware>firmware.archive.

Ver. 3 741022	MULTICS CHANGE REQUEST	MCR <u>1978</u>
TITLE: Fix bugs in sc_init_		STATUS   DATE
AUTHOR: VanVleck		Written   06/21/76
	JWG	Status   06/29/76
		Expires   12/21/76
Planned for System: <del>not applicable</del> 4.0		CATEGORY (check one)
Fixes Bug Number(s): not applicable		( ) Lib. Maint. Tools
Documented in MTB: not applicable		( ) Sys. Anal. Tools
Incompatible Change: no		( ) Sys. Prog. Tools
User/Operations-visible Interface Change: no		( ) 355
Coded in: (X) PL/I ( ) ALM ( ) other-see below		( ) BOS
Performance: ( ) better (X) same ( ) worse		( ) Salvager
DOCUMENTATION CHANGES (specify one or more)		( ) Ring Zero
MPM (vol,sect) MPAM (sect)		( ) Ring One
MOSN (sect) MSAM (sect)		(X) SysDaemon/Admin
PLMs (AN#)		( ) Runtime
Info Segs		( ) User Command/Subr
Other		
None (reason) bug fix		
OBJECTIONS/COMMENTS:		
	Make appropriate SRB comment; verify that this change is harmless.	
Headings are: SUMMARY, REASONS, IMPLICATIONS, DETAILED PROPOSAL (optional)		

SUMMARY:

Remove >unbundled from the search rules for the initializer process set up by sc\_init\_. Do not call com\_err\_ if an error occurs when initializing search rules.

REASONS:

Some sites do not have >unbundled. Therefore, the system distribution tapes do not contain the directory >unbundled. So when a new release is loaded, sc\_init\_ encounters an error setting up the ring 4 search rules for the initializer, and calls com\_err\_, which raises command\_error\_ and crashes the system.

IMPLICATIONS:

Simpler installation procedures.

Ver. 3	MULTICS CHANGE REQUEST	MCR <u>1979</u>
741022		
TITLE: Fix bug in initiate_search_rules		STATUS   DATE
		Written   06/21/76
AUTHOR: VanVleck	JUG	Status   06/29/76
		Expires   12/21/76
Planned for System: <del>not applicable</del> 5.0		CATEGORY (check one)
Fixes Bug Number(s): not applicable		( ) Lib. Maint. Tools
Documented in MTB: not applicable		( ) Sys. Anal. Tools
Incompatible Change: no		( ) Sys. Prog. Tools
User/Operations-visible Interface Change: no		( ) 355
Coded in: (X) PL/I ( ) ALM ( ) other-see below		( ) 80S
Performance: ( ) better (X) same ( ) worse		( ) Salvager
DOCUMENTATION CHANGES (specify one or more)		(X) Ring Zero
MPM (vol,sect) MFAM (sect)		( ) Ring One
MOSN (sect) MSAM (sect)		( ) SysDaemon/Admin
PLMs (AN#) an61		( ) Runtime
Info Segs		( ) User Command/Subr
Other		
OBJECTIONS/COMMENTS:		

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

SUMMARY:

Fix a bug in initiate\_search\_rules which crashes the system if a directory which belongs in the user search rules is not found.

REASONS:

This error should result in failure to create the process, instead of a crash.

IMPLICATIONS:

If this error occurs operations will be able to create the directory from admin mode without losing the system.



Ver. 3 741022	MULTICS CHANGE REQUEST	MCR <u>1980</u>
TITLE: Fix bug in salvager.		STATUS   DATE
AUTHOR: VanVleck		Written   06/21/76
	<i>JWB</i>	Status   06/29/76
Planned for System: <del>not applicable</del> 4.0		Expires   12/21/76
Fixes Bug Number(s): not applicable		CATEGORY (check one)
Documented in MTB: not applicable		( ) Lib. Maint. Tools
Incompatible Change: no		( ) Sys. Anal. Tools
User/Operations-visible Interface Change: no		( ) Sys. Prog. Tools
Coded in: ( <input checked="" type="checkbox"/> ) PL/I ( ) ALM ( ) other-see below		( ) 355
Performance: ( ) better ( <input checked="" type="checkbox"/> ) same ( ) worse		( ) 80S
		( ) Salvager
DOCUMENTATION CHANGES (specify one or more)		( <input checked="" type="checkbox"/> ) Ring Zero
MPM (vol,sect)                      MPAM (sect)		( ) Ring One
MOSN (sect)                              MSAM (sect)		( ) SysDaemon/Admin
PLMS (AN#)                      an61		( ) Runtime
Info Segs		( ) User Command/Subr
Other		
OBJECTIONS/COMMENTS:		

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

SUMMARY:

Fix a bug in salv\_rebuild\_directory which leads to damage to links.

REASONS:

The salvager should not destroy links.

IMPLICATIONS:

Salvager will work.

TITLE: Experimental IO Daemon Meters		STATUS	DATE
AUTHOR: J.C. Whitmore		Written	6/22/76
-Coded in: <input checked="" type="checkbox"/> PL/I <input type="checkbox"/> AIM <input type="checkbox"/> other- explain in DETAILED PROPOSAL -Planned for System MR <u>AR</u> -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 _____		Status	A 06/29/76
		Expires	12/29/76
		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 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 Cmnd/Subr.		Document	Specify One or More
Objections/Comments:		MPM (Vol, Sect.)	Commands
		PLMS (AN #)	IO Daemon
		MOSN (Sect.)	
		MPAM (Sect.)	
		MSAM (Sect.)	IO Daemon
		Info Segs	IO Daemon changes
		Other (Name)	
		None (Reason)	

Use these headings: Summary of Proposal, Reasons for Proposal, Implications, Detailed Proposal.

Summary: Change io\_daemon\_account\_ to save some statistics on request processing. Data will be gathered per request\_type, per queue. Metering will be a site option. Data will include:  
 number of pieces  
 number of pages  
 number of lines [blocks for cards]  
 time of last request  
 wait time of last request  
 average wait time (exponentially averaged)

A follow up MCR will be submitted before installation to provide documentation of administrative and command interfaces.

Reasons: The temporary meters installed to compare the new and old charging algorithms proved to be very useful. MIT (IPC) requested the addition of the waiting time meters to help users choose the proper queue.

Implications: Aggregation of data at multilevel AIM sites will create a potential write down path.

Multics Change Request

TITLE: IO Daemon Emergency Fix		STATUS	DATE	
AUTHOR: J. C. Whitmore		Written	6/21/76	
-Coded in: <input checked="" type="checkbox"/> PL/I <input type="checkbox"/> ALM <input type="checkbox"/> other- explain in DETAILED PROPOSAL -Planned for System MR <u>AR</u> -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)		Status <u>A 06/29/76</u>	
		Lib. Maint. Tools	Expires <u>12/29/76</u>	
		Sys. Anal. Tools	DOCUMENTATION CHANGES	
		Sys. Prog. Tools	Document Specify One or More	
	355		MPM (Vol, Sect.)	
	BOS		PLMS (AN #)	
	Salvager		MOSN (Sect.)	
	Ring Zero		MPAM (Sect.)	
	Ring One		MSAM (Sect.)	
	<input checked="" type="checkbox"/> SysDaemon/Admin.		Info Segs	
	Runtime		Other (Name)	
	User Cmmd/Subr.		None (Reason) no change	
Objections/Comments:				
FCO #PHAFPG096 Fixes the hardware bug.				

Use these headings: Summary of Proposal, Reasons for Proposal, Implications, Detailed Proposal.

Summary: Add one line of code to output request which will make a dummy reference to the translate table. This will ensure that the table is in core when the real translations are done.

Reasons: A hardware bug causes the translate builtin to fail when the translate table straddles a page boundry and a page fault occurs during translation. This has caused the pathname normally printed on the head sheet to be blank.

TITLE: Fix bug in tape_ansi_		STATUS	DATE
AUTHOR: M. Asherman		Written	06/17/76
-Coded in: <input checked="" type="checkbox"/> PL/I <input type="checkbox"/> ALM <input type="checkbox"/> other- explain in DETAILED PROPOSAL		Status	A 06/29/76
-Planned for System MR _____		Expires	12/29/76
-Fixes Bug Number(s) unreported		DOCUMENTATION CHANGES	
-Documented in MTB _____		Document	Specify One or More
-User/Operations-visible Interface change? <input type="checkbox"/> yes <input checked="" type="checkbox"/> no		MPM (Vol, Sect.)	
-Incompatible change? <input type="checkbox"/> yes <input checked="" type="checkbox"/> no		PLMS (AN #)	
-Performance: <input type="checkbox"/> Better <input checked="" type="checkbox"/> Same <input type="checkbox"/> Worse		MOSN (Sect.)	
-Replaces MCR _____		MPAM (Sect.)	
		MSAM (Sect.)	
Objections/Comments:		Info Segs	
		Other (Name)	
		None (Reason)	

Use these headings: Summary of Proposal, Reasons for Proposal, Implications, Detailed Proposal.

#### SUMMARY:

There is a bug in tape\_ansi\_ which prevents the control segment from being deleted on detach. The effect of this is to cause subsequent attachments to retain some of the old attach information, in spite of the new attach description.

#### DETAILED PROPOSAL:

Fix bug in tape\_ansi\_detach\_.

Ver. 3	MULTICS CHANGE REQUEST	MCR <u>1984</u>
741022		
TITLE: Modify commands which truncate segments.	STATUS: <u>Written</u>	DATE: <u>06/16/76</u>
AUTHOR: VanVleck	Status: <u>A06/29/76</u>	Expires: <u>12/16/76</u>
Planned for System: not applicable	CATEGORY (check one)	
Fixes Bug Number(s): not applicable	<input type="checkbox"/> Lib. Maint. Tools	
Documented in MTB: not applicable	<input type="checkbox"/> Sys. Anal. Tools	
Incompatible Change: no	<input type="checkbox"/> Sys. Prog. Tools	
User/Operations-visible Interface Change: no	<input type="checkbox"/> 355	
Coded in: <input checked="" type="checkbox"/> PL/I <input type="checkbox"/> ALM <input type="checkbox"/> other-see below	<input type="checkbox"/> BOS	
Performance: <input checked="" type="checkbox"/> better <input type="checkbox"/> same <input type="checkbox"/> worse	<input type="checkbox"/> Salvager	
<u>DOCUMENTATION CHANGES (specify one or more)</u>		
MPM (vol,sect)                      MPAM (sect)	<input type="checkbox"/> Ring Zero	
MOSN (sect)                         MSAM (sect)	<input type="checkbox"/> Ring One	
PLMs (AN#)	<input type="checkbox"/> SysDaemon/Admin	
Info Segs	<input type="checkbox"/> Runtime	
Other	<input checked="" type="checkbox"/> User Command/Subr	
<u>None (reason) bug fix</u>		
OBJECTIONS/COMMENTS:		

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

**SUMMARY:**

Several commands and utility subroutines truncate segments to zero just before replacing their contents. Change these commands to truncate the segments to the new length after writing out the new contents.

**REASONS:**

If the new segment contents are the same length as the old, this change will save a VIOC write and a bunch of depositing and withdrawing of records. Avoiding these operations will make the system respond faster in real time and use fewer resources.

**IMPLICATIONS:**

System performance will improve.

System reliability is not affected by this change. But in a certain class of crashes, this change will cause a user's segment to contain a mixture of old pages and new pages instead of a mixture of zero pages and new pages.

DETAILED PROPOSAL:

The following programs will be modified:

archive, archive\_sort, reorder\_archive  
qedx  
indent  
encode

sort\_profile, sort\_reqfile  
clear\_profile, clear\_reqfile  
rename\_pnts\_  
save\_dir\_info  
replacer  
cpg\_

TITLE: Correct debug interpretation of offsets in instructions with ic modification		STATUS	DATE
AUTHOR: Susan Barr TVV		Written	06/22/76
-Coded in: <input checked="" type="checkbox"/> PL/I <input type="checkbox"/> ALM <input type="checkbox"/> other- explain in DETAILED PROPOSAL -Planned for System MR 5.0 -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 checked="" type="checkbox"/> Same <input type="checkbox"/> Worse -Replaces MCR _____		Status	A 06/29/76
		Expires	12/29/76
		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 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 Cmmnd/Subr.		Document	Specify One or More
Objections/Comments:		MPM (Vol, Sect.)	Commands
		PLMS (AN #)	
		MOSN (Sect.)	
		MPAM (Sect.)	
		MSAM (Sect.)	
		Info Segs	
		Other (Name)	
		None (Reason)	

Use these headings: Summary of Proposal, Reasons for Proposal, Implications, Detailed Proposal.

SUMMARY:

Correct print\_text\_ so that the offset of a word referred to by a break instruction that has IC modification will be computed correctly.

PROPOSAL:

Set a flag if the procedure was invoked via the break instruction entry. If this flag is set, use the real offset in computing the data offset.

TITLE: Improve move and copy command error message		STATUS	DATE	
AUTHOR: S. Herbst JWG		Written	06/18/76	
-Coded in: <input checked="" type="checkbox"/> PL/I <input type="checkbox"/> ALM <input type="checkbox"/> other- explain in DETAILED PROPOSAL -Planned for System MR 5.0 -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 checked="" type="checkbox"/> Same <input type="checkbox"/> Worse -Replaces MCR _____	Category (Check One)		Status	
		Lib. Maint. Tools	Expires	
		Sys. Anal. Tools	DOCUMENTATION CHANGES	
		Sys. Prog. Tools	Document	Specify One or More
		355	MPM (Vol, Sect.)	
		BOS	PLMS (AN #)	
		Salvager	MOSN (Sect.)	
		Ring Zero	MPAM (Sect.)	
		Ring One	MSAM (Sect.)	
		SysDaemon/Admin.	Info Segs	
	Runtime	Other (Name)		
	<input checked="" type="checkbox"/> User Cmmd/Subr.	None (Reason)	doc. ok	
Objections/Comments:				

Use these headings: Summary of Proposal, Reasons for Proposal, Implications, Detailed Proposal.

SUMMARY:

Fix move, copy -acl and copy -name to print the reason for failure when names or acl cannot be copied due to no m access on the target's parent. Follow the error message that is currently printed:

"copy: Incorrect access ... target\_dir>target\_entry"

with the message:

"Unable to copy acl."

or

"Unable to copy names."



Ver. 3 741022	MULTICS CHANGE REQUEST	MCR <u>1987</u>
TITLE: Make online_salvager_output reverse-deciduous		STATUS: DATE
AUTHOR: Bernard Greenberg		Written: 06/22/76
TVW		Status: <u>06/29/76</u>
Planned for System: MR 5.0		Expires: 12/22/76
Fixes Bug Number(s): not applicable		CATEGORY (check one)
Documented in MTB: not applicable		( ) Lib. Maint. Tools
Incompatible Change: no		( ) Sys. Anal. Tools
User/Operations-visible Interface Change: no		( ) Sys. Prog. Tools
Coded in: (X) PL/I ( ) ALM ( ) other-see below		( ) 355
Performance: ( ) better (X) same ( ) worse		( ) BOS
DOCUMENTATION CHANGES (specify one or more)		(X) Salvager
MPM (vol,sect)	MPAM (sect)	( ) Ring Zero
MOSN (sect)	MSAM (sect)	( ) Ring One
PLMs (AN#) 61		( ) SysDaemon/Admin
Info Segs		( ) Runtime
Other		( ) User Command/Subr
OBJECTIONS/COMMENTS:		

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

SUMMARY: Cause the segment online\_salvager\_output to appear in the global hardcore address space. Store its bit count in its first word.

REASONS: The online salvager currently initiates >online\_salvager\_output in order to speak his mind. The online salvager is called only in times of distress; initiating segments in the root at these times is a poor policy, and has often resulted in mylock errors (root was already locked) and similar mishaps.

IMPLICATIONS: The copy\_salvager\_output (cso) command must be changed to develop the bit count of the online\_salvager\_output segment from its first word.

The online salvager also puts segments in >dumps: proposal to prevent mylocks in this instance will be supplied under separate cover.

DETAILED PROPOSAL: Reserve a hardcore segment number for online\_salvager\_output. Have init\_branches (collection II initialization) locate >online\_salvager\_output, and activate it. Place an SDW for this useful segment in that SDW slot, thereby propagating it to all processes. Change salv\_print\_online to reference this segment by hardcore-prelinked symbol, as opposed to the storage system it is salvaging.