RSTS/E
Release Notes

Order No. AA-JB65A-TC

January 1987

These Release Notes describe the 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   V9.3

SOFTWARE VERSION: RSTS/E   V9.3

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		WPS-PLUS

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Preface

The *RSTS/E V9.3 Release Notes* describe differences between this and
the previous release, RSTS/E V9.2. 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 V9.3. If you are installing a new RSTS/E V9.3
system, refer to PART I of the *RSTS/E System Installation and Update
Guide*. If you are upgrading a pre-V9.0 system to V9.3, refer to PART
II of the *RSTS/E System Installation and Update Guide*. If you are
updating a RSTS/E V9.0, V9.1 or V9.2 system to V9.3, refer to PART IV
of the *RSTS/E System Installation and Update Guide*. In addition,
users and programmers familiar with RSTS/E V9.2 should read these
notes to learn about changes and new features in RSTS/E V9.3. The
V9.3 Release notes are divided into four sections:

    1.   RSTS/E V9.3 New Features
    2.   Differences between RSTS/E V9.2 and RSTS/E V9.3
    3.   RSTS/E V9.3 Documentation Changes
    4.   Known Problems with RSTS/E Version 9.3

NOTE

If you last used a version of RSTS/E older than V9.2,
you should read the release notes for any intermediate
versions.

1   New Features of RSTS/E V9.3

1.1   New Hardware Support

1.1.1   Ethernet Device Drivers

RSTS/E V9.3 provides two new device drivers to support Ethernet
communication using DECnet/E on UNIBUS and Q-Bus systems. The UNA
driver (for UNIBUS systems) supports the DEUNA and DELUA Ethernet
devices. These devices have the device designator XE. The QNA driver
(for Q-Bus systems) supports the DEQNA Ethernet device. Its device
designator is XH.

                              NOTE

     In V9.3, the UNA/QNA device drivers are only supported
     for use by DECnet/E V4.0. These drivers are only
     available if both the device **and** DECnet/E V4.0 are
     present. There is no direct interface.

     In future releases, RSTS/E will support these devices
     for general use, and then will allow you to access
     them independently of DECnet/E. At that time,
     complete documentation describing how to program the
     devices will be provided.

1.1.2   LA75 Desk-Top Printer

RSTS/E V9.3 supports the new LA75 desk-top printer. The LA75 printer
has the following features:

   o   Compact size suitable for desk-top location

   o   Digital and IBM compatibility

   o   ASCII and national character sets

   o   VT100 special graphic character set

   o   Digital and ISO Multinational and Supplemental character sets

   o   Digital Technical character set

   o   Katakana character set

   o   Downline-loadable characters

o   Graphic printing

o   Four print densities -- draft, memo, near-letter quality and
    letter quality

o   Bold, italics, superscript, and subscript printing

o   Bidirectional printing

o   High reliability

The DCL commands SET TERMINAL/INQUIRE, SET TERMINAL/DEVICE_TYPE=LA75
and SHOW TERMINAL now work for the LA75. The terminal type code for
the LA75 is 47.

1.1.3 Micro/PDP-11/53 System

RSTS/E V9.3 supports the Micro/PDP-11/53, which offers complete
hardware compatibility with the Micro/PDP-11/23, Micro/PDP-11/73, and
the Micro/PDP-11/83. RSTS/E V9.2 also supports the Micro/PDP-11/53;
however, no version of RSTS/E prior to V9.2 supports it.

1.1.4 RD31 and RD32 Fixed Disks

RSTS/E V9.3 supports the RD31 and RD32 fixed disks, single half-height
units containing 5.25 inch nonremovable hard disks enclosed in sealed
assemblies. The RD31 can store up to 20 Mbytes of formatted data; the
RD32 can store up to 40 Mbytes of formatted data.

1.1.5 RD54 Fixed Disk

RSTS/E V9.3 supports the RD54 fixed disk, a single full-height unit
containing a 5.25 inch nonremovable hard disk enclosed in a sealed
assembly. The RD54 can store 159 Mbytes of formatted data.

1.1.6 RX33 Diskette

RSTS/E V9.3 supports the RX33 diskette drive, a single unit
half-height drive that runs double-sided 5.25 inch RX33 diskettes,
capable of storing up to 1.2 Mbytes of formatted data.

NOTE

Please note these differences between RX50 and RX33
diskettes:

- DIGITAL ships RX50 diskettes pre-formatted; RX33
  diskettes must be formatted before use.

- For the RX33 drive, you can use any diskette
  capable of storing 1.2 Mbytes in a double-sided
  format, provided you first format these diskettes
  on the RX33.

- You can use an RX50 diskette in an RX33 drive
  (read/write), but you cannot use a formatted RX33
  disk in an RX50 drive.

1.1.7 TU81-PLUS Tape Subsystem

RSTS/E Version 9.3 supports the TU81-E tape subsystem on UNIBUS PDP-11
systems.

The TU81-PLUS is a dual-density tape drive, supporting recording
densities of 1,600 bits per inch (BPI) in Phase Encoding (PE) mode and
6,250 BPI in Group Coded Recording (GCR) mode.

Currently, RSTS/E permits the use of a single TU81-PLUS tape drive on
a system, configured as unit 0 (MU0:). It can be used with other
MU-type tape subsystems (such as the TK50), so long as the TU81-PLUS
drive is configured as unit 0. RSTS/E makes use of the TU81-PLUS
device's cache buffer for data reading, but not for data writing.

The TU81-PLUS is fully compatible with the TU81 tape subsystem.
Customers wishing to upgrade their existing TU81 tape subsystem to a
TU81-PLUS should contact their local Digital sales representative to
learn about the TU81 to TU81-PLUS upgrade kit.

1.2 Initialization Code (INIT.SYS)

1.2.1 Expanded Memory Utilization

INIT.SYS for RSTS/E V9.3 has been enhanced to allow the use of
expanded memory space on the PDP-11/84 and all Q-Bus processors. On
these systems, RSTS/E can now use up to 2044K words of memory, instead
of the previous limit of 1920K words. On older processors, such as
the PDP-11/70, PDP-11/44, and PDP-11/24, the 1920K limit is controlled
by the hardware and cannot be changed.

1.2.2 Support for UNA/QNA Devices

INIT.SYS has been updated to support the new UNA/QNA devices,

described in the previous section. Use the HARDWR LIST option to
display each type of Ethernet device on your system, along with the
default physical address of the device's controller.

1.2.3 Unexpected Interrupt Detection

Defective hardware on a system can cause unexpected interrupts during
the device sizing phase of INIT. Previously, this could cause INIT to
mistakenly believe that the console terminal interface was
interrupting at the wrong priority. INIT then disabled the console
terminal, causing the system to hang sometime during the startup
procedure. The system had to be rebooted and restarted. INIT.SYS has
been enhanced in V9.3 to detect unexpected interrupts and, if they
occur, to print a message similar to the following;

        Unexpected interrupt through the vector at nnnnnn - Possible
        hardware problem

1.3 Monitor

1.3.1 New RSTS/E Error Message

Error code 196 has been defined for use by Basic-Plus-2. The error
message associated with this code is:

        196   ?REMAP string is not static

1.3.2 New Null Job for PDP-11/84 Systems

A new null job has been added for PDP-11/84 systems. It increments
the two-digit display on the 11/84 front panel during system idle
time, showing the number of clock ticks since the last second, in
octal. This display is a fair indicator of system activity, since it
is only updated during system idle time. The new null job also
increments the diagnostic display located on the rear panel of Micro
PDP-11/73 and 11/83 systems, and the diagnostic LEDs on the PDP-11/23
processor board. No special action is necessary to install or invoke
the new null job; it will be selected automatically at system start-up
on all systems with the appropriate processor type.

1.3.3 Resident Library Size Increased

RSTS/E V9.3 supports resident libraries up to a maximum of 255
K-words. Previously, the maximum resident library size was 127
K-words.

1.3.4 Non-File-Structured Writing to Mounted Disks

Before RSTS V9.0, users could not use non-file-structured access to
write to mounted disks. In V9.0, with the introduction of multiple
privileges, they could. Users with RDNFS and WRTNFS privileges could
write to dismounted disks. With SYSMOD privilege, such users could
also use non-file-structured write access to mounted disks. This was
potentially dangerous, and was incompatible with previous versions.
RSTS/E V9.3 now requires you to specify MODE 16384 when opening a
mounted disk to request non-file-structured write access to it. This
change makes the handling of non-file-structured write access to
mounted disks more compatible with pre-V9.0 versions of RSTS. Any
applications that have been written since V9.0 which require
non-file-structured write access to mounted disks must to be modified
to specify this new mode when opening the disk. For further
information about this, see Article 0.1.15 in the November 1986 issue
of *The Software Dispatch*.

1.4 DCL

1.4.1 BACKUP/RESTORE Enhancements

Program Name Indicates Operation

The Backup/Restore utility now changes its program name (as reported
by CTRL/T and the SHOW USERS command) to BACKUP, RSTORE, or VERIFY, to
indicate which operation is currently in progress (backup, restore, or
verify, respectively).

/BLOCK_SIZE Qualifier accepts MINIMUM and MAXIMUM Argument

The /BLOCK_SIZE qualifier now accepts the keywords MINIMUM and
MAXIMUM. The keyword MINIMUM is translated to 2048 characters. The
keyword MAXIMUM is translated to 4080 characters for a backup to tape,
and to 7680 characters for a backup to disk.

New /CRC Qualifier

A new qualifier, /CRC, has been added to the BACKUP command. This
qualifier instructs BACKUP to calculate and include a cyclic
redundancy check (CRC) value for each block of data written to the
backup file. RESTORE, upon seeing the presence of this check,
re-calculates the CRC value and ensures that the new value matches the
one written to the backup file. If the two values do not match,
RESTORE reports a CRC error and then attempts to recover the block
using standard XOR recovery methods. CRC has a significantly higher
probability of detecting errors than the checks normally used on tapes
and disks. Additionally, CRC detects any corruption which may occur
as the data is transferred to or from the computer's memory. There is
significant overhead involved in calculating the CRC. Using the /CRC

qualifier may degrade the performance of BACKUP on some systems. In
some instances, BACKUP with CRC enabled may not be able to maintain
streaming on tape drives capable of streaming. The default for this
qualifier is /NOCRC.

1.4.2 Improved DCL Symbol Handling

The DCL symbol table internal structure has changed, providing five to
six times more symbol and label storage space and faster symbol table
access than in the previous version. This change should not affect
users or existing command procedures. Users will notice on occasion
that DCL will use more than 4K words of memory per user. DCL will
expand its memory in increments of 1K words as necessary for storing
symbols and labels. When the memory is no longer in use, DCL will
return approximately half of it to the system, and keep half in
anticipation of future needs.

1.4.3 Multiple Targets in FORCE and BROADCAST Commands

The FORCE command and the BROADCAST command now accept multiple
targets. For example, the command:

        BROADCAST [193,*],KB0:,[194,*] "Backup is starting"

broadcasts the message to any user logged into account [193,*], to the
terminal KB0:, and to any user logged into account [194,*].

1.4.4 New /RETAIN_DATES Qualifier for COPY Command

Prior to V9.0, all disk file copy operations, using PIP or the DCL
COPY command, by default retained the input file's creation date-time
and access date on the output file. PIP provided two switches,
/RETAIN and /NEW to control this action. The COPY command provided no
similar qualifiers. In V9.0, the default action was changed so that
date/time information of the input file was not retained in the output
file. Instead, the output file was assigned the current date and
time. This action corresponded to PIP's /NEW switch. Users wanting
to maintain the previous default could specify /RETAIN in their PIP
copy commands, but had no corresponding qualifier to use with the DCL
COPY command. RSTS/E V9.3 provides a new COPY command qualifier,
/RETAIN_DATES, to control this action. If you specify /RETAIN_DATES,
then the output file retains the input file's date-time information.
If you specify /NORETAIN_DATES, then the output file receives the
current date and time at the time the output file is created. The
default is /NORETAIN_DATES. This new qualifier is documented in the
on-line help file for the COPY command.

1.4.5 New /NOWARNINGS Qualifier For RENAME Command

A new qualifier, /NOWARNINGS has been added to the DCL RENAME command.
Normally, an error message is displayed if you try to rename a file to
the name of a file that already exists. Now you can include the
qualifier /NOWARNINGS in the RENAME command to disable displaying this
error message. The default is /WARNINGS.

1.4.6 New /SELECT Qualifier

A new qualifier, /SELECT, is now available with several DCL
file-related commands to allow you to select files based on their
size. The format of the new qualifier is:

/SELECT=SIZE=n Selects only those files with size equal to n.

/SELECT=SIZE=MINIMUM=n Selects only those files with size greater than
     or equal to n.

/SELECT=SIZE=MAXIMUM=n Selects only those files with size less than or
     equal to n.

/SELECT=SIZE=(MINIMUM=m,MAXIMUM=n) Selects only those files with size
     between m and n.

This qualifier can be included with any of the following commands:

        o   APPEND

        o   COPY

        o   DELETE

        o   DIRECTORY

        o   RENAME

        o   SET PROTECTION

        o   TYPE

In the DIRECTORY command, if you specify /SELECT together with the
/SIZE=ALLOCATION qualifier, then files are selected based on allocated
size, not used size. In all other cases, /SELECT causes files to be
selected based on used size. Note that the /SELECT qualifier does not
apply to remote (DECnet/E) files. DCL issues an error message if you
specify /SELECT with a file-spec that includes a node name. All of
the on-line help files for the above commands have been updated to
describe the new /SELECT qualifier. With the exception of the
/SELECT=SIZE=n format, this qualifier is compatible with the COPY
command /SELECT qualifier on VAX/VMS systems.

1.5 Commonly Used System Programs (CUSPs)

1.5.1 DISPLY.TSK

The disk display section of DISPLY.TSK now has column headers similar to SYSTAT.

1.5.2 Error Package

The Version 9.3 Error Package includes support for the XE and XH Ethernet devices. Each device has its own error type. In addition, enhancements have been made to the annotations of MSCP and TMSCP error packets.

1.5.3 PIP.SAV

New PIP Switches to Select Files by Size

Several new switches have been added to PIP to allow you to select files by size. These switches correspond to the new /SELECT qualifier formats described in a previous section of these notes.
The new switches are:

Switch   *Meaning*

/EQ:n   Includes only those files with size equal to n.

/GE:n   Includes only those files with size greater than or equal to n.

/LE:n   Includes only those files with size less than or equal to n.

You can combine the /LE and /GE switches to select files between a minimum and maximum size. For example, if you specify /GE:100/LE:200, PIP includes only those files whose size is between 100 and 200 blocks, inclusive. These new switches are available for all PIP operations. For directory operations (/DI, /LI, /S, /BR, /F), if you specify /EQ, /GE or /LE together with the listing argument :AL (list file's allocated size), then files are selected based on allocated size, not used size. These new switches are described in PIP's own on-line help file (PIP /HELP), as well as DCL's on-line help file for PIP (HELP PROGRAM PIP).

New :NO Argument Added to /RE (RENAME) Switch

Normally, PIP issues an error message if you try to rename a file to the name of a file that already exists. You can now append :NO to the /RE (RENAME) switch to disable displaying the error message.

1.5.4 SHUTUP.TSK

Improved Defaults for Prompts

Previously, the SHUTUP program prompted,

```
Minutes until logins are disabled (0-99) <0>?
Minutes until new network activity is disabled (0-99) <5>?
```

(The second prompt only appears on systems with DECnet/E enabled.) The
maximum value allowed for these prompts was 99, regardless of how you
answered the "Minutes until system shutdown" prompt. Now, SHUTUP uses
the value "Minutes until system shutdown" minus 1 as the maximum value
allowed for these two prompts. Also, SHUTUP uses the value "Minutes
until system shutdown" minus 1 as the default to the "Network
activity" prompt, instead of the fixed value 5. The following
examples illustrate these changes:

```
    Old prompting sequence:

     Minutes until system shutdown (0-99) <5>? <CR>
       Minutes until logins are disabled (0-99) <0>? <CR>
       Minutes until new network activity is disabled (0-99) <5>? <CR>
          :
          :


    New prompting sequence:

       Minutes until system shutdown (0-99) <5>? <CR>
       Minutes until logins are disabled (0-4) <0>? <CR>
       Minutes until new network activity is disabled (0-4) <4>? <CR>
          :
          :
```

Shutdown Message Includes Node Name

If your system has DECnet installed, the system shutdown message now
includes the system's node name. For example:

11:10 AM 17-Nov-86 FOOBAR:: shutting down in 1 minute. Please finish up

11:12 AM 17-Nov-86 **** Final Warning!!!!! FOOBAR:: shutting down. ****

If your system does not have DECnet installed, the system shutdown
messages are the same as in the past.

11:10 AM 17-Nov-86 System shutting down in 1 minute.   Please finish up

11:12 AM 17-Nov-86 **** Final Warning!!!!! System shutting down. ****

1.5.5 SYSTAT.TSK

New Option to List Open Files by Job

The SYSTAT /O and /W switches have been enhanced to support listing
open files by job. You can now include a job number as a parameter to
the /O or /W switches. For example:

```
SYS/O:13            ! Brief listing of files opened by job 13
SYS/O:DB1:4         ! Brief listing of DB1: files opened by job 4
SYS/O:13:           ! Brief listing of files opened on logical device 13:
SYS/W:20            ! Long listing of files opened by job 20
SYS/W:DU3:5         ! Long listing of files opened by job 5 on device DU3:
```

The /W switch also shows other jobs that access a file opened by the
requested job number. The /W switch displays new information about
the open file; it indicates which blocks are currently locked and the
use of mode 8. Mode 8 is indicated by the text "Aex" (for "always
extend mode"). The text for caching modes has been changed to make it
more readable. The text now reads "Rnd" (for "random caching mode")
or "Seq" ("for sequential caching mode").

1.6 Layered Products

1.6.1 Announcing DECnet/E V4.0

DECnet/E V4.0 supersedes DECnet/E V2.1 and is the latest version of
the DECnet communications product for the RSTS/E operating system.
V4.0 is a major release of the DECnet/E product which implements Phase
IV of the Digital Network Architecture and provides Ethernet support
for the DEUNA, DELUA, and DEQNA Ethernet controllers. A DECnet/E node
may be configured as either an end node or a Level I Router using both
DDCMP and Ethernet communications media. Level II Ethernet Routing is
not supported by DECnet/E V4.0. DECnet/E is a separately licensed
layered product available for RSTS/E and is not a bundled component of
the RSTS/E product. For specific details regarding features of
DECnet/E V4.0, see the DECnet/E V4.0 documentation set. Please refer
to the RSTS/E Layered Product Cross Reference SPD for appropriate
order numbers and the DECnet/E V4.0 SPD for specific part numbers of
various kits or options.

NOTE

> RSTS/E V9.3 supports only DECnet/E V4.0; it does not
> support any earlier versions of DECnet/E. Likewise,
> no earlier version of RSTS/E supports DECnet/E V4.0.

Installing DECnet/E V4.0

Prior to RSTS/E V9.3, DECnet/E installation was different from most
layered products, since monitor SILs had to be configured to include
support for DECnet/E. Now, the DECnet/E monitor code is included in
all monitor SILs, but is only loaded into memory at start up if
DECnet/E is installed on your system. This greatly simplifies the
DECnet/E installation procedure, allowing you to install DECnet/E as
you would any other layered product. DECnet/E V4.0 is installed
during the layered product phase of the installation process.

Please refer to the *DECnet V4.0 Network Installation Guide* for details
on how to install DECnet/E V4.0 on RSTS/E.

1.6.2 Announcing DECmail-11 V3.0

DECmail-11 is a menu or command driven electronic messaging system
that operates on PDP-11 computers. It provides facilities for
creating, editing, sending, reading, printing, deleting, and filing
messages. Its features include:

   o User defined commands

   o User defined nicknames

   o System manager defined commands and nicknames (global)

   o The ability to set auto answer

   o The ability to have DECmail-11 act on single messages or
      sequences of messages

   o Complete on line help

   o Commands such as "NEXT", "PREVIOUS", and "LAST" allow the
      user to move through a large number of messages quickly and
      easily.

Major New Features

The One Level Menu Interface

This feature gives each user the choice of either a menu or a command
mode interface. The menu contains the major DECmail-11 functions.
The design of the menu is similar to ALL-IN-1. Upon user request the
menu can be turned off. The user will then be in command mode. The
menu can be turned back on at the user's request.

Remote VMS Message Router Support

DECmail-11 V3.0 supports connections to a remote VMS Message Router
(V2.0 or later) via DECnet. DECmail-11 users who wish to use the
STORE and FORWARD features of Message Router, or wish to correspond
with users of ALL-IN-1 based mail products (without using "MRGATE",
the Message Router VMSmail gateway), will be able to do so by using a
remote Message Router mailbox located on a VMS node.

Sending via Batch Mail

DECmail-11 V3.0 includes a mail queue task to handle the delivery of
queued messages. The mail queue task automatically restarts after a
system has recovered from a crash. In addition, it returns error
messages to the user, and users can query the system for the status of
their queued messages through the SHOW QUEUE command. When sending
messages via the "BA" send menu option, DECmail-11 notifies the user
of any errors that prevent the message from being delivered and
returns the entire message back to the sender.

Availability

DECmail-11 V3.0 is now available from DIGITAL. See your DIGITAL sales
representative for information on purchasing DECmail-11.

1.6.3 Announcing EDT V3.1

EDT V3.1-00 supersedes EDT V3.00-13 and is the latest version of EDT
available on RSTS/E. A summary of the problems corrected by this
release of EDT is described in Section 2 (Differences).

2   Differences between V9.3 and V9.2

2.1   System Generation (SYSGEN)

2.1.1   DECnet/E Prompt Removed

Because of the changes to the installation of DECnet/E V4.0, you are
no longer asked if you want to include DECnet/E during the monitor
configuration dialogue. All RSTS/E V9.3 monitor SILs include code for
DECnet/E device drivers, transport and routing layers. At system
start up, such code is only loaded into memory if DECnet/E is present
on your system.

2.1.2   No UNA/QNA Device Questions

No questions are asked during installation to include drivers for the
the new UNA or QNA ethernet devices. The drivers for these devices
are present in all V9.3 SILs and are only loaded into memory at system
start up if both the device and DECnet/E V4.0 are present on the
system.

                                NOTE

        In V9.3, the UNA/QNA device drivers are only supported
        for use by DECnet/E V4.0. As such, these drivers are
        only loaded into memory if both the device **and**
        DECnet/E V4.0 is present. In future releases of
        RSTS/E, these devices will be supported for general
        use, and will not require DECnet/E to be present to
        load their drivers during system start up.

2.1.3   DMP11/DMV11 Question Always Asked

Prior to RSTS/E V9.3, the monitor configuration dialogue only asked
for the number of DMP11/DMV11's to configure if you answered Yes to
the DECnet/E support question. In V9.3, with the removal of the
DECnet/E prompt (see above), the monitor dialogue always asks about
DMP11/DMV11.

2.1.4   Corrections

The following SYSGEN problem has been fixed in V9.3:

1. The prompt for the Template monitor's name did not accept a
    full file specification.

2.1.5 Monitor SIL File Size

All RSTS/E V9.3 monitor SIL files include code to support DECnet/E and
the Ethernet UNA and QNA device drivers. To compensate for this
additional code, the symbol table from each phase of the monitor has
been removed where possible. In some cases, this has resulted in a
decrease in size of V9.3 monitor SIL files compared to equivalent V9.2
monitor SIL files.

2.2 Initialization Code (INIT.SYS)

2.2.1 Changes to Default

The ability to set one-time defaults (defaults that are in effect only
for the current timesharing session) has been removed in RSTS/E V9.3.
When timesharing is started, the defaults used are always the last
ones you set using the DEFALT option of INIT (or ones automatically
selected for you by INIT if you are starting a newly created monitor).

With the removal of one-time defaults, the "long START" option now
performs the same steps as the "fast START" option except that "long
START" prints the list of all disabled devices before starting
timesharing. Invoke the "long START" option by typing "ST" at the
Option: prompt. Invoke the "fast START" option by typing <CR> at the
Option: prompt.

The code that updates the DEFALT phase of a monitor SIL has been
enhanced to detect errors better during reading or writing of the
phase, and to display a meaningful error message if errors should
occur.

2.2.2 Minimum XBUF Size Enforced

Every RSTS/E V9.3 system must now have a minimum XBUF allocation of 3K
words to start timesharing. The DEFALT and START options of INIT have
been modified to enforce this requirement.

2.2.3 Check for Missing TK50 FCO (Field Change Order)

Older TK50 tape controllers that are missing a required FCO can cause
system crashes when used during timesharing. To prevent this from
occurring, INIT now checks each TK50 device and will not start

timesharing if any of them does not have the required FCO installed.

Since you can safely use such a device with any of INIT's off-line
options, INIT does not disable it. To start timesharing without the
device, use the HARDWR option of INIT to disable it.

2.2.4 Improved Memory List Suboption

The LIST suboption of the Memory Allocation section of DEFALT has been
enhanced to show more information about the current system
configuration. The memory table now shows a map of the total physical
address space of the processor, instead of just showing memory that
actually exists. Memory that is not currently addressable is shown as
"NXM". LIST also displays how much memory is available to RSTS/E.
For example, on a PDP-11/84 system with 512K words of memory
installed, the memory table might appear as:

        Memory allocation table:

          0K: 00000000 - 00423777 (69K) : EXEC
         69K: 00424000 - 03377777 (379K) : USER
        448K: 03400000 - 03717777 (64K) : XBUF
        512K: 03720000 - 10217777 (1532K) : NXM

        Memory available to RSTS/E is now 512K words.

2.2.5 Changes to Date/Time Prompt

The Date and Time prompts in INIT.SYS have been shortened to make them
compatible with the ones displayed on Micro/RSTS. They now appear as:

        Today's date?

        Current time?

The date/time help messages have also been changed to describe the
proper format for entering dates and times. If you enter an invalid
date or time, type "?" or press RETURN to either prompt, then INIT
displays the help text.

2.2.6 Improved Diagnostic Messages

Prior to version V9.3, INIT.SYS displayed limited information for
diagnostic failures that occurred on MSCP (RU) and TMSCP (MU) devices.
It also did not differentiate between real diagnostic failures and
errors that occurred while trying to run the diagnostics. INIT.SYS
now performs diagnostic checks on UNA (XE) and QNA (XH) devices in
addition to the MSCP and TMSCP devices. If a device diagnostic fails,

INIT.SYS prints a message similar to the following:

   <Device> micro-diagnostic failure, code nnnnnn - device disabled

where 'nnnnnn' is the diagnostic error code for the device. Refer to
the appropriate hardware manual for a description of the problem
indicated by the code. For XE and XH devices, INIT.SYS also displays
a message if the probable cause of the failure is that the device is
not connected to an active Ethernet transceiver. For all of these
devices, if the device takes too long to respond, or an error occurs
while trying to execute the device's diagnostic, INIT.SYS prints a
message similar to the following;

   <Device> initialization failure - device disabled

2.2.7 SAVRES Option Correction

In some cases, the off-line SAVRES option incorrectly handled
multi-volume magnetic tape savesets, invalidating all but the last
volume. This problem has been corrected in V9.3.

2.2.8 Corrections to the START Option

The following problem in the START option has been fixed for V9.3:

       o The START option failed if it tried to start a monitor SIL
          that had a DEFALT phase that was not contiguous on the disk.

2.3 Monitor

2.3.1 Small Buffers

Systems which use the High Performance 2780/3780 emulator should now
be able to include approximately 80 more small buffers into their
system, depending on the configuration.

2.3.2 Changes to the MSCP Disk Driver

Enhancements have been made to the MSCP disk driver to increase
performance. Consolidation of driver and common code has greatly
decreased CPU overhead when accessing DU-type disks.

Also, the MSCP disk driver has been enhanced to handle removable media
better. With these changes, the following rules take effect:

o If an MSCP unit is open in non-file-structured mode, you can
   take the unit offline and bring it back online. No errors
   will occur unless I/O is attempted on the unit while it is
   offline.

o If an MSCP unit is mounted, and it is taken offline and
   brought back online, all subsequent requests to the unit will
   fail with "?Device hung or write locked" errors. The unit
   must be logically dismounted and remounted to continue using
   it.

o An exception to the above rule is the fixed RC25 drive. You
   can take a fixed RC25 drive offline and bring it back online,
   even if it is mounted. (This allows for the case in which
   the RSTS/E system disk is on the fixed RC25 platter and the
   unit must be spun down in order to remove the removable
   platter.) However, when the fixed RC25 unit comes back
   online, the volume serial number will be checked to insure
   that the unit number is still associated with the same
   volume.

o These changes also correct a problem that caused the
   dismounting and subsequent remounting of RA60 disks to fail.

2.3.3 Monitor size

The size of a V9.3 monitor is about the same as a comparable V9.2
monitor in memory. The size on disk, however, will be larger or
smaller depending on your configuration.

2.3.4 UMR Usage Reduced

The version 9.3 monitor now reserves two less Unibus Mapping Registers
(UMRs) for its own use than before, allowing more simultaneous I/O
requests on machines which have Unibus disks and/or tapes.

2.3.5 Disk Autosize Correction

Disk units are now autosized when the device is allocated as well as
when it is mounted. Previously, a problem existed in the RSTS/E
monitor where opening a disk non-file-structured failed to autosize
the unit.

2.3.6 Monitor Corrections

The following monitor problems have been corrected for Version 9.3:

o A job could not open a non-mounted disk in
   non-file-structured (NFS) mode on more than one channel
   simultaneously.

o The line printer (LP) driver sometimes crashed the system if
   the character designated as the "special space" character
   caused a line break.

o Several problems dealing with access to resident libraries
   have been corrected.

o The Add/Remove Run-Time System or Resident Library directive
   (UU.RTS) caused the system to hang if a 1K word library was
   added at certain addresses.

o If the user tried to set a run-time system name of all
   blanks, the UU.NAM directive sometimes restricted the
   attempt. The monitor now properly allows this for all
   non-executable files with a filesize less than 65536 blocks.

o The RSX emulator incorrectly calculated the initial job size
   of overlaid I & D space programs. This caused later uses of
   the GTSK$ and EXTK$ RSX directives to fail in unpredictable
   ways. This problem was most noticable with BASIC-PLUS-2,
   which uses the GTSK$ directive on initial program startup.
   It often noticed the GTSK$ failure and aborted with an ?Odd
   address trap. In cases where the GTSK$ failure or EXTK$
   failures were not detected, programs usually failed with a
   ?Memory management violation.

   This problem has been corrected. The monitor now properly
   calculates initial job size for overlaid I & D space
   programs.

o The MSCP driver calculated the device size incorrectly for
   disks with device clustersizes greater than 1. This problem
   has been corrected

2.3.7 Terminal Service

Performance Improvements

Changes have been made to the terminal driver to help improve output
performance. Terminal output performance in this version of the
RSTS/E terminal driver has been improved by 7% to 10% over the V9.2
version. This change may or may not be noticable, depending on the
configuration and use of terminals on your system.

Corrections

The following terminal service problems have been corrected in V9.3:

o   The terminal driver failed to wake up controlling jobs when
    there was output pending on a pseudo-keyboard.

o   When closing or releasing a terminal, the terminal driver
    incorrectly cleared a flag bit used to indicate that an XOFF
    had been sent by the device. If there was still pending data
    to be sent to the device, the terminal driver immediately
    proceeded to transmit the pending data, causing data
    overruns.

o   Printers connected to a terminal line could lose data when
    the device was closed if the current and permanent
    characteristics, such as the speed of the line, differed.
    This problem occurred because the terminal driver reset the
    line characteristics to their permanent settings before all
    the output text had been sent to the printer. The terminal
    driver now delays the reset until all output is sent.
    However, to ensure that all the data has been transmitted to
    the device from the interface itself, the driver sends two
    null characters before resetting the characteristics. On
    some interfaces, if the two null characters have not been
    sent prior to the reset, they may appear as garbage
    characters. This is not a bug in the driver, but a function
    of how the hardware works.

o   The terminal driver failed to XON a dial-up line connected to
    a DHV11/DHU11 multiplexer when the last character received
    prior to losing the dial-up connection was an XOFF.

o   The terminal driver failed to treat Control_C (CTRL/C or ^C)
    as a delimiter when the terminal was opened in echo control
    mode.

o   The default stop bit setting for terminals connected to DH11,
    DZ11, and DHV11/DHU11 multiplexers was incorrectly defined.

o   Terminal lines set to AUTOBAUD could be set to the wrong
    default speed. The default speed settings for AUTOBAUD lines
    is 9600 baud. Under some situations the default speed was
    set to 600 baud.

o   Typing or forcing a Control_O (CTRL/O or ^O) to a terminal
    which is owned by a user but is not the user's console
    terminal depleted the system's small buffer pool.

o   The system sometimes crashed when opening a slave terminal in
    binary mode if the terminal was connected to the system by a
    DHV11/DHU11 multiplexer.

o   Output interrupts could be lost on devices connected to
    DHV11/DHU11 multiplexers, causing the terminal to temporarily
    hang.

2.3.8 Set Terminal Characteristics SYS Call

Reading/Setting Characteristics on Owned Terminals

The Set Terminal Characteristics SYS call (UU.TRM Directive) has been
changed in V9.3 to allow a job without HWCFG privilege to read and set
the characteristics of any terminal owned by the job. A terminal is
owned if it is the job's console terminal, or if it is opened or
allocated by the job. UU.TRM returns the error "?Protection
Violation" if a job without HWCFG attempts any of the following:

o   Read or change the characteristics of a terminal not owned by
    the job

o   Change the speed of any terminal

o   Set the permanent characteristics for any terminal

o   Change the input buffer quota for any terminal

Planned Change for Handling Disabled Terminals

The Set Terminal Characteristics Part I and Part II SYS calls (UU.TRM
directive) will be changed in the next release of RSTS/E (not V9.3) to
return the error "?Device not available" if you attempt to set or
retrieve information on a terminal that has been disabled by INIT.SYS.
This change is consistent with the manner in which the terminal driver
prevents access to such devices, and is required for future
development. If you have an application which issues this call on
disabled terminals, it must to be modified to trap this error and take
whatever action is appropriate.

Corrections

The following problems have been corrected in the Set Terminal
Characteristics SYS Call (UU.TRM monitor directive) for V9.3:

o   Issuing the Set Terminal Characteristics Part I SYS call to
    set both parity and speed of a line connected to a
    DHV11/DHU11 multiplexer resulted in the wrong parity being
    set.

o   Issuing the Set Terminal Characteristics Part I SYS call to
    permanently set the line to NOLOCAL_ECHO failed to work.

   o Issuing the Set Terminal Characteristics Part I SYS call to
      set or clear TTSYNCH for a non-existent terminal connected to
      a DHV11/DHU11 multiplexer caused the monitor to become
      corrupted and subsequently, the system to crash.

2.3.9 Tape Driver Corrections

The following problems associated with magnetic tape drives have been
corrected in V9.3:

MS/MU Tape Driver

   o During an ANSI file-structured magtape open, there was a
      timing condition that, together with an error logged by the
      drive, could cause the system to crash.

   o If asynchronous I/O was outstanding for the drive, while a
      close and re-open of the device was performed, the system
      could crash.

   o Under certain conditions, using asynchronous I/O to read an
      ANSI tape on an MS or MU drive could cause the system to
      crash when it reached EOT.

MS Tape Driver

   o Long "skip forward" or "skip backward" operations timed out
      and caused unexpected results. This was seen mostly when
      using the RESTOR package to restore files saved with the
      pre-V9.0 BACKUP utility.

   o A job using the tape drive hung the system for approximately
      45 seconds, then either proceeded normally or aborted with a
      "?Device hung or write locked" error.

   o Skip operations returned a "?No room for user on device"
      error when beyond EOT. No error should have been returned.

   o Initial write operations to a blank TK25 tape cartridge timed
      out, rendering the cartridge useless and possibly hanging the
      system.

   o During ANSI file-structured processing, the "?End of file on
      device" and "?End of volume" errors also returned a non-zero
      byte count. This caused some RMS utilities to produce
      unexpected results.

o Prior to V9.3, if a drive timeout or hard error occurred and
   the drive never became ready to accept commands, the system
   would hang, waiting for the drive to become ready.

   Should a timeout or hard error occur under V9.3, and the
   recovery attempt fails or is impossible, the error "??Fatal
   system I/O failure" (ERR = 12) will be returned. All further
   requests to the drive will receive this error until the drive
   has been deallocated by the job.

2.3.10 Correction to DB and DR Disk Drivers

The following problem in the DB and DR disk drivers has been fixed for
V9.3:

o The DB and DR disk drivers did not count errors eligible for
   ECC correction in the unit error count table (UNTERR), even
   if the error was hard (not correctable). Thus these errors
   did not show in the SHOW DISKS display.

2.4 System Startup

The INSTALL/SWAP_FILE=1 command in the SYSINI.COM file has been
changed in RSTS V9.3 to include the /NOLOG qualifier to disable the
confirmation message.

2.5 Installation

2.5.1 Multi-volume Installation Kits

The RSTS/E installation procedure uses the DCL RESTORE command to copy
most software components from the installation and library kits onto
your system disk. Previously, if the RESTORE process detected an
end-of-volume condition, it prompted you to dismount the current
volume and mount the next volume. However, it allowed you to specify
a different device than the current volume's device. For example,
when the RESTORE process reached the end of the first volume of an
RL02 library kit, it issued the prompt:

          Please dismount present volume
          Please mount next volume
          Where can this volume be located? <_DL0:>

While this "change devices" feature was useful for general BACKUPs and
RESTOREs, it could not be used during installation. If you elected to

mount the next volume of your installation or library kit on a
different device, the installation process terminated with an error.
The *RSTS/E V9.2 Release Notes* noted this problem as a restriction. In
V9.3, the RESTORE process during installation no longer allows you to
specify a different device for mounting the next volume. Instead, you
must mount each volume on the same device. RESTORE prompts you to
dismount the current volume and mount the next volume with the
(sample) text:

            Please dismount the current volume
            Mount volume 2 on device _DL0:
            Press RETURN when ready:

After dismounting the current volume and mounting the next volume,
press RETURN to continue the installation.

2.5.2 Caution - Target Disk Updates

Before updating a target disk other than SY:, you should first update
your current system disk. Otherwise, the resultant target disk may
contain a mix of current and previous version components. In
particular, INIT.SYS and your monitor SIL file may not be the same
version, resulting in an error when you try to start timesharing on
that disk. The proper sequence is to first update your system disk to
the current version, then update other target system disks. You can
update target disks either offline by booting the installation kit, or
online by issuing the @[0,1]INSTALL command.

2.5.3 Installation Corrections

The following installation problems have been corrected in V9.3:

    o   The presence of user defined logicals could cause an
        installation or update to fail. The installation and update
        command procedures now deassign all user logicals before
        attempting to assign their own.

    o   Under certain conditions, the installation procedure failed
        to rename the files [0,1]START.090 and [0,1]LOGIN.090 to
        [0,1]START.COM and [0,1]LOGIN.COM. The installation
        procedure now renames the files correctly.

    o   The installation procedures now allow double-digit device
        numbers for system disks.

    o   The installation/update procedure left CTRL/C disabled (SET
        TERMINAL/NOCONTROL=C) on exit when running under the SYSGEN
        monitor. It now properly re-enables CTRL/C before exiting.

2.6 DCL

2.6.1 SET PROMPT Command Accepts Expression

The SET PROMPT command now accepts an expression for the prompt
string. Previously it accepted only a quoted string. For example:

```
        $ !Prompt before is "$ "
        $
        $ SET PROMPT F$LEFT(F$NODE,F$LEN(F$NODE)-2)+"> "
        MASTER>
        MASTER> !Prompt after is "MASTER> "
```

The maximum length of a prompt is unchanged. Numeric expressions are
permitted and are automatically converted to strings.

2.6.2 SHOW DEVICE Command Enhancements

The SHOW DEVICE command now displays the device names TU80, TU81,
TS05, TK25, TK50, and the Ethernet devices. For the Ethernet devices,
the default physical Ethernet address will also be displayed. Also,
the SHOW DEVICE command now performs 3-10 times faster than before,
especially when a parameter is specified.

2.6.3 SHOW SYMBOL Enhancements

The SHOW SYMBOL command now displays symbols in alphabetical order.
The collating sequence is based on the ASCII values of the characters
in the symbol names. As before, local symbol names are displayed
before global symbol names. Also, the SHOW SYMBOL command now accepts
abbreviated symbol names. For example:

```
        $ FOO-BAR = "This is a test"
        $ SHOW SYMBOL FOO
        FOO-BAR = "This is a test"
```

2.6.4 INITIALIZE Command Supports /NEW_FILES Qualifier

The INITIALIZE command for disks now accepts the
/NEW_FILES={FIRST|LAST} qualifier. Use this qualifier to indicate
whether files stored on the disk should be placed at the beginning of
an account (/NEW_FILES=FIRST) or at the end of an account
(/NEW_FILES=LAST). The default is /NEW_FILES=LAST.

2.6.5 DCL Error Message Removed

The message "?Symbol table almost full" has been removed. DCL now
displays the error message, "?Symbol table full" if it cannot find
enough available memory to fulfill a request for additional symbol
space.

2.6.6 Confirmation of BROADCAST and FORCE Commands

Prior to V9.3, the FORCE and BROADCAST commands only printed a
confirmation message when the target was a PPN. In RSTS/E V9.3, these
commands always print a confirmation message, regardless of the target
specified.

2.6.7 DCL Corrections

The following problems have been corrected in DCL or its associated
commands for V9.3:

BACKUP

o   Previously, BACKUP required you to specify a file name in its
    input ("From") parameter. It now defaults the file name and
    type to *.*.

o   On multi-disk public structures, if you specified _SY: as
    the input disk or did not specify an input device, BACKUP
    only backed up files from the system disk (_SY0:). Now,
    BACKUP correctly interprets _SY: to mean all disks in a
    public-disk structure.

o   BACKUP did not convert the /OUT_LABEL and /IN_LABEL argument
    names to uppercase. It now does so.

DCL Command Interpreter

o   DCL commands which translated into PIP commands (such as
    DIRECTORY, TYPE, CREATE, RENAME, etc) failed to pass the
    command line to PIP if the translated command line was longer
    than 127 characters. This problem was due to a restriction
    in the RT11 runtime-system which does not allow longer
    command lines. DCL now reports an error if a user types a
    command that exceeds the maximum line length of 127
    characters.

o Certain DCL commands such as MACRO/RT11 and FORTRAN/FOR
   failed if an explicit PPN was given in the input file
   specification. This has been fixed.

o Certain commands such as DIRECTORY could not be used to
   access only SY0: on a multi-disk public structure.
   Specifying SY0: caused the entire structure to be
   referenced, not just SY0:.

INITIALIZE Command

o In V9.2, the INITIALIZE command for disks always failed with
   an "?Invalid clustersize" error (issuing the off-line DSKINT
   option of INIT.SYS or running the on-line DSKINT program
   worked). Software Dispatch Article 10.5.1, published in July
   1986, corrects this problem in V9.2 as well.

o Previously, if you typed CTRL/Z in response to the "Proceed
   (Y or N)?" prompt, the INITIALIZE command terminated with the
   error message,

           ?Error trap needs RESUME at line 32767

   Now, typing CTRL/Z in response to the "Proceed" prompt causes
   the command to exit as if you had entered N (No).

o DSKINT selects optimum clustersizes by default when it
   initializes the virtual disk. This change was actually made
   in V9.2 but was not mentioned in those release notes.

INSTALL/RUNTIME_SYSTEM and INSTALL/LIBRARY Commands

o The INSTALL/RUNTIME_SYSTEM command and the INSTALL/LIBRARY
   command ignored the filetype of a filespec if it was
   specified. Since the monitor requires that the filetype be
   .RTS for run-time systems and .LIB for resident libraries,
   these commands now print an error message if the filetype
   specified is invalid.

o The INSTALL/LIBRARY command hung the system if a 1K word
   library was installed at certain addresses (specified by a
   /ADDRESS qualifier argument).

INSTALL/ERROR_FILE, /OVERLAY_FILE, and /SWAP_FILE Commands

o   The INSTALL/ERROR_FILE command, the INSTALL/OVERLAY_FILE
    command, and the INSTALL/SWAP_FILE command ignored the ppn
    and the filetype of a filespec if it was specified. Since
    the monitor requires that the ppn be [0,1] and that the
    filetype be .SYS, these commands now print an error message
    if the ppn or the filetype specified is invalid.

MOUNT Command

o   The MOUNT command for tapes reported the wrong density for
    multi-density tape drives. It now reports the correct
    density.

o   The MOUNT command for disks will now accept the /NORESTRICT
    qualifier. Previously, it only accepted the positive form of
    the qualifier (/RESTRICT).

LINK Command

o   The DCL LINK command created a zero length file in the system
    library account, named LB:FDVLIB.TSK, when the command
    LINK/BP2/FMS=RESIDENT was issued. This problem has been
    fixed.

o   The /DESCRIPTION qualifier of the LINK command was
    incorrectly checking for an input file type of ".OBJ". The
    LINK command reported "?File not found" if a .OBJ file did
    not exist (even if a .CMD was present). The LINK command now
    checks for an input file type of ".CMD" when the /DESCRIPTION
    qualifier is used.

SHOW ACCOUNT and DELETE/ACCOUNT Commands

o   The SHOW ACCOUNT and DELETE/ACCOUNT commands used _SY0: as
    the default device instead of _SY:. This caused problems for
    systems using a multi-disk public structure. These commands
    now use the correct default _SY:.

o   The DELETE/ACCOUNT command deleted accounts that contained
    only zero-length files, without first issuing a confirmation
    prompt. The command now correctly requests a confirmation
    before deleting such an account.

SORT and MERGE Commands

o The commands SORT and MERGE failed with the error
   "?Maximum memory exceeded" if many qualifiers were used. The
   amount of memory available for qualifiers has been doubled.
   If this is insufficient, you should consider using a
   specification file with the SORT or MERGE command. Please
   refer to the SORT/MERGE User's Guide for further information.

SHOW FILE/SYSTEM Command

o The SHOW FILE/SYSTEM command displayed "None" if there were
   any errors encountered looking up the system file; it did not
   report any unexpected errors. The command now display an
   error message if it encounters an error looking up the system
   file.

TYPE Command

o The TYPE command did not always display Fortran files
   correctly.

2.7 Help Files

The following on-line help files have been updated for V9.3:

o ADVANCED DISKS. New disks that are now supported have been
   added.

o APPEND, COPY, DELETE, RENAME, SET PROTECTION, TYPE. The
   qualifier /SELECT=SIZE=n has been added to the DCL commands.
   These help files also had a reference to time for the
   date-related switches. This reference has been removed from
   each help file. The qualifier /[NO]RETAIN_DATES has been
   added to the COPY command and the /[NO]WARNINGS qualifier has
   been added to the RENAME command.

o BACKUP and RESTORE. The /[NO]PROMPT qualifier has been
   added. The /BLOCK_SIZE qualifier has been added to the
   BACKUP command.

o BACKUP, MOUNT (Tapes), INITIALIZE (Tapes) and SET SYSTEM.
   The /DENSITY qualifier topic has been clarified. In some
   cases, the description of the action taken when this

qualifier is not specified was incorrect or misleading.

o CREATE ACCOUNT. The example which referenced an invalid ppn
   has been corrected. A line-wrapping problem in the help text
   for CREATE/ACCOUNT/POSITION has also been corrected.

o FORTRAN/F77. Miscellaneous corrections have been made.

o INITIALIZE (Disks). The /NEW_FILES qualifier has been added.

o LINK. The qualifier /SORT_AND_MERGE=[NO]RESIDENT has been
   added.

o PASSWORD. The help file had an incorrect reference to
   NOLOOKUP passwords when it should have been LOOKUP passwords.

o PROGRAMS. The SYSTAT /O and /W switch descriptions have been
   updated to include the optional job number argument. The
   help files for PIP have been updated to include the new
   switches /EQ, /GE, and /LE.

o SET DEVICE Examples. The example attempted to disable a disk
   with the SET DEVICE/DISABLE command, which is not possible.
   The example has been changed to disable a tape drive instead.

o SET SYSTEM. A line-wrapping problem in the help file has
   been corrected. The qualifier /[NO]LOGINS has been added.

o SET TERMINAL/BUFFER_QUOTA. The word "system" was spelled
   incorrectly and has been corrected.

2.8 Commonly Used System Programs (CUSPs)

2.8.1 ANALYS

The following problems have been corrected in ANALYS for V9.3:

o Some "Odd Peek Address" and "Peek address out of range"
   errors occurred during annotation.

o Two "...RSX" runtime systems were listed in the Run-Time
   System list, one described as "Monitor" under the Comments
   column, and one listed as residing on the virtual disk.

o In the memory layout section, the Virtual Disk was not
   displayed in the memory list. Instead, the area which should
   have been allocated to the Virtual Disk was listed as being
   "locked out".

o The memory list showed job names incorrectly.

o   The UMR printout was incorrect.

o   The disk display in the SYSTAT area did not show any keyword
    for disks initialized for Date of Last Access. It now shows
    DLA.

o   The message receiver display sometimes incorrectly printed
    ??? under the Access field.

2.8.2 DISPLY.TSK

The following problems in DISPLY.TSK have been corrected for V9.3:

o   The disk display section reported an incorrect error count.

o   The buffer error count display reported an incorrect error
    count.

2.8.3 Underscore Prefix Added To Null device Name

Prior to RSTS V9.3, several programs did not include an underscore
character (_) with the null device name, NL:. This resulted in random
results if there was a system or user logical named NL: defined when
these programs were run. The following programs have been changed to
include the underscore prefix character with the null device name to
avoid any possible conflicts:

                        - ANALY3.TSK
                        - EMTCPY.TSK
                        - ERRCPY.TSK
                        - ERRINT.TSK
                        - PBSMGR.TSK
                        - SPLRUN.TSK
                        - SHUTUP.TSK

2.8.4 HELP.TSK

The following problem in HELP.TSK has been corrected for V9.3:

o   Aborting HELP.TSK with CTRL/C sometimes caused the error
    message "??Program failure in HELP - ??Programmable C Trap -
    sy:[0,2]HELP.HLP" to be displayed.

2.8.5 HOOK.SAV

The HOOK.SAV program has been modified for RSTS/E V9.3 to use the new
open MODE 16384, so that you can continue to HOOK mounted disks.

2.8.6 OPSER Spooling Package

The work files SPL???.WRK and BAT???.WRK are now located in OPSER$:
rather than in [1,2]. The following corrections have been made for
V9.3:

  o When QU/K removed a queue entry with an /AFTER qualifier, the
     /AFTER entry in the QUEUE.SYS table did not return to the
     free list along with the queue entry.

  o In V9.1, users logged into accounts lacking WWRITE or GWRITE
     privileges could not delete files in their own accounts by
     using the /DELETE qualifier with OPSER QUE. The Release
     Notes for V9.2 stated that this problem had been fixed.
     Because of a coding error, however, the problem still appears
     in V9.2 in certain cases. It has now been fixed for all
     cases in V9.3.

  o The QUMRUN program could go into hibernation (HB state) if
     the first spooler job was unable to receive messages for more
     than a minute.

  o When the $JOB line in a BATCH command file specified a
     non-existent account number, the batch job failed. BATCH now
     returns the error, "?NO SUCH ACCOUNT".

2.8.7 PIP

The following problems have been fixed in PIP.SAV for RSTS/E V9.3:

  1. PIP did not honor a file's EOF attribute when copying the
      file to a terminal.

  2. The /RMS:FA switch did not display any Fortran files
      correctly.

  3. PIP did not display fixed-length Fortran files correctly.

2.8.8 Print/Batch Services (PBS)

The following problems have been corrected in Print/Batch Services

(PBS) in V9.3:

   o Using a SET ENTRY/PRIORITY command to lower an entry's
      priority by one did not reposition the entry behind those
      with the same initial priority. Also, using the same command
      to raise an entry's priority by one had the same effect as
      raising it by two. See the January 1987 Software Dispatch
      article 15.1.2 for further details.

   o Batch jobs submitted via a User Request Packet that included
      an OWNER field (type 3) by default tried to create the log
      file in the submitter's account, rather than the owner's
      account. This often failed because the user did not have
      enough privilege (WWRITE or GWRITE) to create files in other
      accounts. See the January 1987 Software Dispatch article
      15.1.3 for further details.

   o If the system or user logical name NL: was defined, most PBS
      commands failed or produced unexpected results. This was
      caused by the omission of an underscore (_) prefix in a
      module's reference to the null device.

2.8.9 REORDR.TSK

Prior to V9.3, the REORDR utility required WRTNFS (write
non-file-structured) privilege to run. It did not require WACNT or
GACNT privilege, as do all other account management commands. In
V9.3, REORDR requires WACNT or GACNT privilege to run. If you attempt
to run REORDR without either of these privileges, REORDR issues the
error message:

        ?REORDR requires GACNT or WACNT privilege

and terminates.

Additionally, REORDR requires you to have WACNT privilege to reorder
any account outside your own account group. If you specify an account
outside your group, and you do not have WACNT privilege, then REORDR
issues the error message:

        ?WACNT privilege required - (account-spec)

and re-prompts.

2.8.10 SAVRES.SAV

The SAVRES.SAV program now acts as it did before RSTS V9.0; it will no
longer allow users with sufficient privilege to perform SAVE, RESTORE,
or IMAGE operations to or from a mounted disk.

Other programs like SYSTAT will also no longer allow users with
sufficient privilege to write non-file-structured to a mounted disk.

2.8.11 SHUTUP.TSK

The following problem in SHUTUP.TSK has been corrected for V9.3:

    o   Shutup aborted during the ERRCPY shutdown phase, even when
       ERRCPY already had shutdown.

2.8.12 SYSTAT.TSK

The following problem in SYSTAT.TSK has been made for V9.3:

    o   SYSTAT sometimes printed "???" in the comments field of the
       message receiver display section.

2.9 Unsupported Programs

2.9.1 STATUS.TSK

The following changes have been made to the STATUS.TSK program for
V9.3:

    o   The maximum number of disks that the program can handle has
       been increased.

    o   you no longer see the message "?Disk data cannot fit on the
       screen" when you include the /VT5x or /VT100 switch for the
       output file. Instead, the program prints out as much of the
       disk data as it can until the screen is filled. The next two
       changes allow you to display the remainder of the disk data.

    o   To display a list of mounted disks only, type 'M'<CR> while
       the program is running. This allows you to see a list of all
       the mounted disks on the system. To display a list of the
       non-mounted disks as well as the mounted disks, type 'N'<CR>
       . The default is 'M' (display mounted disks only).

    o   To remove a list of the first n number of disks from the
       display, type 'Dn'<CR> while the program is running . Type
       'D' or 'D0' to display a list of all the disks again.

2.9.2 RSTSFLX Program

The unsupported RSTSFLX program that runs on VAX/VMS systems to read
data from RSTS-structured disks has been updated to support some of
the newer device types. Specifically, the RX50 is now an allowable
device.

2.10 RMS

2.10.1 Access Methods

The following access methods problems have been corrected for RMS in
RSTS/E V9.3:

o   The ORG$, POOL$B and GSA$ macros lost the current psect and
    redirected the location counter to the blank psect (.BLK.) on
    exit from the macro. This caused I & D space programs to put
    data in I-space and sometimes caused programs to abort with
    memory management violation errors when they later referenced
    those locations. This problem is corrected by a change to
    RMSMAC.MLB. All I & D space programs using RMSMAC.MLB should
    be reassembled. Users should ensure that their RMS-based
    programs did not rely on these particular RMS-11 macros
    exiting with the location counter pointing to the .BLK.
    psect.

o   Programs using Mass Insert in indexed files (including RMSCNV
    with /MA) could abort with "Dynamic Memory Exhausted" when
    duplicates were encountered. This problem is corrected by a
    change to R3IUDR and R3IUDL in RMSLIB.OLB and the RMS
    resident library.

o   On relative files opened READ access, WRITE shared, a $GET
    operation requesting locate mode could fail to read from
    disk. If the current $GET involved the same bucket as the
    previous $GET then RMS-11 incorrectly assumed it had a valid
    cache and copied that data to the user buffer. A $GET
    operation should always read from the disk, since READERS do
    not cause bucket locks and a WRITER may have updated the file
    since the last $GET. This problem is corrected by a change
    to module R2GET in RMSLIB.OLB and the RMSLBC.LIB resident
    library.

o   In write-shared index files, a high priority RMS-11
    application could lock out other accessors. In the process
    of attempting to obtain the target record, RMS-11 often had
    to sleep while waiting for an intermediate record (in the
    index tree) to become available. The amount of sleep
    requested was not always great enough to allow the lower
    priority job to release the lock on that intermediate record.
    This problem has been corrected in R0RWBF in both RMSLIB.OLB
    and the resident library.

NOTE

If the user aborts an application before an RMS-11
write operation ($PUT, $DELETE, $WRITE etc.) is
completed, the file is left in an indeterminate state.
This is similar to the effect of a system crash. If
the file is an indexed file it should be reloaded via
RMSIFL before any applications are permitted to access
it.

2.10.2 Network Access Methods

The following network access problems have been corrected for RMS in
RSTS/E V9.3:

o A remote $CLOSE did not work correctly when a Protection XAB
   was linked into the extended attributes (XAB) chain, and the
   remote network partner was not using V6.0 Data Access
   Protocol (DAP). Please note that V5.6 DAP (supported by
   RSTS/E) does not allow the modification of the Protection XAB
   (PRO XAB) on the $CLOSE operation, while V6.0 DAP (supported
   by RSX and VMS) does. If the remote node does not use V6.0
   DAP, the presence of a PRO XAB is ignored. Thus, if a user
   wishes to use a PRO XAB and the possibility exists that the
   remote node uses V5.6 DAP, the user should set up protection
   XAB values on the $CREATE operation rather than on the $CLOSE
   operation. This correction affects module RONFRT in the
   RMSDAP.OLB and the DAPRES library.

o The protection XAB Owner (PRJ and PRG fields) was incorrectly
   translated when the remote system was RSX or VMS. The
   translation always assumed that it was a decimal UIC when in
   fact it was octal. This error occurred both when files were
   created and when files were opened. This correction affects
   modules RONFRL and RONFLR in the RMSDAP.OLB and the DAPRES
   library.

2.10.3 RMS-11 Utilities

RMSCNV

The following problems have been corrected in the RMSCNV utility in
RSTS/E V9.3:

o RMSCNV did not work correctly when the /MA switch was used.
   When a sufficiently large number of duplicates were
   encountered, it reported the error ER$DME (Dynamic Memory
   Exhausted).

o   The /EO switch did not work correctly. Before version 9.0 it
     did not work at all. As a result of a correction issued in
     version 9.0 it null filled the last block containing valid
     data in the file (logical end-of-file (EOF)). However it did
     not null fill to physical EOF. This problem was corrected in
     version 9.2 but was not documented in the V9.2 Release Notes.

RMSIFL

RMSIFL does not work correctly when the input file is on magnetic
tape. This is due to the fact that it does not transfer the data to a
temporary work file as documented, and certain RMS operations fail if
directed to a magnetic tape. In some cases RMSIFL reports the error
"-880" (illegal operation for file). Where the input file is not a
sequential file it may not report an error, however the data may not
be handled correctly. If the input file is a sorted sequential file,
then you can work around this problem by using "/NOSO". This problem
will be addressed in a future release of RMS-11 but is currently a
restriction.

2.10.4 RMS Documentation

Please add the following text to the *RMS-11 MACRO Programmer's Guide*,
Appendix A, page A-6:

 ER$FUL Device or File Allocation Failure   Octal: 176360
                                                    Decimal: -784

     The specified device or directory does not have enough room
     for file creation or extension. In the case of a contiguous
     request it is also possible that there is not enough
     contiguous space on the device.

2.11 Layered Products

2.11.1 Basic-Plus Patch Removed

Prior to RSTS V9.3, there was a mandatory patch - installed
automatically during installation - to clear the I/O buffer whenever a
file was opened. This change has been incorporated into the
Basic-Plus source code for V9.3 and the patch removed.

2.11.2 COBOL-81 Corrections

For RSTS/E COBOL-81 V2.4, the following problems have been corrected:

o Several files of the COBOL-81 V2.4 kit have improper
   protection codes. These are corrected during the update.

o The COBOL-81 V2.4 compiler sometimes generated illegal format
   object file records when large literal values were used.
   Module GPDOUT has been replaced in the compiler library to
   correct this problem.

o A PERFORM of greater than 65536 iterations in an overlayed
   program sometimes resulted in an incorrect transfer of
   control when PERFORM range checking was turned off (the /-PER
   compile switch). Module PERFO in the OTS libraries has been
   replaced to correct this error.

2.11.3 DECmail-11 V3.0

Updates on RSTS/E V9.3:

RSTS/E V9.3 contains updates for DECmail-11 V3.0. Transfer the
DECmail-11 V3.0 update components to the PATCH$ account during the
system upgrade from V9.2 to V9.3. 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

     Disk space:

     - 670 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 blocks for the tasks in MAIL$: should be
          contiguous for optimum performance.

-   The total number of free blocks needed to do this update
    is 6020 of which 1350 blocks should be contiguous. 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 LAYERED_PRODUCT 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.

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

Corrections

The following problems have been corrected in DECmail-11 V3.0 on
RSTS/E V9.3:

   o DECmail-11 ignored the date and time values specified to the
      /AFTER qualifier when sending a message using the /EDIT
      qualifier, or if AUTO EDIT was enabled.

   o DECmail-11 cleared out the From: and Subject: fields when
      sending a message with /EDIT or AUTO EDIT enabled.

   o Batch Mail messages having To: and CC: lines longer than
      255 characters resulted in a "?Line too long" error and
      aborted MAILQ.

   o Entering PRINT<RET> with no current message aborted MAIL with
      an "?Arguments don't match" error.

   o DECmail-11 displayed "?Integer error" when sending a message
      greater than 64 blocks in length via Message Router.

   o MAILQ aborted with "?No room for user on device" when it
      encountered zero free blocks. MAILQ now waits for blocks to
      become available before re-attempting the delivery.

   o Users sometimes received multiple copies of the same mail
      message when sent via Batch Mail.

   o Entering "NI" at the Send Menu replaced 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, did not print correctly when sent to users
      on other nodes.

o   Users intermittently received messages with an incorrect To:+
    field when sent via Batch Mail.

2.11.4   DIBOL Changes

For RSTS/E DIBOL V5.2, the following changes have been made in RSTS/E
V9.3:

o   The replacement files for the DMS-DIBOL resident library
    (DBADRL) correct the following problems:

    -   Potential loss of data to parallel printers if a task
        terminates immediately after a CLOSE.

    -   LPQUE statement not recognizing user logicals.

o   The replacement files for the RMS-DIBOL resident library
    (DBARRL) correct the following problems:

    -   An entry point used by the subroutine ISMCRE unavailable.
        This update restores that entry point ($ERCHK).

    -   LPQUE statement not recognizing user logicals.

o   The replacement DECFORM components (FOCOMP.SAV, FOCOMR.SAV,
    DECLIB.OLB, and DECF0.DBL) correct the following problems:

    -   EXECUTE string limited to 14 characters (increased to
        24).

    -   ODL file not being generated properly in all cases.

    -   Inability to address beyond column 68 on VT52's (or
        VT100's in VT52 mode).

    -   Use of the password option causing TRAP to 4 in compiler
        (FOCOM?.SAV).

    -   Use of extension in output file causing error in command
        file created by compiler (FOCOM?.SAV).

    -   Use of both range check and if check on the same field
        causing runtime error.

    -   Key fields ordered by sequence number cause error at
        runtime.

    -   RMS-DECFORM programs searching ISAM files linearly
        instead of by key.

- CHAIN option not working.

- File validation option using a PPN not working.

- Sequential search of an RMS ISAM file causing DIBOL
  "subscript error".

NOTE

These corrections to DECFORM programs require that the
DECFORM programs be recompiled (using FOCOMP.SAV or
FOCOMR.SAV) and taskbuilt again using TKB.

2.11.5 EDT V3.1-00 Changes

The following list summarizes the differences between EDT V3.1-00 and
the previous version, V3.0-13:

o EDT did not display an error message if erroneous characters
   followed the EXIT command. For example, *EX9T created the
   output file 9T. EDT now correctly displays an "unrecognized
   command" error message, and reprompts for the correct
   command.

o Occasionally EDT changed lowercase text to uppercase while
   using the SET ENTITY COMMAND. EDT now correctly recognizes
   all lowercase characters in the SET ENTITY WORD command.

o The following sequence of nokeypad commands:

           D (delete) + EL (end of line)
           UNDL (undelete line)

   did not always undelete all the characters in the line. EDT
   now undeletes all the characters in the line.

o If a user cleared a buffer (other than the main or paste)
   that had a select range active, then created the buffer
   again, or attempted to reset the select range, EDT displayed
   an internal BUG-CHECK error. EDT now resets the select range
   when the user clears a buffer other than the main or the
   paste.

o The command SUB/ / / ALL did not always work properly. If
   the string used with the ALL qualifier was at or near the end
   of the text line and the length from the beginning of the
   string to the end of the text line was shorter than the
   length of the substitute search string, EDT failed to
   continue substituting after the first substitution was

complete. EDT now continues with additional substitutions.

o EDT displayed a "Must Select Full Lines" error message under
   the following circumstances even though a full line appeared
   to be selected:

   - Using nokeypad mode and having the cursor on a character
      that is not at the beginning of the line.

   - Issuing a BPAR (beginning of paragraph), BL (beginning of
      line) or a similar entity command and then selecting a
      full line of text.

   - Issuing a line mode command and the error message is
      displayed.

   EDT no longer displays the error; the command correctly
   operates on the full line of text.

o If a "! ^Z" (a comment line with a control Z) was used in an
   initialization file, EDT ignored the fact that "! ^Z" was a
   comment and exited the command file. EDT no longer exits the
   command file if a ^Z is properly commented out.

o An EDT macro that cleared itself aborted the editing session
   and displayed an "I/O error on work file" error message. For
   example:

           edit/nocommand x.x

           *insert=a

                   clear a

           ^Z
           *define macro a
           *a
           I/O error on work file

           ?End of file on device

   EDT was trying to read an address that was no longer
   accessible due to the cleared macro. This problem has been
   corrected. EDT now treats a macro buffer that no longer
   exists as it would treat one that reads an EOF.

o EDT aborted with a "BUG CHECK" error message under conditions
   similar to the following:

```
edt x.x/nocommand
set word nodelimiter
set wrap 10
set entity word "-"
change
```

Enter five characters on the first line and another five
characters on the second line:

```
abcde
abcde
```

Open a new line between them and start inserting "-" signs.
After the tenth entry EDT aborted with a "BUG CHECK" error
message. EDT no longer aborts on this condition.

o   EDT occasionally aborted while doing a fill with the select
    going backwards, displaying a "BUG CHECK" error message. EDT
    no longer aborts under these circumstances.

o   More than one control C in an EDT journal file caused EDT to
    abort with an "Internal Software Error" error message upon
    recovery. EDT now handles more than one control C properly.

2.11.6 FMS-11/RSTS V1.5 Changes

Modules HLLDBL.OBJ and DBLDFN.OBJ provide interface support between
FMS-11/RSTS V1.5 and RSTS DIBOL V5.2 . These modules are meant to
replace existing modules in LB:[1,1] of the same name. These modules
do not work with DIBOL versions earlier than 5.2. The symbol CHNLST
has been removed from these modules. Any reference to it in the Task
build command files should be removed.

2.11.7 MENU-11 Calculator Corrections

The following MENU-11 calculator application problems are corrected in
RSTS/E V9.3:

o   Terminals printed the British pound sign instead of the
    American pound sign after exiting from the application.

o   Terminals entered graphics mode during the calculator
    application.

2.11.8 SORT/MERGE Corrections

The following SORT/MERGE problems have been corrected for RSTS/E V9.3:

o   SORT was not always allocating enough RMS pool space when
    performing a TAG sort of one or more indexed files. When
    this happens the following error was given:

    %SORT_F_CNSF00: Error connecting to input file : RMS codes
    -480

    We have modified the allocation routine assuring the proper
    RMS pool space will be allocated and included the fix with
    this update.

o   MERGE was not always allocating enough RMS pool space when
    merging indexed input files with large bucket size. When
    this happens the following error was given:

    %MERGE_F_CNIF00: Error connecting to input file : RMS codes
    -480

    We have corrected this problem and have included the fix with
    this update.

o   SORT/MERGE allowed only 80 characters per command line
    instead of the 132 characters allowed in SORT-11 V2.0. In
    addition continuation characters used within the command line
    were not always handled properly under the BASIC or RSX
    runtime systems.

    We have corrected these problems by increasing the command
    line buffer size to accept 132 characters and check for any
    continuation characters.

o   The /SI switch boundary values were not properly checked.
    SORT/MERGE was failing to indicate an error when an invalid
    value was specified.

    We have corrected this allowing only valid data between 1 and
    255. Any other data will result in an error message.

o   SORT/MERGE did not always work properly on systems that did
    not support the floating point instruction set. And when
    floating point numbers were used as key data items on these
    systems, a "illegal instruction trap" was generated.

    Now, instead of using functions that only work on systems
    which support the floating point instruction set, SORT/MERGE
    uses its own routines to process the floating point data
    which work on all systems.

o   SORT/MERGE did not always translate octal or hexadecimal
    constants properly. In particular, the internal

representation of floating point constants was incorrect.
Consequently, statements in specification file involving
octal or hexadecimal constants did not always produce the
expected results.

Now octal or hexadecimal constants are translated correctly.

3 Documentation Changes in RSTS/E V9.3

There are no update pages for the RSTS/E documentation accompanying
this release. Use these Release Notes to document any new features or
changes on your system. All the on-line help files have been updated,
where appropriate, to reflect the changes in these Release Notes.

3.1 Corrections

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

o The *RSTS/E System Installation and Update Guide* has not been
   updated to reflect the fact that you are no longer asked if
   you want DECnet or if you want data caching. Both of these
   are enabled in V9.3 monitors.

o On page 385 of the *RSTS/E System Installation and Update
   Guide*, the documentation incorrectly lists "RUN $DSKCVT" as
   the command to run DSKCVT. The documentation should read:

       $ RUN AUXLIB$:DSKCVT

o In the *RSTS/E System Directives Manual*, page 3-12, under the
   heading "Data Passed", the first sentence should read:

       The only data passed for this directive is byte 0 of the
       XRB.

o Page 3-298 of the *RSTS/E System Directives Manual* specifies
   DEVNFS as the error returned by the Return Pack Attributes
   SYS call (UU.ATR subfunction -4) in the case of an unmounted
   disk. The error actually returned is NOTMNT.

o In the *RSTS/E System Directives Manual*, on page 3-131, the
   second paragraph states in part, "(Unless data passed and
   returned show specific values for the XRB, it should be all
   zeros.)"

   The following statement will help to clarify how you should
   handle FIRQB and XRB:

       When using SEND/RECEIVE calls, you must clear both FIRQB
       and XRB, even if XRB is not used.

o In the *RSTS/E System Directives Manual* (.SPEC page 3-233.1)
   and the *RSTS/E Programming Manual* (the MAGTAPE and SPEC%

functions page 2-36), the discussion on returned densities
will be corrected as follows:

     When you specify a density that is not a valid density,
     the next highest density for the drive is returned. If
     the specified density is higher than the maximum density
     for the drive, the maximum density is returned.

o In the *RSTS/E Programming Manual*, the discussion of the FIP
   SYS CALL 26 will be extended as follows:

     When you do not have sufficient privileges and attempt to
     get the status of a job other than your own, the ?Illegal
     SYS( ) usage error message is returned. The job number
     is not forced to your own.

o In the *RSTS/E Quick Reference Guide* (page 27-29), the /USER
   qualifier was inadvertently omitted for the CREATE/ACCOUNT
   command. The documentation for the /USER qualifier is:

   /[NO]USER
   Indicates the type of account to create. /USER means
   create an account with login attributes and file storage
   capabilities. /NOUSER means create an account for file
   storage only.

o In the *RSTS/E System User's Guide*, on page 8-22, the
   documentation incorrectly lists /CROSS_REFERENCE as a valid
   qualifier for the MACRO command.

o In the *RSTS/E System User's Guide*, on page 7-19, the
   documentation incorrectly lists /ALL as a valid qualifier for
   the DELETE/ENTRY command.

o On page 381 of the *Installation and Update Guide*, the toggle
   sequence for the bootstrap is obsolete. The last line
   presently reads:

                         010036   005007

   This line should be replaced with the following three lines:

                         010036   010001
                         010040   005000
                         010042   005007

o   The RSTS/E *Utilities Reference Manual* (page 2-118)
    incorrectly states that the PIP /BL switch can be used to
    transfer non-sequential RMS files to tape.

    Due to problems PIP has when copying non-sequential RMS files
    to tape, you should use the RMS utilities RMSBCK and RMSRST
    to transfer these files to and from tape.

4 Known Restrictions in RSTS/E Version 9.3

4.1 Initialization Code (INIT.SYS)

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 DEFALT option of INIT.SYS to remove and
then redefine the Virtual Disk for your original monitor.

4.2 Monitor

4.2.1 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 corrected in a future release of RSTS/E.

4.3 Installation

4.3.1 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 will be
corrected in the next release.

4.3.2 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.

4.3.3 Deleting CLNUP.COM

The file [0,1]CLNUP.COM should delete itself after performing its
intended functions. However, CLNUP.COM is not executed (and therefore
not deleted) if you answer "NO" to the prompt "Are you ready to
proceed?" If, after base installation or update, you find this file
present, execute it by typing @[0,1]CLNUP.COM. This problem will be
fixed in the next release.

4.3.4 V8.0 to V9.3 Upgrades

A problem has been discovered in DCL that affects upgrading a RSTS/E
V8.0 or earlier system to V9.3.

Step 4 of the Upgrade section in the *RSTS/E System Installation and
Update Guide*, page 138, explains that "You will see a number of DCL
errors, followed by the $ prompt." The errors occur because DCL is
unable to open its work file for writing on the system disk, since the
system disk is mounted read-only. Under such conditions, DCL should
report the error and immediately terminate any command procedure
currently executing.

In V9.3, DCL will report the error, but will not terminate the
installation command procedure. Instead, you will see the prompt:

   Do you want to perform an installation or an update? <installation>:

Do not answer this question. Instead, type CTRL/C to abort the
command procedure and return to the $ prompt. You can then proceed
with the upgrade as described in the documentation.

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

4.4 DCL

4.4.1 Odd Address Trap

If DCL finds duplicate parameter (file) qualifiers immediately after a
parameter, it issues an "??Odd address trap" error. For example, if
you issue the command:

        $ PRINT FILE.DAT/DELETE/NODELETE

DCL displays the error message

        ?Odd address trap at line 3100   in "PBSMGR"
        000000 015162 066550 015101 015162 001672 001646 055334

This is a problem in the DCL routines that parse the command language
used in PRINT and other commands that include parameter qualifiers.

For a more complete description of this problem refer to *The Software
Dispatch* article 20.5.1. This problem will be corrected in a future
release of RSTS/E.

4.4.2 Chaining to DCL Command Files

Chaining to a DCL command file at a non-zero line number with
parameters in core common does not work as documented. Instead, the
first parameter is discarded; P1 will contain the second parameter, P2
will contain the third, etc. This is a change from previous versions
of DCL which did not pass any parameters to the command file.

As a workaround, you can either pass an extra leading parameter in
core common, or use the Execute CCL Sys call to execute your command
file. See Software Dispatch article 20.1.5 for further details.

Chaining to DCL command files will work as documented in the next
release of RSTS/E.

4.4.3 "?Unexpected Character" Error

If you try to specify more parameters than a command can handle you
may get an "?Unexpected character" error message rather than the
correct "?Too many parameters" error message. For example, you will
get this error message if you try to delete more than six files with
one DELETE command. This problem will be fixed in the next release of
RSTS/E.

4.4.4 Log File Corruption

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

4.4.5 BACKUP Compatibility Problems with VMS

There are two known BACKUP compatibility problems between RSTS and
VMS:

        o   Multi-volume RSTS backup sets cannot be restored on VMS.
            This problem is described in Software Dispatch article 6.2.2.

> o RSTS backup sets containing accounting data cannot be
>   restored on VMS V4.4. The attempt fails with an error
>   referring to a physical save set being supplied for a
>   non-physical operation. RSTS backup sets without accounting
>   data do not exhibit this behavior.

Efforts are underway to correct both of these problems.

4.4.6 Print/Batch Services FORMS.SYS File

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.

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 ODT.TSK

ODT.TSK produces an integer error when it attempts to examine physical
addresses over 177777777 (octal) and receives the line-feed (examine
next location) command.

4.6 ONLCLN.TSK

ONLCLN does not honor disk unit numbers higher than 7. Consequently,
you cannot mount disks that need rebuilding with unit numbers higher
than 7 unless you specify /NOREBUILD. As a workaround, rebuild these
disks off-line using the REFRESH option of INIT.SYS.

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

4.6.1 PIP.SAV

The following are known problems with PIP.SAV in RSTS/E V9.3:

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   PIP hangs in a run state when accessing ANSI tapes that were
    created with a block size greater than 2048 bytes. This
    happens when VMS backup save sets are being transferred by
    tape to a RSTS system, because the save sets are written by
    default with a block size of 8464 bytes. This problem will
    be fixed in a future release of RSTS/E to display an error
    message and reject the operation.

4.6.2 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

4.6.3 SAVRES MSCP Disk Restriction

SAVRES, both online and offline, only accepts a single octal digit as
a unit number for any volume it deals with. It reports an error of
"%%% Not a valid device" for units 8 or 9, or "%%% Non-existant or
hung device" for units 10 through 15. As a temporary workaround,
confine unit numbers for SAVRES to units 0 through 7.

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

4.7 Layered Products

4.7.1 DECmail-11 V3.0

The following restrictions apply to DECmail-11 V3.0 on RSTS/E V9.3:

> 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::A1::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 TERMINAL/WIDTH=132 does not set the terminal hardware to
>   wide screen mode. It only sets the software column count for
>   determining where to wrap the header fields when reading a
>   message.

4.7.2 DECnet/E Installation Guide Error

In the *DECnet/E Network Installation and Update Guide*, on page 2-6, the
documentation incorrectly refers the reader to the section "Restarting
Your System." Instead, the reader should refer to the section
"Specifying Circuit and Line Parameters."

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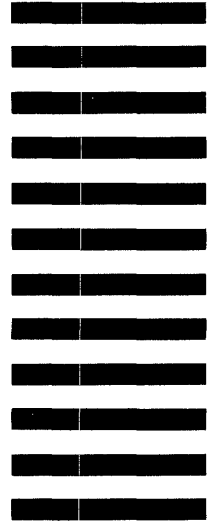
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