RT-11

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THE SOFTWARE DISPATCH

digital

RT-11 SOFTWARE DISPATCH

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The RT-11 Software Dispatch complements the RT-11 Software Dispatch Review. New and revised Software Product Descriptions, programming notes, software problems and solutions, and documentation corrections are published here. Much of the material is developed from Software Performance Report (SPR) answers significant to the general audience and is printed here to supplement the maintenance notebook (established by the Software Dispatch Review).

PRODUCTS SUPPORTED in the RT-11 SOFTWARE DISPATCH

BASIC-11/RT-11 V2
CTS-300 V6
DECnet-RT V1.1
FMS-11/RT-11 V1.1
FORTRAN GRAPHICS PACKAGE V1.1
FORTRAN/RT-11 LAB Extensions V1
FORTRAN IV/RT-11 V2.5
GAMMA-11 F/B V3
LSP-11 V1.1
MSB11 V1
MSB/FORTRAN IV V1
MU BASIC-11/RT-11 V2
PLOT 11/RT-11 V1.1
RT-11 V4
RT-11 2780/3780 Protocol Emulator V4
SSP-11 V1.2

DISTRIBUTION

The RT-11 Software Dispatch is directed to one software contact for each software product. No mailing will be made to addresses without a software contact name. **Address change requests should be sent to the nearest DIGITAL field office. Include the new address and mailing label from the most recently received publication.**

Software binary and sources are provided under licenses only. The standard Terms and Conditions, OEM Agreement, and/or Quantity Discount Agreement contain the licenses for all binaries other than DECsystem-10.

Eleanor F. Hunter, Editor
Ann Owens, Associate Editor

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SPR USER LETTER

Submitted by Sheila Hatchell, 8/11 Administration

How to Make the Best Use of the SPR Form

What We Can Do for You:

1. Blank SPR forms are returned with each SPR acknowledgement and are available upon request in the desired quantities through the SPR Administration (P.O. Box F) and your local office/SPR Center.

2. Copies of the SPR acknowledgement and answer are sent to the appropriate DIGITAL Office/SPR Center for their information.

3. STATUS FOR SUBMITTED SPRs IS PROVIDED UPON REQUEST.

4. SPRs marked PROBLEM/ERROR will have a response for DIGITAL SUPPORTED products. These SPRs should refer to suspected deficiencies in the software.

5. SPRs marked SUGGESTION are forwarded to the pertinent software group for information purposes, and are responded to at their discretion.

What You Can Do for Us:

1. Fill out the form completely either by typing or printing clearly. **PLEASE INCLUDE YOUR SOFTWARE SERVICE CUSTOMER NUMBER IN THE ADDRESS BOX.**

2. Limit only one problem per SPR form. Several problems on an SPR can lengthen the turnaround time.

3. WHENEVER POSSIBLE, SUBMIT AN SPR WITH ATTACHMENTS, SUCH AS MACHINE READABLE DATA, DETAILED INSTRUCTIONS ON HOW TO REPRODUCE THE PROBLEM, PROGRAM AND/OR DATA FILES, LISTINGS, AND CONSOLE LOG.

4. It would be helpful to all concerned if problems with patches are reported as soon as possible.

5. For security SPRs, it is imperative that the DO NOT PUBLISH box be marked.

6. It would be helpful if tapes submitted with SPRs are labeled (track and density), and have a directory attached.

7. Complete the questionnaire that is supplied with each SPR answer. Your feedback is essential in monitoring the quality of our responses.

8. SPRs should not be used for problems concerning software policy, software distribution, or hardware. The local office should be contacted in these cases.

PRODUCT AVAILABILITY DATES - RT-11

APRIL 1982

The following are dates products have become available. Customers who are in warranty or have a Software Product Service contract during the month the product became available are eligible to receive the update. Customers who are eligible and have not received the update should contact their local Digital office.

Autopatch is distributed to Software Product Service Basic contract customers and to Self-Maintenance contract customers who have selected this option. Autopatch will be installed for DECsupport contract customers as part of their Preventive Maintenance.

PRODUCT	VERSION	AVAILABLE
LSP-11	1.2	NOV 81
MU-BASIC	2.1	SEP 81
SSP-11	1.3	NOV 81
RT-11 AUTOPATCH	D	NOV 81

PROBLEMS WITH COPY/DEVICE USING /END (DBF)

a. The switch to indicate that /E: (/END:) was specified in the command line is not cleared on startup or restart. This means that any CSI command which follows a command using /E: will still have this switch set. This error will have various effects depending upon what commands are issued.

b. In certain cases, when /E: is used with /F (/FILES) the value used for /E: is set to zero and no copy is performed.

1. The following is a required patch to the DUP.SAV utility program. It must be installed in all copies of the utility.

   NOTE: Since patching the distribution medium is not recommended, the patch must be installed every time you copy the program from the distribution medium.

2. This patch is installed using SIPP, the Save Image Patching Program. First, ensure that a copy of the file DUP.SAV is on a mounted volume. Create the file, DUP.Ø12 as follows. Replace 'DK:' in the patch below with the name of the device that contains the program file.

```
RUN SIPP
DK:DUP.SAV/A/C
Ø
3546
114
^Z                              (up-arrow/Z)
121Ø4
4767
3ØØ6
^Z                              (up-arrow/Z)
12756
2122
^Z                              (up-arrow/Z)
151Ø2
12767
1
173520
1ØØ67
165372
2Ø7
5Ø67
173ØØ6
127Ø1
1Ø31Ø
2Ø7
^Y                              (up-arrow/Y)
1Ø5131
^C                              (CTRL/C to exit)
```

3. To apply the patch to DUP.SAV type:

   @DUP.Ø12

   The resulting version of the utility will be DUP VØ4.ØØL.

4. Save the new version of the utility on a backup volume.

RT-11 V4.Ø
System Macro Library
SYSMAC.MAC
SYSMAC.SML

Seq 9.1.4 M

1 of 1

INCORRECT EXPANSION OF .DRSET MACRO (JM)

The .DRSET macro does not expand correctly if the location counter is already at 4ØØ. In this case, the first SET option begins at location 376.

1. The following is a required patch to the RT-11 monitor source file SYSMAC.MAC (previously modified in Seq 9.1.3). You must apply it to the source file supplied with the Version 4 distribution kit and then rebuild the System Macro Library.

2. To install the patch, you must first create a patch file for input to the SLP utility. Using an editor, create a file called SYSMAC.ØØ4 on your system volume. Enter the text below into the file. The hyphen must be the first character in the file. The special symbol '<tab>' indicates the TAB character. All other blank space in the text should be entered in the file as single SPACE characters.

```
-52Ø,52Ø,/;ØØ4/
.IF LE<tab>.-4ØØ
/
```

3. Apply the patch to the source file as follows:

```
.R SLP
*SYSMAC.MAC=SYSMAC.MAC,SYSMAC.ØØ4
*^C                                  (CTRL/C to exit)
```

4. Using the LIBR utility re-build the System Macro Library, SYSMAC.SML, as follows:

```
.R LIBR
*SYSMAC.SML=SYSMAC.MAC/M
*^C                                  (CTRL/C to exit)
```

5. Preserve the patched source files. If there are any corrections to these files in the future, you will need to apply them to the patched source file.

RT-11 V4.Ø
System Generation Package
SYSTBL.CND VØ4.ØØB

Seq 1Ø.3.3 M

1 of 1

TERMINAL OUTPUT CORRUPTION ON DZ11 OR DZV11 LINES (JM)

Corruption of terminal output may occur when using a multi-terminal monitor which includes more than one DZ11 or DZV11 multiplexor. An incorrect calculation is made when setting up the input/output buffer pointers. This error causes the pointers for lines on the first multiplexor to be relocated to the same area as another for each line on the second multiplexor. For example, the pointers for the first line on the DZ11 is the same for the first line on the second DZ11 multiplexor. It is recommended that you run SYSGEN after applying the patch below.

1. The following is a required patch to SYSTBL.CND. It must be applied to all copies of SYSTBL.CND.

   NOTE: Since patching the distribution medium is not recommended, the patch must be installed whenever you copy the source file from the distribution medium.

   To install the patch, first create a patch file for input to the SLP utility. Using an editor, create a file called SYSTBL.ØØ3 on your system volume. Enter the text below into the file. The hyphen must be the first character in the file. the special symbol '<tab>' indicates the TAB character. All other blank spaces in the text should be entered in the file as single space characters.

```
-/ELSYTB == 2/,.,/;ØØ3/
ELSYTB == 3
-2,2,/;ØØ3/
; SYSTBL.CND - SYSTEM DEVICE TABLES<tab>VØ4.ØØC
-12,12,/;ØØ3/
 ; SYSTBL.MAC - SYSTEM DEVICE TABLES<tab>VØ4.ØØC
-311,311,/;ØØ3/
X=.
/
```

2. Apply the patch to the source file as follows:

```
.R SLP
*SYSTBL.CND=SYSTBL.CND,SYSTBL.ØØ3
*^C                                  (CTRL/C to exit)
```

3. Preserve the patched source file. If there are any future corrections to SYSTBL.CND, you will be requested to apply them to the patched source file.

   The resulting version will be SYSTBL.CND VØ4.ØØC.

RT-11 V4.Ø
Spooling Package
QUEUE.REL

Seq 16.1.4 N

1 of 1

ATTEMPTING TO COMMUNICATE WITH 'QUEUE' FROM A VIRTUAL JOB (LCP)

Following the example described in Section 3.5.1Ø in the Software Support Manual ("How to Queue Files from an Application Program") will not work if the application program is a virtual job. The reason is that QUEUE's communication interface requires that the PHYSICAL ADDRESS of the requesting job's "Job Request Block" is passed in the "QUEUE Request Block" (see Sect. 3.5.1Ø.3). This will remain a permanent restriction. The documentation will be updated to change the diagram in figure 3-21 of the Software Support Manual to indicate that the 5th word of the "QUEUE Request Block" contains the "PHYSICAL ADDRESS OF JOB BLOCK"

Removal of this restriction for the next release of RT-11 will be considered.

MicroPower/PASCAL V1.Ø
RT-11 V4.Ø

ANNOUNCING MICROPOWER/PASCAL V1.Ø

MicroPower/Pascal is a complete software development system for development of 16-bit, real-time, microcomputer applications.

The major target applications are process control and industrial automation and instrumentation, communications, business DP workstations, intelligent graphics and printing devices, medical equipment, aerospace systems.

The primary benefits are that the often long, tedious and uncertain development phase for microcomputer applications is made much easier and schedules made more dependable through the use of a high-level system implementation language. Pascal is the universally accepted application language in the microcomputer marFet. We Bave extended the Jensen & Wirth Pascal to include the necessary system implementation language features for the realtime microcomputer application. MACRO-11 may also be used as the implementation language.

The Pascal application programs are selectively combined with a library of executive-service modules thus eliminating the need for an operating system in the traditional sense.

Inclusion of a sophisticated, yet easy-to-use symbolic debugger increases programmer productivity significantly. It will also make program maintenance far more manageable and less costly.

MicroPower/Pascal is a software product engineered to be installed by the customer. The distribution media includes a master distribution disk set and a user working disk set. The user working disk set is tailored to lead the new user step-by-step through an interactive installation and application build procedure, whilst informing the user of the meaning and reason for each step.

The product package comprises all components needed for real-time application development and 1 year of software support including centralized telephone service and product updates.

Telephone service will be available to users in North America and Europe from Micro Development Support Groups in Atlanta, U.S.A. and Munich, West Germany.

MicroPower/Pascal is not a general-purpose operating system and it does not replace any existing DIGITAL software products. Neither is it a general purpose Pascal compiler; it will not generate programs for execution on any other DIGITAL operating system.

FEATURES

- o PASCAL language with extensions that support concurrent real-time programming
- o Modular run-time system with language interfaces for both MicroPower/Pascal and MACRO-11
- o RT-11 compatible file system
- o Symbolic debugger to aid debugging of application programs running on the target system
- o Flexible set of utility programs to build and load the application software into target systems
- o Host system support to produce ROM/RAM execution environment
- o A set of device handlers for widely used I/O device interfaces

The MicroPower/Pascal Components:

- o MicroPower/Pascal compiler - supports a super-set of the PASCAL language plus real-time extensions. The compiler generates optimized machine code suitable for ROM/RAM execution environments. An extensive library of Object Time System (OTS) routines provides the compiler with run-time support for PASCAL functions and arithmetic routines, including floating-point support, utility, I/O and math routines.·

- Run-time system -- Composed of kernel and system processes included in the kit in the form of object libraries, which support the following target system features: process synchronization and scheduling, exception handling, interrupt handling, timer services, device I/O, and file I/O. Also included are the OTS routines noted above.

- PASDBG -- Aids debugging of application programs on the target system, and allows references to PASCAL source-code names, as well as system data structures.

- MACRO-11 source libraries -- The MACRO-11 interface to the run-time system is included in the form of a macro library. Also contained in these libraries are macros useful in developing MACRO-11 programs.

SUPPORT CATEGORY

MicroPower/Pascal is a DIGITAL Supported, Customer Installed Software Product.

AVAILABILITY

First customer ship is expected in April 1982.

ORDERING INFORMATION

All binary licensed software, including any subsequent updates, is furnished under the licensing provisions of DIGITAL's Standard Terms and Conditions of Sale, which provide in part that the software and any part thereof may be used on only the single CPU on which the software is first installed, and may be copied, in whole or in part (with the proper inclusion of the DIGITAL copyright notice and any DIGITAL proprietary notices on the software) only for use on such CPU.

All source licensed software is furnished only under the terms and conditions of a separate Software Program Sources License Agreement between Purchaser and DIGITAL.

Each system executing any component of MicroPower/Pascal V1.Ø requires a software license.

Two categories of license are available. The standard license allows the development of MicroPower/Pascal applications and the distribution kit includes MicroPower/Pascal host development software, single-use license, binaries, run-time software, run-time source listings on microfiche, documentation and support services. This option includes a single-use license for MicroPower/Pascal run-time software on one target system; no binaries, no sources, no support services.

When the target run-time software is the only portion or component of MicroPower/Pascal to be run on a given processor, the purchaser can obtain a license for the MicroPower/Pascal run-time software only.

The single use license-only option for MicroPower/Pascal run-time software is available with unit volume options for additional target processors.

CORRECTION FOR CONTINUATION LINES PRECEEDED BY COMMENTS (PAT 27)

PROBLEM:

In the FORTRAN IV compiler, a continuation line which is preceeded by a comment will generate an illegal statement error when parsed.

SOLUTION:

1. Type in the following MACRO files: PAT27.MAC, FIXVER.C09

FIXVER.C09:

```
            .TITLE  FROOT
            .IDENT  /016/
            .PSECT  ROOT
      .=.+370
            .ASCII  /5-9/
            .END
```

PAT27.MAC:

```
            .TITLE  F1
            .IDENT /006/
            .PSECT PAT001,D,LCL
      T=.
      .=T+40
      ENDFLG: .WORD   0

      CONTFX: TST     ENDFLG
              BEQ     3$
              CLR     ENDFLG
              JMP     TWO
      3$:     JMP     THREE

      COMMNT: CMPB    #'C,@R1
              BEQ     CONTFX
              CMPB    #'C+40,@R1
              BEQ     CONTFX
              JMP     CONT

      ENDSET: CLR     CONTSW
              BIS     #1,ENDFLG
              JMP     RETEND

      RESET:  CLRB    CHR7+2
              CLRB    CHR1
              JMP     RETCHR
```

```
                .PSECT  PH01B
        S=.
        .=S+20
        CHR1:
        .=S+26
        CHR7:
        .=S+144
        CONTSW:
        .=S+254
                JMP     COMMNT
                NOP
                NOP
                NOP
                NOP
        CONT:
        .=S+342
        TWO:
        .=S+376
        THREE:
        .=S+676
        4$:     JMP     ENDSET
        RETEND:

        .=S+4072
                JMP     RESET
        RETCHR:
                .END
```

2. Assemble the patches using MACRO-11

```
.R MACRO
*PAT27=PAT27.MAC
*FIXVER.P09=FIXVER.C09
*^C
```

3. Install the patches, using PAT, to the most recently patched F1.OBJ and FROOT.OBJ files:

NOTE: Make a copy of F1.OBJ and FROOT.OBJ before you patch it just in case something goes wrong.

```
.R PAT
*F1=F1/C:102102,PAT27.OBJ/C:042426
.R PAT
*FROOT=FROOT/C:114706,FIXVER.P09/C:007021
```

4. Rebuild the compiler using the procedure described in the FORTRAN IV Installation Guide.

5. Test the patches by creating and compiling the following FORTRAN program.

```
      REAL II
C     COMMENT LINE
      3       ,KK
      END
C
      SUBROUTINE SUB
      A=B
C     COMMENT LINE
      3       +C
      RETURN
      END
```

The program will compile without errors when the patch has been successfully installed.

FORTRAN IV V2.5 for RT-11 V4.0
OTS

Seq. 45.2.18 M
1 of 2

CONVERSION ERROR WHILE READING COMPLEX NUMBER FROM FILE (PAT 26)

PROBLEM:

The FORTRAN IV OTS does not correctly read a complex number which it has written out to a file.

SOLUTION:

1. Type in the following MACRO file: PAT26.MAC

   PAT26.MAC:

```
                .TITLE $LISTI
                .IDENT /F40007/
                .PSECT  OTS$I
        S=.

        .=S+622
        SKPBLK:

        .=S+1030
                JMP     PATCPX
        RET:

        .=S+1372
        PATCPX: INC     34(R3)
                JSR     PC,SKPBLK
                JMP     RET
                .END
```

2. Assemble the patches using MACRO-11

```
.R MACRO
*PAT26=PAT26
*^C
```

3. Install the patches, using PAT, to the most recently patched OTSCOM.OBJ file:

   NOTE: Make a copy of OTSCOM.OBJ before you patch it just in case something goes wrong.

```
.R PAT
*OTSCOM=OTSCOM/C:064543,PAT26/C:012663
```

4. Rebuild the OTS using the procedure described in the FORTRAN IV Installation Guide.

5. Test the patches by creating and compiling the following FORTRAN program.

```
            COMPLEX A,B
DATA  A/(200.0E0,300.0E0)/
OPEN( UNIT=1 , NAME='PAT26.DAT' , TYPE='NEW' )
WRITE (1,*) A
CLOSE( UNIT=1 )
OPEN( UNIT=3 , NAME='PAT26.DAT' , TYPE='OLD' )
READ (3,*) B
CLOSE( UNIT=3 )
STOP
END
```

Prior to the installation of this patch, compiling and executing this program will yield the following run-time error:

```
?Err 5 Input conversion error
in   routine ".MAIN."  line 7
```

The program should execute without errors when the patch has been successfully installed.

DECnet-RT V1.1
for RT-11 V4
NETGEN

COMMAND FILE ABORT and FOREGROUND STACK SPACE problems (RDB)

The command file abort problem is as follows:

If the user responds no to the DECnet-RT NETGEN question:
<41.> DO YOU WANT FORTRAN INTERFACE SUPPORT [Y/N] (Y)?
then the OLBBLD command file aborts and the following fatal system message will appear: ?CSI-F-Illegal command.

This error occurs because an OLBBLD command line expands to more than 80 printing characters before a carriage return. This problem is corrected by breaking up the command line into two command lines rather than one.

The foreground stack space problem is as follows:

If the DECnet-RT utility programs, FAL, NFT, TLK, and NIP are run in the foreground, then there may be stack overflow during execution.

This insufficient stack space may result in program or impure area corruption, which may result in the task aborting, crashing or exhibiting erratic behavior.

Thus, instead of using the default stack size, extra stack space is allocated at link time by using the /FOREGROUND:stacksize option.

Note that all corrections must be made on a copy of the original distribution media. No corrections should be made on the distribution media itself. In the following article the pseudo device name KI: will refer to the original media and the pseudo device name OU: will refer to the copy of the media which will hold the corrected DECnet-RT components.

1) Copy the file NETGEN.CND from the original distribution media to the media on which the correction will be made:

   .COPY KI:NETGEN.CND OU:NETGEN.OLD

2) Edit the previously created file named NETGEN.SIP on the correction media. Only insert the lines marked with a change bar in the left most column. Note that the change

bars and their succeeding spaces are not part of the correction file.
Any extra blank lines may cause a later correction to fail.
The first character of the NETGEN.SLP file must be the minus sign , if a blank line is inserted before the minus sign the whole file will be offset by one line.
Included in the following file are the mandatory corrections from the RT-11 Software Dispatch, August 1980, Seq. 50.3.1 M.

```
| -517,517
| IN$:(NLOOKU,NENTER,NREAD,NWRITE)
| IN$:NCLOSE,NDELET
| -761,761
| LINK/EXECUTE:OUT$:NFT/MAP:MAP$:NFT/FOREGROUND:172./PROMPT
| -844,844
| LINK/EXECUTE:OUT$:FAL/MAP:MAP$:FAL/FOREGROUND:172./PROMPT
| -904,904
| LIN/EXE:OUT$:NIP/MAP:MAP$:NIP/FO:172. IN$:(NIP,NIPLCA,NIPPN,NIPVH)
| -924,924
| LINK/EXECUTE:OUT$:TLK/MAP:MAP$:TLK/FOREGROUND:172./PROMPT
  -975,975
  LINK/EXECUTE:OUT$:XPX.SYS/MAP:MAP$:XPX OUT$:XP
  /
```

3) Apply the correction file:

```
.R SLP
*OU:NETGEN.CND=OU:NETGEN.OLD,OU:NETGEN.SLP/A/T
*^C
.
```

4) If the correction process was successful then delete the backup file created by SLP and the work file:

```
.DELETE/NOQUERY OU:NETGEN.BAK,OU:NETGEN.OLD
```

5) The output media now contains the corrected file NETGEN.CND. In order to incorporate these corrections a NETGEN must be performed as described in the DECnet-RT V1.1 Users Guide chapter 13.

DECnet-RT V1.1
for RT-11 V4
DMC

Seq. 50.4.1 M
1 of 2

DMC DRIVER FAILS WITH THE SYSTEM JOB FEATURE (RDB)

If the user responds yes to the RT-11 V4 SYSGEN question:
9. DO YOU WANT SYSTEM JOB SUPPORT [Y/N] (N)?
then the system may hang or crash during I/O requests from foreground and system DECnet-RT tasks.

In a system without the system job feature the background job number is 0 and the foreground job number is 2. In an environment that supports system jobs, the background job number is 0, the system job numbers range from 2 to 14 octal, and the foreground job number is 16 octal. RT-11 V3B does not support the system job feature.

During the upgrade from RT-11 V3B to RT-11 V4, DECnet-RT V1.1 did not take into account the system job feature increase in the job number field.
This problem is corrected by causing the DMC driver to properly determine the appropriate job number.

Note that all corrections must be made on a copy of the original distribution media. No corrections should be made on the distribution media itself. In the following article the pseudo device name KI: will refer to the original media and the pseudo device name OU: will refer to the copy of the media which will hold the corrected DECnet-RT components.

1) Copy the file DMCDRV.MAC from the original distribution media to the media on which the correction will be made:

```
.COPY KI:DMCDRV.MAC OU:DMCDRV.OLD
```

2) Create the following file named DMCDRV.SLP on the correction media . Create the file exactly as shown. Any extra blank lines may cause a later correction to fail. The first character of the DMCDRV.SLP file must be the minus sign , if a blank line is inserted before the minus sign the whole file will be offset by one line.

```
-811,811
        BIC     #^C17,R1
/
```

3) Apply the correction file:

```
.R SLP
*OU:DMCDRV.MAC=OU:DMCDRV.OLD,OU:DMCDRV.SLP/A/T
*^C
.
```

4) If the correction process was successful then delete the backup file created by SLP and the work file:

```
.DELETE/NOQUERY OU:DMCDRV.BAK,OU:DMCDRV.OLD
```

5) The output media now contains the corrected file DMCDRV.MAC. In order to include this correction in the DMC-11 driver, the driver must be re-built. One way of doing this is to assign the pseudo device names used during NETGEN (if any) and type:

```
@DRVBLD
```

An alternate method is to re-run NETGEN as described in the DECnet-RT V1.1 Users Guide chapter 13.

DECnet-RT V1.1
for RT-11 V4
DDCMP

Seq. 50.5.2 M
1 of 2

DDCMP FAILS WITH THE SYSTEM JOB FEATURE (RDB)

If the user responds yes to the RT-11 V4 SYSGEN question:
9. DO YOU WANT SYSTEM JOB SUPPORT [Y/N] (N)?
then the system may hang or crash during I/O requests from foreground and system DECnet-RT tasks.

In a system without the system job feature the background job number is 0 and the foreground job number is 2. In an environment that supports system jobs, the background job number is 0, the system job numbers range from 2 to 14 octal, and the foreground job number is 16 octal. RT-11 V3B does not support the system job feature.

During the upgrade from RT-11 V3B to RT-11 V4, DECnet-RT V1.1 did not take into account the system job feature increase in the job number field.
This problem is corrected by causing all DECnet-RT software DDCMP devices to properly determine the appropriate job number.

Note that all corrections must be made on a copy of the original distribution media. No corrections should be made on the distribution media itself. In the following article the pseudo device name KI: will refer to the original media and the pseudo device name OU: will refer to the copy of the media which will hold the corrected DECnet-RT components.

1) Copy the file DDCMP.MAC from the original distribution media to the media on which the correction will be made:

   .COPY KI:DDCMP.MAC OU:DDCMP.OLD

2) Edit the previously created file named DDCMP.SLP on the correction media. Only insert the lines marked with a change bar in the left most column. Note that the change bars and their succeeding spaces are not part of the correction file.
   Any extra blank lines may cause a later correction to fail.
   The first character of the DDCMP.SLP file must be the minus sign , if a blank line is inserted before the minus sign the whole file will be offset by one line.

Included in the following file are the mandatory corrections from the RT-11 Software Dispatch, August 1980, Seq. 50.5.1 M.

```
| -492,492
|         BIC     #177760 , (SP)  ;MASK OFF ALL BUT JOB NUM FLD
  -495,495
         BMI     DDCP01          ; BRANCH IF NOT ENTER OR CLOSE
         JMP     INIT            ; JUMP IF YES
  DDCP01::
  -705,706
         MOV     (R0),-(SP)      ; SAVE THE CURRENT STATUS.
         CLRB    1(R0)           ; CLEAR THE HOLD BITS.
  -709,709
         MOV     (SP)+,(R0)      ; RESTORE THE OLD STATUS.
         BIS     #100000,(R0)    ; ASSURE THE HOLD BIT IS SET.
  /
```

3) Apply the correction file:

```
.R SLP
*OU:DDCMP.MAC=OU:DDCMP.OLD,OU:DDCMP.SLP/A/T
*^C
.
```

4) If the correction process was successful then delete the backup file created by SLP and the work file.

```
.DELETE/NOQUERY OU:DDCMP.BAK,OU:DDCMP.OLD
```

5) The output media now contains the corrected file DDCMP.MAC. In order to include the corrections in the DECnet-RT drivers, the drivers must be re-built. One way of doing this is to assign the pseudo device names used during NETGEN (if any) and type:

```
@DRVBLD
```

An alternate method is to re-run NETGEN as described in the DECnet-RT V1.1 Users Guide chapter 13.

INSUFFICIENT NUMBER OF CCB's and ULA TABLE ENTRIES (RDB)

The insufficient number of CCB's problem is as follows:

If a DMC11 is configured for high speed operation, then NSP may report a resource error in the I/O status block provided by a user written network task or FAL may abort with the following NSP resource error:

```
?FAL-F-EXITING DUE TO FATAL
NSP ERROR. CODE: -1 AT PC: nnnnnn.
```

This resource error occurs because there is an insufficient number of communication control buffers (CCB's) allocated during DECnet-RT NETGEN.
This problem is corrected by generating the appropriate number of control buffers required by the Network Services.

The shortage of ULA table entries problem is as follows:

If more than half of the maximum number of logical links are active, then network tasks may exhibit erratic behavior.

The user link table (ULA) is referenced by NSP to map a user program logical link number to its own internal description of the logical link.
The logical link table (LLT) is used to save information for each logical link established by the user.

Because there is an insufficient number of user link table entries, data may be read from or written to the logical link table when NSP references the user link table.
This problem is corrected by generating the appropriate number of user link table entries.

Note that all corrections must be made on a copy of the original distribution media. No corrections should be made on the distribution media itself. In the following article the pseudo device name KI: will refer to the original media and the pseudo device name OU: will refer to the copy of the media which will hold the corrected DECnet-RT components.

1) Copy the file NSPDAT.MAC from the original distribution media to the media on which the correction will be made:

```
.COPY KI:NSPDAT.MAC OU:NSPDAT.OLD
```

2) Create the following file named NSPDAT.SLP on the correction media. Create the file exactly as shown. Any extra blank lines may cause a later correction to fail. The first character of the NSPDAT.SLP file must be the minus sign, if a blank line is inserted before the minus sign the whole file will be offset by one line.

```
-66,66
CCBNUM  = LINKS*2               ;NUMBER OF CCB'S
-156,156
  .REPT ULASZ
/
```

3) Apply the correction file:

```
.R SLP
*OU:NSPDAT.MAC=OU:NSPDAT.OLD,OU:NSPDAT.SLP/A/T
*^C
.
```

4) If the correction process was successful then delete the backup file created by SLP and the work file.

```
.DELETE/NOQUERY OU:NSPDAT.BAK,OU:NSPDAT.OLD
```

5) The output media now contains the corrected file NSPDAT.MAC. The corrected source file must be assembled and linked or replaced into NFT, FAL, TLK, and the object library. All DECnet-RT tasks and utilities must be re-linked against the updated library.

   One way of doing this is to assign the pseudo device names used during NETGEN (if any) and type:

```
@NETBLD
```

   An alternate method is to re-run NETGEN as described in the DECnet-RT V1.1 Users Guide chapter 13.

CTS-3ØØ V6
  for RT-11 V4.Ø
ISMUTL VØ6-ØØA
(PATCH 33)

ISMUTL GIVES INCORRECT ERROR MESSAGES IF INSUFFICIENT MEMORY AVAILABLE

A problem occurs under the RT-11 extended memory monitor with several handlers loaded, XMTSD running in the foreground, and ISMUTL running in the background. If there is insufficient memory in the background partition when ISMUTL attempts to open its work files, an incorrect error message is generated. For example, if the function requested is Create, the message "NO SPACE FOR FILE" may be generated, while Reorg may result in an Error 10 ILLEGAL CHANNEL NUMBER.

Patch 33 corrects this problem so that the proper message, Error 9 NOT ENOUGH MEMORY, is reported in both situations. (ISMUTL displays this as "RUN TIME ERROR 9" .) The version number of ISMUTL changes to V06-00B.

Using the editor, create the following files exactly as shown. Name them as indicated in the comment line that is the first line of each file. Then, to install the patch, follow the procedure shown following the files.

Corrections are made to the source modules using the SLP (Source Language Patch) program. Please note that the last record in each .PAT file is "/". You must terminate each line in those files with a carriage return, including the last line "/".

```
CTS-3ØØ V6                                                    Seq 51.8.2 M
  for RT-11 V4.Ø
ISMUTL VØ6-ØØA                                                2 of 3
(PATCH 33)

;P033A.PAT
-1,1
-167,167
        WRITES (11,'CTS300 ISAM UTILITY PROGRAM, V06-00B ')
/


;P033B.PAT
-81,82
        ERROR,  A20
-190
        IF(ERRFG.EQ.1) RETURN
-292
        IF(ERRFG.EQ.1) RETURN
-307
        IF(ERRFG.EQ.1) RETURN
-385,386
        ERROR=TEMP04
        WRITES (11,ERROR)
-409,409
/


;P033C.PAT
-1,1
-301
        IF(ERRFG.EQ.1) RETURN    ;RETURN TO CALLING PROGRAM
-307
        IF(ERRFG.EQ.1) RETURN    ;RETURN TO CALLING PROGRAM
-366
        IF (TEMP00.EQ.9) GOTO ERREXT
/


.RENAME (UTL2,RORG2,CRET3).DBL *.OLD
 Files renamed:
DK:UTL2.DBL     to DK:UTL2.OLD
DK:RORG2.DBL    to DK:RORG2.OLD
DK:CRET3.DBL    to DK:CRET3.OLD

.R SLP
*UTL2.DBL=UTL2.OLD,P033A.PAT
*RORG2.DBL=RORG2.OLD,P033B.PAT
*CRET3.DBL=CRET3.OLD,P033C.PAT
*^C

.R DICOMP
*UTL2=UTL2/O

    NO  ERRORS DETECTED
*RORG2=RORG2/O

    NO  ERRORS DETECTED
*CRET3=CRET3/O

    NO  ERRORS DETECTED
*^C
```

```
.R LINK
*ISMUTL.SAV=UTL2,FCGFX,DATE,DIBOL/C
*RORG1/O:1/C
*RORG2/O:1/C
*RORG3/O:1/C
*RORG4/O:1/C
*STAT/O:1/C
*CRET1/O:1/C
*CRET2,NUMQ/O:1/C
*CRET3/O:1
*ISMUTL.TSD=UTL2,FCGFX,DATE,TDIBOL/B:100000/C
*RORG1/O:1/C
*RORG2/O:1/C
*RORG3/O:1/C
*RORG4/O:1/C
*STAT/O:1/C
*CRET1/O:1/C
*CRET2,NUMQ/O:1/C
*CRET3/O:1
*^C

.R REDUCE
*ISMUTL.TSD/N
*^C
```

CTS-3ØØ VØ6
  for RT-11 V4.Ø
SUD VAØ6-ØØF
TSD VBØ6-ØØK
XMTSD VCØ6-ØØN
(PATCH 34)

Seq 51.16.7 M
Seq 51.18.12 M
Seq 51.2Ø.15 M

ISAM FILE RECORD COUNT REVERTS TO Ø

If a record is added to an ISAM file containing 65,535 records and the ISMUTL Status function is then run, it will show the record count for the file as 0 rather than 65,536. This is true whether running under SUD, TSD, or XMTSD.

Patch 34 corrects this problem so that the record count of an ISAM file is updated correctly when the number of records in the file exceeds 65,535. Patch 34 changes the version number of SUD to VA06-00G, TSD to VB06-00L, and XMTSD to VC06-000.

Using the editor, create the following source files. Name them as indicated in the comment line that begins each file. Then, to install the patch, follow the procedure shown following the files.

CTS-300 V06
  for RT-11 V4.0
SUD VA06-00F
TSD VB06-00K
XMTSD VC06-00N
(PATCH 34)

Seq 51.16.7 M
Seq 51.18.12 M
Seq 51.20.15 M

$P034A.MAC

```
        .TITLE  $ISAM
        .PSECT  $ISAM
P034:
        .=      .+5416
        JMP P034A
        .=      P034+6160
        JMP P034B
        .=      P034+6340
        JMP     P034C

        .PSECT  $P034
P034A:  JSR PC, P034+10104
        SUB #1,(R2)+
        JMP     P034+5424
P034B:  JSR PC, P034+10104
        ADD #1,(R2)+
        JMP     P034+6166
P034C:  JSR PC, P034+10104
        ADD #1,(R2)+
        JMP     P034+6346
        .END
```

$P034B.MAC

```
        .TITLE  $DISAM
        .CSECT  $DISAM
P034:
        .=      .+5324
        JMP     P034A
        .=      P034+6066
        JMP     P034B
        .=      P034+6246
        JMP     P034C

        .PSECT  $P034
P034A:  JSR PC, P034+10114
        SUB #1,(R3)+
        JMP     P034+5332
P034B:  JSR PC, P034+10114
        ADD #1,(R3)+
        JMP     P034+6074
P034C:  JSR PC, P034+10114
        ADD #1,(R3)+
        JMP     P034+6254
        .END
```

CTS-3ØØ VØ6
  for RT-11 V4.Ø
SUD VAØ6-ØØF
TSD VBØ6-ØØK
XMTSD VCØ6-ØØN
(PATCH 34)

Seq 51.16.7 M
Seq 51.18.12 M
Seq 51.2Ø.15 M

3 of 4

```
;P034C.MAC

        .TITLE  $KISAM
        .CSECT  $KISAM
P034:
        .=      .+5260
        JMP     P034A
        .=      P034+6016
        JMP     P034B
        .=      P034+6176
        JMP     P034C

        .PSECT  $P034
P034A:  JSR PC, P034+10036
        SUB #1,(R3)+
        JMP     P034+5266
P034B:  JSR PC, P034+10036
        ADD #1,(R3)+
        JMP     P034+6024
P034C:  JSR PC, P034+10036
        ADD #1,(R3)+
        JMP     P034+6204
        .END


;P034V1.MAC

        .TITLE  DIRT
        .CSECT  $DIRT

        .=      .+11215
        .ASCII  /G/
        .END


;P034V2.MAC

        .TITLE  DTO
        .CSECT  DTO

        .=      .+4563
        .ASCII  /L/
        .END


;P034V3.MAC

        .TITLE  $KDTO
        .PSECT DATXX

        .=      .+42
        .BYTE   'O
        .END
```

CTS-3ØØ VØ6
  for RT-11 V4.Ø
SUD VAØ6-ØØF
TSD VBØ6-ØØK
XMTSD VCØ6-ØØN
(PATCH 34)

Seq 51.16.7 M
Seq 51.18.12 M
Seq 51.2Ø.15 M

4 of 4

```
.RENAME (ISAM,DISAM,KISAM).OBJ *.OLD
 Files renamed:
DK:ISAM.OBJ     to DK:ISAM.OLD
DK:DISAM.OBJ    to DK:DISAM.OLD
DK:KISAM.OBJ    to DK:KISAM.OLD

.RENAME (SDIRT,DTO,KDTO).OBJ *.OLD
 Files renamed:
DK:SDIRT.OBJ    to DK:SDIRT.OLD
DK:DTO.OBJ      to DK:DTO.OLD
DK:KDTO.OBJ     to DK:KDTO.OLD

.MACRO P034A,P034B,P034C
ERRORS DETECTED:  0
ERRORS DETECTED:  0
ERRORS DETECTED:  0

.MACRO P034V1,P034V2,P034V3
ERRORS DETECTED:  0
ERRORS DETECTED:  0
ERRORS DETECTED:  0

.R PAT
*ISAM.OBJ=ISAM.OLD/C:172257,P034A/C:030170

.R PAT
*DISAM.OBJ=DISAM.OLD/C:147631,P034B/C:036601

.R PAT
*KISAM.OBJ=KISAM.OLD/C:176342,P034C/C:035526

.R PAT
*SDIRT.OBJ=SDIRT.OLD/C:101170,P034V1/C:005611

.R PAT
*DTO.OBJ=DTO.OLD/C:132464,P034V2/C:003253

.R PAT
*KDTO.OBJ=KDTO.OLD/C:063040,P034V3/C:004724

.R CTSGEN          ;FOR SINGLE-USER DIBOL

.R CTSGEN          ;FOR NORMAL TSD

.R CTSGEN          ;FOR EXTENDED MEMORY TSD
```

CTS-3ØØ V6
  for RT-11 V4
XMTSD VCØ6-ØØO
(PATCH 35)

Seq 51.2Ø.16 M

XMTSD GIVES INCORRECT ERROR WHEN NO ROOM FOR I/O BUFFER

In XMTSD, if a program is run that opens a file but there is insufficient memory for the run time system to allocate an I/O buffer for that file then an ERROR 73 - PROGRAM EXCEEDS MAXIMUM SIZE is generated. The error that should be generated under these circumstances is ERROR 9 - NOT ENOUGH MEMORY. In the CTS-300 documentation it says that error 73 is trappable but it is a non-trappable error.

Patch 35 ensures that the run time system issues the correct error message and properly recovers after an ERROR 9 - NOT ENOUGH MEMORY. The version number of XMTSD is changed to VC06-00P.

Using the editor, create the following two files exactly as shown. Name them as indicated in the comment line that is the first line of each file. Then, to install the patch, follow the procedure shown following the files.

```
;P035A.MAC

        .TITLE CORE ALLOCATOR
        .CSECT $CORE

        R6=%6
P035:
        . = P035 + 632
        JMP P035A
        NOP

        .PSECT $P035A

P035A:  MOV P035+32,R6
        SUB #20,R6
        SEC
        RTS PC
        .END


;P035B.MAC

        .TITLE $KDTO
        .PSECT $KDTO

P035:
        . = P035 + 1550
        JMP P035B
        .PSECT DATXX
P035A:  . = P035A + 42
        .BYTE 'P

        .PSECT $P035B

P035B:  SUB #100000,R1
        CMP R1,#74000
        BGT 1$
        JMP P035+1554
1$:     TRAP 311
        .END
```

CTS-3ØØ V6
  for RT-11 V4
XMTSD VCØ6-ØØO
(PATCH 35)

Seq 51.2Ø.16 M

3 of 3

```
.RENAME (KDTO,KCORE).OBJ *.OLD
 Files renamed:
DK:KDTO.OBJ     to DK:KDTO.OLD
DK:KCORE.OBJ    to DK:KCORE.OLD

.MACRO P035A,P035B
ERRORS DETECTED:  0
ERRORS DETECTED:  0

.R PAT
*KCORE.OBJ=KCORE.OLD/C:40717,P035A/C:14430

.R PAT
*KDTO.OBJ=KDTO.OLD/C:64206,P035B/C:20067

.R CTSGEN          ;FOR EXTENDED MEMORY TSD
```

RESTRICTION FOR CTS-3ØØ (LG)

The following is a restriction for CTS-300 and has been since Version 1.

A DIBOL program should not open a file in update mode on two (or more) separate channels. Simultaneous record locking information can not be maintained for the two channels when the program reads a record on each of the two channels. This is because there is exactly one lock table entry slot per update file per program.

For a sequential file, only the last of the two records read will, therefore, be locked.

For an ISAM file, if two records are read, updated, and then written, it is possible that the first record that is written will reside in the second record's position in the file. In addition, when the second record is then written, an ERROR 53 KEY NOT SAME will be generated.

CTS-3ØØ VØ7
for RT-11 V4.Ø
DOCUMENTATION

Seq 52.1.1 N

1 of 1

CTS-3ØØ VERSION 7 IS RELEASED

Version 7 of CTS-300, which runs under RT-11 V4, became available from the Software Distribution Center on March 4, 1982. Users who order RT-11 V4.0/CTS-300 V7 will receive the "remastered" copy of RT-11 V4.0 (see the January 1982 RT-11 Software Dispatch article entitled "NEW RT-11 V4.0 DISTRIBUTION KIT") which contains all mandatory RT-11 patches published through the January 1982 RT-11 Software Dispatch. In addition, it will contain two optional patches, one to KED.SAV and one to K52.SAV (Seq 17.1.1 and 17.2.1 respectively), which are necessary for CTS-300 users. A patch to LINK.SAV to change the default size of LINK's list of library modules (published in the CTS-300 V6 Release Notes and Installation Guide) is also included in the remastered RT-11 V4.

CTS-300 Version 6 is no longer available from the SDC, and support for Version 6 will cease 90 days after the release of Version 7.

CTS-300 V7
for RT-11 V4
DIBOL/TDIBOL

Seq 52.4.1 M

1 of 2

PATCH 2: POSSIBLE INCORRECT RESULTS FROM THE INSTR ROUTINE (DS)

There is a possibility that the INSTR routine in the DIBOL library will return saying that a match was not found when there actually is a match.

Patch 2 to CTS-300 Version 7 fixes the INSTR module so that it returns the correct result. NOTE: This patch to the INSTR routine changes a module in the DIBOL and TDIBOL libraries. Therefore, this patch will only work on programs that are linked with the 'new' libraries. Programs that do not use the INSTR routine need not be relinked.

Using the editor, create the following file exactly as shown. Name the file as indicated in the comment line that is the first line of the file. Then, to install the patch, follow the procedure shown following the file.

```
;P002.MAC

        .TITLE INSTR
        .PSECT $INSTR

P002:
        . = P002 + 140
        JMP P002A
        . = P002 + 160
        JMP P002B
        . = P002 + 212
        JMP P002C

        .PSECT $P002

P002A:  MOV R1,-(SP)
        MOV R3,-(SP)
        MOV DSP,R2
        BEQ 1$
        JMP P002 + 146
1$:     JMP P002 + 160

P002B:  TST (SP)+
        MOV (SP)+,R2
        SUB (SP)+,R2
        JMP P002 + 164

P002C:  MOV (SP)+,R3
        MOV (SP)+,R1
        JMP P002 + 126

        .END


.LIBRARY/EXTRACT
Library? DIBOL.OBJ
File    ? INSTR
Global? INSTR
Global?

.RENAME (INSTR,DIBOL,TDIBOL).OBJ *.OLD
 Files renamed:
DK:INSTR.OBJ    to DK:INSTR.OLD
DK:DIBOL.OBJ    to DK:DIBOL.OLD
DK:TDIBOL.OBJ   to DK:TDIBOL.OLD

.R MACRO
*P002=DEFS,P002
ERRORS DETECTED:  0
*^C

.R PAT
*INSTR.OBJ=INSTR.OLD/C:066046,P002/C:064043

.R LIBR
*DIBOL.OBJ/A=DIBOL.OLD,INSTR/R
*TDIBOL.OBJ/A=TDIBOL.OLD,INSTR/R
*^C
```

CTS-3ØØ V7
  for RT-11 V4
MACRO SORT
SORT.SAV VØ7-ØØ
SORT.TSD VØ7-ØØ

Seq 52.15.1 M

1 of 2

PATCH 1:TWO SORT PROBLEMS EMERGE UNDER CERTAIN CONFIGURATIONS (DS)

Under the TSD version of the macro sort routine, when the IDENT option is used with the TTNUM option there is a possibility of getting an illegal terminal number. This occurs when the terminal number is a 2 digit value.

Under the single user version of the sort, there is a possible error in the I/O routines with certain hardware configurations.

Patch 1 to CTS-300 Version 7 ensures that the above problems are properly taken care of. Patch 1 changes the version numbers of both sorts from V07-00 to V07-0A.

Using the editor, create the following four files exactly as shown. Name them as indicated in the comment line that is the first line of each file. Then, to install the patch, follow the procedure shown following the files.

CTS-3ØØ V7 Seq 52.15.1 M
  for RT-11 V4
MACRO SORT 2 of 2
SORT.SAV VØ7-ØØ
SORT.TSD VØ7-ØØ

```
.RENAME (SORTR,SORTM,SRT11R,SRT110).OBJ *.OLD
 Files renamed:
DK:SORTR.OBJ   to DK:SORTR.OLD
DK:SORTM.OBJ   to DK:SORTM.OLD
DK:SRT11R.OBJ  to DK:SRT11R.OLD
DK:SRT110.OBJ  to DK:SRT110.OLD

.MACRO P001A,P001B,P001V1,P001V2
ERRORS DETECTED:  0
ERRORS DETECTED:  0
ERRORS DETECTED:  0
ERRORS DETECTED:  0

.R PAT
*SORTM.OBJ=SORTM.OLD/C:106762,P001A/C:010233

.R PAT
*SRT110.OBJ=SRT110.OLD/C:152001,P001B/C:015631

.R PAT
*SORTR.OBJ=SORTR.OLD/C:021321,P001V1/C:005026

.R PAT
*SRT11R.OBJ=SRT11R.OLD/C:157713,P001V2/C:005020

.R LINK
*SORT,SRT11/M:1400/B:1400=RTIO,SRT110,SRT11R/P:500./C
*MSGLIB/C
*SRT11C/O:1/C
*SRT11A/O:1/C
*SRT11D/O:1/C
*SRT11M/O:1
*SORT.TSD,SORT=SORTR,SRTIO/B:100000/P:500./C
*SORTC/O:1/C
*SORTA/O:1/C
*SORTD/O:1/C
*SORTM/O:1
*^C

.R REDUCE
*SORT/N
*^C
```

RT-11 V4.0
CUMULATIVE INDEX
APRIL 1982

This is a complete listing of all articles for RT-11 V4.0 and related products. In the case of subordinate software, missing sequence numbers may pertain to problems unique to interaction with previous versions of the same product or other major operating systems.

IMPORTANT!

Unassigned articles are indicated: UNASSIGNED.

Flags are currently being installed for all articles. The flags and definitions are as follows:

M = Mandatory Patch. These patches correct errors in the software product. All users are required to apply these patches to maintain consistent "user level" unless the accompanying article specifies otherwise.

F = Optional Feature Patch. These patches extend or configure functionality into the product. These functions will be treated as a supported part of the product for the duration of the current release and will be incorporated with any future release, unless otherwise stated.

R = Restriction. These articles discuss areas that will not be patched in the current release because they require major modification 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 manual set and provide more detailed information about a program or package. They also provide procedural information to make it easier to use a program or package.

+ = Articles appeared in the RT-11 Software Dispatch Review, March 1980.

*The "Autopatch Kit" column in the list which follows indicates the first RT-11 V4.0 Autopatch Kit in which the associated patch was included. Unless otherwise indicated, the patches also appear in subsequent Autopatch Kits as well. Note that Autopatch Kit "D" is the latest kit available from the SDC.

Component	Autopatch Kit	Sequence	Mon/Yr
RT-11 V4.0			
MONITOR PATCHES			
ISSUING .SETTOP #-2 AND .EXIT UNDER XM MONITOR MAY CORRUPT SYSTEM DISK	A	1.1.1 M	Jul 80
IMPLEMENTING INTERNAL HANDLER QUEUEING IN FB AND XM MONITORS	A	1.1.2 M	Jul 80
ADDING HIGH SPEED RING BUFFER SUPPORT	A	1.1.3 M	Jul 80
CORRUPTION OF CSI TEXT UNDER XM MONITOR	A	1.1.4 M	Jul 80
MISSING COLON IN BOOT XX CAUSES SYSTEM HALT	A	1.1.5 M	Jul 80
TYPING ^U WHILE IN A ^X SEQUENCE UNDER A SYSTEM JOB	A	1.1.6 M	Sep 80
ABNORMAL TERMINATION OF FG JOB WHICH IS USING CSI	A	1.1.7 M	Nov 80
MISCELLANEOUS MRRT-11 BUGS	A	1.1.8 M	Nov 80
MRRT-11 MINIMAL FILE SUPPORT PROBLEM	A	1.1.9 M	Nov 80
INCORRECT LIMIT CHECKS ON PRIVILEGED BACKGROUND JOBS USING VIRTUAL OVERLAYS	A	1.1.10 M	Nov 80
MULTI-TERMINAL MONITORS DON'T ALWAYS PROCESS CTRL/F PROPERLY	A	1.1.11 M	Nov 80
MONITOR CHANGES AND CORRECTIONS	A	1.1.12 M	Dec 80
MONITOR CORRECTIONS	B	1.1.13 M	Jan 81
MONITOR UPDATES	B	1.1.14 M	Feb 81
ABORT I/O IN PROGRESS HANDLER BIT	B	1.1.15 M	Apr 81
CORRECTIONS FOR DISTRIBUTED AND SYSTEM GENERATED MONITORS	C	1.1.16 M	Jun 81
PRINT COMMAND RESTRICTION		1.1.17 R	Jul 81
UPDATES TO MONITOR FILES	D	1.1.18 M	Oct 81
CORRECTIONS TO THE MONITOR		1.1.19 M	Jan 82

Component	Autopatch Kit	Sequence	Mon/Yr
DEVICE HANDLER SOURCES			
DEVICE HANDLER NOTES			
RL02s AT REV. LEVEL "F" FAIL DURING RT-11 SYSGEN		6.1.1 N	Oct 80
DD.MAC			
DD PRIMARY BOOTSTRAP PROBLEM	A	6.4.1 M	Jul 80
DL.MAC			
PATCH XM VERSION OF DL HANDLER .SPFUN GET SIZE ROUTINE	A	6.5.1 M	Dec 80
ERRORS ON RL01 DISK DRIVES AFTER DISK PACKS ARE CHANGED	B	6.5.2 M	Jan 81
DM.MAC			
ERRORS IN DM OFFSET POSITIONING AND ERROR LOGGING	A	6.6.1 M	Jul 80
DY.MAC			
DELETED DATA MARK MAY BE LOST IF BUFFER STARTS ON PAR BOUNDARY	D	6.11.1 M	Aug 81
LP.MAC			
LP SET NOHANG MAY CRASH SYSTEM	A	6.12.1 M	Sep 80
LS.MAC			
LS SET NOHANG MAY CRASH SYSTEM	A	6.13.1 M	Sep 80
PROBLEMS WITH LS HANDLER	B	6.13.2 M	Jan 81
USING AN LA120 TERMINAL AS A LINE PRINTER WITH THE LS HANDLER		6.13.3 N	Jul 81
SET LS NOHANG IS CURRENTLY INOPERATIVE	C	6.13.4 M	Jul 81
RACE CONDITION IN LS HANDLER	D	6.13.5 M	Aug 81
LS HANDLER SET "NOHANG" PROBLEM		6.13.6 M	Jan 82
PD.MAC			
CORRECTION TO PDT ERROR LOGGING SUPPORT	B	6.16.1 M	Apr 81
MAG TAPE HANDLERS			
BUFFER CLEARING ON SHORT READ IN XM MONITOR	A	6.20.1 M	Jul 80
LINKING AN XM, NON-FILESTRUCTURED TS HANDLER GENERATES AN UNDEFINED GLOBAL	A	6.20.2 M	Aug 80
INCORRECT READ ERROR RECOVERY IN MT HANDLER	A	6.20.3 M	Sep 80
TS-11 DOES NOT RECOVER FROM SOFT ERROR ON WRITE EOF	C	6.20.4 M	Jul 81
SYSTEM UTILITIES			
PIP.SAV			
ERRORS IN PIP	A	7.1.1 M	Sep 80
COPY/PREDELETE COMMAND		7.1.2 N	Sep 80
MATCHING FILE SPEECIFICATIONS ERRORS	B	7.1.3 M	Feb 81
COPY/BINARY/WAIT AND LOG HEADER PROBLEMS	B	7.1.4 M	Apr 81
COPY/PREDELETE AND COPY/NOREPLACE WORK INCORRECTLY WITH /WAIT	C	7.1.5 M	Jun 81
ERROR WITH RENAME/NOREPLACE	C	7.1.6 M	Jul 81
/POSITION:N SWITCH FOR MAGTAPE INPUT WORKS INCORRECTLY		7.1.7 M	Oct 81
COPY/BINARY STOPS PROCESSING AFTER ENCOUNTERING AN OBJ LIBRARY FILE		7.1.8 M	Nov 81
COPYING FILES TO UNINITIALIZED DISKS		7.1.9 N	Nov 81
ALLOCATE AND DELETE WORK INCORRECTLY WITH COPY OPERATIONS		7.1.10 M	Feb 82
DUP.SAV			
MISSING COLON IN BOOT XX CAUSES SYSTEM HALT	A	7.2.1 M	Jul 80
SQUEEZE CREATES <UNUSED> ENTRIES OF LENGTH ZERO BEFORE .BAD FILES	A	7.2.2 M	Aug 80
PROBLEMS WITH COPY/DEVICE AND INITIALIZE	A	7.2.3 M	Dec 80
BOOTSTRAPPING AN UNPATCHED MONITOR FROM A PATCHED SYSTEM	B	7.2.4 N	Jan 81
.SPFUN RETURN BUFFER PROCESSED INCORRECTLY FOR RK06/7	B	7.2.5 M	Jan 81
USE OF INITIALIZE/RESTORE ON MEDIA SUPPORTING BAD BLOCK REPLACEMENT		7.2.6 N	May 81
PROBLEMS WITH INIT/BAD AND COPY/DEVICE	C	7.2.7 M	May 81
PROBLEMS WITH INITIALIZE COMMAND	C	7.2.8 M	Jun 81
ATTEMPT TO RESTORE UNCLOSED TENTATIVE FILES FAILS	C	7.2.9 M	Jul 81
/V WITH NO DEVICE SPECIFICATION GIVES WRONG ERROR MESSAGE	D	7.2.10 M	Sep 81
OUTPUT ERROR DURING COPY/DEVICE TO MAGTAPE CAUSES SYSTEM ERROR		7.2.11 M	Oct 81
USE OF COPY/DEV/FILE WITHOUT FILE SPECIFICATION		7.2.12 M	Nov 81
PROBLEMS WITH COPY/DEVICE USING /END		7.2.13 M	Apr 82

Component	Autopatch Kit	Sequence	Mon/Yr
DIR.SAV			
DIR/OUT COMMAND PRODUCES DEVICE NOT ACTIVE MESSAGE	A	7.3.1 M	Jul 80
DIR/VOL GIVES ?MON-F-TRAP TO 4	A	7.3.2 M	Dec 80
LOSS OF LAST PRINT CHARACTER IN DIRECTORY LISTING	D	7.3.3 M	Sep 81
RESORC.SAV			
RESORC MAY REPORT INCORRECT JOB NAMES ON A SHOW JOBS COMMAND	A	7.5.1 M	Aug 80
ADD CIS DETECTION CAPABILITY TO RESORC	B	7.5.2 M	May 81
PROBLEM WITH IDENTIFYING 11/23 PROCESSOR	D	7.5.3 M	Sep 81
LINK.SAV			
LINK BYTE RELOCATION AND DIRECTORY SIZE	A	7.9.1 M	Jul 80
LINK MAP PROCESSING ERROR	A	7.9.2 M	Aug 80
LINK MAP ERROR AND MULTIPLE DEFINITION LIBRARIES	A	7.9.3 M	Oct 80
RT-11 V4 LINKER RESTRICTION	B	7.9.4 R	Jan 81
LINK TRANSFER ADDRESS CALCULATION BUGS	B	7.9.5 M	Mar 81
LINK ADDITIONS AND CORRECTIONS	D	7.9.6 M	Aug 81
LINK UPGRADE		7.9.7 M	Nov 81
LINK ERROR IN LIBRARY MODULE TRANSFER ADDRESS PROCESSING		7.9.8 M	Jan 82
LINK LIBRARY MODULE PLACEMENT ERROR		7.9.9 M	Jan 82
LIBR.SAV			
A LIBR COMMAND WITH NO FILE-SPEC CAN CAUSE A SYSTEM CRASH	A	7.10.1 M	Jul 80
LIBR ERRORS	C	7.10.2 M	Jul 81
LIBR CORRUPTS FORM LIBRARY DIRECTORY	C	7.10.3 M	Jun 81
LIBR ERROR IN GENERATING ENTRY POINT TABLE		7.10.4 M	Jan 82
LIBR RESTRICTION		7.10.5 N	Jan 82
FILEX.SAV			
FILEX WILDCARD TRANSFERS CAUSE MONITOR TRAP	A	7.11.1 M	Aug 80
FILEX CREATES ZERO FILLED INTERCHANGE RECORDS	A	7.11.2 M	Sep 80
SIZE CALCULATION PROBLEM IN FILEX	D	7.11.3 M	Aug 81
RECORDS DROPPED BY FILEX	D	7.11.4 M	Sep 81
SRCCOM.SAV			
COMPARING TWO FILES MAY CAUSE TRAP TO 4	A	7.12.1 M	Aug 80
BLANK LINE COMPARISON FOR SLIDING MATCH	A	7.12.2 M	Dec 80
BINCOM.SAV			
BINCOM GENERATES ERRONEOUS ERROR MESSAGE	B	7.13.1 M	Apr 81
ERRONEOUS DOUBLE PRECISION CALCULATION IN BINCOM	C	7.13.2 M	Jun 81
BINCOM PLACES TAB CHARACTER AFTER OFFSET IN SIPP COMMAND FILE		7.13.3 M	Jan 82
DUMP.SAV			
BLOCK NUMBERS OUTPUT FROM DUMP	D	7.14.1 M	Aug 81
SLP.SAV			
TERMINATION OF PATCHING SESSION WITH SLP FATAL ERRORS	A	7.15.1 M	Nov 80
SLP GENERATES FATAL ERROR TRAP	B	7.15.2 M	Jan 81
SLP ERROR	B	7.15.3 M	Mar 81
SIPP.SAV			
CORRUPTION OF MULTI-BLOCK LOG FILES	A	7.16.1 M	Jul 80
PAT.SAV			
USE OF THE PAT UTILITY WITH RT-11 V3B PATCHES		7.17.1 N+	Mar 80
HELP.SAV			
PROBLEMS WITH HELP UTILITY	A	7.19.1 M	Nov 80
EDIT.SAV			
EDIT MISHANDLES OUTPUT FILE FULL ERROR	B	7.20.1 M	Nov 81
SYSTEM SUBROUTINE LIBRARY (SYSLIB)			
SYSLIB.OBJ			
PATCH TO ICSI	A	8.1.1 M	Oct 80
IASIGN REDEFINITIONS	A	8.1.2 M	Oct 80
ILUN RESTRICTION		8.1.3 R	Feb 81
VIRTUAL OVERLAY HANDLER CORRECTION		8.1.4 M	Feb 82

Component	Autopatch Kit	Sequence	Mon/Yr
SYSTEM MACRO LIBRARY			
.SPFUN PROGRAMMED REQUEST	A	9.1.1 M	Dec 80
ABORT I/O PROGRESS SUPPORT FOR SYSMAC	B	9.1.2 M	Apr 81
.CMKT PROGRAMMED REQUEST	C	9.1.3 M	Jun 81
INCORRECT EXPANSION OF .DRSET MACRO		9.1.4 M	Apr 82
SYSTEM GENERATION PACKAGE			
SYSGEN CREATES ONE MORE DEVICE SLOT THAN REQUESTED	A	10.3.1 M	Dec 80
ASSEMBLY ERROR AFTER SYSGEN	B	10.3.2 M	Mar 81
TERMINAL OUTPUT CORRUPTION ON DZ11 OR DZV11 LINES		10.3.3 M	Apr 82
DOCUMENTATION			
RT-11 SYSTEM RELEASE NOTES			
RT-11 V4.0 DOCUMENTATION CORRECTIONS AND ADDITIONS		11.2.1 N	Jul 80
DOCUMENTATION CORRECTIONS		11.2.2 N	Aug 80
CHANGES TO DUP /I OPTION		11.2.3 N	Apr 81
INCORRECT DUP CUSTOMIZATION PATCHES		11.2.4 N	Sep 81
RT-11 INSTALLATION AND SYSTEM GENERATION GUIDE			
RT-11 V4.0 DOCUMENTATION CORRECTIONS AND ADDITIONS		11.3.1 N	Jul 80
CORRECTION TO AN OPTIONAL PATCH TO LINK		11.3.2 N	Aug 80
DOCUMENTATION ERROR: REFERENCE TO RL02 OMITTED FROM SYSGEN DIALOGUE		11.3.3 N	Oct 80
INCORRECT LINK MAPS FOR DISTRIBUTED MONITORS		11.3.4 N	Dec 80
INCORRECT PATCH FOR CHANGING QUEUE WORK FILE SIZE		11.3.5 N	Dec 80
CHANGING DEFAULT NUMBER OF DIRECTORY SEGMENTS		11.3.6 N	Apr 81
INTRODUCTION TO RT-11			
RT-11 V4.0 DOCUMENTATION CORRECTIONS AND ADDITIONS		11.4.1 N	Jul 80
RT-11 SYSTEM USER'S GUIDE			
RT-11 DOCUMENTATION CORRECTIONS AND ADDITIONS		11.5.1 N	Jul 80
CORRECTIONS TO SLP CHAPTER: RT-11 SYSTEM USER'S GUIDE		11.5.2 N	Oct 80
DIFFERENCES BETWEEN DEVICE COPYING COMMANDS		11.5.3 N	Dec 80
RT-11 SYSTEM MESSAGE MANUAL			
RT-11 V4.0 DOCUMENTATION CORRECTIONS AND ADDITIONS		11.6.1 N	Jul 80
CORRECTIONS TO SLP MESSAGES IN "RT-11 SYSTEM MESSAGE MANUAL"		11.6.2 N	Nov 80
NEW SLP ERROR MESSAGE		11.6.3 N	Feb 81
PIP ERROR MESSAGES MISSING		11.6.4 N	Oct 81
RT-11 POCKET GUIDE			
RT-11 V4.0 DOCUMENTATION CORRECTIONS AND ADDITIONS		11.7.1 N	Jul 80
RT-11 PROGRAMMER'S REFERENCE MANUAL			
DOCUMENTATION CORRECTIONS		11.8.1 N	Sep 80
INCORRECT PROGRAMMED REQUEST EXAMPLES		11.8.2 N	Mar 81
UNDOCUMENTED .SERR ERROR CODE		11.8.3 N	Dec 81
RT-11 SOFTWARE SUPPORT MANUAL			
RT-11 V4.0 DOCUMENTATION CORRECTIONS AND ADDITIONS		11.9.1 N	Jul 80
SOFTWARE SUPPORT MANUAL CORRECTION		11.9.2 N	Jun 81
ERROR IN DESCRIPTION OF .DRSET MACRO		11.9.3 N	Sep 81
DEBUGGING UTILITIES			
VDT.OBJ			
NOTES ON USING ODT OR VDT IN AN XM ENVIRONMENT		12.2.1 N	Jan 81
BATCH PACKAGE			
BATCH.SAV			
PATCH BATCH TO USE MONITOR SUFFIX	A	15.1.1 M	Oct 80
SPOOLING PACKAGE			
QUEUE.REL			
SUPERFLUOUS LINEFEED FROM QUEUE	B	16.1.1 M	Mar 81
NARROW BANNER PAGES FROM QUEUE	C	16.1.2 F	May 81
/R FOLLOWING /S IF NO OUPTUT QUEUED MAY CAUSE FATAL ERROR IN QUEUE	D	16.1.3 M	Aug 81
ATTEMPTING TO COMMUNICATE WITH 'QUEUE' FROM A VIRTUAL JOB		16.1.4 N	Apr 82

Component	Autopatch Kit	Sequence	Mon/Yr
QUEMAN.SAV			
PROBLEMS WITH QUEMAN	B	16.2.1 M	Jan 81
KEYPAD EDITOR			
KED			
MAKE TERMINAL SETUP OPTIONAL IF MTATCH FAILS	A	17.1.1 F	Aug 80
PROVIDE A .CHAIN INTERFACE FOR KED	A	17.1.2 F	Aug 80
PROVIDE REASONABLE ACTIONS AND ERROR MESSAGES WHEN DEALING WITH DEGENERATE FILES	A	17.1.3 M	Oct 80
SEARCH FAILS IF TARGET IF FIRST OR LAST STRING IN THE FILE	A	17.1.4 M	Nov 80
KNOWN ERRORS AND RESTRICTIONS		17.1.5 R	Dec 80
"SET SEARCH EXACT JUNK" COMMAND CRASHES KED	C	17.1.6 M	Jul 81
REPEATED USE OF THE "APPEND" FUNCTION CRASHES KED	C	17.1.7 M	Dec 81
DISABLE REVERSE VIDEO DISPLAY BY KED	C	17.1.8 F	Jul 81
FILE SAMPLE.KED OMITTED FROM DISTRIBUTION		17.1.9 N	Aug 81
KED DOCUMENTATION CORRECTION		17.1.10 N	Nov 81
K52			
MAKE TERMINAL SETUP OPTIONAL IF MTATCH FAILS	A	17.2.1 F	Aug 80
PROVIDE A .CHAIN INTERFACE FOR K52	A	17.2.2 F	Aug 80
PROVIDE REASONABLE ACTIONS AND ERROR MESSAGES WHEN DEALING WITH DEGENERATE FILES	A	17.2.3 M	Oct 80
SEARCH FAILS IF TARGET IS FIRST OR LAST STRING IN THE FILE	A	17.2.4 M	Nov 80
KNOWN ERRORS AND RESTRICTIONS		17.2.5 R	Dec 80
"SET SEARCH EXACT JUNK" COMMAND CRASHES K52	C	17.2.6 M	Jul 81
REPEATED USE OF THE "APPEND" FUNCTION CRASHES K52	C	17.2.7 M	Dec 81
NO EQUIVALENT PATCH FOR K52 FOR SEQ 17.1.8		17.2.8 N	Aug 81
FILE SAMPLE.KED OMITTED FROM DISTRIBUTION		17.2.9 N	Aug 81
KED DOCUMENTATION CORRECTION		17.2.10 N	Dec 81
AUTOMATED PATCHING FACILITY PACKAGE			
PACKAGE NOTES			
AUTOPATCH SERVICE FOR RT-11		19.1.1 N	Jun 81
FMS-11/RT-11 V1.1			
ANNOUNCING FMS-11/RT-11 V1.1		33.1 N	Aug 80
FRED V1.1			
ZERO IMPURE AREA SIZE PROBLEM		33.3.1 M	Sep 81
BASIC-11/RT-11 V2.0			
INTERPRETER			
REPUBLICATION OF PATCHES		35.1.1 N+	Mar 80
PRINT USING - PATCH A	A	35.1.2 M+	Mar 80
RESEQ - PATCH B	A	35.1.3 M+	Mar 80
EDITING A DIM #n STATEMENT - PATCH C	A	35.1.4 M+	Mar 80
DOUBLE PRECISION HANG - PATCH D	A	35.1.5 M+	Mar 80
SAVE dev: AND REPLACE dev: - PATCH E	A	35.1.6 M+	Mar 80
SINGLE PRECISION HANG AND NUMERIC CONVERSION PROBLEM - PATCH F	A	35.1.7 M+	Mar 80
SAVE .XXX & UNSAVE .XXX - PATCH G	A	35.1.8 M+	Mar 80
NEW - PATCH H	A	35.1.9 M+	Mar 80
RESEQ - PATCH I	A	35.1.10 M+	Mar 80
LISTNH / OLD - PATCH J	A	35.1.11 M+	Mar 80
SYS(1) - PATCH K	A	35.1.12 M+	Mar 80
CALL - PATCH L	A	35.1.13 M+	Mar 80
DOUBLE PRECISION INTEGER VARIABLES - PATCH M	A	35.1.14 M+	Mar 80
FILESIZE 0 - PATCH N	A	35.1.15 M+	Mar 80
INTEGERS IN DOUBLE PRECISION BASIC-11		35.1.16 N+	Mar 80
REM STATEMENTS ON MULTI-STATEMENT LINES - PATCH O	A	35.1.17 M+	Mar 80
INT FUNCTION - PATCH P FOR SINGLE USER BASIC-11	A	35.1.18 M	Nov 80
RETRACTED		35.1.19 M	May 81
PRINT USING - PATCH R FOR SINGLE USER BASIC-11	B	35.1.20 M	Jan 81
OMITTING TRIG FUNCTIONS FROM BASIC-11	B	35.1.21 N	Jan 81
STRING CONCATENATION - PATCH S FOR SINGLE USER BASIC-11	B	35.1.22 M	Mar 81
PROBLEM WITH BASIC-11 PATCH Q		35.1.23 N	May 81

Component	Autopatch Kit	Sequence	Mon/Yr
UTILITIES			
CONVERSION PROGRAM		35.2.1 M+	Mar 80
BASIC-11/RT-11 V2 CONVERSION PROGRAM PATCH 1		35.2.2 M+	Mar 80
DOCUMENTATION			
OVERLAYING WHILE IN A SUBROUTINE		35.3.1 R+	Mar 80
OPERATION OF CTRLC, RCTRLC AND SYS(6) FUNCTIONS AND THE CTRL/C COMMAND		35.3.2 N+	Mar 80
OPERATION OF OLD, RUN, CHAIN, AND OVERLAY WHEN THE SPECIFIED FILE IS NOT FOUND		35.3.3 N+	Mar 80
CREATING AND ACCESSING VIRTUAL ARRAY FILES		35.3.4 N+	Mar 80
STORAGE OF THE NULL CHARACTER IN STRING VARIABLES AND VIRTUAL STRING ARRAYS		35.3.5 N+	Mar 80
USE OF COMPILE COMMAND		35.3.6 N+	Mar 80
STRING MANIPULATION IN ASSEMBLY LANGUAGE ROUTINES		35.3.7 N+	Mar 80
MAXIMUM ARRAY SUBSCRIPT SIZE		35.3.8 N+	Mar 80
NEW MANUAL AVAILABLE FOR BASIC-11/RT-11		35.3.9 N	May 81
MU BASIC-11/RT-11 V2.0			
INTERPRETER			
CHAINING WITH COMMON - PATCH A		36.1.1 M+	Mar 80
VIRTUAL FILE I/O - PATCH B		36.1.2 M+	Mar 80
SYS(1,n) FUNCTION - PATCH C		36.1.3 M+	Mar 80
RESEQ - PATCH D		36.1.4 M+	Mar 80
VALUES IN PATCHES A, B, C		36.1.5 N+	Mar 80
LISTNH / OLD - PATCH E		36.1.6 M+	Mar 80
CALL - PATCH F		36.1.7 M+	Mar 80
DOUBLE PRECISION INTEGER VARIABLES - PATCH G		36.1.8 M+	Mar 80
INPUT #/PRINT # - PATCH H		36.1.9 M+	Mar 80
OLD OF A ZERO BLOCK FILE - PATCH I		36.1.10 M+	Mar 80
ADDITION TO PATCH B - PATCH J		36.1.11 M+	Mar 80
DEVICE MNEMONIC PROBLEM - PATCH K		36.1.12 M+	Mar 80
CLOSE - PATCH L		36.1.13 M+	Mar 80
REM STATEMENTS ON MULTI-STATEMENT LINES - PATCH M		36.1.14 M+	Mar 80
DEASSIGNING A TERMINAL - PATCH N		36.1.15 M+	Mar 80
INTEGERS IN DOUBLE PRECISION MU BASIC-11		36.1.16 N+	Mar 80
USE OF SYS(1,n) FUNCTION WHEN ',n' IS OMITTED - PATCH O		36.1.17 M+	Mar 80
DISABLING CR/LF USING TTYSET - PATCH P		36.1.18 M+	Mar 80
HANDLER FETCH ERROR MAY LEAD TO MONITOR FAULT - PATCH Q		36.1.19 M+	Mar 80
REMOTE LINES - PATCH R FOR MULTI-USER BASIC-11		36.1.20 M	Nov 80
INT FUNCTION - PATCH S FOR MULTI-USER BASIC-11		36.1.21 M	Nov 80
PRINT USING - REVISED PATCH T FOR MULTI USER BASIC-11		36.1.22 M	Apr 81
RETRACTED		36.1.23 MM	Jan 81
OMITTING TRIG FUNCTIONS FROM MU BASIC-11		36.1.24 N	Jan 81
SYS(1) FUNCTION - PATCH V FOR MULTI USER BASIC-11		36.1.25 M	Jan 81
STRING CONCATENATION - PATCH W FOR MULTI USER BASIC-11		36.1.26 M	Mar 81
CARD READER EOF - PATCH X FOR MULTI USER BASIC-11		36.1.27 M	May 81
CLOSE GIVES ILLEGAL FILES SPEC - PATCH Y FOR MULTI USER BASIC-11		36.1.28 M	May 81
TTSET GIVES TRAP TO 10 - MU BASIC PATCH Z		36.1.29 M	May 81
PROBLEM WITH MU BASIC-11 PATCH U		36.1.30 N	Jul 81
UTILITIES			
MU BASIC-11/RT-11 V2 CONFIGURATION PROGRAM PATCH 1		36.2.1 M+	Mar 80
MU BASIC-11/RT-11 V2 CONVERSION PROGRAM		36.2.2 F+	Mar 80
DOCUMENTATION			
OPERATION OF CTRLC, RCTRLC AND SYS(6) FUNCTIONS AND THE CTRL/C COMMAND		36.3.1 N+	Mar 80
MEMORY REQUIREMENTS OF OPTIONAL FUNCTIONS, ETC.		36.3.2 N+	Mar 80
OPERATION OF OLD, RUN, CHAIN AND OVERLAY WHEN THE SPECIFIED FILE IS NOT FOUND		36.3.3 N+	Mar 80
CREATING AND ACCESSING VIRTUAL ARRAY FILES		36.3.4 N+	Mar 80
STORAGE OF THE NULL CHARACTER IN STRING VARIABLES AND VIRTUAL STRING ARRAYS		36.3.5 N+	Mar 80
USE OF COMPILE COMMAND		36.3.6 N+	Mar 80
STRING MANIPULATIONN IN ASSEMBLY LANGUAGE ROUTINES		36.3.7 N+	Mar 80
ERROR IN TABLE 4-1 OF THE USER'S GUIDE		36.3.8 N+	Mar 80
RESTRICTION ON USR RESIDENCY WHEN RUNNING IN FOREGROUND		36.3.9 N+	Mar 80

Component	Autopatch Kit	Sequence	Mon/Yr
MAXIMUM ARRAY SUBSCRIPT SIZE		36.3.10 N+	Mar 80
ASSEMBLING SOURCE FILES (SOURCE LICENSE HOLDERS ONLY)		36.3.11 N+	Mar 80
USE OF PATCH UTILITY		36.3.12 N+	Mar 80
MICROPOWER/PASCAL V1.0			
ANNOUNCING MICROPOWER/PASCAL V1.0		37.1.1 N	Apr 82
MU BASIC-11/RT V2.1			
MU BASIC V2.1 MAINTENANCE RELEASE AVAILABLE			Mar 82
APL-11 V2.0			
PACKAGE NOTES			
APL IS AVAILABLE IN THE DECUS LIBRARY		38.1.1 N	Sep 81
FORTRAN IV/RT-11 V2.1			
COMPILER			
PATCH 1		44.1.1 M+	Mar 80
PATCH 2		44.1.2 M+	Mar 80
PATCH 3		44.1.3 M+	Mar 80
REGISTER ALLOCATION - PATCH 8		44.1.4 M+	Mar 80
FORTRAN FAILS TO COMPILE DO-LOOPS - PATCH 11		44.1.5 M+	Mar 80
COMMON SUBEXPRESSION OPTIMIZATION - PATCH 17		44.1.6 M+	Mar 80
BYTE COMPARISON AND COMMON SUBEXPRESSION OPTIMIZATION - PATCH 20		44.1.7 M+	Mar 80
DIRECT ACCESS READ - PATCH 21		44.1.8 M+	Mar 80
COMPLEX VARIABLE TO CONSTANT COMPARISON - PATCH 22		44.1.9 M+	Mar 80
OTS			
PATCH 4		44.2.1 M+	Mar 80
CARRIAGE CONTROL OPTION - PATCH 5		44.2.2 M+	Mar 80
OPEN FAILURE WITH TYPE='OLD' - PATCH 6		44.2.3 M+	Mar 80
FORTRAN LIBRARY FUNCTION ERRTST - PATCH 7		44.2.4 M+	Mar 80
SMALLER EXECUTION-TIME PROGRAMS		44.2.5 N+	Mar 80
FORTRAN OTS - PATCH 9		44.2.6 M+	Mar 80
I/O FROM A FORTRAN COMPLETION ROUTINE - PATCH 10		44.2.7 M+	Mar 80
CALL CLOSE (FORTRAN LIBRARY SUBROUTINE) - PATCH 12		44.2.8 M+	Mar 80
UNFORMATTED BYTE I/O - PATCH 13		44.2.9 F+	Mar 80
LIST DIRECTED INPUT ERRORS - PATCH 14		44.2.10 M+	Mar 80
DISP='DELETE' OPTION - PATCH 15		44.2.11 M+	Mar 80
FORMATTED RECORD OUTPUT - PATCH 16		44.2.12 M+	Mar 80
CALL ASSIGN CARRIAGE CONTROL - PATCH 18		44.2.13 M+	Mar 80
NON-PLAS VIRTUAL ARRAY INITIALIZATION - PATCH 19		44.2.14 M+	Mar 80
DOCUMENTATION			
FORTRAN IV V2.1 MAINTENANCE RELEASE		44.3.1 N+	Mar 80
INSTALLING FORTRAN IV V2.1 UNDER RT-11 V4		44.3.2 N	Aug 80
FORTRAN IV/RT-11 V2.5			
COMPILER			
ANNOUNCING PDP-11 FORTRAN IV/RT-11 V2.5		45.1.1 N	Sep 80
THE COMPILER INCORRECTLY PARSES SOME EXPRESSIONS IN I/O LISTS	A	45.1.2 M	Nov 80
THE COMPILER INCORRECTLY CONVERTS INTEGER TO BYTE IN LOGICAL EXPRESSIONS	A	45.1.3 M	Nov 80
THE COMPILER GENERATES INCORRECT CODE FOR EQUIVALENCED ARRAYS (PAT 12)	D	45.1.4 M	Sep 81
THE COMPILER INCORRECTLY INTERPRETS COMMENTS WITH TABS (PAT 17)		45.1.5 M	Nov 81
MISSING END IN MAIN PROGRAM CAN CAUSE COMPILER CRASH (PAT 18)		45.1.6 M	Nov 81
THE COMPILER INCORRECTLY OPTIMIZES ARRAY ELEMENTS PASSED AS ARGUEMENTS (PAT 20)		45.1.7 M	Dec 81

Component	Autopatch Kit	Sequence	Mon/Yr
THE COMPILER INCORRECTLY PARSES PARENTHESES IN QUOTED STRINGS (PAT 21)		45.1.8 M	Jan 82
THE COMPILER CRASHES WHILE ACCESSING AN ODD ADDRESS IN PAT 12 (PAT 22)		45.1.9 M	Jan 82
CORRECTION FOR CONTINUATION LINES PRECEEDED BY COMMENTS (PAT 27)		45.1.10 M	Apr 82
OTS			
THE OTS DOES NOT SET DEFAULT CARRIAGE CONTROL FOR SERIAL LINE PRINTER	B	45.2.1 M	Jan 81
THE LUN IS NOT SAVED WHEN AN ERROR OCCURS WHILE OPENING A FILE	B	45.2.2 M	Jul 81
PATCH TO ALLOW THE PLACEMENT OF THE FORTRAN OTS WORK AREA BETWEEN THE PROGRAM'S HIGH LIMIT AND THE BASE OF THE FIRST VIRTUAL OVERLAY FOR PRIVILEGED FORTRAN JOBS	B	45.2.3 F	Feb 81
BOUNDARY CONDITION ON FORMATTED I/O CORRUPTS I/O (PAT 6)	B	45.2.4 M	Mar 81
DEFAULT CARRIAGE CONTROL FOR IMPLIED SEQUENTIAL ACCESS FILES (PAT 7)	C	45.2.5 M	Jul 81
STANDALONE FORTRAN YIELDS RUN-TIME ERROR 64 (PAT 8)	B	45.2.6 M	Apr 81
DISPOSE = 'KEEP' NOT RECOGNIZED WITH READONLY OPEN PARAMETER (PAT 9)	C	45.2.7 M	Jul 81
THE DATE ROUTINE DOES NOT PERMIT BYTE ALIGNED PARAMETERS (PAT10)	C	45.2.8 M	Jul 81
IMPLICIT READ FAILURE MAY HALT PROCESSOR (PAT 11)	C	45.2.9 M	Jul 81
FPU DOUBLE PRECISION SINE/COSINE MODULE ERRORS (PAT 13)	D	45.2.10 M	Sep 81
EMBEDDED BLANKS OVERRIDE THE ICNT PARAMETER IN THE ASSIGN ROUTINE		45.2.11 M	Oct 81
THE DEFAULT CARRIAGE CONTROL FOR THE ASSIGN ROUTINE IS INCORRECT		45.2.12 M	Oct 81
CORRECTION FOR UNIT CLOSING (PAT 16)		45.2.13 M	Nov 81
LIST DIRECTED INPUT CONVERSION ERROR (PAT 19)		45.2.14 M	Dec 81
BOUNDARY CONDITION ON FORMATTED I/O CORRUPTS I/O IN PAT 6 (PAT 23)		45.2.15 M	Feb 82
BOUNDARY CONDITION ON FORMATTED I/O BACKSPACE CORRUPTS I/O		45.2.16 M	Feb 82
CORRECTION OF ASSIGN FILENAME HANDLING WHEN ICNT EQUALS ZERO		45.2.17 M	Feb 82
CONVERSION ERROR WHILE READING COMPLEX NUMBER FROM FILE (PAT 26)		45.2.18 M	Apr 82
GAMMA V3.1			
FGAMMA-FRAMES 3 TO 10 OF GSA STUDY SOMETIMES CORRUPT		49.2.1 M	Jul 81
SYSTEM MAY HANG WHEN DISK SQUEEZED		49.2.2 M	Oct 81
STATIC STUDIES ON LARGE DEVICES		49.2.3 M	Jan 82
STATIC STUDY ACQUISITION ON LARGE DEVICES		49.4.1 M	Jan 82
ISOMETRIC DISPLAY IMAGES USE INCORRECT INTENSITY LEVELS		49.5.1 M	Oct 81
SLICE - LAST POINT IS NOT PLOTTED		49.5.2 M	Nov 81
SLICE - <CR>, <LF> NOT ISSUED AFTER PRINTING SLICE DATA		49.5.3 M	Jan 82
TRANSFER STUDY IN SELECTIVE STEP MODE		49.8.1 F	Mar 82
GAMMA-11 DOCUMENTATION CORRECTIONS AND ADDITIONS		49.10.1 N	Mar 82
PATCHING THE RT-11 MONITOR FOR GAMMA-11		49.11.1 M	Nov 81
ERROR IN THE BASIC SUPPORT ROUTINE GPMR		49.12.1 M	Dec 81
ERRORS IN THE BASIC SUPPORT ROUTINES GPLR AND GPF		49.12.2 M	Mar 82
ERROR IN FORTRAN SUPPORT SUBROUTINE GPMR		49.13.1 M	Mar 82
ERRORS IN THE FORTRAN SUPPORT ROUTINES GPLR AND GPF		49.13.2 M	Mar 82
DECnet-RT V1.1			
NETGEN			
FULL DUPLEX, EXTENDED MEMORY DUP DRIVER WON'T BUILD		50.3.1 M	Aug 80
COMMAND FILE ABORT AND FOREGROUND STACK SPACE PROBLEMS		50.3.2 M	Apr 82
DMC			
DMC DRIVER FAILS WITH THE SYSTEM JOB FEATURE		50.4.1 M	Apr 82
DDCMP			
DDCMP BRANCH OUT OF RANGE AND Q ELEMENT RETURN PROBLEMS		50.5.1 M	Aug 80
DDCMP FAILS WITH THE SYSTEM JOB FEATURE		50.5.2 M	Apr 82

Component	Autopatch Kit	Sequence	Mon/Yr
NSP			
NSP CORRUPTS PHYSICAL LINE ERROR CODE		50.6.1 M	Aug 80
INSUFFICIENT NUMBER OF CCB'S AND ULA TABLE ENTRIES		50.6.2 M	Apr 82
NFT			
NFT INCORRECTLY ALLOCATES RT-11 QUEUE ELEMENTS		50.9.1 M	Jun 80
FAL			
FAL INCORRECTLY ALLOCATES RT-11 QUEUE ELEMENTS		50.10.1 M	Jun 80
FAL MAY HANG ON ASCII TRANSFERS OF UNFILLED BLOCKS		50.10.2 M	Aug 80
FAL WILL NOT ALLOW ACCESS COMPLETE AFTER CONTROL CONNECT		50.10.3 M	Aug 80
NFARS			
DAP ROUTINES DO NOT REPORT PHYSICAL LINE ERRORS		50.11.1 M	Nov 80
DAP ATTEMPTS TO MULTIPLY RETURN BUFFERS ON ERROR		50.11.2 M	Aug 80
DAP SEND ONE CHARACTER ON ZERO LENGTH TRANSMITS		50.11.3 M	Nov 80
DAPAST CLEARS THE USER CHANNEL NUMBER TOO SOON		50.11.4 M	Aug 80
FORTRAN USER INTERFACES			
NOTES ON THE USE OF THE DECnet-RT FORTRAN INTERFACES		50.16.1 M	Jun 80
MACRO USER INTERFACES			
NOTES ON DECnet-RT MACRO PROGRAMMING		50.16.2 N	Jun 80

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DBUILD			
CORRECTION FOR THREE DECFORM PROBLEMS		51.2.1 M	Oct 81
DECFORM			
PROBLEM WITH DECFORM AND THE VT100		51.4.1 M	Nov 80
CORRECTION FOR THREE DECFORM PROBLEMS		51.4.2 M	Oct 81
DECFORM WITH VT100 TERMINAL CAUSES BAD CHARACTER ON TYPE-AHEAD		51.4.3 M	Nov 81
DIBOL			
TWO CORRECTIONS TO XCALL PAK/UNPAK		51.5.1 M	Aug 81
DICOMP			
FOUR DICOMP ERRORS FIXED		51.6.1 M	Oct 81
DKED			
TWO PROBLEMS WITH DKED		51.7 M	Aug 80
DKED SELECT/CUT AND KEYPAD ERRORS		51.7.2 M	Sep 80
DKED INCORRECTLY HANDLES CONTINUED LINES		51.7.3 M	Oct 81
ISMUTL			
CORRECTIONS FOR ISAM UTILITY ERRORS		51.8.1 M	Nov 81
ISMUTL GIVES INCORRECT ERROR MESSAGES IF INSUFFICIENT MEMORY AVAILABLE		51.8.2 M	Apr 82
LPTSPL			
TSD SPOOLER GETS CONFUSED		51.9.1 M	Nov 80
SORTM			
SORT SENDS MESSAGES INDISCRIMINATELY		51.14.1 M	Jan 81
SUD			
CORRECTIONS TO DIBOL RUN TIME SYSTEMS		51.16.1 M	Jan 81
PROBLEMS WITH XCALL RENAM AND ERROR 6		51.16.2 M	Feb 81
NO ERROR 22 RETURNED		51.16.3 M	Nov 81
DIBOL STACK OVERFLOW ON OPEN		51.16.4 M	Nov 81
PROBLEMS WITH STACK OVERFLOW AND INCREMENT		51.16.5 M	Dec 81
SUD MESSAGES OVER 100 CHARACTERS IN LENGTH ARE NOT RECEIVED CORRECTLY		51.16.6 M	Feb 82
ISAM FILE RECORD COUNT REVERTS TO 0		51.16.7 M	Apr 82

Component	Autopatch Kit	Sequence	Mon/Yr
TDIBOL			
PROBLEM WITH XCALL PAK		51.17 M	Aug 80
PROBLEM UNPACKING DATA		51.17.2 M	Sep 80
TWO CORRECTIONS TO XCALL PAK/UNPAK		51.17.3 M	Aug 81
TSD			
CORRECTIONS TO DIBOL RUN TIME SYSTEMS		51.18.1 M	Jan 81
PROBLEMS WITH XCALL RENAM AND ERROR 6		51.18.2 M	Feb 81
INCORRECT TERMINAL WIDTHS AND CIS PROBLEM		51.18.3 M	Aug 81
CORRECTION TO TSD/XMTSD		51.18.4 M	Sep 81
CORRECTION FOR ISAM PROBLEM		51.18.5 M	Oct 81
"SEND" STARTS MULTIPLE JOBS		51.18.6 M	Oct 81
NO ERROR 22 RETURNED		51.18.7 M	Nov 81
DIBOL STACK OVERFLOW ON OPEN		51.18.8 M	Nov 81
PROBLEMS WITH STACK OVERFLOW AND INCREMENT		51.18.9 M	Dec 81
CORRECTION FOR SIDE EFFECTS FROM PATCH 27		51.18.10 M	Feb 82
LINE PRINTER IS SOMETIMES INCORRECTLY CONSIDERED IN USE		51.18.11 M	Feb 82
ISAM FILE RECORD COUNT REVERTS TO 0		51.18.12 M	Apr 82
XMTSD			
CONFLICT BETWEEN XMTSD AND RT-11 OVER CHANNEL 16		51.20 M	Aug 80
CORRECTIONS TO DIBOL RUN TIME SYSTEMS		51.20.2 M	Jan 81
PROBLEMS WITH XCALL RENAM AND ERROR 6		51.20.3 M	Feb 81
PATCH FOR XMTSD WITH CIS		51.20.4 M	Apr 81
INCORRECT TERMINAL WIDTHS AND CIS PROBLEM		51.20.5 M	Aug 81
XMTSD HANGS WHEN LP IS OFF-LINE		51.20.6 M	Sep 81
CORRECTION TO TSD/XMTSD		51.20.7 M	Sep 81
CORRECTION FOR ISAM PROBLEM		51.20.8 M	Oct 81
"SEND" STARTS MULTIPLE JOBS		51.20.9 M	Oct 81
NO ERROR 22 RETURNED		51.20.10 M	Nov 81
DIBOL STACK OVERFLOW ON OPEN		51.20.11 M	Nov 81
PROBLEMS WITH STACK OVERFLOW AND INCREMENT		51.20.12 M	Dec 81
CORRECTION FOR SIDE EFFECTS FROM PATCH 27		51.20.13 M	Feb 82
LINE PRINTER IS SOMETIMES INCORRECTLY CONSIDERED IN USE		51.20.14 M	Feb 82
ISAM FILE RECORD COUNT REVERTS TO 0		51.20.15 M	Apr 82
XMTSD GIVES INCORRECT ERROR WHEN NO ROOM FOR I/O BUFFER		51.20.16 M	Apr 82
DOCUMENTATION			
CTS-300 VERSION 6 IS RELEASED		51.21 N	Aug 80
TWO RT-11 PATCHES MODIFIED FOR CTS-300 USE		51.21.2 N	Oct 80
RT-11 PATCH TO LS.MAC MODIFIED FOR CTS-300 USE		51.21.3 N	Feb 81
ADDITIONS TO CTS-300 DOCUMENTATION ON PRINT UTILITY		51.21.4 N	Mar 81
LIST OF SEQUENCE NUMBERS FOR CTS-300 V6		51.21.5 N	Mar 81
SOME NOTES ON RT-11 PATCH SEQ 6.13.3 M TO LS.MAC FOR CTS-300 USERS		51.21.6 M	Jul 81
SOME NOTES ON RT-11 PATCH SEQ 6.13.4 M TO LS.MAC FOR CTS-300 USERS		51.21.7 N	Aug 81
SOME NOTES ON RT-11 PATCH SEQ 6.13.5 M TO LS.MAC FOR CTS-300 USERS		51.21.8 N	Aug 81
AVOIDING POSSIBLE PROBLEM WITH ISAM FILES		51.21.9 N	Dec 81
SOME NOTES ON RT-11 PATCH SEQ 6.13.6 M TO LS.MAC FOR CTS-300 USERS		51.21.10 N	Feb 82
RESTRICTION FOR CTS-300		51.21.11 R	Apr 82
LS.MAC			
SPECIAL CTS-300 PATCH FOR LS.MAC		51.23.1 M	Feb 81
CORRECTION TO CTS-300 PATCH 11 (SEQ 51.23.1 M) TO LS.MAC		51.23.2 M	Jun 81
SYSTBL.CND			
RT-11 PATCH TO SYSTBL.CND MODIFIED FOR CTS-300 USE		51.25.1 M	Mar 81
RT-11 PATCH SEQ 10.3.2 M TO SYSTBL.CND MODIFIED FOR CTS-300 USE		51.25.2 M	Apr 81

CTS-300 V7.0

DOCUMENTATION			
CTS-300 VERSION 7 IS RELEASED		52.1.1 N	Apr 82
DIBOL/TDIBOL			
PATCH 2: POSSIBLE INCORRECT RESULTS FROM THE INSTR ROUTINE		52.4.1 M	Apr 82
MACRO SORT			
PATCH 1: TWO SORT PROBLEMS EMERGE UNDER CERTAIN CONFIGURATIONS		52.15.1 M	Apr 82

Component	Autopatch Kit	Sequence	Mon/Yr
	GAMMA-11 V3.0		
BGAMMA/FGAMMA			
PROBLEMS WITH GAMMA-11 V3.0		54.1.1 M	Jun 81
FGAMMA-FRAMES 3 TO 10 OF GSA STUDY SOMETIMES CORRUPT		54.1.2 M	Jul 81
ISOMETRIC DISPLAY IMAGES USE INCORRECT INTENSITY LEVELS		54.1.3 M	Sep 81
SYSTEM MAY HANG WHEN DISK SQUEEZED		54.1.4 M	Oct 81
	CTS-300 DICAM (3271) V3.1		
INCORRECT ACK SENT IN CONVERSATIONAL MODE		55.1.1 M	Jul 81
LOOP WHEN CLOSE IS ISSUED WITH OUTSTANDING I/O REQUESTS		55.1.2 M	Jul 81
	CTS-300 RDCP (2780/3780) V2.0		
ABNORMAL TERMINATION AND LISTING PROBLEMS		56.1.1 M	Dec 80
SUBSCRIPT ERROR IN RDCP EDITOR		56.1.2 M	Dec 80
MEMORY CORRUPTION PROBLEM		56.1.3 M	Dec 80

Software Product Description

PRODUCT NAME: DECnet-RT, Version 2.0
RT-11 Network Software

SPD 10.72.7

DESCRIPTION:

DECnet-RT is a Phase III network product that allows a suitably configured RT-11 Foreground/Background (FB) system to participate as a nonrouting (end) node in DECnet computer networks. DECnet-RT offers task-to-task communications, utilities for network file operations, and network resource-sharing capabilities using DIGITAL Network Architecture (DNA) protocols. DECnet-RT communicates with adjacent nodes over synchronous and asynchronous communication lines. Access to DECnet-RT is supported for RT-11FB user programs written in MACRO-11 and FORTRAN IV.

DECnet-RT is warranted for use only with Phase III DECnet products supplied by DIGITAL. The functions available to an RT-11FB user depend, in part, on the configuration of the rest of the network. Each DECnet product offers its own level of functionality and its own set of features to the user. Networks consisting entirely of DECnet-RT nodes, for example a two node network, can have the full functionality described in this SPD. Networks that mix DECnet-RT nodes with other DECnet products will enhance the functions available to the DECnet-RT user. As a nonrouting node, DECnet-RT does not support all the features of a routing node.

The DECnet products and functions available to users on mixed networks can be determined by comparison of the SPDs for the component products. An overview of DECnet and common functionality available with mixed networks can be obtained from the general DECnet Phase III (10.59.xx) SPD.

Task-to-Task Communication

Using DECnet-RT, an RT-11FB user program written in MACRO-11 or FORTRAN IV can exchange messages with other network user programs. The messages sent and received by the two user programs can be in any data format.

Network Resource Access

File Transfer Utilities

DECnet-RT provides two utilities for use in accessing and/or transferring files between two DECnet nodes. The Network File Transfer (NFT) utility provides a means for users to transfer sequential ASCII or image files. These files can be transferred in either direction between the local RT file system devices and the file system of other DECnet-RT nodes. Additional facilities allow file deletion, spooling of files and submission and/or execution of command files provided the remote node supports these functions. NFT allows wild cards for the file name and file type for files that reside on DECnet-RT nodes, as well as wild cards in other file specification fields to non-DECnet-RT nodes subject to the restrictions of those implementations. NFT also allows directory listings of remote systems that support this feature. The File Access Listener (FAL) utility allows remote DECnet nodes to access RT file system devices. FAL provides support for sequential ASCII and image files. FAL also supports file deletion and directory listings. Wild cards are allowed in file specifications for file name and file type.

File Access

Access to remote DECnet node files is supported for FORTRAN IV and MACRO-11. The FORTRAN IV Network File Access Routines (NFARS) are explicit subroutine calls that allow OPEN, READ, WRITE, CLOSE, PURGE and DELETE operations to be initiated by FORTRAN IV tasks to sequential ASCII and image files residing on other DECnet nodes. APPEND, SUBMIT, EXECUTE, and SPOOL operations are also supported provided that the remote DECnet node supports these operations (remote DECnet-RT nodes do not). The MACRO-11 NFARS provide all the functionality of the FORTRAN IV NFARS. In addition, the MACRO-11 NFARS allow random access to remote, sequential, or relative files provided that the remote DECnet node supports this feature. Both the FORTRAN IV and MACRO-11 NFARS allow fixed length, variable length, and sequenced record formats.

Network Command Terminal

DECnet-RT provides unsupported utilities that allow a terminal user to establish a virtual connection to Phase III DECnet-11M, DECnet-11M-PLUS, or DECnet-VAX systems. This connection makes the terminal appear as if it were physically connected to the other system and the operator can use most of the standard system and network utilities supported by that system. These

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utilities are particularly useful for doing remote program development and allow terminal users on small application oriented systems to uitilize the resources of larger development oriented systems. However, these utilities are provided only as a courtesy from DIGITAL, with no implied support services offered, as is the case with the other mentioned DECnet-RT capabilities.

Task Activation on Incoming Connect

The Network Job Spawner (NJS) will run as a background program in an "unattended" environment. This program will be notified of incoming connect requests by the Network, and if the program exists, will pass control to the requested job. The requested job should pass control back to NJS if it was initiated by NJS. All server tasks supplied by DECnet-RT, which can be activated by incoming connects, will support the NJS. Server tasks include the File Access Listener (FAL), the Data Test Receiver (DTR), the Terminal Communication Utility (TLK), the Network Management Listener (NML) and the Loopback Mirror (LOOPER).

Network Management

The Network Control Program (NCP) performs three primary functions: displaying statistical and error information, controlling network components, and testing network operation. These functions can be performed locally or executed at remote Phase III nodes that support this feature. In either case, the output resulting from a command can be directed to a local file or to the user's terminal.

An operator can display the status of DECnet activity at the local node and other Phase III nodes. The user can choose to display statistics related to both node and communication lines, including data on traffic and errors. The local console operator can also perform many network control functions, such as loading and unloading DECnet components, starting and stopping lines, and activating the local node.

DECnet-RT does not provide local network events logging to the console device. NCP can be used to test components of the network. NCP can be used to send and receive test messages over individual lines either between nodes or through controller loopback arrangements. The messages can then be compared. NCP allows performance of a logical series of tests that will aid in isolating problems. Network Management Listener allows remote command nodes to perform network management functions at a DECnet-RT node. Functions include display of line and node parameters and counters, zeroing of line and node counters, and changing selected line and node parameters.

Terminal Communication Utility

The DECnet-RT TLK utility allows a user at a DECnet-RT node to send messages to DECnet nodes that support the same feature. Messages can be directed to a specific terminal or to the operator's console at the destination node. TLK dialogue mode allows users of two systems to type messages to one another.

Nonrouting (End) Node

A nonrouting (end) node has only one line that must be connected to another DECnet Phase III node. DECnet-RT systems support only one active line. A nonrouting node can send and receive messages from nonadjacent Phase III network nodes; however, it does not route transient messages through to other nodes since it is only an end node.

Communications

DECnet-RT supports the DIGITAL Data Communications Messages Protocol (DDCMP) for full- or half-duplex transmission in point-to-point and as a tributary in a multi-point operation, using serial synchronous or asynchronous facilities. DDCMP provides error detection and physical link management facilities. In addition, an auto-answer capability is provided.

Node Topologies

DECnet-RT will provide DECnet Phase III nonrouting (end) node support. This feature will allow a DECnet-RT node to communicate with nonadjacent nodes through one or more intervening nodes if the adjacent node supports full routing. If the adjacent node is a nonrouting node, for example another DECnet-RT, Version 2.0 node, the topology of the network would be restricted to two nodes.

Line Configuration

DECnet-RT will support a single line at a time. Although multiple lines can be configured into a particular system, only one line can be loaded and activated for the network. Thus the system is a nonrouting (end) node in the network, with a single path to the adjacent node and, therefore, the rest of the network. The line can be point-to-point or a multipoint tributary.

Direct Line Access

User-written MACRO-11 tasks will be provided with Direct Line Access (DLX) interface support.

This interface allows user tasks to obtain control of and use physical communications lines. Tasks send and receive data using the data link control protocol that is associated with that line. The DECnet logical link control level will be bypassed entirely.

The direct line interface is functionally equivalent to that provided in DECnet-RSX, Version 3.0. The functions supported by the DLX interface are as follows:

- Open a line (implies start)
- Close a line (implies stop)
- Send a message on the line
- Receive a message on the line
- Hang up the line

NCP commands are used for setting and displaying the owner of a line. A line owner can be either NSP for normal network use, or DLX to make the line available for direct access by users.

The direct line access will be supported for a single line and only to another RT-11FB system that has the direct line access enabled for the line. Although multiple lines of the same type, such as DUP, can be simultaneously enabled, these configurations are not supported and communication to other products, for example RSX DLX, supporting the DLX option is possible, but not supported.

DECnet-RT Operation

DECnet-RT, Version 2.0 is implemented as a foreground program and device handlers under the RT-11FB monitor with DIGITAL supplied background utilities and subroutines. A pregenerated system is provided on the distribution media, which can be used for a wide variety of user applications. The following sizing information is based upon the sizes of the pregenerated system. The size of a user generated system will depend upon the specific parameters selected during the Network Generation procedure.

When the network software is loaded in a 56K byte memory system, the background program area remaining is approximately 24K bytes when a DMC, DMR, DMP, or DMV communication device is used. The space available for the background program area is approximately 21K bytes when a DUP, DU, DUV, DL, DLV, or DPV communication device is used. These sizes do not include the size of the RT-11 User Service Routines (USR).

DECnet-RT Configuration

The process of configuring a DECnet-RT node is based primarily on trade-offs of cost, performance, and functionality, within the realm of satisfying the application requirements. It can readily be expected that network applications will run the full range from low-speed, low-cost situations to those of relatively high performance and functionality. The performance of a given DECnet node is a function not only of the expected network traffic and resultant processing (global conditions), but also of the amount of concurrent processing peculiar to that node (local conditions).

Node performance depends on many factors, including

- CPU power
- Number of device interrupts per unit time
- Communication line characteristics
- Number and size of buffers
- Message size and frequency
- "Local" applications

It is important to note the rate at which user data can be transmitted (throughput) over a communications line can sometimes approach, but will never equal or exceed, the actual line speed. The reason is that the actual throughput is a function of many factors, including the user application(s), network topology, protocol overhead, and the factors cited at the beginning of this section.

There are basically two groups of communications interfaces presented in the tables below. They differ in many respects, particularly in their effect on CPU utilization.

- The DMC11, DMR, DMP, and DMV are Direct Memory Access (DMA) devices. Also, the DDCMP line protocol is executed in microcode by these communication controllers, thus, off-loading the PDP-11. The only DECnet load the processor sees is complete incoming and outgoing messages.
- With character interrupt devices, such as the DUP11, CPU cycles are required for not only the DDCMP processing, but also each character sent and received.

The following tables describe what physical hardware configurations are supported by DECnet-RT in terms of CPU class and communication interface. It should be noted that the attachment of such devices as A/D converters and multiple terminals can reduce the line speed that can effectively be supported.

Maximum Line Configurations on 11/03 and 11/23 CPUs, or PDT-11/150

Device	Maximum Number of Lines	Maximum Linespeed (Kilobits/sec)	Maximum Device Bandwidth (Kilobits/sec)	Mode
DLV11-E, DUV11, DPV11	1	4.8[1]	4.8[1]	FDX/HDX
DMV[2]	1	56.0	56.0	FDX/HDX

[1]NOTE: Restricted to 2.4 on 11/03 and PDT-11/150
[2]NOTE: Restricted to 11/23-PLUS only

Maximum Line Configurations on 11/04 - 11/60 CPUs

Device	Maximum Number of Lines	Maximum Linespeed (Kilobits/sec)	Maximum Device Bandwidth (Kilobits/sec)	Mode
DL11, DU11, DUP11	1	9.6[3]	9.6[3]	FDX/HDX
DMC11-AR -DA	1	19.2	19.2	FDX/HDX
DMC11-AL -MD	1	56.0	56.0	FDX/HDX
DMC11-AL -MA	1	1000.0	1000.0	FDX/HDX
DMR	1	1000.0	1000.0	FDX/HDX
DMP	1	1000.0	1000.0	FDX/HDX

[3]NOTE: Restricted to maximum of 4.8 on PDP-11/10, 11/04.

In order to achieve a viable configuration, the user and/or a DIGITAL software specialist must perform a level of application analysis that addresses the factors above. In the preceding tables, the columns have the following meanings:

- Maximum Line Configuration — The greatest number of physical lines that can be attached and driven by the DECnet-RT system.
- Maximum Line Speed — The fastest clock rate at which the device can be driven under DECnet-RT. This means that even if devices have the ability to operate at a maximum rate, they must be configured subject to the "maximum device bandwidth" restrictions listed in the preceding tables.
- Mode — This indicates whether the line is operating in either half-duplex (a single bit stream) or full-duplex (two concurrent bit streams) mode.

System Generation

Generation and installation of DECnet-RT, Version 2.0 requires a generated RT-11FB, Version 4.0 with at least 56K bytes of memory.

NOTE: Generation on floppy diskette or TU58 Dectape II only systems is not supported.

MINIMUM HARDWARE REQUIRED:

Any valid RT-11FB system configuration (excluding PDT-11/130 and TU58 based systems) with:

- 56KB memory and a minimum of 24KB available memory for the DECnet-RT software and data storage
- An RK05 disk or larger, plus one additional device for distribution media
- PDP-11/03 through PDP-11/60 central processor with one or more of the appropriate communications devices:
  - DU11-DA low-speed synchronous interface
  - DUP11-DA low-speed synchronous interface
  - DMC11-AR -DA remote synchronous V.24/EIA-232-C interface
  - DMC11-AR -FA remote synchronous V.35/DDS interface
  - DMC11-AL -MD high-speed synchronous interface
  - DMC11-AL -MA high-speed local synchronous interface
  - DMV11-AA synchronous QBUS interface RS232-C/RS423A for 11/23-PLUS
  - DMV11-AB synchronous QBUS interface CCITT V.35/DDS for 11/23-PLUS
  - DMV11-AC local synchronous QBUS interface for 11/23-PLUS
  - DMP11-AA synchronous UNIBUS interface RS232-C/RS423A
  - DMP11-AB synchronous UNIBUS interface CCITT V.35/DDS
  - DMP11-AC local synchronous UNIBUS interface
  - DMP11-AE synchronous UNIBUS interface RS422A
  - DMR11-AA synchronous interface RS232C/CCITT V.24
  - DMR11-AB synchronous interface CCITT V.35/DDS
  - DMR11-AC local synchronous interface
  - DMR11-AE synchronous interface RS449/422
  - DL11-E asynchronous RS232-C interface with modem control
  - DL11-C asynchronous interface 20mA current loop[4]
  - DL11-WA asynchronous interface 20mA current loop[4]
  - DUV11-DA low-speed EIA RS232-C synchronous interface
  - DLV11-F asynchronous 20mA interface[4]
  - DLV11-E asynchronous EIA interface
  - DPV11-DB synchronous QBUS interface
  - PDT-11/150 with dual floppies

[4]NOTE: Requires either the H319 option for optical isolation or one side of the 20mA line to be in passive mode.

OPTIONAL HARDWARE:

KG11-A Communications Arithmetic Element can be used in conjunction with DU11 and DL11.

PREREQUISITE SOFTWARE:

RT-11FB Operating System, Version 4.0 with device timeout support and without error logging generated

OPTIONAL SOFTWARE:

FORTRAN IV/RT-11

TRAINING CREDITS:

NONE

Training credits are not included with a DECnet software license. Training courses on DECnet software are scheduled at regular intervals in DIGITAL's Training Centers. Arrangements should be made directly with DIGITAL's Educational Services Department.

SUPPORT CATEGORY:

DIGITAL SUPPORTED

DECnet-RT is a DIGITAL Supported Software Product.

SOFTWARE INSTALLATION:

DIGITAL INSTALLED

DIGITAL installation is required for Software Product Support. There is no charge for installation if performed at the time of system installation. DIGITAL installed software products, except for operating systems, are subject to an add-on installation fee when purchased subsequent to system installation.

Installation by DIGITAL will convert the RT-11FB system into a node with connection potential to a DECnet network. Connectivity of the DIGITAL installed DECnet-RT node to all adjacent DECnet Phase III, DIGITAL supported nodes, within the customer's network, will be demonstrated by the use of Network Installation Procedures. The updating/upgrading of adjacent nodes within the customer's network to allow connectivity is the responsibility of the customer.

SOFTWARE PRODUCT SUPPORT:

DECnet-RT includes standard warranty services as defined in the Software Support Categories Addendum of this SPD.

The customer can purchase DECnet-RT licenses with options that do not include support services. The category of support applicable to such software is Customer Supported. When a DECnet-RT product option that does not include support services is connected to a DECnet network, the category of support applicable to all DECnet products in the network is Customer Supported.

CUSTOMER RESPONSIBILITIES:

Before installation of the software, the customer must

- Obtain, install, and demonstrate as operational to DIGITAL's satisfaction any modems and other equipment and facilities necessary to interface DIGITAL's communications line interfaces and terminals.
- Make available to DIGITAL personnel all hardware, including terminals, to be used during installation for a reasonable period of time, as mutually agreed upon by DIGITAL and the customer, until installation is complete.

Delays caused by any failure to meet these responsibilities will be charged at the then prevailing rate for time and materials

PREREQUISITE SUPPORT:

A Network Profile and DECnet Customer Support Plan are required to be jointly prepared by the customer and DIGITAL covering all intended network-nodes and their support.

ORDERING INFORMATION:

All binary licensed software, including any subsequent updates, is furnished under the licensing provisions of DIGITAL's Standard Terms and Conditions of Sale, which provide in part that the software and any part thereof may be used on only the single CPU on which the software is first installed, and may be copied, in whole or in part (with the proper inclusion of the DIGITAL copyright notice and any DIGITAL proprietary notices on the software) only for use on such CPU.

All source licensed software is furnished only under the terms and conditions of a separate Software Program Sources License Agreement between Purchaser and DIGITAL.

Options with no support services are only available after the purchase of one supported license.

A single-use, license-only option is a license to copy the software previously obtained under license.

Listing options are only available after the purchase of at least one supported license and after a source license agreement is in effect.

The following key (D, E, H, Q, X, Z) represents the distribution media for the product and must be specified at the end of the order number, e.g., QJ687-AD = binaries on 9-track 800 BPI Magtape (NRZI).

D = 9-track 800 BPI Magtape (NRZI)
E = RK05 Disk Cartridge
H = RL02 Disk Cartridge
Q = RL01 Disk Cartridge
X = RX02 Double Density Diskette
Z = No hardware dependency

QJ687 -A— Single-use license, binaries, documentation, support services (media: D, E, H, Q, X)

QJ687 -D— Single-use license-only option, no binaries, no documentation, no support services (media: Z)

Update/Unsupported Options

Users of DECnet-RT whose specified Support Category warranty has expired may order under license the following software option as an update to an earlier version. The option may also be purchased for use on a second or subsequent CPU, in conjunction with a binary, single-use, license-only option. Options are distributed in binary form on the appropriate medium and include no installation or other services unless specifically stated.

QJ687 -H— Binaries, documentation (media: D, E, H, Q, X)

QJ687 -H— Right to copy for single-use, no binaries, no documentation, no support services (media: Z)

Miscellaneous Options

QJ687 -G— Documentation-only kit (media: Z)

ADDITIONAL SERVICES:

Self-Maintenance Service for this software product is available to licensed customers as a post-warranty Software Product Service.

The prerequisite being the purchase of the equivalent level RT-11 Software Product Service. Customers should contact their local DIGITAL office for additional information on the availability of this service.

Software Product Description

PRODUCT NAME: RT-11, Version 4.0
Single-User Operating System

SPD 12.1.18

DESCRIPTION:

RT-11 is a disk-based, single-user, real-time operating system designed for interactive program development and/or on-line applications on some PDP-11 and PDT-11 based systems. RT-11 supports both single job (SJ) and foreground/background (FB) modes of processing. In addition to a variety of system and program development utilities, RT-11 offers optional support of a number of high-level language processors, including BASIC and FORTRAN IV.

The emphasis in RT-11 is on efficient use of system resources, minimizing system requirements in the CPU and on the mass storage device, while maximizing system throughput. RT-11's ease of use is partially due to the system simplicity inherent in its design.

The RT-11 Operating System offers several configurations:

FB Monitor — Allows two programs to operate: a foreground program and a background program. The real-time function is accomplished in the foreground, which generally has priority on system resources. Functions that do not have critical response time requirements, such as program development, are accomplished in the background that operates whenever the foreground program cannot run. Within their priorities, both foreground and background are fully functional RT-11 programs with access to system capabilities. Although they operate independently, foreground and background can communicate through disk files and/or the message transmission facility.

Extended Memory (XM) Monitor — Version of the FB monitor for supporting systems with greater than 64K bytes of memory. System generation must be performed for XM support. This feature is accessible through those optional, high-level language processors that can automatically produce programs that address areas of memory other than the lowest 64K bytes. The MACRO-11 programmer can also take advantage of this feature for storing data and instructions above the lowest 64K bytes of memory. A linker option allows FORTRAN IV and MACRO-11 programmers to load overlays in extended memory for fast access.

SJ Monitor — Designed for users not requiring FB operation or the additional FB features. SJ requires less memory and has lower overhead. Should the user's requirements change, a properly written program that runs under the SJ monitor can be executed under the FB or XM monitor as a background program without modifications.

Features

Ease of Use — Designed for the single, interactive user. The English-language keyboard commands are easy to use and understand. The EXECUTE command, for example, allows transition from source to executing code with one command. Indirect command files allow command sequences to be stored and invoked repeatedly by the user.

Contiguous File Structure — Contiguous file structure for random-access devices incurs minimum file access overhead.

Configuration Independence — Provides device-independent I/O programming; for example, at run time the user can send output directly to a printer or write it to a disk file for later printing.

Flexible Real Time I/O — Satisfies a wide variety of input/output requirements by providing the following three modes of I/O operation:

- Synchronous I/O, where user program processing is suspended until the completion of the I/O event
- Asynchronous I/O, where an I/O event is started and user program processing continues until a user-defined point is reached. Processing is then suspended until the I/O event is completed.
- Event driven I/O, where an I/O event is started and user program processing continues until the I/O event completes. Processing is then interrupted to service the completed I/O event.

Low System Overhead — SJ monitor requires not more than 6K bytes of permanent memory to provide system control and I/O for the system device and the operator's terminal. FB operation adds not more than 5K bytes to this requirement. Options selected through system generation can increase memory requirements.

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RT-11's modular structure enables some monitor components to be swapped in as needed, However, if the program's memory requirements allow it, the complete monitor stays resident in memory to increase system responsiveness.

Ease of Expansion — Supports a wide range of PDP-11 peripherals. Beyond that, the modularity of the I/O system allows users with unique devices to interface them easily, merely by writing a device handler and storing it as a file on the system device.

When a new peripheral handler is added to an RT-11 system, properly coded programs can immediately use the device without requiring additional coding or reassembly.

Industry Compatible Magnetic Tape — Supports 7- or 9-track industry-compatible magtape with a subset of ANSI-compatible labels and fixed-length unformatted blocks.

Indirect Command Files — Set of system commands can be stored in an indirect command file that can be executed through a single keyboard command. In addition, an indirect command file can be called automatically on system start-up.

BATCH — Complete job control subsystem that provides batch-mode processing of user jobs in both the SJ and FB environments. BATCH processes job streams in the background partition, allowing real-time jobs or other user jobs to run in the foreground. RT-11 BATCH can be used in either SJ monitor configurations of 32K or more bytes of memory, or in any FB or XM configuration.

SYSLIB — Provides access to system services directly from a FORTRAN program. (FORTRAN IV is available under separate license.) Routines are provided to perform direct file I/O, asynchronous FORTRAN subroutines, FORTRAN interrupt routines, and multiterminal support.

HELP — Allows a user to access useful information about keyboard commands. This information can be modified to meet the user's need.

Multiterminal Support — Optionally supports from one to sixteen terminals (four maximum on PDT-11) in addition to the console terminal. These terminals can be addressed by specially written programs (or by optional software) and can be interfaced by up to eight DL11s, one or two DZ11s (one DZ11-E is two DZ11s), up to eight DLV11s, one or two DLV11-Js, or up to four DZV11s. A terminal on a local DL (DLV) interface must be connected to the hardware console interface (vectors 60, 64) at bootstrap time. There can only be one "command console terminal" per system at any time. Originally the command console is the terminal that is connected to the hardware console interface, but it can be reassigned to any other local terminal through a simple keyboard command. The foreground job can communicate with a private console terminal, other than the command console always used by the background job. Multiterminal support is available with the RT-11 SJ, FB, or XM monitors. The multiterminal support allows dial-up remote users to be connected via Bell 103-type modems. RT-11 does not support leased lines. A system generation must be performed for RT-11 multiterminal support.

System Generation — System generation is not included with DIGITAL installation. RT-11 is shipped already generated and ready to use. Users can do their own system generation. This is desirable for users who require special features (such as error logging, extended memory support, device time-out support, or multiterminal support), or a system highly optimized for their application. A minimum of a dual RX01 (or larger) disk and 32K bytes of memory are required in order to generate a custom RT-11 system. However, it is highly recommended that a user have at least 56K bytes of memory and an RK05 disk or larger to do a system generation. Diskette system generation also requires a hard copy terminal or a line printer and must be done via the procedure described in the *RT-11 Installation and System Generation Guide.* System generation is not supported on TU58 DECtape II or on the PDT-11/130. System generation on the PDT-11/150 series requires a dual floppy system, 60K bytes of memory, and a hard copy terminal or line printer.

RT-11 system programs include

EDIT — Text editor creates and modifies ASCII text files. Both character- and line-oriented commands are included with provisions for command interaction, editing macros, and file manipulation.

KED and K52 — Keypad editors designed for use on VT52, VT55, VT100, and VT105 video terminals. KED and K52 use the additional function keypad keys on those terminals to allow a user to position a visible cursor anywhere in a text file and to make changes and insertions easily.

MACRO-11 — Provides macro assembly language programming under RT-11. It has the facilities for using macro libraries, Cross Reference (CREF) listing, conditional assembly directives, and pseudo operators. MACRO-11 offers the convenience of global symbols for linking object modules and extensive error diagnostics.

LINKER (LINK) — Converts relocatable object modules produced by the assembler or optional compilers into a run-time format. Services performed by LINK include converting relative addresses to absolute addresses, resolving external references among object modules, and initializing all parameters required by the monitor to run a program.

Overlays do not require any special instructions or function calls. The user designates an overlay structure at linker command time and the linker automatically produces a runnable memory image with the desired overlays. Ease of use of the overlay structure is of primary importance, but the power of the overlay system has not been compromised. The system allows multiple overlays in up to seven memory regions, subject only to the memory size. Under the XM monitor, the linker allows overlays to be loaded into extended memory at run-time and executed directly from that memory.

PERIPHERAL INTERCHANGE PROGRAM (PIP) — Allows transfer of files (ASCII or binary) between any RT-11 supported devices. PIP also allows the user to rename, protect, and delete files.

RESOURCE (RESORC) — Examines the currently running RT-11 system and displays useful information about the status of the monitor and the system configuration.

LIBRARIAN (LIBR) — Creates and maintains libraries of commonly used object module subroutines and assembly language macro definitions. The linker uses object libraries (as specified by the user) to resolve undefined external symbols.

DEVICE UTILITY PROGRAM (DUP) —Performs general utility functions in support of mass storage devices. Among DUP functions are initializing devices, scanning for bad blocks, and consolidating free space on a disk.

DIRECTORY (DIR) — Used to list the file directory for file-structured devices. DIR allows directory listing sorted by file name, file type, date, size, or position.

UTILITIES —

- DUMP allows the contents of a file to be printed in various formats.
- SRCCOM is an ASCII file comparison program that helps locate the changes made in source files.
- BINCOM is a binary file comparison program that helps locate the changes made in binary files.
- FILEX allows transfer of RT-11 files to and from some other operating system environments.
- FORMAT allows the user to format RK05, RK06, and RK07 disks, and RX02 diskettes. FORMAT also provides disk verification by writing patterns and reading them on each block of the volume.

SYSTEM JOBS — FB monitor can optionally support up to six extra jobs, called system jobs. These system jobs are programs supplied by DIGITAL and run in parallel with user-written foreground and background jobs. System job support is available only through system generation. DIGITAL does not support user-written system jobs.

Two RT-11 utilities (Error Logger and Queue Package) can run as system jobs (in addition to the background and foreground jobs) if system job support is enabled through the system generation process. The system job feature is available to the FB and XM monitors only. Both utilities also run as simple foreground jobs.

The Error Logger keeps statistics on successful and unsuccessful transfers for random access devices. System generation must be performed for error logging support.

The Queue Package sends files to any valid RT-11 device; it is particularly useful for queuing files for subsequent printing. If run as a simple foreground job, the Queue Package does not require system generation.

DEBUGGING AND PATCHING — Provides the following utilities to aid users in finding, diagnosing, and correcting programming errors.

- ODT — On-line Debugging Technique utility aids in interactive program debugging.
- VDT — Virtual Debugging Technique utility aids in the interactive debugging of extended memory programs and multiterminal applications.
- PATCH — Performs minor modifications to memory image files that are output by the pre-RT-11, Version 4.0 linkers. PATCH cannot be used to modify files linked with the RT-11, Version 4.0 linker.
- SIPP — Save Image Patch Program can be used to patch files that were linked with the RT-11, Version 4.0 linker (and also some files linked with the Versions 03 and 03B linkers).
- PAT — Object module patch program performs minor modifications to files in object format.
- SLP — Source file patch program provides an easy way to make changes to source files.

Autopatch, the automated patching facility provides a means of applying patches by using machine-readable command files, thus avoiding the effort and potential errors associated with keying patches manually. The RT-11 software distribution kit includes one autopatch kit, containing previously published patches.

Subsequent autopatch kits are available on a periodic basis as an optional, separate service.

MINIMUM HARDWARE REQUIRED:

A minimum RT-11 system must include the following:

- Processor: PDP-11 or LSI-11 or PDT-11 processor (see Table I for specific CPUs supported)
- Memory: At least 24K bytes of memory for SJ or at least 32K bytes of memory for FB or greater than 64K bytes for XM. At least 32K bytes of memory are required to perform a system generation.

- Console terminal: LA30, LA34, LA36, LA38, LA120, LS120, LT33, LT35, VT05, VT50, VT52, VT55, VT100, or VT105
- Clock: Line frequency clock for FB operation
- EIS, KT11 Memory Management Unit, and line frequency clock for XM
- System device: Every RT-11 system must have a random-access mass storage device (or TU58 cartridge tape*) for the system device (see Table I for specific devices).
- System backup device: Every RT-11 system must have a system backup device other than the system device (see Table I).

  Same as software distribution device, or any supported removable disk cartridge or disk pack device.
- Software distribution device: Either the system device or the system backup device must also be a distribution medium.

  9-track (800 BPI) magnetic tape (for system device that is either RK05, RK06, RK07, RL01, RL02, or RP03)

  RK05, RL01, or RL02 cartridge disk

  RX01 or RX02 diskette

  TU58 DECtape II cartridge tape

Table I
RT-11 Minimum Hardware Requirements

Processor	Minimum Memory	System Device Medium	Backup Device Medium
PDT-11/130	32K bytes	TU58	TU58
PDT-11/150	32K bytes	RX01	RX01
PDP-11 Unibus 11/04, 11/05, 11/10, 11/20, 11/24, 11/34, 11/35, 11/40, 11/44, 11/45 11/50, 11/55 11/60	24K bytes (32K bytes required for RK06 or RK07 system device)	RK05 RK06* RK07* RL01 RL02 RP03 RX01 RX02	Magnetic Tape RK05 RL01 RL02 RX01 RX02 TU58
PDP-11/03 (LSI-11)	24K bytes	RK05 RL01 RL02 RX01 RX02 TU58	RK05 RL01 RL02 RX01 RX02 TU58
PDP-11/23 PDP-11/23-PLUS	64K bytes	RL01 RL02 RX02 TU58	RL01 RL02 RX02 TU58

*RT-11 is not distributed on RK06 or RK07 disk cartridges.

OPTIONAL HARDWARE:

NOTE: In some cases, not all hardware features of the following options are supported. Hardware or software restrictions can limit the number of devices that a given system can support.

- Additional memory to a system total of 56K bytes (60K bytes with MSV11-DD memory or PDT-11) for systems running the SJ or FB monitor
- Additional memory to a system total of 248K bytes for systems running the XM monitor
- KK11-A cache memory for PDP-11/34
- KW11-P or KWV11-A programmable real-time clock

I/O Peripherals

- One CR11 or CM11 card reader
- One LA180, LAV11, LPV11, LP11, LP25, LS11, or LP35 line printer
- One PC11 paper tape reader/punch
- One VT11A/VS60 Graphics Display processor

Magnetic Tape Devices

- One TC11 DECtape controller and up to four dual transports (total of eight units)
- Up to eight TU16/TE16 and/or TU45 magnetic tape drives (32K bytes required)
- Up to eight TU10/TE10 and/or TS03 magnetic tape drives (32K bytes required)
- Up to four TS11 (1600 BPI) magnetic tape drives (32K bytes required)
- Up to two TU58 DECtape II dual cartridge tape systems (total of four units) interfaced via DL11, DLV11, or MXV11

Disk Devices

- One RK11 or RKV11 disk cartridge controller with up to eight RK05J or RK05F disk drives (RK05F counts as two drives)
- One RK611 or RK711 disk cartridge controller with up to eight RK06 and/or RK07 disk drives (32K bytes required)
- One RL11 or RLV11 disk cartridge controller with up to four RL01 and/or RL02 disk drives
- RPR11 disk controller with up to four RP03 disk pack drives
- Up to two RX11 or RXV11 floppy disk systems with dual RX01 diskette drives (total of four units)
- Up to two RX211 or RXV21 floppy disk systems with dual RX02 diskette drives (total of four units)

Terminals

- The maximum input data rate for a single terminal is 300 baud. The aggregate total input data rate for a system is 4800 baud.

- The output baud rate can be set to any speed. RT-11 sends output as fast as possible, depending on the capacity of the CPU and the nature of its load.
- LA30, LA34, LA36, LA38, LA120, LT33, LT35, VT05, VT50, VT52, VT55, VT100, and VT105 terminals.
- One hard-copy device connected to a DL(V) interface for use as a serial line printer.

*Terminal Interfaces**

- Up to eight lines
  DL11-A, B, C, D, E, W
  DLV11-E, F
  DLV11-J (counts as four lines)
  MXV11-AA, AC
- Up to sixteen lines (up to eight lines on LSI-11, PDP-11/03)
  DZ11-A, B, C, D, E, F
  DZV11
  DFT11-AB cluster controller (PDT only)
- No more than 17 lines total, including console

*Communications Interfaces**

- DL11 or DLV11-E single-line interfaces
- Up to two DZ11 asynchronous 8-line multiplexer (32K bytes required)
- DZ11-E asynchronous 16-line multiplexer (32K bytes required)
- Up to four DZV11 asynchronous 4-line multiplexer (32K bytes required)
- PDT-11 modem port

* NOTE: RT-11 provides remote terminal support only for dial-up lines; RT-11 does not support leased lines.

PREREQUISITE SOFTWARE:

None

OPTIONAL SOFTWARE:

BASIC-11/RT-11
DECnet-RT
FMS-11/RT-11
FORTRAN IV/RT-11
MRRT-11
MU BASIC-11/RT-11
RT-11 2780/3780 Protocol Emulator

TRAINING CREDITS:

ONE (1) - Training Credit applies only to options that include support services. Consult the latest Educational Services Catalog at your local DIGITAL office for the available courses, course requirements, and guidelines.

SUPPORT CATEGORY:

DIGITAL SUPPORTED

RT-11 is a DIGITAL Supported Software Product.

SOFTWARE INSTALLATION:

DIGITAL INSTALLED

DIGITAL installation is required for Software Product Support. There is no charge for installation if performed at the time of system installation. DIGITAL installed software products, except for operating systems, are subject to an add-on installation fee when purchased subsequent to system installation.

System generation is not included with DIGITAL installation.

SOFTWARE PRODUCT SUPPORT:

RT-11 includes standard warranty services as defined in the Software Support Categories Addendum of this SPD.

ORDERING INFORMATION:

All binary licensed software, including any subsequent updates, is furnished under the licensing provisions of DIGITAL's Standard Terms and Conditions of Sale, which provide in part that the software and any part thereof may be used on only the single CPU on which the software is first installed, and may be copied, in whole or in part (with the proper inclusion of the DIGITAL copyright notice and any DIGITAL proprietary notices on the software) only for use on such CPU.

All source licensed software is furnished only under the terms and conditions of a separate Software Program Sources License Agreement between Purchaser and DIGITAL.

Options with no support services are only available after the purchase of one supported license.

A single-use, license-only option is a license to copy the software previously obtained under license.

Sources and/or listings options are only available after the purchase of at least one supported license and after a source license agreement is in effect.

The following key (D, E, G, H, Q, R, X, Y, Z) represents the distribution media for the product and must be specified at the end of the order number, e.g., QJ013-AD = binaries on 9-track 800 BPI Magtape (NRZI).

D = 9-track 800 BPI Magtape (NRZI)
E = RK05 Disk Cartridge
G = TU58 DECtape II Cartridge*
H = RL02 Disk Cartridge
Q = RL01 Disk Cartridge
R = Microfiche
X = RX02 Double Density Diskette
Y = RX01 Floppy Diskette
Z = No hardware dependency

* The TU58 is to be used in a stand-alone, lightly loaded environment. If used as a file device in a heavily loaded environment, it can degrade system performance.

NOTE: Only TU58 and RX01 distribution kits contain additional volumes that are bootable on the PDT-11.

QJ013 -A— Single-use license, binaries, documentation, support services (media: D, E, G, H, Q, X, Y)

QJ013 -D— Single-use license-only option, no binaries, no documentation, no support services (media: Z)

Sources/Listings Options

NOTE: Source kits provided by DIGITAL do not necessarily contain all the source files used by DIGITAL to build the binary kits.

QJ013 -E— Sources (media: D, E, H, Q)

QJ013 -F— Listings (media: R)

Update/Unsupported Options

Users of RT-11 whose specified Support Category warranty has expired may order under license the following software option as an update to an earlier version. The option may also be purchased for use on a second or subsequent CPU, in conjunction with a binary, single-use, license-only option. Options are distributed in binary form on the appropriate medium and include no installation or other services unless specifically stated.

QJ013 -H— Binaries, documentation (media: D, E, G, H, Q, X, Y)

QJ013 -H— Right to copy for single-use, no binaries, no documentation (media: Z)

Sources/Listings Update Options

The following options are available to licensed users as updates to sources/listings options. The update is distributed in source form on the appropriate medium and includes no installation or other services unless specifically stated.

QJ013 -N— Sources update; requires RT-11, Version 4.0 binary distribution for source assembly (media: D, E, H, Q)

QJ013 -N— Listings update (media: R)

Miscellaneous Options

QJ013 -G— Documentation-only kit (media: Z)

ADDITIONAL SERVICES:

The following post-warranty Software Product Services for this software product are available to licensed customers:

- Self-Maintenance Service
- Basic Service
- DECsupport Service

Autopatch for Self-Maintenance Service is an optional service.

Customers should contact their local DIGITAL office for additional information on the availability of these services.

Software Product Description

PRODUCT NAME: CTS-300, Version 7.0
Commercial Transaction System

SPD 12.9.14

DESCRIPTION:

CTS-300 is a disk based, single-user/multiuser system designed to support commercial applications on small PDP-11 based DEC Datasystems or equivalent configurations. CTS-300 applications are written in DIBOL, DIGITAL's own Business Oriented High-Level Language. DIBOL is similar to COBOL in that it has a Data Division and a Procedure Division, although DIBOL is a more concise language. DIBOL provides the application programmer with the ability to do data manipulation, arithmetic expression evaluation, table subscripting, record redefinition, external calls to other programs, spooling, sequential and random access, and indexed access to files. Exception conditions cause control to transfer to a user-specified statement, where the cause of the condition can be determined.

The following table illustrates the user/job capacity versus minimum configurations under some of the Datasystems:

	D315 (11/23)	D330 (11/23)	D340 (11/24)	D350 (1134A)
No. of users	1-4	1-8	1-12	1-12
No. of jobs	1-4	1-16	1-16	1-16
Memory	64-256K bytes	128-256K bytes	128-256K bytes	128-256K bytes
Disk capacity	1-11M bytes	10-40M bytes	10-224M bytes	10-224M bytes

Although 12 users is the stated limit, most application environments should use caution beyond the eighth user because terminal response time is likely to degrade as more users are added to the system. Particular care needs to be exercised with program size, overlay technique, file size and layout, etc.

CTS-300 is a packaged software system consisting of the RT-11 Operating System, a choice of three run-time systems, and a number of utilities. Since RT-11 is included in this package, a CTS-300 licensee can order any RT-11 dependent product without reordering a specific license for RT-11.

Although CTS-300 is a layered product, it should be noted that DIBOL will not run concurrently with other languages.

Run-Time Systems (RTS)

SUD — Single-user DIBOL RTS allows one DIBOL user or job to be run on a system. It is designed for an entry level system running in 32K bytes of memory. SUD runs on all RT-11 monitors (SJ, FB, XM). SUD also runs as the background job in the FB monitor with a line printer spooler running in the foreground. Control returns to the monitor upon completion of the SUD program.

TSD — Time Shared DIBOL RTS allows one to two DIBOL users or two to four DIBOL jobs to run simultaneously. It is designed for a medium-sized system running in 56K bytes of memory. File sharing facilities at the record level permit multiple users to share and update the same data files. TSD is an executive that normally is run on the SJ monitor SYSGENed for multiterminal support. TSD controls loading of DIBOL programs, program scheduling, detached programs, file-sharing, record I/O, intertask communication, as well as other less visible functions. A DIBOL line printer spooler also runs in the TSD environment. Program completion, or the detaching of a program, returns control to the TSD executive. Time slicing and scheduling is governed by the clock.

XMTSD — Extended Memory TSD RTS allows 1 to 12 DIBOL users or 1 to 16 DIBOL jobs to run simultaneously (up to 12 could be attached to terminals with the remainder running in a detached environment). Designed for larger systems running in 128K to 248K bytes of memory using the XM monitor, XMTSD has the same features and capabilities found in TSD. In addition, XMTSD offers multiuser program development. When XMTSD is loaded in the foreground of the XM monitor, the background is reserved for queuing and executing indirect command files. These files can contain compile and link instructions. Programs can be created and modified by running a CRT oriented editor called DKED, which executes as a DIBOL job. More than one copy of DKED can run concurrently.

NOTE: Relinking is required when changing from SUD to TSD or XMTSD or vice versa.

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CTS-300 Utility Programs

CTSGEN — The CTS-300 Generator Program is an interactive utility program that tailors the system to a user's needs. It can create a SUD, TSD or XMTSD RTS to match the specific hardware and software of the installation. Through CTSGEN a user specifies such items as the total number of terminals, jobs, messages, files open at one time, and support for DDT and forced job start-up.

DDT — The DIBOL Debugging Technique is a system utility that allows for user/programmer interaction with a DIBOL program while it is executing. Using DDT, a programmer can set predetermined stopping points to suspend the program, examine and/or alter the contents of variables, and trace through lines of a DIBOL program. These features allow a programmer to locate problems, correct data values, and test programming errors directly, before reediting and recompiling.

DECFORM — The DECFORM Data Entry utility is a program generator that processes screen format directives and produces a DIBOL program that, when compiled and executed, performs specified data entry functions. In addition to defining screen formats, auto-duplication, alphabetic or decimal checking, range checking, field totaling, cross-field validation, and auto-increment characteristics, DECFORM makes possible additions, inquiries, changes, and verifications to sequentially ordered files or Indexed Sequential Access Method (ISAM) files. Deletions are possible only with ISAM files. DECFORM is primarily a tool to facilitate and reduce program development efforts. Its major use is in data file creation, modification, and inquiry.

DKED — DKED is a keyboard editor that runs as a job only under SUD or XMTSD. It is designed to run on a VT52 or VT100, in VT52 mode, and is used to create and modify ASCII text files.

DICOMP — DICOMP is the DIBOL compiler. It translates DIBOL source programs into interpretive code that, when linked, can be executed by the three RTS. It also supports directives such as, LIST, NOLIST, INCLUDE, and PAGE.

DMS-300 — Data Management Services provide capabilities for handling sequential, random, or keyed records in files. Records in an ISAM file can be keyed by a symbolic value. DMS-300 also supports file sharing and multivolume files. Sequential and random file processing are standard in every RTS. ISAM is an option. DIBOL has special language statements to use these file access methods efficiently.

ISMUTL — ISAM files are created and maintained by means of the ISAM Utility Program. Its three major functions are CREATE, STATUS, and REORGANIZE. These functions can be executed interactively or can be automated.

- CREATE is used to create a new ISAM file. Options are provided to create an empty ISAM file or convert a sequential file to an ISAM file. The CREATE function can be carried out without operator intervention.

The STATUS and REORGANIZE functions can be interactive or under DIBOL program control.

- STATUS provides a concise view of the current structure of the file: length of keys, records, and groups, levels of indexing, and information about the use of load exclusion and overflow areas in the data file.
- REORGANIZE is used to reorganize an ISAM file for more efficient operation. It is used when most of the groups in the file are filled and the overflow area or append area is filled. The effect of REORG is to redistribute the records of the file so it appears to be a newly created file.

SORT — A MACRO sort that is fast and easy to use with merge capability. This SORT operates with fixed length records, either as a single user DIBOL (SUD) program or as an XMTSD job. SORT does not require generation phase. SORT accepts sort parameters via a terminal or under application control. The user can use one of four different formats for specifying the desired sort parameters. The user can specify up to seven files and up to eight keys to control the order of the output file. The SORT direction can be either ascending or descending. There are a number of other parameters the user can invoke in running the SORT, such as the maximum amount of memory to be used by the SORT, all of which are optional parameters but are provided so that the user can achieve maximum sort efficiency. SORTG/SORTM parameters will work with MACRO SORT. MACRO SORT is a single volume sort.

LPTSPL — Line Printer Spooler utility, which runs under TSD/XMTSD RTS, includes file recovery facilities, suspension of the spooling operation, queueing, and assignment of default printers. The LPTSLP.TSD spooler is a Que.TSD program that accepts requests to be executed by the spooler, such as queueing files to be printed, listing pending requests, terminating, interrupting, and modifying requests. The Que.TSD program provides the terminal interface, while the spooler program LPTSPL.TSD controls the spooler satellite programs (controls up to four printers).

In response to the LPQUE statement, the spooler program receives information on the file to be printed. When the spooler is started, an I/O channel is opened to the printer(s) and printing begins unless the printer is busy, in which case spooler operation is suspended until the printer becomes available.

The queue manager allows for operations at command level or at program level. At command level the user simply executes a single command string and returns to the timesharing system. While at program level, the user can execute a number of commands, until exiting from the program. A flexible queueing facility allows the user to select from 12 options.

In the SUD.RTS, the spooler, LP SP1.REL, outputs to only one of the four line printers, while operating as a foreground job. This spooler can queue up to ten print jobs. DIBOL programs in the background submit files for printing to the spooler.

SORTG/SORTM — The SORT/MERGE utility permits the user to define the parameters for the sorting and/or merging of data files (fixed length record). A DIBOL program is then generated by the system to perform the required sort and/or merge. The user can specify up to eight key fields to control the ordering of the output, in either ascending or descending sequence.

STATUS — The job and system state program, STATUS, retrieves and displays information about the TSD or XMTSD RTS. STATUS passes the following information to a line printer or a terminal:

- Updates changing status information at regular intervals
- Available free core
- List of active jobs
- Ability to examine a message
- Detailed information of a specified active job
- Detailed information of pending messages
- List of pending line printer jobs
- Characteristics of the timeshared RTS
- Ability to terminate jobs or remove messages

MINIMUM HARDWARE REQUIRED:

CTS-300 is intended to run primarily on DEC Datasystem 300s; it will operate, however, on other similarly configured hardware with the following minimum:

- VT52, VT100, LA34, LA36, LA38, or LA120 console terminal. A VT52 or VT100 terminal (in VT52 mode) is required for use with DECFORM, DKED, ISMUTL, and STATUS utilities.
- The Extended Instruction Set (EIS or equivalent) for XMTSD
- A line frequency clock

Memory management hardware is needed in the D330 and D350 series to use extended memory (memory above 56K bytes); it is needed, as well, in any 11/23, 11/24, 1134A, 11/44, or 11/60 processor intending to use extended memory.

Memory required for SUD — 32K bytes; TSD — 56K bytes; XMTSD — 128K bytes

OPTIONAL HARDWARE:

The following options are available for D315 systems:

- Additional memory up to a system total of 256K bytes
- LA120 Serial Printer for a combined system total of four serial devices
- VT100 Advanced Video Option (VT1XX-AB)
- RLV21 disk cartridge system with controller

The following options are available for D330 systems:

- Additional memory up to a system total of 256K bytes
- VT100 advanced video options (VT1XX-AB)
- Up to a system total of eight VT52, VT100, LA34, LA36, LA38, or LA120 terminals
- Up to four LAV11 or LPV11 line printers
- Up to eight DLV11 serial asynchronous line interfaces (one per terminal) for eight lines total
- Up to two DZV11 asychronous line multiplexers for eight lines total
- RLV disk cartridge system with controller
- Up to four RL disk cartridge drives
- Up to two RXV floppy disk systems, with four drives total

NOTE: Due to limited expansion space inside a base 11/23 CPU system box, additional hardware options can require an expander box and cabinet.

The following options are available for D340 and D350 systems:

- Additional memory to a system total of 256K bytes
- VT100 advanced video option (VT1XX-AB)
- Up to a system total of twelve VT100, LA34, LA36, LA38, or LA120 terminals
- Up to four LS11, LA11, or LP11 line printers
- Up to eight DL11 asynchronous line interfaces (one per terminal) for eight lines total
- Up to two DZ11 multiplexers, with up to eight lines each
- RK11 disk cartridge system with controller
- RK05 disk cartridge drives, up to eight
- RL disk cartridge system with controller
- RL disk cartridge drives, up to four
- RPR11 disk pack system, with up to eight drives
- Up to two RX floppy disk systems, with four drives total
- RK611 disk pack system
- RK06 disk pack drives, up to a system total of eight
- RK711 disk pack system
- RK07 disk pack drive, up to a system total of eight

NOTE: A mix of up to eight RK06s and RK07s is possible

- CR11 card reader
- TME11 magnetic tape controller with up to eight TU10 transports or TJE16 controller with up to two TS03 transports.

NOTE: CTS-300 will run on the 11/24 and 11/44 processors, but will not access memory beyond 256K bytes.

PREREQUISITE SOFTWARE:

None

OPTIONAL SOFTWARE:

CTS-300 RDCP 2780/3780
CTS-300 DICAM/3271
DAP/CTS-300
DECtype-300
DIBS-11
QUILL

TRAINING CREDITS:

None

TRAINING:

An SPI course is included with those options that include support services. Consult the latest Educational Services Catalog, at your local DIGITAL office, for available courses and guidelines.

SUPPORT CATEGORY:

DIGITAL SUPPORTED

CTS-300 is a DIGITAL Supported Software Product.

SOFTWARE INSTALLATION:

DIGITAL INSTALLED

DIGITAL installation is required for Software Product Support. There is no charge for installation if performed at the time of system installation. DIGITAL installed software products, except for operating systems, are subject to an add-on installation fee when purchased subsequent to system installation.

CTS-300 installation requires a system generation. DIGITAL will perform the initial system generation if the system disk is an RL01, RL02, RK05, RK06, or RK07. DIGITAL will install RX02 floppy disk systems, on a time and materials basis, upon request.

SOFTWARE PRODUCT SUPPORT

CTS-300 includes standard warranty services as defined in the Software Support Categories Addendum of this SPD.

Software reliability is maintained at a high standard through the use of a number of DIGITAL-provided tools, which allow the user to correct software components. The *RT-11 Software Dispatch* is the official publication that contains both articles describing known problems and instructions for patching the affected software components. The Automated Patching facility (Autopatch) provides a means of applying patches by using the computer to read command files. This avoids errors that can occur when patches are keyed manually. Autopatch kits are available on a periodic basis, as an optional, separate service.

ORDERING INFORMATION:

All binary licensed software, including any subsequent updates, is furnished under the licensing provisions of DIGITAL's Standard Terms and Conditions of Sale, which provide in part that the software and any part thereof may be used on only the single CPU on which the software is first installed, and may be copied, in whole or in part (with the proper inclusion of the DIGITAL copyright notice and any DIGITAL proprietary notices on the software) only for use on such CPU.

All source licensed software is furnished only under the terms and conditions of a separate Software Program Sources License Agreement between Purchaser and DIGITAL.

Options with no support services are only available after the purchase of one supported license.

A single-use, license-only option is a license to copy the software previously obtained under license.

The following key (E, H, Q, T, V, X, Z) represents the distribution media for the product and must be specified at the end of the order number, e.g., QJ354-AE = binaries on RK05 Disk Cartridge.

E = RK05 Disk Cartridge
H = RL02 Disk Cartridge
Q = RL01 Disk Cartridge
T = RK06 Disk Cartridge
V = RK07 Disk Cartridge
X = RX02 Double Density Diskette
Z = No hardware dependency

CTS-300 is available in English, French, and German languages.

This software is available with a valid DEC Datasystem 315, 330, 340, or 350 that includes support services. License-only CTS-300 is available on those systems meeting the minimum hardware requirement.

D315	11/23 RX02 Floppy Disk Based
D315 PLUS	11/23 RL02 Cartridge Disk Based with RX02 Floppy Disk
D336	11/23 RL02 Cartridge Disk Based
D346	11/24 RL02 Cartridge Disk Based
D348	11/24 RK07 Cartridge Disk Based
D356	11/34A RL02 Cartridge Disk Based
D357	11/34A RK06 Cartridge Disk Based
D358	11/34A RK07 Cartridge Disk Based

QJ354 -A— English single-use license, binaries, documentation, support services (media: E, H, Q, T, V, X)

QJ354 -D— English single-use license-only option, no binaries, no documentation, no support services (media: Z)

QJ365 -A— French single-use license, binaries, documentation, support services (media: E, H, Q, T, V, X)

QJ365 -D— French single-use license-only option, no binaries, no documentation, no support services (media: Z)

QJ366 -A— German single-use license, binaries, documentation, support services (media: E, H, Q, T, V, X)

QJ366 -D— German single-use license-only option, no binaries, no documentation, no support services (media: Z)

Update/Unsupported Options

Users of CTS-300 whose specified Support Category warranty has expired may order under license the following software option as an update to an earlier version. The option may also be purchased for use on a second or subsequent CPU, in conjunction with a binary, single-use, license-only option. Options are distributed in binary form on the appropriate medium and include no installation or other services unless specifically stated.

QJ354 -H— Binaries and documentation (media: E, H, Q, T, V, X)

QJ354 -H— Right to copy for single use, no binaries, no documentation (media: Z)

Miscellaneous Options

QJ354 -G— English documentation-only kit (media: Z)

QJ365 -G— French documentation-only kit (media: Z)

QJ366 -G— German documentation-only kit (media: Z)

ADDITIONAL SERVICES:

The following post-warranty Software Product Services for this software product are available to licensed customers:

- Self-Maintenance Service
- Basic Service

Autopatch for Self-Maintenance Service is an optional service.

Customers should contact their local DIGITAL office for additional information on the availability of these services.

Software Product Description

PRODUCT NAME: DIBS-11/CTS-300, Version 1.0 **SPD 12.34.1**

DESCRIPTION:

DIBS-11 is a multiuser, wholesale distributor's accounting software package written in DIBOL to run under the CTS-300 Operating System. DIBS-11 comprises five accounting modules: Order Entry/Invoicing/Inventory, General Ledger, Accounts Receivable, Accounts Payable and Payroll.

Each of the DIBS-11 modules can be used standalone except Order Entry, which needs Accounts Receivable. DIBS-11 is designed to run with other accounting modules/systems when used with the DIBS-11 Account Group integrater. Each module can be integrated with the rest of the system for both data flow and/or data input verification.

The package is a base on which to build vertically-marketed packages. DIBS-11 is divided into routines by function, making it easier to maintain and modify.

Documentation is provided on both Word Processing diskettes and in printed form. DIBS-11 documentation consists of a User's Guide complete with Conversion Forms to DIBS-11, program explanations, and detailed, step-by-step operating instructions. A Manager's Guide covers system level aspects of the software inclusive of report, screen, file layouts, and data entry specifications. A site manager's guide covers day-to-day housekeeping functions, and a programmers guide helps a programmer live within the enviroment of the system. The guide also contains subroutine descriptions and index.

The DIBS-11 system makes use of the DIBS-11 standard menu driver subsystem, the account group subsystem, which is the path for data to get to the General Ledger, and DIBS-11 standard routines. It uses the standard maintenance programs and tables (parameters, defaults, and verification for nonintegrated systems).

Features

Order Entry/Invoicing/Inventory

- Multibranching
- Credit Management
- Regular Orders
- Completion Orders (after the fact orders)
- Cash Orders
- Branch Transfer Orders
- Debit Memos
- Credit Memos
- Dropshipped Orders
- Backorders
- Order Holding
- Switchable Freight Tax Flag (is freight taxable y/n)
- Switchable Item Tax Flag (is item taxable y/n)
- Bin Location Within Warehouse
- Perpetual Inventory
- Physical Inventory
- Switchable integration
- Detachable Inventory Module

General Ledger

- User-Definable Financial Structure
- User-Definable Accounting Periods
- Budgeting by Account
- Dynamic Account Numbering Scheme
- General Ledger Report Maker
- System Integrater (integrates G/L with other DIBS modules)

Accounts Receivable

- Multibranching
- Delinquent Account Management
- Finance Charge/Credit Management
- Label Printing
- Open Item or Balance Forward per Customer
- Daily or Monthly Aging
- Switchable General Ledger Interface

Accounts Payable

- Multibranching
- Partial Payment handling
- Flexible account number format
- Expense account handling within accounts payable
- Selectable general ledger interface
- Selectable (manual/automatic) voucher numbering

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February 1982
AE-K499B-TC

- Selectable (manual/automatic) discount taking
- Selectable (general ledger/table) account verification

Payroll

- Multibranching
- Multidepartments
- Multiple States
- Flexible Employee Number
- Flexible Social Security Number
- Flexible Labor Distribution Number
- 15 User-Definable Deductions Per Employee
- Five Standard Deductions Per Employee
- One Temporary Deduction Per Employee
- Switchable General Ledger Interface

Reports

Order Entry

- **Order Edit List (listing of edited orders)**
- **Order Status List (report on margin by order)**
- **Picking List (picking and packing list)**
- **Invoice Print (prints invoice)**
- **Item Backorder Advice (stock status report)**
- **Fillable Backorder Report (invoicable backorders)**
- **Order Selection/Item Posting (posting exceptions list)**

Invoicing

- Invoice Posting Report (invoice purge report)
- Order Preallocation Log (preallocated order list)
- Sales Journal (listing of sales by batch)
- Credit Status Codes (credit status code list)
- Customer Price Codes (customer price code list)
- FOB Codes (FOB code list)
- Freight Allowance Codes (freight alowance code list)
- Price Rule Table Listing (lists table definition)
- Reason Code List (memo reason codes list)
- Price Reason Codes Table Listing (price change reason codes)
- Ship VIA Codes Listing (ship VIA codes listing)

Inventory

- **Inventory Master File List (inventory information)**
- **Usage History (stock usage history report)**
- **Alternate Item Listing (alternate stock listing)**
- **Receivings Edit List (received into stock report)**
- **Receivings Posting Register (audit trail of receipts)**
- **Physical Count Batch Creation (list of worksheet batches)**
- **Physical Count Worksheet (stock taking worksheet)**
- **Physical Count Edit List (count sheet verification)**
- **Discrepancy Report (stock "shrinkage report")**
- Physical Count Batch Status (status of worksheet batches)
- Price Change Edit List (audit trail of price edits)
- Price Change Posting (list of posted price edits)
- Adjustments Posting Journal (journal of adjustments)
- Purchase Advice (item statistics list)
- Stock Level Status (stock level report)
- Stock Valuation Summary/Detail (inventory valuation report)
- Inventory System Options (lists system switches)
- Buyer Codes (buyer codes list)
- Commodity Codes (commodity codes list)
- Price Rule Codes (price rule codes list)
- Unit of Measure Codes (unit of measure codes list)
- Branch Transfer Mark-Ups (inter-branch markups report)

General Ledger

- Account File Report (standard chart list)
- Entity Master File List (components of structure)
- Entity Structure List (financial structure list)
- General Ledger (general ledger list)
- Month End Audit (period audit listing)
- Source-Cross Reference (system audit trail)
- Standard Chart of Accounts (skeletal account list)
- Transaction Edit (entry/edit list)
- Update Control (update log)
- Working Trial Balance (monthly trial balance)
- User-Defined Reports (user-definable reports)

Accounts Receivable

- Alphabetical Customer List (alphabetical customer list)
- Customer Master File List (customer and credit list)
- Cash Receipts Edit List (detailed list of receipts)
- Cash Receipts Journal (posting audit trial)
- Detailed Aging Analysis (customer aging)
- No Activity Exception Report (zero balance report)
- Delinquent Accounts Exception (exception by age report)
- Finance Charge Generation (calculated finance charges)
- Sales Edit List (edit list of sales)
- Sales Journal (sales posting audit trail)
- Summary Aging Analysis (Accounts Receivable aging)
- Taxable Sales Report (taxable sales report)

Accounts Payable

- Vendor File Listing (listing of vendors)
- Voucher Edit List (voucher edit audit trail)
- Voucher Journal (journal listing of vouchers)
- Partial Payments Edit List (listing of edited partials)

- Partial Payments Journal (journal listing of partials)
- Cash Requirements Report (report of cash requirements)
- Print Checks (checks)
- Check Register (check print audit trail)
- Detailed Aging Analysis (report aging payables)
- Summary Aging Analysis (aged payables report)
- Account Distribution Report (distribution listing)
- Alphabetic Vendor Listing (vendor file list)
- Vendor Analysis (vendor ranking report)
- Monthly Disbursements (monthly disbursements list)
- Monthly Check Register (detailed recap of checks)
- Expense Account List (list of expense accounts)
- Accounts Payable Option List (system switch settings)
- Branch Account List (account list by branch)

Payroll

- Employee Master File List (employee file list)
- Payroll Edit List (period audit trial)
- Payroll Journal (posting audit trail)
- Payroll Register (register of printed checks)
- Deduction Register (register of deductions))
- Payroll Checks & Stubs (check printing)
- Check Register (check printing audit trial)
- Departmental Distribution (branch distributions list)
- Labor Distribution Report (labor distribution report)
- Employee Pay History Report (employee pay history)
- Workmans Compensation (quarterly comp report)
- Earnings, FUI, SUI, & FICA (unemployment insurance list)
- Alphabetical Employee List (alpha employee list)
- Payroll System Options List (system switch settings)
- Department Name List (listing of departments)
- Deduction Table List (user-defined deductions)
- Federal Tax Table List (user-defined federal tax)
- Miscellaneous Tax Table (FICA & FUI list)

MINIMUM HARDWARE REQUIRED:

Single-user, Nonintegrated System

- PDP-11/03, 11/23, or 11/34 with 64KB of memory, one VT100, one line printer, and two RL01s

Multiuser, Integrated System

- PDP-11/23 or 11/34 with 128KB of memory, one VT100, one line printer, and two RL02s

OPTIONAL HARDWARE

Supports any unit record or mass storage device supported by the prerequisite software, except any mass storage smaller than RL02.

PREREQUISITE SOFTWARE:

CTS-300 Operating System, Version 6.0

Accounts Receivable Module is required to run Order Entry/Invoicing/Inventory.

OPTIONAL SOFTWARE:

None

TRAINING CREDITS:

None

SUPPORT CATEGORY:

CUSTOMER SUPPORTED

DIBS-11 is provided on an "as is" basis withouth warranty expressed or implied. Any software services, if available, will be provided at the then current charges.

ORDERING INFORMATION:

All binary licensed software, including any subsequent updates, is furnished under the licensing provisions of DIGITAL's Standard Terms and Conditions of Sale, which provide in part that the software and any part thereof may be used on only the single CPU on which the software is first installed, and may be copied, in whole or in part (with the proper inclusion of the DIGITAL copyright notice and any DIGITAL proprietary notices on the software) only for use on such CPU.

All source licensed software is furnished only under the terms and conditions of a separate Software Program Sources License Agreement between Purchaser and DIGITAL.

A single-use license-only option is a license to copy the software previously obtained under license.

The following key (H, Q, V, Z) represents the distribution media for the product and must be specified at the end of the order number, e.g., QJA36-CH = binaries on RL02 Disk Cartridge.

H = RL02 Disk Cartridge
Q = RL01 Disk Cartridge
V = RK07 Disk Cartridge
Z = No hardware dependency

QJA30 -C— DIBS-11 packaged system, single-use license, binaries, documentation; includes single-use license for a support kit subject to the binary licensing conditions of DIGITAL's Standard Terms and Conditions of Sale (media: H, V)

QJA30 -D— DIBS-11 packaged system, single-use license only (for both binaries and support kit), no code, no documentation, no support services (media: Z)

QJA31 -C— DIBS-11/Order Entry/Invoicing/ Inventory Module, single-use license, binaries, documentation; includes single-use license for a support kit subject to the binary licensing conditions of DIGITAL's Standard Terms and Conditions of Sale (media: H, Q, V). (Prerequisite Software: QJA34-C-Accounts Receivable)

QJA31 -D— DIBS-11/Order Entry/Invoicing/ Inventory Module, single-use license only (for both binaries and support kit), no code, no documentation, no support services (media: Z)

QJA33 -C— DIBS-11/General Ledger Module, single-use license, binaries, documentation; includes single-use license for a support kit subject to the binary licensing conditions of DIGITAL's Standard Terms and Conditions of Sale (media: H, Q, V)

QJA33 -D— DIBS-11/General Ledger Module, single-use license only (for both binaries and support kit), no code, no documentation, no support services (media: Z)

QJA34 -C— DIBS-11/Accounts Receivable Module, single-use license, binaries, documentation; includes single-use license for a support kit subject to the binary licensing conditions of DIGITAL's Standard Terms and Conditions of Sale (media: H, Q, V)

QJA34 -D— DIBS-11/Accounts Receivable Module, single-use license only (for both binaries and support kit), no code, no documentation, no support services. (media: Z)

QJA35 -C— DIBS-11/Accounts Payable Module, single-use license, binaries, documentation; includes single-use license for a support kit subject to the binary licensing conditions of DIGITAL's Standard Terms and Conditions of Sale (media: H, Q, V)

QJA35 -D— DIBS-11/Accounts Payable Module, single-use license (for both binaries and support kit), no code, no documentation, no support services (media: Z)

QJA36 -C— DIBS-11/Payroll Module, single-use license, binaries, documentation; includes single-use license for a support kit subject to the binary licensing conditions of DIGITAL's Standard Terms and conditions of Sale (media: H, Q, V)

QJA36-D— DIBS-11/Payroll Module, single-use license only (for both binaries and support kit), no code, no documentation, no support services (media: Z)

Upgrade Options

Customers who are currently licensed users of DIBS-11/CTS-500 may obtain this new product by purchasing a license to an upgrade kit for use on the same CPU as their previous license.

QJA60 -C— Single-use license, binaries, documentation, no support services (media: H, V)

ADDITIONAL SERVICES:

None

DECUS

WHY YOU SHOULD JOIN DECUS

- SYMPOSIA
- PROGRAM LIBRARY
- TECHNICAL PUBLICATIONS
- SPECIAL USER GROUPS

DECUS (the Digital Equipment Computer Users Society), a worldwide association of customers and employees, provides a forum for the exchange of useful information, new program packages, and other innovations among those who use and supply the products of Digital Equipment Corporation.

Founded in 1961, DECUS is one of the largest and most active associations of its type in the world. Its objectives are to advance the effective utilization of computers, computer peripheral equipment, and software manufactured and marketed by Digital Equipment Corporation, by promoting the interchange of information concerning their uses; advance the art of computation through mutual education and exchange of ideas of information; establish standards and provide channels to facilitate the exchange of computer programs among DECUS members; provide feedback to the computer industry on equipment and software needs; and to reduce the duplication of development efforts.

DECUS membership is free--upon application--to owners of DIGITAL computers and to their computer-interested employees. Membership carries important benefits and opportunities; among them are access to the program library; membership in local, regional, and national organizations; invitations to symposia dedicated to optimal use of DIGITAL equipment; opportunity to present papers and workshops on your own new ideas; and, finally, access to special interest groups dedicated to particular uses, languages, operating systems, and hardware configurations.

The program library maintained by DECUS contains over 1700 active software packages written and submitted by members and DIGITAL employees, and available to members for the media fee and reproduction cost only. Programs in the library range from enhanced editors and cross compilers to statistics packages and games. Of particular interest to college and university customers, for example, might be a package of programs for registration, class scheduling, dormitory management, and annual giving records. A laboratory user could take advantage of various statistical packages, or programs that perform Fourier transforms or least squares fitting. There are programs for circuit analysis, resonance simulation, blood-count evaluation, and stress testing, and scores of others which medical, scientific, or engineering customers could employ. Business people can find accounting packages, data analysis and payroll programs among the library's offerings. In addition, of course, there is a wide range of text editing, display graphics, and enhanced utility programs available.

Local, regional, and national DECUS organizations give members the opportunity to meet other DIGITAL customers and employees in an informal setting. From the monthly local meeting to the semiannual national symposium, the members can discuss their ideas, can learn what others are doing, and can give DIGITAL feedback necessary in improvement and future development of important products. Often, the national meetings in the various countries also provide the stage for major new product announcements by the company, and a showplace for interesting developments in both hardware and software technology. At any meeting a member might describe ideas and programs he has implemented, or fine tuning that has been achieved for a particular application. Members give papers, participate in panel discussions, lead workshops, or conduct demonstrations for the benefit of other members.

DECUS also publishes newsletters focusing on special interest, technical books that contain the compilation of symposia presentations; and a society newsletter.

Many members derive a particular benefit from joining DECUS Special Interest Groups. Special Interest Groups often meet as subsets of regional and national meetings, or they may meet on their own, to discuss their special interest. Here, all RSTS/E users, or everyone interested in COBOL, for example, can have a chance to get together and discuss topics of mutual importance. At present there are more than 20 Special Interest Groups (SIGs) in the U.S. alone. Many of the SIGs print newsletters and disseminate valuable technical information to members. The SIGs really are the front-line of mutual help and problem solving.

DIGITAL provides DECUS with administrative personnel and office space around the world, but the organization is run by its members, who act as speakers for conferences, planners for meetings, editorial and production talent for newsletters and minutes, and the inventors of the ideas and new programs necessary to keep the library up to date. Belonging to DECUS is a valuable adjunct to owning DIGITAL equipment on both the program exchange and the information exchange fronts.

continued

To obtain a DECUS membership form, complete the form below and return it to the appropriate chapter office.

CHAPTER	ADDRESS
AUSTRALIA (Australia, Brunei, Indonesia, Malaysia, New Zealand, Singapore)	DECUS Australia P.O. Box 384 Chatswood NSW 2067 Australia
CANADIAN (Canada)	DECUS Canada P.O. Box 13000 Kanata, Ontario K2K 2A6 Canada
EUROPEAN (Europe, Middle East, North Africa, Russia)	DECUS Europe P.O. Box 510 12, avenue des Morgines CH-1213 Petit-Lancy 1/GE Switzerland
U.S. (U.S. and all other countries)	DECUS U.S. Chapter One Iron Way Marlboro, Massachusetts 01752 U.S.A.

Please send me a DECUS membership form.

NAME: _____
(First) (Last/Family Name)

COMPANY: (INSTALLATION) _____

ADDRESS: _____

_____

_____

_____
(City, Town, State/Province, and Zip/Postal Code)

COUNTRY: _____

TELEPHONE: _____ TELEX _____

I obtained this form from _____

July 1980

SOFTWARE PROBLEMS OR ENHANCEMENTS

Questions, problems, and enhancements to DIGITAL software should be reported on a Software Performance Report (SPR) form and mailed to the SPR Center at one of the following Digital Offices: *(SPR forms are available from the SPR Center).*

Areas Covered	SPR Center
United States; remainder of Far East, Middle East, Africa Latin America	Corporate Administrative Systems Group P.O. Box F Maynard, MA 01754
Canada	Digital Equipment of Canada, Ltd. P.O. Box 13000 Kanata, Ontario Canada, K2K 2A6
United Kingdom, Bahrein, Egypt, Iraq, Jordan, Kuwait, Lebanon, Libya, Qatar, Oman, Saudi Arabia, Syria, United Arab Emirates, Yemen. Arab Republic	Digital Equipment Co. Ltd. 2 Cheapside GB - Reading, Berkshire RG1 7AA England
Australia, New Zealand	Digital Equipment Aust. Pty. Ltd. P.O. Box 384 Chatswood, New South Wales 2067 Australia
Brazil	Digital Equipment Comercio e Industria Ltda. Avenida Augusto Severo, 156-A 20021 Rio de Janeiro, RJ Brazil
Caribbean	Digital Equipment Latin America P.O. Box 11038 Fernandez Juncos Station Santurce 00910 Puerto Rico
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