

MULTICS
SOFTWARE RELEASE BULLETIN
RELEASE 12.2

PREPARED BY:
MULTICS SUPPORT

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TRADEMARKS ACKNOWLEDGMENTS

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SECTION 1

INTRODUCTION

Multics Release 12.2 (MR12.2) is a complete release and assumes the prior installation of MR12.1. That is, the library tapes are self-supporting and do not require any other information to run Multics.

This document includes descriptions of features included in Multics Release MR12.2.

A separate document, Software Installation Bulletin (SIB), is supplied with the release tapes. The SIB describes the contents of the release tapes and includes procedures for installation of MR12.2.

Additional documentation, including a list of bugs fixed in MR12.2, is provided with the release tapes, either as printable segments on the tape (in a special directory >doc>MR12.2), or as paper copy.

Following is a summary of the remaining of sections in this document.

Section 2
summarizes important highlights

Section 3
describes significant software changes

Section 4
describes incompatible changes

Appendix A
contains a partial list of new commands, active functions, and subroutines

Appendix B

contains a list of Priced Software Products. These items are available only through contractual actions with a Honeywell Bull, Inc. sales representative

Appendix C

describes the associated documentation

SECTION 2

HIGHLIGHTS OF MR12.2

This section contains a brief summary of the most important items in this release. Refer to Section 3 for a more detailed description.

A brief description of known bugs fixed in this release is available in the segment >doc>MR12.2>TRs_fixed_in_MR12.2.

SOFTWARE CHANGE PROPOSALS

- ☒ SCP 6326, provides line numbered dprints
- ☒ SCP 6331, modifies the enter_abs_request command and enter_abs_request_subroutine to use exec_com search paths and accept new control arguments
- ☒ SCP 6338, raises the limit on disk_stat
- ☒ SCP 6339, increases the length of Fortran character variables
- ☒ SCP 6340, modifies dial_out to work in absentee or exec_com
- ☒ SCP 6341, provides additional control arguments for the enter_imft_request command
- ☒ SCP 6342, increases the ASYNC terminal autobaud rate detection range from 110 and 1200 baud to 300 and 9600 baud
- ☒ SCP 6348, modifies the canonicalize command to support canonicalization of MSFs
- ☒ SCP 6349, modifies the mail system to use search paths to locate existing mail system entities
- ☒ SCP 6350, lengthens tty special character sequences

- ☒ SCP 6351, adds new control arguments to `add_search_rules` and `add_search_paths`
- ☒ SCP 6352, makes search paths understand search rules
- ☒ SCP 6355, modifies the `find_rpv_` subsystem support of `boot_without query`
- ☒ SCP 6356, modifies the basic compiler to associate severity levels with error messages
- ☒ SCP 6357, minor changes to the fast subsystem
- ☒ SCP 6361, adds memory features to the `change_wdir, cwd,` command
- ☒ SCP 6365, adds two control arguments, `-inhibit_error` and `-no_inhibit_error,` to the `where_search_paths` command/active function
- ☒ SCP 6366, modifies `mrds` to use `mrds` search paths to locate databases.
- ☒ SCP 6367, modifies the `enter_abs_request` command to support standard control arguments
- ☒ SCP 6373, provides a new MRDS query language parser
- ☒ SCP 6374, provides a quiet mode for LINUS
- ☒ SCP 6375, provides new control arguments to LINUS requests in order to control printing of warning and progress messages
- ☒ SCP 6377, adds the command `set_lisp_temp_dir` to allow a user to specify a directory for temporary segments created during a lisp environment by commands such as `emacs` or `lisp_compiler`
- ☒ SCP 6378, modifies the `display_ttt` command to accept starnames for either the `-terminal_type` or `-table` options
- ☒ SCP 6379, modifies the `display_ttt` command to allow complete expansion of a like definition
- ☒ SCP 6380, allows accesses to be audited for specific file system entries
- ☒ SCP 6384, adds a new initializer (Operator) command `list_lv_attachments`
- ☒ SCP 6385, adds the field "Reply-To" in the header built by the `send` and `reply` editors of executive mail

- ☒ SCP 6391, adds the new request_info command/active function to provide specified information on any request queued in absentee, output, retrieval, imft, and specific request type message queues
- ☒ SCP 6401, Multics Inter-System Mailer (Available as RPQ Only)
- ☒ SCP 6402, Multics TCP/IP (Available as RPG Only)

ADDITIONAL HIGHLIGHTS

- ☒ allow the attachment of laser printers as remote devices
- ☒ Added new audit keywords to switch_on and switch_off commands to manipulate a file system entry audit switch
- ☒ Ported AT&T System V LINT command and AT&T System V Release 2.0 MAKE command to Multics. The probe command may now be used on C programs when properly compiled.

SECTION 3

CONTENTS OF MR12.2

COMMUNICATIONS SYSTEM SOFTWARE

1. The range of autobaud rate detection for ASYNC terminal connections has been changed. Previously it was between 110 and 1200 baud. It now operates between 300 and 9600 baud.
2. Changed the TTF to include special character sequences of up to fifteen characters instead of the current limitation of three. The current system TTF must be converted using the `change cv ttf` command and the resulting TTT must be installed. All user-written TTFs must also be recompiled before use. The `set_ttt_path` command will report an error advising the user to recompile the TTF if the version being used is incorrect. Although the size of the special characters structure has changed, users of the `set_special` and `get_special` control orders should not be affected since the code is upward compatible. However, any other users of the `c_chars` structure may be affected since the size of the character array has been changed.
3. Added the following terminal types (with alternate names) to the installed terminal type table:

```
VERSATERM220_80C_36L (VERSATERM_80C_36L)
VERSATERM220_80C_36L_OFLOW (VERSATERM220_80C_36L_OFLOW)
VERSATERM220_102C_36L (VERSATERM_102C_36L)
VERSATERM220_102C_36L_OFLOW (VERSATERM_102C_36L_OFLOW)
```

These terminal types were developed to handle usage of the Versaterm terminal emulator on the different Macintosh PCs with various screen sizes.

Corrected the "jump scroll" sequence in the initial string for the `VERSATERM220_132c` terminal type. Changed the `^pl` mode for `TEK4023` to `p123`.

4. Added HB_LW_PRINTER_FORMS_BASE terminal type for use by a driver that is processing requests using the forms option to a Honeywell Bull Laserwriter. Added DD8260 (by Delta Data) series of terminal types. This is part of the support for horizontal scrolling in Emacs.

OPERATING SYSTEM SOFTWARE

I/O Daemon Software

BCE

- A- 1. Modified the BCE restore request to zero clear the unused area at the end of the VTOC region on the physical volume being restored, before the restore begins. This is to avoid the possibility of having non-zero data in this area that would later be interpreted as an invalid VTOCE.

System Initialization

- B- 1. Added an option for pre-defining the data needed to locate the Root Physical Volume (RPV) at system boot time. This data can be placed in the hardcore.header segment and subsequently placed on the Multics System Tape (MST) by generate_mst. See the description of the new default_rpv_data minor keyword in generate_mst.info for more details.
- B- 2. Added an option for pre-defining a default time zone, for use early in the system bootload process. This default data can be placed in the hardcore.header segment and subsequently placed on the Multics System Tape (MST) by generate_mst. See the description of the new default_time_zone minor keyword in generate_mst.info for more details.
- B- 3. The console beeper will no longer be turned on when rcp_init is unable to read the options from a tape handler during system initialization.

Operator Command

- C- 1. Added a new operator command list_lv_attachments, llva. It will display a list of processes currently attached to a LV, set of LVs, or all the LVs that have attachments.

- C- 2. Added enhancements to I/O daemon software to allow attachment of laser printers as remote devices. Initial implementation is for the Honeywell Bull Model 80 printer. Among the enhancements are: print orientation on the page; font selection; site-defined head and tail sheets; etc. Defaults have been chosen for the new features such that the current I/O daemon tables source file may be used as-is. The addition of the new features has caused incompatible changes in the compiled I/O daemon tables. The sites current tables must be recompiled using the new version of the iod_tables_compiler.

ADMINISTRATION COMMANDS

- D- 1. Modified the new_user command to time_lock the password of a user. A user who is logged in when the time_lock is set for his/her password will be immediately bumped from the system unless they have the "nobump" user attribute.
- D- 2. Modified programs that reference the disk_stat segment to allow that segment to become a multisegment file if statistics are recorded for more directories than will fit in a segment.

MAINTENANCE SOFTWARE

- E- 1. Modified the reset_soos command to reset the security_out_of_service switch on segments, as well as directories.

Commands

- F- 1. Added a new audit keyword to the switch_on and switch_off commands. Accesses may now be audited for specific file system entries by turning on the entry's audit switch. This operation requires access to the system_privilege_gate.
- F- 2. Added the -auth, -home_dir, -no_start_up, -process_overseer, and -ring control arguments to the enter_abs_request command. The command and the enter_abs_request subroutine will use exec_com search paths to locate the absin file, if only a file entryname is given.
- F- 3. Added a new version (1.2) of kermit. Kermit will transmit and receive multisegment files and support extended packet length. See the kermit info segments for more details.

- F- 4. Added the new control argument `-number`, `-nb`, to the `enter_output_request` command to provide users with the ability to request line-numbered printouts. Line-numbers will appear on the output as they do from the `print` command. See the online help files for more information.
- F- 5. Added memory features to the `change_wdir`, `cwd`, command. Changed `print_wdir`, `pwd`, and `working_dir`, `wd`, commands/active functions to optionally print or return prior working directories that are on the memory stack.
- F- 6. Modified `dump_segment` and `ring_zero_dump` to display data as PL/1 structures similar to the `probe value request`.
- F- 7. Modified the `canonicalize` command to support canonicalization of MSFs.
- F- 8. The search rules commands `add_search_rules`, `set_search_rules`, `delete_search_rules`, and `print_search_rules` are now obsolete; though they will be retained indefinitely. In their place, the search facility now manipulates the search rules using the "linker" search list. The search facility also keeps track of the pathname by UID, so multiple references to an entry in a search list does not need to be by the same name.
- F- 9. Added the control arguments `-inhibit_error`, `-ihe`, and `-no_inhibit_error`, `-nihe`, to the `where_search_paths` command and active function. The `-ihe` control argument causes a null string to be returned rather than an error when no matching entry is found. The `-nihe` control argument is the default.
- F-10. Modified `add_search_rules` and `add_search_paths` commands to accept the `-inhibit_error`, `-ihe`, and `-no_inhibit_error`, `-nihe`, control arguments, which determine whether to print warning messages about nonexistent pathnames and paths already in the search rules/search list. The default is `-nihe`.

The `add_search_paths` command now accepts the `-force`, `-fc`, control argument to allow moving paths already in the search list to new positions in the list. `-no_force`, `-nfc`, has been added to override this control argument.

The `delete_search_paths` command now recognizes the short forms of the pathname keywords (e.g., `-wd`, `-pd`, `-rd`, `-hd`).

- F-11. Modified the `print_terminal_types` command to accept a `starname` identifying the specific terminal types to print. This has caused an incompatible syntax change. The `display_ttt` command now allows `starnames` for either the `-terminal_type` or `-table` options. It also allows a like definition to be completely expanded.
- F-12. Added a new control argument, `-data`, to the `value_get` command to return the uninterpreted contents of `data-type` values from a value segment. These values can then be routed into a temporary segment for display with the `dump_segment` command or some other use. See `value_get.info` for details.
- F-13. Added the command `set_lisp_temp_dir` to specify a directory for temporary segments created during a lisp environment by commands such as `emacs` or `lisp_compiler`. Any new lisp temp segs will be placed in the specified directory. Existing temp segs will not be moved to the new directory. Temporary segs placed in a directory, other than the process dir, will be preserved across processes and system interruptions. While this is useful for debugging and for holding large temp segs, care should be taken to delete obsolete segs as each process will create new copies. Using a nonvolatile directory for lisp temp segs does not mean that the lisp environment is restartable in a new process.
- F-14. Modified `display_disk_label` and `display_pvte` to display disk partition first records and sizes in decimal and octal.
- F-15. Modified `list_vols` argument processing to allow the `-rec_used/-rec_left` and the `-pv/-lv` arguments to override one another.
- F-16. Added the `-state_date` control argument to the `manage_volume_pool` set operation.
- F-17. Added the `copy_liveproc` command. This new command dumps the contents of an active process directory for display by the `analyze_multics, azm, subsystem`.
- F-18. Added the `request_info, rqi`, new command/active function to return specified information about any request queued in the `absentee, output, retrieval, imft`, or any of the specific request type message queues. Added the `-forms` control argument to the `list_abs_requests, lar`, command.
- F-19. Modified the `abbrev .use` request to no longer expand `beginning_of_line` abbrevs that match the pathname string.

- F-20. Added the `-all_entrypoints`, `-aep`, control argument to the `help rest` request, to print all remaining information for the rest of the entry points of a subroutine info segment. Added a `-list_entry_points`, `-lep`, control argument to the `help` command to list all the entry points of a subroutine info segment. The entry point list will no longer be displayed with each entry point. Added the `list_entry_points`, `lep`, request which lists all the entry points of a subroutine info segment. Added a `-case_sensitive`, `-cs`, control argument to the search and section requests, and to the `help` command to be used with either `-section` or `-search`. The default will be non-case sensitive. Added the `list_requests` and `help` responses, which display a brief explanation of help responses.
- F-21. Added new control arguments to the `list_sub_tree` command to make it more versatile.
- F-22. Added a new control argument, `-no_trim`, for use with the `query/response` command/active function. The `-no_trim` argument will cause `query/response` questions which contain trailing spaces not to be trimmed.
- F-23. Removed the `-interpret` (`-int`, `-it`) and `-no_interpret` (`-nint`, `-nit`) arguments from the `disk_queue` command.
- F-24. Changed `display_entry_point_dcl` to treat virtual entries of the form "entry" or "entry\$entry" (as in "ask_" or "ask_\$ask_") as equivalent. See the online help file.

Date/Time Software

- G- 1. Modified the `date/time` argument to the `date_deleter` command. It may now contain a leading hyphen to express a time as `-12hours`.

Mail/Message Facility

- H- 1. Changed the extended mail system (`read_mail`, `print_mail` and `send_mail`) and `emacs rmail` to use the search list named "mlsys" to locate mailboxes, saveboxes, and mailing lists. The default search paths for `mlsys` are `-wd`, `-hd`, and `>udd>[person proj]>[person name]>[person name].mlsys`. Only free standing mailing lists that are not archive components will be located using the search path facility.

Process Environment

- I- 1. Modified the calculation of memory units to decrease the differences between units measured during light system load versus heavier loads. This change will make memory units a more repeatable and useful measure of process paging.

PL/1

- J- 1. Modified PL/1 to now recognize that internal static options (constant) variables have constant values, and to allow these variables in many new contexts where previously only literal constants were allowed.

```
go to TYPE (star_entries.type);
```

```
TYPE (STAR_SEGMENT):
```

```
go to NEXT_ENTRY;
```

```
TYPE (STAR_LINK):
```

```
go to NEXT_ENTRY;
```

```
TYPE (star_directory):
```

- J- 2. Modified PL/1 to now accept the `-no_prefix` control argument to the PL/1 compiler.

Subroutines

- K- 1. Deleted the `find_common_acl_names` subroutine. This subroutine has been replaced by the `match_acl` internal procedure of the `acl_commands`.
- K- 2. Modified `hcs_$reset_ips_mask` to reset the IPS mask only to values returned as `old_mask` by `hcs_$set_ips_mask`. Such mask values contain a control flag in the mask. This avoids leaving IPS signals masked if the user quits after a cleanup handler is established to call `hcs_$reset_ips_mask` but before `hcs_$set_ips_mask` was called.
- K- 3. Added a `pad` field and changed the order of the fields in `help_cis_args.incl.pl1`.

PRICED SOFTWARE PRODUCTS

Basic

- L- 1. Modified basic compiler to associate severity levels with error messages. The severity command will now work with basic.

Compose

- M- 1. Deleted the compose device support module bound_vip7801_dsm_ because it has been inoperative since MR9.0.

C Language

- N- 1. Added support to the C compiler to handle common arguments that are used in many C programs. This will aid the user who is porting this software by increasing the chance of success.
- N- 2. The AT&T System V LINT command has been ported to Multics. LINT is a C program checker, which is much more stringent than the C compiler.
- N- 3. THE AT&T System V Release 2.0 MAKE command has been ported to Multics. Make maintains, updates, and regenerates groups of programs.
- N- 4. The Multics C include file varargs.h has been modified to be compatible with System V varargs.h. This is an incompatible change. Multics programs written to use the older version of varargs.h will require changes to remove the extra level of indirection or be recompiled using "-def Multics_Obsolete_Varargs".
- N- 5. Probe can now be used on C programs. The C program should be compiled (using 'cc') with the -table, -tb, control argument.

Fast

- O- 1. Modified the fast subsystem to query the user when a quit request is issued without previously saving changes. This will prevent unintentional loss of changes.

LINUS, Version 4.5

P- 1. Added new control arguments to the LINUS store, store_from_data_file, write, and write_data_file requests to control the printing of warning messages and progress messages. The -warning, -no_warning (-no_warn) and -progress, -no_progress (-npg) arguments control these messages.

MOWSE

- Q- 1. Modified the PC MOWSE command to cause a communications connection to be disconnected by default, unlike the previous version which provided no means by which a connection could be broken. The default disconnection can be avoided by providing a new "/H" control argument to the PC MOWSE command.
- Q- 2. Modified MOWSE to correctly support the mark and space parity options for the /P control argument.
- Q- 3. Modified bft to maintain a queue of transfer requests with priority levels (1 - 4) and service the queue automatically. This will allow the user to specify more than 2 requests at a time (as was the restriction with the previous implementation).
- Q- 4. Modified the bft recover_store and recover_fetch directives to be condensed into a single recover directive requiring no other arguments. bft will then automatically recover interrupted transfers and continue with the requested entries in the queue.
- Q- 5. The bft command invoked with no arguments will display a listing of requests in the queue.
- Q- 6. The bft cancel directive will allow the user to remove requests from the queue.
- Q- 7. Added the -file_type {binary | ascii} control argument to the bft fetch and store directives to allow the user to specify whether or not <CR><NL> - <NL> conversions will be performed.
- Q- 8. Added the -queue control argument to the bft fetch and store directives to specify transfer priority of the request (1 - 4, with 1 being the highest priority).
- Q- 9. Starname expansion provision will be accepted by the bft store and fetch directives to allow the user a more dynamic means of transfer request specification.

Q-10. A number of new features are being added to WSTERM to increase its functionality and usability. These include editing, auditing, help and command history capabilities. /A - specifies the name of the audit file to write to for file audit. /P - specifies the printer card (0 - 3) to use for line printing.

Changes to WSTERM:

- 1) A new keyboard input routine will be added which will allow some EMACS-like editing capabilities on keyboard input before sending a line to the host;
- 2) Input going to and coming from the host will be trapped by WSTERM to allow the data to be stored to a file and/or printed as it is being displayed;
- 3) Lines of input will be saved in a circular buffer each time they are entered to allow them to be retrieved later;
- 4) Routines for saving and restoring screen contents to and from a local buffer will allow a help screen to be displayed without disturbing the displaying of terminal/host dialogue;
- 5) Routines for saving and restoring screen contents will also allow background messages to be displayed on a screen of its own without disturbing the displaying of terminal/host dialog;
- 6) In addition to signaling the presence of background and foreground messages, the bottom line of the screen will display the current WSTERM modes;
- 7) The control-S key will be used to stop the screen from scrolling;
- 8) The BREAK, ^@ or ^2 key, and the DEL key will be made to send a break signal, nul character, and delete character respectively.

Q-11. The Asynchronous/Non-Edit WSTERM terminal emulation mode is being replaced with an Asynchronous/Edit mode. This contains considerable keyboard and terminal enhancements, thus making the Non-Edit mode obsolete.

EMACS, Version 12.9

- R- 1. Extended the EMACS editor to support direct input and display of 8-bit characters. In order to use this feature, the terminal must be able to generate 8-bit codes and display graphics corresponding to 8-bit codes received.
- R- 2. The modified EMACS terminal controller function, DCTL-init, must set the LISP variable, DCTL-extended-ascii, to non-nil. Also, the TTF entry for the terminal must define an output_conversion table that defines the 8-bit characters that can be directly displayed by the terminal. See the EMACS Extension Writer's Guide, Order Number CJ52, for details.
- R- 3. Modified EMACS to support the following new terminal types:

VERSATERM_80C_36L	VERSATERM_80C_36L_OFLOW
VERSATERM_102C_36L	VERSATERM_102C_36L_OFLOW
VERSATERM220_80C_36L	VERSATERM220_80C_36L_OFLOW
VERSATERM220_102C_36L	VERSATERM220_102C_36L_OFLOW

EMACS will use the current line and page lengths from the tty_mode string to determine how large a screen the Versaterm Terminal Emulator on the Macintosh is actually supporting.

Executive Mail, Version 4.1

- S- 1. Added new field labeled "Reply-To:" for the header built by the xmail send and reply editors. By editing this field, users may now designate a recipient of replies. The default recipient is the sender.

This change introduces a minor incompatibility between deferred messages created and referenced with MR12.2 xmail and those deferred in MR12.2, but referenced by previous versions of xmail. In order to adapt this feature to deferred messages which were created by pre-MR12.2 versions of xmail, the new "Reply-To:" line will be appended to all deferred messages. Deferred messages created or redeferred in MR12.2 and subsequently accessed by an earlier version of xmail will show the "Reply-To:" field appended to the end of the "Subject:" line. This problem can be overcome by editing the subject to remove the extraneous data.

Fortran

- T- 1. Modified Fortran to extend the maximum length of character variables from 512 up to 12BK-1 (131071) characters. Character limits in static and automatic storage may cause fatal compiler errors. These errors can be avoided by using the `-large_array, -la,` option.

Inter Multics File Transfer Facility, IMFT

- U- 1. Enhanced the IMFT facility to support the use of the `-delete, -no_delete, -extend, -replace,` and `-update` control arguments with the `enter_imft_request, eir,` command.

IMFT drivers may now be configured to operate over asynchronous channels including X.25 public networks. This support includes automatic disconnecting when the drivers are idle to reduce X.25 connection charges.

Access checking has been extended to require that the ACL for each object transmitted will be checked and must have explicit "r" or "s" access for both the user and the daemon on the system that is sending the data. The use of the `-delete` control argument requires that both the user and daemon have explicit "sma" access on the parent directory of the object specified in the `eir` command line. See the Inter-Multics File Transfer Facility Reference Manual, Order Number CY73, for more information.
(>doc>MR12.2>book.imft.compout)

MRDS

- V- 1. Added a `mrds` search list named "mrds" with a default search path of `-working_dir`. The following commands and subroutines use the `mrds` search list to search for `mrds` databases.
- `adjust_mrds_db,` `copy_mrds_data,`
`create_mrds_dm_include,``create_mrds_dm_table,`
`display_mrds_db_access,` `display_mrds_db_population,`
`display_mrds_db_status,` `display_mrds_db_version,`
`display_mrds_dm,` `display_mrds_dsm,` `mrds_call,`
`quiesce_mrds_db,` `secure_mrds_db,` `unpopulate_mrds_db,`
`restructure_mrds_db` (ready request), `linus` (open request),
`dsl_$open,` `dsl_$get_path_info,` `msmi_$open_submodel,`
`mmi_$get_secured_state,` `mmi_$get_authorization,`
`mmi_$open_model,` `mmi_$quiesce_db` and `mmi_$unquiesce_db`.

- V- 2. Modified MRDS to report syntax and semantic errors in selection expressions via a new condition, `mrds_se_error_`. The default handler for this condition formats the selection expression that caused the error and displays it on the `error_output` switch along with other diagnostic information. This behaviour may be controlled by the new `set_mrds_options` command described below.
- V- 3. Modified MRDS to no longer enforce the rigid parentheses rules of the past. Parentheses are still allowed, but are only needed to establish operator precedence.
- V- 4. Added a new command, `set_mrds_options`. This provision gives users a finer control over the way MRDS operates in their process.

SECTION 4

INCOMPATIBLE CHANGES

OPERATING SYSTEM SOFTWARE

I/O Daemon Software

- A- 1. Added enhancements to I/O daemon software to allow attachment of laser printers as remote devices. Initial implementation is for the Honeywell Bull Model 80 printer. Among the enhancements are: print orientation on the page; font selection; site-defined head and tail sheets; etc. Defaults have been chosen for the new features such that the current I/O daemon tables source file may be used as-is. The addition of the new features has caused incompatible changes in the compiled I/O daemon tables. The sites current tables must be recompiled using the new version of the `iod_tables_compiler`.

USER SOFTWARE

Commands

- B- 1. Changed the TTF to include special character sequences of up to fifteen characters instead of the current limitation of three. The current system TTF must be converted using the `change cv_ttf` command and the resulting TTT must be installed. All user-written TTFs must also be recompiled before use. The `set_ttt_path` command will report an error advising the user to recompile the TTF if the version being used is incorrect. Although the size of the special characters structure has changed, users of the `set_special` and `get_special` control orders should not be affected since the code is upward compatible. However, any other users of the `c_chars` structure may be affected since the size of the character array has been changed.

B- 2. The `print_terminal_type` command now takes a `starname` option of the specific terminal type names to print. This has caused an incompatible syntax change. The `display_ttt` command now allows `starnames` for either the `-terminal_type` or `-table` options. It also allows a like definition to be completely expanded.

PRICE SOFTWARE PRODUCTS

C Compiler

C- 1. The Multics C include file `varargs.h` has been modified to be compatible with System V `varargs.h`. This is an incompatible change. Multics programs written to use the older version of `varargs.h` will require changes to remove the extra level of indirection or be recompiled using `"-def Multics_Obsolete_Varargs"`.

Executive Mail

D- 1. Added a new field labeled "Reply-to:" for the header built by the `xmail` send and reply editors. By editing this field, users may now designate a recipient of replies. The default recipient is the sender.

This change introduces a minor incompatibility between deferred messages created and referenced with MR12.2 `xmail` and those deferred in MR12.2, but referenced by previous versions of `xmail`. In order to adapt this feature to deferred messages which were created by pre-MR12.2 versions of `xmail`, the new "Reply-To:" line will be appended to all deferred messages. Deferred messages created or redeferred in MR12.2 and subsequently accessed by an earlier version of `xmail` will show the "Reply-To:" field appended to the end of the "Subject:" line. This problem can be overcome by editing the subject to remove the extraneous data.

APPENDIX A

COMMANDS AND SUBROUTINES

This is a partial listing of new commands for MR12.2. There are no new subroutines for MR12.2. A brief description of the command functionality is included. Refer to info segments or the appropriate manuals for more information.

NEW COMMANDS

list_vol_attachment,
lvat

to return a list of current attachment(s) to a LV, set of LVs, or all LVs that have attachments

set_lisp_temp_dir

to specify a directory for temporary segments created during lisp environment

detach_mowse,
dtm

terminates the MOWSE I/O protocol communications and detaches the mowse_io_switch

copy_liveproc

to dump contents of an active process directory for display by the analyze_multics (azm) subsystem

request_info,
rqi

to return specific information about requests queued in the absentee, output, retrieval, imft, or any other specific request type message queues

APPENDIX B

MULTICS PRICED SOFTWARE PRODUCTS

PRODUCT
NUMBER

TITLE

OPERATING SYSTEM SOFTWARE

SGS6800	Multics Operating System EXEC (see Note 1 below)
SGS6801	GCOS (III) Timesharing Environment Facility
SGS6803	FAST/DFAST (Fast Access System for Timesharing)
SGS6804	GCOS (III) Batch Environment Facility (see Note 1)

OPERATING SYSTEM SOFTWARE EXTENSIONS

SGC6823	Inter Multics File Transfer Facility
SGE6800	Multics System Software Extensions (see Note 4)
SGE6802	Remote Job Entry Facility

COMMUNICATIONS SOFTWARE

SGC6800	Multics Communications System (Multics CS)
SGC6801	Autocall Support Option to Multics CS
SGC6802	3270 Support Option to Multics CS
SGC6803	Basic Bisync Support Option to Multics CS
SGC6804	G115 Support Option to Multics CS
SGC6805	File Transfer Facility
SGC6807	Multics HASP Facility
SGC6822	Multics Communications Support for X.25
SGC6827	Personal Computer Support Facility
SGC6828	Multics Online Workstation Environment

PROGRAMMING LANGUAGE SOFTWARE

SGL6801	FORTTRAN Compiler and Runtime Facility
SGL6802	Basic Compiler and Runtime Facility

SGL6803 COBOL-74 Compiler and Runtime Facility
SGL6805 MRPG (Report Generator) Facility
SGL6806 APL (Version 5.02)
SGL6807 Pascal Compiler and Runtime Facility
SGL6808 C Compiler and Runtime

OPERATING SYSTEM UTILITIES AND TOOLS

SGD6806 Executive Mail System
SGD6807 Format Document Facility
SGU6800 WORDPRO Comprehensive Facility
SGU6801 SORT/MERGE Facility
SGU6803 LISTER Facility
SGU6804 SPEEDTYPE Facility
SGU6805 Dictionary Tools
SGU6807 Extended Mail Facility
SGU6820 Compose Facility
SGU6833 TED (Text Editor)
SGU6834 Emacs Text Processing Facility
SGU6835 Offline Page Printing System Support Facility

DATA MANAGEMENT SOFTWARE

SGC6824 Multics Forum Facility
SGD6800 MRDS (Multics Relational Data Store)
SGD6801 LINUS (Logical Inquiry and Update System)
SGC6826 Multics Executive Forum Facility

APPLICATIONS SOFTWARE

AGS6801 Timesharing Library (see Note 3)
AGS6802 ISTAT (Interactive Statistics) (see Note 3)
AGS6803 Graphics Facility
AGS6805 SCICONIC Mathematical Programming Package
AGS6806 SCICONIC Matrix Generator Facility
SGH6801 Simplified Computing and Filing Facility
SGH6802 TEXTO Document Management System and
LOGOTEL User Interface for TEXTO
SGH6804 MegaCalc Spread Sheet Package

Notes:

1. Licensed for use without separate charge to users acquiring a central processor system from Honeywell.
2. Class II - Maintained only.
3. Class III - Unsupported.

4. Required for normal Multics operation and to support any additional separately priced software products.

APPENDIX C

DOCUMENTATION CHANGES

CURRENT MULTICS DOCUMENTATION STATUS

A complete list of manuals (including current availability status) is provided in >doc>info>manuals.info as part of MR12.2. Subsequent to this release a SiteSA may obtain an updated list of available manuals at >doc>info>manuals.info on System M.

12.1 Documentation

The following new and updated publications support MR12.1.

Order No.	Document Title
AG91-04B	Multics Programmer's Reference Manual
AG92-06B	Multics Commands and Active Functions
AG93-05B	Multics Subroutines and I/O Modules
AK50-03B	Multics System Administration Procedures
AM81-04A	Multics System Maintenance Procedures
AW53-04E	Multics Relational Data Store Reference Manual
CC70-01E	Multics FORTRAN User's Guide
CC75-02A	Multics Communications Administration
GB60-00A	Multics HASP Service and Utility Manual
GB61-01B	Operator's Guide to Multics
GB64-00B	Multics Admin, Maint, and Operations Commands
GB66-00	Multics On-Line Work Station Env User's Guide
HH07-00A	Multics C Compiler User's Guide

For the convenience of new user sites, a complete list of Multics manuals, is provided below. For information about how to order manuals, type "help order_manuals," on your system.

AG90 Introduction to Programming on Multics
AG91 Multics Programmer's Reference Manual
AG92 Multics Commands and Active Functions
AG93 Multics Subroutines and Input/Output Modules
AG94 Multics PL/I Language Specification
AK50 Multics System Administration Procedures
AK51 Multics Project Administrator's Guide
AK95 Multics APL User's Guide
AL39 Multics Processor Manual
AM81 Multics System Maintenance Procedures
AM82 Multics BASIC
AM83 Multics PL/I Reference Manual
AN05 Multics GCOS Environment Simulator
AN50 Guide to Multics Manuals
AS40 Multics Graphics System
AS43 Multics COBOL User's Guide
AS44 Multics COBOL Reference Manual
AT58 Multics FORTRAN Manual
AT59 Multics DFAST Subsystem User's Guide
AU25 Multics FAST Subsystem Reference Guide
AU77 Multics Online Test and Diagnostics Reference Manual
AW17 Multics Commands and Active Functions Quick Reference Guide
AW32 Multics SORT/MERGE
AW53 Multics Relational Data Store Reference Manual
AZ49 Multics Logical Inquiry and Update System Reference Manual
AZ98 Multics WORDPRO Reference Manual
CC69 Multics Report Program Generator Reference Manual
CC70 Multics FORTRAN User's Guide
CC75 Multics Communications Administration
CG40 Multics qedx Text Editor User's Guide
CH23 Multics Extended Mail System User's Guide
CH24 New User's Introduction to Multics--Part I
CH25 New User's Introduction to Multics--Part II
CH26 Multics Error Messages: Primer and Reference Manual
CH27 Emacs Text Editor User's Guide
CJ52 Multics Emacs Extension Writer's Guide
CJ97 Multics Page Processing System Utility Manual
CP31 Level 68 Introduction to Emacs Text Editor
CP50 Multics Text Editor (Ted) Reference Manual
CP51 Multics Menu Creation Facilities
CX20 Fundamentals of Multics Executive Mail
CX72 Executive Mail Editing Operations (Reference Card)
CY73 Inter-Multics File Transfer Facility Reference Guide
CY74 Multics Forum Interactive Meeting System User's Guide
DJ18 Guide to Multics WORDPRO for New Users
DU06 Fundamentals of Multics Forum Interactive Meeting System
DW19 Multics MegaCalc User's Guide

DX71 Fundamentals of Multics Executive Forum
GB58 Multics Common Commands
GB59 DPS 6/Multics Satellite 6M Reference Manual
GB60 Multics HASP Service and Utility Manual
GB61 Operator's Guide to Multics
GB62 Multics Pascal User's Guide
GB63 Multics Report Writer Reference Manual
GB64 Multics Administration, Maintenance, and Operations Cmds
GB65 Multics/Personal Computer File Transmission Facilities
GB66 Multics On-Line Work Station End User's Guide
GL71 Multics Simplified Computing and Filing Facility
GN08 Multics Emacs Reference Card
HH07 Multics C Compiler User's Guide

