RSTS/E V8.0
Maintenance Notebook

Order No. AA–L997C–TC

March 1983

This notebook describes optional feature patches for RSTS/E. It is a working document that system maintainers should keep current by adding published articles on software problems, programming notes, and documentation corrections. These articles are published in the *RSTS/E Software Dispatch*.

OPERATING SYSTEM AND VERSION:	RSTS/E	V8.0
SOFTWARE VERSION:	RSTS/E	V8.0

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DEC	Rainbow	Work Processor

Commercial Engineering Publications typeset this manual using DIGITAL's TMS–11 Text Management System.

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Preface

The RSTS/E Maintenance Notebook is a maintenance notebook for documentation corrections, published software problems and solutions, and programming notes. Subordinate software information is also included. The RSTS/E Software Dispatch Review and the RSTS/E Software Dispatch are designed so that their articles may be merged into the Maintenance Notebook.

The RSTS/E Software Dispatch Review contains articles published for optional layered software supported on RSTS/E V8.Ø. In general, this is a composite of all optional layered software articles previously published for RSTS/E, which still apply to the product when run on RSTS/E V8.Ø.

The RSTS/E Software Dispatch is provided for 9Ø days after each software installation of a RSTS/E system by DIGITAL, and is addressed to the software contact established by the DIGITAL field office. After 9Ø days, the customer may purchase the Self Maintenance Service to continue receiving the RSTS/E Software Dispatch. Contact your local Digital office for more information. The RSTS/E Software Dispatch is published monthly, and contains articles for RSTS/E and its layered software. Each month, you should take apart the RSTS/E Software Dispatch and merge the new articles by sequence number in your notebook.

Anyone who is about to generate RSTS/E V8.Ø must incorporate all "Mandatory" patches as part of the system generation and BUILD procedures. All articles published are summarized in the Cumulative Index. There is also an index of the version and edit levels for all the Commonly Used System Programs (CUSPs). These indices are updated each month in the RSTS/E Software Dispatch.

1.Ø Notebook Maintenance

Each month you should take apart the RSTS/E Software Dispatch and merge the new articles by sequence number in your notebook. If an article is a replacement, discard the superseded article. Each article addresses a single topic and its title gives the symptom or a one-line problem description. This information appears at the top of each page. For example:

RSTS/E Software Dispatch, Month year

RSTS/E V8.Ø Seq 4.1.4 F
BASIC-PLUS
BASIC-PLUS Patches 1 of 2

DEFAULT TO NOEXTEND MODE - BASIC-PLUS FEATURE PATCH

The system components and subcomponents are listed in Section 2.Ø. That list will be updated periodically as products become available or obsolete. Articles for each subcomponent are assigned a sequencing number which uniquely identifies the article within that component.subcomponent category. As each new article is published for a subcomponent, it is assigned the next higher sequence number. The entire number is defined as the COMPONENT.SUBCOMPONENT.ISSUE number, an example being the "4.1.4" shown in the upper right corner of the sample heading. Replacement articles are identified as such.

A flag will appear after the sequencing number:

M = MANDATORY:	These patches correct errors in the software product. All users are required to apply these patches unless the accompanying article specifies otherwise.
F = FEATURE:	These patches extend or configure non-standard capabilities into the product. These functions will be treated as a supported part of the product for the duration of the current release.
R = RESTRICTION:	These articles discuss areas that will not be patched in the current release because they require major modifications or because they are not consistent with the design of the product. Restrictions, except those described as permanent, are reviewed and modified when possible as part of the normal release cycle.
N = NOTE:	These articles provide explanatory information that supplements the documentation set and provides more detailed information about a program or package. They also provide procedural information to make it easier to use a program or package.

2.Ø RSTS/E Component.Subcomponent Assignments

The component.subcomponent numbers outlined below appear on articles to be filed following Section 5.4 of this notebook.

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Ø.Ø RSTS/E V8.Ø General Notes
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- 1.1 INIT.SYS Program Patches
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- 4.7 Record I/O
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5.Ø RSTS/E 278Ø Device Driver
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7.Ø DECnet/E Package V2.Ø
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1Ø.6	VT5Ø (VT5ØPY)
1Ø.7	DSKINT.TSK
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1Ø.9	GRIPE
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18.1Ø	CPUTST	
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19.Ø	**Documentation**	
19.1	RSTS/E Documentation Directory	AA-2642F-TC
19.2	RSTS/E System Generation Manual	AA-2669G-TC
19.3	RSTS/E System Manager's Guide	AA-2762D-TC
19.4	RSTS/E System User's Guide	AA-5133C-TC
19.5	BASIC-PLUS Language Manual	AA-2623D-TC
19.6	RSTS/E Programming Manual	AA-2726E-TC
19.7	RSTS/E RUNOFF User's Guide	DEC-11-URUNA-B-D
19.8	RSTS/E DCL User's Guide	AA-L426B-TC
19.9	RSTS/E V8.Ø Release Notes	AA-5246F-TC
19.1Ø	RSTS/E Quick Reference Guide	AV-N996A-TC
19.11	RSTS/E Primer	AA-54Ø8A-TC
19.12	Introduction to BASIC	AA-Ø155A-TK
19.13	RSTS/E Task Builder Reference Manual	AA-5Ø72C-TC
19.14	RSTS/E V8.Ø Maintenance Notebook	AA-L997C-TC
19.15	PDP-11 MACRO-11 Language Reference Manual	AA-5Ø75B-TC
	PDP-11 MACRO-11 Language Reference Manual Update	AA-5Ø75B-T1
19.16	EDT Editor Manual	AA-J726A-TC
19.17	EDT Editor Reference Card	AV-J756A-TC
19.18	Introduction to the EDT Editor	AA-K443A-TC
19.19	(Reserved)	
19.2Ø	IAS/RSX-11 ODT Reference Manual	AA-M5Ø7A-TC
19.21	RSTS/E System Directives Manual	AA-D748C-TC
19.22	RSTS/E Programmer's Utilities Manual	AA-D749A-TC
	RSTS/E Programmer's Utilities Manual Update1	AD-D749A-T1
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19.23	RSTS/E RT11 Utilities Manual	AA-M213A-TC
19.24	PDP-11 SORT Reference Manual	AA-3341C-TC
	PDP-11 SORT Reference Manual Update	AA-3341C-T1
19.25	PDP-11 TECO User's Guide	DEC-11-UTECA-B-D
19.26	RSTS/E Documentation Notes	AV-M895C-TC

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21.7	SYSLIB.OLB
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21.11	CSPCOM.TSK
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22.5	HOOK.SAV
22.6	LIBR.SAV
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22.9	LOGOUT.SAV
22.1Ø	MACRO.SAV
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22.13	PIP.SAV
22.14	SILUS.SAV
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25.Ø RSTS/E 278Ø PACKAGE V3.Ø
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25.2 RJ278Ø
25.3 RSTS/E 278Ø User's Guide (DEC-11-ORJEA-B-D)

26.Ø DIBOL-11/DECFORM V4.5

26.1 Release Notes
26.2 Installation Guide
26.3 CTS-5ØØ DIBOL-11 Language Reference Manual
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26.5 DECFORM User's Manual

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26.6 DBLRES.LIB (and .TSK and .STB)
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26.8 FOCOMP.RTS (and .TSK)
26.9 FOCOMP.MLB
26.1Ø DECFØ
26.11 DECF1
26.12 ISMUTL
26.13 SORTG
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26.15 DBUILD
26.16 DMSDBL.CTL
26.17 DMSDMO.CTL
26.18 DECSM.OBJ
26.19-26.39 Reserved

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26.4Ø DBRRES.LIB (and .TSK and .STB)
26.41 DBRLIB.OLB
26.42 FOCOMR.RTS (and FOCOMR.TSK)
26.43 FOCRMS
26.44 DECFØR
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31.38 MSRSUB (RT-11)
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31.4Ø DNEHLL (RT-11)
31.41 DNEHLL (RSX-11)
31.42 NETMLB
31.43 DNECCI
31.44 DECnet/E V2.Ø Release Notes
31.45 DECnet/E V2.Ø System Manager's Guide
31.46 DECnet/E V2.Ø Network Pgmg in BASIC-PLUS and BASIC-PLUS-2
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31.5Ø DECnet/E V2.Ø System User's Manual
31.51 DECnet/E V2.Ø Installation Manual

32.Ø (Reserved)

33.Ø (Reserved)

34.Ø (Reserved)

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37.Ø DECAL V2
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- 52.7 RSTS/E 278Ø/378Ø High Performance Emulator V1.1 Release Notes (AA-J458B-TC)
- 52.8 RSTS/E High Performance 278Ø/378Ø Emulator User's Guide (AA-J177A-TC)

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54.Ø (Reserved)

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56.Ø (Reserved)

57.Ø (Reserved)

58.Ø (Reserved)

59.Ø (Reserved)

6Ø.Ø DECWORD/DP V1.1
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63.Ø FORTRAN IV V2.5
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67.Ø PDP-11 FORTRAN-77/RSTS/E V4.Ø
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68.Ø DATATRIEVE V2.4
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7Ø.Ø COBOL-11 V4.4
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7Ø.2 COBOL Compiler - NON-CIS
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71.Ø DMS-5ØØ V2.1
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71.3 DMSFSS.BAS
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71.5 DMSRAO.BAS
71.6 DMSISR.BAS
71.7 DMSISC.BAS
71.8 DMSRAR.BAS
71.9 DMSISA.BAS
71.1Ø DMSRAA.BAS
71.11 DMSFSU.BAS
71.12 DMSFSX.BAS
71.13 DMSUTL.BAS
71.14 IAMGEN.BAS
71.15 IAMCRI.BAS
71.16 IAMDMP.BAS
71.17 IAMVFY.BAS
71.18 IAMFNS.BAS

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72.Ø COBOL-81 V1.1
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73.Ø ADE V2.Ø
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74.Ø PDP-11 FORTRAN-77/RSTS/E V4.1
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75.Ø RMS-11 V2.Ø
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76.Ø COBOL-81 V1.2
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77.Ø (Reserved)

78.Ø (Reserved)

79.Ø BASIC-PLUS-2 V2.1
79.1 Package Notes

8Ø.Ø SPM-RSTS/E
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81.Ø ADE V2.1
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82.Ø DECMAIL/RSTS V1.Ø
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9Ø.Ø User Assigned Components - For Development Use
9Ø.1 Package Notes

91.Ø - 99.Ø User Assigned Components - For User Use

3.Ø Software Performance Reports

Each new installation is provided with Software Performance Report (SPR) forms. The SPR form enables the user to suggest enhancements to, or report problems, with DIGITAL software or documentation. When a problem is encountered, an SPR should be completed and mailed to the local SPR Center (see the inside back cover of the SPR form).

Responses will be sent to the name and address appearing on the form. Additional SPR forms may be obtained by writing to the local SPR Center. SPR response is provided at no charge for one year after installation and may be continued by subscription thereafter.

3.1 Software Performance Report Guidelines

These guidelines for RSTS/E SPR completion ensure that adequate information is included to prevent delays in processing.

For all types of actual or suspected software problems, the following should be included with the SPR:

1. A complete description of the problem.
2. The CPU type.
3. The system disk type.
4. The amount and type of memory.
5. If possible, a simple program or procedure which can be used to reproduce the problem.
6. Any additional information which you may think is relevant.

For problems associated with the RSTS/E Monitor or crash analysis package (ANALYS), also include:

1. The crash dump printed by ANALYS (which includes annotations, a listing of the symbol table, and a list of all installed patches).
2. If possible, a machine readable copy (preferrably 9-track magnetic tape) of your monitor and CRASH.SYS file. Your media will be returned with your SPR answer.

3. Listings of your maps, CONFIG.MAC, and SYSGEN.CTL files created during SYSGEN. Note that the .MAP files are necessary, even though ANALYS prints some of the same information.

When submitting an SPR concerning a DIGITAL supplied BASIC-PLUS program (CUSP), also include:

1. The name of the CUSP.

2. A "RUN" of the CUSP which displays the header line, version number, and the problem which is occurring, if possible.

3. A list of any optional feature patches installed.

4. Whether the program was compiled under BASIC-PLUS, BASIC-PLUS-2, or CSPCOM. In the latter two cases, also include the name of the run-time system under which the program was running.

5. Under what account(s) the problem occurs, distinguishing between privileged and non-privileged behavior.

6. A complete listing of the CUSP (preferably on magnetic tape) if your installation has made any non-standard changes.

7. Listings of all relevant input and output files.

NOTE

No SPR, monitor or CUSP, will be considered unless ALL relevant Mandatory patches published to date have been applied. Before submitting an SPR, the user should review the relevant section(s) of the Maintenance Notebook, to insure that ALL Mandatory patches to the program or package have been applied.

SPR turnaround time for CUSPs running under the BASIC-PLUS run-time system can be reduced by including a "DUMP" of the CUSP. See articles Seq 4.1Ø.2 N, Seq 4.1Ø.4 F, and Seq 4.1Ø.6 F.

4.Ø Procedures for Updating RSTS/E Software

This section briefly describes the updating and patching procedures to be used for maintenance of RSTS/E V8.Ø. Programs to be used with the update kits are ATPK, BUILD, PBUILD, PATCPY, CPATCH, and AUTOED. The procedures to be followed for updating the Monitor and system programs when generating a new RSTS/E system are described in the RSTS/E System Generation Manual. The procedures for updating the software as part of normal system maintenance are described in the RSTS/E System Manager's Guide.

NOTE

The RSTS/E Software Dispatch will contain announcement articles as new RSTS/E V8.Ø update kits become available. These articles, to be published as Seq 17.1.n N, will contain general procedures to be followed when applying kits, and indicate components which have patches and/or module replacements that did not appear on the previous kit. The articles may also contain special instructions which might be necessary to install and/or patch various products on RSTS/E V8.Ø. Each announcement/instruction article is also included on the corresponding update kit in account [1,2]; the name of the file is in the form "PATCHn.DOC", where "n" reflects the version of the update kit, e.g., "PATCHA.DOC".

Note that if instructions included in update kit announcement/instruction articles conflict with procedures described in the standard RSTS/E documentation kit, the article takes precedence for the specified update kit. The announcement article should always be read prior to trying to apply the update kit or generating a system.

Be sure to read article Seq 17.1.1 N before generating your system.

Some updates to the Monitor or INIT code must be applied manually with the INIT PATCH option before the system can be started for autopatching. Any update requiring such special attention will be clearly marked in its accompanying article.

Unless otherwise stated, all updates published in the RSTS/E Software Dispatch are mandatory patches which must be made to the affected component as soon as possible. Since not all components will be included at each installation, updates to unused components will fail when the attempt is made to apply them. The system manager should file all articles, however, even for unused components, since the installation might choose at some future time to install additional components; these components will then have to be brought up to the latest support level.

Some articles will describe the procedure to patch a component in order for the installation to use an optional feature of that component. These optional "feature" patches are not required to keep a component at its current support level. If problems occur with a component containing optional features, however, you must report which optional feature patches have been installed when filing your Software Performance Report (SPR).

The following list of syntactic elements describes terminal keys which have non-printing functions. These elements are available for use with programs which update software.

NOTE

When used with the ONLPAT program, the syntactic element "^C" refers only to "up-arrow/C" (i.e., typing upper-shift 6 followed by the character "C").

Element	Description
^C	Up-arrow/C or Control-C
CTRL/C	Control-C
<tab>	Horizontal tab
<lf>	Line feed
<ff>	Form feed
<cr>	Carriage return
^Z or CTRL/Z	Control-Z
<esc>	Escape (Alt Mode or SEL)

An optional item is indicated by enclosing it in square brackets. (This does not apply to project-programmer numbers.) For example, a line of the following form appears in most articles for updating system programs:

```
#[logfile=]KB:/CS:64Ø49
```

Replacing "[logfile=]" with an actual file specification allows you to produce a command file when applying a patch. For example,

```
#PA1Ø12.ØØ3=KB:/CS:64Ø49
```

4.1 Monitor Patching

Changes to the RSTS/E Monitor are made with the PATCH option of INIT.SYS and/or the program ONLPAT. The procedures are described in the RSTS/E System Generation Manual and the RSTS/E System Manager's Guide.

Articles discussing various Monitor options and problem corrections will contain the exact operator action required when using the PATCH option. The expected dialogue will be shown in the article as it should appear when the patch is made. If any deviation occurs, the process should be halted, any changes already made returned to their former values via the PATCH option, and a determination made as to where the discrepancy occurred.

4.2 Commonly Used System Program (CUSP) Module Replacement

Replacement modules for CUSPs are supplied in machine-readable form on the update kits. Refer to the RSTS/E System Manager's Guide for information on procedures for module replacement. Information for using specific update kits are published as articles with sequence numbers 17.1.n N. Please refer to those articles before attempting to apply any update kit.

4.3 Commonly Used System Program (CUSP) Patching

The RSTS/E CPATCH program will serve as the CUSP program patching tool for feature patches.

Refer to the RSTS/E System Manager's Guide for complete information on the commands and capabilities of CPATCH and PBUILD.

DIGITAL recommends that the date of the change and the name of the person making the change be written on the article at the time the program is modified to keep an accurate record of the status of the system library software.

4.4 Update Kits

RSTS/E update kits contain machine readable update modules and/or patches for software supported under RSTS/E V8.Ø. RSTS/E Update Kit "A" contains all patches published in the RSTS/E V8.Ø Maintenance Notebook and in the RSTS/E V8.Ø Software Dispatch Review. Subsequent update kits will contain these same patches plus new patches published in the RSTS/E Software Dispatch. The cumulative index published in the Software Dispatch contains a column indicating which is the first update kit that a new patch or module replacement will appear in.

Procedures for using the update kit to patch standard RSTS/E software can be found in the RSTS/E System Generation Manual. Procedures for updating optional layered software are usually found in the appropriate installation manual for the product.

The sections which follow provide general guidelines for using update kits. Information for using specific update kits will be published as articles with sequence numbers 17.1.n N. Please refer to those articles before attempting to apply any update kit.

4.4.1 OFF-LINE PATCHING

Off-line patching is done as part of the SYSGEN procedure. You can apply patches to the following areas off-line:

- o Initialization code
- o The RSTS/E Monitor
- o The BASIC-PLUS run-time system
- o The RSX Emulator (both Monitor emulation and the run-time system)
- o DECnet/E V2.Ø

Command files exist on the update kit for all of these components. Those that do not currently have any mandatory patches exist in skeletal form only. These command files should ALWAYS be called in automatically during SYSGEN. This is done by answering "YES" to the appropriate questions during the SYSGEN dialogue. For example,

QUESTION	DEFAULT	RESPONSE
Generate monitor?	#Y #	<lf>
Monitor name?	#RSTS#	name<cr>
Monitor patching?	#??#	Y<cr>
Patch file medium?	#dev#	dev:<cr>
Patch file name?	#$MONITR.CMD#	<lf>

The patch file names on the update kit are the same as the default names printed by SYSGEN and should always be accepted.

Note that application of patches to Monitor code in all of these command files may be done on-line using the PBUILD program with the command file EXEC.CMD.

4.4.2 ON-LINE PATCHING

On-line patching is done after the system is installed and running. Use the following procedure:

A. If you received your kit on magnetic tape, transfer all update files from the update kit distribution media to disk, using the PATCPY program. PATCPY.BAS exists on the update kit in account [1,2] and may be used for this transfer. Digital recommends that the account to which you are transferring the files have a clustersize of 16.

NOTE

If you use PATCPY to copy patch or module replacement files for a single package (see Chapter 6 of the RSTS/E System Generation Manual), you MUST use the version of PATCPY included on the update kit. This version handles the most up-to-date list of supported optional layered software; the released version of PATCPY may not handle all products.

Copy the patch files to an account as shown below:

```
RUN PATCPY
<PATCPY's header line>
Enter distribution device/PPN<SY:[1,2]>: dev:[1,2]
Enter output device/PPN<SY:[2ØØ,2ØØ]>: dev:[p,pn]
Packages to patch? ALL<cr>
```

If the specified output account does not exist, PATCPY will, optionally, create it.

NOTE

Two update tapes may be included in RSTS/E 8ØØ BPI magnetic tape kits. If this is the case, and if you are using any of the optional software contained on the second tape, you must run PATCPY twice. The list of command files published for each update kit indicates which products are included on the second tape.

B. If you want to update the system program library as part of a system BUILD procedure, you can use the "BUILD/PATCH" function of the program $BUILD:

```
RUN $BUILD
<BUILD's header line>
System Build <No> ? YES
Source Input Device <SY:> ?
Library Output Device <SY:> ?
Target System Device <SYØ:> ?
Library Account <[1,2]> ?
Locate logical 'LB:' on <SY:[1,1]> ?
Function (BUILD/PATCH, PATCH, BUILD) <BUILD/PATCH> ?
Patch file input location <SY:[2ØØ,2ØØ]> ?
Save patched sources <NO> ?
Run-Time System <BASIC> ?
.
Additional control file is <NONE>? <lf>
```

If you only need to update the library programs, specify "PATCH" in response to the "Function" question.

C. Most other updates must be applied using the program PBUILD. The format of the PBUILD dialogue is as follows:

```
RUN $PBUILD
<PBUILD's header line>
Read files to patch from <SY:[1,2]>:
Compile patched programs <YES>:
Library device <SY:[1,2]>:
System device <SYØ:[1,2]>:
Save patched sources <NO>:
#filnam          (name of the patch command file you are applying)
```

4.4.3 OPTIONAL FEATURE PATCHES

RSTS/E update kits contain all optional feature patches published in the RSTS/E V8.Ø Maintenance Notebook and the RSTS/E Software Dispatch. In general, no command files exist for these files unless there are also mandatory patches for the component. If there are mandatory patches for the components, comment lines will appear in command files that include references to any feature patches for the component. The referenced patches may be automatically applied along with the mandatory patches by simply editing the commented lines. Note that some of the feature patch files require manual editing (to supply installation-specific parameters) before they can be applied.

Feature patches may be applied automatically by running either $ONLPAT or $CPATCH, as indicated in the associated article. All patch file names correspond to the article sequence number. For example, the patch file for BASIC-PLUS article Seq 4.1.4 F, "Default to NOEXTEND mode", is PAØ4Ø1.ØØ4.

To apply this patch using $ONLPAT, you would type:

```
RUN $ONLPAT
Command File Name? PAØ4Ø1.ØØ4
File to patch? (name of BASIC-PLUS run-time system)
    .
    .
Command File Name? ^Z
```

To use $CPATCH to apply LOGIN patch Seq 1Ø.12.8 F, "Enable Auxiliary Password", you would type:

```
RUN $CPATCH
<CPATCH's header line>
File to patch - LOGIN.BAS=LOGIN.BAS
#PA1Ø12.ØØ2
    .
    .
Patch from SY:[P,PN]PA1Ø12.ØØ2 complete.
#^Z
File to patch - ^Z
```

Then you enter the commands necessary to compile the program into the desired account.

5.Ø RSTS/E Articles

Section 5.Ø is the repository for all RSTS/E articles. This section will include problem solutions, optional "Feature" patches, documentation errata, programming hints, and tips for better operation of RSTS/E.

Anyone who generates a RSTS/E system (whether on-line under time sharing or as the initial version of the system) should become familiar with these articles. This should be a continuing process of education as sub-sections are added and updated.

The section which follows is an index to all articles included in the original Maintenance Notebook. This index will be updated monthly as new articles are published in the RSTS/E Software Dispatch. Note that all Mandatory and Feature patches included in this list are included on the RSTS/E V8.Ø Update Kit "A".

5.1 Cumulative Index of All RSTS/E V8.Ø Maintenance Notebook Articles

RSTS/E 278Ø DEVICE DRIVER

DECnet/E Package V2.Ø

TECO

RSTS/E UTILITIES

System Utilities Package

Error Control Package

Backup Package

Spooling and Operator Services Package

System Management Guidelines

Automated Patching Facility Package

Package Notes

ATPK

RUN-TIME SYSTEMS SUPPORT

DCL

Package Notes

DCL.RTS

RSX Emulator and Utilities Package

Package Notes

RSX.RTS

CRF.TSK

RT-11 Emulator and Utilities Package

SUBORDINATE SOFTWARE

EDT V2.Ø

RSTS/E 278Ø PACKAGE V3.Ø

DECNET/E Utilities V2.Ø

5.2 Patch Levels for Commonly Used System Programs (CUSPs)

This report reflects the current Version/Edit level of all of the Commonly Used System Programs (CUSPs) supplied as part of the standard RSTS/E V8.Ø-Ø6 System Library Programs release.

System Utilities Package

BUILD V8.Ø-Ø6	DIRECT V8.Ø-Ø6	DISPLY V8.Ø-Ø6
DSKINT V8.Ø-Ø6	GRIPE V8.Ø-Ø6	HELP V8.Ø-Ø6
INIT V8.Ø-Ø6	LOGIN V8.Ø-Ø6	LOGOUT V8.Ø-Ø6
MONEY V8.Ø-Ø6	ODT V8.Ø-Ø6	PLEASE V8.Ø-Ø6
QUOLST V8.Ø-Ø6	REACT V8.Ø-Ø6	REORDR V8.Ø-Ø6
SHUTUP V8.Ø-Ø6	SWITCH V8.Ø-Ø6	SYSTAT V8.Ø-Ø6
TALK V8.Ø-Ø6	TTYSET V8.Ø-Ø6	UMOUNT V8.Ø-Ø6
UTILTY V8.Ø-Ø6	VTØ5 V8.Ø-Ø6	VT5Ø V8.Ø-Ø6

Data Manipulation Package

BPCREF V8.Ø-Ø6	BPCRF1 V8.Ø-Ø6	COPY V8.Ø-Ø6
DSKCVT V8.Ø-Ø6	FILCOM V8.Ø-Ø6	FIT V8.Ø-Ø6
FLINT V8.Ø-Ø6	MAKSIL V8.Ø-Ø6	PMDUMP V8.Ø-Ø6
RUNOFF V8.Ø-Ø6		

Error Control Package

ANALYS V8.Ø-Ø6	ANALY1 V8.Ø-Ø6	ANALY2 V8.Ø-Ø6
ANALY3 V8.Ø-Ø6	ERRBLD V8.Ø-Ø6	ERRCPY V8.Ø-Ø6
ERRDET V8.Ø-Ø6	ERRDIS V8.Ø-Ø6	ERRINT V8.Ø-Ø6

Backup Package

BACCOM V8.Ø-Ø6	BACCON V8.Ø-Ø6	BACDEL V8.Ø-Ø6
BACDIR V8.Ø-Ø6	BACDMP V8.Ø-Ø6	BACDSK V8.Ø-Ø6
BACENT V8.Ø-Ø6	BACFRM V8.Ø-Ø6	BACLAB V8.Ø-Ø6
BACLOD V8.Ø-Ø6	BACLST V8.Ø-Ø6	BACMNT V8.Ø-Ø6
BACPRM V8.Ø-Ø6	BACKTO V8.Ø-Ø6	BACKUP V8.Ø-Ø6

Spooling and Operator Services Package

BATCH V8.Ø-Ø6	BATDCD V8.Ø-Ø6	BATDEC V8.Ø-Ø6
BATIDL V8.Ø-Ø6	BATRUN V8.Ø-Ø6	CHARS V8.Ø-Ø6
OPSER V8.Ø-Ø6	OPSRUN V8.Ø-Ø6	QUE V8.Ø-Ø6
QUEMAN V8.Ø-Ø6	QUMRUN V8.Ø-Ø6	SPLIDL V8.Ø-Ø6
SPLRUN V8.Ø-Ø6	SPOOL V8.Ø-Ø6	

Automated Patching Facility Package

ATPK V8.Ø-Ø6	AUTOED V8.Ø-Ø6	CPATCH V8.Ø-Ø6
ONLPAT V8.Ø-Ø6	PATCPY V8.Ø-Ø6	PBUILD V8.Ø-Ø6

Device Test Package

CPEXER V8.Ø-Ø6	CPUTST V8.Ø-Ø6	DSKEXR V8.Ø-Ø6
DSKSEK V8.Ø-Ø6	DTEXER V8.Ø-Ø6	DXEXER V8.Ø-Ø6
KBEXER V8.Ø-Ø6	LPEXER V8.Ø-Ø6	MTEXER V8.Ø-Ø6
PPEXER V8.Ø-Ø6	PREXER V8.Ø-Ø6	DDEXER V8.Ø-Ø6

DCL

PRELIN V8.Ø-Ø6	SHOTER V8.Ø-Ø6

5.3 Protection Codes for Commonly Used System Programs (CUSPs)

This table lists the protection codes for the Commonly Used System Programs (CUSPs) supplied as part of the standard RSTS/E V8.Ø System Library Program release. These protection codes are used when the programs are installed, and should be used when re-compiling the programs after patching.

System Utilities Package

BUILD <124>	DIRECT <232>	DSKINT <124>	GRIPE <232>
INIT <124>	LOGIN <232>	LOGOUT <232>	MONEY <1Ø4>
ODT <124>	PLEASE <232>	QUOLST <232>	REACT <124>
REORDR <124>	SHUTUP <124>	SWITCH <232>	SYSTAT <232>
TALK <232>	TTYSET <232>	UMOUNT <232>	UTILTY <124>
VT5DPY <232>	VT5ØPY <232>		

Data Manipulation Package

BPCREF <1Ø4>	BPCRF1 <1Ø4>	COPY <1Ø4>	DSKCVT <124>
FILCOM <1Ø4>	FIT <232>	FLINT <1Ø4>	MAKSIL <1Ø4>
PMDUMP <1Ø4>	RUNOFF <1Ø4>		

Error Control Package

ANALYS <124>	ANALY1 <124>	ANALY2 <124>	ANALY3 <124>
ERRBLD <124>	ERRCPY <124>	ERRDET <124>	ERRDIS <124>
ERRINT <124>			

Backup Package

BACCOM <232>	BACCON <232>	BACDEL <232>	BACDIR <232>
BACDMP <232>	BACDSK <232>	BACENT <124>	BACFRM <232>
BACLAB <232>	BACLOD <232>	BACLST <232>	BACMNT <232>
BACPRM <124>	BACKTO <232>	BACKUP <232>	

Spooling and Operator Services Package

BATCH <124>	BATDCD <124>	BATDEC <124>	BATIDL <124>
BATRUN <124>	CHARS <124>	OPSER <124>	OPSRUN <124>
QUE <232>	QUEMAN <124>	QUMRUN <124>	SPLIDL <124>
SPLRUN <124>	SPOOL <124>		

Automated Patching Facility Package

ATPK <252>	AUTOED <124>	CPATCH <124>	ONLPAT <124>
PATCPY <124>	PBUILD <124>		

Device Test Package

CPEXER <124>	CPUTST <124>	DSKEXR <124>	DSKSEK <124>
DTEXER <124>	DXEXER <124>	KBEXER <124>	LPEXER <124>
MTEXER <124>	PPEXER <124>	PREXER <124>	DDEXER <124>

DCL

PRELIN <232>	SHOTER <1Ø4>

RSX Emulator Package

CRF.TSK <1Ø4>	CSPCOM.OLB <4Ø>	CSPCOM.TSK <1Ø4>
LBR.TSK <1Ø4>	MAC.TSK <1Ø4>	PAT.TSK <1Ø4>
RNO.TSK <1Ø4>	RSXMAC.SML <4Ø>	STK.TSK <1Ø4>
SYSLIB.OLB <4Ø>	TKB.TSK <1Ø4>	

RT-11 Emulator Package

CREF.SAV <1Ø4>	HOOK.SAV <1Ø4>	LIBR.SAV <1Ø4>
LINK.SAV <1Ø4>	LOGIN.SAV <232>	LOGOUT.SAV <232>
MACRO.SAV <1Ø4>	ONLCLN.SAV <232>	PAT.SAV <1Ø4>
PIP.SAV <232>	SAVRES.SAV <124>	SILUS.SAV <1Ø4>
SYSBAT.SAV <124>	SYSGEN.SAV <124>	UTILTY.SAV <1Ø4>

5.4 Compiling CUSPs under BASIC-PLUS-2 or RSX (CSPCOM)

The patching procedure included in those articles that patch BASIC-PLUS source code refers to this section for the appropriate procedure to be followed if BASIC-PLUS is not your system default run-time system. (The BUILD/AUTOPATCH will perform all of these steps for you if you are installing patches from a patch kit.)

The sequence of commands for compiling BASIC-PLUS programs under the BASIC-PLUS run-time system is (items in square brackets are patch or program dependent):

```
BASIC/BPLUS  (if currently in DCL)

OLD PRGNAM.BAS
[APPEND APPEND.BAS]
COMPILE [SYØ:]$PRGNAM[<prot>]
```

The paragraphs which follow describe the comparable commands if BASIC-PLUS-2 or RSX (CSPCOM) is your system default run-time system.

Note that the following CUSPs must always reside on SYØ:, regardless of your system default run-time system:

ATPK INIT LOGIN LOGOUT SHUTUP UTILTY

BASIC-PLUS-2

If BASIC-PLUS-2 is your primary run-time system, first issue the command BASIC/BP2 (if you are currently using DCL) or SWITCH to BP2.

If an article indicates that the program "should be compiled under the BASIC2 run-time system" or "must be task built against the BP2 run-time system" the compile sequence is:

```
SCALE Ø
OLD PRGNAM.BAS
[APPEND APPEND.BAS]
COMPILE
[SYØ:]$PRGNAM[<prot>]/OBJ/CHA/LIN/NODEB/WOR/NOCRO/NOLIS/FLAG:NODEC
SCRATCH
```

The program must then be task built, as the BASIC-PLUS-2 V2.Ø compiler produces only a non-executable object module. To task build the program, use the following sequence of commands:

```
RUN SY:[1,2]TKB.TSK
[SYØ:]$PRGNAM.TSK/FP=PRGNAM.OBJ,LB:BP2OTS.OLB/LB
/
UNITS=12
ASG=SY:5:6:7:8:9:1Ø:11:12
//
RUN SY:[1,2]PIP.SAV
PRGNAM.OBJ/DE:NO
[[SYØ:]$PRGNAM.TSK<prot>/RE]
^Z
```

Programs which must be task built include those which must reside on SYØ:, as well as FILCOM and FIT.

RSX (CSPCOM)

If RSX is your primary run-time system, use the following sequence of commands:

```
SWITCH RSX
RUN $CSPCOM
PRGNAM.OBJ/OBJ=PRGNAM.BAS[,APPEND.BAS]
^Z
RUN SY:[1,2]TKB.TSK
PRGNAM.TSK/FP=PRGNAM.OBJ,LB:CSPCOM.OLB/LB
/
UNITS=12
ASG=SY:5:6:7:8:9:1Ø:11:12
//
RUN SY:[1,2]PIP.SAV
PRGNAM.OBJ/DE:NO
[[SYØ:]$PRGNAM.TSK<prot>/RE]
^Z
```

RSTS/E HARDWARE PHASE OUT SUPPORT

As part of the ongoing process of maintaining RSTS/E as a major operating system, Central Commercial Engineering announced the policy and process for phasing out support for hardware devices in the RSTS/E Software Dispatch dated January, 1982 and July, 1982

From time to time, it is required to evaluate whether or not it is necessary and appropriate to continue the support of the older and counterstrategic hardware devices. The major reasons for removing support of these devices are:

- To reduce the number of hardware combinations that RSTS/E Software Engineering must check out before each release.
- To reduce the amount of hardware that RSTS/E software Engineering must continue to own and keep operational.
- To motivate customers to upgrade to more current hardware that Field Service can easily maintain.
- To make possible the addition of new hardware support, in some cases.
- To make mass storage devices more closely match the storage requirements of the current software.

There are several stages to removing the support of devices that RSTS/E Software Engineering will no longer support:

1. Two (2) years notice that support will be dropped.
2. Place RSTS/E support of the device in maintenance mode (only for systems updating from the current release).
3. Discontinue software maintenance of code supporting the device.
4. Remove code supporting the device from the operating system.

NOTE: The date of removal of the code supporting the device is not an indication of a release of RSTS/E. The code will be removed from the next release of RSTS after this date.

The list of devices currently being phased out and the date when the RSTS/E code will be removed is provided below:

Device Name	Recommended Replacement	Date SPR Support Stops
RF11	RKØ7 or RMØ2	October 1983
RSØ3	RKØ7 or RMØ2	October 1983
RSØ4	RMØ3 on 11/7Ø otherwise RMØ2	October 1983
RKØ5J as system disk*	RLØ2	October 1983
RKØ5F as system disk	RLØ2	October 1983
LT33	LA34 or LA38	October 1983
VTØ5	VT1ØØ	October 1983
VT5Ø	VT1ØØ	October 1983
IBM 2741	LA38 or LA12Ø	October 1983
DP11	DUP11	October 1983
TU58	RXØ2	January 1984

*Note: The RKØ5 will still be supported as a distribution device on RSTS/E.

In the next release of RSTS/E, the RF11, RSØ3, and RSØ4 disks will not be supported as system disks. However, they will be supported as data devices until October 1983. What this implies is that support of the RF11, RSØ3, and RSØ4 disks as system disks is being terminated earlier than had been previously published. Since the RF11, RSØ3, and RSØ4 disks are relatively small disks, it is anticipated that they are no longer being used as system disks.

ANNOUNCING RSTS/E V8.0 AND CTS-500 VERSION 8.0

Digital is pleased to announce Version 8.0 of RSTS/E (Resource Sharing Timesharing System/Extended) and Version 8.0 of CTS-500. This new release brings many enhancements to RSTS/E, and introduces micro RSTS for use on the new MICRO/PDP-11 computer system. This follows the trend started by Version 7.1 toward supporting smaller systems. While aggressively positioning RSTS/E for the Small Business Computer market place, we have provided new features for the over 10,000-system installed base of very satisfied RSTS/E users.

RSTS/E POSITIONING

The PDP-11 family has been clearly positioned between VAX and our Personal Computers.

RSTS/E on the MICRO/PDP-11 provides multi-user timesharing for small numbers of users, typically two to four, where each user performs a similar task, for example business data processing. This is in a price and functionality band just above the "Professional" series of Personal Computers.

RSTS/E on the PDP-11/23 PLUS through the PDP-11/44 provides department level timesharing for four to forty users. In addition, the larger members of the PDP-11 family provide a continuing vehicle for maintaining our customers' huge investment in programs for the PDP-11 and RSTS/E.

FUTURE DIRECTIONS FOR RSTS/E

The last three releases of RSTS/E have set the direction for all future work on RSTS/E. We will continue to add new device support and features that make RSTS/E the multi-user timesharing system of choice for small business computers. These features include easier system management, additional ease-of-use features and layered products, disk management, new MICRO/PDP-11 hardware and a reliable base upon which to build small applications. In addition to the support for new markets, we will provide compatibility features to help our existing base continue to grow and coexist with VAX/VMS systems.

Finally, for the large installed base of RSTS/E systems, we will continue to provide ease-of-use features and easier to maintain systems.

RSTS/E V8.0 HARDWARE SUPPORT

As promised in the past, we intend to make the support of new devices available to RSTS/E customers at hardware shipment date. Support for several devices, planned for announcement with RSTS/E V8.0, was actually made available for RSTS/E V7.2. This support is summarized below:

RA80 support on the PDP-11/34 and PDP-11/70
MS11-P memory to 4MB on PDP-11/24 and 11/44
LA100 and LA12 terminals
LPV11 line printer controller for the PDP-11/23-PLUS
TSV05 magnetic tape subsystem for the PDP-11/23-PLUS
RA81 456MB DSA fixed disk drive
RA60 205MB DSA removeable disk drive
LN01 laser printer
DZS11 statistical multiplexer
VT131 as a VT102 compatible terminal

Additional hardware support in RSTS/E V8.0 is summarized below:

DF02-AC and DF03-AC auto-call
RD51/RX50 disks on MICRO/PDP-11

RSTS/E SUPPORT FOR THE MICRO/PDP-11

One of the major development goals for RSTS/E Version 8.0 was support for the MICRO/PDP-11 Computer system. The MICRO/PDP-11 system includes an integral 10MByte winchester disk and dual 400KByte floppies. It is the disk configuration that controls how RSTS/E can be used on this system:

MICRO/PDP-11 with additional 10 MByte disk, e.g. RL02	MICRO/PDP-11 without additional disk capacity
RSTS/E can be used from the distribution kit.	The 10 MBytes is too small to hold RSTS/E, application code and user data. Therefore a RSTS/E subset, micro RSTS has to be used.

THE RSTS/E SUBSET - micro RSTS

In order to use RSTS on the limited disk capacity of the MICRO/PDP-11 we have provided the ability to produce an application only subset of RSTS/E - micro RSTS. This subset occupies only 2.5 MBytes of the system disk, thus giving 7.5 MB to the application and user data.

micro RSTS Benefits - some of the benefits of micro RSTS over RSTS/E are listed below:

- micro RSTS provides more of the RD51 for the application than a standard RSTS/E system does. That is because micro RSTS only uses approximately 2.5 MBytes or 25% of the disk space whereas RSTS/E would use approximately 8 MBytes or 80%

- micro RSTS is the base for simpler system management work being done by RSTS Engineering.

- It serves as a model to application developers, e.g. OEM's, for building application only RSTS systems.

- It reduces the time to install RSTS to one hour or less for application only systems. Typically, a RSTS/E system can take from four to thirty two hours to install (with all layered products and applications).

The subset is distributed on the RSTS/E Distribution Kit as a pre-sysgened monitor and load command files. The process of loading the RSTS/E subset uses the host RSTS/E system to transfer the pre-sysgened monitor and other files from the distribution kit to a transfer disk, e.g. RL02. The transfer disk is then loaded onto the MICRO/PDP-11.

There is a separately orderable documentation kit (QR421-GZ) "micro RSTS: Application Developers Guide" that describes how to perform the subset build and how to tailor the application around it.

RSTS/E V8.0 SOFTWARE FEATURES

RSTS/E V8.0 includes the following new software features:

RMS V2.0
RSTS/E Subset Generation - micro RSTS
More accounts on a disk
DCL changes for DIBOL and COBOL-81
A new Spooler for small systems
Easier system management for small systems
Module Update for the CUSPS
Security Enhancements

RMS V2.0 - This is described in a separate article in the RSTS/E V8.0 Software Dispatch Review, sequence number 48.1.1.

More Accounts on a Disk - The RSTS/E directory structure has been extended. This now means that large systems with large numbers of users now have the ability to overcome the 1700 user limit on a disk. The new limit is 64,771 accounts per disk subject to total disk space limitations.

These changes to the directory structure may effect some user programs that do their own file processing rather that use the RSTS/E file processor. See the compatibility statement in this article.

DCL Changes for DIBOL and COBOL-81 - The DCL command language has been enhanced to include most of the switches for the operation of these language compilers.

New Spooler for Small Systems - RSTS/E V8.0 includes a new print spooler package, designed for the smaller system. It uses fewer jobs, less disk space, less memory, and has much better performance. In this version of RSTS/E it is limited in functionality to a single printer device, but can use multiple forms types.

Future versions of RSTS/E will extend this so over time it will become a functional replacement for the existing Spooler/Batch system.

Easier System Management - Three of the significant enhancements in this area are:

- Online Disk Initialization - An improved online disk initialation utility is included in the RSTS/E V8.0 system. This utility provides the same initialation features as the offline version except disk formatting.

- Mount With Clean - Optionally clean the ondisk file structure when a disk volume is logically mounted.

- Easier to use Spooler

Module Update for CUSPS - Patching for any system component is a lengthy and error prone method to perform system maintenance. As part of the process in providing an easier to maintain RSTS system, patching for the CUSPS will be discontinued. In its place we are starting module replacement. This is a process where periodic updates will replace the component in error with a new version which has been corrected at source. This reduces errors occuring as a result of miss-printed or incorrectly typed patches. Maintenance for the monitor will still be patches.

Security Enhancements - Three of the significant changes in this area are:

- Some of the system defaults have been changed so the system is more secure.

- Logging of certain system directives every time they are used, e.g. File open and close.

- Logged out disk quota checked on all disks both Private and Public.

COMPATIBILITY WITH PREVIOUS VERSIONS

At the job level, RSTS/E V8.0 is compatible with RSTS/E V7.2 unless use of the new features is required. In this case, the jobs have to be re-taskbuilt. Re-taskbuilding is not required in other cases.

The use of RMS V2.0 will require all tasks that use it to be re-taskbuilt.

The addition of the ability to add more accounts to a disk has affected the directory structure on a disk. The changes only affect disks created by RSTS/E V8.0. RSTS/E V8.0 is able to use disks created by earlier versions of RSTS/E. User written programs that use information in the RSTS/E disk structure may have to be modified.

PERFORMANCE AND QUALITY EVALUATION

RSTS/E has been subject to all the stringent Engineering quality controls to ensure a very high quality product. Field testing has been performed for several months, and RSTS/E V8.0 has proven itself to be as high a quality product as RSTS/E V7.2.

Performance of RSTS/E V8.0 is equally as good as V7.2 if all the SYSGEN options are the same. RSTS/E V8.0 has added features, which can provide performance improvements over a comparable RSTS/E V7.2 systems.

AVAILABILITY OF RSTS/E V8.0

RSTS/E V8.0 will be available from Digital for U.S.A. and Canadian customers in late spring 1983. For those customers in other areas, availability will be approximately one month later, because of shipping delays.

ORDERING INFORMATION

With the introduction of the PDP-11 Operating System General License RSTS/E ordering has been simplified. The new SX Packaged systems include in the package the PDP-11 Operating System General License. Customers who purchase the old SE packaged systems still get the RSTS/E License. Customers who purchase CPU boxes and systems without software can add either the new PDP-11 Operating System General License or the old RSTS/E QR430 line item.

PDP-11 Operating System General License - The order numbers for General Licenses vary for different CPUs:

QJB51-DZ	for MICRO/PDP-11
QJB56-DZ	for PDP-11/23-PLUS
QJB66-DZ	for PDP-11/24
QJB76-DZ	for PDP-11/44 and 11/70

Installation and Warranty - In conjunction with the above PDP-11 Operating System General License users may elect to order Installation and Warranty Period Services. This option does not include the RSTS/E software on any media, or documentation kits.

QR430-AZ	RSTS/E Installation and Warranty Service

Media and Documentation (Update) Kits - With a PDP-11 Operating System General License customers may order an update option (binary distribution and documentation) or a documentation-only kit.

Update Kits:

Media	Out-of-warranty Order Number
800/9 Tape	QR430-HD
RK05	QR430-HE
1600/9 Tape	QR430-HM
RL01	QR430-HQ
RL02	QR430-HH
RK06	QR430-HT
RK07	QR430-HV

RSTS/E Documentation Kits:

QR430-GZ	Complete Documentation Kit
QR432-GZ	System Managers Documentation Kit
QR433-GZ	System Users Documentation Kit
QR426-GZ	System Programming Documentation Kit
QR427-GZ	BASIC-PLUS Programming Documentation Kit
QR428-GZ	MACRO Programming Documentation Kit
QR439-GZ	System Primer Documentation Kit
QR470-GZ	RSTS/E and VAX/VMS Compability Documentation Kit
QR421-GZ	micro RSTS Documentation Kit

The older service inclusive licenses are still available and include Digital Installation, Traning Credits, and 90 Day Warranty in addition to RSTS/E software on the specified media, and documentation:

Media	Digital Supported Order Number
1600/9	QR430-AM
RL02	QR430-AH
RK07	QR430-AV
License Only	QR430-DZ

Other Options:

Microfiche listing kits:	
Run-Time Systems and Utilities	QR431-FR
Monitor, INIT, and SYSGEN	QR432-FR
BASIC-PLUS utilities	QR433-FR
RSTS/E Monitor, run-time systems and utilities	QR438-FR
Source Code on Magnetic Tape:	
RSTS/E Monitor, run-time systems and utilities	QR438-EM
RSTS/E Source Update on Magnetic Tape	QR438-NM

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CHANGE SAVRES DENSITY DEFAULT TO 16ØØ BPI - INIT.SYS FEATURE PATCH

PROBLEM:

SAVRES, as released, defaults to the lowest density (of 8ØØ BPI and 16ØØ BPI) allowed by a given tape drive (normally 8ØØ BPI) for all tape I/O. It may be desirable at some installations to have SAVRES default to the highest density allowed by a given tape drive for more compact storage of data. This is especially true if all drives on the system support 16ØØ BPI and the problem described below is not applicable.

CAUTION

> If the tape drive being used has a TMØ2 formatter, the hardware bootstrap of a 16ØØ BPI tape will not be possible. (You can determine the formatter type by using the HARDWR LIST suboption of INIT.) Therefore, if it is desirable for SAVRES to create tapes which are bootable on such a drive it is recommended that this patch not be installed. Normally, TU16 and TU45 drives use a TMØ2 formatter, TE16 and TU77 drives do not.

SOLUTION:

The following feature patch will cause the SAVRES option of INIT.SYS to default to the highest density allowed by a given tape drive for all tape I/O. This default can be overridden by attaching the /DENSITY:8ØØ switch to the device specification. Refer also to article Seq 22.19.1 F, which supplies a similar patch for SAVRES.SAV.

PROCEDURE:

1. This is a feature patch to the RSTS/E INIT.SYS Program. Since patching the distribution medium is not recommended, the patch must be installed every time the COPY option is used to copy INIT.SYS from the distribution medium. Any copy of the patched INIT.SYS will propagate the feature.

2. The patch described in Step 4 below can be installed using the PATCH option of INIT.SYS:

   ```
   Option: PATCH
   File to patch? INIT.SYS
   ```

3. This patch can be installed manually using ONLPAT, the on-line patching program:

```
RUN $ONLPAT
Command File Name? <cr>          (RETURN for manual patch installation)
File to patch? INIT.SYS
File found in account [Ø,1]
```

The patch is also contained in a patch file appearing in patch kit version "A" or later.

4. The patch is as follows:

```
Base address? DIACTL
Offset address? 31Ø
 Base   Offset  Old     New?
??????  ØØØ31Ø  Ø3ØØ7Ø  ? "16
??????  ØØØ312  177460  ? "ØØ
??????  ØØØ314  Ø33Ø61  ? Ø34377
??????  ØØØ316  Ø3ØØ6Ø  ? <lf>      (no change; verify only)
??????  ØØØ32Ø  ØØØ377  ? <lf>      (no change; verify only)
??????  ØØØ322  ØØ144Ø  ? 16ØØ.
??????  ØØØ324  ØØ31ØØ  ? 8ØØ.
??????  ØØØ326  ØØØØØØ  ? ^Z        (CTRL/Z for new offset)
Offset address? ^Z                  (CTRL/Z for new base)
Base address? SAVCTL
Offset address? 42
 Base   Offset  Old     New?
??????  ØØØØ42  Ø3ØØ7Ø  ? "16
??????  ØØØØ44  177460  ? "ØØ
??????  ØØØØ46  Ø33Ø61  ? Ø34377
??????  ØØØØ5Ø  Ø3ØØ6Ø  ? <lf>      (no change; verify only)
??????  ØØØØ52  ØØØ377  ? <lf>      (no change; verify only)
??????  ØØØØ54  ØØ144Ø  ? 16ØØ.
??????  ØØØØ56  ØØ31ØØ  ? 8ØØ.
??????  ØØØØ6Ø  ØØØØØØ  ? ^Z        (CTRL/Z for new offset)
Offset address? ^Z                  (CTRL/Z for new base)
```

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```
Base address? RESCTL
Offset address? 3Ø
 Base    Offset  Old      New?
??????  ØØØØ3Ø  Ø3ØØ7Ø  ? "16
??????  ØØØØ32  177460  ? "ØØ
??????  ØØØØ34  Ø33Ø61  ? Ø34377
??????  ØØØØ36  Ø3ØØ6Ø  ? <lf>       (no change; verify only)
??????  ØØØØ4Ø  ØØØ377  ? <lf>       (no change; verify only)
??????  ØØØØ42  ØØ144Ø  ? 16ØØ.
??????  ØØØØ44  ØØ31ØØ  ? 8ØØ.
??????  ØØØØ46  ØØØØØØ  ? ^Z         (CTRL/Z for new offset)
Offset address? ^Z                   (CTRL/Z for new base)
Base address? $$Ø1Ø1
Offset address? Ø
 Base    Offset  Old      New?
??????  ØØØØØØ  ??????  ? Q!1
??????  ØØØØØ2  ??????  ? ^C         (up-arrow/C to exit;CTRL/C for INIT)
```

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Initialization
INIT.SYS Program Patches

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MAKING /NOERROR THE DEFAULT - INIT.SYS FEATURE PATCH

PROBLEM:

The /NOERROR switch indicates that SAVRES should abort under the following conditions:

1. A contiguous file is made non-contiguous
2. A placed file is "unplaced"
3. A bad comparison occurs
4. An unexpected bad block is encountered on the input RSTS/E disk in a SAVE or IMAGE operation

Some installations, however, may always want SAVRES to abort under these circumstances.

SOLUTION:

The following feature patch will make /NOERROR, rather than /ERROR, the default in the SAVRES option of INIT.SYS. Note that the user may override the default for a particular operation by specifying /ERROR. Refer also to article Seq 22.19.2 F, which supplies a similar patch for SAVRES.SAV.

PROCEDURE:

1. This is a feature patch to the RSTS/E INIT.SYS Program. Since patching the distribution medium is not recommended, the patch must be installed every time the COPY option is used to copy INIT.SYS from the distribution medium. Any copy of the patched INIT.SYS will propagate the feature.

2. The patch described in Step 4 below can be installed using the PATCH option of INIT.SYS:

   ```
   Option: PATCH
   File to patch? INIT.SYS
   ```

3. This patch can be installed manually using ONLPAT, the on-line patching program:

   ```
   RUN $ONLPAT
   Command File Name? <cr>          (RETURN for manual patch installation)
   File to patch? INIT.SYS
   File found in account [Ø,1]
   ```

The patch is also contained in a patch file appearing in patch kit version "A" or later.

4. The patch is as follows:

```
Base address? ..NOER
Offset address? 2
 Base   Offset  Old     New?
??????  ØØØØØ2  ØØØØ1Ø  ? 4
??????  ØØØØØ4  ??????  ? <lf>      (no change)
??????  ØØØØØ6  ??????  ? <lf>      (no change)
??????  ØØØ1Ø   ??????  ? <lf>      (no change)
??????  ØØØ12   ØØØØØ4  ? 1Ø
??????  ØØØ14   ??????  ? ^Z        (CTRL/Z for new offset)
Offset address? ^Z                  (CTRL/Z for new base)
Base address? $$Ø1Ø1
Offset address? Ø
 Base   Offset  Old     New?
??????  ØØØØØØ  ??????  ? Q!2
??????  ØØØØ2   ??????  ? ^C        (up-arrow/C to exit;CTRL/C for INIT)
```

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Initialization
INIT.SYS Program Patches

Seq 1.1.3 F

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MAKING /NOSTATS THE DEFAULT - INIT.SYS FEATURE PATCH

PROBLEM:

SAVRES always prints a summary report after completing a transfer unless the /NOSTATS (no statistics) switch is specified. Certain installations may prefer that this report NOT be printed unless specifically requested.

SOLUTION:

The following feature patch will make /NOSTATS, rather than /STATS, the default in the SAVRES option of INIT.SYS. Note that the user may override this default for a particular operation by specifying /STATS. Refer also to article Seq 22.19.3 F, which supplies a similar patch for SAVRES.SAV.

PROCEDURE:

1. This is a feature patch to the RSTS/E INIT.SYS Program. Since patching the distribution medium is not recommended, the patch must be installed every time the COPY option is used to copy INIT.SYS from the distribution medium. Any copy of the patched INIT.SYS will propagate the feature.

2. The patch described in Step 4 below can be installed using the PATCH option of INIT.SYS:

   ```
   Option: PATCH
   File to patch? INIT.SYS
   ```

3. This patch can be installed manually using ONLPAT, the on-line patching program:

   ```
   RUN $ONLPAT
   Command File Name? <cr>          (RETURN for manual patch installation)
   File to patch? INIT.SYS
   File found in account [Ø,1]
   ```

   The patch is also contained in a patch file appearing in patch kit version "A" or later.

4. The patch is as follows:

```
Base address? ..NOST
Offset address? 2
 Base   Offset  Old     New?
??????  ØØØØØ2  ØØØØ4Ø  ? 2Ø
??????  ØØØØØ4  ??????  ? <lf>      (no change)
??????  ØØØØØ6  ??????  ? <lf>      (no change)
??????  ØØØØ1Ø  ??????  ? <lf>      (no change)
??????  ØØØØ12  ØØØØ2Ø  ? 4Ø
??????  ØØØØ14  ??????  ? ^Z        (CTRL/Z for new offset)
Offset address? ^Z                  (CTRL/Z for new base)
Base address? $$Ø1Ø1
Offset address? Ø
 Base   Offset  Old     New?
??????  ØØØØØØ  ??????  ? Q!4
??????  ØØØØØ2  ??????  ? ^C        (up-arrow/C to exit;CTRL/C for INIT)
```

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Initialization
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CHANGING THE DEFAULT LINE FREQUENCY TO 5Ø HERTZ - INIT.SYS FEATURE PATCH

PROBLEM:

When new Save Image Libraries (SIL's) are installed with INIT, the line frequency will always default to 6Ø HERTZ. If your system uses an AC line frequency of 5Ø Hz, then every installation of a new monitor requires that you use the HARDWR HERTZ suboption to change this value.

SOLUTION:

The following INIT.SYS patch will set the default line frequency for the installed monitor SIL and INIT.SYS to 5Ø Hz. Note that if you have previously installed a monitor SIL with an unpatched copy of INIT.SYS, you must use the HARDWR HERTZ suboption to change the line frequency for that monitor SIL (if the monitor SIL is not currently installed, you must use the HERTZ suboption to change its default line frequency the next time you install it).

This patch is most effective if applied before any SILs are installed. If you are installing a monitor SIL for the first time, and you are using an INIT.SYS which is patched as indicated below, the default line frequency will be 5Ø Hz.

PROCEDURE:

1. This is a feature patch to the RSTS/E INIT.SYS Program. Since patching the distribution medium is not recommended, the patch must be installed every time the COPY option is used to copy INIT.SYS from the distribution medium. Any copy of the patched INIT.SYS will propagate the fix.

2. The patch described in Step 4 below can be installed using the PATCH option of INIT.SYS:

   ```
   Option: PATCH
   File to patch? INIT.SYS
   ```

3. This patch can be installed manually using ONLPAT, the on-line patching program:

   ```
   RUN $ONLPAT
   Command File Name? <cr>          (RETURN for manual patch installation)
   File to patch? INIT.SYS
   File found in account [Ø,1]
   ```

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This patch is contained in a patch file appearing in patch kit version "A" or later.

4. The patch is as follows:

```
Base address? ..DFHZ
Offset address? Ø
 Base   Offset  Old     New?
??????  ØØØØØØ  ØØØØ74  ? 5Ø.
??????  ØØØØØ2  ??????  ? ^Z        (CTRL/Z for new offset)
Offset address? ^Z                  (CTRL/Z for new base)
Base address? $$Ø1Ø1
Offset address? Ø
 Base   Offset  Old     New?
??????  ØØØØØØ  ??????  ? Q!1Ø
??????  ØØØØØ2  ??????  ? ^C        (up-arrow/C to exit;CTRL/C for INIT)
```

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DEVICES WITH NON-STANDARD UNIBUS ADDRESSES AND VECTORS

Some installations have devices which are installed at non-standard UNIBUS addresses or which vector to non-standard locations. INIT does not automatically recognize these devices. Of course, the best solution is to have field service re-configure these devices so that they conform to the standard. Appendix C of the RSTS/E System Generation Manual contains the information you need to determine the correct UNIBUS addresses and vectors for all devices supported by RSTS/E. Note that extra units such as the second RX, second PR, etc., do not have "homes" and must use the CSR option.

If re-configuration is not possible, you can use the HARDWR option of INIT. The CSR suboption sets non-standard UNIBUS addresses and the VECTOR suboption sets non-standard vectors. DIGITAL strongly recommends that you use only the CSR suboption. This tells INIT to find the device at its non-standard UNIBUS address, but lets INIT determine the device's vector. If the device is functioning properly, INIT will find the device's non-standard vector. The only device for which INIT cannot determine a vector is the card reader. If a card reader has a non-standard vector, you must use the VECTOR suboption. The PA611 paper tape reader must be powered on for INIT to find its vector. Use the VECTOR suboption if you intend to start your system with a PA611 paper tape reader powered off.

Be careful when you assign non-standard vectors to devices. INIT checks all device vectors (assigned through the VECTOR suboption or automatically determined) against a table of reserved locations. INIT also checks to see if any vector location is used by more than one device. Any conflict will print the message

Vector for Device XXn: (vvv) already in use - device disabled.

where vvv is the octal address of the erring vector.

The RSTS/E reserved locations, which may not be used as device vectors, are:

Addresses	RSTS/E usage
Ø-2	Detection of jumps to Ø and traps to Ø
4-36	System trap vectors
4Ø-56	Reload start addresses, failure HALT
1ØØ-1Ø2	KW11-L line frequency clock vector
1Ø4-1Ø6	KW11-P crystal clock vector
11Ø-112	Jump to Ø handling
114-116	Memory parity trap vector
144-146	Crash dump handling
234-236	Statistics handling
24Ø-242	PIRQ trap vector
244-246	FPP or FIS exception trap vector
25Ø-252	Memory Management Unit trap vector

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INIT.SYS Program Notes

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USE OF RSTS/E V8.Ø WITH 22-BIT ADDRESSING ON Q-BUS

RSTS/E V8.Ø supports 22-bit addressing on systems using the RLV12 disk controller and the Q-bus. This Notice discusses the conditions that must be satisfied in order for RSTS/E to perform correctly with 22-bit addressing.

1. If the system has MORE than 124KW of memory, the RLV12 controller must be strapped for 22-bit addressing. The controller has two jumpers that determine the type of addressing, and both jumpers must be set to the proper configuration. If the system has 124KW or less of memory, the RLV12 controller can be strapped for either 18-bit or 22-bit addressing.

   If the system has more than 128KW of memory and the RLV12 is strapped for 18-bit addressing, INIT.SYS will warn the user that the RLV12 must be strapped for 22-bit addressing and will then return to the OPTION prompt. However, if the system has more than 124KW of memory but not more than 128KW of memory, INIT.SYS will not warn the user that the disk controller must be strapped for 22-bit addressing, even though the controller must be strapped that way.

2. There are two types of memory boards that might be used on Q-bus systems.

   (a) boards having 22 address lines, i.e. 22-bit addressing.
   (b) boards having 18 address lines, i.e. 18-bit addressing.

   These two types of boards must not be mixed in the same system. In order to use more than 124KW of memory, you must have boards with 22-bit addressing. You should have 22-bit addressing boards in your system unless you have inserted 18-bit addressing boards that were taken from an older system.

HOW TO CHANGE THE NUMBER OF SMALL BUFFERS SPECIFIED AT SYSGEN

It is often useful to be able to change the number of small buffers in a monitor without repeating the entire system generation dialogue.

To do so, perform the following steps

1. Edit CONFIG.MAC to indicate how many small buffers you want. Change the value of the symbol SMLBUF to indicate how many small buffers you want.

2. Reassemble TBL.MAC.

3. Relink and re-SILUS the monitor.

The value of SMLBUF indicates approximately how many general small buffers the system will have if none are added during initialization. The value of SMLBUF does not directly affect FIP small buffers.

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FIRST FIT MEMORY ALLOCATION - MONITOR FEATURE PATCH

When a residency request is made for a job or for a run-time system residency without a specific load address, the RSTS/E monitor does a best fit allocation: the job or run-time system is loaded into the smallest free area in memory in which it fits. For some systems, especially those with a large user memory region, a first fit allocation may result in better performance.

This monitor feature patch changes the memory allocation from best fit to first fit.

PROCEDURE:

1. This is a feature patch to the RSTS/E executive. It may be installed in any target monitor SIL.

2. The patch described in Step 4 below can be installed using the PATCH option of INIT.SYS:

   ```
   Option: PATCH
   File to patch? <lf>                (LINE FEED for installed monitor SIL)
   ```

3. This patch can be installed manually using ONLPAT, the on-line patching program:

   ```
   RUN $ONLPAT
   Command File Name? <cr>            (RETURN for manual patch installation)
   File to patch? <lf>                (LINE FEED for installed monitor SIL)
   File found in account [Ø,1]
   ```

   The patch is also contained in a patch file appearing in patch kit version "A" or later.

4. The patch is as follows:

```
Module name? GEN
Base address? ..FFIT
Offset address? Ø
 Base    Offset  Old        New?
??????  ØØØØØØ  ØØ1627   ? 627
??????  ØØØØØ2  Ø2Ø2Ø3   ? ^Z          (CTRL/Z for new offset)
Offset address? ^Z                     (CTRL/Z for new base)
Base address? ^Z                       (CTRL/Z for new module)
Module name? RSTS
Base address? $$Ø3Ø1
Offset address? Ø
 Base    Offset  Old        New?
??????  ØØØØØØ  ??????   ? Q!1
??????  ØØØØØ2  ??????   ? ^C          (up-arrow/C to exit;CTRL/C for INIT)
```

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CHANGING CACHE REPLACEMENT TIME - MONITOR FEATURE PATCH

When data is installed in the disk cache, it will not be removed until a certain minimum residency time has expired (unless the last block of a cluster is read in sequential mode). The minimum residency time is meant to keep some useful data in the cache, even when the cache is very small, and prevent thrashing. For systems with large caches or rapidly changing disk access patterns, it may be advantageous to reduce the minimum residency time from its default value of 1 minute. The residency time may be changed to any integer value in the range Ø. to 65535. inclusive. Refer to the RSTS/E System Manager's Guide for a discussion of caching tradeoffs.

PROCEDURE:

1. This is a feature patch to the RSTS/E V8.Ø executive. It may be installed in any target monitor SIL configured with data caching. If data caching was not included in the monitor during your system generation, the patch will fail with a "Symbol not found in STB" error after you specify ..CAGE as the Base Address.

2. Determine the new minimum cache residency time in seconds. Use this value as n in Step 5 below. Be sure to include a period after the number so that it is interpreted as a decimal number.

3. The patch described in Step 5 below can be installed using the PATCH option of INIT.SYS:

```
Option: PATCH
File to patch? <lf>                (LINE FEED for installed monitor SIL)
```

4. This patch can be installed manually using ONLPAT, the on-line patching program:

```
RUN $ONLPAT
Command File Name? <cr>            (RETURN for manual patch installation)
File to patch? <lf>                (LINE FEED for installed monitor SIL)
File found in account [Ø,1]
```

The patch is also contained in a patch file appearing in patch kit version "A" or later.

NOTE

The patch file for this patch requires manual editing to include installation specific parameters before it can be successfully installed.

5. The patch is as follows:

```
Module name? RSTS
Base address? ..CAGE
Offset address? Ø
 Base   Offset  Old       New?
??????  ØØØØØØ  ØØØØ74  ? n.        (from step 2)
??????  ØØØØØ2  ??????  ? ^Z        (CTRL/Z for new offset)
Offset address? ^Z                  (CTRL/Z for new base)
Base address? $$Ø3Ø1
Offset address? Ø
 Base   Offset  Old       New?
??????  ØØØØØØ  ??????  ? Q!2
??????  ØØØØØ2  ??????  ? ^C        (up-arrow/C to exit;CTRL/C for INIT)
```

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DISABLING THE USE OF DATA SPACE - MONITOR FEATURE PATCH

PROBLEM:

Some systems may find it desirable to permanently disable the use of Data Space by the monitor because optional software generated into the system is not compatible with the monitor using Data Space. If your monitor contains any unsupported software, such as a locally written device driver, then it is unlikely to work with data space. The only supported monitor software which works with Data Space is software that comes from either the RSTS/E V8.Ø, DECnet/E V2.Ø, FMS-11 V1.5, RSTS/E 3271 Protocol Emulator, or RSTS/E High Performance 278Ø/378Ø Protocol Emulator distribution kits. Note that Data Space will automatically not be used if your system includes the optional RSTS/E-278Ø (RJ278Ø) package.

SOLUTION:

The patching procedure detailed below will cause the monitor to never use Data Space, regardless of whether the processor it is running on supports it or not.

PROCEDURE:

1. This is a feature patch to the RSTS/E V8.Ø executive. It may be installed in any target monitor SIL.

2. The patch described in Step 4 below can be installed using the PATCH option of INIT.SYS:

```
Option: PATCH
File to patch? <lf>                    (LINE FEED for installed monitor SIL)
```

3. This patch can be installed manually using ONLPAT, the on-line patching program. Note, however, that if the patch is applied online to the installed monitor SIL, it will not take effect until the system is re-booted.

```
RUN $ONLPAT
Command File Name? <cr>                (RETURN for manual patch installation)
File to patch? <lf>                    (LINE FEED for installed monitor SIL)
File found in account [Ø,1]
```

This patch is contained in a patch file appearing in patch kit version "A" or later.

4. The patch is as follows:

```
Module name? DEFALT
Base address? ..NODS
Offset address? Ø
 Base   Offset  Old     New?
ØØ1ØØØ  ØØØØØØ  ØØØØØØ  ? \
ØØ1ØØØ  ØØØØØØ     ØØØ  ? -1
ØØ1ØØØ  ØØØØØ1     ØØØ  ? ^Z        (CTRL/Z for new offset)
Offset address? ^Z                   (CTRL/Z for new base)
Base address? ^Z                     (CTRL/Z for new module)
Module name? RSTS
Base address? $$Ø3Ø1
Offset address? Ø
 Base   Offset  Old     New?
??????  ØØØØØØ  ??????  ? Q!4
??????  ØØØØØ2  ??????  ? ^C        (up-arrow/C to exit;CTRL/C for INIT)
```

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CHANGING THE QUOTA OF RECEIVER ID BLOCKS PER USER - MONITOR FEATURE PATCH

The "Declare Receiver" system call of BASIC-PLUS and the "Declare Receiver Subfunction" of the .MESSAG monitor directive can now be used by non-privileged jobs. However, there are certain restrictions imposed on the non-privileged users. These restrictions include a new quota on the number of Receiver Id Blocks (RIB) per user. This quota can be changed by a feature patch, as explained below. The default value of this quota is 3; the quota may be changed to any integer value in the range Ø. to 255. inclusive. Note that setting the limit to Ø. disables receiver declaration for non-privileged users.

Please also refer to article Seq 3.1.5 F to alter the default number of messages pending per RIB. Refer to article Seq 7.1.33 M if you have DECnet/E on your system.

PROCEDURE:

1. This is a feature patch to the RSTS/E V8.Ø executive. It may be installed in any target monitor SIL.

2. Determine the RIB quota. Use this value as n in Step 5 below. Be sure to include a period after the number so that it is interpreted as a decimal number.

3. The patch described in Step 5 below can be installed using the PATCH option of INIT.SYS:

   ```
   Option: PATCH
   File to patch? <lf>                (LINE FEED for installed monitor SIL)
   ```

4. This patch can be installed manually using ONLPAT, the on-line patching program.

   Note that if you answered 'No' to the 'Resident Send/Receive' question during system generation this patch will take effect immediately when applied to the installed monitor SIL.

   ```
   RUN $ONLPAT
   Command File Name? <cr>            (RETURN for manual patch installation)
   File to patch? <lf>                (LINE FEED for installed monitor SIL)
   File found in account [Ø,1]
   ```

   This patch is contained in a patch file appearing in patch kit version "A" or later.

NOTE

The patch file for this patch requires manual editing to include installation specific parameters before it can be successfully installed.

5. The patch is as follows:

```
Module name? OVR
Base address? ..RCNR
Offset address? Ø
 Base   Offset  Old      New?
??????  ØØØØØØ  ØØØØØ3  ? n.        (from step 2; enter new value)
??????  ØØØØØ2  ??????  ? ^Z       (CTRL/Z for new offset)
Offset address? ^Z                  (CTRL/Z for new base)
Base address? ^Z                    (CTRL/Z for new module)
Module name? RSTS
Base address? $$Ø3Ø1
Offset address? Ø
 Base   Offset  Old        New?
??????  ØØØØØØ  ??????  ? Q!1Ø
??????  ØØØØØ2  ??????  ? ^C       (up-arrow/C to exit;CTRL/C for INIT)
```

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Executive
Monitor Patches

Seq 3.1.5 F

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CHANGING PENDING MESSAGE LIMIT RECEIVER ID BLOCK - MONITOR FEATURE PATCH

The "Declare Receiver" system call of BASIC-PLUS and the "Declare Receiver Subfunction" of the .MESSAG monitor directive can now be used by non-privileged jobs. However, there are certain restrictions imposed on the non-privileged users. These restrictions include a new upper limit on the number of messages pending per Receiver ID Block (RIB). This limit can be changed by a feature patch, as explained below. The default value of this limit is 4; the limit may be changed to any integer value in the range 1. to 127. inclusive.

Please also refer to article Seq 3.1.4 F to alter the default number of RIBs per user. Refer to article Seq 7.1.12 M if you have DECnet/E on your system.

PROCEDURE:

1. This is a feature patch to the RSTS/E V8.Ø executive. It may be installed in any target monitor SIL.

2. Determine the pending message limit. Use this value as n in Step 5 below. Be sure to include a period after the number so that it is interpreted as a decimal number.

3. The patch described in Step 5 below can be installed using the PATCH option of INIT.SYS:

```
Option: PATCH
File to patch? <lf>                (LINE FEED for installed monitor SIL)
```

4. This patch can be installed manually using ONLPAT, the on-line patching program.

   Note that if you answered 'No' to the 'Resident Send/Receive' question during system generation this patch will take effect immediately when applied to the installed monitor SIL.

```
RUN $ONLPAT
Command File Name? <cr>            (RETURN for manual patch installation)
File to patch? <lf>                (LINE FEED for installed monitor SIL)
File found in account [Ø,1]
```

   This patch is contained in a patch file appearing in patch kit version "A" or later.

NOTE

The patch file for this patch requires manual editing to include installation specific parameters before it can be successfully installed.

5. The patch is as follows:

```
Module name? OVR
Base address? ..NRMM
Offset address? Ø
 Base   Offset  Old     New?
??????  ØØØØØØ  ØØØØØ4  ? n.       (from step 2, enter new value)
??????  ØØØØØ2  1Ø1355  ? ^Z       (CTRL/Z for new offset)
Offset address? ^Z                 (CTRL/Z for new base)
Base address? ^Z                   (CTRL/Z for new module)
Module name? RSTS
Base address? $$Ø3Ø1
Offset address? Ø
 Base   Offset  Old       New?
??????  ØØØØØØ  ??????  ? Q!2Ø
??????  ØØØØØ2  ??????  ? ^C       (up-arrow/C to exit;CTRL/C for INIT)
```

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Monitor Patches

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NON-PRIVILEGED CREATION (SPAWN) OF DETACHED JOBS - MONITOR FEATURE PATCH

PROBLEM:

RSTS/E V8.Ø allows a non-privileged job to create (spawn) detached jobs in the same account as the requesting job. There is a settable limit for the number of detached jobs that can be spawned by a non-privileged job. Unless modified by the patch described below, this limit is zero, thereby preventing non-privileged users from spawning detached jobs.

SOLUTION:

The limit on the number of detached jobs that can be spawned by a non-privileged job is defined as the ratio of detached jobs to attached jobs. The value of this ratio is initially zero. In order for non-privileged users to spawn detached jobs, the patch procedure given below must be followed to change the value of this ratio to a non-zero value. The value of this ratio applies to all non-privileged accounts on the system. For example, if a detached job quota of 2 is used, then two detached jobs may be spawned for each attached job in a non-privileged account.

NOTE

The patch file for this patch requires manual editing before it can be sucessfully installed.

This patch only affects non-privileged spawning of detached jobs; if non-privileged jobs are spawned attached, the patching procedure given below need not be installed.

PROCEDURE:

1. This is a feature patch to the RSTS/E V8.Ø executive. It may be installed in any target monitor SIL.

2. Decide what value you wish to assign for the detached job quota. Remember that this quota represents the number of detached jobs for each attached job in a non-privileged account.

3. The patch described in Step 4 below can be installed using the PATCH option of INIT.SYS:

```
Option: PATCH
File to patch? <lf>                (LINE FEED for installed monitor SIL)
```

4. This patch can be installed manually using ONLPAT, the on-line patching program. Note, however, that if the patch is applied online to the installed monitor SIL, it will not take effect until the system is re-booted.

```
RUN $ONLPAT
Command File Name? <cr>            (RETURN for manual patch installation)
File to patch? <lf>                (LINE FEED for installed monitor SIL)
File found in account [Ø,1]
```

5. The patch is as follows:

```
Module name? RSTS
Base address? ..NPDQ
Offset address? Ø
 Base   Offset  Old      New?
??????  ØØØØØØ  ØØØØØØ  ? n.        (from step 2)
??????  ØØØØØ2  ??????  ? ^Z       (CTRL/Z for new offset)
Offset address? ^Z                 (CTRL/Z for new base)
Base adress ^Z                     (CTRL/Z for new module)
Module name? RSTS
Base Address? $$Ø3Ø1
Offset address? Ø
 Base   Offset  Old      New?
??????  ØØØØØØ  ??????  Q!4Ø
??????  ØØØØØ2  ??????  ^C        (uparrow C to exit; CTRL/C for INIT)
```

RESTRICTING TERMINAL MODES - TERMINAL SERVICE FEATURE PATCH

The RSTS/E monitor normally allows any user to OPEN a terminal in binary mode or echo control mode (if configured). There is a danger in the use of these terminal modes, since all characters (including CTRL/C) are passed to the user program. A novice user could easily find himself in a situation in which his terminal does not respond. A malicious user could "lock up" a terminal in a way which required the system manager to kill his or her job. The following procedure allows you to patch the RSTS/E monitor to specify which terminal OPEN modes require privileges. Privileged users and non-privileged users running privileged programs would still have full access to all available terminal modes. Attempts by non-privileged users to use restricted modes would be ignored with no error message.

PROCEDURE:

1. This is a feature patch to the RSTS/E executive. It may be installed in any target monitor SIL.

2. Decide which terminal modes you wish to make privileged. Consult the RSTS/E Programming Manual for the various modes which are available, and determine the associated MODE values. Compute the sum, n, of the MODE values corresponding to the modes you wish to restrict. If you calculate the sum of the mode values in decimal, include a decimal point after the value of n in the patch below so that it is interpreted as a decimal number.

3. The patch described in Step 5 below can be installed using the PATCH option of INIT.SYS:

```
Option: PATCH
File to patch? <lf>                (LINE FEED for installed monitor SIL)
```

4. This patch can be installed manually using ONLPAT, the on-line patching program:

```
RUN $ONLPAT
Command File Name? <cr>            (RETURN for manual patch installation)
File to patch? <lf>                (LINE FEED for installed monitor SIL)
File found in account [Ø,1]
```

The patch is also contained in a patch file appearing in patch kit version "A" or later.

NOTE

The patch file for this patch requires manual editing to include installation specific parameters before it can be successfully installed.

5. The patch is as follows:

```
Module name? TER
Base address? ..KBMP
Offset address? -2
 Base    Offset  Old       New?
??????  177776  Ø42ØØ2  ? <lf>      (no change; verify only)
??????  ØØØØØØ  ØØØØØØ  ? n.        (from step 2)
??????  ØØØØØ2  ??????  ? ^Z        (CTRL/Z for new offset)
Offset address? ^Z                  (CTRL/Z for new base)
Base address? ^Z                    (CTRL/Z for new module)
Module name? RSTS
Base address? $$Ø3Ø3
Offset address? Ø
 Base    Offset  Old       New?
??????  ØØØØØØ  ??????  ? Q!1
??????  ØØØØØ2  ??????  ? ^C        (up-arrow/C to exit;CTRL/C for INIT)
```

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IMMEDIATE MODEM HANGUP - TERMINAL SERVICE FEATURE PATCH

When the carrier frequency drops on a modem line connecting a terminal to RSTS/E, the monitor normally waits approximately 5 seconds before hanging up the line. This allows recovery from transient line failures or accidental unseating of a phone from an acoustic coupler. In certain areas, such as the United Kingdom, computer systems are required to disconnect from such a line within milliseconds. The following patch causes RSTS/E to hang up a modem line as soon as it detects loss of carrier signal on that line. Note that LOGIN automatically hangs up after an unsuccessful log-in attempt.

PROCEDURE:

1. This is a feature patch to the RSTS/E executive. It may be installed in any target monitor SIL that supports modem control. If modem control was not included in the monitor during your system generation, the patch will fail with a "Symbol not found in STB" error after you specify ..UKMD as the Base Address.

2. The patch described in Step 4 below can be installed using the PATCH option of INIT.SYS:

   ```
   Option: PATCH
   File to patch? <lf>                (LINE FEED for installed monitor SIL)
   ```

3. This patch can be installed manually using ONLPAT, the on-line patching program:

   ```
   RUN $ONLPAT
   Command File Name? <cr>            (RETURN for manual patch installation)
   File to patch? <lf>                (LINE FEED for installed monitor SIL)
   File found in account [Ø,1]
   ```

   The patch is also contained in a patch file appearing in patch kit version "A" or later.

4. The patch is as follows:

```
Module name? TER
Base address? ..UKMD
Offset address? Ø
 Base   Offset  Old       New?
??????  ØØØØØØ  ØØØ4Ø4  ? 24Ø
??????  ØØØØØ2  Ø127Ø4  ? ^Z        (CTRL/Z for new offset)
Offset address? ^Z                  (CTRL/Z for new base)
Base address? ^Z                    (CTRL/Z for new module)
Module name? RSTS
Base address? $$Ø3Ø3
Offset address? Ø
 Base   Offset  Old       New?
??????  ØØØØØØ  ??????  ? Q!2
??????  ØØØØØ2  ??????  ? ^C        (up-arrow/C to exit;CTRL/C for INIT)
```

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CHANGING SPECIAL LOGIN TERMINAL - TERMINAL SERVICE FEATURE PATCH

The number of jobs that can log in to a RSTS/E system is limited by the swapping space available, the JOB MAX set at system start-up time, and the login setting (set by the LOGINS, NO LOGINS, and SET LOGINS functions of UTILTY). However, the console terminal (KBØ:) is a special terminal, and can log in regardless of the login setting, provided that swapping space and JOB MAX permit.

With the patch given below, one or two special keyboards can be selected, or this feature can be disabled entirely.

PROCEDURE:

1. This is a feature patch to the RSTS/E executive. It may be installed in any target monitor SIL.

2. Decide which terminals should be allowed to log in regardless of the login setting, and use those numbers as m and n in the patch below. If you wish to allow only one terminal, use its number as m and use -1 in place of n. If you wish to disable this feature, use -1 in place of both m and n. Be sure you include the decimal point after the new value of m or n so that it is interpreted as a decimal number.

3. The patch described in Step 5 below can be installed using the PATCH option of INIT.SYS:

```
Option: PATCH
File to patch? <lf>                (LINE FEED for installed monitor SIL)
```

4. This patch can be installed manually using ONLPAT, the on-line patching program:

```
RUN $ONLPAT
Command File Name? <cr>            (RETURN for manual patch installation)
File to patch? <lf>                (LINE FEED for installed monitor SIL)
File found in account [Ø,1]
```

The patch is also contained in a patch file appearing in patch kit version "A" or later.

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NOTE

The patch file for this patch requires manual editing to include installation specific parameters before it can be successfully installed.

5. The patch is as follows:

```
Module name? TER
Base address? ..CTZ.
Offset address? Ø
 Base   Offset  Old       New?
??????  ØØØØØØ  ØØØØØØ  ? m.*2 (or -1) (from step 2)
??????  ØØØØØ2  ØØ14Ø7  ? ^Z           (CTRL/Z for new offset)
Offset address? ^Z                    (CTRL/Z for new base)
Base address? ..CTY.
Offset address? Ø
 Base   Offset  Old       New?
??????  ØØØØØØ  177777  ? n.*2 (or -1) (from step 2)
??????  ØØØØØ2  ØØ14Ø4  ? ^Z           (CTRL/Z for new offset)
Offset address? ^Z                    (CTRL/Z for new base)
Base address? ^Z                      (CTRL/Z for new module)
Module name? RSTS
Base address? $$Ø3Ø3
Offset address? Ø
 Base   Offset  Old       New?
??????  ØØØØØØ  ??????  ? Q!4
??????  ØØØØØ2  ??????  ? ^C       (up-arrow/C to exit;CTRL/C for INIT)
```

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Seq 3.3.4 F

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CHANGING A TERMINAL'S INPUT BUFFER QUOTA - TERMINAL SERVICE FEATURE PATCH

Inside every terminal's DDB (Device Data Block) is an "input buffer quota" value. The default value is 6. Since there are 3Ø. characters in a buffer, this is equal to 6 times 3Ø. or 18Ø. characters. Terminal service will attempt to buffer that many characters before telling the terminal to stop (by sending it an XOFF). You can increase the input buffer quota value for one or more high-speed input terminals by using this feature patch.

NOTE

> There is no guarantee that a terminal will be able to allocate its full buffer quota. A heavy system load may leave less than the terminal's full buffer quota available. In addition, while the installation of this patch will not have any direct adverse effect on a system, it does cause more small buffers to be used.

PROCEDURE:

1. This is a feature patch to the RSTS/E executive. It may be installed in any target monitor SIL.

2. Decide which terminal will have its buffer quota altered, and use that number as n in the patch below. Be sure you include the decimal point after the value of n so that it is interpreted as a decimal number. Also decide what the new buffer quota for that terminal should be, and use that number as m in the patch below. The legal values for m are 6. through about 2Ø. inclusive.

3. The patch described in Step 5 below can be installed using the PATCH option of INIT.SYS:

```
Option: PATCH
File to patch? <lf>                (LINE FEED for installed monitor SIL)
```

4. This patch can be installed manually using ONLPAT, the on-line patching program:

```
RUN $ONLPAT
Command File Name? <cr>            (RETURN for manual patch installation)
File to patch? <lf>                (LINE FEED for installed monitor SIL)
File found in account [Ø,1]
```

The patch is also contained in a patch file appearing in patch kit version "A" or later.

NOTE

The patch file for this patch requires manual editing to include installation specific parameters before it can be successfully installed.

5. The patch is as follows:

```
Module name? RSTS
Base address? KBDDDB
Offset address? DDS.KB*n.+26          (n. is the KB number)
 Base   Offset  Old       New?
??????  ??????  ØØØØØ6  ? m.          (from step 2)
??????  ??????  ØØØØØØ  ? ^Z          (CTRL/Z for new offset)
Offset address? ^Z                    (CTRL/Z for new base)
Base address? $$Ø3Ø3
Offset address? Ø
 Base   Offset  Old       New?
??????  ØØØØØØ  ??????  ? Q!1Ø
??????  ØØØØØ2  ??????  ? ^C          (up-arrow/C to exit;CTRL/C for INIT)
```

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INPUT ESCAPE SEQUENCE HANDLING - TERMINAL SERVICE FEATURE PATCH

RSTS/E allows multiple character incoming escape sequences. The RSTS/E Programming Manual fully describes the escape sequence handling.

One of the multi-character escape sequences is ESCape followed by "P" followed by one modifier character. On the VT52 terminal, the upper left hand key on the auxiliary keypad (usually blue) generates ESC P. When the VT1ØØ terminal is operating in VT52 mode, the upper lefthand key on the auxiliary keypad (usually labelled "PF1") generates ESC P. If the terminal user types this key and then any other graphic key, the whole sequence is gathered by the terminal service and delivered to the application program. None of the sequence is echoed. Thus, the blue key can be considered a "function" key to be followed by some function code character.

On the other hand, some existing applications using the VT52 may expect this key to generate a standalone escape sequence with no required (or desired) modifier character. You may install the following patch to change the terminal service so that the ESCape, "P" sequence does not expect a modifier character. Note that this patch affects all terminals on the system.

PROCEDURE:

1. This is a feature patch to the RSTS/E executive. It may be installed in any target monitor SIL.

2. The patch described in Step 4 below can be installed using the PATCH option of INIT.SYS:

```
Option: PATCH
File to patch? <lf>                (LINE FEED for installed monitor SIL)
```

3. This patch can be installed manually using ONLPAT, the on-line patching program:

```
RUN $ONLPAT
Command File Name? <cr>            (RETURN for manual patch installation)
File to patch? <lf>                (LINE FEED for installed monitor SIL)
File found in account [Ø,1]
```

   The patch is also contained in a patch file appearing in patch kit version "A" or later.

4. The patch is as follows:

```
Module name? TER
Base address? ..ESCP
Offset address? Ø
 Base   Offset  Old       New?
??????  ØØØØØØ  Ø5ØØØ1  ? Q&177400
??????  ØØØØØ2  ??????  ? ^Z        (CTRL/Z for new offset)
Offset address? ^Z                  (CTRL/Z for new base)
Base address? ^Z                    (CTRL/Z for new module)
Module name? RSTS
Base address? $$Ø3Ø3
Offset address? Ø
 Base   Offset  Old       New?
??????  ØØØØØØ  ??????  ? Q!2Ø
??????  ØØØØØ2  ??????  ? ^C        (up-arrow/C to exit;CTRL/C for INIT)
```

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RESTRICTING PSEUDO KEYBOARD MODES - TERMINAL SERVICE FEATURE PATCH

The RSTS/E monitor normally allows any user to OPEN a pseudo keyboard with mode 1%, which causes the controlled job to detach rather than be killed if the controlling job closes the pseudo keyboard prematurely. There is a danger in the use of this mode, since a non-privileged user could fill the system with detached jobs. The following procedure allows you to patch the RSTS/E monitor to specify which pseudo keyboard OPEN modes require privileges. Privileged users and non-privileged users running privileged programs would still have full access to all available pseudo keyboard modes. If a non-privileged user specifies a restricted mode, the mode value will be ignored but no error message will be printed.

PROCEDURE:

1. This is a feature patch to the RSTS/E executive. It may be installed in any target monitor SIL.

2. Decide which pseudo keyboard modes you wish to make privileged. Consult the RSTS/E Programming Manual for the various modes which are available, and determine the associated MODE values. Compute the sum, n, of the MODE values corresponding to the modes you wish to restrict. If you calculate the sum of the mode values in decimal, include a decimal point after the value of n in the patch below so that it is interpreted as a decimal number.

3. The patch described in Step 5 below can be installed using the PATCH option of INIT.SYS:

```
Option: PATCH
File to patch? <lf>                (LINE FEED for installed monitor SIL)
```

4. This patch can be installed manually using ONLPAT, the on-line patching program:

```
RUN $ONLPAT
Command File Name? <cr>            (RETURN for manual patch installation)
File to patch? <lf>                (LINE FEED for installed monitor SIL)
File found in account [Ø,1]
```

The patch is also contained in a patch file appearing in patch kit version "A" or later.

NOTE

The patch file for this patch requires manual editing to include installation specific parameters before it can be successfully installed.

5. The patch is as follows:

```
Module name? TER
Base address? ..PKMP
Offset address? -2
 Base   Offset  Old       New?
??????  177776  142761  ? <lf>      (no change; verify only)
??????  ØØØØØØ  ØØØØØØ  ? n         (from step 2)
??????  ØØØØØ2  ??????  ? ^Z        (CTRL/Z for new offset)
Offset address? ^Z                  (CTRL/Z for new base)
Base address? ^Z                    (CTRL/Z for new module)
Module name? RSTS
Base address? $$Ø3Ø3
Offset address? Ø
 Base   Offset  Old       New?
??????  ØØØØØØ  ??????  ? Q!4Ø
??????  ØØØØØ2  ??????  ? ^C        (up-arrow/C to exit;CTRL/C for INIT)
```

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Seq 3.3.7 F

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INCREASING THE TIME ALLOWED FOR DIAL UP - TERMINAL SERVICE FEATURE PATCH

PROBLEM:

Terminal Service is distributed with a 3Ø second timeout limit for dialing to a host. This time may not be sufficient, for example, when dialing to a long-distance number.

SOLUTION:

You can increase the timeout limit with the following patch. We recommend that you increase the timeout limit to 9Ø or 12Ø seconds. The maximum timeout limit is 127 seconds.

PROCEDURE:

1. This is a feature patch to the RSTS/E executive. It may be installed in any target monitor SIL that supports modem control. If modem control was not included in the monitor during your system generation, the patch will fail with a "Symbol not found in STB" error after you specify ..WRNG as the Base Address.

2. The patch described in Step 4 below can be installed using the PATCH option of INIT.SYS:

   ```
   Option: PATCH
   File to patch? <lf>                (LINE FEED for installed monitor SIL)
   ```

3. This patch can be installed manually using ONLPAT, the on-line patching program. Note, however, that if the patch is applied online to the installed monitor SIL, it will not take effect until the system is re-booted.

   ```
   RUN $ONLPAT
   Command File Name? <cr>            (RETURN for manual patch installation)
   File to patch? <lf>                (LINE FEED for installed monitor SIL)
   File found in account [Ø,1]
   ```

   This patch is contained in a patch file appearing in patch kit version "A" or later.

NOTE

The patch file for this patch requires manual editing to include installation specific parameters before it can be successfully installed.

4. The patch is as follows:

```
Module name? TER
Base address? ..WRNG
Offset address? -2
 Base   Offset  Old     New?
??????  177776  Ø12ØØ4  ? <LF>      (no change; verify only)
??????  ØØØØØØ  ??????  ? \
??????  ØØØØØØ     Ø36  ? n.        (n.=number of seconds 1-127.)
                                     (the period indicates decimal)
                                     (value as opposed to octal.)
??????  ØØØØØ1     1ØØ  ? ^Z        (CTRL/Z for new offset)
Offset address? ^Z                   (CTRL/Z for new base)
Base address? ^Z                     (CTRL/Z for new module)
Module name? RSTS
Base address? $$Ø3Ø3
Offset address? Ø
 Base   Offset  Old     New?
??????  ØØØØØØ  ??????  ? Q!1ØØ
??????  ØØØØØ2  ??????  ? ^C        (up-arrow/C to exit;CTRL/C for INIT)
```

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UNDERSTANDING SYNCHRONIZATION DELAYS

DIGITAL's video terminals (VT5Ø, VT52, VT1ØØ, etc.) use two special control characters (commonly called XOFF and XON) to request the host computer to suspend and resume data transmission. One use of this synchronization protocol allows the terminal to "freeze" a screen of data giving the user a chance to read it before it has scrolled off the screen. On VT5Ø-series terminals, this special mode, called HOLD SCREEN MODE, is enabled and disabled with escape sequences. Once enabled, the terminal detects when a line is about to be scrolled from the screen. The character received from the host computer that would cause the scroll is line feed (LF). At this point, the terminal sends an XOFF to the host and waits for the user to type the SCROLL key. During this time, the terminal will accept and buffer in a temporary storage area (called a silo) further characters received from the host. Even if the host computer can cease transmission with no software delays, there are delays in line transmission that cause a determinable number of characters to be received by the terminal after it has sent the XOFF.

HOLD SCREEN MODE is just one use of this synchronization protocol. Another use is in the handling of the hard copy option of the VT5Ø-series terminals. The copier is slow (at least compared to the video screen) and the terminal must ask the host computer to suspend transmission so that it does not miss data when the copier is running.

The LA34, LA38, and LA12Ø terminals use this synchronization protocol, and when the LA18Ø DECprinter I is connected to the computer through a serial line interface (referred to as the LA18ØS), it also uses this protocol. If the printer "gets behind" due to high line transmission speed or carriage restore time, it requests the host to suspend data transmission. The printer will also send an XOFF if its ONLINE/OFFLINE switch is placed into the OFFLINE position or if it runs out of paper.

The RSTS/E terminal service processing of the synchronization protocol is enabled and disabled by the TTYSET commands STALL and NO STALL.

Below is the formula used for calculating the largest number of characters that would be received after the terminal has sent the XOFF:

$$1 + (3*Y/X) + 2*D*Y \quad \text{where}$$

X is the terminal's transmission rate in characters per second (CPS), Y is the host computer's transmission rate in CPS, and D is the delay time in seconds for a character to travel from one end of the line to the other.

Note: This formula assumes that there is no host computer software delay. In reality there is always some delay at the host computer. This delay might be very small or possibly large, depending on system loading and other I/O interrupt activity.

Considering the formula from left to right:

The 1 is the character storage requirement for the line feed that triggered the XOFF in the first place.

The 3*Y/X is due to the nature of the UART (Universal Asynchronous Receiver/Transmitter) in the terminal. Since the UART is normally double buffered, there can be up to two characters already in the UART's buffers when the terminal decides to send the XOFF. Those two characters plus the XOFF correspond to three character times of terminal to host transmit during which the host may be sending to the terminal. Therefore, it is the ratio of the host and terminal transmission rates that is important for three terminal transmission times.

The 2*D is the total time delay for the line in both directions (the 2) to clear. During this time the host computer may have sent up to 2*D*Y characters to the terminal.

The formula presented here is not completely correct for the VT5Ø series of video terminals. The VT5Ø does not double buffer transmission to the host computer in its UART. On the other hand, the formula can be used as a worst case formula to ensure correct operation of the XON/XOFF Synchronization Protocol.

The following tables give the required size of the temporary storage area (silo) given: 1) the transmission speed (baud rate) from the host computer to the terminal, 2) the transmission speed from the terminal to the host computer, and 3) the physical delay of the transmission line. Local terminal connections have essentially a zero delay factor. The Phone Company specifies a nominal worst case delay of 5Øms in a coast-to-coast connection, assuming it is not via satellite.

The horizontal scale of baud rates is the baud rate from the host computer to the terminal.

The vertical scale of baud rates is the baud rate from the terminal to the host computer. Baud rates can be converted to characters per second (CPS) by dividing the baud rate by 1Ø (1 start bit + 8 data bits + 1 stop bit = 1Ø bits), with the exception of 11Ø baud which corresponds to 1Ø CPS (1 start bit + 8 data bits + 2 stop bits).

Øms Line Delay

Transmit Speed to Terminal (Y)

		11Ø	15Ø	3ØØ	6ØØ	12ØØ	24ØØ	48ØØ	96ØØ
	11Ø	4	6	1Ø	19	37	73	145	289
Receive	15Ø	3	4	7	13	25	49	97	193
Speed	3ØØ	2	3	4	7	13	25	49	97
from	6ØØ	2	2	3	4	7	13	25	49
Terminal	12ØØ	1	1	2	3	4	7	13	25
(X)	24ØØ	1	1	1	2	3	4	7	13
	48ØØ	1	1	1	1	2	3	4	7
	96ØØ	1	1	1	1	1	2	3	4

5Øms Line Delay

Transmit Speed to Terminal (Y)

		11Ø	15Ø	3ØØ	6ØØ	12ØØ	24ØØ	48ØØ	96ØØ
	11Ø	5	7	13	25	49	97	193	385
Receive	15Ø	4	6	1Ø	19	37	73	145	289
Speed	3ØØ	3	4	7	13	25	49	97	193
from	6ØØ	3	3	6	1Ø	19	37	73	145
Terminal	12ØØ	2	3	5	9	16	31	61	121
(X)	24ØØ	2	3	4	8	15	28	55	1Ø9
	48ØØ	2	3	4	7	14	27	52	1Ø3
	96ØØ	2	3	4	7	13	26	51	1ØØ

By referring to the manual that came with your terminal, you can determine which baud rate combinations are legal for your terminal.

UNDERSTANDING TERMINAL PARITY AND STOP BIT SETTINGS

Terminal Parity

The TTYSET commands "NO PARITY", "EVEN PARITY", and "ODD PARITY" control the format in which data characters are sent to a terminal. NO PARITY (the default) sends the full 8 bits of a byte out to a terminal. EVEN PARITY and ODD PARITY trim the byte to 7 bits of data and then set or clear the eighth bit to achieve the correct parity setting. (Note: Binary Output Mode is "Data Binary Output Mode". NO PARITY yields 8 bit data, EVEN PARITY and ODD PARITY yield 7 bit data.)

The DL11A/B/C/D/E and DJ11 interfaces do not have programmable hardware parity generation. For these interfaces, terminal service generates the output parity bit. The DH11 and DZ11 have programmable hardware parity generation, which is used by terminal service.

Stop Bit Settings

Terminal interfaces with programmable baud rate settings (DH11 and DZ11) also have programmable stop-bit settings. TTYSET will automatically select 2 stop bits for speed settings of 11Ø baud or less and 1 stop bit for speeds greater than 11Ø baud. Older mechanical terminals, such as the ASR33 (which runs at 11Ø baud), require the time delay of 2 stop bits for synchronization. Modern terminals need only 1 stop bit.

When converting from baud rates to characters per second (CPS), the correct number of stop bits becomes clear. Asynchronous communication consists of 1 start bit, 8 data bits, and 1 or 2 stop bit(s).

(11Ø bits per second)/(1+8+2 bits per character)=11Ø/11=1Ø characters per second

(3ØØ bits per second)/(1+8+1 bits per character)=3ØØ/1Ø=3Ø characters per second

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MODEM CONTROL ON PRIVATE, LEASED LINES

Some RSTS/E installations use private, leased phone lines for terminal connections. If the line has no modem or no modem control (i.e., data signals only) then the line should be set as a local line using the INIT SET option. In this case the private, leased line is simply a long local connection. On the other hand, many private, leased lines do use modem control.

When using modem control, there are five modem signals used by RSTS/E:

1. Ring Indicator (Circuit CE, pin 22)

   This signal is true if the modem's "phone" is ringing. RSTS/E does not control this signal; the modem does. Private, leased lines normally do not "ring".

2. Carrier Detect (Circuit CF, pin 8)

   This signal is true when the modem is receiving carrier from the modem on the other end of the line. RSTS/E does not control this signal; the modem does.

3. Clear to Send (Circuit CB, pin 5)

   This signal is true when it is "OK to send data" to the other modem. RSTS/E does not control this signal; the modem does.

4. Data Terminal Ready (Circuit CD, pin 2Ø)

   This signal is controlled by RSTS/E, not the modem. When RSTS/E sets this signal to true, the modem answers the phone (if it is not already answered) and sends carrier to the modem at the other end of the connection.

5. Request to Send (Circuit CA, pin 4)

   This signal is controlled by RSTS/E, not the modem. When RSTS/E sets this signal to true, the modem tells the other modem it is now "clear to send".

RSTS/E always sets and clears Data Terminal Ready and Request to Send together.

The normal sequence for a dial-up modem line is:

1. Someone calls in. The modem asserts Ring Indicator.

2. RSTS/E sets Data Terminal Ready and Request to Send.

3. The modem answers the phone and sends out carrier and Clear to Send. The Ring Indicator goes off.

4. The other end sends carrier and Request to Send. The modem sets Carrier Detect and Clear to Send.

5. RSTS/E enables the line for data communication.

6. Data communication occurs...

7. The other end drops carrier. The modem clears Carrier Detect and Clear to Send.

8. RSTS/E starts a 5 second timeout.

9. The timeout expires. RSTS/E clears Data Terminal Ready and Request to Send.

1Ø. The connection is now broken.

In addition, RSTS/E polls all modem lines once each second. If Carrier Detect has come on without a Ring Indication, the line will be enabled by setting Data Terminal Ready and Request to Send. If Carrier Detect is on when the system is initially started, this happens immediately. So, to use a modem-controlled private, leased line as a local line:

1. Strap the Ring Indicator signal false. This ensures that RSTS/E never sees a "ringing" line to get confused about.

2. Strap the Carrier Detect and Clear to Send signals true. This ensures that RSTS/E will immediately enable the line by setting Data Terminal Ready and Request to Send.

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AUXILIARY LIBRARY ACCOUNTS - FILE PROCESSOR FEATURE PATCH

The standard system library for RSTS/E systems is account [1,2]. This account is normally referenced by the $ character in file specifications. The special characters !, %, and & can also be used to refer tothree auxiliary libraries. The default assignments for these characters are [1,3], [1,4], and [1,5], respectively. Although the association of character with account is defined, the three accounts must be created with REACT before the special characters can be used successfully.

In some installations, the system manager may want to change the account numbers referenced by the three special characters. The account numbers are defined by four words in the RSTS/E monitor. The default account numbers are altered with a simple patch as described below.

PROCEDURE:

1. This is a feature patch to the RSTS/E executive. It may be installed in any target monitor SIL.

2. Decide which account numbers you wish to use for the auxiliary library characters. You may change any or all of the default assignments (although changing the assignment of the $ library character is strongly discouraged). To specify a new project-programmer number of [p,pn], type a new value at the appropriate offset. The new value has the form:

   p.*256.+pn.

   where p is the new project number (followed by a decimal point to ensure that it is interpreted as a decimal number), the multiplication shifts the project to the high byte (again, do not omit the decimal point after the 256), and pn is the new programmer number (followed by a decimal point). p and pn must be between Ø and 254, and p may not be zero.

3. The patch described in Step 5 below can be installed using the PATCH option of INIT.SYS:

   Option: PATCH
   File to patch? <lf> (LINE FEED for installed monitor SIL)

4. This patch can be installed manually using ONLPAT, the on-line patching program:

```
RUN $ONLPAT
Command File Name? <cr>          (RETURN for manual patch installation)
File to patch? <lf>              (LINE FEED for installed monitor SIL)
File found in account [Ø,1]
```

The patch is also contained in a patch file appearing in patch kit version "A" or later.

NOTE

The patch file for this patch requires manual editing to include installation specific parameters before it can be successfully installed.

5. In this example, the ! account is patched to [1ØØ,25Ø], the % account is left unchanged, and the & account is changed to [1,99]. You should type in appropriate values for your system. The patch is as follows:

```
Module name? RSTS
Base address? $$Ø3Ø5
Offset address? Ø
 Base   Offset  Old       New?
??????  ØØØØØØ  ??????  ? Q!1
??????  ØØØØØ2  ??????  ? ^Z                (CTRL/Z for new offset)
Offset address? ^Z                          (CTRL/Z for new base)
Base address? ..PPN.
Offset address? Ø
 Base   Offset  Old       New?
??????  ØØØØØØ  ØØØ4Ø2  ? <lf>              (No change to $)
??????  ØØØØØ2  ØØØ4Ø3  ? 1ØØ.*256.+25Ø.    (New value for !)
??????  ØØØØØ4  ØØØ4Ø4  ? <lf>              (No change to %)
??????  ØØØØØ6  ØØØ4Ø5  ? 1.*256.+99.       (New value for &)
??????  ØØØØ1Ø  ??????  ? ^C          (up-arrow/C to exit;CTRL/C for INIT)
```

CHANGING DEFAULT PROTECTION CODE - FILE PROCESSOR FEATURE PATCH

When a user creates a file without specifying a protection code for that file, and if the personal default protection code is not set, the RSTS/E monitor creates that file with the system default protection code. This is normally 6Ø., which allows the user read/write access to the file, but restricts all non-privileged users from any access. The legal value range for the default protection code is Ø. to 63. inclusive. The following procedure allows you to patch the RSTS/E monitor to change your system's default protection code.

PROCEDURE:

1. This is a feature patch to the RSTS/E executive. It may be installed in any target monitor SIL.

2. The patch described below can be installed using the PATCH option of INIT.SYS:

   ```
   Option: PATCH
   File to patch? <lf>          (LINE FEED for installed monitor SIL)
   ```

3. This patch can be installed manually using ONLPAT, the on-line patching program.

   Note that if you answered 'No' to the 'Resident file OPEN/CLOSE' question during system generation this patch will take effect immediately when applied to the installed monitor SIL.

   ```
   RUN $ONLPAT
   Command File Name? <cr>      (RETURN for manual patch installation)
   File to patch? <lf>          (LINE FEED for installed monitor SIL)
   File found in account [Ø,1]
   ```

   The patch is also contained in a patch file appearing in patch kit version "A" or later.

NOTE

The patch file for this patch requires manual editing to include installation specific parameters before it can be successfully installed.

4. The patch is as follows:

```
Module name? OVR
Base address? ..DPRT
Offset address? Ø
 Base   Offset  Old       New?
??????  ØØØØØØ     Ø74  ? n.        (n. is the new default)
??????  ØØØØØ1     364  ? ^Z        (CTRL/Z for new offset)
Offset address? ^Z                  (CTRL/Z for new base)
Base address? ^Z                    (CTRL/Z for new module)
Module name? RSTS
Base address? $$Ø3Ø5
Offset address? Ø
 Base   Offset  Old       New?
??????  ØØØØØØ  ??????  ? Q!2
??????  ØØØØØ2  ??????  ? ^C        (up-arrow/C to exit;CTRL/C for INIT)
```

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RESTRICTING DISK MODES - FILE PROCESSOR FEATURE PATCH

The RSTS/E monitor normally allows any user to OPEN a disk file using any mode except 4Ø96. (the read regardless mode) or 256. (data caching), and requires that a user have privileges to open a disk file with MODE 4Ø96. or 256.

You may wish to allow non-privileged users to use mode 4Ø96. or 256. or to restrict one or more of the other disk modes (see the RSTS/E Programming Manual for a complete list). The following procedure allows you to patch the RSTS/E monitor to specify which disk file OPEN modes require privileges. Privileged users and non-privileged users running privileged programs would still have full access to all available modes. If a non-privileged user specifies a restricted mode, the mode value will be ignored but no error message will be printed.

PROCEDURE:

1. This is a feature patch to the RSTS/E executive. It may be installed in any target monitor SIL.

2. Decide which disk file modes you wish to make privileged. Consult the RSTS/E Programming Manual for the various modes which are available, and determine the associated MODE values. Compute the sum, n, of the MODE values corresponding to the modes you wish to restrict. If you wish to restrict special update mode, but leave normal update mode unrestricted, use a value of 4 (not 5). If you wish to restrict both update modes, use 4+1. You may type the addition directly to the new value question of PATCH. Be sure to include a decimal point after each number so that it is interpreted as decimal.

3. The patch described below can be installed using the PATCH option of INIT.SYS:

   ```
   Option: PATCH
   File to patch? <lf>                (LINE FEED for installed monitor SIL)
   ```

4. This patch can be installed manually using ONLPAT, the on-line patching program.

   Note that if you answered 'No' to the 'Resident file OPEN/CLOSE' question during system generation this patch will take effect immediately when applied to the installed monitor SIL.

```
RUN $ONLPAT
Command File Name? <cr>          (RETURN for manual patch installation)
File to patch? <lf>              (LINE FEED for installed monitor SIL)
File found in account [Ø,1]
```

The patch is also contained in a patch file appearing in patch kit version "A" or later.

NOTE

The patch file for this patch requires manual editing to include installation specific parameters before it can be successfully installed.

5. The patch is as follows:

```
Module name? OVR
Base address? ..DKNP
Offset address? Ø
 Base   Offset  Old       New?
??????  ØØØØØØ  Ø1Ø4ØØ  ? n.       (from step 2)
??????  ØØØØØ2  Ø1ØØ37  ? ^Z       (CTRL/Z for new offset)
Offset address? ^Z                 (CTRL/Z for new base)
Base address? ^Z                   (CTRL/Z for new module)
Module name? RSTS
Base address? $$Ø3Ø5
Offset address? Ø
 Base   Offset  Old       New?
??????  ØØØØØØ  ??????  ? Q!4
??????  ØØØØØ2  ??????  ? ^C       (up-arrow/C to exit;CTRL/C for INIT)
```

MAKING FIP SYS CALLS PRIVILEGED - FILE PROCESSOR FEATURE PATCH

The following FIP SYS calls are normally non-privileged:

-28. Spooling
-25. File Attribute Read/Write
-17. Change File's run-time system Name
+1Ø. Assign a Device
+13. Zero a Device or Account
+14. Read Accounting Data
+15. Indexed Directory Lookup
+17. Wildcard Directory Lookup
+25. Wildcard PPN Lookup

It is possible to make one or more of these SYS calls privileged. Doing so will restrict the use of that SYS call to only privileged users and/or privileged programs.

CAUTION

The standard CUSP programs assume that the above SYS calls are non-privileged; unexpected results may occur using the CUSPs if one or more of the above are made privileged.

PROCEDURE:

1. This is a feature patch to the RSTS/E executive. It may be installed in any target monitor SIL.

2. Decide which SYS call code you wish to make privileged. Be sure to include a decimal point after the SYS call code to ensure that it is interpreted in decimal.

3. The patch described below can be installed using the PATCH option of INIT.SYS:

```
Option: PATCH
File to patch? <lf>                (LINE FEED for installed monitor SIL)
```

4. This patch can be installed manually using ONLPAT, the on-line patching program:

```
RUN $ONLPAT
Command File Name? <cr>          (RETURN for manual patch installation)
File to patch? <lf>              (LINE FEED for installed monitor SIL)
File found in account [Ø,1]
```

The patch is also contained in a patch file appearing in patch kit version "A" or later.

NOTE

The patch file for this patch requires manual editing to include installation specific parameters before it can be successfully installed.

5. The patch is as follows:

```
Module name? RSTS
Base address? $$Ø3Ø5
Offset address? Ø
 Base   Offset  Old       New?
??????  ØØØØØØ  ??????  ? Q!1Ø
??????  ØØØØØ2  ??????  ? ^Z        (CTRL/Z for new offset)
Offset address? ^Z                  (CTRL/Z for new base)
Base address? $UUOTB
Offset address? n.-UU$MIN*2         (from step 2)
 Base   Offset  Old       New?
??????  ??????  ??????  ? Q!1
??????  ??????  ??????  ? ^C        (up-arrow/C to exit;CTRL/C for INIT)
```

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ALLOWING NON-PRIVILEGED ACCESS TO NON-FILE STRUCTURED DISKS - FILE PROCESSOR FEATURE PATCH

Normally, a non-privileged user is not given read and write access to a non-file structured disk. Certain installations may wish to allow non-privileged users to access a non-file structured disk if it was that user's open request which mounted the disk as non-file structured. Note that allowing this makes it possible for malicious users to read passwords on non-mounted disks; this might be unacceptable from a system security standpoint.

PROCEDURE:

1. This is a feature patch to the RSTS/E executive. It may be installed in any target monitor SIL.

2. The patch described below can be installed using the PATCH option of INIT.SYS:

```
Option: PATCH
File to patch? <lf>                (LINE FEED for installed monitor SIL)
```

3. This patch can be installed manually using ONLPAT, the on-line patching program.

   Note that if you answered 'No' to the 'Resident file OPEN/CLOSE' question during system generation this patch will take effect immediately when applied to the installed monitor SIL.

```
RUN $ONLPAT
Command File Name? <cr>            (RETURN for manual patch installation)
File to patch? <lf>                (LINE FEED for installed monitor SIL)
File found in account [Ø,1]
```

   The patch is also contained in a patch file appearing in patch kit version "A" or later.

4. The patch is as follows:

```
Module name? OVR
Base address? ..NFSP
Offset address? Ø
 Base   Offset  Old       New?
??????  ØØØØØØ  ØØ1423  ? 1414
??????  ØØØØØ2  1Ø1ØØØ  ? ^Z        (CTRL/Z for new offset)
Offset address? ^Z                  (CTRL/Z for new base)
Base address? ^Z                    (CTRL/Z for new module)
Module name? RSTS
Base address? $$Ø3Ø5
Offset address? Ø
 Base   Offset  Old       New?
??????  ØØØØØØ  ??????  ? Q!2Ø
??????  ØØØØØ2  ??????  ? ^C        (up-arrow/C to exit;CTRL/C for INIT)
```

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1 of 2

ALLOWING NON-PRIVILEGED WRITES TO NON-FILE STRUCTURED DISKS - FILE PROCESSOR FEATURE PATCH

Normally, a non-privileged user is not given write access to a non-file structured disk. Certain installations may wish to allow non-privileged users to obtain write access to a non-file structured disk if it was that user's open request which mounted the disk as non-file structured. Note that doing so has similar security implications to those noted in article Seq 3.5.5 F.

PROCEDURE:

1. This is a feature patch to the RSTS/E executive. It may be installed in any target monitor SIL.

2. The patch described below can be installed using the PATCH option of INIT.SYS:

```
Option: PATCH
File to patch? <lf>                (LINE FEED for installed monitor SIL)
```

3. This patch can be installed manually using ONLPAT, the on-line patching program.

   Note that if you answered 'No' to the 'Resident file OPEN/CLOSE' question during system generation this patch will take effect immediately when applied to the installed monitor SIL.

```
RUN $ONLPAT
Command File Name? <cr>            (RETURN for manual patch installation)
File to patch? <lf>                (LINE FEED for installed monitor SIL)
File found in account [Ø,1]
```

   The patch is also contained in a patch file appearing in patch kit version "A" or later.

4. The patch is as follows:

```
Module name? OVR
Base address? ..NFSW
Offset address? Ø
 Base   Offset  Old       New?
??????  ØØØØØØ  ØØ1ØØ1  ? 1ØØØ
??????  ØØØØØ2  ØØ5Ø16  ? ^Z        (CTRL/Z for new offset)
Offset address? ^Z                  (CTRL/Z for new base)
Base address? ^Z                    (CTRL/Z for new module)
Module name? RSTS
Base address? $$Ø3Ø5
Offset address? Ø
 Base   Offset  Old       New?
??????  ØØØØØØ  ??????  ? Q!4Ø
??????  ØØØØØ2  ??????  ? ^C        (up-arrow/C to exit;CTRL/C for INIT)
```

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ALLOWING CROSS ACCOUNT CREATIONS - FILE PROCESSOR FEATURE PATCH

Normally, a non-privileged job cannot create files in any account other than its own. Some installations may wish to allow a non-privileged job to create files in any account within its project number (i.e., create files in any [x,*] account if the job's account is [x,y]).

This feature patch changes the File Processor's cross account check to allow any job to create files within its project. A non-privileged job still cannot create files in accounts outside of its project number group.

PROCEDURE:

1. This is a feature patch to the RSTS/E executive. It may be installed in any target monitor SIL.

2. The patch described below can be installed using the PATCH option of INIT.SYS:

   ```
   Option: PATCH
   File to patch? <lf>                (LINE FEED for installed monitor SIL)
   ```

3. This patch can be installed manually using ONLPAT, the on-line patching program.

   Note that if you answered 'No' to the 'Resident file OPEN/CLOSE' question during system generation this patch will take effect immediately when applied to the installed monitor SIL.

   ```
   RUN $ONLPAT
   Command File Name? <cr>            (RETURN for manual patch installation)
   File to patch? <lf>                (LINE FEED for installed monitor SIL)
   File found in account [Ø,1]
   ```

   The patch is also contained in a patch file appearing in patch kit version "A" or later.

4. The patch is as follows:

```
Module name? OVR
Base address? ..XGRP
Offset address? Ø
 Base   Offset  Old       New?
??????  ØØØØØØ  ØØ1334  ? 24Ø
??????  ØØØØØ2  124237  ? ^Z        (CTRL/Z for new offset)
Offset address? ^Z                  (CTRL/Z for new base)
Base address? ^Z                    (CTRL/Z for new module)
Module name? RSTS
Base address? $$Ø3Ø5
Offset address? Ø
 Base   Offset  Old       New?
??????  ØØØØØØ  ??????  ? Q!1ØØ
??????  ØØØØØ2  ??????  ? ^C        (up-arrow/C to exit;CTRL/C for INIT)
```

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ALLOWING CROSS ACCOUNT RENAME OPERATIONS - FILE PROCESSOR FEATURE PATCH

Normally, a non-privileged job cannot rename files in any account other than its own. Some installations may wish to allow a non-privileged job to rename files in any account within its project number (i.e., rename files in any [x,*] account if the job's account is [x,y]).

This feature patch changes the File Processor's cross account check to allow any job to rename files within its project. A non-privileged job still cannot rename files in accounts outside of its project number group.

PROCEDURE:

1. This is a feature patch to the RSTS/E executive. It may be installed in any target monitor SIL.

2. The patch described below can be installed using the PATCH option of INIT.SYS:

```
Option: PATCH
File to patch? <lf>                (LINE FEED for installed monitor SIL)
```

3. This patch can be installed manually using ONLPAT, the on-line patching program.

   Note that if you answered 'No' to the 'Resident file DELETE/RENAME' question during system generation this patch will take effect immediately when applied to the installed monitor SIL.

```
RUN $ONLPAT
Command File Name? <cr>            (RETURN for manual patch installation)
File to patch? <lf>                (LINE FEED for installed monitor SIL)
File found in account [Ø,1]
```

   The patch is also contained in a patch file appearing in patch kit version "A" or later.

4. The patch is as follows:

```
Module name? OVR
Base address? ..XGRR
Offset address? Ø
 Base   Offset  Old       New?
??????  ØØØØØØ  ØØ136Ø  ? 24Ø
??????  ØØØØØ2  126Ø37  ? ^Z        (CTRL/Z for new offset)
Offset address? ^Z                  (CTRL/Z for new base)
Base address? ^Z                    (CTRL/Z for new module)
Module name? RSTS
Base address? $$Ø3Ø5
Offset address? Ø
 Base   Offset  Old       New?
??????  ØØØØØØ  ??????  ? Q!2ØØ
??????  ØØØØØ2  ??????  ? ^C        (up-arrow/C to exit;CTRL/C for INIT)
```

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EXTENDING DIRECTORY LOOKUP - FILE PROCESSOR FEATURE PATCH

Normally, the FIP calls 15 (Directory look up on Index) and 17 (Directory look up by File Name/Wildcard directory look up) will not allow a non-privileged user to find information about any file on the system to which he or she does not have read or run access. Some installations, where security is not an issue, may find it desirable to allow non-privileged users to look up files to which they do not normally have access. If this patch is applied, non-privileged use of FIP calls 15 and 17 will return information about all files. Since PIP.SAV (for the /L command) and BASIC-PLUS (for the CATALOG command) use these calls, these commands would be unrestricted for non-privileged users. The DIRECT program does not use these calls; another feature patch, Seq 1Ø.3.1 F, may be used to extend its use.

NOTE

For consistency, Digital recommends that you either use both patches (Seq 3.5.9 F and Seq 1Ø.3.1 F) or neither of them.

PROCEDURE:

1. This is a feature patch to the RSTS/E V8.Ø executive. It may be installed in any target monitor SILs.

2. The patch described below can be installed using the PATCH option of INIT.SYS:

```
Option: PATCH
File to patch? <lf>                (LINE FEED for installed monitor SIL)
```

3. This patch can be installed manually using ONLPAT, the on-line patching program.

   Note that if you answered 'No' to the 'Resident directory lookup' question during system generation this patch will take effect immediately when applied to the installed monitor SIL.

```
RUN $ONLPAT
Command File Name? <cr>            (RETURN for manual patch installation)
File to patch? <lf>                (LINE FEED for installed monitor SIL)
File found in account [Ø,1]
```

   The patch is also contained in a patch file appearing in patch kit version "A" or later.

4. The patch is as follows:

```
Module name? OVR
Base address? ..DIRP
Offset address? Ø
 Base   Offset  Old       New?
??????  ØØØØØØ  ØØ1415  ? 415
??????  ØØØØØ2  Ø21Ø37  ? ^Z        (CTRL/Z for new offset)
Offset address? ^Z                  (CTRL/Z for new base)
Base address? ^Z                    (CTRL/Z for new module)
Module name? RSTS
Base address? $$Ø3Ø5
Offset address? 1
 Base   Offset  Old       New?
??????  ØØØØØ1     ???  ? Q!1
??????  ØØØØØ2     ???  ? ^C        (up-arrow/C to exit;CTRL/C for INIT)
```

RESTRICTING NON-PRIVILEGED USE OF UU.TRM - FILE PROCESSOR FEATURE PATCH

The UU.TRM directive allows a user to set various characteristics of a terminal. Some installations may wish to restrict a non-privileged user's ability to set terminal characteristics.

Protection checking in UU.TRM is done with two 2-word bit masks. Each of the 4Ø(8) bits in a mask corresponds to a FIRQB byte offset. If the bit is on, the corresponding byte in the FIRQB must be zero for all non-privileged callers. If the corresponding byte in the FIRQB is not zero, a "?Protection violation" error is returned.

The two-word mask at patch locations ..TRM1 and ..TRM2 is checked when a non-privileged user specifies the job's console keyboard in the call. The two-word mask at locations ..TRM3 and ..TRM4 is checked when a non-privileged user specifies any other keyboard that the job owns.

..TRM1 AND ..TRM3 are masks for bytes Ø-17(8) of the FIRQB, and ..TRM2 AND ..TRM4 are the masks for bytes 2Ø-37(8). For example, if the value 1 is ORed into location ..TRM2, a non-privileged user could not change parity (byte 2Ø) at the job's console.

If none of these words are patched, the system is setup so that a non-privileged user may change anything on the job's console, except speeds and ring characteristics, and may change nothing on other terminals that job owns (but the characteristics may still be read).

Note that by OR'ing value 1Ø(8) into ..TRM3, the user is "not allowed" to specify FQFUN (which must be 16. to invoke UU.TRM), so a "?Protection violation" error is returned without divulging the characteristics of any non-console keyboard owned by the job.

The following is a table relating FIRQB byte number with its corresponding mask word and value to "OR" to force the parameter to be zero.

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FIRQB BYTE	MASK WORD		OCTAL VALUE	DECIMAL VALUE
	Console	Non-console		
Ø/2Ø	..TRM1/2	..TRM3/4	1	1.
1/21	..TRM1/2	..TRM3/4	2	2.
2/22	..TRM1/2	..TRM3/4	4	4.
3/23	..TRM1/2	..TRM3/4	1Ø	8.
4/24	..TRM1/2	..TRM3/4	2Ø	16.
5/25	..TRM1/2	..TRM3/4	4Ø	32.
6/26	..TRM1/2	..TRM3/4	1ØØ	64.
7/27	..TRM1/2	..TRM3/4	2ØØ	128.
1Ø/3Ø	..TRM1/2	..TRM3/4	4ØØ	256.
11/31	..TRM1/2	..TRM3/4	1ØØØ	512.
12/32	..TRM1/2	..TRM3/4	2ØØØ	1Ø24.
13/33	..TRM1/2	..TRM3/4	4ØØØ	2Ø48.
14/34	..TRM1/2	..TRM3/4	1ØØØØ	4Ø96.
15/35	..TRM1/2	..TRM3/4	2ØØØØ	8192.
16/36	..TRM1/2	..TRM3/4	4ØØØØ	16384.
17/37	..TRM1/2	..TRM3/4	1ØØØØØ	32768.

Compute a value for ..TRM1 by taking the values from the table above corresponding to the bytes you wish to disable and adding them to give a value "a" which you will use in the patch.

Similarly compute a value for ..TRM2 and call this value "b".

Similarly compute a value for ..TRM3 and call this value "c".

Similarly compute a value for ..TRM4 and call this value "d".

Apply these values in step 4 below.

NOTE

To allow non-privileged users to change terminal speeds on their console, as was the case in V7.Ø, "a" should equal Ø and "b" should equal 1ØØ.

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PROCEDURE:

1. This is a feature patch to the RSTS/E V8.Ø executive. It may be installed in any target monitor SIL.

2. The patch described below can be installed using the PATCH option of INIT.SYS:

```
Option: PATCH
File to patch? <lf>                (LINE FEED for installed monitor SIL)
```

3. This patch can be installed manually using ONLPAT, the on-line patching program. Note that this patch will take effect immediately when applied to the installed monitor SIL.

```
RUN $ONLPAT
Command File Name? <cr>            (RETURN for manual patch installation)
File to patch? <lf>                (LINE FEED for installed monitor SIL)
File found in account [Ø,1]
```

This patch is contained in a patch file appearing in patch kit version "A" or later.

NOTE

The patch file for this patch requires manual editing to include installation specific parameters before it can be successfully installed.

4. The patch is as follows:

```
Module name? OVR
Base address? ..TRM1
Offset address? Ø
 Base   Offset  Old     New?
??????  ØØØØØØ  1ØØØØØ  ? a          ;Value from above
??????  ØØØØØ2  Ø127Ø2  ? ^Z         (CTRL/Z for new offset)
Offset address? ^Z                   (CTRL/Z for new base)
Base address? ..TRM2
Offset address? Ø
 Base   Offset  Old     New?
??????  ØØØØØØ  ØØØ1Ø2  ? b          ;Value from above
??????  ØØØØØ2  ØØ57Ø5  ? ^Z         (CTRL/Z for new offset)
Offset address? ^Z                   (CTRL/Z for new base)
Base address? ..TRM3
Offset address? Ø
 Base   Offset  Old     New?
??????  ØØØØØØ  177700  ? c          ;Value from above
??????  ØØØØØ2  Ø12702  ? ^Z         (CTRL/Z for new offset)
Offset address? ^Z                   (CTRL/Z for new base)
Base address? ..TRM4
Offset address? Ø
 Base   Offset  Old     New?
??????  ØØØØØØ  177777  ? d          ;Value from above
??????  ØØØØØ2  ØØ52ØØ  ? ^Z         (CTRL/Z for new offset)
Offset address? ^Z                   (CTRL/Z for new base)
Base address? ^Z                     (CTRL/Z for new module)
Module name? RSTS
Base address? $$Ø3Ø5
Offset address? 1
 Base   Offset  Old       New?
??????  ØØØØØ1     ???   ? Q!2
??????  ØØØØØ2     ???   ? ^C         (up-arrow/C to exit;CTRL/C for INIT)
```

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Seq 3.5.11 F

1 of 2

ALLOWING USERS WITH TEMPORARY PRIVILEGES TO SET PRIVILEGED PROTECTION CODES - FILE PROCESSOR FEATURE PATCH

The patch described below will allow a program using the FIP RENAME SYS call (or BASIC-PLUS "NAME AS" command) with temporary privileges to set the 128 bit in the protection code.

PROCEDURE:

1. This is a feature patch to the RSTS/E V8.Ø executive. It may be installed in any target monitor SIL.

2. The patch described below can be installed using the PATCH option of INIT.SYS:

   ```
   Option: PATCH
   File to patch? <lf>                (LINE FEED for installed monitor SIL)
   ```

3. This patch can be installed manually using ONLPAT, the on-line patching program.

   Note that if you answered 'No' to the 'Resident file DELETE/RENAME' question during system generation this patch will take effect immediately when applied to the installed monitor SIL.

   ```
   RUN $ONLPAT
   Command File Name? <cr>            (RETURN for manual patch installation)
   File to patch? <lf>                (LINE FEED for installed monitor SIL)
   File found in account [Ø,1]
   ```

   This patch is contained in a patch file appearing in patch kit version "A" or later.

4. The patch is as follows:

```
Module name? OVR
Base address? DLNØ
Offset address? 612
 Base   Offset  Old     New?
??????  ØØØ612  ØØ14Ø2  ? <LF>      (no change; verify only)
??????  ØØØ614  Ø427ØØ  ? 24Ø
??????  ØØØ616  ØØØ2ØØ  ? 24Ø
??????  ØØØ62Ø  1Ø5737  ? ^Z        (CTRL/Z for new offset)
Offset address? ^Z                  (CTRL/Z for new base)
Base address? ^Z                    (CTRL/Z for new module)
Module name? RSTS
Base address? $$Ø3Ø5
Offset address? 1
 Base   Offset  Old       New?
??????  ØØØØØ1     ???   ? Q!4
??????  ØØØØØ2     ???   ? ^C        (up-arrow/C to exit;CTRL/C for INIT)
```

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Seq 3.5.12 F

CONTROLLING EMT LOGGING - FILE PROCESSOR FEATURE PATCH

If you included EMT Logging when you generated your system, you may wish to modify the set of directives which the Monitor passes to your logging program. The following procedure allows you to enable or disable EMT logging for each of the directives which can be logged.

PROCEDURE:

1. This is a feature patch to the RSTS/E V8.Ø executive. It may be installed in any target monitor SIL which has been generated to include the EMT Logging feature.

2. Note that as supplied, the patch disables logging for each of the directives. We recommend that you retain a copy of the patch in this form, to use as a starting point for creating later versions, should your requirements change.

3. Decide which directives you wish to have logged. For each one, locate the appropriate segment(s) of the patch. The value under "New?" will be "Q!1ØØ", which is the value to disable logging. To enable logging (reversing the sense of the patch), replace this value with "Q&\1ØØ".

4. Note that some directives can be invoked via CALFIP, some via .UUO, and some via either CALFIP or .UUO. The patch below contains three sections: the first controls those directives which can be invoked via either CALFIP or .UUO. (The second and third control those directives invoked via CALFIP alone and .UUO alone, respectively.) You will need to make TWO changes for any directive appearing in the first group: once for the CALFIP invocation path, and once for the .UUO invocation path.

   The paired directives appear next to each other in the first group. Directives appear in ascending order by CALFIP code for the first two groups, and by .UUO code for the third group; these codes are the MACRO values documented in the System Directives Manual.

5. The patch described in Step 7 below can be installed using the PATCH option of INIT.SYS:

   ```
   Option: PATCH
   File to patch? <lf>                (LINE FEED for installed monitor SIL)
   ```

6. This patch can be installed manually using ONLPAT, the on-line patching program. Note, however, that if the patch is applied online to the installed monitor SIL, it will not take effect until the system is re-booted.

```
RUN $ONLPAT
Command File Name? <cr>          (RETURN for manual patch installation)
File to patch? <lf>              (LINE FEED for installed monitor SIL)
File found in account [Ø,1]
```

This patch is contained in the patch file PAØ3Ø5.Ø12 appearing in update kit version "A" or later.

NOTE

The patch file for this patch requires manual editing to include installation specific parameters before it can be successfully installed.

7. The patch is as follows:

```
Module name? RSTS
Base address? EMLTBL
Offset address? Ø                    ; Verify EMT Logging generated
 Base   Offset  Old     New?
??????  ØØØØØØ  ??????  ? ^Z         (CTRL/Z for new offset)
Offset address? ^Z                   (CTRL/Z for new base)
Base address? $$Ø3Ø5
Offset address? 1
 Base   Offset  Old     New?
??????  ØØØØØ1     ???  ? Q!1Ø
??????  ØØØØØ2     ???  ? ^Z         (CTRL/Z for new offset)
Offset address? ^Z                   (CTRL/Z for new base)
Base address? $EMLFQ     ; Beginning of paired CALFIP - UUO functions
Offset address? ASSFQ/2              ; ASSIGN function, CALFIP flavor
 Base   Offset  Old     New?
??????  ØØØØ12  ??????  ? Q!1ØØ
??????  ØØØØ14  ??????  ? ^Z         (CTRL/Z for new offset)
Offset address? ^Z                   (CTRL/Z for new base)
Base address? $UUOSN
Offset address? UU.ASS-UU$MIN        ; ASSIGN function, UUO flavor
 Base   Offset  Old     New?
??????  ØØØØ47     ???  ? Q!1ØØ
??????  ØØØØ5Ø     ???  ? ^Z         (CTRL/Z for new offset)
Offset address? ^Z                   (CTRL/Z for new base)
Base address? $EMLFQ
```

```
Offset address? DEAFQ/2              ; DEASSIGN function, CALFIP flavor
 Base   Offset  Old     New?
??????  ØØØØ13     ???  ? Q!1ØØ
??????  ØØØØ14     ???  ? ^Z        (CTRL/Z for new offset)
Offset address? ^Z                   (CTRL/Z for new base)
Base address? $UUOSN
Offset address? UU.DEA-UU$MIN        ; DEASSIGN function, UUO flavor
 Base   Offset  Old     New?
??????  ØØØØ5Ø  ??????  ? Q!1ØØ
??????  ØØØØ52  ??????  ? ^Z        (CTRL/Z for new offset)
Offset address? ^Z                   (CTRL/Z for new base)
Base address? $EMLFQ
Offset address? DALFQ/2              ; DEASSIGN ALL function, CALFIP flavor
 Base   Offset  Old     New?
??????  ØØØØ14  ??????  ? Q!1ØØ
??????  ØØØØ16  ??????  ? ^Z        (CTRL/Z for new offset)
Offset address? ^Z                   (CTRL/Z for new base)
Base address? $UUOSN
Offset address? UU.DAL-UU$MIN        ; DEASSIGN ALL function, UUO flavor
 Base   Offset  Old     New?
??????  ØØØØ51     ???  ? Q!1ØØ
??????  ØØØØ52     ???  ? ^Z        (CTRL/Z for new offset)
Offset address? ^Z                   (CTRL/Z for new base)
Base address? $EMLFQ
Offset address? LOKFQ/2              ; LOOKUP function, CALFIP flavor
 Base   Offset  Old     New?
??????  ØØØØ11     ???  ? Q!1ØØ
??????  ØØØØ12     ???  ? ^Z        (CTRL/Z for new offset)
Offset address? ^Z                   (CTRL/Z for new base)
Base address? $UUOSN
Offset address? UU.LOK-UU$MIN        ; LOOKUP function, UUO flavor
 Base   Offset  Old     New?
??????  ØØØØ56  ??????  ? Q!1ØØ
??????  ØØØØ6Ø  ??????  ? ^Z          (CTRL/Z for new offset)
Offset address? ^Z                 ; End of paired CALFIP - UUO functions
Base address? $EMLFQ               ; Beginning of CALFIP-only functions
Offset address? CLSFQ/2              ; CLOSE function
 Base   Offset  Old     New?
??????  ØØØØØØ  ??????  ? Q!1ØØ
??????  ØØØØØ2  ??????  ? ^Z        (CTRL/Z for new offset)
Offset address? OPNFQ/2              ; OPEN function
 Base   Offset  Old     New?
??????  ØØØØØ1     ???  ? Q!1ØØ
??????  ØØØØØ2     ???  ? ^Z        (CTRL/Z for new offset)
Offset address? CREFQ/2              ; CREATE function
 Base   Offset  Old     New?
```

```
??????  ØØØØØ2  ??????  ? Q!1ØØ
??????  ØØØØØ4  ??????  ? ^Z        (CTRL/Z for new offset)
Offset address? DLNFQ/2             ; DELETE function
 Base   Offset  Old     New?
??????  ØØØØØ3     ???  ? Q!1ØØ
??????  ØØØØØ4     ???  ? ^Z        (CTRL/Z for new offset)
Offset address? RENFQ/2             ; RENAME function
 Base   Offset  Old     New?
??????  ØØØØØ4  ??????  ? Q!1ØØ
??????  ØØØØØ6  ??????  ? ^Z        (CTRL/Z for new offset)
Offset address? DIRFQ/2             ; DIRECTORY (wildcard) function
 Base   Offset  Old     New?
??????  ØØØØØ5     ???  ? Q!1ØØ
??????  ØØØØØ6     ???  ? ^Z        (CTRL/Z for new offset)
Offset address? RSTFQ/2             ; RESET function
 Base   Offset  Old     New?
??????  ØØØØ1Ø  ??????  ? Q!1ØØ
??????  ØØØØ12  ??????  ? ^Z        (CTRL/Z for new offset)
Offset address? CRTFQ/2             ; CREATE Temporary file function
 Base   Offset  Old     New?
??????  ØØØ15     ???  ? Q!1ØØ
??????  ØØØ16     ???  ? ^Z        (CTRL/Z for new offset)
Offset address? CRBFQ/2             ; CREATE Binary file function
 Base   Offset  Old     New?
??????  ØØØ16  ??????  ? Q!1ØØ
??????  ØØØ2Ø  ??????  ? ^Z        (CTRL/Z for new offset)
Offset address? RUNFQ/2             ; RUN function
 Base   Offset  Old     New?
??????  ØØØ17     ???  ? Q!1ØØ
??????  ØØØ2Ø     ???  ? ^Z        (CTRL/Z for new offset)
Offset address? ^Z                ; End of CALFIP-only functions
Base address? $UUOSN              ; Beginning of UUO-only functions
Offset address? UU.TB3-UU$MIN       ; Monitor Tables III function
 Base   Offset  Old     New?
??????  ØØØØØ  ??????  ? Q!1ØØ
??????  ØØØØ2  ??????  ? ^Z        (CTRL/Z for new offset)
Offset address? UU.SPL-UU$MIN       ; SPOOL function
 Base   Offset  Old     New?
??????  ØØØØ1     ???  ? Q!1ØØ
??????  ØØØØ2     ???  ? ^Z        (CTRL/Z for new offset)
Offset address? UU.DMP-UU$MIN       ; Snapshot dump function
 Base   Offset  Old     New?
??????  ØØØØ2  ??????  ? Q!1ØØ
??????  ØØØØ4  ??????  ? ^Z        (CTRL/Z for new offset)
Offset address? UU.FIL-UU$MIN       ; FILe statistics function
 Base   Offset  Old     New?
```

```
??????  ØØØØØ3     ???  ? Q!1ØØ
??????  ØØØØØ4     ???  ? ^Z        (CTRL/Z for new offset)
Offset address? UU.ATR-UU$MIN        ; Read/Write attributes function
 Base   Offset  Old     New?
??????  ØØØØØ4  ??????  ? Q!1ØØ
??????  ØØØØØ6  ??????  ? ^Z        (CTRL/Z for new offset)
Offset address? UU.LOG-UU$MIN        ; Set number of logins function
 Base   Offset  Old     New?
??????  ØØØØ12  ??????  ? Q!1ØØ
??????  ØØØØ14  ??????  ? ^Z        (CTRL/Z for new offset)
Offset address? UU.RTS-UU$MIN        ; RTS/RESLIB control functions
 Base   Offset  Old     New?
??????  ØØØØ13     ???  ? Q!1ØØ
??????  ØØØØ14     ???  ? ^Z        (CTRL/Z for new offset)
Offset address? UU.NAM-UU$MIN        ; RTS name for file function
 Base   Offset  Old     New?
??????  ØØØØ14  ??????  ? Q!1ØØ
??????  ØØØØ16  ??????  ? ^Z        (CTRL/Z for new offset)
Offset address? UU.ACT-UU$MIN        ; Accounting dump function
 Base   Offset  Old     New?
??????  ØØØØ16  ??????  ? Q!1ØØ
??????  ØØØØ2Ø  ??????  ? ^Z        (CTRL/Z for new offset)
Offset address? UU.DAT-UU$MIN        ; System date/time function
 Base   Offset  Old     New?
??????  ØØØØ17     ???  ? Q!1ØØ
??????  ØØØØ2Ø     ???  ? ^Z        (CTRL/Z for new offset)
Offset address? UU.PRI-UU$MIN        ; Priority/Run Burst/Size function
 Base   Offset  Old     New?
??????  ØØØØ2Ø  ??????  ? Q!1ØØ
??????  ØØØØ22  ??????  ? ^Z        (CTRL/Z for new offset)
Offset address? UU.TB2-UU$MIN        ; Monitor Tables II function
 Base   Offset  Old     New?
??????  ØØØØ21     ???  ? Q!1ØØ
??????  ØØØØ22     ???  ? ^Z        (CTRL/Z for new offset)
Offset address? UU.BCK-UU$MIN        ; File backup statistics function
 Base   Offset  Old     New?
??????  ØØØØ22  ??????  ? Q!1ØØ
??????  ØØØØ24  ??????  ? ^Z        (CTRL/Z for new offset)
Offset address? UU.HNG-UU$MIN        ; Hangup dataset function
 Base   Offset  Old     New?
??????  ØØØØ24  ??????  ? Q!1ØØ
??????  ØØØØ26  ??????  ? ^Z        (CTRL/Z for new offset)
Offset address? UU.FCB-UU$MIN        ; FCB/WCB/DDB data function
 Base   Offset  Old     New?
??????  ØØØØ25     ???  ? Q!1ØØ
??????  ØØØØ26     ???  ? ^Z        (CTRL/Z for new offset)
```

```
Offset address? UU.POK-UU$MIN       ; POKE function
 Base   Offset  Old     New?
??????  ØØØØ27     ???  ? Q!1ØØ
??????  ØØØØ3Ø     ???  ? ^Z        (CTRL/Z for new offset)
Offset address? UU.TB1-UU$MIN       ; Monitor Tables I function
 Base   Offset  Old     New?
??????  ØØØØ32  ??????  ? Q!1ØØ
??????  ØØØØ34  ??????  ? ^Z        (CTRL/Z for new offset)
Offset address? UU.NLG-UU$MIN       ; Disable further logins function
 Base   Offset  Old     New?
??????  ØØØØ33     ???  ? Q!1ØØ
??????  ØØØØ34     ???  ? ^Z        (CTRL/Z for new offset)
Offset address? UU.YLG-UU$MIN       ; Enable logins function
 Base   Offset  Old     New?
??????  ØØØØ34  ??????  ? Q!1ØØ
??????  ØØØØ36  ??????  ? ^Z        (CTRL/Z for new offset)
Offset address? UU.PAS-UU$MIN       ; Create PPN function
 Base   Offset  Old     New?
??????  ØØØØ35     ???  ? Q!1ØØ
??????  ØØØØ36     ???  ? ^Z        (CTRL/Z for new offset)
Offset address? UU.DLU-UU$MIN       ; Delete PPN function
 Base   Offset  Old     New?
??????  ØØØØ36  ??????  ? Q!1ØØ
??????  ØØØØ4Ø  ??????  ? ^Z        (CTRL/Z for new offset)
Offset address? UU.CLN-UU$MIN       ; "Rebuild" disk function
 Base   Offset  Old     New?
??????  ØØØØ37     ???  ? Q!1ØØ
??????  ØØØØ4Ø     ???  ? ^Z        (CTRL/Z for new offset)
Offset address? UU.MNT-UU$MIN       ; Disk/Terminal functions
 Base   Offset  Old     New?
??????  ØØØØ4Ø  ??????  ? Q!1ØØ
??????  ØØØØ42  ??????  ? ^Z        (CTRL/Z for new offset)
Offset address? UU.LIN-UU$MIN       ; LOGIN function
 Base   Offset  Old     New?
??????  ØØØØ41     ???  ? Q!1ØØ
??????  ØØØØ42     ???  ? ^Z        (CTRL/Z for new offset)
Offset address? UU.BYE-UU$MIN       ; LOGOUT function
 Base   Offset  Old     New?
??????  ØØØØ42  ??????  ? Q!1ØØ
??????  ØØØØ44  ??????  ? ^Z        (CTRL/Z for new offset)
Offset address? UU.ATT-UU$MIN       ; ATTACH function
 Base   Offset  Old     New?
??????  ØØØØ43     ???  ? Q!1ØØ
??????  ØØØØ44     ???  ? ^Z        (CTRL/Z for new offset)
Offset address? UU.DET-UU$MIN       ; DETACH function
 Base   Offset  Old     New?
```

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```
??????  ØØØØ44  ??????  ? Q!1ØØ
??????  ØØØØ46  ??????  ? ^Z        (CTRL/Z for new offset)
Offset address? UU.ERR-UU$MIN       ; Error message text function
 Base   Offset  Old     New?
??????  ØØØØ46  ??????  ? Q!1ØØ
??????  ØØØØ5Ø  ??????  ? ^Z        (CTRL/Z for new offset)
Offset address? UU.ZER-UU$MIN       ; ZERO device/PPN function
 Base   Offset  Old     New?
??????  ØØØØ52  ??????  ? Q!1ØØ
??????  ØØØØ54  ??????  ? ^Z        (CTRL/Z for new offset)
Offset address? UU.RAD-UU$MIN       ; Read/Write accounting data function
 Base   Offset  Old     New?
??????  ØØØØ53     ???  ? Q!1ØØ
??????  ØØØØ54     ???  ? ^Z        (CTRL/Z for new offset)
Offset address? UU.DIR-UU$MIN       ; Directory (index) function
 Base   Offset  Old     New?
??????  ØØØØ54  ??????  ? Q!1ØØ
??????  ØØØØ56  ??????  ? ^Z        (CTRL/Z for new offset)
Offset address? UU.TRM-UU$MIN       ; Terminal characteristics function
 Base   Offset  Old     New?
??????  ØØØØ55     ???  ? Q!1ØØ
??????  ØØØØ56     ???  ? ^Z        (CTRL/Z for new offset)
Offset address? UU.CHE-UU$MIN       ; Disk caching control function
 Base   Offset  Old     New?
??????  ØØØØ6Ø  ??????  ? Q!1ØØ
??????  ØØØØ62  ??????  ? ^Z        (CTRL/Z for new offset)
Offset address? UU.CNV-UU$MIN       ; Date/Time conversion function
 Base   Offset  Old     New?
??????  ØØØØ61     ???  ? Q!1ØØ
??????  ØØØØ62     ???  ? ^Z        (CTRL/Z for new offset)
Offset address? UU.SWP-UU$MIN       ; System file control function
 Base   Offset  Old     New?
??????  ØØØØ64  ??????  ? Q!1ØØ
??????  ØØØØ66  ??????  ? ^Z        (CTRL/Z for new offset)
Offset address? UU.JOB-UU$MIN       ; Job creation function
 Base   Offset  Old     New?
??????  ØØØØ65     ???  ? Q!1ØØ
??????  ØØØØ66     ???  ? ^Z        (CTRL/Z for new offset)
Offset address? UU.PPN-UU$MIN       ; PPN wildcard lookup function
 Base   Offset  Old     New?
??????  ØØØØ66  ??????  ? Q!1ØØ
??????  ØØØØ7Ø  ??????  ? ^Z        (CTRL/Z for new offset)
Offset address? UU.SYS-UU$MIN       ; Job status function
 Base   Offset  Old     New?
??????  ØØØØ67     ???  ? Q!1ØØ
??????  ØØØØ7Ø     ???  ? ^Z        (CTRL/Z for new offset)
```

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```
Offset address? UU.STL-UU$MIN        ; Stall system function
 Base   Offset  Old     New?
??????  ØØØØ72  ??????  ? Q!1ØØ
??????  ØØØØ74  ??????  ? ^C        (up-arrow/C to exit;CTRL/C for INIT)
```

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Executive
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Seq 3.5.13 F

1 of 2

DISABLE UU.SPL ROUTING TO NEW SPOOLER - FEATURE MONITOR PATCH

PROBLEM:

The UU.SPL monitor directive has been modified for version 8.Ø so that print requests (those with no target device or device LP specified) will be routed to the new micro-RSTS Spooling Package if its receiver name (QMAN) is defined in the system message receiver table. If its receiver name is not defined, then the print request will be routed to the standard spooling package.

Those sites that choose to run both spooling packages concurrently may want to disable routing of UU.SPL print directives to the new spooling package, causing all print requests to be routed to the standard spooler.

Note that UU.SPL batch directives (those with the target device BA) are always routed to the standard spooling package.

SOLUTION:

The patch described below will disable routing of any UU.SPL print request to the new micro-RSTS Spooling Package.

PROCEDURE:

1. This is a feature patch to the RSTS/E V8.Ø executive. It may be installed in any target monitor SIL.

2. The patch described in Step 4 below can be installed using the PATCH option of INIT.SYS:

```
Option: PATCH
File to patch? <lf>                (LINE FEED for installed monitor SIL)
```

3. This patch can be installed manually using ONLPAT, the on-line patching program. Note, however, that if the patch is applied online to the installed monitor SIL, it will not take effect until the system is re-booted.

```
RUN $ONLPAT
Command File Name? <cr>            (RETURN for manual patch installation)
File to patch? <lf>                (LINE FEED for installed monitor SIL)
File found in account [Ø,1]
```

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This patch is contained in a patch file appearing in patch kit version "A" or later.

4. The patch is as follows:

```
Module name? OVR
Base address? ..NSPL
Offset address? Ø
 Base   Offset  Old     New?
??????  ØØØØØØ  Ø46521  ? Ø
??????  ØØØØØ2  ??????  ? ^Z        (CTRL/Z for new offset)
Offset address? ^Z                  (CTRL/Z for new base)
Base address? ^Z                    (CTRL/Z for new module)
Module name? RSTS
Base address? $$Ø3Ø5
Offset address? Ø
 Base   Offset  Old     New?
??????  ØØØØØØ  ??????  ? Q!1ØØØØ
??????  ØØØØØ2  ??????  ? ^C        (up-arrow/C to exit;CTRL/C for INIT)
```

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LOGOUT WITH DETACHED JOBS IN NON-PRIVILEGED ACCOUNTS - MONITOR FEATURE PATCH

PROBLEM:

If an attached job attempts to log out of a non-privileged account in which there are detached jobs, a detached-job quota is checked. This quota limits the number of detached jobs per attached job in the account. If this quota would be exceeded, the attached job is not allowed to log out. However, there may be cases in which the system manager wishes to allow the attached job to log out, even though the detached-job quota would be exceeded.

SOLUTION:

The detached-job quota is defined as the ratio of detached jobs to attached jobs in a non-privileged account. This quota is enforced when non-privileged jobs attempt to create or spawn detached jobs. The quota is also enforced when attached jobs attempt to log out of non-privileged accounts.

This patch disables the enforcement of this quota when an attached job attempts to log out of a non-privileged account, but it does not affect the enforcement of the quota when a non-privileged job attempts to spawn a detached job.

PROCEDURE:

1. This is a feature patch to the RSTS/E V8.Ø executive. It may be installed in any target monitor SIL.

2. The patch described in Step 4 below can be installed using the PATCH option of INIT.SYS:

```
Option: PATCH
File to patch? <lf>                (LINE FEED for installed monitor SIL)
```

3. This patch can be installed manually using ONLPAT, the on-line patching program. Note, however, that if the patch is applied online to the installed monitor SIL, it will not take effect until the system is re-booted.

```
RUN $ONLPAT
Command File Name? <cr>            (RETURN for manual patch installation)
File to patch? <lf>                (LINE FEED for installed monitor SIL)
File found in account [Ø,1]
```

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Executive
File Processor Patches 2 of 2

This patch is contained in a patch file appearing in patch kit version "A" or later.

4. The patch is as follows:

```
Module name? OVR
Base address? LOG3
Offset address? 242
 Base   Offset  Old     New?
??????  ØØØ242  ØØ1Ø16  ? 416
??????  ØØØ244  Ø131Ø1  ? ^Z        (CTRL/Z for new offset)
Offset address? ^Z                  (CTRL/Z for new base)
Base address? ^Z                    (CTRL/Z for new module)
Module name? RSTS
Base address? $$Ø3Ø5
Offset address? Ø
 Base   Offset  Old     New?
??????  ØØØØØØ  ??????  ? Q!2ØØØØ
??????  ØØØØØ2  ??????  ? ^C        (uparrow/C to exit; CTRL/C for INIT)
```

SPECIAL LINE PRINTER DRUMS - DEVICE DRIVER FEATURE PATCH

Most DEC LP11 line printer drums contain a character which corresponds to octal code ØØ4Ø (the ASCII SPACE character). This character may be a blank, the British Pound Sterling character, or some other optional non-standard character. Normally, this character is irrelevant, since the LP11 is usually wired to print only ASCII codes Ø41 through 137 (octal) for the 64-character set, or Ø41 through 176 for the 96-character set. The SPACE character (ØØ4Ø), "non-printing" characters (codes ØØØ to Ø11, Ø13, and Ø16 to Ø37), and character codes greater than 137 (on printers with the 64-character set) all print as spaces. The space is created by suppressing printer action, rather than actually having a hammer strike a character position on the printer drum.

By making a simple wiring change to the LP11, the range of printing characters can be extended to include ASCII code ØØ4Ø. If the printer drum contains a special character in the ØØ4Ø position, sending an ØØ4Ø code to the printer will cause that special character to be printed.

In conjunction with this change, you can patch the RSTS/E line printer driver to allow special handling of ASCII ØØ4Ø on a unit-by-unit basis. Normally, the driver sends ØØ4Ø codes (SPACEs) unchanged to the printer. If the wiring change is not installed in the printer, this character will appear as a space, regardless of the symbol on the line printer drum. The patch allows you to specify an ASCII code which the driver will translate to ØØ4Ø before sending it to the printer. The special character will thus be printed. In addition, the driver will translate all ØØ4Ø codes to Ø37, which is a non-printing character and appears as a space. Note that translation of ØØ4Ø is performed only if the special character translation is enabled.

Ideally, you should choose a character which is not commonly used for other purposes but which can be typed and printed on any standard terminal. This allows you to use any standard editor to insert the special character into text destined for the printer. Remember that the conversion in the printer driver overrides the standard symbol (if any) for the selected code. For example, if you select the code 1Ø1 (the letter A), the special character is printed in place of any A sent to the driver. It would therefore be impossible to print an A.

All normal printing characters have some meaning in RSTS/E or BASIC-PLUS. For example, the "&" character ends a comment field in the EXTEND mode of BASIC-PLUS, is an abbreviation for account [1,5], and is a special character in RUNOFF source files. The "@" character is seldom used in printed material, but RSTS/E uses it as an assignable account designator.

If none of the printable characters is suitable, one of the ASCII control characters (codes ØØ1 to Ø37) may be used. For example, CTRL/F (ØØ6) can be generated with most terminals and will echo and print as ^F, if UP ARROW mode is selected with TTYSET. It has no meaning to any standard DEC terminal.

As system manager, you must choose the character which is appropriate for your installation by studying the ASCII code table and considering your users' needs. The procedure for installing the patch is described below.

PROCEDURE:

1. This is a feature patch to the RSTS/E executive. It may be installed in any target monitor SIL that includes line printer support.

2. Decide which line printer unit should have special character handling. If more than one unit is to be patched, repeat the steps below for each unit you wish to modify.

3. Select the character to represent the special printer symbol. If this character is a printable character (e.g., &), specify the new value in the patch by simply typing

   ```
   '&
   ```

   and replacing the & with the character you have chosen. If the character is a control character, specify its ASCII code as an octal number (or decimal number followed by a decimal point), or as 'x-1ØØ to represent CTRL/x. For example, CTRL/N may be specified as

   ```
   16
   ```

   or as

   ```
   14.
   ```

   or as

   ```
   'N-1ØØ
   ```

   in the patch.

4. The patch described in Step 6 below can be installed using the PATCH option of INIT.SYS:

```
Option: PATCH
File to patch? <lf>                (LINE FEED for installed monitor SIL)
```

5. This patch can be installed manually using ONLPAT, the on-line patching program:

```
RUN $ONLPAT
Command File Name? <cr>            (RETURN for manual patch installation)
File to patch? <lf>                (LINE FEED for installed monitor SIL)
File found in account [Ø,1]
```

The patch is also contained in a patch file appearing in patch kit version "A" or later.

NOTE

The patch file for this patch requires manual editing to include installation specific parameters before it can be successfully installed.

6. In this example, the symbol n is used to denote the line printer unit being modified. You should type the actual unit number (between zero and the number of printers -1). The patch is as follows:

```
Module name? RSTS
Base address? LPDDDB
Offset address? DDS.LP*n+3Ø          (n is the unit number)
 Base   Offset  Old       New?
??????  ??????  ØØØØØØ  ? n          (new value from step 3)
??????  ??????  ØØØØØØ  ? ^Z         (CTRL/Z for new offset)
Offset address? ^Z                   (CTRL/Z for new base)
Base address? $$Ø3Ø7
Offset address? Ø
 Base   Offset  Old       New?
??????  ØØØØØØ  ??????  ? Q!1
??????  ØØØØØ2  ??????  ? ^C         (up-arrow/C to exit;CTRL/C for INIT)
```

7. Install the hardware modification to the printer. The modification is different for the several printer models, as listed below:

   LPØ1 (231Ø) Wiring change required to card cage backplane. Remove wire A3A4-36 and connect this wire through a 1K pullup resistor to +5 Volts.

   LPØ2 (241Ø) Change to AR16 Data Register Card. Remove card from slot A3A24. Lift Pin 5 on Z15 and tie Pin 5 to ground.

   LPØ4 (247Ø) Wiring change required to card cage backplane. Remove wire from A3A24-Ø4 and connect this wire through a 1K pullup resistor to +5 Volts.

   LPØ5 (223Ø) Insert jumper W1 on the Logic Control Board 29-21112.

CHANGING DEFAULT PRINTER FORM LENGTH - DEVICE DRIVER FEATURE PATCH

When a line printer is OPENed, the default, hardware, form length is set to 66. This is the actual form length for most applications. You can change the default form length by installing the patch given below. The legal form length values are between 7. and 127. inclusive. Note that this patch changes the default form length for ALL line printers on the system.

PROCEDURE:

1. This is a feature patch to the RSTS/E executive. It may be installed in any target monitor SIL which includes line printer support.

2. The patch described in Step 4 below can be installed using the PATCH option of INIT.SYS:

```
Option: PATCH
File to patch? <lf>                (LINE FEED for installed monitor SIL)
```

3. This patch can be installed manually using ONLPAT, the on-line patching program:

```
RUN $ONLPAT
Command File Name? <cr>            (RETURN for manual patch installation)
File to patch? <lf>                (LINE FEED for installed monitor SIL)
File found in account [Ø,1]
```

   The patch is also contained in a patch file appearing in patch kit version "A" or later.

NOTE

> The patch file for this patch requires manual editing to include installation specific parameters before it can be successfully installed.

4. Be sure you include the decimal point after the new value so that it is interpreted as a decimal number.
The patch is as follows:

```
Module name? RSTS
Base address? ..LP66
Offset address? Ø
 Base   Offset  Old       New?
??????  ØØØØØØ  ØØØ1Ø2  ? n.        (the new default)
??????  ØØØØØ2  112712  ? ^Z       (CTRL/Z for new offset)
Offset address? ^Z                  (CTRL/Z for new base)
Base address? $$Ø3Ø7
Offset address? Ø
 Base   Offset  Old       New?
??????  ØØØØØØ  ??????  ? Q!2
??????  ØØØØØ2  ??????  ? ^C       (up-arrow/C to exit;CTRL/C for INIT)
```

5. If you are using the line printer spooling package, you must change the control file (or files) which start the spoolers. Include the /DFLENGTH:n switch in the command line for each spooler to specify the new default form length.

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TU16/TE16/TU45/TU77 MAGNETIC TAPE DENSITY/PARITY DEFAULT - DEVICE DRIVER FEATURE PATCH

The default density and parity settings for TU16, TE16, TU45, or TU77 magnetic tape (device MM) under RSTS/E are 8ØØ BPI and ODD parity. A program can change the density and/or parity value for either file structured or non-file structured operations by using the MAGTAPE function.

You can change your system's default settings for density and/or parity by installing the patch given below. This is useful if you frequently interchange tapes with other systems which use 16ØØ-BPI phase-encoded defaults. It is also useful if you want to use the 16ØØ-BPI recording mode as your installation's standard.

NOTE

> The 6ØØ-foot RSTS/E distribution magnetic tapes for TU16, TE16, TU45, and TU77 (including optional languages such as COBOL and FORTRAN) are written at 8ØØ BPI with ODD parity. If you use this kind of distribution kit, do not install this patch until after you have completed the system library build procedures, including any optional software.

PROCEDURE:

1. This is a feature patch to the RSTS/E executive. It may be installed in any target monitor SIL which is configured for TU16, TE16, TU45, or TU77 magnetic tape.

2. Select the desired magnetic tape density and parity. To use 16ØØ BPI phase encoded mode, specify a new value of Ø in the patch. To return to 8ØØ BPI, specify a new value of 14Ø. Any other value will cause file structured operations to fail.

3. The patch described in Step 5 below can be installed using the PATCH option of INIT.SYS:

   Option: PATCH
   File to patch? <lf> (LINE FEED for installed monitor SIL)

4. This patch can be installed manually using ONLPAT, the on-line patching program:

```
RUN $ONLPAT
Command File Name? <cr>          (RETURN for manual patch installation)
File to patch? <lf>              (LINE FEED for installed monitor SIL)
File found in account [Ø,1]
```

The patch is also contained in a patch file appearing in patch kit version "A" or later.

NOTE

The patch file for this patch requires manual editing to include installation specific parameters before it can be successfully installed.

5. The patch is as follows:

```
Module name? RSTS
Base address? ..MTDP
Offset address? 1
 Base   Offset  Old       New?
??????  ØØØØØ1     14Ø  ? n          (from step 2)
??????  ØØØØØ2     ???  ? ^Z         (CTRL/Z for new offset)
Offset address? ^Z                   (CTRL/Z for new base)
Base address? $$Ø3Ø7
Offset address? Ø
 Base   Offset  Old       New?
??????  ØØØØØØ  ??????  ? Q!4
??????  ØØØØØ2  ??????  ? ^C         (up-arrow/C to exit;CTRL/C for INIT)
```

USING THE CSS PAPER TAPE READER ON RSTS/E - DEVICE DRIVER FEATURE PATCH

PROBLEM:

The paper tape reader device driver included in the RSTS/E object library does not work with the CSS paper tape reader (PA611).

SOLUTION:

The paper tape reader driver for RSTS/E is for Digital Equipment Corporation model PC11. The following optional patch will make the driver compatible with the CSS paper tape reader model PA611. Note that after applying this patch, the device driver does not work with model PC11.

PROCEDURE:

1. This is a feature patch to the RSTS/E executive. It may be installed in any target monitor SIL that supports paper tape readers. If this support was not included in the monitor during your system generation, the patch will fail with a "Symbol not found in STB" error after you specify ..PCSS as the Base Address.

2. The patch described in Step 4 below can be installed using the PATCH option of INIT.SYS:

```
Option: PATCH
File to patch? <lf>                (LINE FEED for installed monitor SIL)
```

3. This patch can be installed manually using ONLPAT, the on-line patching program:

```
RUN $ONLPAT
Command File Name? <cr>            (RETURN for manual patch installation)
File to patch? <lf>                (LINE FEED for installed monitor SIL)
File found in account [Ø,1]
```

   The patch is also contained in a patch file appearing in patch kit version "A" or later.

4. The patch is as follows:

```
Module name? RSTS
Base address? ..PCSS
Offset address? Ø
 Base   Offset  Old     New?
??????  ØØØØØØ  1ØØ2ØØ  ? 1ØØ1ØØ
??????  ØØØØØ2  ??????  ? ^Z        (CTRL/Z for new offset)
Offset address? ^Z                  (CTRL/Z for new base)
Base address? $$Ø3Ø7
Offset address? Ø
 Base   Offset  Old       New?
??????  ØØØØØØ  ??????  ? Q!1Ø
??????  ØØØØØ2  ??????  ? ^C        (up-arrow/C to exit;CTRL/C for INIT)
```

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DMC-11 DRIVER MAY CAUSE SYSTEM CRASHES - MANDATORY PATCH

PROBLEM:

During periods of heavy congestion, the DMC-11 driver may leave units buffer stalled and mangle small buffer chains.

SOLUTION:

The following patch corrects this problem.

PROCEDURE:

1. This is a required patch to the RSTS/E V8.Ø executive. It must be installed in all target monitor SILs.

2. The patch described in Step 4 below can be installed using the PATCH option of INIT.SYS:

```
Option: PATCH
File to patch? <lf>                (LINE FEED for installed monitor SIL)
```

3. This patch can be installed manually using ONLPAT, the on-line patching program. Note, however, that if the patch is applied online to the installed monitor SIL, it will not take effect until the system is re-booted.

```
RUN $ONLPAT
Command File Name? <cr>            (RETURN for manual patch installation)
File to patch? <lf>                (LINE FEED for installed monitor SIL)
File found in account [Ø,1]
```

4. The patch is as follows:

```
Module name? XVR
Base address? XMDVRM
Offset address? 3154
 Base   Offset  Old     New?
??????  ØØ3154  Ø42765  ? 42761
??????  ØØ3156  Ø4ØØØØ  ? ^Z          (CTRL/Z for new offset)
Offset address? ^Z                   (CTRL/Z for new base)
Base address? ^Z                     (CTRL/Z for new module)
```

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```
Module name? RSTS
Base address? $$Ø3Ø7
Offset address? Ø
 Base   Offset  Old     New?
??????  ØØØØØØ  ??????  ? Q!2Ø
??????  ØØØØØ2  ??????  ? ^C        (Up-arrow/C to exit;CTRL/C for INIT)
```

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LINE PRINTER DRIVER CAN PRINT GARBAGE - MANDATORY DEVICE DRIVER PATCH

PROBLEM:

When in Software Formatting mode (512%), the line printer driver can print extra characters on listings. It will also cause the owning job to abort with ?ILLEGAL I/O CHANNEL (err 46) or some other error.

SOLUTION:

The patching procedure detailed below corrects the above problem.

PROCEDURE:

1. This is a required patch to the RSTS/E V8.Ø executive. It must be installed in all target monitor SILs which have been genned to support a line printer.

2. The patch described in Step 4 below can be installed using the PATCH option of INIT.SYS:

   ```
   Option: PATCH
   File to patch? <lf>                (LINE FEED for installed monitor SIL)
   ```

3. This patch can be installed manually using ONLPAT, the on-line patching program. Note, however, that if the patch is applied online to the installed monitor SIL, it will not take effect until the system is re-booted.

   ```
   RUN $ONLPAT
   Command File Name? <cr>            (RETURN for manual patch installation)
   File to patch? <lf>                (LINE FEED for installed monitor SIL)
   File found in account [Ø,1]
   ```

   The patch is also contained in a command file ($MONITR.CMD) appearing in patch kit version "A" or later.

4. If the extended buffering line printer driver was selected at SYSGEN time, then you want to install the first patch printed here, for LPDVRX. If you did not select the extended buffering printer driver, then install the second patch. If you do not remember whether you selected the XBUF printer or not when you Genned your system, then try to install the first patch, for LPDVRX. If the patching program reports ?Symbol not found in STB, then you did not gen in the XBUF driver, and you want to install the second patch included here.

   The first patch (for the XBUF line printer driver) is as follows:

```
Module name? RSTS
Base address? LPDVRX
Offset address? 1174
 Base   Offset  Old     New?
??????  ØØ1174  Ø05726  ? 137
??????  ØØ1176  ØØØ663  ? PATCH
??????  ØØ12ØØ  Ø1Ø346  ? ^Z        (CTRL/Z for new offset)
Offset address? 746
 Base   Offset  Old     New?
??????  ØØØ746  Ø05723  ? ^Z        (CTRL/Z for new offset)
Offset address? ^Z                  (CTRL/Z for new base)
Base address? PATCH
Offset address? Ø
 Base   Offset  Old     New?
??????  ØØØØØØ  ØØØØØØ  ? 5213
??????  ØØØØØ2  ØØØØØØ  ? 5343
??????  ØØØØØ4  ØØØØØØ  ? 5726
??????  ØØØØØ6  ØØØØØØ  ? 137
??????  ØØØØ1Ø  ØØØØØØ  ? LPDVRX+746
??????  ØØØØ12  ??????  ? ^Z        (CTRL/Z for new offset)
Offset address? ^Z                  (CTRL/Z for new base)
Base address? $$Ø3Ø7
Offset address? Ø
 Base   Offset  Old     New?
??????  ØØØØØØ  ??????  ? Q!4Ø
??????  ØØØØØ2  ??????  ? ^C        (up-arrow/C to exit;CTRL/C for INIT)
```

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This is the second patch, install it if you did not select the extended buffering line printer driver at SYSGEN time. The patch is as follows:

```
Module name? RSTS
Base address? LPDVR
Offset address? 1Ø66
 Base   Offset  Old     New?
??????  ØØ1Ø66  Ø05726  ? 137
??????  ØØ1Ø7Ø  ØØØ663  ? PATCH
??????  ØØ1Ø72  Ø31327  ? ^Z        (CTRL/Z for new offset)
Offset address? 64Ø
 Base   Offset  Old     New?
??????  ØØØ64Ø  Ø05723  ? ^Z        (CTRL/Z for new offset)
Offset address? ^Z                  (CTRL/Z for new base)
Base address? PATCH
Offset address? Ø
 Base   Offset  Old     New?
??????  ØØØØØØ  ØØØØØØ  ? 5213
??????  ØØØØØ2  ØØØØØØ  ? 5343
??????  ØØØØØ4  ØØØØØØ  ? 5726
??????  ØØØØØ6  ØØØØØØ  ? 137
??????  ØØØØ1Ø  ØØØØØØ  ? LPDVR+64Ø
??????  ØØØØ12  ??????  ? ^Z        (CTRL/Z for new offset)
Offset address? ^Z                  (CTRL/Z for new base)
Base address? $$Ø3Ø7
Offset address? Ø
 Base   Offset  Old     New?
??????  ØØØØØØ  ??????  ? Q!4Ø
??????  ØØØØ2  ??????  ? ^C        (up-arrow/C to exit;CTRL/C for INIT)
```

SPECIAL PRINT-USING CHARACTERS - BASIC-PLUS FEATURE PATCH

The PRINT-USING option of BASIC-PLUS provides for floating dollar sign, comma insertion every three digits to the left of the decimal point, and printing of the decimal point. The $-sign is used for the currency symbol in the United States and Canada, but various other symbols are used for other monetary systems. In the United Kingdom it would be useful to float the Pound Sterling symbol (or whatever ASCII character is used to represent that symbol) instead of the $-sign. In France, a floating Franc symbol (or F) would be generally more useful than the floating $-sign. The role of the comma and period are also reversed in France (e.g., 9,999,999.Ø2 should be printed as 9.999.999,Ø2).

To accommodate these differences in monetary systems, PRINT-USING is coded to allow substitution of any character for the floating currency symbol, the decimal point character, and the "every three digits" character. These three characters are defined by three words in the BASIC-PLUS run-time system. System defaults and several suggestions are shown in the table below:

Location	Usage	Default	England	France
..PUCH+Ø	Floating currency symbol	$ (Ø44)	& (Ø46)	F (1Ø6)
..PUCH+2	Decimal point character	. (Ø56)	. (Ø56)	, (Ø54)
..PUCH+4	Every three digits character	, (Ø54)	, (Ø54)	. (Ø56)

Substitution of different characters, such as those listed under England and France above, is done with a simple patch. Any change will affect both the PRINT-USING format string and the output produced. For example, if the suggestions under "France" were installed, the following PRINT-USING statement would result in the output shown:

```
PRINT USING "FF#.######,##", 3673298.Ø2, 4545.2Ø

F3.673.298,Ø2
   F4.545,2Ø
```

Since any change in this area does render the PRINT-USING documentation slightly incorrect, an appropriate note should be published for users of the system.

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PROCEDURE:

1. This is a feature patch to the BASIC-PLUS run-time system. It may be installed in any BASIC-PLUS run-time system configured with Print-Using.

2. Determine the three special characters you wish to use for the floating currency symbol, the decimal point character, and the "every three digits" character. The chosen characters can be entered as either:

   'x where x is the chosen printable character
   n where n is the octal value of the chosen character
   n. where n is the decimal value of the chosen character

3. The patch described in Step 5 below can be installed using the PATCH option of INIT.SYS:

```
Option: PATCH
File to patch? BASIC.RTS          (BASIC-PLUS run-time system name)
```

4. This patch can be installed manually using ONLPAT, the on-line patching program:

```
RUN $ONLPAT
Command File Name? <cr>           (RETURN for manual patch installation)
File to patch? [Ø,1]BASIC.RTS     (BASIC-PLUS run-time system name)
File found in account [Ø,1]
```

   The patch is also contained in a patch file appearing in patch kit version "A" or later.

NOTE

The patch file for this patch requires manual editing to include installation specific parameters before it can be successfully installed.

5. The patch is as follows:

```
Base address? ..PUCH
Offset address? Ø
 Base   Offset  Old     New?
??????  ØØØØØØ  ØØØØ44  ? 'f       (currency sign from step 2)
??????  ØØØØØ2  ØØØØ56  ? ',       (decimal point from step 2)
??????  ØØØØØ4  ØØØØ54  ? '.       ("every three" from step 2)
??????  ØØØØØ6  ??????  ? ^C      (up-arrow/C to exit;CTRL/C for INIT)
```

6. If the above patch was installed using ONLPAT, it will take effect the next time the run-time system is reloaded. If the run-time system has been ADDed, or if it is your system default run-time system, execute the following commands:

```
RUN $UTILTY<cr>
<UTILTY's header line>
#UNLOAD BASIC<cr>                    (BASIC-PLUS run-time system name)
#EXIT<cr>

Ready
```

NOTE: The UNLOAD command will not remove the run-time system, but simply instructs the monitor to reload it the next time a job requests it.

If, in addition to being previously ADDed, the run-time system had been ADDed with the /STAY switch, also reload it as follows:

```
RUN $UTILTY<cr>
<UTILTY's header line>
#LOAD BASIC/STAY/ADDR:nnn<cr>        (BASIC-PLUS run-time system name)
#EXIT<cr>

Ready
```

DEFAULT SCALE FACTOR - BASIC-PLUS FEATURE PATCH

The BASIC-PLUS default SCALE factor may be modified by utilizing the procedure in this article. A complete description of SCALE factors is included in the BASIC-PLUS Language Manual.

PROCEDURE:

1. This is a feature patch to the BASIC-PLUS run-time system. It may be installed in any BASIC-PLUS run-time system configured with the 4-word, scaled math package.

2. Determine the new BASIC-PLUS default SCALE factor. This default SCALE factor must be between 0 and 6 inclusive.

3. The patch described in Step 5 below can be installed using the PATCH option of INIT.SYS:

```
Option: PATCH
File to patch? BASIC.RTS          (BASIC-PLUS run-time system name)
```

4. This patch can be installed manually using ONLPAT, the on-line patching program:

```
RUN $ONLPAT
Command File Name? <cr>           (RETURN for manual patch installation)
File to patch? [0,1]BASIC.RTS     (BASIC-PLUS run-time system name)
File found in account [0,1]
```

The patch is also contained in a patch file appearing in patch kit version "A" or later.

NOTE

The patch file for this patch requires manual editing to include installation specific parameters before it can be successfully installed.

5. The patch is as follows:

```
Base address? ..SCA.
Offset address? 0
 Base   Offset  Old     New?
??????  000000  000000  ? n          (from step 2)
??????  000002  ??????  ? ^C         (up-arrow/C to exit;CTRL/C for INIT)
```

6. If the above patch was installed using ONLPAT, it will take effect the next time the run-time system is reloaded. If the run-time system has been ADDed, or if it is your system default run-time system, execute the following commands:

```
RUN $UTILTY<cr>
<UTILTY's header line>
#UNLOAD BASIC<cr>                  (BASIC-PLUS run-time system name)
#EXIT<cr>

Ready
```

NOTE: The UNLOAD command will not remove the run-time system, but simply instructs the monitor to reload it the next time a job requests it.

If, in addition to being previously ADDed, the run-time system had been ADDed with the /STAY switch, also reload it as follows:

```
RUN $UTILTY<cr>
<UTILTY's header line>
#LOAD BASIC/STAY/ADDR:nnn<cr>      (BASIC-PLUS run-time system name)
#EXIT<cr>

Ready
```

OMITTING SCALE FACTOR WARNING MESSAGE - BASIC-PLUS FEATURE PATCH

Normally, if a BASIC-PLUS program is compiled with one SCALE factor and then is run under a different job SCALE factor, the "%SCALE Factor Interlock" warning message is printed and execution proceeds using the program's SCALE factor. It may be desirable to omit the printing of this message.

PROCEDURE:

1. This is a feature patch to the BASIC-PLUS run-time system. It may be installed in any BASIC-PLUS run-time system configured with the 4-word, scaled math package.

2. The patch described in Step 4 below can be installed using the PATCH option of INIT.SYS:

```
Option: PATCH
File to patch? BASIC.RTS          (BASIC-PLUS run-time system name)
```

3. This patch can be installed manually using ONLPAT, the on-line patching program:

```
RUN $ONLPAT
Command File Name? <cr>           (RETURN for manual patch installation)
File to patch? [0,1]BASIC.RTS     (BASIC-PLUS run-time system name)
File found in account [0,1]
```

   The patch is also contained in a patch file appearing in patch kit version "A" or later.

4. The patch is as follows:

```
Base address? ..SCE.
Offset address? 0
 Base   Offset  Old     New?
??????  000000  104577  ? 240      (for no warning message)
??????  000002  000207  ? ^C       (up-arrow/C to exit;CTRL/C for INIT)
```

5. If the above patch was installed using ONLPAT, it will take effect the next time the run-time system is reloaded. If the run-time system has been ADDed, or if it is your system default run-time system, execute the following commands:

```
RUN $UTILTY<cr>
<UTILTY's header line>
#UNLOAD BASIC<cr>                    (BASIC-PLUS run-time system name)
#EXIT<cr>

Ready
```

NOTE: The UNLOAD command will not remove the run-time system, but simply instructs the monitor to reload it the next time a job requests it.

If, in addition to being previously ADDed, the run-time system had been ADDed with the /STAY switch, also reload it as follows:

```
RUN $UTILTY<cr>
<UTILTY's header line>
#LOAD BASIC/STAY/ADDR:nnn<cr>        (BASIC-PLUS run-time system name)
#EXIT<cr>

Ready
```

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DEFAULT TO NOEXTEND MODE - BASIC-PLUS FEATURE PATCH

Normally, BASIC-PLUS defaults to EXTEND mode. To change this default to NOEXTEND mode, apply the patch in this article.

PROCEDURE:

1. This is a feature patch to the BASIC-PLUS run-time system. It may be installed in any BASIC-PLUS run-time system.

2. The patch described in Step 4 below can be installed using the PATCH option of INIT.SYS:

```
Option: PATCH
File to patch? BASIC.RTS          (BASIC-PLUS run-time system name)
```

3. This patch can be installed manually using ONLPAT, the on-line patching program:

```
RUN $ONLPAT
Command File Name? <cr>           (RETURN for manual patch installation)
File to patch? [0,1]BASIC.RTS     (BASIC-PLUS run-time system name)
File found in account [0,1]
```

   The patch is also contained in a patch file appearing in patch kit version "A" or later.

4. The patch is as follows:

```
Base address? ..XTN.
Offset address? 0
 Base   Offset  Old     New?
??????  000000  020000  ? 0
??????  000002  ??????  ? ^C       (up-arrow/C to exit;CTRL/C for INIT)
```

5. If the above patch was installed using ONLPAT, it will take effect the next time the run-time system is reloaded. If the run-time system has been ADDed, or if it is your system default run-time system, execute the following commands:

```
RUN $UTILTY<cr>
<UTILTY's header line>
#UNLOAD BASIC<cr>                    (BASIC-PLUS run-time system name)
#EXIT<cr>

Ready
```

NOTE: The UNLOAD command will not remove the run-time system, but simply instructs the monitor to reload it the next time a job requests it.

If, in addition to being previously ADDed, the run-time system had been ADDed with the /STAY switch, also reload it as follows:

```
RUN $UTILTY<cr>
<UTILTY's header line>
#LOAD BASIC/STAY/ADDR:nnn<cr>        (BASIC-PLUS run-time system name)
#EXIT<cr>

Ready
```

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IMMEDIATE MODE FROM .BAS FILE - BASIC-PLUS FEATURE PATCH

Normally, BASIC-PLUS does not allow immediate-mode commands to appear in the file accessed by the "OLD" command. This may be desirable in environments where this feature was used in previous versions of BASIC-PLUS. To allow BASIC-PLUS to accept immediate mode commands in files, apply the patch in this article.

PROCEDURE:

1. This is a feature patch to the BASIC-PLUS run-time system. It may be installed in any BASIC-PLUS run-time system.

2. The patch described in Step 4 below can be installed using the PATCH option of INIT.SYS:

```
Option: PATCH
File to patch? BASIC.RTS          (BASIC-PLUS run-time system name)
```

3. This patch can be installed manually using ONLPAT, the on-line patching program:

```
RUN $ONLPAT
Command File Name? <cr>           (RETURN for manual patch installation)
File to patch? [Ø,1]BASIC.RTS     (BASIC-PLUS run-time system name)
File found in account [Ø,1]
```

   The patch is also contained in a patch file appearing in patch kit version "A" or later.

4. The patch is as follows:

```
Base address? ..IBAS
Offset address? Ø
 Base   Offset  Old     New?
??????  ØØØØØØ  ØØ14Ø1  ? 4Ø1
??????  ØØØØØ2  1Ø4767  ? ^C       (up-arrow/C to exit;CTRL/C for INIT)
```

5. If the above patch was installed using ONLPAT, it will take effect the next time the run-time system is reloaded. If the run-time system has been ADDed, or if it is your system default run-time system, execute the following commands:

```
RUN $UTILTY<cr>
<UTILTY's header line>
#UNLOAD BASIC<cr>                    (BASIC-PLUS run-time system name)
#EXIT<cr>

Ready
```

NOTE: The UNLOAD command will not remove the run-time system, but simply instructs the monitor to reload it the next time a job requests it.

If, in addition to being previously ADDed, the run-time system had been ADDed with the /STAY switch, also reload it as follows:

```
RUN $UTILTY<cr>
<UTILTY's header line>
#LOAD BASIC/STAY/ADDR:nnn<cr>        (BASIC-PLUS run-time system name)
#EXIT<cr>

Ready
```

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NO PPN'S IN CATALOG COMMAND - BASIC-PLUS FEATURE PATCH

Normally, BASIC-PLUS allows any user to list the contents of another user's directory with the CATALOG [P,PN] command. The patch in this article prevents BASIC-PLUS from accepting a project, programmer number in the CATALOG command. Thus, only the user's own directory may be listed.

PROCEDURE:

1. This is a feature patch to the BASIC-PLUS run-time system. It may be installed in any BASIC-PLUS run-time system.

2. The patch described in Step 4 below can be installed using the PATCH option of INIT.SYS:

```
Option: PATCH
File to patch? BASIC.RTS          (BASIC-PLUS run-time system name)
```

3. This patch can be installed manually using ONLPAT, the on-line patching program:

```
RUN $ONLPAT
Command File Name? <cr>           (RETURN for manual patch installation)
File to patch? [0,1]BASIC.RTS     (BASIC-PLUS run-time system name)
File found in account [0,1]
```

   The patch is also contained in a patch file appearing in patch kit version "A" or later.

4. The patch is as follows:

```
Base address? ..CAT.
Offset address? 0
 Base   Offset  Old     New?
??????  000000  000401  ? 5064
??????  000002  000006  ? ^C       (up-arrow/C to exit;CTRL C for INIT)
```

5. If the above patch was installed using ONLPAT, it will take effect the next time the run-time system is reloaded. If the run-time system has been ADDed, or if it is your system default run-time system, execute the following commands:

```
RUN $UTILTY<cr>
<UTILTY's header line>
#UNLOAD BASIC<cr>                    (BASIC-PLUS run-time system name)
#EXIT<cr>

Ready
```

NOTE: The UNLOAD command will not remove the run-time system, but simply instructs the monitor to reload it the next time a job requests it.

If, in addition to being previously ADDed, the run-time system had been ADDed with the /STAY switch, also reload it as follows:

```
RUN $UTILTY<cr>
<UTILTY's header line>
#LOAD BASIC/STAY/ADDR:nnn<cr>        (BASIC-PLUS run-time system name)
#EXIT<cr>

Ready
```

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DISABLING THE CCL SYS CALL - BASIC-PLUS FEATURE PATCH

Normally, BASIC-PLUS allows any user to execute any valid CCL command on the system with SYS call 14. However, some installations may choose to disable this feature to discourage users from writing programs that will simulate the features of a standard run-time system. The patch in this article prevents BASIC-PLUS from executing SYS call 14.

PROCEDURE:

1. This is a feature patch to the BASIC-PLUS run-time system. It may be installed in any BASIC-PLUS run-time system.

2. The patch described in Step 4 below can be installed using the PATCH option of init.sys:

```
Option: PATCH
File to patch? BASIC.RTS          (BASIC-PLUS run-time system name)
```

3. This patch can be installed manually using ONLPAT, the on-line patching program:

```
RUN $ONLPAT
Command File Name? <cr>           (RETURN for manual patch installation)
File to patch? [0,1]BASIC.RTS     (BASIC-PLUS run-time system name)
File found in account [0,1]
```

   The patch is also contained in a patch file appearing in patch kit version "A" or later.

4. The patch is as follows:

```
Base address? ..CCL.
Offset address? 0
 Base   Offset  Old     New?
??????  000000  ??????  ? UUOBAD
??????  000002  ??????  ? ^C       (up-arrow/C to exit;CTRL/C for INIT)
```

5. If the above patch was installed using ONLPAT, it will take effect the next time the run-time system is reloaded. If the run-time system has been ADDed, or if it is your system default run-time system, execute the following commands:

```
RUN $UTILTY<cr>
<UTILTY's header line>
#UNLOAD BASIC<cr>                    (BASIC-PLUS run-time system name)
#EXIT<cr>

Ready
```

NOTE: The UNLOAD command will not remove the run-time system, but simply instructs the monitor to reload it the next time a job requests it.

If, in addition to being previously ADDed, the run-time system had been ADDed with the /STAY switch, also reload it as follows:

```
RUN $UTILTY<cr>
<UTILTY's header line>
#LOAD BASIC/STAY/ADDR:nnn<cr>        (BASIC-PLUS run-time system name)
#EXIT<cr>

Ready
```

CLEAR I/O BUFFERS USED BY OPEN STATEMENTS - BASIC-PLUS FEATURE PATCH

PROBLEM:

BASIC-PLUS does not clear I/O buffers used by OPEN statements.

SOLUTION:

The patching procedure detailed below will cause BASIC-PLUS to clear I/O buffers used by OPEN statements. This patch need only be applied when high security is needed.

NOTE: Applying this patch will cause BASIC-PLUS file commands (OLD, SAVE, REPLACE) to execute more slowly.

PROCEDURE:

1. This is a feature patch to the BASIC-PLUS Run-Time System. It may be installed on any BASIC-PLUS Run-Time System.

2. The patch described in Step 4 below can be installed using the PATCH option of INIT.SYS:

   ```
   Option: PATCH
   File to patch? BASIC.RTS          (BASIC-PLUS Run-Time System name)
   ```

3. This patch can be installed manually using ONLPAT, the on-line patching program:

   ```
   RUN $ONLPAT
   Command File Name? <cr>      (RETURN for manual patch installation)
   File to patch? [Ø,1]BASIC.RTS     (BASIC-PLUS Run-Time System name)
   File found in account [Ø,1]
   ```

   The patch is also contained in a patch file appearing in patch kit version "A" or later.

4. The patch is as follows:

```
Base address? RC
Offset address? 6774
 Base  Offset  Old     New?
?????? ØØ6774 ØØ5Ø62  ? 4737
?????? ØØ6776 ØØØØØ6  ? PA+1Ø2
?????? ØØ7ØØØ Ø16764  ? ^Z          (CTRL/Z for new offset)
Offset address? ^Z                  (CTRL/Z for new base)
Base address? PA
Offset address? 1Ø2
 Base  Offset  Old     New?
?????? ØØØ1Ø2 ØØØØØØ  ? 5Ø62
?????? ØØØ1Ø4 ØØØØØØ  ? 6
?????? ØØØ1Ø6 ØØØØØØ  ? 1ØØ46
?????? ØØØ11Ø ØØØØØØ  ? 1Ø246
?????? ØØØ112 ØØØØØØ  ? 662Ø2
?????? ØØØ114 ØØØØØØ  ? 1Ø
?????? ØØØ116 ØØØØØØ  ? 1Ø5Ø22
?????? ØØØ12Ø ØØØØØØ  ? 77ØØ2
?????? ØØØ122 ØØØØØØ  ? 126Ø2
?????? ØØØ124 ØØØØØØ  ? 126ØØ
?????? ØØØ126 ØØØØØØ  ? 2Ø7
?????? ØØØ13Ø ??????  ? ^C          (up-arrow/C to exit;)
                                    (CTRL/C for INIT)
```

5. If the above patch was installed using ONLPAT, it will take effect the next time the run-time system is reloaded. If the run-time system has been ADDed, or if it is your system default run-time system, execute the following commands:

```
RUN $UTILTY<cr>
<UTILTY's header line>
#UNLOAD BASIC<cr>                   (BASIC-PLUS Run-Time System name)
#EXIT<cr>

Ready
```

NOTE: The UNLOAD command will not remove the run-time system, but simply instructs the monitor to reload it the next time a job requests it.

If, in addition to being previously ADDed, the run-time system had been ADDed with the /STAY switch, also reload it as follows:

```
RUN $UTILTY<cr>
<UTILTY's header line>
#LOAD BASIC/STAY/ADDR:nnn<cr>     (BASIC-PLUS Run-Time System name)
#EXIT<cr>

Ready
```

NOTE: IF IT IS NECESSARY, THE PATCH SPACE THIS PATCH USES MAY BE RE-USED FOR MANDATORY PATCHES.

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FORCE "ILLEGAL STATEMENT" ERROR WHEN USING OBSOLETE SEND/RECEIVE
- BASIC-PLUS FEATURE PATCH

PROBLEM:

Send/Receive SYS call 18 (SYS(CHR$(6%)+CHR$(18%)+...) in BASIC-PLUS is obsolete and should not be used.

SOLUTION:

The patching procedure detailed below will cause BASIC-PLUS to generate an "?Illegal Statement" error whenever the obsolete Send/Receive SYS call (SYS(CHR$(6%)+CHR$(18%)+....) is used. This patch will help to identify programs which use this obsolete SYS call so they may be changed to the new format Send/Receive SYS call (Refer to RSTS/E Programming Manual, Chapter 8 for information).

NOTE

It is suggested that you apply the patch which follows to a COPY of your BASIC-PLUS run-time system that the CUSPs have not been compiled against. You can then switch to the new run-time system, OLD/COMPILE/RUN all programs which you suspect may use SYS call 18, and track down and change the calls with less impact on your system. Note that any "?Illegal Statement" errors will occur at execution of your programs, not during the compilation.

PROCEDURE:

1. This is a feature patch to the BASIC-PLUS run-time system. It may be installed in any BASIC-PLUS run-time system.

2. The patch described in Step 4 below can be installed using the PATCH option of INIT.SYS:

```
Option: PATCH
File to patch? BASIC.RTS          (BASIC-PLUS run-time system name)
```

3. This patch can be installed manually using ONLPAT, the on-line patching program:

```
RUN $ONLPAT
Command File Name? <cr>           (RETURN for manual patch installation)
File to patch? [Ø,1]BASIC.RTS     (BASIC-PLUS run-time system name)
File found in account [Ø,1]
```

This patch is contained in a patch file appearing in patch kit version "A" or later.

4. The patch is as follows:

```
Base address? ..S18.
Offset address? Ø
 Base  Offset  Old     New?
?????? ØØØØØØ  111ØØ2  ? 1Ø4771
?????? ØØØØØ2  Ø1Ø246  ? ^C          (up-arrow/C to exit;CTRL/C for INIT)
```

5. If the above patch was installed using ONLPAT, it will take effect the next time the run-time system is reloaded. If the run-time system has been ADDed, or if it is your system default run-time system, execute the following commands:

```
RUN $UTILTY<cr>
<UTILTY's header line>
#UNLOAD BASIC<cr>                  (BASIC-PLUS run-time system name)
#EXIT<cr>

Ready
```

NOTE: The UNLOAD command will not remove the run-time system, but simply instructs the monitor to reload it the next time a job requests it.

If, in addition to being previously ADDed, the run-time system had been ADDed with the /STAY switch, also reload it as follows:

```
RUN $UTILTY<cr>
<UTILTY's header line>
#LOAD BASIC/STAY/ADDR:nnn<cr>      (BASIC-PLUS run-time system name)
#EXIT<cr>

Ready
```

THE BASIC-PLUS DEBUG FACILITY

A feature of BASIC-PLUS, the DEBUG facility, is available with RSTS/E as an unsupported feature, and may be changed or removed in future versions of BASIC-PLUS.

The DEBUG commands extend the present BASIC-PLUS immediate-mode debugging commands by allowing you to trace the flow of your program and to set breakpoints. These commands provide a subset of the functions provided by the BASIC-PLUS-2 debugging facility, and are only available as immediate-mode commands. They cannot be used within BASIC-PLUS programs. The commands are used in one of two ways:

1. Issuing them between the OLD and RUN of a program and, thereafter, whenever a breakpoint is hit.

2. By including STOP statements within the program, and then issuing the DEBUG commands when the first STOP statement is encountered and, thereafter, whenever another STOP statement or breakpoint is hit.

Any DEBUG commands are disabled when:

1. A "RUN <program-name>" command is successfully executed, or
2. A NEW, OLD, or EXIT command is executed, or
3. Any valid CCL command is executed.

The keywords used with the DEBUG facility have been implemented with the second character of each keyword changed to a question mark ("?"). The patch described in article Seq 4.10.3 F may be used to change the question marks to the characters required to make the keyword names match the names of their respective functions (for example, "T?ACE" is changed to "TRACE"). Note that, if this patch is applied, any program with a variable or function name that represents a variant of TRACE, UNTRACE, BREAK, or UNBREAK (such as TRACE%, FNBREAK$, etc.) will not compile until the variable name is changed.

For the purposes of this discussion, assume that the patch described above has been installed. If you include the DEBUG features, but choose not to install the patch, replace all occurrences of the keywords below as follows:

With Patch	Without Patch
TRACE	T?ACE
UNTRACE	U?TRACE
BREAK	B?EAK
UNBREAK	U?BREAK

TRACE/UNTRACE

The TRACE command causes BASIC-PLUS to print the message "at line nnn" (where "nnn" represents a line number) each time that a line number is encountered or the current line number changes.

The UNTRACE command disables any previous invocation of the TRACE command.

BREAK/UNBREAK

The BREAK command allows you to specify that execution should stop any time that a specified line number is encountered. Up to 1Ø such breakpoints can be set. The BREAK command is of the form

BREAK [N1, N2, N3 ..., N1Ø]

where "Nn" represents a line number between 1 and 32767.

When a breakpoint is encountered, BASIC-PLUS prints the message "Break at line nnn" and returns to "Ready" as though a STOP statement had been executed. At this point you can examine or change the values of variables, execute the DUMP command (if enabled, see article Seq 4.1Ø.2 N), or execute any other legal command. Type "CONT" (continue) to resume execution.

If the BREAK command is issued without a line number argument, BASIC-PLUS will BREAK each time that a new line is encountered.

The UNBREAK command is used to disable breakpoints, and is of the form

UNBREAK [N1, N2, N3, ..., N1Ø]

If no line numbers are specified, all breakpoints are disabled.

UNDERSTANDING LINE NUMBERS IN THE DEBUG FACILITY

(This section discusses the actual implementation of the DEBUG facility in the BASIC-PLUS run-time system, and should help to explain certain anomalies that you may encounter.)

The DEBUG code is entered whenever an internal construct called a "statement header" is encountered. Statement headers are generated for the following BASIC-PLUS elements:

Line numbers	DIMENSION statements	DATA statements
FOR statements	NEXT statements	
DEF statements	FNEND statements	

When a statement header is encountered, BASIC-PLUS first checks to see if the BREAK or TRACE feature has been requested. If not, program execution continues.

If BREAK or TRACE has been requested, BASIC-PLUS now compares the current line number with the previously encountered line number. If they are the same, program execution continues.

If a different line number has been encountered, BASIC-PLUS then checks to see if the statement header represents a function definition ("DEF") statement. If so, program execution continues.

Because of the internal structure of BASIC-PLUS, it is not possible to BREAK at a function definition. As you can see from the algorithm used, any attempt to BREAK at a function definition is rejected while the program is being executed, rather than when the "BREAK" command is specified.

If the BREAK feature has been requested, BASIC-PLUS compares the current line number with the list of breakpoints that have been requested. If the current line number is included in the breakpoint list, BASIC-PLUS prints "Break at line nnn," and returns to keyboard monitor ("Ready") state.

If the TRACE feature has been requested, BASIC-PLUS prints "at line nnn" and proceeds with execution of the program.

SUPPORT POLICY FOR THE BASIC-PLUS DEBUG FEATURE

DIGITAL makes no commitment, expressed or implied, to support the BASIC-PLUS run-time system, or any BASIC-PLUS System programs (CUSPs) used with that run-time system, if the DEBUG feature is enabled in the BASIC-PLUS run-time system.

If you experience problems with the DEBUG feature, please submit an FYI-type (priority 5) Software Performance Report (SPR). While DIGITAL makes no commitment to fix problems reported with the DEBUG facility, we would like to know about any problems that you encounter.

ENABLING THE DEBUG FACILITY

The DEBUG facility requires approximately 160 (decimal) additional words in the BASIC-PLUS run-time system. In most cases, this means that one or more of the other optional features (String Arithmetic, Print Using, etc.) must be omitted to prevent the BASIC-PLUS run-time system from exceeding 16K words in size.

To include the DEBUG facility in your BASIC-PLUS run-time system, respond "Y/D" to SYSGEN's "Generate BASIC-PLUS?" query.

RSTS/E V8.Ø
BASIC-PLUS
Non-standard BASIC-PLUS Features

Seq 4.1Ø.2 N
1 of 2

THE BASIC-PLUS DUMP FACILITY

A feature of BASIC-PLUS, the DUMP facility, is available with RSTS/E as an unsupported feature, and may be changed or removed in future versions of BASIC-PLUS.

The keyword D?MP has been implemented to write a post-mortem dump to the specified file on a random-access device if the patch described in article Seq 4.1Ø.4 F is installed. To change the keyword to DUMP, also install the patch described in article Seq 4.1Ø.6 F. Note that, if this patch is installed, any program with a variable or function named DUMP, DUMP%, DUMP$, FNDUMP(), etc. will not compile until the name of the variable is changed.

For the purposes of this discussion, assume that the patch described above has been installed. If you enable the DUMP facility, but choose not to install this patch, replace all occurrences of "DUMP" with "D?MP" in the discussion below.

The DUMP command provides an extension to the present BASIC-PLUS immediate mode debugging commands by allowing you to take a "snap-shot" dump of your current job. After DUMPing your program, you can use the BPDA (BASIC-PLUS Dump Analyzer) program to display the contents of all variables used by the program. In addition, you can continue executing your program after issuing the DUMP command; this allows you to inspect the state of the program at several stages of execution.

The DUMP command is only available as an immediate-mode command (i.e., it cannot be used in a BASIC-PLUS program), and has the syntax

DUMP <file-specification>

If no device name is specified, the public disk structure ("SY:") is used. If no filename is specified, the current program name is used. If no file type is specified, ".PMD" is used.

THE BASIC-PLUS DUMP ANALYSIS PROGRAM

After the DUMP command has been issued, you can use the BPDA program to print the contents of each variable that is used in the program, as well as the contents of the buffer of any open files.

The BPDA program asks for an input file name. The default file type is ".PMD". There is no default for the file name. Wildcards are illegal.

When BPDA asks for the output file name, responding with <cr> will direct the output to your terminal. If no filename is specified, the input filename is used with the default file type ".PDA".

You may also respond to the "Input file?" query with a command of the form:

<outfile> = <infile>

The DUMP facility has not been implemented as a standard feature because it could be used to obtain confidential information, such as student grades or payroll information, in applications where a user could type CTRL/C and examine the contents of buffers and variables. If the feature is enabled, however, there are two mechanisms available to protect against this kind of situation.

1. Non-privileged users are normally prevented from using the DUMP command on programs that are running from compiled files. This restriction may be removed if desired (see article Seq 4.10.5 F).

2. Whether or not non-privileged users are allowed to use the DUMP command on programs that are executed from compiled files, they still may not use the DUMP command on a program that uses temporary privileges, since the BASIC-PLUS run-time system clears the program from memory before a non-privileged user returns to keyboard monitor state.

Some installations may find it desirable to generate two versions of the BASIC-PLUS run-time system, one for development and one for production. This would prevent the potential problems described above, while providing the DUMP feature for development work.

SUPPORT POLICY FOR THE BASIC-PLUS DUMP FACILITY

DIGITAL makes no commitment, expressed or implied, to support the BASIC-PLUS run-time system, or any BASIC-PLUS System programs (CUSPs) used with that run-time system, if the DUMP facility is enabled.

If you experience problems with the DUMP feature, please submit an FYI-type (priority 5) Software Performance Report (SPR). While DIGITAL makes no commitment to fix problems reported with the DUMP facility, we would like to know about any problems that you encounter.

RSTS/E V8.Ø Seq 4.1Ø.3 F
BASIC-PLUS
Non-standard BASIC-PLUS Features 1 of 3

CHANGING THE BASIC-PLUS DEBUG KEYWORDS - BASIC-PLUS FEATURE PATCH

PROBLEM:

If support for the DEBUG facility has been included in the BASIC-PLUS run-time system, the keywords BREAK, TRACE, UNBREAK, and UNTRACE are initially enabled with the second character of the keyword changed to a question mark ("?"), i.e., B?EAK, T?ACE, U?BREAK, and U?TRACE.

SOLUTION:

The patching procedure detailed below will replace the question marks with the correct characters, thus changing the keywords to BREAK, TRACE, UNBREAK, and UNTRACE.

NOTE

> If this patch is installed, any program with a variable or function name of one of these keywords, such as BREAK% or FNTRACE$, will fail to compile until the variable name has been changed.

PROCEDURE:

1. This is a feature patch to the BASIC-PLUS run-time system. It may be installed in any BASIC-PLUS run-time system.

2. The patch described in Step 4 below can be installed using the PATCH option of INIT.SYS:

   ```
   Option: PATCH
   File to patch? BASIC.RTS          (BASIC-PLUS run-time system name)
   ```

3. This patch can be installed manually using ONLPAT, the on-line patching program:

   ```
   RUN $ONLPAT
   Command File Name? <cr>           (RETURN for manual patch installation)
   File to patch? [Ø,1]BASIC.RTS     (BASIC-PLUS run-time system name)
   File found in account [Ø,1]
   ```

   This patch is contained in a patch file appearing in patch kit version "A" or later.

4. The patch is as follows:

```
Base address? ..BEA.
Offset address? 0
 Base   Offset  Old     New?
??????  000000     077  ? 'R
??????  000001     ???  ? ^Z        (CTRL/Z for new offset)
Offset address? ^Z                  (CTRL/Z for new base)
Base address? ..TAC.
Offset address? 0
 Base   Offset  Old     New?
??????  000000     077  ? 'R
??????  000001     ???  ? ^Z        (CTRL/Z for new offset)
Offset address? ^Z                  (CTRL/Z for new base)
Base address? ..UBR.
Offset address? 0
 Base   Offset  Old     New?
??????  000000     077  ? 'N
??????  000001     ???  ? ^Z        (CTRL/Z for new offset)
Offset address? ^Z                  (CTRL/Z for new base)
Base address? ..UTR.
Offset address? 0
 Base   Offset  Old     New?
??????  000000     077  ? 'N
??????  000001     ???  ? ^C        (up-arrow/C to exit;CTRL/C for INIT)
```

5. If the above patch was installed using ONLPAT, it will take effect the next time the run-time system is reloaded. If the run-time system has been ADDed, or if it is your system default run-time system, execute the following commands:

```
RUN $UTILTY<cr>
<UTILTY's header line>
#UNLOAD BASIC<cr>                   (BASIC-PLUS run-time system name)
#EXIT<cr>

Ready
```

NOTE: The UNLOAD command will not remove the run-time system, but simply instructs the monitor to reload it the next time a job requests it.

If, in addition to being previously ADDed, the run-time system had been ADDed with the /STAY switch, also reload it as follows:

```
RUN $UTILTY<cr>
<UTILTY's header line>
#LOAD BASIC/STAY/ADDR:nnn<cr>        (BASIC-PLUS run-time system name)
#EXIT<cr>

Ready
```

RSTS/E V8.Ø
BASIC-PLUS
Non-standard BASIC-PLUS Features

Seq 4.1Ø.4 F
1 of 2

ENABLING THE BASIC-PLUS DUMP FEATURE - BASIC-PLUS FEATURE PATCH

PROBLEM:

The (unsupported) BASIC-PLUS "DUMP" feature is initially disabled. Some installations may choose to enable this feature, even though it is unsupported. (See article Seq 4.1Ø.2 N for a complete description of the DUMP feature. See article Seq 4.1Ø.6 N to change the keyword from "D?MP" to "DUMP".)

SOLUTION:

The patching procedure detailed below will enable the DUMP feature.

PROCEDURE:

1. This is a feature patch to the BASIC-PLUS run-time system. It may be installed in any BASIC-PLUS run-time system.

2. The patch described in Step 4 below can be installed using the PATCH option of INIT.SYS:

```
Option: PATCH
File to patch? BASIC.RTS          (BASIC-PLUS run-time system name)
```

3. This patch can be installed manually using ONLPAT, the on-line patching program:

```
RUN $ONLPAT
Command File Name? <cr>           (RETURN for manual patch installation)
File to patch? [Ø,1]BASIC.RTS     (BASIC-PLUS run-time system name)
File found in account [Ø,1]
```

   This patch is contained in a patch file appearing in patch kit version "A" or later.

4. The patch is as follows:

```
Base address? ..PMD.
Offset address? Ø
 Base   Offset  Old     New?
??????  ØØØØØØ  1Ø4755  ? BNE+2
??????  ØØØØØ2  ??????  ? ^C        (up-arrow/C to exit;CTRL/C for INIT)
```

5. If the above patch was installed using ONLPAT, it will take effect the next time the run-time system is reloaded. If the run-time system has been ADDed, or if it is your system default run-time system, execute the following commands:

```
RUN $UTILTY<cr>
<UTILTY's header line>
#UNLOAD BASIC<cr>                    (BASIC-PLUS run-time system name)
#EXIT<cr>

Ready
```

NOTE: The UNLOAD command will not remove the run-time system, but simply instructs the monitor to reload it the next time a job requests it.

If, in addition to being previously ADDed, the run-time system had been ADDed with the /STAY switch, also reload it as follows:

```
RUN $UTILTY<cr>
<UTILTY's header line>
#LOAD BASIC/STAY/ADDR:nnn<cr>        (BASIC-PLUS run-time system name)
#EXIT<cr>

Ready
```

RSTS/E V8.Ø Seq 4.1Ø.5 F
BASIC-PLUS
Non-standard BASIC-PLUS Features 1 of 2

ENABLING DUMP FROM COMPILED FILES FOR NON-PRIVILEGED USERS - BASIC-PLUS FEATURE PATCH

PROBLEM:

Normally, if the DUMP feature is enabled (see article Seq 4.1Ø.2 N), BASIC-PLUS will not allow non-privileged users to DUMP programs that are executing from compiled files, even though they may DUMP programs that are executing from source files. This protection prevents users from DUMPing programs which may contain confidential information in their variable strings or file buffers.

Some installations, however, may want to allow all users to DUMP all BASIC-PLUS programs to which they have RUN access, regardless of whether the program is compiled.

SOLUTION:

The patching procedure detailed below will cause BASIC-PLUS to allow all users to DUMP programs that they are executing. (Note that a program whose protection code includes the 128. bit for temporary privileges is always cleared from a non-privileged user's job space before returning the keyboard monitor ("Ready") state. Hence, a non-privileged user can never DUMP such a program.)

PROCEDURE:

1. This is a feature patch to the BASIC-PLUS run-time system. It may be installed in any BASIC-PLUS run-time system.

2. The patch described in Step 4 below can be installed using the PATCH option of INIT.SYS:

```
Option: PATCH
File to patch? BASIC.RTS          (BASIC-PLUS run-time system name)
```

3. This patch can be installed manually using ONLPAT, the on-line patching program:

```
RUN $ONLPAT
Command File Name? <cr>           (RETURN for manual patch installation)
File to patch? [Ø,1]BASIC.RTS     (BASIC-PLUS run-time system name)
File found in account [Ø,1]
```

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BASIC-PLUS
Non-standard BASIC-PLUS Features 2 of 2

This patch is contained in a patch file appearing in patch kit version "A" or later.

4. The patch is as follows:

```
Base address? ..NPD.
Offset address? Ø
 Base   Offset  Old     New?
??????  ØØØØØØ  ØØ4767  ? NOP
??????  ØØØØØ2  ??????  ? NOP
??????  ØØØØØ4  ØØ5Ø46  ? ^C        (up-arrow/C to exit;CTRL/C for INIT)
```

5. If the above patch was installed using ONLPAT, it will take effect the next time the run-time system is reloaded. If the run-time system has been ADDed, or if it is your system default run-time system, execute the following commands:

```
RUN $UTILTY<cr>
<UTILTY's header line>
#UNLOAD BASIC<cr>                  (BASIC-PLUS run-time system name)
#EXIT<cr>

Ready
```

NOTE: The UNLOAD command will not remove the run-time system, but simply instructs the monitor to reload it the next time a job requests it.

If, in addition to being previously ADDed, the run-time system had been ADDed with the /STAY switch, also reload it as follows:

```
RUN $UTILTY<cr>
<UTILTY's header line>
#LOAD BASIC/STAY/ADDR:nnn<cr>      (BASIC-PLUS run-time system name)
#EXIT<cr>

Ready
```

RSTS/E V8.Ø
BASIC-PLUS
Non-standard BASIC-PLUS Features

Seq 4.1Ø.6 F

1 of 2

CHANGING THE BASIC-PLUS D?MP KEYWORD - BASIC-PLUS FEATURE PATCH

PROBLEM:

The DUMP command, which is disabled unless the patch described in article Seq 4.1Ø.4 F is installed, has been implemented with the keyword "D?MP." Some installations may desire to change this keyword to "DUMP."

SOLUTION:

The patching procedure detailed below will change the keyword "D?MP" to "DUMP." If this patch is installed, please note that any program which uses a variable or function name such as DUMP% or FNDUMP$, will not compile until the variable name is changed.

PROCEDURE:

1. This is a feature patch to the BASIC-PLUS run-time system. It may be installed in any BASIC-PLUS run-time system.

2. The patche described in Step 4 below can be installed using the PATCH option of INIT.SYS:

```
Option: PATCH
File to patch? BASIC.RTS          (BASIC-PLUS run-time system name)
```

3. This patch can be installed manually using ONLPAT, the on-line patching program:

```
RUN $ONLPAT
Command File Name? <cr>           (RETURN for manual patch installation)
File to patch? [Ø,1]BASIC.RTS     (BASIC-PLUS run-time system name)
File found in account [Ø,1]
```

   This patch is contained in a patch file appearing in patch kit version "A" or later.

4. The patch is as follows:

```
Base address? ..DMP.
Offset address? 0
 Base   Offset  Old     New?
??????  000000    077  ? 'U
??????  000001    ???  ? ^C        (up-arrow/C to exit;CTRL/C for INIT)
```

5. If the above patch was installed using ONLPAT, it will take effect the next time the run-time system is reloaded. If the run-time system has been ADDed, or if it is your system default run-time system, execute the following commands:

```
RUN $UTILTY<cr>
<UTILTY's header line>
#UNLOAD BASIC<cr>                (BASIC-PLUS run-time system name)
#EXIT<cr>

Ready
```

NOTE: The UNLOAD command will not remove the run-time system, but simply instructs the monitor to reload it the next time a job requests it.

If, in addition to being previously ADDed, the run-time system had been ADDed with the /STAY switch, also reload it as follows:

```
RUN $UTILTY<cr>
<UTILTY's header line>
#LOAD BASIC/STAY/ADDR:nnn<cr>    (BASIC-PLUS run-time system name)
#EXIT<cr>

Ready
```

RSTS/E 2780 Device Driver
for RSTS/E V8.0
2780 Device Driver Patches

Seq 5.1.1 M

BUFFER LIMIT CHECKING - MANDATORY 2780 DEVICE DRIVER PATCH

PROBLEM:

The RSTS/E extended buffering scheme in effect since V06B obsoletes the buffer limit checking code in the 2780 device driver. This buffer limit checking code was removed from the DU11/DUP11 version of the driver, but was left in the DP11 version. Certain valid buffer addresses will cause the DP11 version to fail.

SOLUTION:

This patch eliminates the buffer checking code from the DP11 version of the 2780 device driver. It should only be installed if you are using the DP11 version of the driver.

PROCEDURE:

1. This is a required patch to the RSTS/E 2780 Device Driver. It must be installed in all target monitor SILs configured with the DP11 version of 2780 Device Driver.

2. The patch described in Step 4 below can be installed using the PATCH option of INIT.SYS:

```
Option: PATCH
File to patch? <lf>                (LINE FEED for installed monitor SIL)
```

3. This patch can be installed manually using ONLPAT, the on-line patching program:

```
RUN $ONLPAT
Command File Name? <cr>            (RETURN for manual patch installation)
File to patch? <lf>                (LINE FEED for installed monitor SIL)
File found in account [0,1]
```

For automated patching, the patch is contained in a command file (RJ2780.CMD) appearing in patch kit version "A" or later.

4. The patch is as follows:

```
Module name? RJ2780
Base address? RJDV3
Offset address? 576
 Base    Offset  Old        New?
135636  000576  020467   ? 240
135636  000600  ??????   ? 240
135636  000602  101033   ? 240
135636  000604  010163   ? ^Z        (CTRL/Z for new offset)
Offset address? 622
 Base    Offset  Old        New?
135636  000622  020467   ? 240
135636  000624  ??????   ? 240
135636  000626  101021   ? 240
135636  000630  000767   ? ^C        (up-arrow/C to exit;CTRL/C for INIT)
```

DISCONNECT COMMAND HANDLING - MANDATORY 2780 DEVICE DRIVER PATCH

PROBLEM:

If the 2780 device driver receives a disconnect command (DLE EOT), it mistakenly releases its buffers and line table. A subsequent close will cause modification of critical monitor memory. A system crash may occur thereafter.

SOLUTION:

This patch eliminates the problem.

PROCEDURE:

1. This is a required patch to the RSTS/E 2780 Device Driver. It must be installed in all target monitor SILs configured with the 2780 Device Driver.

2. The patch described in Step 4 below can be installed using the PATCH option of INIT.SYS:

```
Option: PATCH
File to patch? <lf>                (LINE FEED for installed monitor SIL)
```

3. This patch can be installed manually using ONLPAT, the on-line patching program:

```
RUN $ONLPAT
Command File Name? <cr>            (RETURN for manual patch installation)
File to patch? <lf>                (LINE FEED for installed monitor SIL)
File found in account [0,1]
```

   For automated patching, the patch is contained in a command file (RJ2780.CMD) appearing in patch kit version "A" or later.

4. The patch is as follows:

```
Module name? RJ2780
Base address? RJDV0
Offset address? 4266
 Base    Offset  Old        New?
120000  004266  004767  ? 240
120000  004270  174210  ? 240
120000  004272  112777  ? ^C        (up-arrow/C to exit;CTRL/C for INIT)
```

RSTS/E 278Ø Device Driver
for RSTS/E V8.Ø
278Ø Device Driver Patches

DP11 TRANSMIT HANG CONDITION - MANDATORY 278Ø DEVICE DRIVER PATCH

PROBLEM:

Under certain load conditions, when the 278Ø package issues the error 'Send Error - Transmit Hang - Redial Required', critical locations in the monitor can be modified. This will cause a subsequent system crash.

SOLUTION:

This patch fixes the problem for the DP11 version of the 278Ø Device Driver. It should only be installed if you are using the DP11 version of the driver. Article Seq 5.1.4 M, published in this notebook, describes the procedure for correcting this problem on a system configured with the DU11/DUP11 version of the 278Ø Device Driver.

PROCEDURE:

1. This is a required patch to the RSTS/E 278Ø Device Driver. It must be installed in all target monitor SILs configured with the DP11 version of the 278Ø Device Driver.

2. The patch described in Step 4 below can be installed using the PATCH option of INIT.SYS:

```
Option: PATCH
File to patch? <lf>                (LINE FEED for installed monitor SIL)
File found in account [Ø,1]
```

3. This patch can be installed manually using ONLPAT, the on-line patching program:

```
RUN $ONLPAT
Command File Name? <cr>            (RETURN for manual patch installation)
File to patch? <lf>                (LINE FEED for installed monitor SIL)
```

   For automated patching, the patch is contained in a command file (RJ278Ø.CMD) appearing in patch kit version "A" or later.

4. The patch is as follows:

```
Module name? RJ2780
Base address? RJDV3
Offset address? 764
 Base    Offset  Old        New?
135636  000764  042715  ? 5015
135636  000766  000001  ? 5065
135636  000770  042765  ? 177774
135636  000772  004100  ? 240
135636  000774  177774  ? 240
135636  000776  000763  ? ^C        (up-arrow/C to exit;CTRL/C for INIT)
```

RSTS/E 2780 Device Driver
for RSTS/E V8.0
2780 Device Driver Patches

Seq 5.1.4 M

DU11/DUP11 TRANSMIT HANG CONDITION - MANDATORY 2780 DEVICE DRIVER PATCH

PROBLEM:

Under certain load conditions, when the 2780 package issues the error 'Send Error - Transmit Hang - Redial Required', critical locations in the monitor can be modified. This will cause a subsequent system crash.

SOLUTION:

This patch fixes the problem for the DU11/DUP11 version of the 2780 Device Driver. It should only be installed if you are using the DU11/DUP11 version of the driver. Article Seq 5.1.3 M, published in this notebook, describes the procedure for correcting this problem on a system configured with the DP11 version of the 2780 Device Driver.

PROCEDURE:

1. This is a required patch to the RSTS/E 2780 Device Driver. It must be installed in all target monitor SILs configured with the DU11/DUP11 version of the 2780 Device Driver.

2. The patch described in Step 4 below can be installed using the PATCH option of INIT.SYS:

```
Option: PATCH
File to patch? <lf>                (LINE FEED for installed monitor SIL)
File found in account [0,1]
```

3. This patch can be installed manually using ONLPAT, the on-line patching program:

```
RUN $ONLPAT
Command File Name? <cr>            (RETURN for manual patch installation)
File to patch? <lf>                (LINE FEED for installed monitor SIL)
```

   For automated patching, the patch is contained in a command file (RJ2780.CMD) appearing in patch kit version "A" or later.

4. The patch is as follows:

```
Module name? RJ2780
Base address? RJDV3
Offset address? 1070
 Base   Offset  Old        New?
135636  001070  042713  ? 4737
135636  001072  000002  ? RJEPAT
135636  001074  000753  ? ^Z        (CTRL/Z for new offset)
Offset address? ^Z                  (CTRL/Z for new base)
Base address? RJEPAT
Offset address? 0
 Base   Offset  Old        New?
137340  000000  000000  ? 42713
137340  000002  000000  ? 2
137340  000004  000000  ? 52763
137340  000006  000000  ? 400
137340  000010  000000  ? 4
137340  000012  000000  ? 207
137340  000014  ??????  ? ^C        (up-arrow/C to exit;CTRL/C for INIT)
```

RSTS/E 278Ø Device Driver for RSTS/E V8.Ø
278Ø Device Driver Patches

Seq 5.1.5 M

LOSS OR DUPLICATION OF DATA - MANDATORY 278Ø DEVICE DRIVER PATCH

PROBLEM:

Occasionally the loss or duplication of data occurs. There is no indication from the 278Ø package that any trouble had occurred.

SOLUTION:

This patch fixes the 278Ø Device Driver's handling of buffer contents.

PROCEDURE:

1. This is a required patch to the RSTS/E 278Ø Device Driver. It must be installed in all target monitor SILs configured with the 278Ø Device Driver.

2. The patch described in Step 4 below can be installed using the PATCH option of INIT.SYS:

```
Option: PATCH
File to patch? <lf>                (LINE FEED for installed monitor SIL)
```

3. This patch can be installed manually using ONLPAT, the on-line patching program:

```
RUN $ONLPAT
Command File Name? <cr>            (RETURN for manual patch installation)
File to patch? <lf>                (LINE FEED for installed monitor SIL)
File found in account [Ø,1]
```

   For automated patching, the patch is contained in a command file (RJ278Ø.CMD) appearing in patch kit version "A" or later.

4. The patch is as follows:

```
Module name? RJ278Ø
Base address? RJDV2
Offset address? 1522
 Base   Offset  Old       New?
126510  ØØ1522  ØØ5ØØØ  ? 4737
126510  ØØ1524  152500  ? RJEPAT+14
126510  ØØ1526  ØØ4771  ? ^Z          (CTRL/Z for new offset)
Offset address? 4776
```

RSTS/E 2780 Device Driver for RSTS/E V8.0 — Seq 5.1.5 M

2780 Device Driver Patches — 2 of 2

```
 Base    Offset  Old       New?
126510  004776  016767  ? 4537
126510  005000  ??????  ? RJEPAT+40
126510  005002  ??????  ? 172354
126510  005004  110477  ? 172354
126510  005006  ??????  ? 172354
126510  005010  005267  ? ^Z          (CTRL/Z for new offset)
Offset address? 7072
 Base    Offset  Old       New?
126510  007072  010446  ? 4437
126510  007074  010346  ? RJEPAT+56
126510  007076  010504  ? ^Z          (CTRL/Z for new offset)
Offset address? 7122
 Base    Offset  Old       New?
126510  007122  012604  ? 137
126510  007124  000207  ? RJEPAT+66
126510  007126  ??????  ? ^Z          (CTRL/Z for new offset)
Offset address? ^Z                   (CTRL/Z for new base)
Base address? RJEPAT
Offset address? 14
 Base    Offset  Old       New?
??????  000014  000000  ? 13746
??????  000016  000000  ? 172354
??????  000020  000000  ? 13737
??????  000022  000000  ? SAVR6
??????  000024  000000  ? 172354
??????  000026  000000  ? 5000
??????  000030  000000  ? 152500
??????  000032  000000  ? 12637
??????  000034  000000  ? 172354
??????  000036  000000  ? 207
??????  000040  000000  ? 13546
??????  000042  000000  ? 13735
??????  000044  000000  ? SAVR6
??????  000046  000000  ? 110477
??????  000050  000000  ? SAVADD-.-2
??????  000052  000000  ? 12635
??????  000054  000000  ? 205
??????  000056  000000  ? 13746
??????  000060  000000  ? 172354
??????  000062  000000  ? 10346
??????  000064  000000  ? 114
??????  000066  000000  ? 12637
??????  000070  000000  ? 172354
??????  000072  000000  ? 12604
??????  000074  000000  ? 207
??????  000076  ??????  ? ^C          (up-arrow/C to exit;CTRL/C for INIT)
```

DOUBLE CLOSE ALTERS MONITOR - MANDATORY 278Ø DEVICE DRIVER PATCH

PROBLEM:

The 278Ø Device Driver does not protect itself against closing the RJ: device twice in all cases. A double close can alter monitor memory and cause a system crash.

SOLUTION:

This patch adds the necessary protection against a double close.

PROCEDURE:

1. This is a required patch to the RSTS/E 278Ø Device Driver. It must be installed in all target monitor SILs configured with the 278Ø Device Driver.

2. The patch described in Step 4 below can be installed using the PATCH option of INIT.SYS:

```
Option: PATCH
File to patch? <lf>                (LINE FEED for installed monitor SIL)
```

3. This patch can be installed manually using ONLPAT, the on-line patching program:

```
RUN $ONLPAT
Command File Name? <cr>            (RETURN for manual patch installation)
File to patch? <lf>                (LINE FEED for installed monitor SIL)
File found in account [Ø,1]
```

   For automated patching, the patch is contained in a command file (RJ278Ø.CMD) appearing in patch kit version "A" or later.

4. The patch is as follows:

```
Module name? RJ2780
Base address? RJDV0
Offset address? 352
 Base   Offset  Old       New?
120000  000352  004767  ? 4737
120000  000354  000124  ? RJEPAT+76
120000  000356  004567  ? ^Z        (CTRL/Z for new offset)
Offset address? 370
 Base   Offset  Old       New?
120000  000370  004767  ? 4737
120000  000372  000106  ? RJEPAT+76
120000  000374  004567  ? ^Z        (CTRL/Z for new offset)
Offset address? 506
 Base   Offset  Old       New?
120000  000506  112767  ? 4737
120000  000510  000377  ? RJEPAT+116
120000  000512  ??????  ? 103447
120000  000514  112767  ? ^Z        (CTRL/Z for new offset)
Offset address? ^Z                  (CTRL/Z for new base)
Base address? RJEPAT
Offset address? 76
 Base   Offset  Old       New?
??????  000076  000000  ? 5737
??????  000100  000000  ? C.STAX
??????  000102  000000  ? 1404
??????  000104  000000  ? 10137
??????  000106  000000  ? CLOSD
??????  000110  000000  ? 4737
??????  000112  000000  ? CLS$RJ
??????  000114  000000  ? 207
??????  000116  000000  ? 5737
??????  000120  000000  ? CLOSD
??????  000122  000000  ? 1002
??????  000124  000000  ? 261
??????  000126  000000  ? 207
??????  000130  000000  ? 112737
??????  000132  000000  ? 377
??????  000134  000000  ? GTSEN
??????  000136  000000  ? 241
??????  000140  000000  ? 207
??????  000142  ??????  ? ^C        (up-arrow/C to exit;CTRL/C for INIT)
```

RSTS/E 278Ø Device Driver
for RSTS/E V8.Ø
278Ø Device Driver Patches

Seq 5.1.7 M

GET/PUT INTERLOCK PROBLEM - MANDATORY 278Ø DEVICE DRIVER PATCH

PROBLEM:

Due to timing considerations on systems with zero turn-around delay, it is possible for a bid from a remote unit to be processed before the completion of the routine for End Of Transmission. This causes the driver to receive the bid when it "thinks" it is in transmit mode and the GET/PUT INTERLOCK error is triggered.

SOLUTION:

The patching procedure detailed below corrects the above problem by allowing a bid to be processed, even if the End Of Transmission routine is not yet done.

PROCEDURE:

1. This is a required patch to the RSTS/E 278Ø Device Driver. It must be installed in all target monitor SILs configured with the 278Ø Device Driver.

2. The patch described in Step 4 below can be installed using the PATCH option after bootstrapping your system disk:

```
Option: PATCH
File to patch? <lf>                (LINE FEED for installed monitor SIL)
```

3. This patch can be installed manually using ONLPAT, the on-line patching program:

```
RUN $ONLPAT
Command file name? <cr>            (RETURN for manual patch installation)
File to patch? <lf>                (LINE FEED for installed monitor SIL)
File found in account [Ø,1]
```

For automated patching, the patch is contained in a command file (rj278Ø.cmd) appearing in patch kit version "A" or later.

4. The patch is as follows:

```
Module name? RJ2780
Base address? RJDV0
Offset address? 2714
 Base   Offset  Old     New?
120000  002714  105767  ? 137
120000  002716  ??????  ? RJEPAT+142
120000  002720  001733  ? 240
120000  002722  105767  ? ^Z        (CTRL/Z for new offset)
Offset address? ^Z                  (CTRL/Z for new base)
Base address? RJEPAT
Offset address? 142
 Base   Offset  Old     New?
??????  000142  000000  ? 105737
??????  000144  000000  ? RDWRT
??????  000146  000000  ? 1401
??????  000150  000000  ? 406
??????  000152  000000  ? 22737
??????  000154  000000  ? EOTMSG
??????  000156  000000  ? PTDBF+2
??????  000160  000000  ? 1402
??????  000162  000000  ? 137
??????  000164  000000  ? RJDV0+2610
??????  000166  000000  ? 137
??????  000170  000000  ? RJDV0+2722
??????  000172  ??????  ? ^C        (up-arrow/C to exit; CTRL/C for INIT)
```

2780 HANDLER FAILURE PROBLEM - MANDATORY 2780 DEVICE DRIVER PATCH

PROBLEM:

When the RSTS/E system is under heavy load, it is possible for the notification of the receipt of a bid to be passed back with a receive buffer address of zero. When the driver attempts to requeue the buffer, it is considered a fatal error.

SOLUTION:

The patching procedure detailed below corrects the above problem by making the driver wait for another bid when this condition occurs.

PROCEDURE:

1. This is a required patch to the RSTS/E 2780 Device Driver. It must be installed in all target monitor SILs configured with the 2780 Device Driver.

2. The patch described in Step 4 below can be installed using the PATCH option after bootstrapping your system disk:

```
Option: PATCH
File to patch? <lf>                (LINE FEED for installed monitor SIL)
```

3. This patch can be installed manually using ONLPAT, the on-line patching program:

```
RUN $ONLPAT
Command file name? <cr>            (RETURN for manual patch installation)
File to patch? <lf>                (LINE FEED for installed monitor SIL)
File found in account [0,1]
```

For automated patching, the patch is contained in a command file (rj2780.cmd) appearing in patch kit version "A" or later.

4. The patch is as follows:

```
Module name? RJ278Ø
Base address? RJDVØ
Offset address? 31Ø2
 Base   Offset  Old     New?
12ØØØØ  ØØ31Ø2  Ø16Ø67  ? 137
12ØØØØ  ØØ31Ø4  ØØØØØ2  ? RJEPAT+172
12ØØØØ  ØØ31Ø6  ??????  ? 24Ø
12ØØØØ  ØØ311Ø  112767  ? ^Z        (CTRL/Z for new offset)
Offset address? ^Z                  (CTRL/Z for new base)
Base address? RJEPAT
Offset address? 172
 Base   Offset  Old     New?
??????  ØØØ172  ØØØØØØ  ? 16Ø37
??????  ØØØ174  ØØØØØØ  ? 2
??????  ØØØ176  ØØØØØØ  ? ASNBF+2
??????  ØØØ2ØØ  ØØØØØØ  ? 14Ø2
??????  ØØØ2Ø2  ØØØØØØ  ? 137
??????  ØØØ2Ø4  ØØØØØØ  ? RJDVØ+311Ø
??????  ØØØ2Ø6  ØØØØØØ  ? 137
??????  ØØØ21Ø  ØØØØØØ  ? RJDVØ+3Ø12
??????  ØØØ212  ??????  ? ^C        (up-arrow/C to exit; CTRL/C for INIT)
```

RSTS/E 278Ø Device Driver for RSTS/E V8.Ø
278Ø Device Driver Patches

LOCAL BINARY TRANSMIT PROBLEM - MANDATORY 278Ø DEVICE DRIVER PATCH

PROBLEM:

If the default transmit command is 278Ø or GEN, it should be possible to send, as part of a multiple file transfer, a file or files in binary mode. This is done by using the "/B" switch to override the transmit command for those files which should be sent untranslated. Currently, the mode of the first file controls the mode for the complete transfer.

SOLUTION:

The patching procedure detailed below corrects the above problem with the processing of the "/B" switch.

NOTE

> The mandatory RJ278Ø.BAS program patch described in article Seq 25.2.2 M, published in this document, must be installed along with this patch.

PROCEDURE:

1. This is a required patch to the RSTS/E 278Ø Device Driver. It must be installed in all target monitor SILs configured with tne 278Ø Device Driver.

2. The patch described in Step 4 below can be installed using the PATCH option after bootstrapping your system disk:

```
Option: PATCH
File to patch? <lf>                (LINE FEED for installed monitor SIL)
```

3. This patch can be installed manually using ONLPAT, the on-line patching program:

```
RUN $ONLPAT
Command file name? <cr>            (RETURN for manual patch installation)
File to patch? <lf>                (LINE FEED for installed monitor SIL)
File found in account [Ø,1]
```

   For automated patching, the patch is contained in a command file (rj278Ø.cmd) appearing in patch kit version "A" or later.

4. The patch is as follows:

```
Module name? RJ2780
Base address? RJDV0
Offset address? 1654
 Base   Offset  Old     New?
120000  001654  004767  ? 137
120000  001656  000622  ? RJEPAT+212
120000  001660  100413  ? ^Z          (CTRL/Z for new offset)
Offset address? ^Z                    (CTRL/Z for new base)
Base address? RJEPAT
Offset address? 212
 Base   Offset  Old     New?
??????  000212  000000  ? 16300
??????  000214  000000  ? 10
??????  000216  000000  ? 105037
??????  000220  000000  ? NATIV
??????  000222  000000  ? 42737
??????  000224  000000  ? 10
??????  000226  000000  ? PTCPAR+2
??????  000230  000000  ? 105237
??????  000232  000000  ? NATIV
??????  000234  000000  ? 6000
??????  000236  000000  ? 103005
??????  000240  000000  ? 105037
??????  000242  000000  ? NATIV
??????  000244  000000  ? 52737
??????  000246  000000  ? 10
??????  000250  000000  ? PTCPAR+2
??????  000252  000000  ? 12701
??????  000254  000000  ? PTCPAR
??????  000256  000000  ? 4737
??????  000260  000000  ? RJDV0+420
??????  000262  000000  ? 100404
??????  000264  000000  ? 4737
??????  000266  000000  ? RJDV0+2502
??????  000270  000000  ? 137
??????  000272  000000  ? RJDV0+1660
??????  000274  000000  ? 137
??????  000276  000000  ? RJDV0+2634
??????  000300  ??????  ? ^C          (up-arrow/C to exit; CTRL/C for INIT)
```

INSTALLING AND TROUBLESHOOTING 278Ø'S

Installing a communication package involves a minimum of two vendors and more likely three or four. The most time-consuming aspect of installation can be pinpointing a problem. When installing A to communicate with B, the problem may be in one of seven areas.

A's software (either code or SYSGEN parameters)
A's hardware
A's modem
phone line
B's modem
B's hardware
B's software

Sometimes a given symptom can have several possible causes. Then it is necessary to go through a step by step elimination procedure.

Here are some ideas and suggestions which may be helpful when difficulties arise in installation of 278Ø packages.

1. What is a 278Ø and what is its protocol?

For those who are unfamiliar with what a 278Ø emulator is emulating, here is a short description of what it is and what its protocol is like.

The 278Ø is an unintelligent, hard-wired terminal which can communicate to an IBM host or to another 278Ø. It reads cards and transmits them over a synchronous link to another computer. It receives data back and prints it. The model 2 278Ø can also receive back data for a card punch.

The 278Ø sends 8Ø character card image records, blocked into a maximum of a 4ØØ character block. For reception, it prints or punchs a file according to a peripheral selection code (basically, an Escape 4 sends a file to the punch). It is able to accept horizontal tabs and handles them according to the spacing of a special HT record which is sent at the beginning of the file. The block size is again a maximum of 4ØØ characters.

A synchronous protocol is used to enable the data to be sent back and forth. The protocol determines who speaks, when, and whether or not the other end heard them correctly. When there is synchronous communication, the two modems sample the line at a preset speed (2ØØØ times a second or 48ØØ, etc.), and the data is sent in blocks with one character directly following another. Every message, therefore, whether a single control character or a 4ØØ character block is preceded by four SYNC characters and followed by a PAD. The SYNC characters are used to allow the hardware to tell when valid data is coming (as opposed to noise on the line), and the PAD is used to make sure that the final significant character is fully received. Every data record sent has a CRC (cyclic redundancy check) computed on its characters, and following each record and block (IUS, ETB, and ETX) is a two-character checksum which is used to make sure the data was received correctly.

The major control characters used in the 278Ø protocol are:

ENQ (enquiry):	(1) Used to request permission to send data (bid); (2) Used to request resending of a missed response.
ACKØ (acknowledge):	(1) Used to give permission to send data; (2) Used to accept every other data block.
ACK1 (acknowledge):	Used to accept every other data block.
NAK (negative acknowledge):	Used to reject a data block.
STX (start of text):	Used to indicate the beginning of a data block.
ETB (end of block):	Used to indicate the end of a data block.
ETX (end of text):	Normally used to indicate the end of the final block of the job.
IUS (intermediate record end):	Used to indicate the end of a record.
EOT (end of transmission):	Used to indicate completed transmission and give up control of line.

A sample job might be sent as follows:

```
A                   B
-                   -

ENQ -->                         ;request permission to send

                    <-- ACKØ        ;permission given

STX DATA1 ETB -->               ;block of data

                    <-- ACK1        ;acknowledge correct reception

STX DATA2 ETB -->               ;another block

                    <-- ACKØ

STX DATA3 ETB -->

                    <-- NAK         ;rejection of data

STX DATA3 ETB -->               ;resending of data block

                    <-- ACK1

STX DATA4 ETX -->

ENQ -->                         ;.3 second silence request for response

                    <-- ACK1        ;response shows did not see block,
                                     since an ACKØ is the expected
                                     response for DATA4

STX DATA4 ETX -->               ;block re-sent

                    <-- ACKØ

EOT -->                         ;transmission complete

                    <-- ENQ         ;other side requests permission to
                                     send data
```

2. What to check before installation of the software.

There are some questions to be asked before 2780 installation.

What operating system will you be communicating with? If it is not another PDP-11, is it one of the usual IBM systems? If it is a different system (e.g., a Univac 1108 with a Comterm front end, an RPG program running on a System 3, etc.) has a demo test been done with the system, and what problems, if any, were encountered?

What kind of modems are being used? If they are not identical, are they compatible. If they are the same type, are the options the same on both? If it is a local connection are modem eliminators being used, or are null modems being used? Null modems require a clocking option on the computer hardware to provide transmit clocking. Are the modems for a speed higher than is warranted by the software? RSX11M, RSX11D, and RSTS/E are not warranted to work over 4800 baud.

Make sure that the modem has been grounded on the same ground as the hardware. The communications interface and many modems can be affected by being plugged into a device which is grounded differently.

Is the DP11, DU11, or DUP11 the furthest forward device on the bus (except the system disk) which operates at hardware level 5? If there is a DH11 or DZ11 on the system, it will probably be necessary to raise the hardware level of the communications interface to 6. This is because the DH11 often is programmed to remain at interrupt level until the silo is emptied (the DZ11 has no silo and must interrupt per character).

Have the diagnostics been run for the communications interface and the KG11? The DP, DU, or DUP should be checked out with the turn-around plug at the end of the modem cable or with the modem in maintenance mode.

Two manuals are shipped with the 2780 software. They are the 2780 RCS Users Guide* and the 2780 RCS Installation Notes (DEC-11-CCDNA-A-D). Relevant chapters should be read in advance of installation. There will be some overlap between this article and the manuals, but in many ways they should complement each other.

---

* DEC-11-ORJEA-B-D is for RSTS/E 2780 only.
DEC-11-CRCSA-A-D, DN1, DN2, DN3, and DN4 are for the other 2780s.

3. Initial attempt to run

One of the more frustrating circumstances is to bring up the package, issue a transmit command, and have it do absolutely nothing. Silence, however, can be just as informative as a message.

This section will itemize the things that can go wrong in the sequence in which they would be encountered. It is specified when systems react in different ways. The systems involved are RT11, RSX11M, RSX11D, and RSTS/E.

a. Run the program for the first time and
   (1) there is a trap to 4 in RT11 and RSTS/E
   (2) there is an odd address trap abort in RSX11M or D

Probably the device address of the DU11 or DUP11 is incorrect. They are floating device address devices. Check that the device was installed at the correct address (i.e., if the DU11 is the only floating device on the system it will be at 760040, if the DUP11 is the only floating device it will be at 760050) and also that the system was told the same address. RSTS/E calculates the address during boot, RT11, RSX11M and D have it specified during taskbuild. The KG11 may also be missing. This is the hardware CRC calculator. If it is missing the software cannot run.

b. Run the program and get ready to make the connect to the other system. Dial the phone, receive the beep from the other end, and push (or pull) the data button and
   (1) the data light does not come on or
   (2) the DSR (or MR) indicator does not light.

Usually a dial-out modem will not give DSR (data set ready) until DTR (data terminal ready) has been presented by the communications interface

   (1) check that the light is not just burned out
   (2) check that you have put the system on-line (all systems but RSTS/E)
   (3) check that the DTR bit is on in the status word
   (4) check that a valid but incorrect device address was not used (RT11, RSX11M and D)
   (5) check that the hardware diagnostics were run, including the one using the modem cable.
   (6) check that the cable is securely plugged into the modem

With a leased line, the modem often has DSR strapped on. In that case, this type of error may not be discovered until later in the procedure (see c. and d.). There are now some dial-out modems (e.g., some MILGO modems) which have DSR strapped on also. They will react the same as the leased line modems.

c. The program has been run and the connection established; a transmit transfer command is issued and a modem (or data set) not ready message is given.
(1) the data set is not ready (e.g., DSR is not up) or
(2) a valid, but incorrect, device address has been used.

d. This is at the same stage as c. The first transmit command has been issued, but nothing happens. There are several possible causes.

(1) Incorrect interrupt vector (RSX11M and D). Since in these systems interrupt vector is specified at build time, check that it corresponds to the actual hardware vector.

(2) No response to the bid (RT11, RSX11M and D). These systems do an infinite retry on the bid if they get no response. (RSTS/E does a timeout). Unfortunately, this cause is really a symptom with multiple causes of its own. Some possibilities are:

(a) the remote end software is not up (usually leased line) or the connection was not made (a dial-out modem with DSR strapped on).
(b) the modems have different speeds (e.g., 2ØØØ baud talking to 24ØØ)
(c) the modem is not sending out the signal (this can usually be checked by finding out whether the other side has seen the bid)
(d) the other end is responding, but the turn-around time is too fast (usually on a two-wire dial-out system where there are echo suppressers on the line)
(e) the other end is responding but the modem either does not see it (receive strength too low) or the modem does not pass it back (bad receive leads on the modem), or our hardware does not see it (bad receive chip or modem cable - this should be caught by diagnostics or actual zero turnaround delay (see f.)).

To determine whether or not the bid is actually being sent out, check the receive end to see if it has gone into receive mode. If it is in receive mode, but the transmitting side is still in control mode, the bid is being seen but the response is not (or the response is not considered valid).

e. A transmit command is given and the program aborts. In RT11 if the wrong interrupt vector has been specified, the program is aborted and the monitor reprompts. In RSX11M if the 278Ø is running in a partition that can be 'shuffled' the program may have been moved.

This will have completely unpredictable effects, since the interrupt will jump to where the correct code used to be.

f. When attempting to transmit there are frequent transmit abort errors. Each system has its own version of the error message, but they all indicate that either eight attempts to send a data block were NAKed, or eight attempts to get a valid response were ignored.

On RSTS/E VØ6B and later releases, a status request will show whether tne data is being NAKed or timed-out. In the other packages an error request will show the number of NAKs. If the transmit is aborting, but there are few or no NAKs the problem is timeouts.

If the first block is not being accepted, the KG11 may not be working correctly. If it is improperly seated the program may be sending out a CRC of zeros. This should be easily caught by diagnostics.

On a multi-user system the package should not be run at a higher speed than is warranted.

On a multi-user system with a DH11 or DZ11, the communications interface should be at hardware bus request level 6.

Other possibilities are: modems with different turn-around delays, bad modems, incompatible modems, and noisy phone lines.

If there is an actual zero turn around delay (not just a modem with no delay, but a system with a front-end which is capable of responding without any processing delays) it is possible to have the response return while our hardware is sending trailing pads. Either a minimum delay time should be installed or the number of trailing pads can be decreased.

g. Transmit works fine, but files cannot be received.

Most of the suggestions for f. should be checked. Two of the most likely ones are running at too high a speed for the system, or having the communication interface at level 5 on a system with high DH11 or DZ11 load.

If no data from the other side is accepted at all it is quite possible that the other system is SYSGEN'd to support either a 378Ø or a HASP Workstation instead of a 278Ø. Our data will be acceptable to their side, since the 278Ø is, in effect, a subset of the other two. In both cases, the data block can be too long (they will both send up to 512 characters and the 278Ø can only accept 4ØØ) and the CRC

calculations are done on the complete block instead of on each record. The usual indication is that we consistently NAK the very first block that they attempt to send to us.

If the other side is SYSGEN'd as a 278Ø, but is sending too long a record (over 132 data characters plus a two character escape sequence) most of our packages will now accept the record and truncate it (as long as there were no other problems with the data). The user will be informed as to the number of truncated records at tne end of the reception.

h. The package has been transmitting and receiving without difficulty. It is in the middle of transmitting and all activity stops. The package is in transmit mode, but nothing is going out.

This is usually caused by losing DSR on a modem which will not give CTS (clear to send) to a RTS (request to send) if DSR has been lost (e.g., BELL 2Ø8B modems). Check the modem, and if this is correct, try to push the talk button and then the data button to try to re-establish the connection. If that doesn't work you will have to redial. RSTS/E VØ6B (and later releases) will timeout in 3Ø seconds and terminate transmit. The other packages will not terminate until operator intervention has taken place.

Installation is complete when the program has been brought up, a connection made, and files transmitted and received.

NOTE ON THE HANDLING OF THE /B+ AND /B2 SWITCHES

When TECO reads a page of text into the editing buffer, it stops when it encounters a FORMFEED character, or when the buffer is full. In the latter case, the last line in the buffer will be complete (i.e., it includes the line delimiter), but no look-ahead is done to examine the next line in the file.

If TECO is used with the /B+ or /B2 switch to edit a very long BASIC-PLUS or BASIC-PLUS-2 source program that is not segmented with FORMFEED characters, chances are good that the last line in the buffer will not coincide with the last line of a (numbered) multiple-line combination.

When the buffer is written to the output file, TECO assumes that the last line in the buffer is the last line of a multiple-line combination, and terminates it with a CARRIAGE-RETURN character, rather than with a LINEFEED (or AMPERSAND) CARRIAGE-RETURN character combination. This can cause the remaining lines of that multiple-line combination to be lost when the program is subsequently OLDed.

To avoid this problem, lengthy BASIC-PLUS or BASIC-PLUS-2 programs should be segmented into smaller sections (approximately 15Ø to 2ØØ lines) with FORMFEED characters before editing them with TECO's /B+ or /B2 switches.

RSTS/E V8.Ø Seq 1Ø.3.1 F
System Utilities Package
DIRECT 1 of 2

ALLOW NON-PRIVILEGED ACCESS TO OTHER DIRECTORIES - DIRECT FEATURE PATCH

PROBLEM:

Non-privileged users are only allowed to list the directory information of files on the system to which they have read or run access. However, some installations, for which security is not a concern, may find it desirable to allow non-privileged users to list all files in the system.

SOLUTION:

Another feature patch, Seq 3.5.9 F, extends the use of FIP calls 15 (Directory look up on Index) and 17 (Directory lookup by File Name/Wildcard directory lookup). Since DIRECT does not use these calls, a separate procedure is necessary to cause DIRECT to allow non-privileged users to list directory information of all files on the system.

NOTE

For consistency, Digital recommends that you either use both patches (Seq 3.5.9 F and Seq 1Ø.3.1 F) or neither of them.

PROCEDURE:

1. For purposes of this discussion, we will assume that the program to be patched is located in your privileged account on the public disk structure. If this is not the case, replace all program references with suitable text according to the requirements of your installation.

   We assume the executable version of the program will be stored in the System Library Account ($). If this is not the case, replace references to $ in step 3 below with the appropriate package or library account.

   The procedure below assumes that BASIC-PLUS is your system default run-time system.

   If you are using CSPCOM or BASIC-PLUS-2, refer to Section 5.4 of the RSTS/E V8.Ø Maintenance Notebook for the correct procedure to compile the program.

   If you are using BASIC-PLUS-2, this program should be compiled under the BASIC2 run-time system.

2. This patch is contained in a patch file appearing in patch kit version "A" or later. If you do not have this distribution you can produce a command file by specifying a file for [logfile=] in the procedure below.

   To apply the patch manually, perform the following RSTS/E system commands.

```
RUN $CPATCH<cr>
<CPATCH's header line>

File to patch - DIRECT.BAS=DIRECT.BAS<cr>
#[logfile=]KB:/CS:58126<cr>
*H/2!/V<cr>
2!              PROGRAM         : DIRECT.BAS
*H/3ØØ<tab>/V<cr>
3ØØ     CROSS.PROTECT%=-1% &
*G/-1/-2C/Ø/V<cr>
3ØØ     CROSS.PROTECT%=Ø% &
*EX<cr>
Patch from _KB:[P,PN]CPATCH.CMD complete
#^Z
File to patch - ^Z

Ready
```

3. Use this procedure if your system default run-time system is BASIC-PLUS; otherwise, refer to Section 5.4 of the RSTS/E V8.Ø Maintenance Notebook for the correct procedure to compile the program.

   To re-compile the program and re-enter it into the system library, type the following RSTS/E commands.

```
OLD DIRECT<cr>

Ready

COMPILE $DIRECT<232><cr>

Ready
```

4. The person making the changes to the program should now take whatever steps are necessary, according to installation guidelines, to save the new version of the program.

5. The source (.BAS) version of the program may now be removed from the public structure.

RSTS/E V8.Ø
System Utilities Package
LOGIN

Seq 1Ø.12.1 N

1 of 1

INSTALLING USER MODIFICATIONS OR FEATURE PATCHES TO LOGIN

When you install feature patches or your own patches to LOGIN, you should take the following steps.

1. Log into a privileged account at TWO terminals.
2. Copy LOGIN.(BAC,TSK) to LOGIN.OLD
3. Install the new version of LOGIN
4. Test the new version extensively
5. Delete LOGIN.OLD

If a patch to LOGIN causes it to fail, and you have logged out of the ONLY privileged, attached job on the system, the only way to recover is to crash the system and stop it when INIT.(BAC,TSK) starts to execute. By logging in to the second terminal, you can quickly restore the previous (working) version of LOGIN, if necessary.

RSTS/E V8.Ø
System Utilities Package
LOGIN

Seq 1Ø.12.2 F

UNSCRUPULOUS PROGRAMS MAY CHAIN TO LOGIN - LOGIN FEATURE PATCH

PROBLEM:

Users, particularly in an educational environment, have been known to write programs that simulate the LOGIN dialogue, store the account number and password, and then CHAIN to LOGIN. In this way, a hostile user can gain access to the accounts of other users without the knowledge (or permission) of those users.

SOLUTION:

LOGIN reports both the original account and the new account when invoked by a logged-in job. While this will not prevent a user from writing such a program, it will allow the victimized user to report the account that was used to the system manager.

The variable W$ has been defined in the patch as a null string (W$="") at line 28ØØØ. This patch allows the system manager to replace this string with some message, such as "Please inform the System Manager".

Assume that the LOGIN-simulating program resides in account [2,219]. When the patch described below has been installed, a typical run may look like this:

```
HELLO 1,224
Password:

Old Account:       [2,219]

New Account:       [1,224]

Please inform the System Manager.

Ready
```

PROCEDURE:

1. For purposes of this discussion, we will assume that the program to be patched is located in your privileged account on the public disk structure. If this is not the case, replace all program references with suitable text according to the requirements of your installation.

   The executable version of the program must be stored in the System Library Account ($) on the system disk.

   The procedure below assumes that BASIC-PLUS is your system default run-time system.

If you are using CSPCOM or BASIC-PLUS-2, refer to Section 5.4 of the RSTS/E V8.Ø Maintenance Notebook for the correct procedure to compile the program.

If you are using BASIC-PLUS-2, this program must be task built against the BP2 run-time system.

2. This patch is contained in a patch file appearing in patch kit version "A" or later. If you do not have this distribution you can produce a command file by specifying a file for [logfile=] in the procedure below.

NOTE

If you wish to have W$ indicate a particular message, the patch file for this patch requires manual editing before it can be successfully installed. Be sure to include the quotes around the desired message. The patch verify line which follows the insertion of the message will vary, echoing the message you have chosen.

To apply the patch manually, perform the following RSTS/E system commands.

```
RUN $CPATCH<cr>
<CPATCH's header line>

File to patch - LOGIN.BAS=LOGIN.BAS<cr>
#[logfile=]<cr>
*H/2!/V<cr>
2!              PROGRAM         : LOGIN.BAS
*H/28ØØØ<tab>/V<cr>
28ØØØ   ! IF OPTIONAL PATCH AT 15Ø1Ø IS INSTALLED, PRINT &
*13AV<cr>
        \ W$="" &
*G/""/-2C/"<Inserted message>"/V<cr>
        \ W$="<Inserted message>" &
*EX<cr>
Patch from _KB:[P,PN]CPATCH.CMD complete
#^Z
File to patch - ^Z

Ready
```

3. Use this procedure if your system default run-time system is BASIC-PLUS; otherwise, refer to Section 5.4 of the RSTS/E V8.Ø Maintenance Notebook for the correct procedure to compile the program.

To re-compile the program and re-enter it into the system library, type the following RSTS/E commands.

```
OLD LOGIN<cr>

Ready

COMPILE SYØ:$LOGIN<232><cr>

Ready
```

4. The person making the changes to the program should now take whatever steps are necessary, according to installation guidelines, to save the new version of the program.

5. The source (.BAS) version of the program may now be removed from the public structure.

RSTS/E V8.Ø
System Utilities Package
LOGIN

Seq 1Ø.12.3 F

1 of 2

LOGIN CAN PRINT A MESSAGE FOR SPECIFIC ACCOUNTS - LOGIN FEATURE PATCH

PROBLEM:

Some installations may choose, on occasion, to establish messages for the users of specific accounts.

SOLUTION:

The patching procedure detailed below will allow the System Manager, or anyone else with access to a given account, to establish a message file that will be printed anytime that someone logs in under that account. To create the file, use $PIP (or a suitable text editor) to create the file "MESSAG.TXT" in the appropriate account.

Each time that a user logs in, LOGIN will check for the presence of the file "MESSAG.TXT" in that account, and print the contents of that file if it exists. This file will be printed (if present) even if the system message ($NOTICE.TXT) has been suppressed with a slash ("/") in the account specification.

Note that anyone with write-access to the file MESSAG.TXT, including users of that account, will be able to create, change, or delete the message.

PROCEDURE:

1. For purposes of this discussion, we will assume that the program to be patched is located in your privileged account on the public disk structure. If this is not the case, replace all program references with suitable text according to the requirements of your installation.

   The executable version of the program must be stored in the System Library Account ($) on the system disk.

   The procedure below assumes that BASIC-PLUS is your system default run-time system.

   If you are using CSPCOM or BASIC-PLUS-2, refer to Section 5.4 of the RSTS/E V8.Ø Maintenance Notebook for the correct procedure to compile the program.

   If you are using BASIC-PLUS-2, this program must be task built against the BP2 run-time system.

2. This patch is contained in a patch file appearing in patch kit version "A" or later. If you do not have this distribution you can produce a command file by specifying a file for [logfile=] in the procedure below.

   To apply the patch manually, perform the following RSTS/E system commands.

```
RUN $CPATCH<cr>
<CPATCH's header line>

File to patch - LOGIN.BAS=LOGIN.BAS<cr>
#[logfile=]KB:/CS:64Ø49<cr>
*H/2!/V<cr>
2!              PROGRAM         : LOGIN.BAS
*H/32Ø5<tab>/V<cr>
32Ø5    !RESUME 14Ø2Ø IF ERL=14ØØØ% OR ERL=14Ø1Ø% &
*G/!/-1DV<cr>
32Ø5    RESUME 14Ø2Ø IF ERL=14ØØØ% OR ERL=14Ø1Ø% &
*EX<cr>
Patch from KB:[P,PN]CPATCH.CMD complete
#^Z
File to patch - ^Z

Ready
```

3. Use this procedure if your system default run-time system is BASIC-PLUS; otherwise, refer to Section 5.4 of the RSTS/E V8.Ø Maintenance Notebook for the correct procedure to compile the program.

   To re-compile the program and re-enter it into the system library, type the following RSTS/E commands.

```
OLD LOGIN<cr>

Ready

COMPILE SYØ:$LOGIN<232><cr>

Ready
```

4. The person making the changes to the program should now take whatever steps are necessary, according to installation guidelines, to save the new version of the program.

5. The source (.BAS) version of the program may now be removed from the public structure.

RSTS/E V8.Ø
System Utilities Package
LOGIN

Seq 1Ø.12.4 F

LOGIN CAN CHAIN TO A SPECIFIED PROGRAM - LOGIN FEATURE PATCH

PROBLEM:

Some installations may find it desirable to have LOGIN chain to a specified program when some or all users log in.

SOLUTION:

The patching procedure detailed below will cause LOGIN to chain to the specified program, if it exists. (LOGIN will proceed normally if the program does not exist.)

At line 2295Ø, the variable MGR.PROG$ should be set to some program name, as follows:

START	This will cause LOGIN to chain to the program "START" if it exists in the current user's account.
#START	This will cause LOGIN to chain to the program "START" if it exists in the user's group library ([*,Ø]).
$START	This will always cause LOGIN to chain to the program "START" if it exists in the system library ([1,2]).

PROCEDURE:

1. For purposes of this discussion, we will assume that the program to be patched is located in your privileged account on the public disk structure. If this is not the case, replace all program references with suitable text according to the requirements of your installation.

   The executable version of the program must stored in the System Library Account ($) on the system disk.

   The procedure below assumes that BASIC-PLUS is your system default run-time system.

   If you are using CSPCOM or BASIC-PLUS-2, refer to Section 5.4 of the RSTS/E V8.Ø Maintenance Notebook for the correct procedure to compile the program.

If you are using BASIC-PLUS-2, this program must be task built against the BP2 run-time system.

2. This patch is contained in a patch file appearing in patch kit version "A" or later. If you do not have this distribution you can produce a command file by specifying a file for [logfile=] in the procedure below.

NOTE

The patch file for this patch requires manual editing to include installation specific parameters before it can be successfully installed. Specifically, "START" should be replaced with the desired program name (be sure to include the quotes). The patch verify line which follows the insertion of the program name will vary, echoing the program name you have chosen.

To apply the patch manually, perform the following RSTS/E system commands.

```
RUN $CPATCH<cr>
<CPATCH's header line>

File to patch - LOGIN.BAS=LOGIN.BAS<cr>
#[logfile=]<cr>
*H/2!/V<cr>
2!              PROGRAM         : LOGIN.BAS
*H/22950<tab>/V<cr>
22950   MGR.PROG$="" &
*G/""/-2C/"START"/V<cr>         <Replace "START" with the desired program name>
22950   MGR.PROG$="START" &
*EX<cr>
Patch from _KB:[P,PN]CPATCH.CMD complete
#^Z
File to patch - ^Z

Ready
```

3. Use this procedure if your system default run-time system is BASIC-PLUS; otherwise, refer to Section 5.4 of the RSTS/E V8.Ø Maintenance Notebook for the correct procedure to compile the program.

   To re-compile the program and re-enter it into the system library, type the following RSTS/E commands.

   ```
   OLD LOGIN<cr>

   Ready

   COMPILE SYØ:$LOGIN<232><cr>

   Ready
   ```

4. The person making the changes to the program should now take whatever steps are necessary, according to installation guidelines, to save the new version of the program.

5. The source (.BAS) version of the program may now be removed from the public structure.

RSTS/E V8.Ø
System Utilities Package
LOGIN

Seq 1Ø.12.5 F

DON'T LOG ACCESS ATTEMPTS OVER DIAL-UP LINES - LOGIN FEATURE PATCH

PROBLEM:

We assume that most installations will find it desirable to log all access attempts made from dial-up lines. This enables an installation to keep track of which accounts are being used to gain system access over dial-up lines and what type of logged-out requests are made over these lines. This log is normally sent to OPSER, but will be sent to KBØ: if OPSER is not running.

SOLUTION:

For those systems that choose not to log access attempts over dial-up lines, the patching procedure detailed below will prevent access attempts made over dial-up lines from being logged to OPSER or KBØ:.

PROCEDURE:

1. For purposes of this discussion, we will assume that the program to be patched is located in your privileged account on the public disk structure. If this is not the case, replace all program references with suitable text according to the requirements of your installation.

   The executable version of the program must be stored in the system Library Account ($) on the system disk.

   The procedure below assumes that BASIC-PLUS is your system default run-time system.

   If you are using CSPCOM or BASIC-PLUS-2, refer to Section 5.4 of the RSTS/E V8.Ø Maintenance Notebook for the correct procedure to compile the program.

   If you are using BASIC-PLUS-2, this program must be task built against the BP2 run-time system.

2. This patch is contained in a patch file appearing in patch kit version "A" or later. If you do not have this distribution you can produce a command file by specifying a file for [logfile=] in the procedure below.

   To apply the patch manually, perform the following RSTS/E system commands.

```
RUN $CPATCH<cr>
<CPATCH's header line>

File to patch - LOGIN.BAS=LOGIN.BAS<cr>
#[logfile=]KB:/CS:14877<cr>
*H/2!/V<cr>
2!              PROGRAM         : LOGIN.BAS
*H/13100<tab>/V<cr>
13100   SEND.OPSER%=-1% IF (L.CLASS% AND JCLS.REM.BIT%) &
*G/=/35C/0%/V<cr>
13100   SEND.OPSER%=0% &
*H/22500<tab>/V<cr>
22500   ! &
*12AV<cr>
        \ SEND.OPSER%=(TTINTF% AND 16384%)<>0% &
*G/=/22DV<cr>
        \ SEND.OPSER%=0% &
*EX<cr>
Patch from _KB:[P,PN]CPATCH.CMD complete
#^Z
File to patch - ^Z

Ready
```

3. Use this procedure if your system default run-time system is BASIC-PLUS; otherwise, refer to Section 5.4 of the RSTS/E V8.Ø Maintenance Notebook for the correct procedure to compile the program.

   To re-compile the program and re-enter it into the system library, type the following RSTS/E commands.

   ```
   OLD LOGIN<cr>

   Ready

   COMPILE SY0:$LOGIN<232><cr>

   Ready
   ```

4. The person making the changes to the program should now take whatever steps are necessary, according to installation guidelines, to save the new version of the program.

5. The source (.BAS) version of the program may now be removed from the public structure.

RSTS/E V8.Ø
System Utilities Package
LOGIN

Seq 1Ø.12.6 F

CHANGING LOGIN TO SET A DIFFERENT SWAP MAXIMUM - LOGIN FEATURE PATCH

PROBLEM:

The LOGIN system program sets the swap maximum to 32K words for all users. This action means that all users run with a swap maximum of 32K words (or the system Swap Maximum, if that is lower than 32K).

SOLUTION:

1. The LOGIN program may be modified to set a swap maximum of less than 32K words for non-privileged accounts. To do this, you must change the value 32% in the statement "J% = 32%" (very first statement in line 15Ø1Ø) to any value less than or equal to the current default swap maximum used at system start up time.

   To change the swap maximum for non-privileged accounts, substitute the desired swap maximum for "NN" in the patch below.

2. LOGIN may also be modified to lower the swap maximum for privileged accounts. To do this, you must change the "J% = 32%" expression in the second physical line at line number 15Ø1Ø. The statement on this line checks for a 1 as the project number of the account.

   To change the swap maximum for privileged accounts, substitute the desired swap maximum for "ZZ" in the patch below.

PROCEDURE:

1. For purposes of this discussion, we will assume that the program to be patched is located in your privileged account on the public disk structure. If this is not the case, replace all program references with suitable text according to the requirements of your installation.

   The executable version of the program must be stored in the System Library Account ($) on the system disk.

   The procedure below assumes that BASIC-PLUS is your system default run-time system.

   If you are using CSPCOM or BASIC-PLUS-2, refer to Section 5.4 of the RSTS/E V8.Ø Maintenance Notebook for the correct procedure to compile the program.

If you are using BASIC-PLUS-2, this program must be task built against the BP2 run-time system.

2. This patch is contained in a patch file appearing in patch kit version "A" or later. If you do not have this distribution you can produce a command file by specifying a file for [logfile=] in the procedure below.

NOTE

The patch file for this patch requires manual editing to include installation specific parameters before it can be successfully installed. Specifically, have "NN" and/or "ZZ" indicate the desired swap maximums.

To apply the patch manually, perform the following RSTS/E system commands.

```
RUN $CPATCH<cr>
<CPATCH's header line>

File to patch - LOGIN.BAS=LOGIN.BAS<cr>
#[logfile=]KB:<cr>
*H/2!/V<cr>
2!              PROGRAM         : LOGIN.BAS
*H/15Ø1Ø<tab>/V<cr>
15Ø1Ø   J%=32% &
*G/32/-2C/NN/V<cr>                                  (from Step 1)
15Ø1Ø   J%=NN% &                                    (will vary, based on NN)
*AV<cr>
        \ J%=32% IF (ACCOUNT% AND -256%)=256% &
*G/32/-2C/ZZ/V<cr>                                  (from Step 2)
        \ J%=ZZ% IF (ACCOUNT% AND -256%)=256% &     (will vary, based on ZZ)
*EX<cr>
Patch from _KB:[P,PN]CPATCH.CMD complete
#^Z
File to patch - ^Z

Ready
```

3. Use this procedure if your system default run-time system is BASIC-PLUS; otherwise, refer to Section 5.4 of the RSTS/E V8.Ø Maintenance Notebook for the correct procedure to compile the program.

To re-compile the program and re-enter it into the system library, type the following RSTS/E commands.

```
OLD LOGIN<cr>

Ready

COMPILE SYØ:$LOGIN<232><cr>

Ready
```

4. The person making the changes to the program should now take whatever steps are necessary, according to installation guidelines, to save the new version of the program.

5. The source (.BAS) version of the program should now be removed from the public structure. As noted in the RSTS/E Programming Manual, it is recommended that the system manager not replace the original LOGIN source file with the modified version.

RSTS/E V8.Ø
System Utilities Package
LOGIN

Seq 1Ø.12.7 F

ENABLE LOGGED-OUT COMMANDS - LOGIN FEATURE PATCH

PROBLEM:

LOGIN does not let users invoke any programs if they are logged out. Some installations may want to allow all users to be able to run the HELP, SET, SYSTAT, and QUE programs, even if they are not logged in.

SOLUTION:

The patching procedure detailed below allows logged out access to all of the programs listed above.

PROCEDURE:

1. For purposes of this discussion, we will assume that the program to be patched is located in your privileged account on the public disk structure. If this is not the case, replace all program references with suitable text according to the requirements of your installation.

   The executable version of the program must be stored in the System Library Account ($) on the system disk.

   The procedure below assumes that BASIC-PLUS is your system default run-time system.

   If you are using CSPCOM or BASIC-PLUS-2, refer to Section 5.4 of the RSTS/E V8.Ø Maintenance Notebook for the correct procedure to compile the program.

   If you are using BASIC-PLUS-2, this program must be task built against the BP2 run-time system.

2. This patch is contained in a patch file appearing in patch kit version "A" or later. If you do not have this distribution you can produce a command file by specifying a file for [logfile=] in the procedure below.

   To apply the patch manually, perform the following RSTS/E system commands.

RSTS/E V8.Ø
System Utilities Package
LOGIN

Seq 1Ø.12.7 F

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```
RUN $CPATCH<cr>
<CPATCH's header line>

File to patch - LOGIN.BAS=LOGIN.BAS<cr>
#[logfile=]KB:/CS:6686<cr>
*H/2!/V<cr>
2!              PROGRAM         : LOGIN.BAS
*H/32240<tab>/DV<cr>
32240   DATA    HELP,   $HELP,  4,      3
*H/32250<tab>/DV<cr>
32250   DATA    SET,    $TTYSET,3,      4
*H/32260<tab>/DV<cr>
32260   DATA    SYSTAT, $SYSTAT,2,      4
*H/32270<tab>/DV<cr>
32270   DATA    QUEUE,  $QUE,   2,      4
*EX<cr>
Patch from _KB:[P,PN]CPATCH.CMD complete
#^Z
File to patch - ^Z

Ready
```

3. Use this procedure if your system default run-time system is BASIC-PLUS; otherwise, refer to Section 5.4 of the RSTS/E V8.Ø Maintenance Notebook for the correct procedure to compile the program.

   To re-compile the program and re-enter it into the system library, type the following RSTS/E commands.

   ```
   OLD LOGIN<cr>

   Ready

   COMPILE SYØ:$LOGIN<232><cr>

   Ready
   ```

4. The person making the changes to the program should now take whatever steps are necessary, according to installation guidelines, to save the new version of the program.

5. The source (.BAS) version of the program should now be removed from the public structure.

RSTS/E V8.Ø
System Utilities Package
LOGIN

Seq 1Ø.12.8 F

ENABLE AUXILIARY PASSWORD - LOGIN FEATURE PATCH

PROBLEM:

Some installations may find it desirable to augment system security by requiring privileged users to supply an auxiliary password when logging in over dial-up lines or when using DECnet/E.

SOLUTION:

The patching procedure detailed below enables code in LOGIN which will require privileged users to supply an extra password in the cases noted above. (You may wish to change the auxiliary password periodically, for additional security.)

PROCEDURE:

1. For purposes of this discussion, we will assume that the program to be patched is located in your privileged account on the public disk structure. If this is not the case, replace all program references with suitable text according to the requirements of your installation.

   The executable version of the program must be stored in the System Library Account ($) on the system disk.

   The procedure below assumes that BASIC-PLUS is your system default run-time system.

   If you are using CSPCOM or BASIC-PLUS-2, refer to Section 5.4 of the RSTS/E V8.Ø Maintenance Notebook for the correct procedure to compile the program.

   If you are using BASIC-PLUS-2, this program must be task built against the BP2 Run-Time System.

2. This patch is contained in a patch file appearing in patch kit version "A" or later. If you do not have this distribution you can produce a command file by specifying a file for [logfile=] in the procedure below.

RSTS/E V8.Ø
System Utilities Package
LOGIN

Seq 1Ø.12.8 F

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NOTE

The patch file for this patch requires manual editing to include installation specific parameters before it can be successfully installed. Specifically, "AUXPASS" should be replaced by the desired auxiliary password (be sure to include the quotes). The patch verify line which follows the insertion of the password will vary, echoing the password you have chosen.

To apply the patch manually, perform the following RSTS/E system commands.

```
RUN $CPATCH<cr>
<CPATCH's header line>

File to patch - LOGIN.BAS=LOGIN.BAS<cr>
#[logfile=]KB:<cr>
*H/2!/V<cr>
2!              PROGRAM         : LOGIN.BAS
*H/13Ø15<tab>/V<cr>
13Ø15   L.PROJ%=M%(6%) &
*2AV<cr>
        !\ GOSUB 131ØØ &
*G/!/-DV<cr>
        \ GOSUB 131ØØ &
*H/225Ø5<tab>/8AV<cr>
        \ L.PASS$="" &
*G/""/-2C/"AUXPASS"/V<cr>       <Change "AUXPASS" to the desired auxiliary password>
        \ L.PASS$="AUXPASS" &
*EX<cr>
Patch from _KB:[P,PN]CPATCH.CMD complete
#^Z
File to patch - ^Z

Ready
```

3. Use this procedure if your system default run-time system is BASIC-PLUS; otherwise, refer to Section 5.4 of the RSTS/E V8.Ø Maintenance Notebook for the correct procedure to compile the program.

   To re-compile the program and re-enter it into the system library, type the following RSTS/E commands.

```
OLD LOGIN<cr>

Ready

COMPILE SYØ:$LOGIN<232><cr>

Ready
```

4. The person making the changes to the program should now take whatever steps are necessary, according to installation guidelines, to save the new version of the program.

5. The source (.BAS) version of the program should now be removed from the public structure.

RSTS/E V8.Ø
System Utilities Package
SHUTUP

Seq 1Ø.21.1 F

1 of 3

CHANGING 'SHUTUP' SLEEP PARAMETERS - SHUTUP FEATURE PATCH

PROBLEM:

In the "Initial Job Killing Phase", SHUTUP makes two passes through the system job table looking for active jobs which can be logged off the system or KILLed. For those jobs which are attached to a keyboard, the following text string is FORCEd to the terminal's input buffer to simulate the log off sequence:

CTRL/C CTRL/C "BYE/Y" <cr>

Since this method requires the running of the system LOGOUT program, the actual logging off process can consume a fair amount of elapsed time after the text string FORCE is made.

The SHUTUP program is initially set up with the following parameters which control a program pause (SLEEP) at the end of the job table search pass:

```
SLEEP.BASE%      = 1Ø%
SLEEP.INCREMENT% =  2%
```

The length of the SLEEP period in seconds is calculated as:

SLEEP time = SLEEP.BASE% + (SLEEP.INCREMENT% * <number of terminals "killed">)

where the number of terminals "killed" is the total number of jobs sent the FORCE text string during the pass through the job table. For example, for 3 terminals, a period of 16 seconds results; for 1Ø terminals, a period of 3Ø seconds results.

Some installations may desire to change these parameters to alter the SLEEP period during this phase of SHUTUP operation. A case in point is when a system has at least one terminal running on the system at 11Ø baud. At this transmission speed, it requires 25-3Ø seconds just to type out the LOGOUT message which appears after typing BYE/Y. Changing the value of SLEEP.BASE% to 3Ø% should eliminate this problem.

SOLUTION:

Below is presented a procedure for changing the value(s) SLEEP.BASE% and/or SLEEP.INCREMENT%.

Assume the following parameter values for the edit session which follows:

```
xx = new SLEEP.BASE%      value
yy = new SLEEP.INCREMENT% value
```

PROCEDURE:

1. For purposes of this discussion, we will assume that the program to be patched is located in your privileged account on the public disk structure. If this is not the case, replace all program references with suitable text according to the requirements of your installation.

   We assume the executable version of the program will be stored in the System Library Account ($). If this is not the case, replace references to $ in step 3 below with the appropriate package or library account.

   The procedure below assumes that BASIC-PLUS is your system default run-time system.

   If you are using CSPCOM or BASIC-PLUS-2, refer to Section 5.4 of the RSTS/E V8.Ø Maintenance Notebook for the correct procedure to compile the program.

   If you are using BASIC-PLUS-2, this program must be task built against the BP2 run-time system.

2. This patch is contained in a patch file appearing in patch kit version "A" or later. If you do not have this distribution you can produce a command file by specifying a file for [logfile=] in the procedure below.

   NOTE

   The patch file for this patch requires manual editing to include installation specific parameters before it can be successfully installed. Specifically, change references to "xx" and "yy" to the desired values.

   To apply the indicated corrections manually, perform the following RSTS/E system commands.

RSTS/E V8.Ø Seq 1Ø.21.1 F
System Utilities Package
SHUTUP 3 of 3

```
RUN $CPATCH<cr>
<CPATCH's header line>

File to patch - SHUTUP.BAS=SHUTUP.BAS<cr>
#[logfil=]<cr>
*H/2!/V<cr>
2!              PROGRAM         : SHUTUP
*H/1Ø31<tab>/V<cr>
1Ø31        SLEEP.BASE% = 1Ø% &
*G/1Ø/-2C/xx/V<cr>
1Ø31        SLEEP.BASE% = xx% &
*AV<cr>
        \ SLEEP.INCREMENT% = 2% &
*G/2/-C/yy/V<cr>
        \ SLEEP.INCREMENT% = yy% &
*EX<cr>
Patch from [P,PN]CPATCH.CMD complete
#^Z
File to patch - ^Z

Ready
```

3. Use this procedure if your system default run-time system is BASIC-PLUS; otherwise, refer to Section 5.4 of the RSTS/E V8.Ø Maintenance Notebook for the correct procedure to compile the program.

   To re-compile the program and re-enter it into the system library, type the following RSTS/E commands.

   ```
   OLD SHUTUP<cr>

   Ready

   COMPILE SYØ:$SHUTUP<cr>

   Ready
   ```

4. The person making the changes to the program should now take whatever steps are necessary, according to installation guidelines, to save the new version of the program.

5. The source (.BAS) version of the program may now be removed from the public structure.

RSTS/E V8.Ø
Error Control Package
Package Notes

Seq 12.1.1 N

1 of 2

UNDERSTANDING "PA MEMORY SYSTEM" ERROR LOGS

The following information is logged when a memory error causes a trap or an instruction abort. These logs can be recognized by the fact that "MEM ERR" is not zero.

CACHECTL This is the data RSTS/E sets into the Cache Control Register (777746). It is meaningless for systems without cache memory.

ADDR LSB
ADDR MSB These words contain the address of the word in memory which failed. On the PDP-11/7Ø, they are the contents of the Low Error Address Register (777740) and High Error Address Register (777742). Bits <15:14> of ADDR MSB indicate the cycle type of the failure. On other processors, these words are assembled from the other logged information.

MEM ERR On processors with cache, this is the contents of the Memory System Error register (777744). On other processors, this word always contains 1ØØØØØ (CPU Abort, no cache error). If the same cache group fails five times in the same minute, that cache group will be disabled.

The remaining registers are not logged on the 11/7Ø, which does not have accessible memory CSR's. In any case, they are not meaningful unless the error occurred in main memory.

CSR This is the address of the CSR which indicated an error.

(CSR) This is the contents of that CSR. A second entry is also printed for an MS11M or MS11L with the extended address function selected.

K Range This tells how finely the CSR contents can resolve the location of the error. For all current memory controllers (MF11-LP, MF11-UP, MF11-WP, MF11S-K, MM11-DP, MM11-YP, and MS11-JP), this value is 1, indicating that the CSR locates the error to within 1K words. For older semiconductor memory controllers (MS11-AP, MS11-BP, and MS11-CP) that do not provide the address of the error in the CSR, this value is the number of 1K-word blocks (up to 31.) controlled by the CSR.

Fail When it discovers a CSR announcing an error, RSTS/E looks through all memory in the range of the error (see above) to find which words actually have errors. Thus, for a controller which resolves the error location to within 1K words, RSTS/E checks 1Ø24. words (or 512. if the memory is interleaved). This word tells how many words in the range had an error indication.

Base Adr To get the physical address of the start of the range mentioned above, add two zero digits (six bits) to this value.

Fail #n The next words in the error log tell which words in the given range actually have errors. The addresses are given as byte offsets from the base given above. Up to 5 such offsets may be logged.

Once a second, except on 11/7Ø's, RSTS/E checks all memory CSR's for errors that do not cause traps or aborts. The logs for these errors can be recognized by the fact that "MEM ERR" is zero. These errors include uncorrectable errors detected on NPR cycles, and correctable (single-bit) ECC errors. Uncorrectable errors are logged whenever they are detected, but only one correctable error will be logged for each CSR, for each time RSTS/E is started. When a correctable error is logged, only the CSR address and CSR contents will be meaningful.

DISABLE PRINTING OF "PLACED FILE..." WARNING MESSAGES - BACDIR FEATURE PATCH

PROBLEM:

The "PLACED FILE..." warning messages that are printed on the terminal during a BACKUP or RESTORE operation may take extra time and use a great deal of extra paper, especially if there are many placed files on the system. Since the same messages are output to the listing file, it may be considered redundant for them to be output to the terminal as well, especially through OPSER to KBØ:.

SOLUTION:

The patching procedure detailed below suppresses the logging of "PLACED FILE..." warning messages to the terminal.

PROCEDURE:

1. For purposes of this discussion, we will assume that the program to be patched is located in your privileged account on the public disk structure. If this is not the case, replace all program references with suitable text according to the requirements of your installation.

   We assume the executable version of the program will be stored in the System Library Account ($). If this is not the case, replace references to $ in Step 3 below with the appropriate package or library account.

   The procedure below assumes that BASIC-PLUS is your system default run-time system.

   If you are using CSPCOM or BASIC-PLUS-2, refer to Section 5.4 of the RSTS/E V8.Ø Maintenance Notebook for the correct procedure to compile the program.

   If you are using BASIC-PLUS-2, this program should be compiled under the BASIC2 run-time system.

2. The command file for this patch appears in patch kit version "A" or later. If you do not have this distribution you can produce a command file by specifying a file for [logfile=] in the procedure below.

   To apply the patch manually, perform the following RSTS/E system commands.

RSTS/E V8.Ø
Backup Package
BACDIR

Seq 13.5.1 F

2 of 3

```
RUN $CPATCH<cr>
<CPATCH's header line>

File to patch - BACDIR.BAS=BACDIR.BAS<cr>
#[logfile=]KB:/CS:5708<cr>
*H/2!/V<cr>
2!              PROGRAM         : BACDIR.BAS
*H/11080<tab>/V<cr>
11080   Y2%=Y2% OR 1024% &
*25AV<cr>
                \ GOSUB 23100 &
*G/<tab>/I/!/V<cr>
        !       \ GOSUB 23100 &
*H/11220<tab>/V<cr>
11220   IF Z0%(P0%,12%) AND 2% AND D0%=2% THEN &
*5AV<cr>
                \ GOSUB 23100 &
*G/<tab>/I/!/V<cr>
        !       \ GOSUB 23100 &
*EX<cr>
Patch from _KB:[P,PN]CPATCH.CMD complete
#^Z
File to patch - ^Z

Ready
```

3. Use this procedure if your system default run-time system is BASIC-PLUS; otherwise, refer to Section 5.4 of the RSTS/E V8.Ø Maintenance Notebook for the correct procedure to compile the program.

   To re-compile the program and re-enter it into the system library, type the following RSTS/E commands.

```
OLD BACDIR<cr>

Ready

COMPILE $BACDIR<232><cr>

Ready
```

4. The person making the changes to the program should now take whatever steps are necessary, according to installation guidelines, to save the new version of the program.

5. The source (.BAS) version of the program should now be removed from the public structure.

NOTES ON THE USE OF THE SERIAL LA18Ø (LA18ØS) TERMINAL UNDER RSTS/E V8.Ø

The first part of this article describes the behavior of the Serial LA18Ø terminal (called the LA18ØS) when its power is turned off, either at system start-up time or at some later time during timesharing, and makes recommendations to prevent loss of data.

If any terminal (including an LA18ØS) is powered off when the system is booted, the device appears to the system to be operational. If a user tries to print a file on the terminal, the system will send characters to the device at the usual speed and assume that they are being printed properly. Obviously, since the device is powered off, the characters are not being printed, but the device cannot return any indication of that fact to the system. The entire file will be sent as if it were printing.

If a spooler is started on such a KB: line, any files queued to that spooler will be sent, just as if the device were printing properly. The queue will gradually empty, and any files queued with /DELETE will be deleted.

Since there is no method by which the software can differentiate between a terminal which is powered off and one which is printing properly, it is highly recommended that the person starting up a RSTS/E system check to ensure that all terminal devices which are ordinarily spooled are powered on and properly online before system start-up is performed.

A second class of problems involves the behavior of the LA18ØS when it is powered off or powered on after it has been ASSIGNed or OPENed.

During its power down and power up sequence, the LA18ØS terminal may send spurious characters to the host processor. The ASCII code of these characters appears to be random, but they occasionally take on the value of control characters (for example, CTRL/C). Since the program printing on the terminal may not expect input of any kind from the terminal, these spurious characters may result in unexpected errors: a CTRL/C may cause the program to print READY; a CTRL/O will cause all further output to be discarded without printing; etc. There is no way for the software to protect against all possible spurious inputs. RSTS/E is able to protect against all spurious input except CTRL/S (XON) and CTRL/Q (XOFF) via the MODE 32% option on the OPEN statement. However, spurious XON/XOFF characters can still cause loss of synchronization between the host system and the terminal. The only way to prevent this problem is to ensure that the LA18ØS is never powered off or powered on while it is ASSIGNed or OPENed.

A final problem concerns loss of data when the LA18ØS is powered off. The LA18ØS contains an internal buffer which is used to hold characters which have been received from the host processor but which have not yet been printed. When the LA18ØS goes OFFLINE (either because the ONLINE/OFFLINE switch is placed in the OFFLINE position, or because some exception condition, such as a paper jam, has been detected) this buffer may still contain some unprinted data. If the terminal is placed back ONLINE, printing will resume with no loss of data. If, however, the terminal is turned off, the buffer is cleared and any data in the buffer is lost. The only protection against this loss is to ensure that the LA18ØS is not powered off while it is printing.

In summary, DIGITAL recommends that any LA18ØS terminal to be used under RSTS/E timesharing be powered on before system start-up and that it remain on whenever it is in use. If the terminal is powered off, loss of data and unexpected errors may result.

Another kind of problem has been encountered when spooling to an LA18ØS. This problem concerns the manner in which the terminal device handles printed lines which are longer than the width of the terminal.

When a line is printed on the LA18ØS, the device prints characters until it gets to the physical right margin. At that point, the logic of the terminal inhibits further printing until a carriage return character moves the print head back from the margin. When a CR is encountered in such a situation, the LA18ØS also generates a line-feed, causing spacing to a new line. Since most print lines are terminated by a CR-LF sequence, however, the second LF will, again, cause spacing to a new line, leaving one line blank. Thus, printing a line which is longer than the width of the LA18ØS (i.e., longer than 132 characters) will cause a blank line on the printed output.

When performing normal print operations under RSTS/E, the user will not ordinarily encounter this problem. The RSTS/E Terminal Service ordinarily keeps track of the characters printed on the terminal and explicitly issues a CR-LF sequence to the terminal when the print head reaches the right margin (as defined by the WIDTH parameter in a TTYSET command). Thus, lines printed to that terminal which are longer than the width of the terminal result in printing of all characters, but on multiple lines. The only programs which will have trouble are those which need to keep track of vertical position on the page (for example, the line printer spooler) and, therefore, invoke the special MODE (Mode 4%) to inhibit the automatic CR-LF by terminal service. Files printed by such programs will have blank lines after each line which was longer than the terminal width. There is no practical software remedy for this problem.

USING TWO OR MORE PRINTERS TO SERVE A QUEUE

It is possible to have two or more printers serve a single print queue. For example, you can have two printers serve the LPØ: queue, which is the default queue. Ordinary print jobs (those queued to LPØ:) would be printed on either printer.

This feature is most useful when you have two or more similar printers in the same vicinity. It is not generally useful to have a fast and a slow printer serve the same queue, nor to have two printers in different locations serve the same queue.

A different form can be mounted on each printer. If this is done, the spooling package will automatically select the printer that has the correct form for a particular job. Or, if the correct form is not mounted on any available printer, the spooling package will hold the job.

Start up each spooler by running the SPOOL program, as discussed in section 5.4 of the RSTS/E System Manager's Guide. Specify the same queue name for each -- for example, specify LPØ: if the spoolers are to serve the LPØ: queue. But you must use the /NAME:rcvrid switch to ensure that each spooler is given a different receiver ID. Otherwise, the SPOOL program will print the message "?Duplicate receiver ID".

In the following example, the devices LPØ: and LP1: both serve the queue named LPØ:.

```
RUN $SPOOL
#LPØ:/NAME:LPØ/PHYSICAL:LPØ:
Detaching ...

RUN $SPOOL
#LPØ:/NAME:LP1/PHYSICAL:LP1:
Detaching ...
```

To avoid confusion, a queue should not have the same name as a printer that serves another queue. For example, if queue LPØ: is served by printers LPØ: and LP1:, then you would not want to name another queue LP1:.

RSTS/E V8.Ø Seq 14.4.1 F
Spooling and Operator Services Package
QUE 1 of 2

DISABLE OPERATOR QUEUEING TO OTHER USERS ACCOUNT - QUE FEATURE PATCH

PROBLEM:

Under BATCH, operators, as defined in OPSER's table of operators, can QUE files to be printed or jobs to be run for another user. Some installations may consider this too great a security risk.

SOLUTION:

The following patch disables the above mentioned feature. It does not affect the operator's ability to modify or kill other users' jobs once they are in the queue, as that poses no apparent threat to system security. It also does not affect a privileged user's ability to QUE files or jobs to another account. Refer to article Seq 14.6.3 F, which supplies a similar patch for QUMRUN.

PROCEDURE:

1. For purposes of this discussion, we will assume that the program to be patched is located in your privileged account on the public disk structure. If this is not the case, replace all program references with suitable text according to the requirements of your installation.

   The executable version of the program must be stored in the System Library Account ($). Note that QUE cannot reside in any other account.

   The procedure below assumes that BASIC-PLUS is your system default run-time system.

   If you are using CSPCOM or BASIC-PLUS-2, refer to Section 5.4 of the RSTS/E V8.Ø Maintenance Notebook for the correct procedure to compile the program.

   If you are using BASIC-PLUS-2, this program should be compiled under the BASIC2 run-time system.

2. This patch is contained in a patch file appearing in patch kit version "A" or later. If you do not have this distribution you can produce a command file by specifying a file for [logfile=] in the procedure below.

   To apply the patch manually, perform the following RSTS/E system commands.

```
RUN $CPATCH<cr>
<CPATCH's header line>

File to patch - QUE.BAS=QUE.BAS<cr>
#[logfile=]KB:/CS:11874<cr>
*H/2!/V<cr>
2!              PROGRAM         : QUE
*H/2Ø15<tab>/V<cr>
2Ø15    IF NOT PRIV% AND Y1%(Ø%,1%)<>SWAP%(P8%)+P9% THEN &
*G/NOT PRIV%/-9C/P8%<>1%/V<cr>
2Ø15    IF P8%<>1% AND Y1%(Ø%,1%)<>SWAP%(P8%)+P9% THEN &
*EX<cr>
Patch from KB:[P,PN]CPATCH.CMD complete
#^Z
File to patch - ^Z

Ready
```

3. Use this procedure if your system default run-time system is BASIC-PLUS; otherwise, refer to Section 5.4 of the RSTS/E V8.Ø Maintenance Notebook for the correct procedure to compile the program.

   To re-compile the program and re-enter it into the system library, type the following RSTS/E commands.

   ```
   OLD QUE<cr>

   Ready

   COMPILE $QUE<232><cr>

   Ready
   ```

4. The person making the changes to the program should now take whatever steps are necessary, according to installation guidelines, to save the new version of the program.

5. The source (.BAS) version of the program may now be removed from the public structure.

RSTS/E V8.Ø
Spooling and Operator Services Package
QUMRUN

Seq 14.6.1 F

1 of 2

DISABLING 'JOB WITH DIFFERENT FORM NAME WAITING' MESSAGE
- QUMRUN FEATURE PATCH

PROBLEM:

QUMRUN will print a message on the OPERATOR SERVICES CONSOLE whenever one of the LP: spoolers has no JOBs which it may print but there are eligible JOBs waiting in the spooler's queue with a form name which is different from that of the spooler. It may be desirable to disable this feature.

SOLUTION:

The following patch will disable this feature.

PROCEDURE:

1. For purposes of this discussion, we will assume that the program to be patched is located in your privileged account on the public disk structure. If this is not the case, replace all program references with suitable text according to the requirements of your installation.

   We assume the executable version of the program will be stored in the System Library Account ($). If this is not the case, replace references to $ in step 3 below with the appropriate package or library account.

   The procedure below assumes that BASIC-PLUS is your system default run-time system.

   If you are using CSPCOM or BASIC-PLUS-2, refer to Section 5.4 of the RSTS/E V8.Ø Maintenance Notebook for the correct procedure to compile the program.

   If you are using BASIC-PLUS-2, this program should be compiled under the BASIC2 run-time system.

2. This patch is contained in a patch file appearing in patch kit version "A" or later. If you do not have this distribution you can produce a command file by specifying a file for [logfile=] in the procedure below.

   To apply the patch manually, perform the following RSTS/E system commands.

```
RUN $CPATCH<cr>
<CPATCH's header line>

File to patch - QUMRUN.BAS=QUMRUN.BAS<cr>
#[logfile=]KB:/CS:57315<cr>
*H/2!/V<cr>
2!              PROGRAM         : QUMRUN.BAS
*H/138Ø<tab>/V<cr>
138Ø    DFORMS% = Ø% &
*G/IF Z4% = 2%/I/ AND Ø%/V<cr>
        \       IF Z4% = 2% AND Ø% THEN &
*EX<cr>
Patch from KB:[P,PN]CPATCH.CMD complete
#^Z
File to patch - ^Z

Ready
```

3. Use this procedure if your system default run-time system is BASIC-PLUS; otherwise, refer to Section 5.4 of the RSTS/E V8.Ø Maintenance Notebook for the correct procedure to compile the program.

   To re-compile the program and re-enter it into the system library, type the following RSTS/E commands.

   ```
   OLD QUMRUN<cr>

   Ready

   COMPILE $QUMRUN<cr>

   Ready
   ```

4. The person making the changes to the program should now take whatever steps are necessary, according to installation guidelines, to save the new version of the program.

5. The source (.BAS) version of the program may now be removed from the public structure.

RSTS/E V8.Ø
Spooling and Operator Services Package
QUMRUN

Seq 14.6.2 F

RESTRICTING THE ASSIGNMENT OF BA: - QUMRUN FEATURE PATCH

PROBLEM:

Some installations may find it desirable to limit the number of BATCH streams which can be used for jobs that are queued to BA:.

SOLUTION:

The patching procedure detailed below will cause QUMRUN to avoid assigning jobs to BA6: and BA7: unless the user has specified BA6: or BA7:.

PROCEDURE:

1. For purposes of this discussion, we will assume that the program to be patched is located in your privileged account on the public disk structure. If this is not the case, replace all program references with suitable text according to the requirements of your installation.

   We assume the executable version of the program will be stored in the System Library Account ($). If this is not the case, replace references to $ in step 3 below with the appropriate package or library account.

   The procedure below assumes that BASIC-PLUS is your system default run-time system.

   If you are using CSPCOM or BASIC-PLUS-2, refer to Section 5.4 of the RSTS/E V8.Ø Maintenance Notebook for the correct procedure to compile the program.

   If you are using BASIC-PLUS-2, this program should be compiled under the BASIC2 run-time system.

2. This patch is contained in a patch file appearing in patch kit version "A" or later. If you do not have this distribution you can produce a command file by specifying a file for [logfile=] in the procedure below.

   To apply the patch manually, perform the following RSTS/E system commands.

RSTS/E V8.Ø
Spooling and Operator Services Package
QUMRUN

Seq 14.6.2 F

2 of 2

```
RUN $CPATCH<cr>
<CPATCH's header line>

File to patch - QUMRUN.BAS=QUMRUN.BAS<cr>
#[logfile=]KB:/CS:1Ø597<cr>
*H/2!/V<cr>
2!              PROGRAM         : QUMRUN.BAS
*H/15Ø7Ø<tab>/V<cr>
15Ø7Ø   DEF* FNN% &
*G/DFORMS2%/V<cr>
        \       DFORMS2%=(FNC%(LEFT(O$(Z3%,2%),2%),ZØ%(Z7%,9%)) AND &
*ØAI<cr>
<tab>\<tab>DFORMS1%=Ø% IF O$(Z3%,Ø%)="BA" &<cr>
<tab><tab><tab>IF (ZØ%(Z7%,1%) AND 255%)=255% IF O%(Z3%,1%)>5% &<cr>
<esc>*V<cr>
        \       DFORMS2%=(FNC%(LEFT(O$(Z3%,2%),2%),ZØ%(Z7%,9%)) AND &
*EX<cr>
Patch from KB:[P,PN]CPATCH.CMD complete
#^Z
File to patch - ^Z

Ready
```

3. Use this procedure if your system default run-time system is BASIC-PLUS; otherwise, refer to Section 5.4 of the RSTS/E V8.Ø Maintenance Notebook for the correct procedure to compile the program.

   To re-compile the program and re-enter it into the system library, type the following RSTS/E commands.

   ```
   OLD QUMRUN<cr>

   Ready

   COMPILE $QUMRUN<cr>

   Ready
   ```

4. The person making the changes to the program should now take whatever steps are necessary, according to installation guidelines, to save the new version of the program.

5. The source (.BAS) version of the program may now be removed from the public structure.

RSTS/E V8.Ø
Spooling and Operator Services Package
QUMRUN

Seq 14.6.3 F

DISABLE OPERATOR QUEUEING TO OTHER USERS ACCOUNT - QUMRUN FEATURE PATCH

PROBLEM:

Under BATCH, operators, as defined in OPSER's table of operators, can QUE files to be printed or jobs to be run for another user. Some installations may consider this too great a security risk.

SOLUTION:

The following patch disables the above mentioned feature. It does not affect the operator's ability to modify or kill jobs once they are in the queue, as that poses no apparent threat to system security. It also does not affect a privileged user's ability to QUE files/jobs to another account. Refer to article Seq 14.4.1 F, which supplies a similar patch for QUE.

PROCEDURE:

1. For purposes of this discussion, we will assume that the program to be patched is located in your privileged account on the public disk structure. If this is not the case, replace all program references with suitable text according to the requirements of your installation.

   We assume the executable version of the program will be stored in the System Library Account ($). If this is not the case, replace references to $ in step 3 below with the appropriate package or library account.

   The procedure below assumes that BASIC-PLUS is your system default run-time system.

   If you are using CSPCOM or BASIC-PLUS-2, refer to Section 5.4 of the RSTS/E V8.Ø Maintenance Notebook for the correct procedure to compile the program.

   If you are using BASIC-PLUS-2, this program should be compiled under the BASIC2 run-time system.

2. This patch is contained in a patch file appearing in patch kit version "A" or later. If you do not have this distribution you can produce a command file by specifying a file for [logfile=] in the procedure below.

   To apply the patch manually, perform the following RSTS/E system commands.

RSTS/E V8.Ø
Spooling and Operator Services Package
QUMRUN

Seq 14.6.3 F

2 of 2

```
RUN $CPATCH<cr>
<CPATCH's header line>

File to patch - QUMRUN.BAS=QUMRUN.BAS<cr>
#[logfile=]KB:/CS:16561<cr>
*H/2!/V<cr>
2!              PROGRAM         : QUMRUN.BAS
*H/1ØØ7Ø<tab>/V<cr>
1ØØ7Ø   IF (CVT$%(MID(M$,16%,2%))=Ø%) OR ONE.SHOT% THEN &
*3AV<cr>
                        E%=-1% UNLESS VALID.OP% &
*G/UNLESS /I/(P% AND 255%)=1% OR (/G/VALID.OP%/I/ AND T%<>6%)/V<cr>
                        E%=-1% UNLESS (P% AND 255%)=1% OR (VALID.OP% AND T%<>6%) &
*EX<cr>
Patch from KB:[P,PN]CPATCH.CMD complete
#^Z
File to patch - ^Z

Ready
```

3. Use this procedure if your system default run-time system is BASIC-PLUS; otherwise, refer to Section 5.4 of the RSTS/E V8.Ø Maintenance Notebook for the correct procedure to compile the program.

   To re-compile the program and re-enter it into the system library, type the following RSTS/E commands.

   ```
   OLD QUMRUN<cr>

   Ready

   COMPILE $QUMRUN<cr>

   Ready
   ```

4. The person making the changes to the program should now take whatever steps are necessary, according to installation guidelines, to save the new version of the program.

5. The source (.BAS) version of the program may now be removed from the public structure.

RSTS/E V8.Ø
Spooling and Operator Services Package
SPLRUN

Seq 14.1Ø.1 F

ELIMINATING EXTRA FORM FEEDS ON SPECIAL FORMS - SPLRUN FEATURE PATCH

PROBLEM:

At the beginning of each job, the spooler performs two top-of-form operations. The purpose of this action is to ensure that the new job really starts at the top of a new form, with at least one blank page between it and the last job. When using special paper forms, however, it is usually necessary to do a forms alignment. In this case, it may be annoying to have the extra top of form executed, because it wastes a page of the form.

SOLUTION:

The following patch inhibits the extra top-of-form operation at the start of a new job. Note that it inhibits the action not only after a forms-alignment process, but also at the beginning of any job. If this patch is used, it is essential that the paper be very carefully aligned in the printer. If the paper is misaligned, one job will begin on the same physical page as the end of the previous job.

PROCEDURE:

1. For purposes of this discussion, we will assume that the program to be patched is located in your privileged account on the public disk structure. If this is not the case, replace all program references with suitable text according to the requirements of your installation.

   We assume the executable version of the program will be stored in the System Library Account ($). If this is not the case, replace references to $ in step 3 below with the appropriate package or library account.

   The procedure below assumes that BASIC-PLUS is your system default run-time system.

   If you are using CSPCOM or BASIC-PLUS-2, refer to Section 5.4 of the RSTS/E V8.Ø Maintenance Notebook for the correct procedure to compile the program.

   If you are using BASIC-PLUS-2, this program should be compiled under the BASIC2 run-time system.

2. This patch is contained in a patch file appearing in patch kit version "A" or later. If you do not have this distribution you can produce a command file by specifying a file for [logfile=] in the procedure below.

RSTS/E V8.Ø
Spooling and Operator Services Package
SPLRUN

Seq 14.1Ø.1 F

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To apply the patch manually, perform the following RSTS/E system commands.

```
RUN $CPATCH<cr>
<CPATCH's header line>

File to patch - SPLRUN.BAS=SPLRUN.BAS<cr>
#[logfile=]KB:/CS:32856<cr>
*H/2!/V<cr>
2!              PROGRAM         : SPLRUN.BAS
*H/32ØØ/V<cr>
32ØØ    GOSUB 145ØØ IF PRTLNE%<>1% &
*AV<cr>
        \ NXTLNE%=2% \ RECLEN%=Ø% \ GOSUB 148ØØ &
*2KV<cr>
        \ GO SUB 21ØØØ &
*EX<cr>
Patch from KB:[P,PN]CPATCH.CMD complete
#^Z
File to patch - ^Z

Ready
```

3. Use this procedure if your system default run-time system is BASIC-PLUS; otherwise, refer to Section 5.4 of the RSTS/E V8.Ø Maintenance Notebook for the correct procedure to compile the program.

   To re-compile the program and re-enter it into the system library, type the following RSTS/E commands.

   ```
   OLD SPLRUN<cr>

   Ready

   COMPILE $SPLRUN<cr>

   Ready
   ```

4. The person making the changes to the program should now take whatever steps are necessary, according to installation guidelines, to save the new version of the program.

5. The source (.BAS) version of the program may now be removed from the public structure.

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Spooling and Operator Services Package
BATRUN

Seq 14.15.1 F

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$EOJ DOES NOT RESET ERROR CONDITION - BATRUN FEATURE PATCH

PROBLEM:

The $EOJ command does not reset the "running in error" flag in BATRUN. Thus, exceeding the ERROR level prevents succeeding $JOB commands from being processed. Without this feature patch, a batch control file containing multiple $JOB and $EOJ commands will terminate immediately once an error which exceeds the error level is detected. With this patch installed, all succeeding $JOB commands within the control file will be processed, regardless of whether any previous job within the control file failed to complete properly due to an exceeded error level condition.

SOLUTION:

The following patch will allow each $EOJ command to reset the ERROR flag so that processing can continue with the next $JOB command.

PROCEDURE:

1. For purposes of this discussion, we will assume that the program to be patched is located in your privileged account on the public disk structure. If this is not the case, replace all program references with suitable text according to the requirements of your installation.

   We assume the executable version of the program will be stored in the System Library Account ($). If this is not the case, replace references to $ in step 3 below with the appropriate package or library account.

   The procedure below assumes that BASIC-PLUS is your system default run-time system.

   If you are using CSPCOM or BASIC-PLUS-2, refer to Section 5.4 of the RSTS/E V8.Ø Maintenance Notebook for the correct procedure to compile the program.

   If you are using BASIC-PLUS-2, this program should be compiled under the BASIC2 run-time system.

2. This patch is contained in a patch file appearing in patch kit version "A" or later. If you do not have this distribution you can produce a command file by specifying a file for [logfile=] in the procedure below.

   To apply the patch manually, perform the following RSTS/E system commands.

```
RUN $CPATCH<cr>
<CPATCH's header line>

File to patch - BATRUN.BAS=BATRUN.BAS<cr>
#[logfile=]KB:/CS:53265<cr>
*H/2!/V<cr>
2!              PROGRAM         : BATRUN.BAS<cr>
*H/4ØØ<tab>/V<cr>
4ØØ     ! &
*G/!<tab>E8%/V<cr>
!       E8%             RUNNING IN LOCAL ERROR STATE FLAG. &
*ØAKV<cr>
!       E9%             RUNNING IN ERROR STATE FLAG. &
*H/11Ø3Ø<tab>/V<cr>
11Ø3Ø   I%=I%+2% IF CVT$%(MID(OUTPUT$,I%+1%,2%))=3328% &
*G/<tab>\ E9%,/4DG/-1%/-3C/Ø%/V<cr>
        \ E9%,ZØ%(J9%,5Ø%)=FNEØ%("ERROR LEVEL EXCEEDED",Ø%) IF &
*H/13Ø1Ø<tab>/V<cr>
13Ø1Ø   E8%=Ø% &
*G/E8%=Ø%/-6C/E9%=Ø%/V<cr>
13Ø1Ø   E9%=Ø% &
*H/1713Ø<tab>/V<cr>
1713Ø   GOSUB 11ØØØ &
*G/FNW%=-1% IF E8%/-3C/E9%/V<cr>
        \ FNW%=-1% IF E9% &
*EX<cr>
Patch from KB:[P,PN]CPATCH.CMD complete
#^Z
File to patch - ^Z

Ready
```

3. Use this procedure if your system default run-time system is BASIC-PLUS; otherwise, refer to Section 5.4 of the RSTS/E V8.Ø Maintenance Notebook for the correct procedure to compile the program.

   To re-compile the program and re-enter it into the system library, type the following RSTS/E commands.

```
OLD BATRUN<cr>

Ready

COMPILE $BATRUN<cr>

Ready
```

4. The person making the changes to the program should now take whatever steps are necessary, according to installation guidelines, to save the new version of the program.

5. The source (.BAS) version of the program may now be removed from the public structure.

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USING SAVE/RESTORE ON A TWO-DISK SYSTEM

This article describes the procedure for using SAVE/RESTORE to backup the disks on a system which has only two disk drives and no magnetic tape drives. On such a system, you can back up the system disk by shutting down the RSTS/E system and using the SAVRES option of INIT. It is impossible, however, to perform such a backup of the non-system disk, since the procedure would require that the system disk, the disk being backed up, and the SAVE volume all be mounted simultaneously, and hence would require three or more disk drives, or a magnetic tape drive.

The solution presented in this article is to place a copy of the INIT.SYS system initialization code on the non-system disk, allowing it to run as the "system" disk for off-line SAVE/RESTORE operations. This procedure has one drawback: the INIT.SYS initialization code requires about 6ØØ blocks on the non-system disk (about 11% of an RKØ5). If you have small disks, such as RKØ5's or RLØ1's, you should consider expanding your hardware to include another disk drive or magnetic tape unit. For disks larger than RLØ1's, the overhead of having the INIT.SYS initialization code on each non-system disk is usually small enough to be tolerable, although you must decide based on your system's needs.

You should put the INIT.SYS initialization code ([Ø,1]INIT.SYS) on the non-system disk immediately after initializing the disk with DSKINT. This ensures that there is enough space for INIT.SYS. After generating the monitor, run-time system, and system library, perform the procedures outlined below. In the examples below, the notation "SYØ:" denotes the disk drive on which your normal system disk is mounted, and "xxn:" denotes the other disk drive, which is used for various purposes in the procedure.

1. Ensure that HOOK.SAV is on your system disk in account [1,2]. This will be the case if your SYSGEN target system was SY:. If this file does not already exist in [1,2], mount your distribution system disk (with the /RONLY switch) on xxn: and use the following commands to copy HOOK.SAV to your system disk (user responses are underlined):

   RUN $PIP.SAV<cr>
   *SYØ:$*.*=xxn:$HOOK.SAV<cr>
   *^Z

   Ready

2. If you have not yet initialized the non-system disk that you plan to use, shut down the system, mount the disk on xxn:, and use DSKINT to initialize the disk. You may then start timesharing.

3. Issue the commands given below:

```
RUN $PIP.SAV<cr>
*xxn:[Ø,1]*.*/CL:16=[Ø,1]INIT.SYS<cr>
*^Z

Ready

RUN $HOOK.SAV<cr>
<HOOK's header line>
*xxn:[Ø,1]INIT.SYS<cr>
Hook complete
*^Z

Ready
```

4. Your non-system disk is now ready to use. You may dismount it and mount it as a public disk if you desire. When you wish to back up that disk, you must shut down your system, bootstrap the non-system disk, and mount a scratch disk in place of your normal system disk. You may now use the SAVRES option of INIT to SAVE or IMAGE-copy your non-system disk to the backup disk.

NOTE

If you ever patch [Ø,1]INIT.SYS on the system disk, be sure to patch that file on all disks which have [Ø,1]INIT.SYS.

RSTS/E V8.Ø
System Management Guidelines
Package Notes

Seq 16.1.2 N

USING BACKUP ON A TWO-DISK SYSTEM

This article describes the procedure for using the RSTS/E V8.Ø BACKUP package to back up the disks on a system which has only two disk drives and no magnetic tape drive. On such a system, you can back up the system disk normally by dismounting the non-system disk. The only requirement is that the BACKUP package exist entirely on the system disk. However, it is impossible to take a normal backup of the non-system disk. Such a procedure would require that the system disk, the disk being backed up, and the backup volume all be mounted simultaneously, and hence would require three or more disk drives.

The solution presented in this article is to place a minimal system on the other disk, allowing it to run as the system disk during the backup. You must follow this procedure for every RSTS/E file structured disk pack, public or private, which you ever mount along with the system disk and which you want to be able to back up. This procedure has one major drawback: the minimal system requires a large number of blocks on the non-system disk (approximately 16ØØ). If you have RKØ5 or RLØ1 disks, you should not use this procedure. Instead, use SAVE/RESTORE to preserve these disks. If you have RKØ6 disks, carefully consider the consequences of using a large part of your non-system disk capacity (almost 6% for RKØ6) for backup. If you do not wish to use such a large part of your non-system disk capacity for backup, you should use SAVE/RESTORE instead (see article Seq 16.1.1 N). The only disadvantage with SAVE/RESTORE is that you cannot save or restore individual files, but must copy an entire disk. For disks larger than RKØ6s, the overhead of having a small system on each nonsystem disk is usually small enough to be tolerable, although you must decide based upon your system's needs.

If you decide to build a small system on each non-system disk, you may use your standard monitor SIL, the SYSGEN.SIL provided by Digital, or another SIL generated especially for the purpose. The last choice allows you to build a small, special-purpose monitor for use only during backup and restore, thereby minimizing the disk space required. If you generate a special monitor, it should support at least 2 jobs, your two disks, one terminal (KBØ:), have nothing resident, no options, and a minimal number of small buffers. (Note that such a system may cause BACKUP to run slowly. If you can afford the disk space and wish to optimize the system for speed, more options and/or small buffers should be included, as well as directory and/or data caching.) Remember to install any applicable patches to the SIL.

You should place the minimal system for backup on the non-system disk immediately after initializing the disk with DSKINT. This placement ensures that contiguous space is available for the required files. After generating the monitor, run-time system, and system library (including the BACKUP package), perform the procedures outlined below. In the examples, the

notation "SYØ:" denotes the disk drive on which your normal system disk is mounted, and "xxn:" denotes the other disk drive on the system, which is used for various purposes in the procedure. Note that the procedure below assumes that your primary run-time system is BASIC-PLUS (e.g., the Backup Package, SHUTUP, and UTILTY are .BAC files). If these programs are in .TSK form on your system, be sure to substitute the proper file type where appropriate.

1. Ensure that the monitor SIL you want to use for your small backup system is on the system disk. Generate it or copy it if necessary.

2. If you have not yet initialized the non-system disk you plan to use, shut down the system, mount the disk on xxn:, and use DSKINT to initialize the disk. You may then start timesharing.

3. Issue the commands given below:

```
RUN $UTILTY<cr>
<UTILTY's header line>
#MOUNT xxn:packid/PRIVATE<cr>
#UNLOCK xxn:<cr>
#^Z

Ready

RUN $PIP.SAV<cr>
*xxn:[Ø,1]*.*/MO:16=[Ø,1]bbbbbb.RTS,[Ø,1]ERR.ERR<cr>
*xxn:[Ø,1]*.*/MO:16=[Ø,1]INIT.SYS,[Ø,1]ssssss.SIL<cr>
     where ssssss is the SIL you wish to use on your backup disk, and
     bbbbbb is the run-time system under which SHUTUP, UTILTY, and the
     BACKUP package were compiled
*xxn:$*.*/W=SYØ:$BAC???.BAC,$BACKUP.PRM,$BACKUP.HLP,$SHUTUP.BAC,$UTILTY.BAC<cr>
     to copy SHUTUP, UTILTY, and the BACKUP package to the non-system disk
     (use a file type of .TSK if appropriate)
*xxn:[Ø,1]SWAP.SYS/MO:16/SI:128=NL:
     (if using BASIC-PLUS-2 or CSPCOM/RSX, use /SI:224 rather than /SI:128)
*^Z

Ready

RUN $HOOK.SAV<cr>
<HOOK's header line>
*xxn:[Ø,1]INIT.SYS<cr>
Hook complete
*^Z
```

```
Ready
```

4. Shut down your system, and use the BOOT option of the initialization code to bootstrap the disk xxn:. Use INSTALL to install the ssssss SIL, which you copied in step 3. Use DEFAULT to set defaults for the backup system. Specify 16K (28K for BASIC-PLUS-2 or RSX) as the SWAP MAX, and bbbbbb as the default run-time system.

Your non-system disk is now ready to use. You may dismount it and mount it as a public disk if you desire. When you wish to back up that disk, you must shut down your system and bootstrap the non-system disk. Use START to start timesharing from the small system on the non-system disk. Since INIT.BAC (or INIT.TSK) was not moved to the non-system disk, the messages:

```
?Can't find file or account
?Program lost-sorry

Ready
```

will be printed. You may now do your backup. (Alternatively, you may want to move INIT.BAC (or INIT.TSK) to your non-system disk at the time you moved the BACKUP package. In this case, you can include a control file to bring up a limited RSTS/E system and include the backup commands in the control file.)

Physically remove your normal system disk from SYØ: and mount a backup volume in its place. Then use the BACKUP package to preserve the files on the disk. Use a similar procedure to restore any files to the disk. If you lose the entire file structure of the disk, including the system and/or the BACKUP package, you can restore the disk using a system recovery medium as described in article Seq 16.1.3 N.

NOTE

If you ever patch or replace on the system disk any of the BACKUP or system modules that you copied in the above procedure, you must do so while the non-system disk is not mounted as a public disk. After replacing the module(s), mount the non-system disk with the /PRIVATE switch and use PIP (with the /UP switch, update in place, if the output file is INIT.SYS, the monitor SIL, or the default run-time system) to change the file on the non-system disk. In addition, when patching INIT or the monitor SIL, repeat the HOOK, INSTALL, and DEFAULT steps shown above. Repeat for each disk used on drive xxn: that contains a minimal system for backup purposes. Also, if any patches are installed to the RSTS/E monitor or the INIT.SYS code, be sure to

CREATING A SYSTEM DISK RECOVERY MEDIUM

Regular use of the RSTS/E BACKUP package provides protection against loss of files if the system crashes, if disk errors occur, or if important files are accidentally destroyed. However, the one situation from which BACKUP cannot recover is when the system disk or one or more of the monitor files is destroyed and the system cannot be started at all. One option in such an event is to use the RSTS/E distribution kit to regenerate the system, install all patches, build the complete system library, and then restore the remaining files on the system disk from the most recent backup. This is time consuming and error prone. Recovery is much simpler if you have a "recovery medium".

One means of creating a system disk recovery medium is SAVE/RESTORE. SAVE/RESTORE runs much more quickly than BACKUP for saving an entire disk and generates a bootable recovery medium. SAVE/RESTORE, however, cannot perform selective backups or back up the system disk while the system is running.

DIGITAL recommends that you use a procedure, such as the one outlined below, to regularly protect your system against the catastrophic loss of critical files that might result from hardware or software failure.

1. Use SAVE/RESTORE periodically (perhaps weekly) to back up all of your disks. This will provide you with a bootable medium that can be used to restore your entire disk(s) in the event of catastrophic failure.

2. Use BACKUP to back up those files which have changed since SAVE/RESTORE was last run. This will allow you to recover files that have changed recently without shutting down your system disk to back them up.

The remainder of this article tells you how to create a system recovery medium (disk or tape) if for some reason you choose not to use SAVE/RESTORE on your system. The resulting recovery medium will contain your fully patched monitor, BASIC-PLUS (or appropriate) run-time system, and enough of the BACKUP package to restore the rest of the system disk file structure. The recovery medium is bootable in a manner similar to the distribution medium and any intermediate tape (or disk) which you may have created during SYSGEN.

In order to recover from destruction of the system disk, you will need the recovery medium and a recent backup of your system disk. Note that this backup must include an up-to-date version of the file [1,2]ACCT.SYS so that the recovery can enter all accounts properly. If you ever change your monitor, or install any patches in any of the files placed on the recovery medium, you should rebuild that medium.

To build the recovery medium, you must have ADDed the RT11 run-time system to RSTS/E. You must also have the programs PIP.SAV and HOOK.SAV in account [1,2].

Follow the instructions in the following sections, depending on whether you wish to build a recovery disk or magnetic tape. In the examples, the file name RSTS.SIL is used as the monitor SIL. You should substitute the actual file name for your system.

Building a recovery disk

Using PIP, create the file RECOVR.CMD in [1,2] containing the following text:

("[x,y]" is the account containing the BACKUP package)

("rrrrrr" is the run-time system under which the Backup Package is compiled)

("ccc" is the file type of the compiled programs)

```
RUN $PIP.SAV<cr>
*$RECOVR.CMD=KB:<cr>
SYØ:[x,y]*.*<232>/RTS:rrrrrr=IN:[x,y]BAC???.ccc<cr>
SYØ:[x,y]*.*=IN:[x,y]BACKUP.PRM<cr>
SYØ:[x,y]BACENT.ccc<1Ø4>/RE<cr>
^Z
*^Z
```

Mount a formatted and initialized disk on a free disk drive. (The text below uses xxn: as the device designator and "packid" as the pack identification for the recovery pack.) If necessary, shut down your system and use DSKINT to format a pack, or use the program DSKINT.BAC to re-initialize an already formatted scratch pack.

Using UTILTY or UMOUNT, logically mount xxn:.

Follow the procedure below to build the recovery disk (user responses are underlined):

```
RUN $REACT<cr>
<REACT's header line>
System Account Manager
Function? E<cr>
Proj,Prog? x,y<cr>
Disk:Password? xxn:pppppp<cr>
Quota? <cr>
Cluster Size? <cr>
Account Name? nnnnnn<cr>
Proj,Prog? 1,2<cr>
Disk:Password? xxn:pppppp<cr>
Quota? <cr>
Cluster Size? <cr>
Account Name? nnnnnn<cr>
Proj,Prog? ^Z

Ready
```

```
RUN $PIP.SAV<cr>
*xxn:[Ø,1]*.*/MO:16=SY:[Ø,1]RT11.RTS<cr>
*xxn:[Ø,1]*.*/MO:16=SY:[Ø,1]rrrrrr.RTS<cr>
*xxn:[Ø,1]*.*/MO:16=SY:[Ø,1]ERR.ERR<cr>
*xxn:[Ø,1]*.*/CL:16=SY:[Ø,1]INIT.SYS,[Ø,1]RSTS.SIL<cr>
*xxn:$*.*=SY:$PIP.SAV,$UTILTY.SAV,$RECOVR.CMD<cr>
*xxn:$*.*=SY:$REACT.ccc,$ACCT.SYS<cr>
*xxn:[x,y]*.*=SY:[x,y]BAC???.ccc<cr>
*xxn:[x,y]*.*=SY:[x,y]BACKUP.PRM<cr>
*xxn:$PIP.SAV<232>/RE<cr>
*^Z

Ready

RUN $HOOK.SAV<cr>
HOOK's header line>
*xxn:[Ø,1]INIT.SYS<cr>
Hook complete
*^Z

Ready
```

Dismount the recovery disk and save it. Also dismount the distribution medium.

To recover from the destruction of the system disk or one or more of the system files, you need the recovery disk and a recent BACKUP.

Mount the recovery disk on one disk drive and bootstrap it. The RSTS/E initialization code runs and prints a header and the OPTION: prompt.

On another disk drive, mount the disk on which to restore the system disk. Using the DSKINT option, recreate your system disk with the same parameters that you used at system generation time.

Then use the COPY option to move your monitor files to the new system disk. Use the /A switch to copy all relevant files (see the RSTS/E System Generation Manual). As part of the COPY option, INIT bootstraps that disk. If necessary, use the HARDWR option to change controller characteristics.

Then INSTALL your monitor SIL and use REFRESH to create the required system files on your system disk. Use DEFAULT to change the system default run-time system to RT11.

START the system on your new system disk and continue as follows:

?Can't find file or account

```
.ASSIGN xxn:IN
.MOUNT IN:packid/RO<cr>
.R IN:UTILTY<cr>
*ADD rrrrrr<cr>
*^z

.R IN:$PIP.SAV<cr>
*$*.*=IN:$ACCT.SYS<cr>
*^Z
```

Now run REACT to create all the accounts on the new system disk that were on the old system disk. Ignore the errors generated when REACT attempts to enter an account that already exists, either on SY: or on another disk.

```
.R IN:REACT<cr>
<REACT's header line>
System Account Manager
Function? S<cr>
   .
   .
   .
Function? ^Z

.R IN:$PIP.SAV<cr>
*@IN:RECOVR.CMD<cr>
*^Z
.R IN:UTILTY<cr>
*REMOVE rrrrrr<cr>
*DISMOUNT IN:<cr>
*SHUTUP<cr>

Option:
```

Dismount the recovery disk from drive xxn:. Use DEFAULT to change the system default run-time system back to rrrrrr. START the system. Your new system disk now has enough of the BACKUP package to restore the entire disk from a recent BACKUP. Do this now, specifying that all files be superseded. Your system disk is now ready to use.

Building a recovery magnetic tape

Using PIP, create the file RECOVR.CMD in [1,2] containing the following text:

("[x,y]" is the account containing the BACKUP package)

("rrrrrr" is the run-time system under which the Backup Package is compiled)

("ccc" is the file type of the compiled programs)

```
RUN $PIP.SAV<cr>
*$RECOVR.CMD=KB:<cr>
SYØ:[x,y]*.*<232>/RTS:rrrrrr=IN:[x,y]BAC???.ccc<cr>
SYØ:[x,y]*.*=IN:[x,y]BACKUP.PRM<cr>
SYØ:[x,y]BACENT.ccc<1Ø4>/RE<cr>
^Z
*^Z
```

Mount a magnetic tape on a free drive (referred to below as xxn:). Follow the procedure below to build the recovery tape (user responses are underlined):

```
ASSIGN xxn:.DOS<cr>

Ready

RUN $PIP.SAV<cr>
*xxn:/ZE<cr>
Really zero xxn:/density:ddd/parity:ppp? YES<cr>
*^Z

Ready
```

In the following, "ddd" represents the tape unit density.

```
RUN $HOOK.SAV<cr>
HOOK's header line>
*xxn:[Ø,1]INIT.SYS/D:ddd,SY:[Ø,1]INIT.SYS<cr>
Hook complete
*^Z

Ready
```

```
RUN $PIP.SAV<cr>
*xxn:[Ø,1]*.*=[Ø,1]RT11.RTS<cr>
*xxn:[Ø,1]*.*=[Ø,1]rrrrrr.RTS<cr>
*xxn:[Ø,1]*.*=[Ø,1]ERR.ERR<cr>
*xxn:[Ø,1]=SY:[Ø,1]RSTS.SIL<cr>
*xxn:$*.*=SY:$PIP.SAV,$UTILTY.SAV,$RECOVR.CMD<cr>
*xxn:$*.*=$REACT.ccc,$ACCT.SYS<cr>
*xxn:[x,y]*.*=SY:[x,y]BAC???.ccc<cr>
*xxn:[x,y]*.*=SY:[x,y]BACKUP.PRM<cr>
#^Z

Ready
```

Dismount the tape and save it.

To recover from the destruction of the system disk or one or more of the system files, you need the recovery tape and a recent BACKUP.

Mount the recovery tape on a tape drive (referred to below as xxn:) and bootstrap it. The RSTS/E initialization code runs and prints a header and the OPTION: prompt.

Mount the disk on which to restore the system disk.

Using the DSKINT option, recreate your system disk with the same parameters that you used at system generation time.

Then use the COPY option to move your monitor files to the new system disk. Use the /A switch to copy all files with the appropriate file types (see the RSTS/E System Generation Manual). As part of the COPY option, INIT bootstraps that disk. If necessary, use the HARDWR option to change controller characteristics.

Then INSTALL your monitor SIL and use REFRESH to create the required system files on your system disk. Use DEFAULT to change the default run-time system to RT11.

START the system on your new system disk and continue as follows:

```
?Can't find file or account
.ASSIGN xxn:.DOS<cr>
.ASSIGN xxn:IN<cr>

.R IN:PIP<cr>
*$*.*<232>=IN:$PIP.SAV/NO<cr>
*$*.*<1Ø4>=IN:$UTILTY.SAV/NO<cr>
*$*.*=IN:$RECOVR.CMD/NO<cr>
*$*.*<124>/RTS:rrrrrr=IN:$REACT.ccc/NO<cr>
*$*.*=IN:$ACCT.SYS/NO<cr>
*^Z

.R UTILTY.SAV<cr>
#ADD rrrrrr<cr>
#^Z

.R $REACT<cr>
<REACT's header line>
System Account Manager
Function? S<cr>
    .
    .
    .
Function? ^Z

.R $PIP<cr>
*@$RECOVR.CMD<cr>
*$RECOVR.CMD/DE<cr>
*^Z
```

Dismount the recovery tape from drive xxn:.

Your new system disk now has enough of the BACKUP package to restore the entire disk from a recent BACKUP.

Do this now, specifying that all files be superseded.

Your system disk is now ready to use.

Notes on systems with multiple public disks

During the recovery procedure, after starting the system on your new system disk, you must physically mount and write-enable the other disks in your system's public structure. Type the command

```
MOUNT xxn:packid
```

for each non-system public disk, replacing xxn: with the disk name and unit, and packid with the pack ID for that disk. This procedure ensures that all required disk space is available for the recovery.

Take the following precautions when creating a recovery disk:

1. If you can mount the recovery disk on an unused drive or in place of a private disk, do so. This leaves the full public disk structure mounted.

2. If you cannot mount the recovery disk in addition to the full public structure, you must dismount a non-system public disk. This disk must not contain any of the files required for the creation of the recovery disk or the actual recovery procedure. This disk can be dismounted while creating the recovery disk, and need not be mounted until a recovery is complete. If necessary, use PIP to copy files from this disk to another disk on the public structure:

   ```
   RUN $PIP.SAV<cr>
   *out:*.*=in:file.typ<cr>
   *^Z
   ```

   In these commands, "in:" is the name and unit number of the disk to be cleared of files, "out:" is the name and unit number of any other public disk, and file.typ is a file to be moved.

   NOTE

   You must not specify wildcard filenames for input when transferring files between public disks in the same account.

   Repeat these commands to PIP to copy each file on in: necessary for building the recovery disk or for the recovery procedure itself.

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RSTS/E V8.Ø UPDATE KIT "A" PATCHING PROCEDURE

NOTE

This article appears on Update Kit "A" as $PATCHA.DOC. The Pack ID for disk media is "PATCHA".

I. INTRODUCTION

Update Kit "A" contains "Mandatory" and optional "Feature" patches published in the RSTS/E V8.Ø Software Dispatch. Update Kit "A" also contains Replacement Modules for some of the CUSPs.

This Update Kit includes all patches published for optional layered software that appear in the RSTS/E Software Dispatch. Please be sure to read the sections which follow prior to installing optional layered software.

NOTE TO USERS WITH SYSTEMS THAT INCLUDE DECNET/E

Beginning with RSTS/E V8.Ø, certain components of DECnet/E V2.Ø will be maintained by module replacement. For these components, patching and task-building on-site will no longer be necessary. With update kit "A" (shipped with the RSTS/E V8.Ø distribution), three components of DECnet/E V2.Ø are updated with module replacements: NFT, FAL, and NCP. These replacement modules incorporate all previously-published patches, as well as fixes for several problems which were not patchable.

Update kit "A" also includes a new version of the build/patch top-level control file, DECNET.CTL. NOTE that this control file supersedes the DECNET.CTL file supplied on the DECnet/E V2.Ø distribution. The new control file from update kit "A" will be used to install all future module replacements, and to apply future patches, when the PATCH option of BUILD is invoked. You must also use the new DECNET.CTL file to install the DECnet/E utilities as you build DECnet/E for your V8.Ø RSTS/E system.

II. PATCH COMMAND FILES FOR MANDATORY PATCHES

The following is a list of all patch command files containing "Mandatory" patches.

Command File	Component to patch	New patches or Modules this kit	Comments
Using ONLPAT:			
DECNTC.CMD	DECnet/E monitor patches	*	
MONITR.CMD	Monitor patches	*	
INIT.CMD	Initialization code		
BASIC.CMD	BASIC-PLUS Run-Time System		
RSXRTS.CMD	RSX Emulator		
RJ278Ø.CMD	RSTS/E 278Ø Device Driver		
Using PBUILD:			
EXEC.CMD	All of the above except RSX	*	
RT11.CMD	RT-11 Emulator and Utilities		
RSX.CMD	RSX Emulator & Utilities		
BUILD.CMD	Standard CUSP Library		1
BACKUP.CMD	CUSP Library (Backup Pkg)		1
SPLER.CMD	CUSP Library (Spooling Pkg)		1
SPL.CMD	CUSP Libr (Micro Spool Pkg)		1
EDT.CMD	EDT V2.Ø		
DCL.CMD	DCL		1
RMS.CMD	RMS-11 V2.Ø		1
UT278Ø.CMD	RSTS/E 278Ø library		1,2
DECNET.CMD	DECnet/E V2.Ø Utilities	*	
COBOL.V44	COBOL V4.4	*	1
DECAL.CMD	DECAL V2		1,2,5
DMSDBL.CMD	DMS DIBOL-11/DECFORM V4.5	*	1
RMSDBL.CMD	RMS DIBOL-11/DECFORM V4.5	*	1
DTR.V24	DATATRIEVE V2.4	*	1
FORTRA.V25	FORTRAN IV V2.5		4
F77.V41	FORTRAN-77 V4.1		
INDENT.CMD	INDENT V1.2		1
3271.CMD	3271 PE V2.1		
Using BUILD:			
DECNET.CTL	DECnet/E V2.Ø Utilities	*	1
DMS5ØØ	DMS5ØØ V2.1		3
MAILOB.CMD	DECmail/RSTS V1.Ø	*	6

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Notation:

1. Requires distribution kit for that component - answer the PBUILD "Read files to patch from" question with "dev:", where dev: is the device on which the appropriate distribution kit is mounted, unless additional instructions are listed below.

2. During patching, you must be running under the BASIC-PLUS run-time system.

3. The DMS5ØØ patches which appear on this patch kit are for the correction of the control file which installs DMS5ØØ Version 2.1. This correction to the control file allows DMS5ØØ Version 2.1 to be installed correctly in accounts other than the library account [1,2]. These patches can only be installed through the use of the BUILD program (not PBUILD), and can be installed by selecting the BUILD/PATCH option during the BUILD program dialogue.

4. Be sure to refer to Appendix D of the RSTS/E FORTRAN IV Installation Guide (AA-C762C-TC) before attempting to apply FORTRAN IV V2.5 patches. As noted in that document, all files to be patched must reside in the account under which you are running. Therefore, the "Read files to patch from" question should be answered with "[p,pn]", where [p,pn] is the current user account.

   Also note that the first "patch" or file prints procedures to be performed after the installation of the patches.

5. For DECAL V2 patching, answer the "Read files to patch from" question with "dev:[25Ø,1]", where dev: is the device on which the DECAL V2 distribution kit is mounted. This is necessary because the required source files reside in that account. DECAL.CMD determines which account patched sources are to be compiled on by asking the question:

   Locate DECAL Package on <SY:[1,2]> ? [p,pn]

6. Requires distribution kit for this componet. These patches can only be installed through the use of the BUILD program (not PBUILD), and can be installed by selecting the BUILD/PATCH option during the BUILD program dialogue.

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NOTES ON ATPK

ATPK (pronounced "at-pee-kay") is included in RSTS/E for use as a part of the BUILD procedure and in the DCL LINK command. It can also be used, however, as a general purpose indirect command file processor. ATPK can control a job by use of a pseudo-keyboard (PK) and run programs from a script previously defined in a command file. As an indirect command file processor, ATPK runs at the user's keyboard and reports the job dialogue there as it happens. ATPK can also be used as a simple batch processor, running detached and reporting the job's dialogue in a log file. Note that ATPK is unsupported except for its use in BUILD and DCL.

STARTING UP ATPK

ATPK may be invoked in one of the following ways:

```
RUN $ATPK
*<startup command>
```

or, if the CCL is installed,

```
ATPK <startup command>

        or

ATPK
*<startup command>
```

ATPK will accept either of the CCL commands "ATPK" or "@" if they have been installed by the system manager.

<startup command> is of the form:

```
[<log file> =] <command file> [/<switches>]
```

Valid switches are:

/DET	Run ATPK detached (available only to privileged users). Note that if a log file is not specified, output will be to the keyboard whether or not ATPK detaches. At the end of a successful detached run, ATPK will kill itself.
/DEL	Delete command file on successful completion (used by BUILD).

/RTS:<rts> Start the controlled job under the keyboard monitor <rts>. If <rts> is not a keyboard monitor RTS, no error will be reported and the new job will start up under the system default RTS. If this switch is not specified, the job will start under the user's current job default RTS.

/LOG If the user is privileged, the controlled job and any jobs started with the $LOGIN command will be created regardless of whether logins have been disabled.

/CHA[IN]: <program> [;<line>] [=\<core common>\]

On successful completion, chain to <program> at line number <line>, if specified, with <core common> loaded in core common, if specified. Any character not contained in <core common> may be used in place of the backslashes to delimit the <core common> argument. This switch allows BUILD to patch itself or ATPK and then chain back to itself for the rest of the build.

The dialogue of the controlled job will normally be printed on the terminal. If a log file is specified, the dialogue will also be printed there. If both a log file and the /DET switch are specified, the dialogue will be printed only in the log file.

The default file types for the command and log files are, respectively, .CMD and .LOG.

PROCESSING THE COMMAND FILE

ATPK usually sends each line of the control file "as is" to the PK when the job at the PK enters a program or monitor keyboard wait stall. Four characters in the command file are handled specially, however:

$ as first character on line, indicates an ATPK command.
! as first character on line, indicates a comment.
^ indicates a control character.
_ indicates that the next character is not a special character. (i.e., an underscore character quotes the following character.)

ATPK commands:

Any command file line beginning with a dollar sign ("$") will be considered an ATPK command. Valid ATPK commands are:

$DISABLE LOG	Turn dialogue reporting to the log file (and/or keyboard) off.
$ENABLE LOG	Resume printing the controlled job's dialogue in the log file (and/or at the keyboard).
$ALLOW NO ERRORS	Abort if any (fatal or warning) errors are encountered by the controlled job.
$ALLOW WARNING ERRORS	Abort if a fatal error is encountered by the controlled job, but allow warning errors.
$ALLOW FATAL ERRORS	Do not abort if any errors are encountered by the controlled job (default setting).
$WAIT	Accept a line of input from the keyboard and send it as input to the controlled job. If a program is running at the controlled job after this line has been processed, continue accepting command lines from the keyboard until the program has stopped running and the controlled job is in a keyboard monitor wait (i.e., SYSTAT would show the job in a "^C" state). After this command has been processed, input will resume from the command file.
$@<command file>	Switch input command stream to <command file>. ATPK will abort if the command file is not found. No nesting of these indirect command files is allowed; ATPK will abort if it finds the "$@" command in the <command file>.
$DETACH	Causes ATPK to detach. This command may be used after the $WAIT command to cause ATPK to detach after user input at the start of the controlled job.
$LOGIN [KB[n]:] [(p,pn)]	Log in a keyboard under the user's account or the account specified by (p,pn). This command, which is only available to privileged users, causes ATPK to create a job running LOGIN with instructions to attach to the specified keyboard and log in under the specified account. If (p,pn) is not specified, the

account that ATPK is running under will be used. If n is not specified (e.g., $LOGIN KB:), LOGIN will be instructed to attach to the keyboard from which ATPK was started. This may be useful to log the user back in following a command that started up ATPK with the /DET switch. If the keyboard specification is missing altogether, a new job will be started at the pseudo keyboard under ATPK's control. The current job at the pseudo keyboard, if any, will first be killed in this case. If LOGIN fails to attach or log in at the pseudo keyboard under ATPK, an error message will be printed and ATPK will abort. If LOGIN fails at any other keyboard, no error will be returned to ATPK.

COMMENTS:

Any line starting with an exclamation point ("!") will be recorded in the log and not sent to the controlled job.

CONTROL CHARACTERS:

Any character preceded by an uparrow ("^") will be converted to a control character before being sent to the controlled job. If a command line consists only of an uparrow followed by a single character, the single control character will be sent to the controlled job with no extra line terminator.

QUOTED CHARACTERS:

Any "$" or "!" that is meant to be the first character of a line to be sent to the controlled job, or any "^" or "_" in the command file that is not to be interpreted as a special character by ATPK must be preceded with the underscore character. Every underscore character (except those preceded by another underscore character) will be removed from the command line before it is sent to the controlled job.

USING ATPK FOR SILENT SYSTEM STARTUP

If it is desired, most of system startup may be controlled under ATPK. INIT.BAC (or INIT.TSK) need only run long enough to invoke ATPK. At the end of system startup, the ATPK log can be queued to the line printer. This section suggests guidelines for writing ATPK startup files and gives a sample set of these control files.

When designing the ATPK startup command files, most of the functions of INIT.BAC will have to be performed with UTILTY. The recommended procedure for bringing a non-system disk online after a crash is to use the DCL MOUNT command, or to clean the disk with ONLCLN.SAV and then MOUNT and UNLOCK the disk with UTILTY.

When starting up the spooling package under ATPK, two points in particular should be noted. First, the $LOGIN command should be used to re-log in the pseudo keyboard after a spooling program detaches. Secondly, when the spooling programs are invoked, they generally prompt for input and then sleep while awaiting a response. Since ATPK will not respond unless the controlled program enters an input stall (as opposed to a sleep), ATPK will not detect when the spooler needs the command line. This problem may be circumvented by including the startup command(s) on the same command file line as the command that invokes the spooling program. If the commands are separated with an uparrow-M, ATPK will insert a carriage return (the equivalent of a CTRL/M) between the commands, causing them to be sent to the pseudo keyboard at the same time, but as separate lines.

The way ERRCPY is normally started up by INIT is as follows: INIT runs as job 1, attaches to KBØ:, forces the commands to KBØ: to run ERRINT, and then exits. The system then processes the type-ahead on KBØ: and runs ERRINT, as job 1. To avoid using KBØ: in this way for the silent system startup, two chain entries have been added to ERRINT so that ATPK, running detached as job 1, can simply chain to ERRINT for normal or crash system startup. Chaining to ERRINT at line 31Ø2Ø can be used for normal startup; crash dump output will not be used. For a crash recovery, chaining to ERRINT at line 31Ø3Ø will cause crash dump output to be used.

Care must be taken when starting up certain programs by forcing to other terminals under ATPK, so that timing problems do not develop. For example, under INIT, VT5ØPY could be started up to run detached and report to a terminal by logging in that terminal, forcing the command to run VT5ØPY, forcing the VT5ØPY command line, and then forcing commands to modify the displayed options. Since INIT runs at a low priority, it would be prevented from running while VT5ØPY was running, and would force the next line only when VT5ØPY was ready. If the same technique were used; using ATPK's $LOGIN command to log in the keyboard and then forcing the commands with UTILTY, all the commands would be typed at the terminal before VT5ØPY had the chance to detach. As it detaches, VT5ØPY briefly closes the keyboard. The typed-ahead commands would then invoke LOGIN at the keyboard and prevent VT5ØPY from gaining access to it. VT5ØPY may be started up under ATPK using commands such as the following:

```
RUN $VT5ØPY
6Ø/24/DCA/TAB/ECHO/DET/KB5:
$LOGIN
RUN $UTILTY
FORCE KB5: F1
FORCE KB5: P
FORCE KB5: -O
FORCE KB5: J-S
EXIT
```

Because of the way the $LOGIN command works, VT5ØPY will be given enough time to open the keyboard (KB5: in the above example) before the other commands are forced.

The following is a sample set of control files that could be used for silent system startup.

$START.CTL:

```
FORCE KBØ: RUN $ATPK
FORCE KBØ: $STRTUP.LOG=$START.CMD/DET/LOG/CHA:$ERRINT;31Ø2Ø
END
```

$CRASH.CTL:

```
FORCE KBØ: RUN $ATPK
FORCE KBØ: $STRTUP.LOG=$CRASH.CMD/DET/LOG/CHA:$ERRINT;31Ø3Ø
END
```

$START.CMD:

```
$@[1,2]RTS.CMD
$@[1,2]MOUNT.CMD
$@[1,2]TTY.CMD
$@[1,2]SPOOL.CMD
$@[1,2]CCL.CMD
RUN $UTILTY
LOGINS
SEND ALL RSTS/E IS NOW ON THE AIR...
EXIT
RUN $QUE
Q LPØ:/DELETE/PRI:2ØØ=$STRTUP.LOG
EXIT
```

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$CRASH.CMD:

```
$@[1,2]RTS.CMD
$@[1,2]ANALYS.CMD
$@[1,2]CLEAN.CMD
$@[1,2]MOUNT.CMD
$@[1,2]TTY.CMD
$@[1,2]SPOOL.CMD
RUN $QUE
Q LPØ:/PRI:2ØØ=$ANALYS.DMP
EXIT
$@[1,2]CCL.CMD
RUN $UTILTY
LOGINS
SEND ALL RSTS/E IS NOW ON THE AIR...
EXIT
RUN $QUE
Q LPØ:/DELETE/PRI:2ØØ=$STRTUP.LOG
EXIT
```

$RTS.CMD:

```
RUN $UTILTY
SEND KBØ:Adding run-time systems
ADD RT11
ADD RSX
ADD BP2
ADD BASIC
ADD BAS4F
EXIT
```

$ANALYS.CMD:

```
RUN $UTILTY
SEND KBØ:Running ANALYS
EXIT
RUN $ANALYS
[Ø,1]CRASH.SYS
[1,2]ANALYS.DMP
[1,2]ERRCRS.FIL
```

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$CLEAN.CMD:

```
RUN $UTILTY
SEND KBØ:Cleaning Disks
EXIT
RUN $ONLCLN
DB1:
^C
RUN $ONLCLN
DB2:
^C
```

$MOUNT.CMD:

```
RUN $UTILTY
SEND KBØ:Mounting Disks
MOUNT DB1:PACK1
UNLOCK DB1:
MOUNT DB2:PACK2
UNLOCK DB2:
EXIT
```

$TTY.CMD:

```
RUN $UTILTY
SEND KBØ:Setting Terminal Characteristics
EXIT
RUN $TTYSET
KB16:;VT52;SPEED 24ØØ
KB17:;VT1ØØ;SPEED 48ØØ;GAG
EXIT
```

$SPOOL.CMD:

```
RUN $UTILTY
SEND KBØ:Starting Spoolers
EXIT
RUN $OPSER ^MLOG OPSER.LOG;ALL ^MCHA KBØ: ^MDETACH
$LOGIN
RUN $QUEMAN ^MDETACH/PRIORITY:Ø
$LOGIN
RUN $SPOOL ^MLPØ:/HEAD:2
$LOGIN
RUN $BATCH ^MBAØ:/ERROR:FATAL/NOQUEUE/NODELETE
$LOGIN
```

$CCL.CMD:

```
RUN $UTILTY
SEND KBØ:Adding CCL's.
CCL ATT-ACH=$LOGIN.*;PRIV 3ØØØØ
CCL ATP-K=$ATPK.*;PRIV 3ØØØØ
CCL BCK-=$RMSBCK.TSK;Ø
CCL BPC-REF=$BPCREF.*;3ØØØØ
CCL BYE-=$LOGOUT.*;PRIV Ø
CCL CCL-=[Ø,1]DCL.DCL;PRIV Ø
CCL CNV-=$RMSCNV.TSK;Ø
CCL DCL-=[Ø,1]DCL.DCL;PRIV Ø
CCL DEF-=$RMSDEF.TSK;Ø
CCL DFN-=$RMSDFN.TSK;Ø
CCL DES-=$RMSDES.TSK;Ø
CCL DIS-MOUNT=$UMOUNT.*;PRIV 3ØØØØ
CCL DI-RECTORY=$DIRECT.*;PRIV 3ØØØØ
CCL DSP-=$RMSDSP.TSK;Ø
CCL EDT-=$EDT.TSK;Ø
CCL FIT-=$FIT.*;PRIV 3ØØØØ
CCL HELLO-=$LOGIN.*;PRIV Ø
CCL HELP-=$HELP.*;3ØØØØ
CCL IFL-=$RMSIFL.TSK;Ø
CCL LBR-=$LBR.TSK;Ø
CCL LIBR-=$LIBR.SAV;82Ø8
CCL LIN-K=$LINK.SAV;82Ø8
CCL LOG-IN=$LOGIN.*;PRIV Ø
CCL MACR-O=$MACRO.SAV;8216
CCL MAC-=$MAC.TSK;Ø
CCL MAK-E=$TECO.TEC;Ø
CCL MOU-NT=$UMOUNT.*;PRIV 3ØØØØ
CCL MU-NG=$TECO.TEC;Ø
CCL PAT-=$PAT.TSK;Ø
CCL PIP-=$PIP.SAV;82Ø8
CCL PL-EASE=$PLEASE.*;PRIV 3ØØØØ
CCL QU-EUE=$QUE.*;PRIV 3ØØØØ
CCL RST-=$RMSRST.TSK;PRIV Ø
CCL SE-T=$TTYSET.*;PRIV 3ØØØØ
CCL SRT-=$SORT.TSK;Ø
CCL SU-BMIT=$QUE.*;PRIV 3ØØØØ
CCL SW-ITCH=$SWITCH.*;PRIV 3ØØØØ
CCL SY-STAT=$SYSTAT.*;PRIV 3ØØØØ
CCL TE-CO=$TECO.TEC;Ø
CCL TKB-=$TKB.TSK;Ø
CCL TY-PE=$TYPE.TEC;8
CCL UT-ILTY=$UTILTY.*;3ØØØØ
EXIT
```

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OTHER FEATURES

By specifying a log file and KB: as your input file, you can make a copy of interactive dialogue to queue to the line printer, etc. Note that ATPK will not be completely transparent in such a session. Any line typed at the keyboard will not be sent to the PK until the next time the controlled job enters a keyboard input wait state.

When inputting from the terminal, CTRL/Z's get passed on through to the controlled job. A CTRL/C at any time will cause the controlled job to be killed, the log file closed, and ATPK to exit. A CTRL/C may be sent to the job by typing uparrow-C.

INSTALLING ATPK AS A CCL COMMAND

The following sequence will install the CCL commands "ATPK" and "@" to run the ATPK program. Either or both of the commands may be installed.

```
RUN $UTILTY<cr>
<UTILTY's header line>
#CCL ATP-K=[1,2]ATPK.*;PRIV 3ØØØØ<cr>
#CCL @-=[1,2]ATPK.*;PRIV 3ØØØØ<cr>
#^Z
```

(This assumes that ATPK is located on SY:[1,2]. Note that the DCL LINK command assumes this location.)

ALLOWING ACCESS TO ATPK BY NON-PRIVILEGED USERS

ATPK is installed on the system with a protection code of <252>. If non-privileged users are to be allowed to run ATPK, it must be renamed to have a protection code of <232> after the system installation is complete and after any patches have been applied to ATPK and it is re-compiled.

SUPPORT POLICY FOR ATPK

ATPK is supported only as a part of the BUILD procedure and for the DCL LINK command. DIGITAL makes no commitment, expressed or implied, to support ATPK as an indirect command file processor, or to supply an indirect command file processor in future releases of RSTS/E that is compatible with the present version of ATPK.

If you experience problems when using ATPK as an indirect command file processor, please submit an FYI-type (Priority 5) Software Performance Report (SPR). While DIGITAL makes no commitment to fix problems reported with ATPK as an indirect command file processor, we would like to know about any problems that you encounter.

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ALLOWING ATPK TO DETACH FOR NON-PRIVILEGED USERS - ATPK FEATURE PATCH

At some installations it may be desirable to allow non-privileged users to run ATPK detached as a "mini batch processor", even though running a detached job is usually a privileged operation under RSTS/E. This optional patch will allow ATPK to detach for any user if the /DET switch is specified at the end of ATPK's startup command, or if the $DETACH command is encountered in the command file.

PROCEDURE:

1. For purposes of this discussion, we will assume that the program to be patched is located in your privileged account on the public disk structure. If this is not the case, replace all program references with suitable text according to the requirements of your installation.

   We assume the executable version of the program will be stored in the System Library Account ($). If this is not the case, replace references to $ in step 3 below with the appropriate package or library account.

   The procedure below assumes that BASIC-PLUS is your system default run-time system.

   If you are using CSPCOM or BASIC-PLUS-2, refer to Section 5.4 of the RSTS/E V8.Ø Maintenance Notebook for the correct procedure to compile the program.

   If you are using BASIC-PLUS-2, this program must be task built against the BP2 run-time system.

2. This patch is contained in a patch file appearing in patch kit version "A" or later. If you do not have this distribution you can produce a command file by specifying a file for [logfile=] in the procedure below.

   To apply the patch manually, perform the following RSTS/E system commands.

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```
RUN $CPATCH<cr>
<CPATCH's header line>

File to patch - ATPK.BAS=ATPK.BAS<cr>
#[logfile=]KB:/CS:62461<cr>
*H/2!/V<cr>
2!              PROGRAM         : ATPK.BAS
*H/3ØØØ<tab>/V<cr>
3ØØØ    ! &
*G/IF DETACHED% /V<cr>
        \ RETURN IF DETACHED% OR NOT PRIV% &
*I/!/V<cr>
        \ RETURN IF DETACHED% !OR NOT PRIV% &
*EX<cr>
Patch from KB:[P,PN]CPATCH.CMD complete
#^Z
File to patch - ^Z

Ready
```

3. Use this procedure if your system default run-time system is BASIC-PLUS; otherwise, refer to Section 5.4 of the RSTS/E V8.Ø Maintenance Notebook for the correct procedure to compile the program.

   To re-compile the program and re-enter it into the system library, type the following RSTS/E commands. Note the protection code of <232> to allow non-privileged users to run ATPK.

   ```
   OLD ATPK<cr>

   Ready

   COMPILE SYØ:$ATPK<232><cr>

   Ready
   ```

4. The person making the changes to the program should now take whatever steps are necessary, according to installation guidelines, to save the new version of the program.

5. The source (.BAS) version of the program may now be removed from the public structure.

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LIMITING THE USE OF THE $LOGIN COMMAND - ATPK FEATURE PATCH

The $LOGIN command of ATPK provides an easy way for a privileged user to log in under any account at any keyboard. While the $LOGIN command does not compromise normal RSTS/E security (it is available only to privileged users), it may be desirable to disable this feature at installations that have implemented their own security measures.

This optional patch will cause ATPK to ignore any keyboard or account number specification used with the $LOGIN command. The $LOGIN command may still be used to log a privileged user back in under his or her own account at the pseudo keyboard after the job controlled by ATPK has detached or terminated.

PROCEDURE:

1. For purposes of this discussion, we will assume that the program to be patched is located in your privileged account on the public disk structure. If this is not the case, replace all program references with suitable text according to the requirements of your installation.

   We assume the executable version of the program will be stored in the System Library Account ($). If this is not the case, replace references to $ in step 3 below with the appropriate package or library account.

   The procedure below assumes that BASIC-PLUS is your system default run-time system.

   If you are using CSPCOM or BASIC-PLUS-2, refer to Section 5.4 of the RSTS/E V8.Ø Maintenance Notebook for the correct procedure to compile the program.

   If you are using BASIC-PLUS-2, this program must be task built against the BP2 run-time system.

2. This patch is contained in a patch file appearing in patch kit version "A" or later. If you do not have this distribution you can produce a command file by specifying a file for [logfile=] in the procedure below.

   To apply the patch manually, perform the following RSTS/E system commands.

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```
RUN $CPATCH<cr>
<CPATCH's header line>

File to patch - ATPK.BAS=ATPK.BAS<cr>
#[logfile=]KB:/CS:28893<cr>
*H/2!/V<cr>
2!              PROGRAM         : ATPK.BAS
*H/29ØØ<tab>/V<cr>
29ØØ    ! &
*G/!\/V<cr>
        !\ TØ%=Ø% &
*-2JDV<cr>
        \ TØ%=Ø% &
*EX<cr>
Patch from KB:[P,PN]CPATCH.CMD complete
#^Z
File to patch - ^Z

Ready
```

3. Use this procedure if your system default run-time system is BASIC-PLUS; otherwise, refer to Section 5.4 of the RSTS/E V8.Ø Maintenance Notebook for the correct procedure to compile the program.

   To re-compile the program and re-enter it into the system library, type the following RSTS/E commands. Specify a protection code of <232> if ATPK is to be runnable by non-privileged users on your system.

   ```
   OLD ATPK<cr>

   Ready

   COMPILE SYØ:$ATPK<252><cr>

   Ready
   ```

4. The person making the changes to the program should now take whatever steps are necessary, according to installation guidelines, to save the new version of the program.

5. The source (.BAS) version of the program may now be removed from the public structure.

FILE SPECIFICATIONS IN DCL

The rules about file specifications in DCL are slightly more restrictive than elsewhere in RSTS/E.

The special PPN character "!" does not work in DCL. The exclamation point is used as the comment delimiter.

The special PPN characters "@", "%", "&", and "#" are accepted in the current version, but their use is not supported. They are reserved DCL characters, and may have other meanings in the future.

The special PPN character "$" is legal and supported in DCL. It will continue to designate the system library [1,2].

The traditional RSTS/E file specification switches /MODE, /SIZE, /POSITION, /CLUSTERSIZE, and /RONLY cannot be used in DCL. Many of the same features are available through DCL, but you must use DCL notation. Protection codes in angle brackets ("<nn>") cannot be used in DCL. The DCL syntax for protection codes is "/PROTECTION:nn".

Parentheses ("()") cannot be used to delimit the project-programmer number of a file in DCL. Brackets ("[]") must be used instead. Parentheses are reserved.

The single-character wildcard "?" works in DCL, but it is unsupported. It may have a different meaning in the future.

RSTS/E V8.Ø
DCL
Package Notes

Seq 2Ø.1.2 N

1 of 2

DCL CAN TRANSLATE LOGICAL DEVICE NAMES TWICE

PROBLEM:

DCL has two related problems in the translation of device names. The system can translate a logical device name twice, and can translate a name once even if you precede it with an underscore.

The following example shows double translation.

```
$ ASSIGN _DB: FOO:

$ ASSIGN _NL: DB:

$ DIR FOO:
?Device not file-structured - file NL:??????.???

$
```

What happens in the above example is that the system correctly translates the logical name "FOO:" to "DB:", and then incorrectly retranslates the name "DB:" to "NL:".

The following example shows the underscore being ignored.

```
$ ASSIGN _NL: DB:

$ DIR _DB:
?Device not file-structured - file NL:??????.???

$
```

These problems occur only with the following commands.

APPEND
COPY
DIRECTORY
FORTRAN/FOR
LINK
MACRO/RT11
RENAME
SET PROTECTION
TYPE

The problems occur only with local operations; they do not occur if you specify a remote file.

SOLUTION:

You can work around the double-translation problem. Don't use the name of a physical device as a logical device name. All physical device names consist of two letters or of two letters followed by a number. If you avoid using these forms when you assign logical names, double translation will not occur.

RSTS/E V8.Ø
DCL
Package Notes

Seq 2Ø.1.3 N

SETTING UP THE DCL LINK COMMAND

This article explains how to set up your system so that the DCL LINK command can be used. If you intend that the LINK command will be used, you should read this article before you install any layered languages. Other aspects of setting up DCL are described in the System Generation Manual and the System Manager's Guide.

The DCL LINK command provides a simple way of linking programs. It lets you link programs in two RT11-based languages (FORTRAN-IV and MACRO-11) and four RSX-11-based languages (BASIC-PLUS-2, COBOL-81, DIBOL, and FORTRAN-77). With several of these languages, the LINK command also lets you specify an overlay structure using a simple dialogue.

The requirements for setting up the LINK command depend on what languages you want to be able to link with, and whether you want to be able to link with FMS. The following paragraphs explain how to set LINK up for each language.

The default language assumed by the LINK command is BASIC-PLUS-2. You may wish to change this default if your installation does not have BASIC-PLUS-2, or if you prefer that a different language be the default. Refer to article Seq 2Ø.2.7 F if you wish to change the default language to FORTRAN IV, RT11-based MACRO, RSX-11-based MACRO, DIBOL, COBOL-81, or FORTRAN-77.

Disabling Languages

You should disable linking with a particular language if your installation does not have all of the files or other requirements for that language. The following table shows what file to delete for each language to be disabled. These files are installed automatically when you install DCL.

Language to Disable	File to Delete
All RSX-based languages	[1,2]PRELIN (.BAC or .TSK)
BASIC-PLUS-2	LB:BP2.LNK
COBOL-81	(none)
DIBOL	LB:DIB.LNK
FORTRAN-IV	(none)
FORTRAN-77	LB:F77.LNK
MACRO/RT11	(none)

If a user tries to link with a language you have disabled in this manner, DCL will display the message "?Command not installed".

Requirements for RT11-based Languages

MACRO-11

Location	Required File	When Installed
SY:[1,2]	LINK.SAV	RSTS/E System Generation
SY:[1,2]	SYSLIB.OBJ	RSTS/E System Generation

LINK/RT11 is automatically disabled if LINK.SAV is not present. If LINK.SAV is not present and a user types LINK/RT11, the system will display the message "?Command not installed."

FORTRAN-IV V2.5

Location	Required File	When Installed
SY:[1,2]	LINK.SAV	RSTS/E System Generation
SY:[1,2]	SYSLIB.OBJ	RSTS/E System Generation
SY:[1,2]	FORLIB.OBJ	FORTRAN-IV Installation

Also:

When you install FORTRAN-IV you have the options of either including the FORTRAN library routines in SYSLIB.OBJ or putting them separately, in FORLIB.OBJ. For LINK/FOR to work properly, select FORLIB.OBJ.

LINK/FOR is automatically disabled if LINK.SAV is not present. If LINK.SAV is not present and a user types LINK/RT11, the system will display the message "?Command not installed."

Requirements for RSX-based Languages

All of the RSX-based languages have certain linking requirements in common. These follow.

Location	Required File	When Installed
SY:[1,2]	PRELIN (.BAC or .TSK)	RSTS/E DCL Installation
SY:[1,2]	TKB.TSK	RSTS/E RSX Emulator Build
LB:	RMSRES.TSK	RSTS/E RMS Installation
LB:	RMSRES.STB	RSTS/E RMS Installation
SY:[Ø,1] (usually)	RMSRES.LIB	RSTS/E RMS Installation
LB:	RMSLIB.OLB	RSTS/E RMS Installation
LB:	SYSLIB.OLB	RSTS/E RSX Emulator Build
LB:	RMSRLX.ODL	RSTS/E RMS Installation

Also:

1. When you generate your system specify RSX emulation in the monitor and resident library support. Answer YES to the questions "Resident libraries ?" and "RSX directives ?"

2. Install the RSX Emulator Package.

3. Establish a library account with the system-wide logical name LB:. (This is done automatically during the RSX installation.)

4. Install the RMS package. Select the RMSRES resident library.

5. ADD the RMSRES resident library.

6. The PRELIN (pre-link) program has a protection code of 232.

Forms Management System

You can use Digital's Forms Management System (FMS) with any of the RSX-based languages. There are certain requirements for setting up the LINK command to link FMS into the program. These follow.

Location	Required File	When Installed
LB:	FDVRES.TSK	FMS Installation
LB:	FDVRES.STB	FMS Installation
SY:[Ø,1] (usually)	FDVRES.LIB	FMS Installation
LB:	FDVRES.OLB	FMS Installation
LB:	HLLDFN.OBJ	FMS Installation
LB:	FDVDRS.OBJ	FMS Installation

Also:

1. ADD the FDVRES resident library.

2. You must have the appropriate high-level language interface file in account LB:. These are: HLLBP2.OBJ for BASIC-PLUS-2, HLLDBL.OBJ for DIBOL, HLLFOR.OBJ for FORTRAN-77, and HLLCOB.OBJ for COBOL-81. They are installed during FMS Installation.

BASIC-PLUS-2 V1.6

Location	Required File	When Installed
LB:	BP2.LNK	RSTS/E DCL Installation
LB:	BASICS.TSK	BASIC-PLUS-2 Installation
LB:	BASICS.STB	BASIC-PLUS-2 Installation
SY:[Ø,1] (usually)	BASICS.LIB	BASIC-PLUS-2 Installation
LB:	BASRMS.OLB	BASIC-PLUS-2 Installation
LB:	BP2COM.OLB	BASIC-PLUS-2 Installation
LB:	BP2IC7.ODL	BASIC-PLUS-2 Installation

Also:

1. ADD the BASICS resident library.

2. If you gave a name other than BP2COM to the BASIC-PLUS-2 object library, then edit the file LB:BP2.LNK, and change LB:BP2COM.OLB to the appropriate file specification.

COBOL-81

Location	Required File	When Installed
(If you select CIS (Commercial Instruction Set) when you install COBOL-81:)		
LB:	C81CIS.TSK	COBOL-81 Installation
LB:	C81CIS.STB	COBOL-81 Installation
SY:[Ø,1] (usually)	C81CIS.LIB	COBOL-81 Installation
(If you select NONCIS when you install COBOL-81:)		
LB:	C81LIB.TSK	COBOL-81 Installation
LB:	C81LIB.STB	COBOL-81 Installation
SY:[Ø,1] (usually)	C81LIB.LIB	COBOL-81 Installation
(In either case:)		
SY:[1,2]	C81ODL.TSK	COBOL-81 Installation
SY:[1,2]	ATPK (.BAC or .TSK)	RSTS/E Standard CUSP Build
SY:[1,2]	PIP.SAV	RSTS/E System Generation

Also:

1. ATPK's protection code must include 128. In other words, it must be a privileged program. The standard CUSP installation procedure sets ATPK's protection code to 252, which is satisfactory.

2. ADD the COBOL resident library, C81CIS or C81LIB.

If [1,2]PIP.SAV or [1,2]C81ODL.TSK is not present, the LINK command will fail with "?Can't find file or account". If [1,2]ATPK is not present, the LINK command will fail with "?Unexpected error in PRELIN ... ?Can't find file or account".

DIBOL V4.5

Location	Required File	When Installed
LB:	DIB.LNK	RSTS/E DCL Installation
LB:	DBRRES.TSK	DIBOL Installation
LB:	DBRRES.STB	DIBOL Installation
SY:[Ø,1] (usually)	DBRRES.LIB	DIBOL Installation
LB:	DBRLIB.OLB	DIBOL Installation

Also:

1. When you install the DIBOL V4.5 compiler select the RMS I/O package (rather than DMS).

FORTRAN-77 V4.Ø

Location	Required File	When Installed
LB:	F77.LNK	RSTS/E DCL Installation
LB:	F4POTS.OLB	FORTRAN-77 Installation
LB:	RMS11M.ODL	FORTRAN-77 Installation

Also:

1. When you install the FORTRAN-77 V4.Ø compiler select the RMS I/O package (rather than FCS).

2. When you install FORTRAN-77 you have the option of either including the FORTRAN library routines in SYSLIB.OLB or putting them separately in F4POTS.OLB. For LINK/F77 to work properly, select F4POTS.OLB.

3. Edit the file LB:RMS11M.ODL. Change all occurrences of "LB:[1,1]" to "LB:".

SOME DIFFERENCES BETWEEN DCL AND BASIC-PLUS

This section is for the new DCL user who is familiar with the command environment of BASIC-PLUS (or of the RT11 or RSX run-time systems). It warns you of some of the more common pitfalls.

In DCL, the input file specification goes first, and the output file specification goes second. They are separated by a space. You cannot type embedded spaces within a file specification. Thus instead of:

```
PIP NEW.FIL=OLD.FIL
```

you would type:

```
$ COPY OLD.FIL NEW.FIL
```

DCL does not allow protection codes in angle brackets, nor the standard RSTS/E file specification switches /MODE, /SIZE, /CLUSTERSIZE, /POSITION, and /RONLY. However, there are DCL equivalents for many of these. The /PROTECTION switch is accepted both by BASIC-PLUS and by several DCL commands.

There are no DCL commands corresponding to ATTACH and HELLO. If you want to use the ATTACH and HELLO commands while in the DCL environment, you must install them as CCL commands.

Several DCL commands have the same names as familiar BASIC-PLUS or CCL commands, but different meanings or different syntax. The following list contrasts these commands:

1. APPEND

   DCL:
   Appends the contents of one file to the end of another file. The files may contain text or anything else.

   BASIC-PLUS:
   Merges the contents of a previously saved BASIC-PLUS source program into a BASIC-PLUS program currently in memory. (Use the /APPEND qualifier of PIP to append one file to another.)

2. ASSIGN

DCL:

Establishes a logical name for a device or PPN. The syntax is "ASSIGN device: logical", with a space required before the logical name. (In DCL, the ALLOCATE command reserves a device for your use, and the SET PROTECTION/DEFAULT command changes the default protection code for files you create.)

BASIC-PLUS:

Establishes a logical name for a device or PPN; reserves a device for your use only; changes the default protection code for files you create; or associates a PPN with the @ character. The syntax to assign a logical name is "ASSIGN device:logical", with no space required before the logical name.

3. DISMOUNT

DCL and CCL:

Dismounts a device. The syntax of the DCL and CCL commands is essentially the same. However, the qualifiers are different.

4. MOUNT

DCL and CCL:

Mounts a device. The syntax of the DCL and CCL commands is essentially the same. However, the qualifiers are different.

5. PRINT

DCL:

Queues a file for printing.

BASIC-PLUS:

Displays the value of a variable, or outputs it into a file. (Use the QUE or QUEUE program to queue a file for printing.)

6. RENAME

DCL:
Changes the name and/or type of a file. The syntax is "RENAME oldname newname".

BASIC-PLUS:
Changes the name of the program currently in memory. (Use the /RENAME qualifier of PIP to change the name and/or type of a file.)

7. SET

DCL:
This has several options: SET HOST, SET TERMINAL, SET PROTECTION, and SET QUEUE.

BASIC-PLUS:
Sets terminal characteristics.

8. SUBMIT

DCL and CCL:
Submits a file for batch processing. The syntax of the DCL and CCL commands is essentially the same. However, the qualifiers are different.

NOTE

In DCL, you can continue a command line by ending it with a hyphen. For example (underscored text is what you type):

```
$ COPY A.A, -
Continue:  B.B, -
Continue:  C.C
To:        D.D
```

This can surprise you if you type the CCL command "SYSTAT/-" while in the DCL command environment.

RSTS/E V8.Ø Seq 2Ø.2.1 F
DCL
DCL.RTS 1 of 2

RUNNING DCL AT INCREASED PRIORITY - DCL.RTS FEATURE PATCH

This patch might significantly improve the speed with which your system responds to user input typed at the DCL command level.

This patch causes DCL to run at a CPU priority 4 greater than other programs. Since the normal job priority is -8, DCL will generally run at a priority of -4. As soon as DCL invokes any CUSP or user program, the job's priority will drop by 4, to its normal level. Without this patch, DCL runs at the same priority as other programs.

This will cause RSTS/E to give preferential treatment to jobs at the DCL command level. DCL will prompt them and issue error messages to them faster than it otherwise would. Whether the improvement is significant depends on how heavily your system is loaded.

This patch will also slightly degrade the speed of everything else on the system that is running at a lower priority. At most RSTS installations, nearly everything runs at a lower priority. Logged-out jobs and ERRCPY, the error logger, run at priority Ø, but most other things generally run at priority -8. Since DCL consumes little CPU time, the effect on other jobs is slight at most installations.

Try this patch to see how it affects performance. We expect that most installations will find that the net effect of this patch is beneficial.

The patching procedure detailed below will cause DCL to run at a priority 4 greater than other programs.

PROCEDURE:

1. This is a feature patch to the DCL run-time system.

2. The patch described in Step 4 below can be installed using the PATCH option of INIT.SYS:

   ```
   Option: PATCH
   File to patch? DCL.RTS              (DCL run-time system name)
   ```

3. This patch can be installed manually using ONLPAT, the on-line patching program:

```
RUN $ONLPAT
Command File Name? <cr>          (RETURN for manual patch installation)
File to patch? [Ø,1]DCL.RTS      (DCL run-time system name)
File found in account [Ø,1]
```

This patch is contained in a patch file appearing in patch kit version "A" or later.

4. The patch is as follows:

```
Base address? ..PRIO
Offset address? Ø
 Base   Offset  Old     New?
??????  ØØØØØØ  ??????  ? \
??????  ØØØØØØ     ØØØ  ? -1
??????  ØØØØØ1     ???  ? ^C      (up-arrow/C to exit;CTRL/C for INIT)
```

5. If the above patch was installed using ONLPAT, it will take effect the next time the run-time system is reloaded. If the run-time system has been ADDed, execute the following commands:

```
RUN $UTILTY<cr>
<UTILTY's header line>
#UNLOAD DCL<cr>                  (DCL run-time system name)
#EXIT<cr>

Ready
```

NOTE: The UNLOAD command will not remove the run-time system, but simply instructs the monitor to reload it the next time a job requests it.

If, in addition to being previously ADDed, the run-time system had been ADDed with the /STAY switch, also reload it as follows:

```
RUN $UTILTY<cr>
<UTILTY's header line>
#LOAD DCL/STAY/ADDR:nnn<cr>      (DCL run-time system name)
#EXIT<cr>

Ready
```

RSTS/E V8.Ø Seq 2Ø.2.2 F
DCL
DCL.RTS 1 of 2

CHANGING DCL BASIC COMMAND DEFAULT FROM /BP2 TO /BPLUS - DCL.RTS FEATURE PATCH

PROBLEM:

The DCL BASIC command switches the user into BASIC-PLUS if /BPLUS is specified, or into BASIC-PLUS-2 if /BP2 is specified. If neither is specified, the command switches the user into BASIC-PLUS-2. Your installation may find it convenient to make BASIC-PLUS the default, especially if you do not have BASIC-PLUS-2.

SOLUTION:

The patching procedure detailed below allows you to change DCL's default for the BASIC command from /BP2 to /BPLUS.

PROCEDURE:

1. This is a feature patch to the DCL run-time system.

2. The patch described in Step 4 below can be installed using the PATCH option of INIT.SYS:

```
Option: PATCH
File to patch? DCL.RTS              (DCL run-time system name)
```

3. This patch can be installed manually using ONLPAT, the on-line patching program:

```
RUN $ONLPAT
Command File Name? <cr>             (RETURN for manual patch installation)
File to patch? [Ø,1]DCL.RTS         (DCL run-time system name)
File found in account [Ø,1]
```

   This patch is contained in a patch file appearing in patch kit version "A" or later.

4. The patch is as follows:

```
Base address? ..BASD
Offset address? Ø
 Base   Offset  Old     New?
??????  ØØØØØØ  ??????  ? BPL.Q
??????  ØØØØØ2  ??????  ? ^C       (up-arrow/C to exit;CTRL/C for INIT)
```

5. If the above patch was installed using ONLPAT, it will take effect the next time the run-time system is reloaded. If the run-time system has been ADDed, execute the following commands:

```
RUN $UTILTY<cr>
<UTILTY's header line>
#UNLOAD DCL<cr>                    (DCL run-time system name)
#EXIT<cr>

Ready
```

NOTE: The UNLOAD command will not remove the run-time system, but simply instructs the monitor to reload it the next time a job requests it.

If, in addition to being previously ADDed, the run-time system had been ADDed with the /STAY switch, also reload it as follows:

```
RUN $UTILTY<cr>
<UTILTY's header line>
#LOAD DCL/STAY/ADDR:nnn<cr>        (DCL run-time system name)
#EXIT<cr>

Ready
```

RSTS/E V8.Ø Seq 2Ø.2.3 F
DCL
DCL.RTS 1 of 2

CHANGING BASIC-PLUS KBM NAME IN DCL - DCL.RTS FEATURE PATCH

PROBLEM:

DCL assumes that the keyboard monitor for BASIC-PLUS is called BASIC. Your installation may have installed BASIC-PLUS under a different name, such as BAS4F. If so, you must patch DCL so that the BASIC/BPLUS command switches to the correct keyboard monitor.

SOLUTION:

The patching procedure detailed below allows you to change the name of the BASIC-PLUS keyboard monitor invoked by DCL.

PROCEDURE:

1. This is a feature patch to the DCL run-time system.

2. The patch described in Step 4 below can be installed using the PATCH option of INIT.SYS:

```
Option: PATCH
File to patch? DCL.RTS              (DCL run-time system name)
```

3. This patch can be installed manually using ONLPAT, the on-line patching program:

```
RUN $ONLPAT
Command File Name? <cr>             (RETURN for manual patch installation)
File to patch? [Ø,1]DCL.RTS         (DCL run-time system name)
File found in account [Ø,1]
```

   This patch is contained in a patch file appearing in patch kit version "A" or later.

NOTE

The patch file for this patch requires manual editing to include installation specific parameters before it can be successfully installed. Specifically, specify the name of your BASIC-PLUS keyboard monitor. Note that the name should be padded with Ø's if it is less than 6 characters long.

4. The patch is as follows:

```
Base address? ...BPL
Offset address? Ø
 Base   Offset  Old     New?
??????  ØØØØØØ  Ø41ØØ6  ? \
??????  ØØØØØØ     ØØ6  ? <lf>      (no change; verify only)
??????  ØØØØØ1     1Ø2  ? 'B
??????  ØØØØØ2     1Ø1  ? 'A
??????  ØØØØØ3     123  ? 'S
??????  ØØØØØ4     111  ? 'I
??????  ØØØØØ5     1Ø3  ? 'C
??????  ØØØØØ6     ØØØ  ? Ø         (pad with Ø's, if necessary)
??????  ØØØØØ7     ???  ? ^C        (up-arrow/C to exit;CTRL/C for INIT)
```

5. If the above patch was installed using ONLPAT, it will take effect the next time the run-time system is reloaded. If the run-time system has been ADDed, execute the following commands:

```
RUN $UTILTY<cr>
<UTILTY's header line>
#UNLOAD DCL<cr>                    (DCL run-time system name)
#EXIT<cr>

Ready
```

NOTE: The UNLOAD command will not remove the run-time system, but simply instructs the monitor to reload it the next time a job requests it.

If, in addition to being previously ADDed, the run-time system had been ADDed with the /STAY switch, also reload it as follows:

```
RUN $UTILTY<cr>
<UTILTY's header line>
#LOAD DCL/STAY/ADDR:nnn<cr>        (DCL run-time system name)
#EXIT<cr>

Ready
```

RSTS/E V8.Ø Seq 2Ø.2.4 F
DCL
DCL.RTS 1 of 2

CHANGING BASIC-PLUS-2 KBM NAME IN DCL - DCL.RTS FEATURE PATCH

PROBLEM:

DCL assumes that the keyboard monitor for BASIC-PLUS-2 is called BP2. Your installation may have installed it under a different name. If so, you must patch DCL so that the BASIC/BP2 command switches to the correct keyboard monitor.

SOLUTION:

The patching procedure detailed below allows you to change the name of the BASIC-PLUS-2 keyboard monitor invoked by DCL.

PROCEDURE:

1. This is a feature patch to the DCL run-time system.

2. The patch described in Step 4 below can be installed using the PATCH option of INIT.SYS:

```
Option: PATCH
File to patch? DCL.RTS              (DCL run-time system name)
```

3. This patch can be installed manually using ONLPAT, the on-line patching program:

```
RUN $ONLPAT
Command File Name? <cr>             (RETURN for manual patch installation)
File to patch? [Ø,1]DCL.RTS         (DCL run-time system name)
File found in account [Ø,1]
```

   This patch is contained in a patch file appearing in patch kit version "A" or later.

NOTE

> The patch file for this patch requires manual editing to include installation specific parameters before it can be successfully installed. Specifically, specify the name of your BASIC-PLUS-2 keyboard monitor. If the name is less than six characters long, pad it with zeroes to six characters.

4. The patch is as follows:

```
Base address? ...BP2
Offset address? Ø
 Base   Offset  Old     New?
??????  ØØØØØØ  Ø41ØØ6  ? \
??????  ØØØØØØ     ØØ6  ? <lf>      (no change; verify only)
??????  ØØØØØ1     1Ø2  ? 'B
??????  ØØØØØ2     12Ø  ? 'P
??????  ØØØØØ3     Ø62  ? '2
??????  ØØØØØ4     ØØØ  ? Ø         ;(pad with Ø's, if necessary)
??????  ØØØØØ5     ØØØ  ? Ø
??????  ØØØØØ6     ØØØ  ? Ø
??????  ØØØØØ7     ???  ? ^C        (up-arrow/C to exit;CTRL/C for INIT)
```

5. If the above patch was installed using ONLPAT, it will take effect the next time the run-time system is reloaded. If the run-time system has been ADDed, execute the following commands:

```
RUN $UTILTY<cr>
<UTILTY's header line>
#UNLOAD DCL<cr>                  (DCL run-time system name)
#EXIT<cr>

Ready
```

NOTE: The UNLOAD command will not remove the run-time system, but simply instructs the monitor to reload it the next time a job requests it.

If, in addition to being previously ADDed, the run-time system had been ADDed with the /STAY switch, also reload it as follows:

```
RUN $UTILTY<cr>
<UTILTY's header line>
#LOAD DCL/STAY/ADDR:nnn<cr>      (DCL run-time system name)
#EXIT<cr>

Ready
```

RSTS/E V8.Ø Seq 2Ø.2.5 F
DCL
DCL.RTS 1 of 2

CHANGING DCL MACRO COMMAND DEFAULT FROM /RSX11 TO /RT11
- DCL.RTS FEATURE PATCH

PROBLEM:

The DCL MACRO command can invoke either the RT11 MACRO assembler or the RSX-11M MACRO assembler. If the user specifies MACRO/RT11, then the RT11 MACRO assembler is invoked. If the user specifies MACRO/RSX11, then the RSX-11M MACRO assembler is invoked.

/RSX11 is the default. If the user does not specify a assembler, then the RSX-11M MACRO assembler is invoked.

Your installation may find it convenient to make the RT11 assembler the default.

SOLUTION:

The patching procedure detailed below allows you to change DCL's default for the MACRO command from /RSX11 to /RT11. With this patch installed, the MACRO command will invoke the RT11 assembler if the user does not specify an assembler.

PROCEDURE:

1. This is a feature patch to the DCL run-time system.

2. The patch described in Step 4 below can be installed using the PATCH option of INIT.SYS:

```
Option: PATCH
File to patch? DCL.RTS              (DCL run-time system name)
```

3. This patch can be installed manually using ONLPAT, the on-line patching program:

```
RUN $ONLPAT
Command File Name? <cr>             (RETURN for manual patch installation)
File to patch? [Ø,1]DCL.RTS         (DCL run-time system name)
File found in account [Ø,1]
```

   This patch is contained in a patch file appearing in patch kit version "A" or later.

4. The patch is as follows:

```
Base address? ..MACD
Offset address? Ø
 Base   Offset  Old     New?
??????  ØØØØØØ  ??????  ? RT11.Q
??????  ØØØØØ2  ??????  ? ^C        (up-arrow/C to exit;CTRL/C for INIT)
```

5. If the above patch was installed using ONLPAT, it will take effect the next time the run-time system is reloaded. If the run-time system has been ADDed, execute the following commands:

```
RUN $UTILTY<cr>
<UTILTY's header line>
#UNLOAD DCL<cr>                    (DCL run-time system name)
#EXIT<cr>

Ready
```

NOTE: The UNLOAD command will not remove the run-time system, but simply instructs the monitor to reload it the next time a job requests it.

If, in addition to being previously ADDed, the run-time system had been ADDed with the /STAY switch, also reload it as follows:

```
RUN $UTILTY<cr>
<UTILTY's header line>
#LOAD DCL/STAY/ADDR:nnn<cr>        (DCL run-time system name)
#EXIT<cr>

Ready
```

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CHANGING DCL FORTRAN COMMAND DEFAULT TO FORTRAN IV - DCL.RTS FEATURE PATCH

PROBLEM:

The FORTRAN command can invoke either the PDP-11 FORTRAN-IV compiler or the PDP-11 FORTRAN-77 compiler. If the user specifies FORTRAN/FOR, then the FORTRAN-IV compiler is invoked (if your installation has it). If the user specifies FORTRAN/F77, then the FORTRAN-77 compiler is invoked (if your installation has it).

/F77 is the default. If the user does not specify a compiler, then the FORTRAN-77 compiler is invoked. If your installation does not have FORTRAN-77, an error message is printed.

Your installation may find it convenient to change the default to /FOR.

SOLUTION:

The patching procedure detailed below allows you to make the FORTRAN command invoke FORTRAN-IV when the user does not specify a compiler.

PROCEDURE:

1. This is a feature patch to the DCL run-time system.

2. The patch described in Step 4 below can be installed using the PATCH option of INIT.SYS:

```
Option: PATCH
File to patch? DCL.RTS              (DCL run-time system name)
```

3. This patch can be installed manually using ONLPAT, the on-line patching program:

```
RUN $ONLPAT
Command File Name? <cr>             (RETURN for manual patch installation)
File to patch? [Ø,1]DCL.RTS         (DCL run-time system name)
File found in account [Ø,1]
```

   This patch is contained in a patch file appearing in patch kit version "A" or later.

4. The patch is as follows:

```
Base address? ..FORD
Offset address? Ø
 Base   Offset  Old     New?
??????  ØØØØØØ  ??????  ? FOR.Q
??????  ØØØØØ2  ??????  ? ^C        (up-arrow/C to exit;CTRL/C for INIT)
```

5. If the above patch was installed using ONLPAT, it will take effect the next time the run-time system is reloaded. If the run-time system has been ADDed, execute the following commands:

```
RUN $UTILTY<cr>
<UTILTY's header line>
#UNLOAD DCL<cr>                    (DCL run-time system name)
#EXIT<cr>

Ready
```

NOTE: The UNLOAD command will not remove the run-time system, but simply instructs the monitor to reload it the next time a job requests it.

If, in addition to being previously ADDed, the run-time system had been ADDed with the /STAY switch, also reload it as follows:

```
RUN $UTILTY<cr>
<UTILTY's header line>
#LOAD DCL/STAY/ADDR:nnn<cr>        (DCL run-time system name)
#EXIT<cr>

Ready
```

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CHANGING DEFAULT LANGUAGE FOR LINK COMMAND - DCL.RTS FEATURE PATCH

PROBLEM:

The DCL LINK command can link programs written in any of several languages. The LINK command accepts a qualifier that specifies what language the program is written in.

If the user does not specify such a qualifier, the LINK command assumes that the program is written in BASIC-PLUS-2 (as if the user had typed /BP2). Your installation may find it convenient to change the default, especially if you do not have BASIC-PLUS-2. You can change the default to FORTRAN-IV, RT11-based MACRO, RSX-11-based MACRO, DIBOL, FORTRAN-77, or COBOL-81.

SOLUTION:

The patching procedure detailed allows you to make the LINK command default to either /C81, /DIBOL, /FOR, /F77, /RSX11, or /RT11 when the user does not specify a language.

PROCEDURE:

1. This is a feature patch to the DCL run-time system.

2. The patch described in Step 4 below can be installed using the PATCH option of INIT.SYS:

```
Option: PATCH
File to patch? DCL.RTS              (DCL run-time system name)
```

3. This patch can be installed manually using ONLPAT, the on-line patching program:

```
RUN $ONLPAT
Command File Name? <cr>             (RETURN for manual patch installation)
File to patch? [Ø,1]DCL.RTS         (DCL run-time system name)
File found in account [Ø,1]
```

   This patch is contained in a patch file appearing in patch kit version "A" or later.

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NOTE

The patch file for this patch requires manual editing to include installation specific parameters before it can be successfully installed.

4. As written, the following patch changes the default language used by the DCL LINK command to COBOL-81. To default to DIBOL, substitute DIB.Q for C81.Q; to default to FORTRAN-IV, substitute FOR.Q for C81.Q; to default to FORTRAN-77, substitute F77.Q for C81.Q; to default to RT11-based MACRO, substitute RT11.Q for C81.Q; to default to RSX-11-based MACRO, substitute RSX.Q for C81.Q.

```
Base address? ..LIND
Offset address? Ø
 Base   Offset  Old     New?
??????  ØØØØØØ  ??????  ? C81.Q     (or substitute from the list above)
??????  ØØØØØ2  ??????  ? ^C       (up-arrow/C to exit;CTRL/C for INIT)
```

5. If the above patch was installed using ONLPAT, it will take effect the next time the run-time system is reloaded. If the run-time system has been ADDed, execute the following commands:

```
RUN $UTILTY<cr>
<UTILTY's header line>
#UNLOAD DCL<cr>                    (DCL run-time system name)
#EXIT<cr>

Ready
```

NOTE: The UNLOAD command will not remove the run-time system, but simply instructs the monitor to reload it the next time a job requests it.

If, in addition to being previously ADDed, the run-time system had been ADDed with the /STAY switch, also reload it as follows:

```
RUN $UTILTY<cr>
<UTILTY's header line>
#LOAD DCL/STAY/ADDR:nnn<cr>        (DCL run-time system name)
#EXIT<cr>

Ready
```

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CHANGING DCL DELETE DEFAULT FROM /NOQUERY TO /QUERY - DCL.RTS FEATURE PATCH

PROBLEM:

The DCL DELETE command deletes one or more files specified by the user. If the user does not specify either /QUERY or /NOQUERY, the DELETE command defaults to /NOQUERY. Since DELETE accepts wildcard file specifications, your installation may find it desirable to change the default to /QUERY.

SOLUTION:

The patching procedure detailed below allows you to change the DELETE command default to /QUERY when the user does not specify /QUERY or /NOQUERY.

PROCEDURE:

1. This is a feature patch to the DCL run-time system. It may be installed in any DCL run-time system.

2. The patch described in Step 4 below can be installed using the PATCH option of INIT.SYS:

```
Option: PATCH
File to patch? DCL.RTS              (DCL run-time system name)
```

3. This patch can be installed manually using ONLPAT, the on-line patching program:

```
RUN $ONLPAT
Command File Name? <cr>             (RETURN for manual patch installation)
File to patch? [Ø,1]DCL.RTS         (DCL run-time system name)
File found in account [Ø,1]
```

   This patch is contained in a patch file appearing in patch kit version "A" or later.

4. The patch is as follows:

```
Base address? ..DELD
Offset address? Ø
 Base   Offset  Old     New?
??????  ØØØØØØ  ØØØØØØ  ? \
??????  ØØØØØØ     ØØØ  ? -1
??????  ØØØØØ1     ØØØ  ? ^C        (up-arrow/C to exit;CTRL/C for INIT)
```

5. If the above patch was installed using ONLPAT, it will take effect the next time the run-time system is reloaded. If the run-time system has been ADDed, or if it is your system default run-time system, execute the following commands:

```
RUN $UTILTY<cr>
<UTILTY's header line>
#UNLOAD DCL<cr>                  (DCL run-time system name)
#EXIT<cr>

Ready
```

NOTE: The UNLOAD command will not remove the run-time system, but simply instructs the monitor to reload it the next time a job requests it.

If, in addition to being previously ADDed, the run-time system had been ADDed with the /STAY switch, also reload it as follows:

```
RUN $UTILTY<cr>
<UTILTY's header line>
#LOAD DCL/STAY/ADDR:nnn<cr>      (DCL run-time system name)
#EXIT<cr>

Ready
```

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USING RTSODT FOR DEBUGGING RUN-TIME SYSTEMS

A version of ODT is provided on the RSTS/E V8.Ø distribution kit as an unsupported feature which can be linked with user-written run-time systems.

To use RTSODT with run-time systems that are assembled and task-built under the RSX run-time system you may specify "RTSODT" in the ODL file. For example:

```
; ODTBLD.ODL
;
;       *** RSXODT.RTS OVERLAY DESCRIPTION ***
;
; RSXODT VERSION V7.2
;

        .NAME   RSXODT
        .ROOT   RSXODT-LB:SYSLIB/DL-RSXEMU-RSXPMD-RSXRUN-RSXPLA-RSXKBM-ODT
;
; RSXRTS MUST BE THE FIRST MODULE LINKED IN ANY RSX BASED RTS
; RSXODT MUST BE THE LAST MODULE LINKED IN IF YOU WANT ODT
;
RSXEMU: .FCTR   LB:SYSLIB/LB:RSXRTS:RSXIO:RSXAST:RSXSST:RSXDIR
RSXPMD: .FCTR   LB:SYSLIB/LB:RSXPMD
RSXRUN: .FCTR   LB:SYSLIB/LB:RSXRUN
RSXPLA: .FCTR   LB:SYSLIB/LB:RSXPLA
RSXKBM: .FCTR   LB:SYSLIB/LB:RSXKBM:RSXAT:RSXHLP:RSXMCR
ODT:    .FCTR   LB:SYSLIB/LB:RTSODT
        .END
```

Refer to article Seq 22.1.2 N for a description of the use of RTSODT with run-time systems that are assembled and linked under the RT11 run-time system.

NOTES ON WRITING KEYBOARD MONITORS

A keyboard monitor is a program which accepts input from a job's "console" terminal or "keyboard", and takes action on the input (called "commands", or "keyboard monitor commands"). The result of a command may be the execution of a program, such as the BASIC-PLUS "RUN" command, or a CCL command. A keyboard monitor command may merely cause a change in the state of the job, such as the allocation of a device to the job, or the definition of a user logical name.

Every job on a RSTS/E system must have a default run-time system, and every run-time system which can be a job's default run-time system must have a keyboard monitor. Whereas run-time systems are generally difficult to write, and are normally written in MACRO-11, keyboard monitors are relatively easy to write, and in theory may be written in any programming language.

A "feature" patch of the RSX run-time system, as described in article Seq 21.3.5 F, provides a way for RSTS/E system programmers to implement their own keyboard monitors without having to learn the mysteries of run-time systems. However, some guidelines and precautions must be kept in mind.

First, let us examine some of the reasons why system programmers may want to write their own keyboard monitors.

- Change the user interface

  RSTS first came into existence at a time when most terminals were Model 33 Teletypes (R) or equivalents, and video display terminals were rare. Now, several years later, many RSTS/E systems may not have any hardcopy terminals other than the system console terminal. Many commercial applications using video display terminals are forms or menu driven. The standard RSTS/E keyboard monitors do not, and perhaps cannot, take advantage of video terminal features.

- Change the command set

  RSTS/E itself has a very limited command set that is shared by its various keyboard monitors. BASIC-PLUS has a somewhat fuller set of commands, but some of these are not relevant to someone not programming in BASIC-PLUS. DCL provides a rich command set, but it might not be appropriate for your system. Extending or changing the command set may be done through the use of CCL commands, but another way is to write a keyboard monitor.

- Many users of RSTS/E systems are non-programmers and they do not need access to the full capabilities of RSTS/E. Limiting what these users can do may actually help them. They do not have to learn commands which are irrelevant to their use of the system, and they are protected from typing commands by accident that would cause something to happen that they did not expect.

Next, let us review some guidelines for writing keyboard monitors.

- Open a channel for terminal I/O

  All standard RSTS/E keyboard monitors use channel Ø for terminal I/O because channel Ø is always open except when the job is detached. However, if a keyboard monitor is to use special terminal modes, such as echo control mode, open "KB:" on a channel other than Ø so that you can use those modes.

- Prompt for command input

  The "Ready" message is a prompt. So is a dot or a special character such as ">" or "$". So is a form on a screen. It is just a way to let the user know the keyboard monitor is ready for input. You may choose to have a different prompt, depending on whether the job is logged in or logged out. BASIC-PLUS prompts a logged-out job with "Bye". If you use a form to prompt, you should display a different form when the job is logged out, to let the other users know that they can log into the system using that terminal.

- Wait for a command line

  After prompting the user, wait for a command line from the keyboard. Execute a .READ or GET instruction, depending on the language. If you are coding in MACRO-11, you can put a value of -1 in the XRTIME word of the XRB, so that terminal service will flag the job as being in keyboard monitor wait state (displayed as "^C" by SYSTAT). However, you cannot do the same in BASIC-PLUS, which does not allow negative WAIT times.

- Convert the command line to upper case

  At least convert the command part of the line to upper case. (If you like, you may choose to convert to lower case.) At any rate, convert to one case before processing. Your users should be free to type their commands in either case and achieve the same results.

- Check for abbreviations

  The ability to abbreviate commands is not mandatory (BASIC-PLUS does not have it), but your users will love you for it. Each RSTS/E CCL command can be abbreviated to some minimum number of characters, usually two or three, when that command is added to the system. Any number of characters from the minimum to the full length of the command can be typed as the command. If you process your own commands this way, your users won't have to learn separate rules for your commands and for CCL commands.

- Let CCL do part of your work

  Getting a command line executed as a CCL command line is easy, especially in BASIC-PLUS (V8.Ø). However, you may want to impose some restrictions, rather than allowing every user to execute any CCL command. This is entirely governed by considerations specific to your system.

- RUN programs

  Implementing a RUN command is also easy in BASIC-PLUS, by using the CHAIN statement. If you can code in MACRO-11, the RUN command is not difficult in MACRO-11 either. However, consider whether you want to give your users the full gamut of all executable programs on the system.

- The rest is up to you

  After CCL commands and RUN, not many standard system commands are left. You may or may not need ASSIGN and DEASSIGN commands. You do need a BYE or LOGOUT command, but these are normally CCL commands already. You really have a free hand in designing your command set.

Lastly, observe the following precautions.

- Be careful with privileges

  It would be unusual for a keyboard monitor to require privileges. Thus, a keyboard monitor is normally non-privileged. If you do make it privileged for any reason, drop privileges temporarily upon entry to the program, regain privileges only long enough to execute privileged functions, and drop privileges again as soon as you can.

- Distinguish between logged-in and logged-out jobs

  Remember that logged-out jobs are always privileged. When the job is logged out, you don't want to process commands the same way as when the job is logged in. In fact, a keyboard monitor normally does not want to

process commands from a logged-out job at all. For this reason, the "feature" patch to the RSX run-time system does not allow the "menu" program to be called unless the job is logged in.

- Be careful with terminal types

  If your keyboard monitor is specifically written to handle video terminals with special characteristics, make sure other terminals on the system, such as hardcopy terminals, will still work. One way to achieve this is to include a very simple keyboard monitor mechanism in your keyboard monitor for such terminals. Another approach is to always invoke another keyboard monitor for such terminals (switch to another run-time system or run (CHAIN to) another program).

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MAKING TASK IMAGES NON-SWAPPABLE - RSX.RTS FEATURE PATCH

Sometimes a situation exists where it would be desirable to lock a job in memory so that it would not be swapped out between run bursts. The RSTS/E Programming Manual describes the BASIC-PLUS SYS call which locks a job in memory. This article describes how task images may be made non-swappable through the use of a Task Builder switch.

CAUTION

> Locking jobs in memory may cause fragmentation of user space and is normally not recommended. Use of the capability described in this article may cause severe system performance degradation, and may even lock out ALL other jobs on your system.

The Task Builder (TKB) switch "/CP" indicates a "checkpointable" or swappable task or job. This is the default for all .TSK files built by TKB. By specifying "/-CP" for the task output file, e.g.,

```
TKB TASK/-CP,MAP=OBJ
```

the resulting task image will be marked as non-swappable. When the task is run, if the patch described below is installed in the run-time system, the job will be locked for the duration of its execution. The job will be unlocked when the task terminates and "Ready" (or an equivalent prompt) is printed.

The following patch applies only to the RSX.RTS distributed with V7.2, and does not apply to any other run-time system. Thus, the only task images which can be locked in memory are those built to run under the RSX run-time system. This excludes all task images built using the HISEG option.

PROCEDURE:

1. This is a feature patch to the RSX run-time system only.

2. The patch described in Step 4 below can be installed using the PATCH option of INIT.SYS:

```
Option: PATCH
File to patch? RSX.RTS              (RSX run-time system name)
```

3. This patch can be installed manually using ONLPAT, the on-line patching program:

```
RUN $ONLPAT
Command File Name? <cr>          (RETURN for manual patch installation)
File to patch? [Ø,1]RSX.RTS      (RSX run-time system name)
File found in account [Ø,1]
```

This patch is contained in a patch file appearing in patch kit version "A" or later.

4. The patch is as follows:

```
Base address? ..NSW
Offset address? Ø
 Base   Offset  Old     New?
??????  ØØØØØØ  ØØØ24Ø  ? .SET
??????  ØØØØØ2  Ø137ØØ  ? ^C       (up-arrow/C to exit;CTRL/C for INIT)
```

5. If the above patch was installed using ONLPAT, it will take effect the next time the run-time system is reloaded. If the run-time system has been ADDed, or if it is your system default run-time system, execute the following commands:

```
RUN $UTILTY<cr>
<UTILTY's header line>
#UNLOAD RSX<cr>                  (RSX run-time system name)
#EXIT<cr>

Ready
```

NOTE: The UNLOAD command will not remove the run-time system, but simply instructs the monitor to reload it the next time a job requests it.

If, in addition to being previously ADDed, the run-time system had been ADDed with the /STAY switch, also reload it as follows:

```
RUN $UTILTY<cr>
<UTILTY's header line>
#LOAD RSX/STAY/ADDR:nnn<cr>      (RSX run-time system name)
#EXIT<cr>

Ready
```

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DISABLING POST-MORTEM DUMPS FOR CTRL/C ABORTS - RSX.RTS FEATURE PATCH

The Post-Mortem Dump capability of the RSX run-time system is enabled for task images built with the Task Builder /PM switch. (See the RSTS/E Task Builder Manual.) When such a task is executed, a post-mortem dump file is created if the task is aborted for any reason. Thus, the error condition which caused the task to abort may be analyzed through examination of the saved job image.

Strictly speaking, typing CTRL/C to terminate the execution of a task is to abort it. For example, the program might be in an infinite loop, and, unless CTRL/C were typed, the program would continue to execute indefinitely. In such a case, a post-mortem dump caused by typing CTRL/C may reveal what the program was doing over and over again. However, it may not always be desirable to generate a dump at the typing of CTRL/C, while at the same time a dump is desired for other kinds of aborts. This article describes a feature patch to the RSX run-time system to disable the generation of post-mortem dumps when CTRL/C is typed to abort any task.

PROCEDURE:

1. This is a feature patch to the RSX run-time system.

2. The patch described in Step 4 below can be installed using the PATCH option of INIT.SYS:

```
Option: PATCH
File to patch? RSX.RTS              (RSX run-time system name)
```

3. This patch can be installed manually using ONLPAT, the on-line patching program:

```
RUN $ONLPAT
Command File Name? <cr>             (RETURN for manual patch installation)
File to patch? [Ø,1]RSX.RTS         (RSX run-time system name)
File found in account [Ø,1]
```

   This patch is contained in a patch file appearing in patch kit version "A" or later.

4. The patch is as follows:

```
Base address? ..CCPM
Offset address? Ø
 Base   Offset  Old     New?
??????  ØØØØØØ  ØØØ4Ø4  ? 24Ø
??????  ØØØØØ2  123727  ? ^C        (up-arrow/C to exit;CTRL/C for INIT)
```

5. If the above patch was installed using ONLPAT, it will take effect the next time the run-time system is reloaded. If the run-time system has been ADDed, or if it is your system default run-time system, execute the following commands:

```
RUN $UTILTY<cr>
<UTILTY's header line>
#UNLOAD RSX<cr>                    (RSX run-time system name)
#EXIT<cr>

Ready
```

NOTE: The UNLOAD command will not remove the run-time system, but simply instructs the monitor to reload it the next time a job requests it.

If, in addition to being previously ADDed, the run-time system had been ADDed with the /STAY switch, also reload it as follows:

```
RUN $UTILTY<cr>
<UTILTY's header line>
#LOAD RSX/STAY/ADDR:nnn<cr>        (RSX run-time system name)
#EXIT<cr>

Ready
```

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CHANGE KEYBOARD MONITOR PROMPT - RSX.RTS FEATURE PATCH

The Keyboard Monitor in the RSX run-time system prompts with a "greater-than" sign (">") when it is ready to accept a command from the terminal. This prompt is analogous to the "Ready" message of BASIC-PLUS, or the "." (dot) printed by the RT11 run-time system. In RSTS/E V7.2, it is possible to make the RSX run-time system the system default run-time system. There are advantages to doing this. However, one side effect, which may be considered undesirable by some users, is that the familiar "Ready" message is not printed unless the job is using BASIC-PLUS as its private default run-time system.

The procedure described below will change the Keyboard Monitor prompt of the RSX run-time system from ">" to "<CR><LF>Ready<CR><LF><LF>" (logged in) and to "<CR><LF>Bye<CR><LF><LF>" (logged out). It also changes the RSX run-time system to behave like BASIC-PLUS in the following ways:

1. Typing an empty line does not result in another prompt.

2. Line Feed is echoed immediately after typing Carriage Return.

3. Typing CTRL/Z results in the "?End of file on device" error message.

PROCEDURE:

1. This is a feature patch to the RSX run-time system.

2. The patch described in Step 4 below can be installed using the PATCH option of INIT.SYS:

```
Option: PATCH
File to patch? RSX.RTS              (RSX run-time system name)
```

3. This patch can be installed manually using ONLPAT, the on-line patching program:

```
RUN $ONLPAT
Command File Name? <cr>             (RETURN for manual patch installation)
File to patch? [Ø,1]RSX.RTS         (RSX run-time system name)
File found in account [Ø,1]
```

This patch is contained in a patch file appearing in patch kit version "A" or later.

4. The patch is as follows:

```
Base address? ..RDY
Offset address? 2
 Base   Offset  Old     New?
??????  ØØØØØ2  ØØØØØ1  ? 1Ø.
??????  ØØØØØ4  ØØ1ØØØ  ? Ø
??????  ØØØØØ6  ØØØØ76  ? 5Ø15
??????  ØØØØ1Ø  ØØØØØØ  ? "RE+2ØØØØ
??????  ØØØØ12  ØØØØØØ  ? "AD+2ØØ4Ø
??????  ØØØØ14  ØØØØØØ  ? 'Y+644Ø
??????  ØØØØ16  ØØØØØØ  ? 5Ø12
??????  ØØØØ2Ø  ØØØØØØ  ? ^Z        (CTRL/Z for new offset)
Offset address? ^Z                  (CTRL/Z for new base)
Base address? ..BYE
Offset address? 2
 Base   Offset  Old     New?
??????  ØØØØØ2  ØØØØØ1  ? 8.
??????  ØØØØØ4  ØØ1ØØØ  ? Ø
??????  ØØØØØ6  ØØØØ76  ? 5Ø15
??????  ØØØØ1Ø  ØØØØØØ  ? "BY+2ØØØØ
??????  ØØØØ12  ØØØØØØ  ? 'E+644Ø
??????  ØØØØ14  ØØØØØØ  ? 5Ø12
??????  ØØØØ16  ØØØØØØ  ? ^Z        (CTRL/Z for new offset)
Offset address? ^Z                  (CTRL/Z for new base)
Base address? ..RPT
Offset address? <lf>
 Base   Offset  Old     New?
??????  ØØØØØØ  Ø12716  ? NOP
??????  ØØØØØ2  ??????  ? NOP
??????  ØØØØØ4  ØØØ2Ø7  ? ^Z        (CTRL/Z for new offset)
Offset address? ^Z                  (CTRL/Z for new base)
Base address? ..RMOD
Offset address? <lf>
 Base   Offset  Old     New?
??????  ØØØØØØ  ØØ1ØØØ  ? Ø
??????  ØØØØØ2  Ø16646  ? ^Z        (CTRL/Z for new offset)
Offset address? ^Z                  (CTRL/Z for new base)
Base address? ..EOF
Offset address? <lf>
 Base   Offset  Old     New?
??????  ØØØØØØ  ØØØ24Ø  ? 4737
??????  ØØØØØ2  ØØØ24Ø  ? ..ERMS
??????  ØØØØØ4  ØØØ2Ø7  ? ^C        (up-arrow/C to exit;CTRL/C for INIT)
```

5. If the above patch was installed using ONLPAT, it will take effect the next time the run-time system is reloaded. If the run-time system has been ADDed, or if it is your system default run-time system, execute the following commands:

```
RUN $UTILTY<cr>
<UTILTY's header line>
#UNLOAD RSX<cr>                    (RSX run-time system name)
#EXIT<cr>

Ready
```

NOTE: The UNLOAD command will not remove the run-time system, but simply instructs the monitor to reload it the next time a job requests it.

If, in addition to being previously ADDed, the run-time system had been ADDed with the /STAY switch, also reload it as follows:

```
RUN $UTILTY<cr>
<UTILTY's header line>
#LOAD RSX/STAY/ADDR:nnn<cr>        (RSX run-time system name)
#EXIT<cr>

Ready
```

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RSX.RTS

Seq 21.3.4 F

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CHANGE PROGRAM NAME OF KEYBOARD MONITOR - RSX.RTS FEATURE PATCH

The Keyboard Monitor in the RSX run-time system sets up a "program name" of "...MCR" (Monitor Console Routine) when it is waiting for a command to be typed at a terminal. By comparsion, BASIC-PLUS sets up a program name of "NONAME", and the RT11 run-time system set up the name "RT11". This name is displayed by SYSTAT, or by typing CTRL/T (if the feature is included on the system). Some users may prefer to change the "...MCR" name to the familiar "NONAME", or to some other name of their choice.

The procedure described below will change the program name of the RSX Keyboard Monitor to "NONAME". Any other six-character alphanumeric (or RAD5Ø) name may be substituted.

PROCEDURE:

1. This is a feature patch to the RSX run-time system.

2. The patch described in Step 4 below can be installed using the PATCH option of INIT.SYS:

```
Option: PATCH
File to patch? RSX.RTS              (RSX run-time system name)
```

3. This patch can be installed manually using ONLPAT, the on-line patching program:

```
RUN $ONLPAT
Command File Name? <cr>             (RETURN for manual patch installation)
File to patch? [Ø,1]RSX.RTS         (RSX run-time system name)
File found in account [Ø,1]
```

   This patch is contained in a patch file appearing in patch kit version "A" or later.

4. The patch is as follows:

```
Base address? ..NAM
Offset address? <lf>
 Base   Offset  Old     New?
??????  ØØØØØØ  131574  ? %NON
??????  ØØØØØ2  Ø5Ø712  ? %AME
??????  ØØØØØ4  ØØØØØØ  ? ^C        (up-arrow/C to exit;CTRL/C for INIT)
```

5. If the above patch was installed using ONLPAT, it will take effect the next time the run-time system is reloaded. If the run-time system has been ADDed, or if it is your system default run-time system, execute the following commands:

```
RUN $UTILTY<cr>
<UTILTY's header line>
#UNLOAD RSX<cr>                    (RSX run-time system name)
#EXIT<cr>

Ready
```

NOTE: The UNLOAD command will not remove the run-time system, but simply instructs the monitor to reload it the next time a job requests it.

If, in addition to being previously ADDed, the run-time system had been ADDed with the /STAY switch, also reload it as follows:

```
RUN $UTILTY<cr>
<UTILTY's header line>
#LOAD RSX/STAY/ADDR:nnn<cr>        (RSX run-time system name)
#EXIT<cr>

Ready
```

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RSX Emulator and Utilities Package
RSX.RTS

Seq 21.3.5 F

INVOKING A MENU PROGRAM - RSX.RTS FEATURE PATCH

PROBLEM:

Some installations may elect for certain users to return to a menu program, instead of one of the standard RSTS/E Keyboard Monitors such as BASIC-PLUS.

SOLUTION:

The following feature patch to the RSX run-time system will change its keyboard monitor such that it invokes a program called "MENU" in account [1,1Ø] instead of issuing its normal ">" prompt. "MENU" must be compiled (i.e., executable). If a specific file type is required, include it in the following patch. Otherwise, the effect of the patch will be equivalent to typing "RUN [1,1Ø]MENU" to the keyboard monitor.

The first portion of the patch determines the filename specification of the menu program to be invoked. Any valid RSTS/E filename specification, including device, PPN, filename, and file type (up to 26 characters) may be patched in. The filename string begins at Base "..MENU", Offset Ø. Two ASCII characters per word may be patched in, using the quote (") prefix.

The second portion of the patch determines the line number at which the program is to be started. Be sure to include the decimal point (".") after the line number value so that it is interpreted as a decimal number.

If the menu program cannot be run for any reason, the RSX run-time system will default to its normal keyboard monitor.

PROCEDURE:

1. This is a feature patch to the RSX run-time system. It may be installed in any RSX run-time system. Alternatively, you may install it in a new run-time system created from the RSX run-time system. For example,

```
RUN $PIP.SAV<cr>
*SY:[Ø,1]MENU.RTS/MO:16=SY:[Ø,1]RSX.RTS<cr>
*^Z

Ready
```

2. The patch described in Step 4 below can be installed using the PATCH option of INIT.SYS:

```
Option: PATCH
File to patch? RSX.RTS              (RSX run-time system name)
```

3. This patch can be installed manually using ONLPAT, the on-line patching program:

```
RUN $ONLPAT
Command File Name? <cr>             (RETURN for manual patch installation)
File to patch? [Ø,1]RSX.RTS         (RSX run-time system name)
File found in account [Ø,1]
```

This patch is contained in a patch file appearing in patch kit version "A" or later.

NOTE

The patch file for this patch requires manual editing to include installation specific parameters before it can be successfully installed. Specifically, change [1,1Ø]MENU to the desired account and program name.

4. The patch is as follows:

```
Base address? ..MENU
Offset address? Ø
 Base   Offset  Old     New?
??????  ØØØØØØ  Ø2ØØ4Ø  ? "[1       (File specification
??????  ØØØØØ2  Ø2ØØ4Ø  ? ",1       (of menu program)
??????  ØØØØØ4  Ø2ØØ4Ø  ? "Ø]
??????  ØØØØØ6  Ø2ØØ4Ø  ? "ME
??????  ØØØØ1Ø  Ø2ØØ4Ø  ? "NU
??????  ØØØØ12  Ø2ØØ4Ø  ? ^Z        (CTRL/Z for new offset)
Offset address? ^Z                  (CTRL/Z for new base)
Base address? ..LINE
Offset address? Ø
 Base   Offset  Old     New?
??????  ØØØØØØ  ØØØØØØ  ? Ø.        (Line number to start at)
??????  ØØØØØ2  ??????  ? ^C        (up-arrow/C to exit;CTRL/C for INIT)
```

5. If the above patch was installed using ONLPAT, it will take effect the next time the run-time system is reloaded. If the run-time system has been ADDed, or if it is your system default run-time system, execute the following commands:

```
RUN $UTILTY<cr>
<UTILTY's header line>
#UNLOAD RSX<cr>                    (RSX run-time system name)
#EXIT<cr>

Ready
```

NOTE: The UNLOAD command will not remove the run-time system, but simply instructs the monitor to reload it the next time a job requests it.

If, in addition to being previously ADDed, the run-time system had been ADDed with the /STAY switch, also reload it as follows:

```
RUN $UTILTY<cr>
<UTILTY's header line>
#LOAD RSX/STAY/ADDR:nnn<cr>        (RSX run-time system name)
#EXIT<cr>

Ready
```

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USING THE RSX CRF UTILITY

An RSX CRF.TSK utility is included on the RSTS distribution kit as an unsupported product. It is not, therefore, copied from the distribution by any of the build procedures. This program will create cross reference listings from the binary cross reference (.CRF) files optionally produced by the RSX task builder (TKB) and and RSX MACRO assembler (MAC). The cross reference file created by MAC lists page and line number references to data items and routines, whereas the cross reference file created by TKB lists tha names of the object modules which reference these items. The following are examples of these two types of output:

MACRO Assembler output:

```
CRF        CREATED BY  MACRO  ON 15-JUL-79 AT Ø6:Ø2     PAGE 1
SYMBOL CROSS REFERENCE                                   CREF   Ø7.Ø65
SYMBOL  VALUE           REFERENCES
CR      = ØØØØ15        #4-18Ø
FF      = ØØØØ14        #4-18Ø
HT      = ØØØØ11        #4-18Ø
LF      = ØØØØ12        #4-18Ø
L$$IST  = ******         1-1        1-2        2-53       3-1        4-182
RSTS    = ØØØØØ1        #4-39
R$$11M  = ØØØØØØ        #4-38
SPA     = ØØØØ4Ø        #4-18Ø
VT      = ØØØØ13        #4-18Ø
V1145   = ******         4-157
$$$VER  = Ø34Ø66        #3-2       #5-1
```

Task Builder output:

```
CRF        CREATED BY  TKB    ON 15-JUL-79 AT Ø6:23     PAGE 1

GLOBAL CROSS REFERENCE                                   CREF   Ø7.Ø65

SYMBOL  VALUE      REFERENCES...

A.BTTN  ØØØØØ2    # DIRSYM
A.DFUI  ØØØ1Ø2      CRFIN   # FCSGBL
A.LULU  ØØØØØ2    # DIRSYM
A.LUNA  ØØØØØ4    # DIRSYM
A.LUNU  ØØØØØ6    # DIRSYM
A.TRBA  ØØØØØ2    # DIRSYM
BADDIR  ØØØØØ1    # ERR       FIP
BADNAM  ØØØØØ2    # ERR       FIP
```

More details on the CRF output can be found in the RSX-11 Utilities Procedures Manual.

To request that MAC or TKB produce a binary cross reference file, the /CR switch must be specified in the command line to these programs. For MAC the switch is included with the listing file specification and for TKB it is included with the map file specification. The binary file created has the same name as the listing or map file and its file type is always .CRF.

CRF.TSK is run using either the RUN command or the CRF CCL if installed. When run using the RUN command, CRF will prompt with "CRF>". Typing the CTRL/Z combination to this prompt will cause an exit to your default RTS. The command line is a single RSTS/E file specification of the file into which the cross reference listing is to be placed. The default file type for this file is .LST. If the file specified already exists, CRF appends the listing to it, otherwise a new file is created. The CRF output is variable length records and, therefore, if the file specified for output already exists, it must also be a variable length file. The listing file produced by MAC and the map file created by TKB are both variable length files making them prime candidates.

CRF also accepts as input an indirect command file (preceded by "@") which can contain a list of file specifications. Each specification in the file will be processed as if it was separately entered to the "CRF>" prompt. The default file type for the command file is .CMD. CRF only allows one level of command indirection.

CRF requires the binary cross reference file to have the same name as the output file with a file type of ".CRF". CRF always deletes the binary ".CRF" file when it is done. Therefore, if it is desirable to keep the binary file, it must be copied to a non-".CRF" file prior to running CRF.TSK.

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USE OF UNDERSCORE IN RT-11 EMULATOR UTILITIES

RSTS/E allows the use of the underscore ("_") character before a device name in a file specification to indicate that the device name is not to undergo logical translation. Utilities provided with the RT-11 emulator will allow the use of the underscore character; however, due to the nature of the emulator, it is still possible for the device name to undergo translation before a file is opened.

In the RT-11 emulator, file specifications given to a utility are scanned using the RT-11 CSI (command string interpreter). At this time, the device designation may or may not undergo logical translation (depending on whether or not the underscore was used). The CSI returns RT-11 file description blocks to the utilities.

When the utility program then requests the emulator to open a file, the file open code does an additional logical translation on the specified device name. This is an unavoidable consequence of allowing logical device names to be specified in RT-11 file description blocks.

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USING RTSODT FOR DEBUGGING RUN-TIME SYSTEMS

A version of ODT is provided on the RSTS/E distribution kit as an unsupported feature which can be linked with user-written run-time systems.

To use RTSODT with run-time systems that are assembled and linked under the RT11 run-time system, execute the following commands:

```
RUN $LBR.TSK<cr>
LBR>RTSODT.OBJ=LB:SYSLIB/EX:RTSODT<cr>
LBR>^Z

Ready

RUN $PIP.SAV<cr>
*RTSODT.OBJ=RTSODT.OBJ/RMS:FB<cr>
*^Z

Ready
```

You may now include RTSODT.OBJ in the list of input files during the LINK. For example:

```
RUN $LINK<cr>
*RT11OD/Z,RT11OD/W,RT11OD=RT11/X/H:#177776/U:#4ØØØ/C<cr>
*#ERR.STB,#RTSODT<cr>
*PATCH<cr>
*^Z

Ready
```

Refer to article Seq 21.1.1 N for a description of the use of RTSODT with run-time systems that are assembled and linked under the RSX run-time system.

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CHANGING DEFAULT PROGRAM LOAD SIZE FOR MACRO CUSPS

Some installations may wish to change the default memory load size of one of the MACRO CUSPS. This might be done if LINK is normally used to link large programs or if you wish to increase the amount of buffer space that PIP uses for transfers.

The example given below is the method by which this can be accomplished. Note that the '24.' supplied should be replaced with the size in K words that you wish to be the default load size for this program.

PROCEDURE:

1. This patch will only work on MACRO (*.SAV) cusps.

2. The patch described in Step 4 below can NOT be installed using the PATCH option of INIT.SYS.

3. This patch can be installed manually using ONLPAT, the on-line patching program:

```
RUN $ONLPAT
Command File Name? <cr>          (RETURN for manual patch installation)
File to patch? EXAMPL.SAV/N      (be sure to specify /N after MACRO
                                     cusp name)

File found in account [p,pn]
```

4. The patch is as follows:

```
Base address? Ø
Offset address? 56
 Base   Offset  Old     New?
ØØØØØØ  ØØØØ56  XXXXXX  ? 24.      (replace with desired size)
ØØØØØØ  ØØØØ6Ø  ØØØØØØ  ? ^Z      (CTRL/Z for new offset)
Offset address? 776
 Base   Offset  Old     New?
ØØØØØØ  ØØØ776  Ø74Ø64  ? ^Z      (if the old contents are
                                   different, then end here)
Offset address? 774
 Base   Offset  Old     New?
ØØØØØØ  ØØØ774  ??????  ? Q#XXXXXX#24.  (XXXXXX is from old value above)
ØØØØØØ  ØØØ776  Ø74Ø64  ? ^C           (up-arrow/C to exit)
```

NOTES ON HOOK.SAV

HOOK.SAV is a program which will write a bootstrap program on RSTS/E file-structured disks and magnetic tapes. Though it is intended only for use during SYSGEN, it can be used to make any RSTS/E file-structured disk or tape bootable.

Creating a bootable RSTS/E File-structured Disk

Mount the disk to be "HOOKed":

```
RUN $UTILTY<cr>
<UTILTY's header line>
#MOUNT xxn:packid/PRIVATE<cr>
#^Z

Ready
```

Copy INIT.SYS from your system disk to the output device:

```
RUN $PIP.SAV<cr>
*xxn:[Ø,1]*.*/CL:16=SYØ:[Ø,1]INIT.SYS<cr>
*^Z

Ready
```

Then, run HOOK.SAV:

```
RUN $HOOK.SAV<cr>
<HOOK's header line>
*xxn:[Ø,1]INIT.SYS<cr>
Hook complete
*^Z

Ready
```

Creating a bootable RSTS/E DOS-format Magnetic Tape

Mount a scratch magnetic tape on a tape drive. (Note that HOOK.SAV will zero the tape before using it.) Then, run HOOK.SAV:

```
RUN $HOOK.SAV<cr>
<HOOK's header line>
*xxn:[Ø,1]INIT.SYS/D[:n.],SYØ:[Ø,1]INIT.SYS<cr>
Hook complete
*^Z
```

Ready

NOTES

1. Magnetic tape density: Specify "/D:n" after the "output" dev:filnam, as follows:

/D:8ØØ.	Set 8ØØ BPI, odd parity
/D	Same as /D:8ØØ.
/D:16ØØ.	Set 16ØØ BPI, phase encoded
/D:16ØØ	Same as /D:16ØØ.

   Note:

   - o /D:8ØØ (no dot) is an illegal specification
   - o If /D is not specified, the drive's current settings are used.
   - o HOOK will assign the tape drive to you, in DOS format, at the density that you specify (or do not specify).

2. Normally, HOOK finds the bootstraps for disks and magnetic tapes in SYØ:[Ø,1]INIT.SYS. If, as may happen on a development machine, [Ø,1]INIT.SYS does not have the most recent version of the appropriate bootstrap, you can specify an alternate file in which to find the bootstraps. Hence, a full HOOK command line looks like

   <outdev:filename> , <file for mt-only> , <bootstraps>

   The bootstrap file must meet the following criteria:

   - o It must reside on a mounted disk
   - o It must be a SAV-format SIL with a symbol table
   - o It must have the global symbol "XXBOOT" defined for the start of the bootstrap pointer table.
   - o The bootstraps must be in the standard RSTS/E format.
   - o In short, the bootstrap file should look like INIT.SYS.

3. HOOK writes magnetic tapes with DOS labels. If the tape is written at 8ØØ BPI, the name of the first file on the tape will be [Ø,1]MTBOOT.SYS. If the tape is written at 16ØØ BPI, the name of the first file will be [Ø,1]MSBOOT.SYS. Note that the difference is important; the 8ØØ BPI bootstrap is significantly different from the 16ØØ BPI bootstrap.

4. If no filename is specified with the device specification for magnetic tape, the default name INIT.SYS is used, with the current PPN. In other words, if you are logged in under [123,1] and specify

    MTØ:/D:8ØØ.,[Ø,1]FOO.FOO

    the files on the tape will be "[Ø,1]MTBOOT.SYS" and "[123,1]INIT.SYS".

    If you have any reason to wonder if a magnetic tape is bootable, check the directory, which should have 2 files with legal RSTS/E filenames. The first file should be 1 block long (2 blocks on SAVE set tapes, which are bootable tapes created by SAVRES). If the directory looks unusual, it is not a bootable RSTS/E tape.

5. The following might be useful information.

    Standard command lines:

    DKØ:[Ø,1]INIT.SYS
        Load and execute [Ø,1]INIT.SYS when DKØ: is booted.

    MM1:[Ø,1]INIT.SYS/D:16ØØ,DRØ:[Ø,1]INIT.SYS
        Load and execute MM1:[Ø,1]INIT.SYS when MM1: is booted; copy the file to be executed from DR1:[Ø,1]INIT.SYS; set the density to 16ØØ BPI.

    Non-standard command lines:

    DB3:[Ø,1]INIT.SYS,,[4,4]NEWINI.SYS
        Load and execute [Ø,1]INIT.SYS when DB3: is booted; get the bootstrap from [4,4]NEWINI.SYS.

    MMØ:,[Ø,1]INIT.SYS <not recommended>
        Load and execute a file called INIT.SYS that was copied from [Ø,1]INIT.SYS.

6. Possible Errors:

?Can't open disk NFS
Someone else is using the disk to be HOOKed, or you are not privileged.

?Can't open [Ø,1]SYØ:INIT.SYS
You must be privileged to run HOOK.SAV

?Directory error
The output disk is not a valid RSTS/E file-structured disk.

?File high limit too large
The file to be loaded by the bootstrap program is too large.

?Error reading boot block
An I/O error occurred while reading the disk to be HOOKed; it may be off-line.

?Error writing boot block
An I/O error occurred while writing the bootstrap program; the disk may be write-locked.

?Error reading pack ID
An I/O error occurred while reading the disk to be HOOKed.

?Error reading INIT.SYS
An I/O error occurred while reading INIT.SYS.

?Explicit unit number required
The device name specified must include an explicit unit number.

?Ill cmd?
HOOK.SAV could not interpret the specified command line.

?Illegal density
The density that you specified cannot be used on this tape drive.

?Illegal overlay number in INIT
You are using an obsolete version of INIT.SYS.

?INIT.SYS is not a SAV format SIL
You are using an obsolete version of INIT.SYS.

?INIT.SYS is too fragmented
Occurs on disk if the INIT.SYS file being hooked is sufficiently fragmented across the disk that the boot block pointers to INIT do not fit in the boot block. Solution: make INIT contiguous or as a minimum use a clustersize of 16 for INIT.

?Not a bootable device
HOOK.SAV cannot write a bootstrap for that device.

?Null file can't be hooked
Self explanatory.

?No BOOT in STB
You are using an obsolete version of INIT.SYS.

Second input file required for magtape hook
You must specify a file to be copied to the magnetic tape.

?UFD open failure
An I/O error occurred.

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PIP.SAV

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SETTING /NEWFILE AS A DEFAULT PIP.SAV OPTION - PIP.SAV FEATURE PATCH

PROBLEM:

When transferring a disk file to a new disk file, PIP transfers the creation date and time, and last access date of the existing file to the newly created file. This may be undesirable in some environments where files are backed up by creation or access dates.

SOLUTION:

This problem may be solved on a per-command basis by using the /NEWFILE option. However, if it is deemed that this operation is desired as the default, the following PIP patch may be applied.

If this patch is applied /NEWFILE will be the default operation. To transfer a file and retain all accounting information the /RETAIN switch may be used on a per-command basis to override the new default.

PROCEDURE:

1. This is a feature patch to PIP.SAV.

2. The patch described in Step 4 below can NOT be installed using the PATCH option of INIT.SYS.

3. This patch can be installed manually using ONLPAT, the on-line patching program:

```
RUN $ONLPAT
Command File Name? <cr>              (RETURN for manual patch installation)
File to patch? [1,2]PIP.SAV
File found in account [1,2]
```

   The patch is also contained in a patch file appearing in patch kit version "A" or later.

4. The patch is as follows:

```
Base address? ..NEWF
Offset address? Ø
 Base   Offset  Old     New?
??????  ØØØØØØ  ØØ1Ø37  ? (Q&377)+BR
??????  ØØØØØ2  ØØ5767  ? ^C        (up-arrow/C to exit)
```

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PIP.SAV

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TRANSFERRING FILES BY DATE OF LAST ACCESS - PIP.SAV FEATURE PATCH

PROBLEM:

PIP allows file operations selectively by creation date through the use of a number of switches (i.e., /TODAY, /SINCE, /UNTIL, etc.). In some instances it would be desirable to have such switches key off of the last access date.

SOLUTION:

Two new switches have been added to PIP to allow specifying either creation date (/CREATION) or date of last access (/DLA). The default operation is to key off of the creation date. The following patch will set the default operation to key all date selections off of the date of last access.

PROCEDURE:

1. This is a feature patch to PIP.SAV.

2. The patch described in Step 4 below CANNOT be installed using the INIT.SYS PATCH option.

3. This patch can be installed manually using ONLPAT, the on-line patching program:

```
RUN $ONLPAT
Command File Name? <cr>              (RETURN for manual patch installation)
File to patch? [1,2]PIP.SAV
File found in account [1,2]
```

   The patch is also contained in a patch file appearing in patch kit version "A" or later.

4. The patch is as follows:

```
Base address? ..DLAC
Offset address? Ø
 Base   Offset  Old     New?
??????  ØØØØØØ  ØØ1ØØ2  ? (Q&377)+BR
??????  ØØØØØ2  Ø167ØØ  ? ^C        (up-arrow/C to exit)
```

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REQUIRING VOLUME I.D. SPECIFICATIONS WITH ANSI MAGNETIC TAPES - PIP.SAV FEATURE PATCH

PROBLEM:

When using PIP.SAV to write multi-volume ANSI format magnetic tapes, a volume ID may be specified when mounting a tape. The default action for PIP is to check the volume I.D. against that of the tape being mounted, and if the two do not match to reject the mounted tape. In some environments it might be desirable to force the specification of the volume I.D. to insure maximum tape security.

SOLUTION:

The following patch will reject the mounting of an ANSI format magnetic tape if no volume I.D. is specified.

PROCEDURE:

1. This is a feature patch to PIP.SAV.

2. The patch described in Step 4 below can NOT be installed using the PATCH option of INIT.SYS.

3. This patch can be installed manually using ONLPAT, the on-line patching program:

```
RUN $ONLPAT
Command File Name? <cr>            (RETURN for manual patch installation)
File to patch? [1,2]PIP.SAV
File found in account [1,2]
```

   The patch is also contained in a patch file appearing in patch kit version "A" or later.

4. The patch is as follows:

```
Base address? ..VIDS
Offset address? Ø
 Base   Offset  Old     New?
??????  ØØØØØØ  ØØØ4Ø3  ? NOP
??????  ØØØØØ2  Ø327Ø4  ? ^C        (up-arrow/C to exit)
```

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SETTING /LOG AS A DEFAULT PIP.SAV OPTION - PIP.SAV FEATURE PATCH

PROBLEM:

In some environments it is desirable to have the /LOG option with PIP.SAV set for all transactions.

NOTE

Certain control files for older products which use PIP.SAV may not run with this optional feature patch installed.

SOLUTION:

The following PIP.SAV feature patch will set the /LOG option for every PIP.SAV command which allows the use of /LOG. Note that the /NOLOG switch may be used to suppress the logging for a particular operation.

PROCEDURE:

1. This is a feature patch to PIP.SAV.

2. The patch described in Step 4 below can NOT be installed using the PATCH option of INIT.SYS.

3. This patch can be installed manually using ONLPAT, the on-line patching program:

```
RUN $ONLPAT
Command File Name? <cr>              (RETURN for manual patch installation)
File to patch? [1,2]PIP.SAV
File found in account [1,2]
```

   The patch is also contained in a patch file appearing in patch kit version "A" or later.

4. The patch is as follows:

```
Base address? ..SCNF
Offset address? Ø
 Base   Offset  Old     New?
??????  ØØØØØØ  ØØØØØØ  ? 1ØØØØØ
??????  ØØØØØ2  ØØ4437  ? ^C        (up-arrow/C to exit)
```

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MAKING /ERASE IMPLY /DELETE - PIP.SAV FEATURE PATCH

PROBLEM:

Some users may want to make the /ERASE switch imply /DELETE.

SOLUTION:

The patching procedure detailed below will cause the /ERASE switch to imply /DELETE.

PROCEDURE:

1. This is a feature patch to PIP.SAV.

2. The patch described in Step 4 below can NOT be installed using the PATCH option of INIT.SYS.

3. This patch can be installed manually using ONLPAT, the on-line patching program:

```
RUN $ONLPAT
Command File Name? <cr>              (RETURN for manual patch installation)
File to patch? [1,2]PIP.SAV
File found in account [1,2]
```

   This patch is contained in a patch file appearing in patch kit version "A" or later.

4. The patch is as follows:

```
Base address? ..ERDE
Offset address? Ø
 Base   Offset  Old     New?
??????  ØØØØØØ  Ø1ØØØØ  ? 1ØØØ1
??????  ØØØØØ2  ØØØØØØ  ? ^C        (up-arrow/C to exit)
```

RSTS/E V8.Ø
RT-11 Emulator and Utilities Package
PIP.SAV

Seq 22.13.6 F

1 of 1

CHANGING THE MAXIMUM ALLOWABLE MAGNETIC TAPE BLOCKING SIZE - PIP.SAV FEATURE PATCH

PROBLEM:

The current maximum allowable blocking size that PIP permits on magnetic tape is 4Ø96. Some installations may want to change this to 8192. to allow better usage of magnetic tape.

SOLUTION:

The procedure described below shows how this can be accomplished.

NOTE

> Unless the CCL '/SI' switch is used to increase PIP's size or the procedure described in article Seq 22.1.3 N is used to increase the default load size, PIP will not allow larger blocksizes because of lack of buffer space. This can be overcome by changing PIP's size to 2ØK words.

PROCEDURE:

1. This is a feature patch to PIP.SAV.

2. The patch described in Step 4 below can NOT be installed using the PATCH option of INIT.SYS.

3. This patch can be installed manually using ONLPAT, the on-line patching program:

```
RUN $ONLPAT
Command File Name? <cr>            (RETURN for manual patch installation)
File to patch? [1,2]PIP.SAV
File found in account [1,2]
```

   This patch is contained in a patch file appearing in patch kit version "A" or later.

4. The patch is as follows:

```
Base address? ..BSHI
Offset address? Ø
 Base   Offset  Old     New?
??????  ØØØØØØ  Ø1ØØØØ  ? 8192.
??????  ØØØØØ2  ØØ3ØØ4  ? ^C        (up-arrow/C to exit)
```

RSTS/E V8.Ø
RT-11 Emulator and Utilities Package
SAVRES.SAV

Seq 22.19.1 F

CHANGE SAVRES DEFAULT DENSITY TO 16ØØ BPI - SAVRES.SAV FEATURE PATCH

PROBLEM:

SAVRES, as released, defaults to the lowest density (of 8ØØ BPI and 16ØØ BPI) allowed by a given tape drive (normally 8ØØ BPI) for all tape I/O. It may be desirable at some installations to have SAVRES default to the highest density allowed by a given tape drive for more compact storage of data. This is especially true if all drives on the system support 16ØØ BPI and the problem described below is not applicable.

CAUTION

> If the tape drive being used has a TMØ2 formatter, the hardware bootstrap of a 16ØØ BPI tape will not be possible. (You can determine the formatter type by using the HARDWR LIST suboption of INIT.) Therefore, if it is desirable for SAVRES to create tapes which are bootable on such a drive it is recommended that this patch not be installed. Normally, TU16 and TU45 drives use a TMØ2 formatter, TE16 and TU77 drives do not.

SOLUTION:

The following feature patch will cause SAVRES to default to the highest density allowed by a given tape drive for all tape I/O. This default can be overridden by attaching the /DENSITY:8ØØ switch to the device specification. Refer also to article Seq 1.1.1 F, which supplies a similar patch for the SAVRES option of INIT.

PROCEDURE:

1. This is a feature patch to SAVRES.SAV.

2. The patch described in Step 4 below can NOT be installed using the PATCH option of INIT.SYS.

3. This patch can be installed manually using ONLPAT, the on-line patching program:

```
RUN $ONLPAT
Command File Name? <cr>              (RETURN for manual patch installation)
File to patch? [1,2]SAVRES.SAV
File found in account [1,2]
```

RSTS/E V8.Ø Seq 22.19.1 F
RT-11 Emulator and Utilities Package
SAVRES.SAV 2 of 2

The patch is also contained in a patch file appearing in patch kit version "A" or later.

4. The patch is as follows:

```
Base address? DIACTL
Offset address? 31Ø
 Base   Offset  Old     New?
??????  ØØØ31Ø  Ø3ØØ7Ø  ? "16
??????  ØØØ312  177460  ? "ØØ
??????  ØØØ314  Ø33Ø61  ? Ø34377
??????  ØØØ316  Ø3ØØ6Ø  ? <lf>      (no change; verify only)
??????  ØØØ32Ø  ØØØ377  ? <lf>      (no change; verify only)
??????  ØØØ322  ØØ144Ø  ? 16ØØ.
??????  ØØØ324  ØØ31ØØ  ? 8ØØ.
??????  ØØØ326  ØØØØØØ  ? ^Z        (CTRL/Z for new offset)
Offset address? ^Z                  (CTRL/Z for new base)
Base address? SAVCTL
Offset address? 42
 Base   Offset  Old     New?
??????  ØØØØ42  Ø3ØØ7Ø  ? "16
??????  ØØØØ44  177460  ? "ØØ
??????  ØØØØ46  Ø33Ø61  ? Ø34377
??????  ØØØØ5Ø  Ø3ØØ6Ø  ? <lf>      (no change; verify only)
??????  ØØØØ52  ØØØ377  ? <lf>      (no change; verify only)
??????  ØØØØ54  ØØ144Ø  ? 16ØØ.
??????  ØØØØ56  ØØ31ØØ  ? 8ØØ.
??????  ØØØØ6Ø  ØØØØØØ  ? ^Z        (CTRL/Z for new offset)
Offset address? ^Z                  (CTRL/Z for new base)
Base address? RESCTL
Offset address? 3Ø
 Base   Offset  Old     New?
??????  ØØØØ3Ø  Ø3ØØ7Ø  ? "16
??????  ØØØØ32  177460  ? "ØØ
??????  ØØØØ34  Ø33Ø61  ? Ø34377
??????  ØØØØ36  Ø3ØØ6Ø  ? <lf>      (no change; verify only)
??????  ØØØØ4Ø  ØØØ377  ? <lf>      (no change; verify only)
??????  ØØØØ42  ØØ144Ø  ? 16ØØ.
??????  ØØØØ44  ØØ31ØØ  ? 8ØØ.
??????  ØØØØ46  ØØØØØØ  ? ^C        (up-arrow/C to exit)
```

RSTS/E V8.Ø
RT-11 Emulator and Utilities Package
SAVRES.SAV

Seq 22.19.2 F

1 of 2

MAKING /NOERROR THE DEFAULT - SAVRES.SAV FEATURE PATCH

PROBLEM:

The /NOERROR switch indicates that SAVRES should abort under the following conditions:

1. A contiguous file is made non-contiguous
2. A placed file is "unplaced"
3. A bad comparison occurs
4. An unexpected bad block is encountered on the input RSTS/E disk in a SAVE or IMAGE operation

Some installations, however, may always want SAVRES to abort under these circumstances.

SOLUTION:

The following feature patch will make /NOERROR, rather than /ERROR, the default in SAVRES.SAV. Note that the user may override the default for a particular operation by specifying /ERROR. Refer also to article Seq 1.1.2 F, which supplies a similar patch for the SAVRES option of INIT.

PROCEDURE:

1. This is a feature patch to SAVRES.SAV.

2. The patch described in Step 4 below can NOT be installed using the PATCH option of INIT.SYS.

3. This patch can be installed manually using ONLPAT, the on-line patching program:

```
RUN $ONLPAT
Command File Name? <cr>              (RETURN for manual patch installation)
File to patch? [1,2]SAVRES.SAV
File found in account [1,2]
```

   The patch is also contained in a patch file appearing in patch kit version "A" or later.

4. The patch is as follows:

```
Base address? ..NOER
Offset address? 2
 Base   Offset  Old     New?
??????  ØØØØØ2  ØØØØ1Ø  ? 4
??????  ØØØØØ4  ??????  ? <lf>      (no change)
??????  ØØØØØ6  ??????  ? <lf>      (no change)
??????  ØØØØ1Ø  ??????  ? <lf>      (no change)
??????  ØØØ12   ØØØØØ4  ? 1Ø
??????  ØØØ14   ??????  ? ^C        (up-arrow/C to exit)
```

RSTS/E V8.Ø
RT-11 Emulator and Utilities Package
SAVRES.SAV

Seq 22.19.3 F

1 of 1

MAKING /NOSTATS THE DEFAULT - SAVRES.SAV FEATURE PATCH

PROBLEM:

SAVRES always prints a summary report after completing a transfer unless the /NOSTATS (no statistics) switch is specified. Certain installations may prefer that this report NOT be printed unless specifically requested.

SOLUTION:

The following feature patch will make /NOSTATS, rather than /STATS, the default in SAVRES.SAV. Note that the user may override this default for a particular operation by specifying /STATS. Refer also to article Seq 1.1.3 F, which supplies a similar patch for the SAVRES option of INIT.

PROCEDURE:

1. This is a feature patch to SAVRES.SAV.

2. The patch described in Step 4 below can NOT be installed using the PATCH option of INIT.SYS.

3. This patch can be installed manually using ONLPAT, the on-line patching program:

```
RUN $ONLPAT
Command File Name? <cr>              (RETURN for manual patch installation)
File to patch? [1,2]SAVRES.SAV
File found in account [1,2]
```

   The patch is also contained in a patch file appearing in patch kit version "A" or later.

4. The patch is as follows:

```
Base address? ..NOST
Offset address? 2
 Base   Offset  Old     New?
??????  ØØØØØ2  ØØØØ4Ø  ? 2Ø
??????  ØØØØØ4  ??????  ? <lf>      (no change)
??????  ØØØØØ6  ??????  ? <lf>      (no change)
??????  ØØØØ1Ø  ??????  ? <lf>      (no change)
??????  ØØØØ12  ØØØØ2Ø  ? 4Ø
??????  ØØØØ14  ??????  ? ^C        (up-arrow/C to exit)
```

NOTES ON KNOWN PROBLEMS AND RESTRICTIONS IN EDT

The following problems and restrictions are present in EDT version 2.

1. There are some restrictions in the operation of CTRL/C.

    1. If you type CTRL/C when inserting at the end of a line in keypad mode, the CTRL/C echos as ^C, messing up the screen. Removing this restriction will require improving the interaction between EDT and the operating system's terminal driver, a long-term project. The work-around is to type CTRL/W (refresh the screen) after a CTRL/C.

    2. If you type CTRL/C during the EXIT command, EDT may leave a truncated output file. As documented, CTRL/C aborts the current operation. The operation in this case is writing the file. The only reasonable workaround is not to type CTRL/C during the EXIT command.

    3. If you type CTRL/C to abort an operation, for example a long search, you should type EXIT and re-invoke EDT to continue editing the file. This requirement is imposed because the journal file is invalidated. That is, if there is a subsequent system crash and you need to recover the edit using the journal file, edits done after the CTRL/C may be wrong. This is because the journal consists of just a record of what was typed, and there is no way, within this structure, to record just when the CTRL/C was typed. (If the aborted operation does not modify text, it is sufficient to move the cursor to a unique location, such as the beginning or end of buffer, before proceeding.)

2. The fact that the line-mode command "WRITE file-spec SELECT" writes on a file the current select range is not in the manual.

3. Hardcopy change mode is not described in the manual.

4. In hardcopy change mode, the setting of TRUNCATE, and the values of SHL and SHR, are not reflected in the text displayed.

5. In line mode commands which take a multi-line range as argument one of the conventions is that the first line in the range will become the current line once the command is complete. For example, TYPE ABC 5:1Ø implies that after lines 5 through 1Ø have been typed, the current line will be line 5 in the buffer ABC. However, when the range is of the form ALL 'string', the current line becomes the first line of the buffer. This is because ALL 'string' is taken to mean WHOLE ALL 'string', and the first line of the buffer is the first line of the range. TYPE =ABC 5:1Ø ALL 'string' would leave the cursor on line 5, even if line 5 were excluded by the ALL phrase.

6. If you edit a file on an account to which you do not have write access, you should specify that the output and journal files are to be written on an account to which you do have write access.

7. The range specifier LAST is not very useful, as implemented. Instead, use ".", which is defined local to each buffer.

8. If you use the RESEQUENCE line-mode command from keypad mode (using <GOLD> 7) you must type CTRL/W to refresh the screen. This is because the informational message that the RESEQUENCE command prints causes the screen to scroll, thus making the screen wrong.

9. The word wrapping feature takes effect when WRAP has been set to no more than 2 less than the screen width. That is, the screen must be set to at least two wider than the word wrapping point that you want. For example, on a VT52 you can SET SCREEN 82 and SET WRAP 8Ø, or SET SCREEN 8Ø and SET WRAP 78.

1Ø. In line mode, a range specification may not include both a buffer and the ALL phrase. In the COPY command, the ALL phrase may not be used at all.

11. EDT will run on a VT52, VT1ØØ, VT132, VT125, VT1Ø1 and VT1Ø2. The VT132, VT125, VT1Ø1 and VT1Ø2 are treated as VT1ØØs. If you have a VT1ØØ without the Advanced Video Option (AVO) or a VT1Ø1 you must not use SET SCREEN 132, and you must set the cursor to "block". EDT treats all other terminals as hard copy terminals.

12. EDT has trouble with very long files. If a file has more than 42949 lines EDT numbers them incorrectly, with the result that line mode does not work correctly after line 42949. Also, if you WRITE a buffer of more than 32767 lines, or EXIT with the main buffer containing more than 32767 lines, the message indicating the number of lines written is incorrect.

13. In the SUBSTITUTE command you cannot use single quote ('), double quote (") or percent sign (%) as the delimiter.

14. If you define a key to execute a (line-mode) macro, using EXT, that macro may not enter change mode using the C; command.

15. If you undelete a line that is 128 characters long or longer, you may not do a multiple undelete line. That is, <GOLD> 2 <GOLD> <UNDL> would not work.

16. If you delete a <CR> using delete character, delete word or delete line, then undelete it, the <CR> is turned into a line break. If you use CUT, the <CR> is preserved.

17. You may not imbed a space in a file specification; EDT uses space to separate a file name from the range in the INLCUDE command.

RSTS/E 278Ø Package V3.Ø
for RSTS/E V8.Ø
RJ278Ø

Seq 25.2.1 M

FAILURE TO CLEAR 'JOB ACTIVE' ON ATTACH - MANDATORY RJ278Ø PATCH

NOTE

This patch appeared in an earlier issue of the RSTS/E VØ6B-Ø2 Software Dispatch (September, 1977) as a patch to the RSTS/E VØ6B RJ278Ø.BAS program. Since the same program is used under the V8.Ø system, this patch is being republished for the RSTS/E V8.Ø Software Dispatch Review. Because of this, the edit level remains at "VØ6B-Ø3". If you have applied the earlier VØ6B patch, do not apply this patch again.

PROBLEM:

Once RJ278Ø has been put into SPOOL mode, an ATTACH should cause any job being sent by QUEMAN to be REQUEUEd, and all variables in the RJ278Ø program itself concerning that job to be cleared. Processing should then resume, taking input from the terminal to which the program is ATTACHed. When SPOOL mode is re-entered, the same job should be sent by QUEMAN, and processed by the RJ278Ø program. Instead, the RJ278Ø program becomes confused when it receives a new SPOOL command, and the NEWJOB sent by QUEMAN causes an error message and the job is not processed.

SOLUTION:

The following patch causes reset of all variables upon ATTACH.

PROCEDURE:

1. For purposes of the discussion, we will assume that the required program to be patched is located on the public disk structure. In the patching procedure, we will refer to the program by its most simple name format: <program name>.BAS. The person performing the patching operation should, if necessary, replace all program references with suitable text according to the requirements of the installation.

   Also, for purposes of presenting the patching procedure, we assume that the patching operation will be performed in a privileged account.

2. The command file for this patch appears in patch kit version "A" or later. If you do not have this distribution you can produce a command file by specifying a file for [logfile=] in the procedure below.

   To apply the patch manually, perform the following RSTS/E system commands.

```
RUN $CPATCH<cr>
<CPATCH's header line>

File to patch - RJ278Ø.BAS=RJ278Ø.BAS<cr>
#[logfile=]<cr>
*H/6!/V<cr>
6!              EDIT            :       Ø3
*G/Ø3/I/A/V<cr>
6!              EDIT            :       Ø3A
*H/7!/V<cr>
7!              EDIT DATE       :       Ø2-JUN-77
*G/Ø2-JUN-77/-9C/Ø6-JUL-77/V<cr>
7!              EDIT DATE       :       Ø6-JUL-77
*H/21!/V<cr>
21!     VER/ED          EDIT DATE       REASON
*G/REASON/I<cr>
<lf>
  !<tab>6B-Ø3A<tab><tab>6-JUL-77<tab>FIX ATTACH/DETACH PROBLEM WITH<lf>
  !<tab><tab><tab><tab><tab>QUEMAN COMMUNICATION.<esc>*V<cr>
  !                                     QUEMAN COMMUNICATION.
*H/1Ø1Ø<tab>/V<cr>
1Ø1Ø    I$="V06B-Ø3"
*G/Ø3/I/A/V<cr>
1Ø1Ø    I$="V06B-Ø3A"
*H/1492<tab>/V<cr>
1492    M$="ATTACH"
*G/DETACH%=/V<cr>
        \ DETACH%=((E3% AND 1%)<>Ø%)
*ØAI<cr>
<tab>\ INJOB%,ABTJOB%=Ø%<lf>
<esc>*V<cr>
        \ DETACH%=((E3% AND 1%)<>Ø%)
*EX<cr>
Patch from KB:[P,PN]CPATCH.CMD complete
#^Z
File to patch - ^Z

Ready
```

3. To re-compile the program and re-enter it into the system library, type the following RSTS/E commands.

```
OLD RJ278Ø<cr>

Ready

COMPILE $RJ278Ø<cr>

Ready
```

4. The person making the changes to the program should now take whatever steps are necessary, according to installation guidelines, to save the new version of the program.

5. The source (.BAS) version of the program should now be removed from the public structure.

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for RSTS/E V8.Ø
RJ278Ø

Seq 25.2.2 M

LOCAL BINARY TRANSMIT FAILURE - MANDATORY RJ278Ø PATCH

NOTE

RJ278Ø.BAS as released with RSTS/E VØ6B is used on all VØ6B and later versions of RSTS/E. For this reason, the edit level of the program remains at "VØ6B-Ø3".

PROBLEM:

If the default transmit command is 278Ø or GEN, it should be possible to send, as part of a multiple file transfer, a file or files in binary mode. This is done by using the "/B" switch to override the transmit command for those files which should be sent untranslated. Currently, the mode of the first file of a multiple file transfer controls the mode for the complete transfer.

SOLUTION:

The patching procedure detailed below will correct this problem.

NOTE

The mandatory 278Ø Device Driver patch described in article Seq 5.1.9 M, published in this notebook, must be installed along with this patch.

PROCEDURE:

1. For purposes of the discussion, we will assume that the required program to be patched is located on the public disk structure. In the patching procedure, we will refer to the program by its most simple name format: <program name>.BAS. The person performing the patching operation should, if necessary, replace all program references with suitable text according to the requirements of the installation.

   Also, for purposes of presenting the patching procedure, we assume that the patching operation will be performed in a privileged account.

2. The command file for this patch appears in patch kit version "A" or later. If you do not have this distribution you can produce a command file by specifying a file for [logfile=] in the procedure below.

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for RSTS/E V8.Ø
RJ278Ø

Seq 25.2.2 M

To apply the patch manually, perform the following RSTS/E system commands.

```
RUN $CPATCH<cr>
<CPATCH's header line>

File to patch - RJ278Ø.BAS=RJ278Ø.BAS<cr>
#[logfile=]<cr>
*H/6!/V<cr>
6!              EDIT            :       Ø3A
*G/Ø3A/I/B/V<cr>
6!              EDIT            :       Ø3AB
*H/7!/V<cr>
7!              EDIT DATE       :       Ø6-JUL-77
*G/Ø6-JUL-77/-9C/23-MAR-79/V<cr>
7!              EDIT DATE       :       23-MAR-79
*H/21!/G/REASON/V<cr>
21!     VER/ED          EDIT DATE       REASON
*I<cr>
<lf>
  !<tab>6B-Ø3AB<tab><tab>23-MAR-79<tab>FIX LOCAL BINARY PROBLEM.<esc>*V<cr>
  !     6B-Ø3AB         23-MAR-79       FIX LOCAL BINARY PROBLEM.
*H/1Ø1Ø<tab>/V<cr>
1Ø1Ø    I$="VØ6B-Ø3A"
*G/Ø3A/I/B/V<cr>
1Ø1Ø    I$="VØ6B-Ø3AB"
*H/4Ø1Ø<tab>/V<cr>
4Ø1Ø    FIELD #1%, 134% AS B1$
*1ØAV<cr>
                ! FIELD THE RJ: BUFFER.
*I<cr>
<tab>\ PUTBIN%=NEWBIN%<lf>
<esc>*V<cr>
                ! FIELD THE RJ: BUFFER.
*H/413Ø<tab>/V<cr>
413Ø    F$=LEFT(CHR$(27%)+F$,MAXLEN%) IF X.TEST% AND 128%
*8AV<cr>
        \  RETURN
*I<cr>
<tab>\ PUTBIN%=NEWBIN%<lf>
<esc>*V<cr>
        \  RETURN
```

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for RSTS/E V8.Ø
RJ278Ø

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```
*H/423Ø<tab>/V<cr>
423Ø    E%,E2%=Ø%
*3AV<cr>
        \ PUTBIN%=(R% OR (B1% AND B2%)) AND 1%
*G/PUTBIN/-6C/NEWBIN/V<cr>
        \ NEWBIN%=(R% OR (B1% AND B2%)) AND 1%
*EX<cr>
Patch from KB:[P,PN]CPATCH.CMD complete
#^Z
File to patch - ^Z

Ready
```

3. To re-compile the program and re-enter it into the system library, type the following RSTS/E commands.

```
OLD RJ278Ø<cr>

Ready

COMPILE $RJ278Ø<cr>

Ready
```

4. The person making the changes to the program should now take whatever steps are necessary, according to installation guidelines, to save the new version of the program.

5. The source (.BAS) version of the program should now be removed from the public structure.

DECnet/E Utilities V2.Ø
for RSTS/E V8.Ø
Package Notes

Seq 31.1.3 N

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DECNET/E UTILITIES MAINTENANCE CHANGES

Beginning with RSTS/E V8.Ø, certain components of DECnet/E V2.Ø will be maintained by module replacement; patching and task-building on-site will no longer be necessary. With update kit "A" (shipped with the RSTS/E V8.Ø distribution), three components of DECnet/E V2.Ø are updated with module replacements: NFT, FAL, and NCP. These replacement modules incorporate all previously-published patches, as well as fixes for several problems which were not patchable.

The update kit includes new versions of the MSRSUB routines. These have not been changed functionally, but have been modified for compatibility with RMS V2.Ø. The associated update kit command files are PA3138.RTO (for the RT11 version) and PA3138.RXO (for the RSX version).

Update kit "A" also includes a new version of the build/patch top-level control file, DECNET.CTL. NOTE that this control file supersedes the DECNET.CTL file supplied on the DECnet/E V2.Ø distribution. The new control file from update kit "A" will be used for to install all future module replacements, and to apply all future patches to these modules. You must also use the new DECNET.CTL file to install the DECnet/E utilities as you build DECnet/E for your V8.Ø RSTS/E system. Article sequence 31.51.1 N describes the effect of this change to the DECnet/E V2.Ø Installation Manual.

The following previously-published patches are rescinded:

31.3.1 M	CORRECT HANDLING OF DEVICE NAME CHECK - NCP
31.3.2 M	PREVENT NCP FROM CORRUPTING OBJECT NUMBERS
31.3.3 M	CORRECT OBJECT SEARCH BY NAME - NCP
31.3.4 M	ACCEPT LINK NUMBERS GREATER THAN 32767 - NCP
31.3.6 M	CORRECT END-NODE REPORTING - NCP
31.3.7 M	CORRECT LINE AND CIRCUIT DEFINITIONS - NCP
31.23.3 M	FAL STALLS IF REMOTE NODE DOESN'T USE FLOW CONTROL
31.23.4 M	FB$DLK AND FB$DLW FOP BITS IN ATTRIBUTE MSG - FAL

The problems addressed by the above patches have been fixed in the replacment modules.

The following restriction remains in effect:

31.3.5 R	DECNET/E VOLATILE PARAMETER FILE NAME RESTRICTION

The following are feature patches, and have been re-published to correspond to the new replacement modules for NFT and FAL:

31.21.1 F	DEFAULTS FOR REMOTE QUEING - NFT FEATURE PATCH
31.23.2 F	DEFAULTS FOR REMOTE QUEING - FAL FEATURE PATCH

DECnet/E Utilities V2.Ø
for RSTS/E V8.Ø
NFT

Seq 31.21.1 F

DEFAULTS FOR REMOTE QUEING - NFT FEATURE PATCH

Note: this Feature Patch article corresponds to the updated NFT.TSK module supplied on Update Kit "A" or later, and supercedes the corresponding article (sequence 31.21.1 F) published for RSTS/E V7.2.

PROBLEM:

RSTS/E supports multiple batch and printer queues; the system manager can create discrete queues for BAØ:, BA1:, BA2:, etc., and LPØ:, LP1:, LP2:, etc. On a given RSTS/E system, a user can choose among the discrete queues created by the system manager, and submit jobs explicitly to any of them, using the "discrete" queue names above.

In addition, a user can submit jobs to a "generic" queue (named BA: or LP: for the generic batch or printer queues, respectively). When it gets to the head of its queue, a job submitted to a generic queue will be processed by whichever of the appropriate discrete processing programs next becomes available.

These choices offer flexibility. For instance, several batch processors can be working simultaneously on the jobs in the generic BA: queue, sharing the load. Alternatively, a user can guarantee that several batch jobs will be run in a certain sequence by explicitly submitting them to a single discrete queue. Depending upon the needs of jobs to be submitted, a user may select one or another queing technique. (See the SUBMIT and PRINT commands in the RSTS/E DCL User's Guide, and the QUE program in the RSTS/E System User's Guide for complete information.)

When queue-submission requests to a RSTS/E system arrive via a DECnet network, however, this selection of the local RSTS/E queue is not available to the remote user; DAP allows only enough information to distinguish between batch-queue and printer-queue submittals.

In DECnet/E V2.Ø, a local (receiving) RSTS/E system treats remote queue submittals as being explicitly for the discrete BAØ: and LPØ: queues. This is the correct default for many cases. However, it does not allow for direct use of generic-queue features (such as load-sharing for batch), nor does it directly allow for explicit queing to discrete queues other than unit zero of each type.

SOLUTION:

A remote user can (indirectly) access these facilities by submitting a "control" job to the default (BAØ:) batch queue, and setting up the control job to queue whatever subsidiary jobs may be required.

For some systems, however, the system manager may want to change the default queues to which jobs arriving over the network are submitted. A pair of feature patches to RSTS/E NFT and FAL allow the system manager to make such a specification. Note that these patches apply only to submissions arriving at the local RSTS/E system via NFT/FAL, and that the remote user will have no control over the selected default.

Note also that the patches are a pair, and must be applied identically to both NFT and FAL on the local RSTS/E system whose queing defaults are to be changed. This article (sequence 31.21.1 F) describes the patch for NFT; a companion article (sequence 31.23.2 F) describes the corresponding article for FAL.

To change the queing defaults, first determine the desired default for each of the two queues (batch and printer). Either new default may be the generic queue (BA: or LP:), the explicit "unit zero" queue (BAØ: or LPØ:, the defaults in NFT/FAL as provided by Digital), or any other legal explicit unit. The selections may be different for the two queues. For instance, you might want to make the batch queue default be BA:, but allow the printer queue default to remain as LPØ:.

NOTE AGAIN that the patches are a pair, and must be applied identically to both NFT and FAL. This article (sequence 31.21.1 F) describes the patch for NFT; the companion article (sequence 31.23.2 F) describes the corresponding article for FAL.

In the patch below, lines (1) and (2) pertain to the default for the batch queue. Line (1) is the explicit unit number; it may be zero to make the batch queue default be explicit BAØ: (and will also be zero to specify the generic BA: queue). Line (2) is the unit-number flag; it will be 377 to make the unit number on line (1) explicit, or will be zero to make a zero on line (1) refer to the generic (BA:) queue. (In the prototype patch below, lines (1) and (2) are zero and 377, respectively; this corresponds to the as-shipped default of explicit unit BAØ:.) Should you wish to make BA: the default queue, you would specify zero on both line (1) and (2). Should you wish to make BA3: the default queue, you would specify 3 on line (1) and 377 on line (2).

The values on lines (3) and (4) apply to the default printer queue, and work in the same way as the values on lines (1) and (2). (Again, the values shown

in the prototype below correspond to the as-shipped default of explicit unit LPØ:.)

PROCEDURE:

1. This is a feature patch to NFT.

2. The patch described in Step 4 below can NOT be installed using the PATCH option of INIT.SYS.

3. This patch can be installed manually using ONLPAT, the on-line patching program:

```
RUN $ONLPAT
Command File Name? <cr>              (RETURN for manual patch installation)
File to patch? [1,2]NFT.TSK
File found in account [1,2]
```

This patch is contained in a patch file appearing in update kit version "A" or later.

NOTE

The patch file for this patch requires manual editing to include installation specific parameters before it can be successfully installed.

4. The patch is as follows:

```
Base address? ..BAQN
Offset address? Ø
 Base   Offset  Old     New?
??????  ØØØØØØ  ??????  ? \
??????  ØØØØØØ     ???  ? Ø        ; (1) "n" for explicit "BAn:" queue
??????  ØØØØØ1     ???  ? ^Z        (CTRL/Z for new offset)
Offset address? ^Z                   (CTRL/Z for new base)
Base address? ..BAQG
Offset address? Ø
 Base   Offset  Old     New?
??????  ØØØØØØ     ???  ? 377      ; (2) BA "explicit" flag
??????  ØØØØØ1     ???  ? ^Z        (CTRL/Z for new offset)
Offset address? ^Z                   (CTRL/Z for new base)
Base address? ..LPQN
Offset address? Ø
 Base   Offset  Old     New?
```

```
    ??????  ØØØØØØ  ??????  ? \
    ??????  ØØØØØØ     ???  ? Ø        ; (3) "n" for explicit "LPn:" queue
    ??????  ØØØØØ1     ???  ? ^Z        (CTRL/Z for new offset)
    Offset address? ^Z                   (CTRL/Z for new base)
    Base address? ..LPQG
    Offset address? Ø
     Base   Offset  Old     New?
    ??????  ØØØØØØ     ???  ? 377      ; (4) LP "explicit" flag
    ??????  ØØØØØ1     ???  ? ^C        (up-arrow/C to exit)
```

DECnet/E Utilities V2.Ø
for RSTS/E V8.Ø
FAL

Seq 31.23.2 F

DEFAULTS FOR REMOTE QUEING - FAL FEATURE PATCH

Note: this Feature Patch article corresponds to the updated FAL.TSK module supplied on Update Kit "A" or later, and supercedes the corresponding article (sequence 31.23.2 F) published for RSTS/E V7.2.

PROBLEM:

This article is a companion to sequence 31.21.1 F (for NFT). See that article for a detailed discussion.

SOLUTION:

This patch is one of a pair, which (if used) must be applied identically to both NFT and FAL on the local RSTS/E system whose queing defaults are to be changed. This article (sequence 31.23.2 F) describes the patch for FAL; a companion article (sequence 31.21.1 F) describes the corresponding article for NFT, and contains discussion of the background for these feature patches.

To change the queing defaults, first determine the desired default for each of the two queues (batch and printer). Either new default may be the generic queue (BA: or LP:), the explicit "unit zero" queue (BAØ: or LPØ:, the defaults in NFT/FAL as provided by Digital), or any other legal explicit unit. The selections may be different for the two queues. For instance, you might want to make the batch queue default be BA:, but allow the printer queue default to remain as LPØ:.

NOTE AGAIN that the patches are a pair, and must be applied identically to both NFT and FAL. This article (sequence 31.23.2 F) describes the patch for FAL; the companion article (sequence 31.21.1 F) describes the corresponding article for NFT.

In the patch below, lines (1) and (2) pertain to the default for the batch queue. Line (1) is the explicit unit number; it may be zero to make the batch queue default be explicit BAØ: (and will also be zero to specify the generic BA: queue). Line (2) is the unit-number flag; it will be 377 to make the unit number on line (1) explicit, or will be zero to make a zero on line (1) refer to the generic (BA:) queue. (In the prototype patch below, lines (1) and (2) are zero and 377, respectively; this corresponds to the as-shipped default of explicit unit BAØ:.) Should you wish to make BA: the default queue, you would specify zero on both line (1) and (2). Should you wish to make BA3: the default queue, you would specify 3 on line (1) and 377 on line (2).

The values on lines (3) and (4) apply to the default printer queue, and work in the same way as the values on lines (1) and (2). (Again, the values shown in the prototype below correspond to the as-shipped default of explicit unit LPØ:.)

PROCEDURE:

1. This is a feature patch to FAL.

2. The patch described in Step 4 below can NOT be installed using the PATCH option of INIT.SYS.

3. This patch can be installed manually using ONLPAT, the on-line patching program:

```
RUN $ONLPAT
Command File Name? <cr>              (RETURN for manual patch installation)
File to patch? [1,2]FAL.TSK
File found in account [1,2]
```

   This patch is contained in a patch file appearing in update kit version "A" or later.

NOTE

> The patch file for this patch requires manual editing to include installation specific parameters before it can be successfully installed.

4. The patch is as follows:

```
Base address? ..BAQN
Offset address? Ø
 Base   Offset  Old     New?
??????  ØØØØØØ  ??????  ? \
??????  ØØØØØØ     ???  ? Ø        ; (1) "n" for explicit "BAn:" queue
??????  ØØØØØ1     ???  ? ^Z        (CTRL/Z for new offset)
Offset address? ^Z                   (CTRL/Z for new base)
Base address? ..BAQG
Offset address? Ø
 Base   Offset  Old     New?
??????  ØØØØØØ     ???  ? 377      ; (2) BA "explicit" flag
??????  ØØØØØ1     ???  ? ^Z        (CTRL/Z for new offset)
Offset address? ^Z                   (CTRL/Z for new base)
Base address? ..LPQN
```

```
Offset address? Ø
 Base   Offset  Old     New?
??????  ØØØØØØ  ??????  ? \
??????  ØØØØØØ     ???  ? Ø        ; (3) "n" for explicit "LPn:" queue
??????  ØØØØØ1     ???  ? ^Z        (CTRL/Z for new offset)
Offset address? ^Z                   (CTRL/Z for new base)
Base address? ..LPQG
Offset address? Ø
 Base   Offset  Old     New?
??????  ØØØØØØ     ???  ? 377      ; (4) LP "explicit" flag
??????  ØØØØØ1     ???  ? ^C        (up-arrow/C to exit)
```

DECnet/E Utilities V2.Ø
for RSTS/E V8.Ø
DECnet/E V2.Ø Installation Manual

Seq 31.51.1 N

1 of 1

DECNET/E UTILITIES MAINTENANCE CHANGES

Beginning with RSTS/E V8.Ø, certain components of DECnet/E V2.Ø will be maintained by module replacement; patching and task-building on-site will no longer be necessary. With update kit "A" (shipped with the RSTS/E V8.Ø distribution), three components of DECnet/E V2.Ø are updated with module replacements: NFT, FAL, and NCP. These replacement modules incorporate all previously-published patches, as well as fixes for several problems which were not patchable.

Update kit "A" also includes a new version of the build/patch top-level control file, DECNET.CTL. NOTE that this control file supersedes the DECNET.CTL file supplied on the DECnet/E V2.Ø distribution. The new control file from update kit "A" will be used for to install all future module replacements, and to apply all future patches to these modules. You must also use the new DECNET.CTL file to install the DECnet/E utilities as you build DECnet/E for your V8.Ø RSTS/E system.

Please make the following changes on page 1-6 of the DECnet/E Network Installation Guide to correspond to the new BUILD procedure.

1. Modify the second bullet to read:

   - The control file is DECNET.CTL from account [1,2] on the latest update kit...

2. Modify the third bullet to read:

   - The function is BUILD/PATCH (Updates to DECnet/E...)

3. In the sample BUILD dialogue, your response to the "Control File is ?" prompt should specify DEV:[1,2]DECNET.CTL, where DEV: refers to the device containing the latest update kit (not the DECnet/E distribution medium).

4. The "NOTE" at the bottom of the page should be deleted, as the file transfer software need no longer be task built.

6.Ø Software Product Descriptions (SPDs) and Option Bulletins

6.1 Software Product Descriptions (SPDs)

Periodically, new or revised Software Product Description (SPD) bulletins will appear in the RSTS/E Software Dispatch for various software products marketed by DIGITAL. This section of the notebook is provided as a convenient place to file these SPDs for future reference.

Every SPD has a unique number, a sample of which is shown below:

SPD 13.1.2Ø

This number appears on the first page of the SPD bulletin, at the far right hand side of the PRODUCT NAME: line.

Note that the last part of the SPD number is the revision level, with Ø being assigned for original issues of SPDs.

6.2 Option Bulletins

Periodically, new or revised Option Bulletins will appear in the RSTS/E Software Dispatch for various products marketed by DIGITAL. This section of this notebook is provided as a convenient place to file these bulletins. There is no filing scheme for option bulletins.

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AA–L997C–TC

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