

RSTS/E Release Notes

Order No. AA-KL99A-TC

June 1987

These Release Notes describe new features of the RSTS/E system and explain the differences between this version and previous versions of RSTS/E. System managers and system maintainers should read this document prior to system installation.

OPERATING SYSTEM AND VERSION: RSTS/E V9.4

SOFTWARE VERSION: RSTS/E V9.4

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Preface

The *RSTS/E V9.4 Release Notes* describe new features in RSTS/E for this release as well as differences between this and the previous release, RSTS/E V9.3.

The procedure to install a new RSTS/E V9.4 system or to upgrade an existing RSTS/E system to V9.4 follows the same general process developed for V9.0.

Because of the V9.0 changes to the installation process, users of earlier versions of RSTS/E should read the *RSTS/E System Installation and Update Guide* prior to attempting an installation of RSTS/E V9.4.

If you are installing a new RSTS/E V9.4 system, refer to PART I of the *RSTS/E System Installation and Update Guide*.

If you are upgrading a pre-V9.0 system to V9.4, refer to PART II of the *RSTS/E System Installation and Update Guide*.

If you are updating a RSTS/E V9.0 or later system to V9.4, refer to PART IV of the *RSTS/E System Installation and Update Guide*.

In addition, users and programmers familiar with RSTS/E V9.3 should read these notes to learn about changes and new features in RSTS/E V9.4. The V9.4 Release notes are divided into four sections:

1. RSTS/E V9.4 New Features
2. Differences Between RSTS/E V9.3 and RSTS/E V9.4
3. RSTS/E V9.4 Documentation Changes
4. Known Problems and Restrictions with RSTS/E V9.4

NOTE

If you last used a version of RSTS/E older than V9.3, you should read the release notes for any intermediate versions.



1 New Features of RSTS/E V9.4

1.1 New Device Support

1.1.1 New VT330 and VT340 text and graphics terminals supported

RSTS/E V9.4 includes support for the new VT330 and VT340 text and graphics terminals. Some of the main features of these terminals are:

- o Ability to run two terminal sessions at the same time
- o Display information from two sessions in separate windows (split vertically or horizontally) on the screen
- o Multiple-page display memory
- o 25th status line (for use by applications)
- o User-defined keys
- o ReGIS and Sixel graphics
- o Tektronix 4010/4014 terminal emulation
- o Display 16 colors from a palette of 4096 colors (VT340 only)

RSTS/E supports dual sessions on these terminals using the two data ports located at the rear of the VT330 and VT340 terminals. These ports can be connected to the same system or to different systems.

The DCL command SET TERMINAL/INQUIRE properly sets the software characteristics of these new terminals.

The SET TERMINAL command qualifier /DEVICE_TYPE now accepts the keyword arguments VT330 and VT340.

The SHOW TERMINAL command displays the new terminal types VT330 and VT340.

The terminal type code for the VT330 is 48; the type code for the VT340 is 49.

1.1.2 DEUNA, DEQNA, DELUA support enhanced

In RSTS/E V9.3 the Ethernet devices were only supported for use under DECnet/E V4.0. In RSTS/E V9.4, the three Ethernet Controllers (DEUNA, DEQNA, and DELUA) have been enhanced to include a direct user interface. For details on the use of this interface from BASIC-PLUS, see the *RSTS/E Programming Manual*. For details on using Ethernet Special Functions with MACRO-11 programs or subroutines, see the *RSTS/E System Directives Manual*.

1.2 Monitor

1.2.1 Terminal Service

Previously, RSTS Terminal Service scanned each line output to your terminal, looking for the special prefix characters %, ?, and ??. If a line beginning with the % character was found, the monitor set the job's severity level to WARNING; if the ? prefix character (followed by a non-blank) was found, the monitor set the level to ERROR; if the ?? prefix characters were found, the monitor set the level to SEVERE_ERROR. DCL used this information to correctly set the \$SEVERITY and \$STATUS symbols. While executing a command file, DCL also used this information to take the necessary action based on the command file's ON severity-level THEN command.

This checking was provided in V9.0 to provide compatibility with the OPSER-based batch package and ATPK, which also performed similar checks.

Unfortunately, there was considerable overhead involved in these checks. This action within Terminal Service was the major reason why Terminal Service since V9.0 used more CPU overhead than in previous versions.

Terminal Service for V9.4 performs severity-level checking on terminal output lines only when a DCL command file is executing. This increases the performance of Terminal Service for jobs that are not executing command procedures. Because of this change, the DCL symbols \$STATUS and \$SEVERITY will not be updated when a program running interactively (not within a command procedure) outputs lines beginning with any of the special severity prefix characters.

The preferred method for correctly setting a program's exit status (severity level) is via the RSX EXST\$ directive. Doing so sets the job's severity level both interactively and within a command procedure. All of the RSX-based and RMS-based utilities currently use this method for setting exit status.

This change was made because a program's exit status is only meaningful within a DCL command procedure; it is not necessary to update and maintain the \$SEVERITY and \$STATUS symbols at the interactive level.

1.2.2 Context Switching Performance Improvements

The context switching function of the RSTS/E monitor, used to transfer execution between users, has been re-written for RSTS/E V9.4 to improve overall performance of RSTS/E systems. This change will be most noticeable on systems which have a large number of users runnable at the same time.

1.3 DCL

1.3.1 New GOSUB and RETURN Commands

The GOSUB command transfers control to a labeled subroutine in a command procedure. It behaves similarly to the Basic-Plus GOSUB statement and is fully compatible with the VMS DCL GOSUB command. Note that a command procedure's severity and CONTROL_C settings are not reset or otherwise changed when control is passed to or from a subroutine.

The format of the GOSUB command is:

```
$ GOSUB label
```

where label is the label of the first line of the subroutine to be executed.

The RETURN command terminates a subroutine and returns control to the command following the calling GOSUB command. The format of the RETURN command is:

```
$ RETURN [severity_code]
```

where severity_code is an optional argument (a DCL expression) that sets the exit status of the subroutine. If no expression is present, the subroutine's exit status is set to the most recent command exit status.

The following example demonstrates the use of GOSUB and RETURN in a command procedure:

```
$ _Inquire SCORE "Enter test score"
$ _Gosub CHECK_RANGE
:
:
$CHECK_RANGE:
$ _If (SCORE .ge. 0) .and. (SCORE .le. 100) -
    Then _Return
$ _Write 0 "?Score not in range 0 - 100"
$ _Exit
```

1.3.2 New /CODE=DATA_SPACE Qualifier for LINK command

The /CODE=DATA_SPACE and /CODE=NODATA_SPACE qualifiers have been added to the DCL LINK command for V9.4. These qualifiers are valid only with RSX-based languages such as BASIC-PLUS-2 and FORTRAN-77.

Use the /CODE=DATA_SPACE qualifier to instruct the task builder to create an instruction and data (I & D) space task. Use the /CODE=NODATA_SPACE qualifier to instruct the task builder not to create an I & D space task.

The default is /CODE=NODATA_SPACE.

1.3.3 New /STANDARD qualifier for DIBOL command

The /[NO]STANDARD[=type] qualifier allows you to specify which syntax type the DIBOL compiler will accept.

/STANDARD=D83 tells the compiler to accept only DIBOL-83 syntax.

/STANDARD=ANSI tells the compiler to accept only ANSI DIBOL syntax.

The default is /NOSTANDARD. However, if /STANDARD is specified without an argument, then /STANDARD=ANSI is assumed.

1.4 RSX Emulator

1.4.1 RSX Utilities Include PSW in Register Dump

The Processor Status Word is now displayed along with the General Register Set. Previously, when a program running under the RSX emulator aborted abnormally, the emulator displayed the contents of registers R0-R5, SP and PC. The emulator has been updated in V9.4 to include the contents of the PSW (processor status word) in the display. For example:

```
??Odd address trap
000000 000015 012664 010110 001346 122000 002000 002030 174010
```

The registers displayed are in the order:

R0	R1	R2	R3	R4	R5	SP	PC	PSW
----	----	----	----	----	----	----	----	-----

2 Differences Between V9.4 and V9.3

2.1 Changed Support for Devices, Programs, and Software Features

The following hardware and software will be supported on RSTS/E V9.4 only for systems upgrading from V9.2 or V9.3. RSTS/E support for these devices, programs, or software features will be stopped in December 1988.

Device/Program/Feature	Suggested Replacement
RPR02	RA60
RP03	RA60
TU56	TK50
PC11 (paper tape)	Other form of I/O
Card readers	Other form of I/O
DJ11 terminal multiplexer	DH11 terminal multiplexer
SAVRES	BACKUP
FLINT	None
Terminal Service support for 5 and 6 bit character lengths	None

2.2 Initialization Code (INIT.SYS)

2.2.1 Additions to INIT Hardware List option

Additional comments have been included in the INIT hardware list for DMR-11 and DMP-11 devices. This information will aid in verification of proper hardware installation and diagnosing of networking problems.

Also, INIT now detects the presence of a DT07 bus switch. If this device is present on the bus, the hardware list option displays the device BS: (Bus Switch) and its CSR address. There is no vector information displayed for the bus switch.

2.2.2 Changes to INIT.SYS Autosizing Code for DU and MU Devices

The autosizing code that INIT.SYS uses to determine the number and types of DU and MU devices on the system has been enhanced to perform faster, and to provide better detection and reporting of controller errors. These changes result in shorter boot times for systems with DU and MU devices (as much as 20% shorter on large systems).

2.2.3 Error Messages

- o In previous versions, the error message "RUx: Unit nn is too large" printed if INIT.SYS encountered an MSCP disk with a unit number larger than 15. This message was misleading, as it implied that the actual unit, rather than the unit number, was too large. The wording of this message has been changed to read "RUx: Unit nn - Unit number is too large".
- o Several new error messages have been added to INIT.SYS. These messages occur during the autosizing of MSCP/TMSCP devices, and indicate a hardware failure or bus configuration problem.

- "RUx: controller type is UNSUPPORTED by RSTS/E - Device disabled".

This message indicates that the controller has given an invalid model ID code to INIT.SYS.

- "RUx: does not respond to disk or tape connects - Device disabled".

This message indicates that the controller says it is incapable of handling either disk or tape devices.

- "RUx: timeout during disk initialization, step nnnnnn - Device disabled".

"RUx: timeout during tape initialization, step nnnnnn - Device disabled".

"RUx: timeout during SCC - Device disabled".

These messages indicate that the controller did not complete a step of the initialization process within an allocated amount of time.

2.2.4 Check for missing DEQNA ECO

As stated in the RSTS SPD, all DEQNA devices must be at revision E or later. However, there is no way in software to determine if the DEQNA is at revision "E". Another ECO is coming for machines with 4Mbytes of memory, or machines using DECOM hardware to a broadband Ethernet.

This ECO can be detected in software. INIT now checks for the presence of this latest ECO, and issues the following message if the ECO is not found:

WARNING - Device XHx: is missing ECO(s), but will still function.

This message indicates that your DEQNA may be revision E or lower, but that it is NOT higher than E. If your DEQNA is already at revision E, then no action is necessary. If your system contains 4 Mbytes of memory, or is connected via a DECOM to a broadband Ethernet, then INIT will use a software workaround to these problems until the ECO can be obtained. If your DEQNA is NOT at revision E or higher, then you MUST contact Field Service for a replacement DEQNA, and reference FCO DEQNA-R-001 or EQ-01418-01.

2.2.5 SAVRES Corrections

The following problems have been corrected in both the SAVRES option of INIT.SYS and the online version of SAVRES for V9.4:

- o Prior to V9.4, the SAVRES option displayed an error message if you specified a DU disk unit number greater than seven (for example, DU11:).

Now, SAVRES lets you specify any DU disk unit between 0 and 15.

- o Error messages printed by online SAVRES for DU device unit numbers over 9 now properly identify the device unit.
- o Previously savesets for DU disks could only be restored under the same environment in which they were created. Savesets of DU disks created by SAVRES.SAV (online SAVRES) could only be restored online, and not by the SAVRES option. Also, savesets of DU disks created by the SAVE option of INIT (offline SAVRES) could only be restored offline, and not by the SAVRES.SAV program (online SAVRES). This problem was caused by different size calculations made by INIT, and SAVRES.SAV.

Both SAVRES environments have been changed to allow these savesets to be restored. However, due to the difference in size, the restored disk must be left "dirty". This means that the pack must be "rebuilt" by the "Refresh" option, ONLCLN, or Mount/Rebuild, prior to its use. The incorrect size calculation that originally caused this problem has also been fixed. See section 2.2.6 for additional information.

2.2.6 MSCP Sizing Algorithm Corrected

In previous versions of RSTS/E, the algorithm that was used to determine the unit size in device clusters for MSCP disks with a device cluster size greater than one, was incorrect. The algorithm has been corrected for V9.4.

2.3 Monitor

2.3.1 Terminal Service Corrections

The following Terminal Service problems have been corrected in source for V9.4:

- o The system could crash if you specified an illegal byte count value when issuing the .SPEC directive to set a private delimiter mask. This problem was corrected by a Software Dispatch article (Seq. 3.3.11 M).

Now if you specify an illegal value, the error "?Illegal byte count for I/O" will be returned as documented in the RSTS/E System Directives Manual.

- o If a job logged into a captive account and became detached while running under a command procedure (either by issuing the DETACH command or by loss of modem signals) the job was killed. This problem was corrected by a Software Dispatch article (Seq. 3.3.12 M).

Terminal service now places such jobs in a hibernation state.

- o Excessive hardware errors on a DHU11 or DHV11 multiplexer could crash the system. This problem was corrected by a Software Dispatch article (Seq. 3.3.13 M) and has been corrected in source for V9.4.
- o Terminal service was incorrectly computing the number of spaces to send to a device when encountering a TAB. This problem occurred if the current line contained invalid eight-bit characters. This problem has been corrected in source for V9.4.

2.3.2 Message Send/Receive Corrections

The 'Send local data message' and 'Send local data message with privilege mask' subfunctions of the .MESAG system call have been corrected to return the receiver job number in byte 5 (byte 4 if using the Basic-Plus SYS() call) as documented. RSTS V9.3 returned the data incorrectly in byte 4 (byte 3 if using the Basic-Plus SYS() call).

2.3.3 Set Terminal Characteristics SYS Call

The Set Terminal Characteristics SYS call (UU.TRM directive) has been changed to return the error "?Device not available" if the terminal port has been disabled by INIT. Issuing the call to set or obtain terminal characteristics for lines disabled by issuing the DCL SET DEVICE/DISABLE command or the Set Device Characteristics and System Default SYS call (UU.CFG directive) works as in previous versions of RSTS/E.

2.3.4 Device Driver Corrections

The following problems associated with device drivers have been corrected for V9.4:

- o When printing data to line printer devices, using both the "Delay until output complete" and "No stall" write modifiers (RECORD 4% and 8192%, respectively), the monitor would not return an error if the device was offline.

Print/Batch Services (PBS) uses both of these modifiers to determine when a line printer device has finished printing a file. If a file was completely buffered by the system before the printer went offline, PBS would not recognize that the server was offline.

- o ANSI magnetic tape files that were created on MS (TS11/TU80/TSV05/TK25) or MU (TU81/TK50) tape drives using anything except the COPY command or the PIP utility had an invalid EOF1 trailer record. The block count field of this record always contained zeroes, regardless of how many records were actually written to the tape.
- o The MS tape driver (for TS11, TU80, TSV05 and TK25 tapes) incorrectly handled timeouts that could occur during some long tape operations; most frequently, this was seen when using 3600' tapes on TS11 drives. The most common symptom of this problem was a BACKUP hang, in an FP(MTA) state.

- o In RSTS/E V9.3, the XE: devices (DEUNA and DELUA) logged many errors. These errors were hard to interpret, but reflected transient conditions (such as buffer shortages) instead of hardware errors requiring investigation.

For RSTS/E V9.4, these errors are no longer logged. The DECnet/E V4.0 Event logger records all of these transient events, and Ethernet device Line and Circuit counters can be accessed to keep track of excessive transient problems, so that they can be addressed with more careful resource management.

- o Prior to V9.4, if software formatting mode (MODE 512%) was specified on the open of a line printer device that had the eight-bit characteristic set, the open failed as expected but the device remained assigned to the job even if it wasn't explicitly assigned.
- o In V9.3, systems that included support for TMSCP tape drives, but did not include support for MSCP disks, crashed if any attempt was made to access the TMSCP tape. This problem is fixed in V9.4.

2.3.5 File Name String Scan (.FSS) Corrections

The following problem has been corrected in the File Name String Scan (.FSS) directive for V9.4:

- o Previously, if you placed a protection code value in the FIRQB before issuing an .FSS directive, the monitor would not use that value as the default when no protection code was specified in the file string being scanned.

Now, if no protection code is specified in the file string passed to .FSS, then the protection value found in the FIRQB, if any, is returned. If no value is found in the FIRQB, then the job's default protection code is returned. If no default protection code is defined for the job, then no protection code value is returned.

2.3.6 Cache Correction

In Versions 9.0 through 9.3 it was possible for some non-file-structured write operations to a mounted disk to corrupt block 1 of that disk. If the disk had a cluster size greater than the cache cluster size, and the pack label of the disk was contained in the cache, and the boot block of the disk was written to, then the data for the pack label within the cache became corrupt. If a read was done to the pack label while this data was still in the cache, the block would be read with the corrupted data. If the data was then modified and written back to the disk (as in the case of dismounting a disk or system shutdown), the pack label became corrupt. This problem was occasionally encountered when a mounted disk with a cluster size greater than the cache cluster size was hooked immediately after a backup or restore operation involving that disk.

2.4 Installation

2.4.1 RMS Modules Included in Standard SYSLIB Library

Previously, the installation procedure inserted several RMS modules into the SYSLIB object library if you selected any packages that required RMS. Now, the RMS modules are included in the standard SYSLIB object library as shipped; there is no longer any need to reinstall RMS after installing a new SYSLIB library.

2.4.2 Corrections

The following problems have been corrected in the RSTS/E installation procedures for V9.4:

- o Prior to V9.4, if you answered NO to the Proceed? prompt of the system package section of the installation procedure, it may have caused disk space to be wasted by leaving unnecessary files on the disk until they could be cleaned up by another installation.

Now the installation procedure performs its standard cleanup procedure if you answer NO to that prompt.

- o Previously, the installation procedure displayed an error if you specified the patch account logical name PATCH\$ without a trailing colon. It now allows the patch account name to be specified without the trailing colon.

- o In V9.3, DCL did not terminate a command procedure if it was unable to write to its work file. This affected the installation procedure when upgrading RSTS/E V8.0 or earlier systems to V9.3.

This problem was documented in the *RSTS/E V9.3 Release Notes*, which included a workaround to the problem.

This problem has been corrected in V9.4. The upgrade procedures documented in Step 4 of the Upgrade section of the *RSTS/E System Installation and Update Guide* now correctly describe the upgrade sequence during installation.

- o Prior to V9.4, the installation procedure did not calculate the number of TU16/TE16/TU45/TU77 magtape drives on your system; it always used 8 as the default.

The installation procedure now calculates the actual number of drives on your system and uses that value as the default.

- o Prior to V9.4, it was possible that SYSLIB.OLB was installed contiguously. This caused failures in some layered product installations which required that the object library be extended. SYSLIB.OLB is no longer installed contiguously.

2.5 Error Package

The ERRDIS program no longer displays MU device errors if /NOTAPE is specified.

2.6 DCL

2.6.1 Enhancements to SET PROMPT Command

The SET PROMPT command can now create prompt strings up to 255 characters long. This change was made possible by creating two new reserved global symbols: \$PROMPT and \$LOGFILE_PROMPT.

The \$PROMPT symbol contains your regular prompt string (when no log file is active).

The \$LOGFILE_PROMPT symbol contains your prompt string when a log file is active.

Use the SET PROMPT command as before to store your prompt strings in these symbols.

The values of these prompt symbols cannot be changed by an assignment statement, since all \$-symbols are treated as reserved symbols. However, they can be used like normal symbols in all other respects.

For example, you could enclose your current prompt string in parentheses by issuing the command:

```
$ SET PROMPT "(" + $PROMPT + ")"  
($ )
```

2.6.2 SHOW FILE/OPEN/JOB Command Changes

You can now issue the command SHOW FILE/OPEN/JOB[=n] to display all files opened by the job specified by its number n.

If a device name parameter is also specified (i.e., SHOW FILE/OPEN/JOB=n dev:) then the display is restricted to files opened on that device by the job specified.

2.6.3 DIBOL Command Length Extended

The maximum command length that the DIBOL command accepts has been increased from 80 to 255 characters.

2.6.4 /EXTEND_SOURCE Qualifier for FORTRAN/FOR Command

The /EXTEND_SOURCE qualifier allows FORTRAN IV statements to extend beyond column 72.

This qualifier was documented incorrectly as applying to both the FORTRAN/FOR and FORTRAN/F77 commands in the online help files, and was not documented anywhere else.

Also, the qualifier was not recognized by the FORTRAN/FOR command prior to V9.4. The FORTRAN/FOR command now accepts the /EXTEND_SOURCE qualifier and the RSTS/E Quick Reference Guide is being updated to include the qualifier.

2.6.5 GOTO Command Changes

Prior to V9.4, if you issued a GOTO command with a label that was not defined in the command procedure, DCL would issue an error message and immediately STOP the procedure.

In some instances this was undesirable. For example, if a command procedure wanted to dispatch to a routine based on a user-supplied command name, it might do so as follows:

```
$ _Inquire COMMAND "Enter command"  
$ _Goto 'COMMAND'
```

This worked properly as long as the user supplied a defined command keyword (one that matched a defined label). If not, there was no way for the command procedure to trap the GOTO error and re-prompt.

Now, if the GOTO command includes an undefined label, DCL will redisplay the command line, issue an error message and take whatever ON severity THEN action is in effect at the time. This allows the command procedure to handle the error in the normal manner.

This same action is taken if an undefined label is included with the new GOSUB command.

2.6.6 Changes to INITIALIZE Qualifiers

The DCL INITIALIZE qualifiers /MFD_CLUSTER_SIZE, /CLUSTER_SIZE and /EXERCISE have been modified to accept only valid values as arguments. These values are:

/MFD_CLUSTER_SIZE	4,8, and 16
/CLUSTER_SIZE	1,2,4,8, and 16
/EXERCISE	0,1,2, and 3

2.6.7 PBS Command Length Extended

DCL commands which perform Print/Batch Service operations such as PRINT, SUBMIT, SHOW ENTRY, INITIALIZE/QUEUE, etc. can now be up to 255 characters long.

The previous limit was 127 characters.

2.6.8 DCL Makes More Efficient Use of Memory

In previous versions, when a command procedure was invoked, DCL allocated an extra 1K words of memory for the local symbol table. This caused all jobs to begin with a job size of 5K words.

Now the initial job size of DCL is 4K words. DCL can create its local symbol table within the initial 4K words of memory, and does not need to allocate additional memory until local or global symbol assignments require it.

2.6.9 DCL Corrections

The following problems have been corrected in DCL for V9.4:

- o Several problems relating to passing parameters to a command file have been corrected. It is now possible to pass parameters to a command file by putting the parameters into core common and chaining to the command file with a non-zero line number.

NOTE

Digital recommends that you use line number 30000 to indicate the presence of parameters in core common when chaining to a command file. The use of other non-zero line numbers may conflict with possible new features in the future.

For example, the following BASIC-PLUS program segment passes three parameters to the command file UPDATE.COM:

```
1000      JUNK$ = SYS(CHR$(8%)+ "ONE TWO THREE") &  
  \      CHAIN "UPDATE.COM" LINE 30000 &  
          ! Load name into core common &  
          ! Chain to the command file &
```

Chaining with a zero line number continues to work as before; no parameters are passed to the command file.

Chaining with a non-zero line number when core common is null no longer produces the error "?Can't find file or account."

Defining a system command (CCL) to execute a command file now correctly passes all parameters to the command file. In previous versions, DCL would ignore a parameter if there was no space separating the command from the parameters (i.e. FOO/BAR).

- o In previous versions certain commands which took an explicit device name as an argument (such as SET DEVICE) would ignore leading underscores on the device name.

DCL no longer ignores leading underscores on device names.

- o Previously, if the first character of the first parameter to the @ command was a plus sign (+) or a comma (,) it was ignored.

Now these characters are passed correctly to the command procedure.

- o DCL no longer corrupts DCL I/O channel 1 if you attempt to nest command procedures more than 14 levels deep.
- o Previously, if you specified too many parameters or arguments in a command (for example, specifying more than six file names in a DELETE command), DCL displayed the confusing message, "?Unexpected character."

Now DCL reports the error "?Too many elements in list" when you have exceeded the parameter or argument limits within a command.

- o In previous versions, if you specified a parameter qualifier more than once in a command, DCL failed with an odd address trap. For example, the following command would cause an odd address trap in DCL:

```
$ PRINT FILE.DAT/DELETE/NODELETE
```

Now DCL properly parses such commands, applying only the rightmost occurrence of the qualifier.

- o Previously, if you assigned a disk or a tape to a system logical name which contained more than 7 characters, you could not INITIALIZE, MOUNT, or DISMOUNT the device using the logical name. DCL would fail with "?Not a valid device". These commands now support full 9-character logical names.

- o Prior to V9.4, if you used the DCL function F\$PARSE with a valid device name in the file specification, but the default file specification contained an untranslatable logical name, the resulting device returned was incorrect. For example:

```
$ WRITE 0 F$PARSE("SY:[1,2]FOO.BAR","JUNK:","DEVICE")
NK$:
```

DCL no longer returns invalid information in the F\$PARSE device field.

2.7 Help Files

The Help Files have been extensively changed in V9.4 of RSTS. The following list represents all of the technical changes made to the help files:

ASSIGN command

The command format indicates an optional device name or optional PPN.

ASSIGN/SYSTEM command

The command format indicates an optional device name or optional PPN.

BACKUP command

The /GROUP_SIZE qualifier accepts arguments in the range 1 to 100. The /LIST_FILE qualifier can be specified without a file specification.

BROADCAST command

The destination field can take an optional list of PPNs, terminals, or both.

COPY command

The command format indicates an optional node can be specified. The required privilege list includes TMPPRV and SYSIO when the /PROTECTION qualifier is specified. Also, the /CLUSTER_SIZE qualifier accepts arguments in the range -256 to 256.

CREATE command

The required privilege list includes TMPPRV and SYSIO when the /PROTECTION qualifier is specified. Also, the /CLUSTER_SIZE qualifier accepts arguments in the range -256 to 256.

CREATE/ACCOUNT command

The command format indicates that the device is optional. The /RIB_QUOTA qualifier accepts arguments in the range 0 to 256. The /SIZE qualifier accepts arguments in the range 1 to 7.

DEFINE/COMMAND/SYSTEM command

The /LINE_NUMBER qualifier accepts an argument in the range 0 to 32767.

DELETE command

The command format indicates that an optional node name can be specified.

DELETE/SYMBOL command

The command format indicates that the symbol name is not optional.

DIBOL command

The /STANDARD qualifier has been added.

DIFFERENCES command

The default for the /MAXIMUM_DIFFERENCES qualifier, which is 300 differences, has been added.

EDIT command

The /OUTPUT qualifier requires a file specification argument.

FORCE command

The command format indicates that the destination field accepts a list of PPNs, terminals, or both.

FORTTRAN/F77 and FORTTRAN/FOR commands

The qualifier lists have been updated to reflect the current state of DCL. All qualifiers listed are correct for these commands.

GOSUB command

This is a new DCL command, for which on-line help is available.

GOTO command

The GOTO command will no longer abort a command procedure if the label is not defined. The error message "?Undefined label" is printed and the command procedure continues with the next DCL command, or may be trapped with an ON severity THEN command.

INITIALIZE (disks) command

WREAD privilege has been removed from the list of required privileges. The /EXERCISE qualifier accepts arguments in the range 0 to 3. The /MFD_CLUSTER_SIZE qualifier accepts arguments 4, 8, and 16.

INITIALIZE/QUEUE command

The /PAGE_LIMIT qualifier accepts arguments in the range 1 to 4,294,967,295.

INSTALL/RUNTIME_SYSTEM command

The /PREFIX qualifier does not require an argument.

LINK command

The qualifiers have been arranged in alphabetical order.

MOUNT (disks) command

The /SHARE and /NOSHARE qualifiers have been expanded to their full form /SHAREABLE and /NOSHAREABLE.

MOUNT (tapes) command

The /OVERRIDE qualifier accepts an argument =IDENTIFICATION, which is optional and does not change the meaning of the qualifier.

RENAME command

The required privilege list includes TMPPRV and SYSIO when the /PROTECTION qualifier is specified.

RESTORE command

The /LIST_FILE qualifier indicates that the file specification argument is optional.

RETURN command

This is a new DCL command, for which on-line help is available.

SET ENTRY command

The privilege list indicates that PBSCTL is required to specify /PRIORITY, /HOLD and /RELEASE for any entry you do not own. You may specify these qualifiers on your own print or batch jobs. Also, the /PAGE_LIMIT qualifier accepts an argument in the range 1 to 4,294,967,295.

SET PROMPT command

The optional prompt parameter can be an expression as well as a quoted string.

SET PROTECTION command

The required privilege list includes TMPPRV and an expanded explanation of the SYSIO privilege.

SET TERMINAL command

The /DEVICE_TYPE qualifier accepts the VT330 and VT340 terminal type keywords, and the LA75 keyword. Also, an explanation has been added that the EXTA and EXTB keywords, used with the /SPEED qualifier, are valid only on terminals connected to DH interfaces.

SHOW ACCOUNTS command

The required privileges include GACNT or WACNT to display data for accounts other than your own, or to reset the accounting data for any account. Also, help text for the /ALL and /RESET qualifiers have been added.

SHOW DEVICE/ALLOCATED command

The Examples subtopic was incorrectly placed, and appeared in the main help text. This has been corrected.

SHOW DISKS command

Help for the /OUTPUT qualifier has been added.

SHOW ENTRY command

Help for the /PRINT qualifier has been added.

SHOW FILE/OPEN command

The /JOB qualifier accepts an optional job-number argument.

SHOW QUEUE command

The queue name parameter is optional. SHOW QUEUE defaults to all queues if a queue parameter is not specified.

SHOW TERMINAL command

The Examples subtopic has been corrected. Indentation problems have been fixed.

SUBMIT command

The optional node name in the command format has been removed.

TYPE command

The command format indicates that an optional node name can be specified.

2.8 Commonly Used System Programs (CUSPs)

2.8.1 Supporting Disks with Unit Numbers Greater Than 9

Prior to V9.4, there were a number of system utilities that did not correctly parse disks with unit numbers greater than 9.

The following is a list of the system utilities that have been updated to properly handle disk unit numbers greater than 9:

DSKINT.TSK
ONLCLN.TSK
REORDR.TSK
SYSTAT.TSK
RT11.RTS (RT-11 run-time system)
PIP.SAV

All utilities that run under the RT-11 run-time system

This problem still exists for LINK.SAV, LIBR.SAV, and MACRO.SAV. See section 4.5.5 for additional information.

2.8.2 ANALYS.TSK

- o In the SYSTAT/D (disks) display of ANALYS, the notations DLA (Date of Last Access) or DLW (Date of Last Write) now prints only for file-structured disks.
- o DEUNA/DELUA/DEQNA DECnet annotations have been added to show XEDCTL/XHDCTL Region and receive and transmit buffer information.

Corrections

The following problem has been corrected in ANALYS.TSK for V9.4:

- o The bug that caused the error "?Subscript out of range at line 4300" has been fixed. This bug occurred whenever the symbol lookup routines could not find a symbol, such as when FMS was not selected at installation time.

2.8.3 BUILD.TSK

Prior to V9.4, BUILD.TSK required the privileges SETPAS, GACNT and WACNT. Because SETPAS and GACNT privileges are implicit in the WACNT privilege, the BUILD.TSK program for RSTS/E V9.4 no longer requires SETPAS or GACNT privileges.

2.8.4 DSKINT.TSK

DSKINT.TSK now checks to verify that the user has WRTNFS and RDNFS privileges before it executes. This also affects the DCL INITIALIZE command when used with disk devices.

2.8.5 Print/Batch Services (PBS)

Previously, when you issued a command to PBS that required an acknowledgement message from PBS, (PRINT, SUBMIT, SET, etc.) the PBSMGR utility would wait up to 60 seconds for a response. If a response was not received in that time, PBSMGR would abort with the following error message:

```
??Program failure in RECV  
?No acknowledgement received
```

This was a severe error message, even though the request may actually have succeeded. In some cases, on heavily loaded systems, PBS could not complete the request and return an acknowledgement in the 60-second time limit.

Also, PBSMGR gave no indication that it was waiting for a response from PBS.

PBSMGR now prints an informational "Waiting for acknowledgement" message approximately every 15 seconds while waiting for a response from PBS. If no response is received after approximately 90 seconds, PBSMGR exits with the warning message, "%No acknowledgement received."

Note that the command issued by the user may have succeeded, even though no acknowledgement message was returned within the time allotted. Use a corresponding SHOW command (SHOW ENTRY, SHOW QUEUE, etc.) to confirm the status of your command.

Corrections

The following problems have been corrected in PBS.TSK for V9.4:

- o PBS could send the wrong number of spaces to an output device while translating a tab character if the device had both the NOTAB and FILL characteristics set. This would occur at the top of a new page while skipping over perforations.

- o Prior to V9.4, you needed SWCFG and TUNE privileges to change the priority and/or the run burst of a server. Because a user who has TUNE privilege, but does not have SWCFG privilege, can change the priority and run burst of the batch job, it is not reasonable to require that users have SWCFG privilege to change the priority and run burst of a server. In RSTS/E V9.4, you only need TUNE privilege to accomplish this.

2.8.6 ODT.TSK Corrections

The following problem has been corrected in ODT.TSK for V9.4:

- o Previously, the ODT.TSK utility would return %Integer error when you attempted to display an address greater than 300377772(8).

2.8.7 OPSER BATCH PACKAGE

BATRUN no longer goes into HB state if the OPSER BATCH PACKAGE is run from a private disk (a disk other than SY:).

2.8.8 PIP

Open Next Directive

PIP has been enhanced in RSTS/E V9.4 to take advantage of the Open Next monitor directive (UU.ONX). This causes file lookups for directory listings and other file operations to be much faster than before, on the order of four times faster. This is especially noticeable when accessing large directories.

This enhancement also corrects a long-standing problem in PIP. Before, if you copied files "into themselves" using a wildcard file specification (for example, PIP *.*=*.*), PIP would not copy every file. This happened because the file lookup directive used by PIP located the next file in a directory by counting files from the beginning of the directory; that count was constantly changing as files were relocated within the directory during the copy operation.

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By using the Open Next directive, this problem has been corrected; every file in a directory will now be copied. This works for disks initialized as "New Files First" (NFF) and "New Files Last" (NFL).

There is one new restriction with this change. If you are copying files "into themselves" on the system disk initialized as NFL, and you specify that disk's device name differently on the input and output side of the command line, PIP will continue copying files in an endless loop; it will not properly detect the last file in the directory. Under such circumstances, you must type CTRL/C to terminate the operation. For example, if your system disk is _DU1: and you issue the command:

```
$ PIP _SY:[1,2]=_DU1:[1,2]*.*/LOG
```

PIP will loop endlessly copying files.

To prevent this, do not specify a device name for the system disk, or, specify the same device name on both the input and output side of the PIP command line (_SY: = _SY:, _SY0: = _SY0:, _DU1: = _DU1:, etc.).

Corrections

The following problems have been corrected in PIP.SAV for V9.4:

- o PIP would hang in an RN state if it tried to read an ANSI magtape file with a blocksize greater than 2048.

PIP now reads ANSI magtapes with blocksizes greater than 2048, such as VAX/VMS backup sets, properly.
- o PIP can now transfer ANSI files with fixed length record sizes greater than 4095 from tape to disk or from disk to tape. The higher order bits of the record size are no longer ignored.
- o When PIP transfers an ANSI file with implied carriage control and with a fixed length record size not evenly divisible into 512 from tape to disk or from disk to tape, it no longer drops characters at the end of each 512-byte block.
- o PIP no longer hangs in an RN state when transferring an ANSI file with a block size greater than zero and with a record size of zero from tape to disk or from disk to tape.
- o PIP now transfers the ANSI file carriage control attribute (Fortran, implied, embedded) from disk to tape correctly.

- o PIP no longer accepts a non-space character in byte 16 of HDR2 of an ANSI file as the only indication that there are valid DEC attributes in bytes 16-36 and 38-50. On non-DEC tapes, PIP used to assign invalid attributes to the file after a transfer from tape to disk. PIP now ignores bytes 16-36 and 38-50 unless the characters "DEC" appear in HDR1 in positions 61-63.
- o When run from an account without TMPPRV privilege, PIP now erases and deletes a file with a <232> protection code properly.
- o When PIP is asked to rename a file's protection code to a value including the <128> bit from an account without TMPPRV, the <128> bit will not be set, but PIP issues a warning message to indicate that the requested protection does not match the one actually set.

2.8.9 QUE.TSK Corrections

The following problem has been corrected in the OPSER-based QUE.TSK utility for V9.4:

- o Previously, the /AF (AFTER) switch did not handle the date format "YY.MM.DD" properly when the month field (MM) was 01 (January).

2.8.10 RESTOR PACKAGE

A problem existed in the RESTOR package if you attempted to RESTOR a backup set under the following conditions:

- o You first loaded the backup set's work index to disk;
- o You restored the backup set using the pre-loaded index;
- o Your system no longer contains the same tape controller as that used in the original backup.

Under the above conditions, the RESTOR option failed by prompting you to mount a tape volume on device " _ : " (the device name was missing), and it refused to accept any device you specified. Please see the June 1987 issue of the RSTS/E Software Dispatch for further details.

This problem has been corrected in V9.4.

2.8.11 SHUTUP.TSK Corrections

The following problems have been corrected in SHUTUP.TSK for V9.4:

- o SHUTUP would send a shutdown message to an EMT logging utility (like EMTCPY) by issuing a "send by job number" SYS call. This failed if the EMT receiver was declared using a non-zero RIB.

SHUTUP has been corrected to use the "send by local object type" SYS call properly. This correctly sends the shutdown message to the EMT receiver, regardless of its RIB number.

- o If PBS was running when you ran SHUTUP, and the OPSER package was not, SHUTUP would not allow you to back up to the PBS prompt from the "Minutes until system shutdown" prompt.

2.8.12 SYSTAT.TSK

- o In the SYSTAT/D (disks) display of SYSTAT, the notations DLA (Date of Last Access) or DLW (Date of Last Write) now print only for file structured disks.
- o SYSTAT displayed the UP time "???:?:?" when the hours exceeded 999. Now, SYSTAT displays up to 9,999 hours, and "????:?:?" when the hours exceed 9,999.

2.8.13 HOOK.SAV Correction

A problem where HOOK.SAV appeared to corrupt the pack label of a disk has been fixed. See section 2.3.6 for additional details.

2.8.14 BACKUP.TSK

Previously, when BACKUP produced a multi-volume backup set, it duplicated detail information about the source of the backup on each volume. This was done so that proper volume defaults could be applied when doing a restore, even if the first volume of the backup set was lost.

Unfortunately, VMS BACKUP was not coded to handle this duplication of information, and caused the file that was being restored at the time of the volume split to be restored incorrectly.

For RSTS/E V9.4, BACKUP no longer writes the volume detail information on each volume. This means that the RESTORE command will be unable to provide meaningful defaults for initializing output disks when the first volume is not restored.

2.9 RMS-11

2.9.1 RMS-11 Access Methods

- o RMS-11 allowed an indexed file to be created that had incompatible maximum record size and bucket size. Subsequent attempts to access the file returned ER\$MRS. RMS-11 has been modified to disallow this create.

This correction involved module R3WPLG of RMSLIB.OLB and the RMS resident libraries.

- o RMS-11 allowed temporary files to be created with a declaration of shared write access. These programs would enter a sleep state in RMS during a subsequent record access. Since temporary files are not intended to be write shared, RMS-11 now overrides this request by clearing the write sharing request from the user's File Access Block (FAB).

This correction involved module R0CRFL of RMSLIB.OLB and the RMS resident libraries.

- o The RMS-11 macros XBDOF\$ and \$GNCAL did not work correctly. XBDOF\$ attempted to use octal values for field lengths (they are decimal), and \$GNCAL did not bring in the ORG\$ and GSA\$ macros as documented. RMSMAC.MLB has been modified to include these changes.

2.9.2 RMS-11 Utilities

RMSDES

- o DES did not prompt correctly for packed decimal keys. It failed to request the key length. It now prompts for this value.
- o There was no capability for superseding a file design. There are now two commands: `SAVE_SUPERSEDE` and `EXIT_SUPERSEDE`. See the section on RMS-11 Documentation for detailed descriptions of these new commands.
- o Indexed file alternate key data area assignments were sometimes incorrect when user defaulted areas. When there was more than one alternate key, the data area for all subsequent keys would still be the same as for the first alternate key. This was not as documented (RMS-11 Utilities, Appendix B). RMSDES has been corrected to function as documented.
- o Alternate Index allocations were too large in many cases. The calculations have been improved to match the expected needs of the file more closely.
- o Indexed file allocations were not correct when duplicates were allowed and the anticipated number of duplicates would result in continuation buckets on alternate keys. As an enhancement, RMSDES now issues a warning message when continuation buckets are required. These buckets are a performance drain when the user requires deletion within the duplicate pointer array, or repositioning once having lost record context on this key. Further, a new informational message will be issued if overflow occurs during calculations in this area, and the prompt "number of duplicates" has been expanded to read "number of duplicates per record on this key" to increase clarity.
- o A user-friendly error message is now issued if the help file (LB:RMSDES.HLP) is not found. This is a feature for small systems that are extremely tight for disk space.
- o DES displays the error message "Value out of legal range" if you attempt to use a file cluster size of 256. A workaround to this problem is to use a file cluster size of 255.

2.9.3 RMS-11 Documentation

RMS-11 USER'S GUIDE

- o Add new section 3.5.3.5 Block Mode versus Record Mode

Block I/O is recommended for file transfer applications. It provides a performance advantage over record mode due to a simplified code path for RMS-11, less internal data movement and elimination of RMS-11 internal I/O buffer allocation. However, in this case RMS-11 relies on the application to be responsible for End of File (EOF). Applications should write the last block of the file so that the Record Size field indicates the valid bytes in the block, and ensures that the record buffer is padded with nulls beyond EOF.

NOTE

File transfer applications will observe that the READ operation returns the size of the valid portion of the last block in the RSZ field for all record formats except stream files. For compatibility purposes this value is rounded up to the block boundary and, therefore, is not to be trusted as EOF. The EOF attribute can be obtained from the RFA field at the time of the block I/O CONNECT operation.

Current RMS-11 implementations performing record operations to stream files do not use the EOF attribute to determine the end of the file. However, future implementations may use it; therefore, applications should not rely on access to data beyond the logical EOF.

- o Correction to section 5.4 paragraph 3, adding last sentence for increased clarity:

For FIND operations, RMS-11 uses the next record pointer to identify the target bucket. For GET operations, RMS-11 uses the next record pointer, if the GET operation was not immediately preceded by a successful FIND operation. The current record pointer is used if the GET operation was immediately preceded by a successful FIND operation. An intervening FREE operation will cause RMS-11 to lose current record context.

- o Add new section 7.4.5 RFA Access

This method can yield a record in one or two disk I/O's (providing no duplicates on primary key). FIND and GET will report the unique address of each record. A table kept by the user in program space enables optimization of subsequent accesses.

NOTE

WARNING - RFA's are only valid for the life of the file. Invalid RFA's may cause RMS-11 to abort or return erroneous data.

RMS-11 UTILITIES GUIDE

- o Additions for new commands
 - Section 2.2.5 should be expanded to add the following:

EXIT_SUPERSEDE

The EXIT_SUPERSEDE command stores your file design in the description file specified in the command string, superseding any existing file by the same name. Then, it terminates RMSDES, and the system prompt is returned.

Format

EXIT_S[UPERSEDE] filename[.typ]

filename[.typ]

Names the description file in which the file design will be stored. The default file type is .DES.

If you do not wish to supersede an existing description file you must use the EXIT command.

- In section 2.2.5 add to the discussion of the EXIT command:

To supersede an already existing description file, use the EXIT_SUPERSEDE command.

- Section 2.2.9 should be expanded to add the following:
SAVE_SUPERSEDE

The SAVE_SUPERSEDE command stores the file design in the description file specified in the command string, superseding any existing file by the same name. If you have not defined areas when you issue the SAVE command, you will be prompted as to whether you want RMSDES to define areas.

Format

SAVE_S[UPERSEDE] filename[.typ]

filename[.typ]

Names the description file in which the file design will be saved. The default file typ is .DES.

If you want to design another file, you should issue a CLEAR ALL command to restore the attribute values in the design buffer to their defaults. If you do not wish to supersede an existing description file use the SAVE command.

- In section 2.2.9 add to the discussion of the SAVE command:

To supersede an already existing description file, use the SAVE_SUPERSEDE command.

- The above items should also be added to Table 2-1.

- o Other additions

- Section 2.8 RMSDES MESSAGES - expand the description of ?DES-F-VOR by adding the following:

Or the values you entered resulted in a calculation which caused an overflow for RMSDES.

- Section 2.6.2 File Section

- o Modify paragraph 3 of the ALLOCATION field discussion to read as follows:

If you intend to create a single-area indexed file and do not request file placement, RMS-11 will use the allocation from the file section if no area section exists in your design buffer. If you are allowing RMSDES to define areas for an indexed file ...

- o Modify paragraph 4 of the EXTENSION field discussion to read as follows:

If you intend to create a single-area indexed file and do not request file placement, RMS-11 will use the extension from the file section if no area section exists in your design buffer. If you are allowing RMSDES to define areas for an indexed file ...

- o Modify paragraph 5 of the BUCKET_SIZE field discussion to read as follows:

If you intend to create a single-area indexed file and do not request file placement, RMS-11 will use the bucket size from the file section if no area section exists in your design buffer. If you are allowing RMSDES to define areas for an indexed file

by default, RMSDES will assign a bucket size value for each area it defines. However, if you choose to define areas explicitly and specify a bucket size value for each area, you should accept the default in this section and set the bucket size attribute in each area section.

2.10 Layered Products

2.10.1 DECnet/E V4.0

Updating DECnet/E

To update DECnet/E to include changes on the RSTS/E V9.4 kit, run the DECnet/E installation procedure after the RSTS/E V9.4 update is complete. See the *DECnet/E Installation and Update Guide* for details on the installation process. When the installation completes, all new DECnet/E components will exist in the appropriate accounts. No network conversion or configuration procedures need to be carried out when updating existing DECnet/E V4.0 installations.

SET HOST Command Corrections

The following problems have been corrected in NET.TSK for RSTS/E V9.4:

- o Under previous versions of RSTS/E, pressing CTRL/C while attempting to SET HOST to another node could cause the following message to be displayed:

```
Connection Established to ?0 Node
? Unsupported Remote Terminal Protocol - 0
```

This message no longer displays.

- o Previously, if a logical link failure occurred during a network session, no reason for the failure was indicated. In RSTS/E V9.4, the NSP reason code for the failure displays in the abort message.

RSTS/E Network File Transfer program (NFT) Corrections

The following problems have been corrected in NFT for RSTS/E V9.4:

- o Remote copies involving a wildcarded ULTRIX file specification would fail. This was due to NFT's incorrect handling of the ULTRIX directory symbol when parsing the resultant file specification.
- o NFT did not correctly write the attributes of stream files transferred in block mode. It erroneously rounded up the End of File attribute.

DECnet/E File Access Listener (FAL) Corrections

The following problems have been corrected in FAL for RSTS/E V9.4:

- o The DECnet/E FAL incorrectly handled repetitive use of a DECnet/E link to access more than one file on a RSTS/E node. This problem could occur on a wildcard COPY command issued from a VAX/VMS V4.4 or later system, when three or more files were involved. In such cases, COPY would report an error (ER\$ORD) when accessing the second file matching the wildcard specification and abort the operation.

NOTE

The re-use of a DECnet link by VAX/VMS V4.4 and V4.5 can still cause problems with other types of remote RSTS/E accesses. For example, a VMS COPY command referencing more than one explicit file on RSTS/E will report "DAP CODE = 01F7A001", referring to a synchronization error related to an unexpected Configuration Message sent by VMS. In this case, the link is re-used following a search operation by VMS.

This problem is under investigation by both RSTS/E and VMS development.

- o Remote accesses and remote directory operations would occasionally result in FAL inappropriately setting the P-bit on a file. This caused the file to be non-deleteable (protected). To restore files to their original state you previously had to use the DCL command "SET FILE/DELETE".

2.10.2 DECnet/E Documentation

DECnet/E Utilities Guide

- o Add to discussion of /ASCII switch, p.4-36:

NOTE

This switch is useful for copying ASCII text files from systems which have a different concept of non-attributed stream files than RSTS/E (e.g. DECnet-ULTRIX and DECnet-DOS use Line Feed as the standard record delimiter, while RSTS/E non-attributed files use Carriage Return followed by Line Feed). When this switch is applied, only the data portion of a record is transferred, so that RSTS/E can apply its own record delimiter.

2.10.3 DECmail-11 V3.0

Updates on RSTS/E V9.4

This release of RSTS/E contains updates for DECmail-11 V3.0.

NOTE

Due to a change in RSTS/E V9.4, installation of the update is mandatory. If this update is not installed you may get "?Device not available" errors when attempting to send mail.

Transfer the DECmail-11 V3.0 update components to the PATCH account during the system upgrade from V9.3 to V9.4. Refer to the *RSTS/E System Installation and Update Guide*, Part IV:, Phase:3, Task:4, page 178 for more information about transferring updates for Layered Products.

If you do not transfer DECmail-11 updates during the system upgrade, you will need to mount your RSTS/E Installation media during the DECmail-11 update. The RSTS/E Layered Product Update Procedure will transfer the DECmail-11 updates.

Requirements for this update:

Privileges:

- Refer to the *DECmail-11 Installation and System Manager's Guide* for information about the privileges needed.

Programs:

- SY:[1,2]LBR.TSK
- SY:[1,2]STK.TSK
- SY:[1,2]TKB.TSK
- SY:[1,2]MAKSIL.TSK

Disk space:

- 960 blocks for update files in PATCH\$:
- 5350 blocks for update work files in WORK\$:

NOTE

The 5350 blocks of disk space in WORK\$ will be returned to the system as free space after the update has completed.

- 1350 blocks for updated tasks in MAIL\$:

NOTE

The tasks in MAIL\$ should be contiguous for optimum performance.

- The total number of free blocks needed to do this update is 7660 of which 1350 blocks should be contiguous. In order to reduce the need for disk space the MAIL update procedure deletes files as soon as they are no longer needed.

NOTE

Use of DECmail-11 during the update may cause unpredictable errors to occur.

Updating your DECmail-11 V3.0 software can be accomplished by invoking the RSTS/E software update procedure. The following is an example of a DECmail-11 update.

```
$ @[0,1]UPDATE LAYEREDPRODUCT MAIL
```

Deleting all global symbols

Patch account <PATCH\$:> :

The following will be updated:

MAIL

Proceed? <yes>

Please enter the name and unit number of the disk to which you want to update the software. This disk should be physically mounted and write-enabled.

Target disk? <SY:> :

Assigning system logicals

01-Dec-86 09:49 AM

01-Dec-86 09:49 AM

Please mount the MAIL Library media and enter the name and unit number of the device.

Valid device types are: 'MM', 'MS', 'MT', 'MU', 'DM' or 'DL'

MAIL Library device? <MM0:> DL0:

The update procedure will complete without user intervention from this point. UPDATE.LOG is a log file of this update procedure, created in your account, and should be checked for possible update errors. Disregard multiply defined symbol errors during the task rebuild phase.

RSTS/E V9.4 Release Notes
Differences Between V9.4 and V9.3

The update should take between 3 and 4.5 hours, depending on your CPU and system disk.

Corrections

The following problems have been fixed in this update:

- o Date and time values specified to the /AFTER qualifier were ignored when sending a message using the /EDIT qualifier, or if AUTO EDIT was enabled.
- o The From: and Subject: fields are cleared out when sending a message with /EDIT or AUTO EDIT enabled.
- o Batch Mail messages having To: and CC: lines greater than 255 characters would result in a "?Line too long" error and abort MAILQ.
- o Entering PRINT<return> with no current message aborts MAIL with an "?Arguments don't match" error.
- o DECmail-11 displays "?Integer error" when sending a message greater than 64 blocks in length via Message Router.
- o MAILQ aborts with "?No room for user on device" when it encounters zero free blocks. MAILQ will now wait for blocks to become available before re-attempting the delivery.
- o Users would sometimes receive multiple copies of the same mail message when sent via Batch Mail.
- o Entering "NI" at the Send Menu replaces the CC: field with the To: field contents, if a CC: line had been entered.
- o Files having records with trailing carriage returns, such as RNO and DSR files, do not print correctly when sent to users on other nodes.
- o Users intermittently receive messages with an incorrect To: field when sent via Batch Mail.
- o DECmail-11 would abort with a Maximum Memory Exceeded error when attempting to send or FETCH Message Router mail to a large number of users.

RSTS/E V9.4 Release Notes
Differences Between V9.4 and V9.3

- o Two errors which caused Batch Mail to send duplicate messages were corrected.
- o Mail would not be delivered to a user who had exceeded logged out quota.
- o The SELECT keyword was not properly cleared after unsuccessful SEARCH commands.

3 Documentation Changes in RSTS/E V9.4

The following documents have been revised or updated for V9.4:

- o The *RSTS/E Quick Reference Guide* (AA-EZ13B-TC) has been revised to incorporate all changes that have occurred since V9.1 and to correct all known errors.
- o The *RSTS/E Programming Manual* (AD-EZ09A-T2) has been updated to describe the Ethernet interface.
- o The *RSTS/E System Directives Manual* (AD-EZ10A-T2) has been updated to describe the Ethernet interface.

3.1 Corrections

The following documentation errors will be corrected in a future version of RSTS/E:

- o The *RSTS/E System User's Guide* incorrectly states on page 1-23 that the SHOW NETWORK command will display all nodes to which connections may be established. This is not the case, since the command simply expands to NCP SHOW ACTIVE NODES, which includes a subset of all nodes in the local area only.
- o On page 8-20 of the *RSTS/E System User's Guide*, add the following description for the /[NO]EXTENDSOURCE qualifier to the FORTRAN command:

/[NO]EXTENDSOURCE
[Does not] allow source lines to contain significant characters in columns 73 through 80.
- o On page 16-11 in the *RSTS/E System Manager's Guide*, change [*.] to [*,*] in the last two rows of Table 16-2: BACKUP Quick Reference Table.
- o On pages 16-7 and 16-15 in the *RSTS/E System Manager's Guide*, add the following text to the /END qualifier for the BACKUP and RESTORE commands:

You can use the /END=DISMOUNT qualifier for both tapes and disks. The default is /END=DISMOUNT for disks.

You can use the /END=REWIND qualifier for tapes only. The default for tapes is /END=NOREWIND.

- o In the *RSTS/E Programming Manual*, page 1-44, under the heading "Reading a File During Processing: 4096%", it should be noted that users no longer need privileges to open a file in 'read regardless' mode.
- o In the *RSTS/E Installation and Update Guide*, page 250, in the first bulleted item on the page, replace the words "a minimum of 4K words" with "a minimum of 16K words initialized with an MFD cluster size of 4"
- o On page 137 in the *RSTS/E Installation and Update Guide*, add the following text after the note at the bottom of the page:

You must estimate the number of volumes required for the backup and then initialize these disks before starting the backup. You can initialize the disks either on a RSTS/E V8.0 system or in INIT on the V9.n system you are installing. The important factor is that if you run out of volumes during the backup, you must either initialize other disks (assuming another RSTS/E system is available) and continue, or stop the backup and initialize other disks in INIT and then restart the backup. The disks can be either RDS1.1 or RDS1.2.

You cannot use the /INITIALIZE qualifier with the BACKUP command because the software required has not been installed at this point.

4 Known Problems and Restrictions with RSTS/E V9.4

4.1 Installation

4.1.1 Boot from TU10

RSTS/E 9.4 cannot be booted from the 'Option:' BOOT command on a TU10 magnetic tape drive. The tape can be booted on this drive using a hardware boot ROM.

4.1.2 Booting Magnetic Tape

Magnetic tape distributions of RSTS/E V9.3 or any bootable recovery tapes of V9.3 must be booted from unit zero. This problem affects MM and MT drives. This problem will be corrected in a future release.

4.1.3 Flag Files

The installation or update of RSTS/E leaves several zero length flag files - files used by the installation procedure to determine what parts of the installation have been completed - in various system accounts after installation.

Deleting any of these files may cause unpredictable results. In particular, deleting the flag file [1,2]VER093.SYS breaks certain layered product installations and updates.

4.2 DEUNA Ethernet Driver

- o Under some conditions, it is possible to hang a user job in an XE state when attempting a transmit command to a DELUA controller which was initialized successfully during system start up, but which was subsequently rendered inoperable due to a simple failure like cable removal. The command SET DEVICE XE0:/DISABLE frees up the job to continue normal processing. The DELUA should be disabled until such time as the cabling is repaired.

- o In RSTS/E V9.4, there is a problem with the DEUNA/DELUA Ethernet driver which can cause a system crash should the Ethernet controller become disabled during normal use. A patch is included in the August 1987 Software Dispatch which corrects the conditions that can cause this crash for both RSTS/E V9.3 and RSTS/E V9.4

4.3 Initialization Code (INIT.SYS)

- o If your installed monitor has a Virtual Disk defined (DV:), and you START a monitor that has no Virtual Disk defined, and then START your original monitor containing the Virtual Disk again, you will get "?Device unavailable" errors when you attempt to use the Virtual Disk.

The workaround is to use the DEFAULT option of INIT.SYS to remove and then redefine the Virtual Disk for your original monitor.

- o If account [1,2] on a system disk has been created as a NOUSER account, system startup will be aborted with a "?Can't find file or account" error, followed by a register dump.

The solution is to insure that account [1,2] is created as a USER account on all system disks. If the documented installation or update procedure is followed this will be done automatically, and the problem will not occur.

- o An unnecessary error message prints when an 800 BPI magnetic tape on a TEL6 subsystem that uses a TM02 formatter is booted from the "Option:" prompt of INIT.SYS. For example:

```
MM0 Error    MTCS1  MTWC   MTFC    MTCS2  MTDS    MTER    MTTC
              144270 000000 001007 000100 154640 102100 102300
```

The error message you receive may be different. This message prints as a result of the density autosizing process that occurs on TM02 formatters, and does not represent a true hardware error.

- o If the INSTAL option of INIT.SYS is used to install a monitor, and the installation process aborts or is stopped for any reason, invalid information will be left in the

configuration tables and INIT.SYS will be unable to successfully configure the monitor and system memory. Any attempt to start timesharing will be aborted after several random error messages are printed.

The workaround is to make sure that the INSTAL process is not aborted, and that it completes without error.

4.4 Monitor

4.4.1 DB and DR Disk Drivers

The DB and DR disk drivers may count or log errors for the wrong disk unit if there is heavy DB/DR disk activity and an attempt is made to mount a unit that is spun down or offline.

This problem will be corrected in a future release of RSTS/E.

4.4.2 MSCP Disk Driver

On systems having multiple UDA50-A MSCP controllers, a system crash may result if disk unit numbers are swapped between two drives on different UDA50-A controllers during timesharing.

The preferred workaround is to only swap drive numbers when timesharing is not up. The best method is to shut the system down, and swap the unit numbers when the "Start timesharing" prompt appears. After swapping the unit numbers, reboot the system disk and restart timesharing.

4.5 Commonly Used System Programs (CUSPs)

4.5.1 ANALYS Package

In the Monitor Memory dump section of the ANALYS report, the Virtual Disk area of the Memory Layout is shown as locked out memory. This will be changed to correctly annotate the Virtual Disk in a future release of RSTS/E.

4.5.2 LOGIN.TSK and LOGOUT.TSK

The LOGIN and LOGOUT programs control when to drop the carrier on a dial-up line. If you access the system from a captive account over a dial-up line and the command procedure aborts abnormally, carrier will not be dropped. A workaround to this problem is to trap all possible errors within the command procedure and exit by using the LOGOUT command.

4.5.3 PIP

The following problems have been reported and will remain as restrictions for V9.4, while they are being investigated for resolution in a future release:

- o There is a conflict between DV: and DU10: device names which can occur when you address one which is not mounted. For example, the DCL command "DIR DV:" can result in the error "?Disk pack is not mounted - file DU10:[p,pn]?????.???" if "DV" is not assigned as a system wide logical and "DU10" is.
- o If a directory contains only files which are SET FILE/NODELETE, a PIP [p,pn]/ZE of that account fails to zero the account, and also fails to indicate that it did not zero the account.
- o PIP does not handle RMS RF:VFC formatted files correctly. Currently, PIP can copy these files from disk to disk, but cannot output them to a printing device or a terminal.
- o PIP cannot access files that are on a tape created on an RT11 system. This problem will be fixed in a future release of RSTS/E to allow access to RT11 tapes.
- o There is a restriction using the Open Next directive with PIP when copying files "into themselves". See section 2.8.8 for information on this restriction.
- o If you change both the name and protection code of a file with the RENAME command, the confirmation message will be incorrect. For example:

```
PIP TEST.NEW<104>=TEST.OLD/RE/LO
DB1:[249,1]TEST .NEW renamed to TEST .NEW<104>
```

This problem will be fixed in the next release of RSTS/E.

4.5.4 Print/Batch Services (PBS)

- o If the last line of PBS\$:FORMS.SYS ends with the continuation character, the SET SERVER command will go into an infinite loop. To fix this, remove the continuation character from the last line of PBS\$:FORMS.SYS.

This problem will be corrected in the next Release of RSTS/E.

- o Under certain circumstances, the Print/Batch Services package will go into a steady run state, locking out jobs that have a lower priority.

These circumstances are:

1. A print job has been started for a keyboard server on a dialup line that is not connected or has lost carrier.
2. Another print job starts on a local keyboard server.

PBS will enter a steady run state until the job finishes on the local print server, or the dialup connection is established.

4.5.5 Supporting Disks with Unit Numbers Greater Than 9

The following utilities will not correctly print the disk name and unit number in error messages, for disks with unit numbers greater than 9:

LINK.SAV
LIBR.SAV
MACRO.SAV

For example, if the source file TEST01 does not exist on DU15:

```
$ run $macro
*DU15:TEST01=DU15:TEST01
?MACRO-F-File not found DVE:TEST01.MAC
DU15:TEST01=DU15:TEST01
```

This problem will be fixed in a future release of RSTS/E.

4.6 DCL

4.6.1 ON severity THEN path Not Taken

In one instance, DCL does not take the ON severity THEN path if an error is encountered in a command file. This only happens when you issue a CCL command (including "\$") which points to DCL from a runtime system other than DCL, and there is an error on that command line.

For example, consider the following command procedure:

```
$ SET VERIFY
$ ON ERROR THEN GOTO ERROR_HANDLER
$ SET JOB/KEYBOARD_MONITOR=BASIC
$ FOO
$ SET JOB/KEYBOARD_MONITOR=DCL
$ WRITE 0 "No error was seen by DCL"
$ EXIT
```

```
$ERROR_HANDLER:
$ SET JOB/KEYBOARD_MONITOR=DCL
$ WRITE 0 "An error was hit"
$ EXIT
```

A run of this command procedure would produce the following:

```
$ ON ERROR THEN GOTO ERROR_HANDLER
$ SET JOB/KEYBOARD_MONITOR=BASIC
```

Ready

```
$ FOO
FOO
^
```

?Invalid command

Ready

```
$ SET JOB/KEYBOARD_MONITOR=DCL
$ WRITE 0 "No error was seen by DCL"
No error was seen by DCL
$ EXIT
```

Notice that the error "?Invalid command" was not trapped and the error handler routine was not performed. This problem will be fixed in a future release of RSTS/E.

4.6.2 Log File Corruption

If the disk on which a DCL or BATCH log file is being written becomes full, then as space becomes available, the resultant log file may contain one or two ending blocks of random data.

4.7 RSX and RMS Tasks

Typically you are allowed to omit one or both of the PPN (project, programmer number) fields when specifying a file or account. You are also able to use logical names longer than 6 characters, and logical names containing dollar signs. The following is a list of RSX and RMS tasks which do NOT allow you to specify one or more of these new features.

Task Name	Handles Logical names longer than 6 characters	Handles Logical names containing dollar (\$) signs	Handles omitted field(s) in PPN
TKB	YES	YES	Cannot Handle
MAC	YES	YES	Cannot Handle
PAT	Cannot Handle	YES	Cannot Handle
LBR	Cannot Handle	YES	Cannot Handle
RMSDEF	YES	Cannot Handle	Cannot Handle
RMSDSP	YES	Cannot Handle	Cannot Handle

4.8 Layered Products

4.8.1 DECmail-11 V3.0

The following restrictions apply to DECmail-11 V3.0 on RSTS/E V9.4:

- o Sending a message via combined MROUTER and MRGATE pathways is not valid. For example, To: MROUTER::MRGATE::FAGEN or To: MRGATE::MROUTER::BECKER.

The workaround is to choose one method of delivery or the other (Message Router or normal DECmail-11).

- If the addressee is an ALL-IN-1 user, send the message to node::Al::username.
- If the addressee is a VAX DECmail user, send to node::DECMAIL::name.

- If you wish to send a message to another DECmail-11 user via Message Router, send to node::MROUTER::username.
 - Otherwise, let DECmail-11 handle the delivery by not using any alternate delivery mode keywords (MRGATE, MROUTER, DECMAIL, or A1) in the address.
- o SET TERM/WIDTH=132 does not set the terminal hardware to wide screen mode. It only sets the software column count that determines where to wrap the header fields when reading a message.

4.8.2 DECnet/E

- o The NCP command to SET EXECUTOR SEGMENT BUFFER SIZE <n> does not work when the EXECUTOR STATE is ON. The command should fail with an appropriate error, but instead it appears to succeed without taking any action. This will be corrected in a future release of RSTS/E.
- o When attempting to issue a command such as SHOW NODE <number> COUNTERS and the node <number> isn't in your volatile database, NCP will report that the node does not exist, even though you may have an active link to it. The workaround is to ensure that all of the nodes you normally access are defined in your volatile parameter file. This will be corrected in a future release of RSTS/E.
- o Occasionally the number of Total Bytes Sent on a DEQNA circuit will be excessive and display invalid counters for DECnet event 3.2 or from the NCP command SHOW NODE COUNTERS. This is a known problem which can be ignored. This will be corrected in a future release of RSTS/E.



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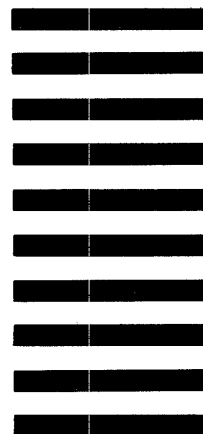
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