RT-11

June 1978

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THE SOFTWARE DISPATCH

digital
SOFTWARE SERVICES
OPERATIONS GROUP

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RT-11 SOFTWARE DISPATCH
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The RT-11 Software Dispatch complements the **RT-11 V3B Software Dispatch Review.** It publishes new and revised Software Product Descriptions, programming notes, software problems and solutions and documentation corrections. Much of the material is developed from answers to customer Software Performance Reports (SPRs) significant to the general audience.

The material is formatted to establish a reference notebook for the customer's software interests. The following products are supported in the **RT-11 Software Dispatch:**

APL-11 V1
BASIC/RT-11 V1B, V2
BASIC/RT-11 Extensions
CTS-300 V3, V4
CTS-300 DICAM V1
CTS-300/DIS V1
DECnet/RT V1
FOCAL/RT-11 V1B
FORTRAN/RT-11 Extensions V1B
FORTRAN/RT-11 LSI Extensions V1
FORTRAN IV/RT-11 V1C, V2
GAMMA-11 F/B V2
INDUSTRIAL BASIC/RT-11 V1
LA-11 V3
LV11/RT-11 Plotting Package V2
MU BASIC/RT-11 V1
PDL/RT-11 V1
PEAK-11 V2
PLOT-11/RT-11 V1
REMOTE/RT-11 V1
RT-11 V3, V3B
RT-11/2780 V2
SSP-11/RT-11 V1

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

DISTRIBUTION: The Dispatch is directed to one software contact (the system manager) at each licensed Category A and B software installation. No mailing will be made to addresses without a software contact.

Address changes and requests for information about maintenance service after the first year should be sent to the nearest DIGITAL Field Office. For address changes, include the new address and mailing label from the most recently received publication.

Eleanor F.Hunter, Editor
Roxanne Alexander, Associate Editor

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Maynard, Massachusetts

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TYPESET-8
TYPESET-11

34-5/78

TABLE OF CONTENTS

TABLE OF CONTENTS (CONT.)

USER LETTER
Jan Fair, SPR Administration

Customers (and others) have brought to our attention the need for additional information regarding SPR service, particularly as it involves SPR Administration. The following represents our attempt to fulfill this need. Your comments and suggestions are most welcome.

HOW TO MAKE THE BEST USE OF SPR FORM

What WE Can Do for YOU

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

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

3. SPRs marked *SOFTWARE ERROR or INQUIRY* will have a response for supported Category A and B products. These SPRs should refer to suspected deficiencies in the software.

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

5. SPRs marked *DOCUMENTATION ERROR* should report those problems dealing with software manuals or newsletters, and will be forwarded to the pertinent software group.

What YOU Can Do For US

1. Customer Name and Address and Problem Statement should always be typed or printed clearly.

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

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

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

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

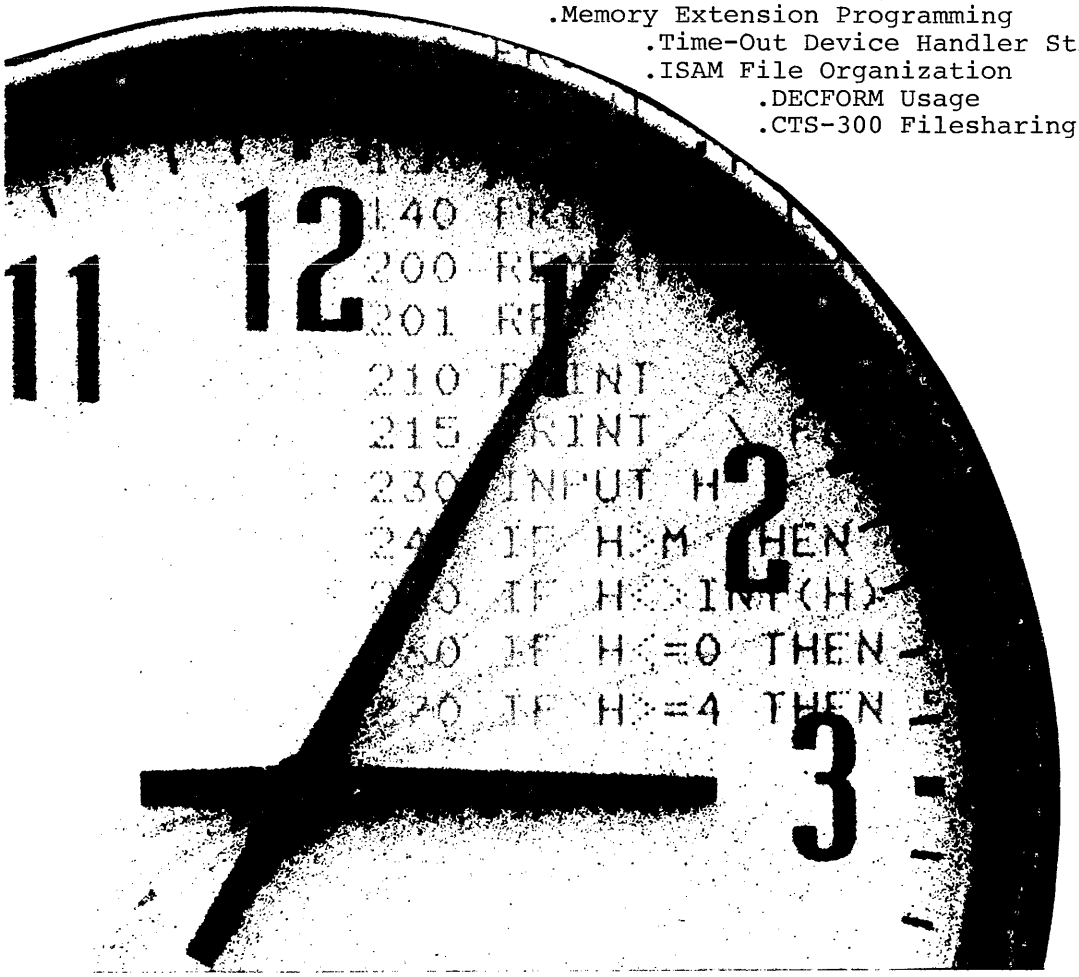
6. Should you ever receive an unacceptable SPR response, please contact us or the appropriate SPR Center so that the response may be readdressed.

EDUCATIONAL SERVICES

RT-11 SELF-PACED COURSE

A COMPLETE TRAINING PROGRAM INCLUDING

.SYSLIB for FORTRAN Programmers
.Memory Extension Programming
.Time-Out Device Handler Structure
.ISAM File Organization
.DECFORM Usage
.CTS-300 Filesharing



YOU SET THE PACE WITH DIGITAL'S MODULARIZED SELF-PACED COURSES

----High Quality Education at a Reasonable Cost

DIGITAL EQUIPMENT CORPORATION's Self-Paced Instruction (SPI) Courses offer the prospective student a method for acquiring valuable skills at his own rate of speed on an independent level. Designed in a modularized fashion containing comprehensive information, these courses are intended to be used locally as an effective training alternative to traditional reference study.

Using the latest proven educational technology, our Self-Paced Instruction programs are composed of separate courses, each containing modular instructional units. The student can expect to find specific learning objectives, instructional text, exercises, and self-evaluating tests already organized into a logical learning sequence for easier comprehension and retention. As a training alternative to traditional reference study, this modularized self-paced format is DIGITAL's answer to high quality education at a reasonable cost.

WHO BENEFITS FROM AN SPI COURSE?

As a student you benefit from Self-Paced Courses because you learn at your own speed on a totally independent level. Just what you learn depends on your personal interests and needs. A benefit of DIGITAL's SPI Courses is the ability to select only those modules which meet your specific job needs. In addition, learning outside the bounds of a traditional classroom enables you to study during spare moments while on the job or at home. The end result is a very viable learning process which minimizes your use of time and materials.

As a manager you benefit from such a self-paced study program because you are able to provide high quality training at any time to your employees while they stay on their job site. Travel and living expenses are eliminated and are no longer important criteria when evaluating the need for employee training...And SPI Course Packages may be used in part or in whole as an overall coordinated tool for in-company training, including upgrading of employees and retraining as it is required.

COURSE OBJECTIVES FOR RT-11

Upon completion of this course, the student should be able to:

1. Describe the organization of the RT-11 Operating System, naming the major components of the monitor and the function of each.
2. Use the supplied system-program development tools to write, debug and successfully execute programs in BASIC, FORTRAN or MACRO-11.
3. Use the utility commands and programs to perform necessary program maintenance and file housekeeping.
4. Generate a system appropriate for given hardware configurations, tailored to the needs of specific applications; and install its language.
5. Write assembly language routines that are callable from BASIC or FORTRAN.

FORTRAN and MACRO Programmers:

6. Write programs to perform the following functions:
   A. Terminal Input/Output
   B. File Operations
   C. Reads and Writes
   D. Foreground/Background Communication
7. Describe the differences between the three modes of Input/Output available to the RT-11 programmer.

System Programmers:

8. Write an interrupt service routine to communicate with an external device in the foreground/background environment.
9. Write, debug and install an RT-11 device handler using a selected set of optional features.
10. Use the memory management directives to access extended memory.

COURSE OBJECTIVES FOR CTS-300

1. Describe the organization of the CTS-300 Operating System; naming the major components of the monitor and the function of each.
2. Use the supplied system-program development tools to write, debug and successfully execute programs in DIBOL.
3. Use the utility commands and programs to perform necessary maintenance and file housekeeping.
4. Generate and maintain a CTS-300 System appropriate for a given hardware configuration, tailored to the needs of a specific application; and install its language.
5. Write and run single and timeshared DIBOL programs.

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COURSE ABSTRACTS

RT-11 CONCEPTS (#JB024-A)

This Self-Paced Instruction Course is intended for the RT-11 User, MACRO, FORTRAN, and BASIC Programmers. It will review the program-development procedure and familiarize the student with the operation of the RT-11 System and the use of the system software.

RT-11 MACRO (#JB020-A)

This Self-Paced Instruction Course is intended for MACRO programmers. It covers the program directives available to them, as well as major parts of the monitor internals. Please note that this course assumes the student knows how to make use of program development and utilities and does not cover the MACRO-11 Language.

RT-11 FORTRAN (#JB022-A)

This Self-Paced Instruction Course is intended for FORTRAN programmers. It covers the program directives available to FORTRAN programs. Please note that this course assumes the student knows how to make use of program development and utilities and does not cover the FORTRAN Language.

RT-11 BASIC (#JB018-A)

This Self-Paced Instruction Course is intended for BASIC programmers. It covers the language installation and the programming of BASIC callable assembly language routines.

RT-11 CONCEPTS (#JB024-A)

This Self-Paced Instruction Course is intended for the CTS-300 User, System Manager and DIBOL programmer. It will review the program-development procedure and familiarize the student with the operation of the RT-11/CTS-300 System and the use of the System Software.

CTS-300 DIBOL (#JB016-A)

This Self-Paced Instruction Course is intended for DIBOL programmers. It covers the organization of ISAM files, SORT/MERGE programs, as well as the usage of time-shared programs and spoolers. Also, the user will be familiarized with DECFORM capabilities. Please note that this course assumes the student knows how to make use of program development and utilities and does not cover the DIBOL-11 Language.

COURSE CONTENTS FOR RT-11

CONCEPTS
- Overview and Getting Started with RT-11
- Program Development for MACRO, FORTRAN and BASIC Programmers
- Commands and Options
- File System
- Utilities
- System Maintenance

MACRO
- Assembler and Linker Options
- Debugging Techniques
- Programmed Requests
- Memory Extension Programming
- System Library and the MACRO Programmer
- Overlays
- Introduction to Monitor Internals

FORTRAN
- Compiler and Linker Options
- Debugging Techniques
- System Library and the FORTRAN Programmer
- Overlays
- Character String Functions
- FORTRAN/MACRO Interface

BASIC
- Commands and Options
- BASIC/MACRO Interface
- Installation

COURSE CONTENTS FOR CTS-300

CONCEPTS
- Overview and Getting Started with RT-11
- Program Development for DIBOL Programmers
- Commands and Options
- File System
- Utilities
- System Maintenance

DIBOL
- Compiler and Linker Options
- Debugging Techniques
- Timesharing and DIBOL
- Overlays
- SORT and MERGE Programs
- ISAM Programming
- Introduction to DECFORM

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ENSURING SUCCESS

In order to successfully complete and gain maximum benefit from the RT-11/CTS-300 SPI Course, the prospective student will need a good knowledge of the English language and access to an RT-11/CTS-300 Computer System for the laboratory exercises contained in this course.

PREREQUISITES FOR THE RT-11

1. Prerequisites for MACRO Programmers:
   A. Fluency in the PDP-11 assembly language and understanding of MACRO-11 programming concepts.
2. Prerequisites for FORTRAN or BASIC Programmers:
   A. Fluency in FORTRAN or BASIC
   B. Elementary knowledge of the PDP-11 architecture.
   C. Understanding of the program development cycle.

PREREQUISITES FOR THE CTS-300

1. Prerequisites for DIBOL programmers:
   A. Fluency in DIBOL-11
   B. Basic understanding of the program development cycle.

REFERENCE MANUALS FOR THE RT-11

In addition to the material covered in the different course binders, the following reference manuals will also be needed in order to complete the course successfully. Please contact your nearest DIGITAL Sales Representative for ordering procedures.

General Manuals (for JB024-A)

RT-11 Documentation Directory	DEC-11-ORDDB-A-D
Introduction to RT-11	DEC-11-ORITA-A-D
RT-11 System User's Guide	DEC-11-ORGADA-A-D
RT-11 System Generation Manual	DEC-11-ORGMB-A-D
RT-11 System Message Manual	DEC-11-ORMEB-A-D
RT-11 Pocket Guide	DEC-11-ORRCB-A-D
RT-11 System Release Notes	DEC-11-ORNRB-A-D

BASIC Programmer (for JB018-A)

BASIC-11/RT-11 V2 Documentation Kit	QJ913-GZ

FORTRAN Programmer (for JB022-A)

FORTRAN IV/RT-11 V2 Documentation Kit	QJ813-GZ
FORTRAN/RT-11 Extensions Manual	AA-2124D-TC

MACRO Programmer (for JB020-A)

RT-11 Advanced Programmer's Guide	DEC-11-ORAPA-A-D
PDP-11 MACRO Language Reference Manual PDP-11/04/34/45/55 Processor Handbook PDP-11 Peripherals Handbook	AA-5075A-TC
RT-11-D Memory Management Option Manual	DEC-ED-KTIID-TM-002

REFERENCE MANUALS FOR CTS-300

General Manuals (for JB024-A)

RT-11 Documentation Directory	DEC-11-ORDDB-A-D
Introduction to RT-11	DEC-11-ORITA-A-D
RT-11 System User's Guide	DEC-11-ORGADA-A-D
RT-11 System Generation Manual	DEC-11-ORGMB-A-D
RT-11 System Message Manual	DEC-11-ORMEB-A-D
RT-11 Pocket Guide	DEC-11-ORRCB-A-D
RT-11 System Release Notes	DEC-11-ORNRB-A-D

DIBOL Programmer (for JB016-A)

CTS-300 Release Notes	DEC-AA-5697A-TC
CTS-300 System User Guide	DEC-AA-C7474-TC
CTS-300 Concepts and Facilities	DEC-AA-5495A-TC
DECFORM User's Guide	DEC-11-VDFVA-A-D
DECFORM User's Guide	DEC-11-UDFUA-A-DN1
DIBOL-11 Language Reference Manual	DEC-11-LDRMA-C-D
DIBOL-11 Language Reference Manual	DEC-11-LDRMA-C-DN1

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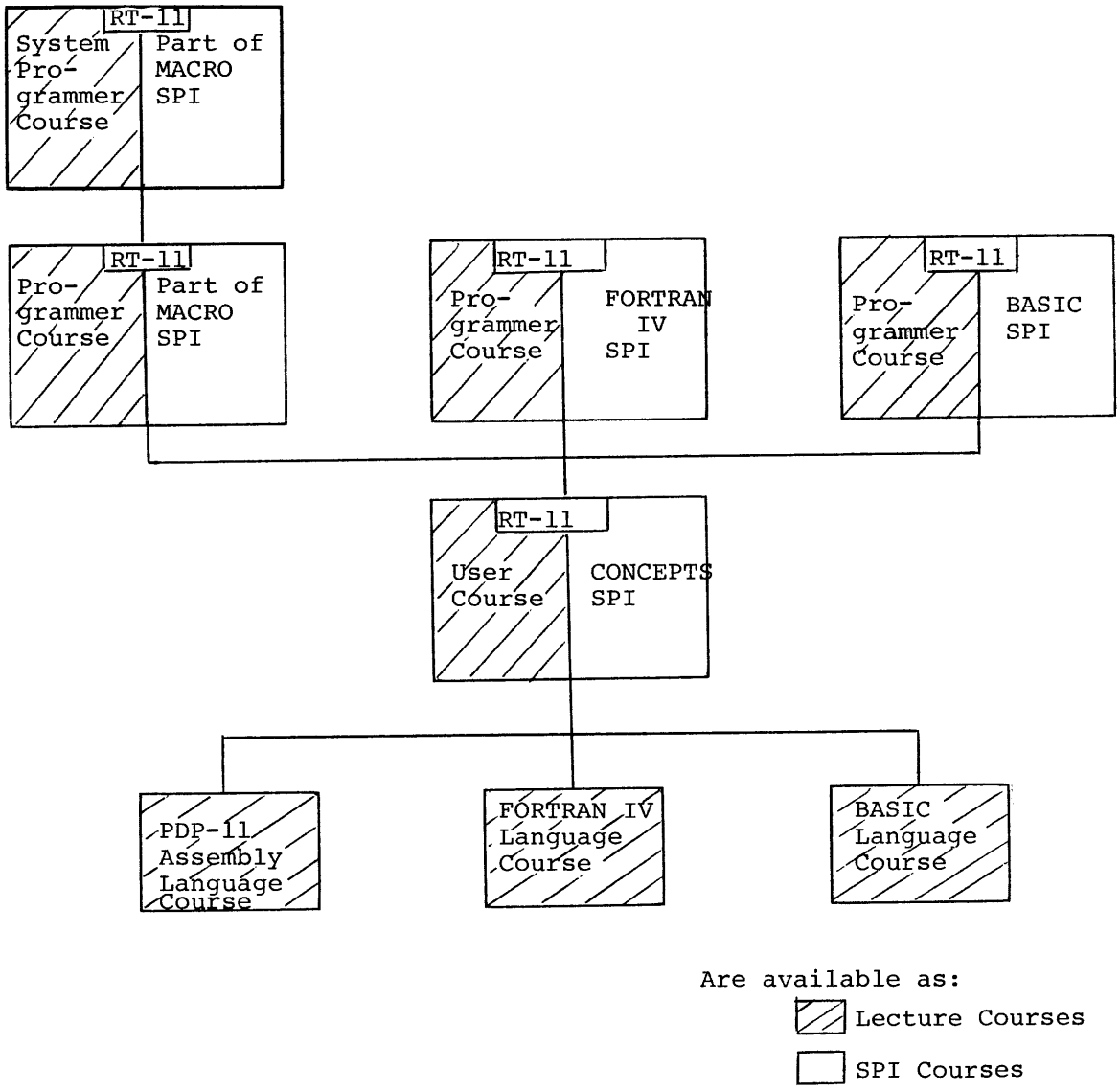
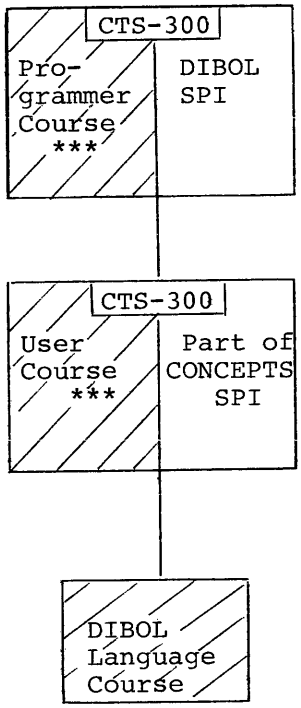
RT-11 CURRICULUM

If it is more convenient for a student to learn in a classroom environment which consists of both the experience of a professional instructor and interaction with other students, or if access to a computer is not available, then we encourage you to contact the nearest Educational Services' Training Center for consultation regarding DIGITAL's facility training curriculum.



CTS-300 CURRICULUM

If it is more convenient for a student to learn in a classroom environment which consists of both the experience of a professional instructor and interaction with other students, or if access to a computer is not available, then we encourage you to contact the nearest Educational Services' Training Center for consultation regarding DIGITAL's facility training curriculum.



Are available as:

Lecture Course

SPI Course

*** Both types of students will be trained in the Commercial Transaction Operating System (CTS-300) course.

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ORDERING INFORMATION

Please contact your local Educational Services Education Center for prices and ordering procedures.

COURSE MATERIAL FOR THE RT-11

Course material may be purchased in complete sets or individual binders as shown below:

Order Number	Title
JB024-A	RT-11 Operating System/CONCEPTS
JB018-A	RT-11 Operating System/BASIC
JB022-A	RT-11 Operating System/FORTRAN
JB020-A	RT-11 Operating System/MACRO
JB042-A	RT-11 SPI Package * (all four binders)

COURSE MATERIAL FOR THE CTS-300

Order Number	Title
JB024-A	RT-11 Operating System/CONCEPTS
JB016-A	RT-11 Operating System/DIBOL
JB040-A	CTS-300 SPI Package ** (all two binders)

* As a special service, every complete RT-11 Course Package, consisting of the CONCEPTS, BASIC, MACRO and FORTRAN binders, can be ordered with the recommended REFERENCE MANUALS from Educational Services.
If you buy binders separately, please order the necessary reference materials at the standard DEC price via your Software Literature contact.

** As a special service, every complete CTS-300 Course Package, consisting of the CONCEPTS and DIBOL binders, can be ordered with the recommended REFERENCE MANUALS from Educational Services.
If you buy binders separately, please order the necessary reference materials at the standard DEC price via your Software Literature contact.

EDUCATIONAL SERVICES EDUCATION CENTERS

Boston area:
Digital Equipment Corporation
Educational Services Department
Maynard, Massachusetts 01754
Telephone: (617)493-3819 or 5217

For DECsystem-10 and DECSYSTEM-20 inquiries and enrollments, contact:
Digital Equipment Corporation
Educational Services Department
Marlboro, Massachusetts 01752
Telephone: (617)481-9511
Ext. 5071 or 5072

New York area:
Digital Equipment Corporation
Educational Services Department
One Penn Plaza
New York, New York 10001
Telephone: (212)971-3545

Chicago area:
Digital Equipment Corporation
Educational Services Department
5600 Apollo Drive
Rolling Meadows, Illinois 60008
Telephone: (312)640-5520

San Francisco area:
Digital Equipment Corporation
Educational Services Department
2525 Augustine Drive
Santa Clara, California 95051
Telephone: (408)984-0200
Ext. 2142

Washington, D.C. area:
Digital Equipment Corporation
Educational Services Department
Lanham 30 Office Building
5900 Princess Garden Parkway
Lanham, Maryland 20801
Telephone: (301)459-7900
Ext. 315 or 215

Canada – Ottawa area:
Digital Equipment Corporation
of Canada, Ltd.
Educational Services Department
100 Herzberg Road
Kanata, Ontario, Canada
Telephone: (613)592-5111

France:
Digital Equipment S.A.R.L.
Educational Services Department
2 Place Gustave Eiffel
F-94533 Rungis, France
Telephone: (01)687-2333

Italy:
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Educational Services Department
Viale Fulvio Testi, 117
20092 Cinisello Balsamo
Milan, Italy
Telephone: 92-81-892

Switzerland:
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Educational Services Department
Schaffhauserstr. 315 CH-8050
Zurich/Oerlikon
Telephone: (01)46 41 91

Germany:
Digital Equipment Gmbh.
Educational Services Department
D-8 Munich 40
Wallensteinplatz 2
West Germany
Telephone: 35031

United Kingdom:
Digital Equipment Company, Ltd.
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Fountain House, Butts Center
Reading, England RG1, 7QN
Telephone: 58-35-55

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Educational Services Department
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S-171-41 Solna, Sweden
Telephone: 08/7300 800

The Netherlands:
Digital Equipment B.V.
Educational Services Department
Kaap Hoorndreef 38
Utrecht, Holland
Telephone: 030-63 12 222

Spain:
Digital Equipment Corporation
Educational Services Department
Agustin de Foxa, 27
Madrid 16, Spain
Telephone: 733-1900

Australia:
Digital Equipment Australia Pty. Ltd
Educational Services Department
Fourth Floor
1-3 Atchison Street
St. Leonards, NSW, 2065
Australia
Telephone: (02)439-2377

Japan:
Digital Equipment Corporation Int.
Educational Services Department
Kowa Bldg. No. 25, Third Floor
8-7 Sanban-Cho
Chiyoda-ku, Tokyo 102, Japan
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RT-11/CTS-300

SELF-PACED INSTRUCTION COURSES

Order Form

I would like to purchase the following RT-11/CTS-300 Self-Paced Instruction Courses:

ORDER NO.	DESCRIPTION	QUANTITIES
JB024-A	RT-11 Operating System/CONCEPTS	_____
JB018-A	RT-11 Operating System/BASIC	_____
JB022-A	RT-11 Operating System/FORTRAN	_____
JB020-A	RT-11 Operating System/MACRO	_____
JB042-A	RT-11 SPI Package (including JB024-A, JB018-A, JB022-A, JB020-A)	
	◯ Without reference material	_____
	◯ With reference material at additional charge	_____
JB016-A	RT-11 Operating System/DIBOL	
JB040-A	CTS-300 SPI Package (including JB024-A and JB016-A)	
	◯ Without reference material	_____
	◯ With reference material at additional charge	_____

◯ CHECK ENCLOSED ◯ PURCHASE ORDER ENCLOSED

Taxes. Prices are exclusive of all federal, state, municipal or other government excise, sales, use, occupational or like taxes now in force or enacted in the future.

Payment. Net thirty (30) days from date of delivery.

CTS-3ØØ V4
DOCUMENTATION
CTS-3ØØ SYSTEM USER'S GUIDE, AA-C747A-TC

DOCUMENTATION CHANGES TO CTS-3ØØ SYSTEM USER's GUIDE (MP)

Replace the first paragraph in Section 7.3 under the subtitle "Introduction" with the following paragraph.

"The TSD line printer spooler, LPTSPL.TSD, is a DIBOL program that operates under the control of the TSD Run-Time System. It supports a maximum of four line printers. During RT-11 SYSGEN, you must request the number of desired line printers. Also, during TSDGEN, you must request Forced Job Start-Up."

Add the following three error messages to the information on page 11-2.

?REDUCE-I-IMPROPER BASE ADDRESS IN OVERLAID FILE: dev:filnam.ext
An input file linked for a base address of other than 100000 has been specified.

?REDUCE-I-INCORRECT RELATIVE BLOCK NUMBERS IN OVERLAID FILE: dev:filnam.ext
The block numbers generated by LINK for this input file are incorrect. Try relinking the file.

?REDUCE-I-REDUCE vernum
This message is displayed with the current version number (vernum) whenever the /V option is specified in the command line.

DOCUMENTATION CHANGES TO DECFORM USER'S GUIDE (MP)

Replace all of Section 2.3.6 on page 2-19 with the following information. A line of asterisks is used here, at the beginning and the end of the replacement section, to delimit it from others in this article.

****

2.3.6 Initial Values

An initial value may be assigned to a format description line which contains a data descriptor. The initial value must immediately follow the field definition and must be preceded by a comma:

line, column, 'TEXT', data field descriptor, INITIAL VALUE

If the field definition is alphanumeric, the initial value must be specified within single quotes. As in text descriptors, two single quote marks in a row will be interpreted as a single quote mark. Tabs are not allowed in alphanumeric initial values. If the field definition is numeric or free format, the initial value is not specified in quotes. To properly initialize a free format field you must include the decimal point in the initial value. The initial value will be displayed in ADD mode only. Furthermore, in order for the initial value to be accepted by FOCOMP the field must be specified with an option which causes the value in the data field to be saved and displayed from record to record. Otherwise, the initial value is meaningless and will be discarded. The options to use with initial values are: Auto Increment, Save Initial, Duplicate, Constant, and No Clear - I, S, D, C, N.

For example:

```
FORM
1,1,A10,'ABCDEFGHIJ',D          ;note D is an option which
                                 ;displays a value from record
                                 ;to record.

2,1,D4.2,2.4                     ;Pound signs are displayed in
                                 ;the blank form and the
                                 ;value 2.4 is ignored because
                                 ;none of the above options were
                                 ;specified.

3,1,D4,10,S                      ;S is an option which displays
                                 ;a value from record to record.

4,1,D4.2,12.5,D                  ;the decimal point must be
                                 ;included in the initial value
                                 ;for proper initialization
                                 ;of free format fields.
END
```

If in ADD mode, the control file above will be initially displayed on the screen as:

```
ABCDEFGHIJ
##.##
  10
12.50
```

****

Replace the last paragraph before the example in Section 2.6.27 on page 2-59 with the following paragraph delimited at the beginning and the end with a line of asterisks.

****

Literals may be used in DECFORM expressions. An alpha literal must be contained in single quotes as with initial values. The DECFORM compiler, FOCOMP, unlike the DIBOL compiler, DICOMP, recognizes free format decimal literals in IF/THEN statements. If you want to compare decimal value X with the free format decimal literal 12.99 you can, for example, express it as

```
IF (X.EQ.12.99) THEN ERROR
```

FOCOMP will recognize 12.99 as a free format literal.

****

Add the following paragraph to the information given in Table 5-1 on page 5-15 on the ADV FLD key.

If the ADV FLD key is used to skip over a field without entering any data in the field, then no validity checks are made on that field as you proceed down the form. This is because it is assumed that you want to ignore that field. However, if you back up (BACK FLD) or re-enter the form through a negative reply to IS RECORD OK?, a re-check is automatically done on all math fields and those fields requiring field validation, including those fields that were previously skipped, just prior to the next issuance of the IS RECORD OK? question.

RT-11
CUMULATIVE INDEX
JUNE 1978

This is a complete listing of all articles for current versions of RT-11 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.

IMPORTANT!

Retracted articles are indicated: RETRACTION.

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

M = Mandatory patch. These are critical patches which each customer is required to install.

O = Optional patch. These articles are applicable only if the reported problems have occurred at the customer site or if they are unique to his operation.

R - Restriction. These problems are not patchable in released software. Restrictions are reviewed and corrected when possible as part of the normal release cycle.

N = NOTE. This information may be helpful to the user.

Component	Sequence	Mon/Yr
APL-11 V1		
APL.SAV PROGRAM PATCHES		
ERRONEOUS "DEFINITION ERROR" DURING FUNCTION EDITING	01 M	Nov 77
LOSS OF LOWER-CASE ON RE-ENTRY TO APL-11	02 M	Nov 77
APL WORKSPACE	03 R	Nov 77
"SYSTEM ERROR"S GENERATED BY NULL LINE ELEMENTS	04	Dec 77
INTERNAL MEMORY ALLOCATION PROBLEMS	05 M	Dec 77
ERROR FOR SCALAR RESULT OF DECODE OR INNER PRODUCT OPERATION	06 M	Feb 78
SYSTEM ERROR ON PARAMETER RETURN	07 M	May 78
BASIC/RT-11 V01B-01		
HALT OR OTHER SYSTEM FAILURE AFTER USE OF BASIC EXTENSIONS	01 M	Jan 76
BUFFER STORAGE OVERFLOW ERROR	02	Feb 76
BASIC/RT-11 USED WITH EAE HARDWARE INCORRECTLY HANDLES THE VALUE -32768	03	May 76
CALL TO DFIX CAUSES DISPLAY TO GO BLANK	04 M	Aug 76
USING R5 IN ASSEMBLE LANGUAGE SUBROUTINES	05	Dec 76
BASIC VIRTUAL FILES ARE NOT FORTRAN COMPATIBLE	06 M	Aug 77
TAB FUNCTION CANNOT BE MOVED	07 M	Feb 77
DOCUMENTATION		
BASIC/RT-11 LANGUAGE REFERENCE MANUAL		
APPENDIX H	01	Dec 75
BASIC/RT-11 V2		
RESEQUENCE PRODUCES AN INCORRECT PROGRAM UNDER CERTAIN CONDITIONS	01 M	Jun 78
PRINT USING	02 M	Jun 78
MAX SIZE OF LINE ENTERED TO BASIC-11	03 M	Jun 78
REM STATEMENT CONTAINING LEFT PARENTHESIS CAUSES SUBSEQUENT SPACES AND PERIODS TO BE REMOVED	04 R	Jun 782780

Component	Sequence	Mon/Yr
BASIC/RT-11 EXTENSIONS V1		
"IPK" SUBROUTINE	01 M	Aug 77
SAMPLING A/D CHANNEL NO. 15	02 R	Aug 77
SAMPLING AR11	03 M	Sep 77
"CLRD" AND "PUTD" ROUTINES	04 M	Nov 77
"SETR" AND "WAIT" COMBINATION MAY FAIL	05	Apr 78
CTS-300 V3		
CTS-300 V03 RELEASE NOTES	01	Apr 77
USE OF RSTAT WITH ISAM FILES	02 R	Aug 77
PATCH NUMBERS AND TITLES	03	Nov 77
DECFORM		
DECFORM ERRORS	01	Apr 77
REPLACEMENT PAGES	02	Apr 77
SEARCHMODE AND RENAM PROBLEM - NEW VERSION NUMBER	03	Jun 77
EXTRA CHARACTERS AT STATEMENT END	04	Jun 77
FOCOMP INCORRECTLY ALLOCATES AN EXTRA CHARACTER	05	Nov 77
REPLACEMENT PAGES	06	Aug 77
DECFORM RESTRICTIONS	07	Sep 77
CONDITIONAL GOTO AND CONDITIONAL SKIP	08	Oct 77
DECFORM PROBLEMS AND RESTRICTIONS	09 R	Nov 77
HANG ON EXIT	10	Jan 78
TWO PROBLEMS IN FOCOMP	11 M	Feb 78
EOF AFTER CHANGED RECORD	12 M	Mar 78
LOST RECORD ON DUPLICATE KEY	13 M	Apr 78
MESSAGE FOR SPEED READERS	14 M	Apr 78
EXCITING DECFORM VIA FIVE-PART QUESTION	15 M	May 78
DOCUMENTATION		
MULTIVOLUME FILES ON MAGTAPE	01 N	Feb 78
PAGE CORRECTION	02	Apr 78
DOCUMENT ERROR	03	Apr 78
DICOMP		
IMPROPER GLOBAL INFORMATION	01	Jul 77
COMMENT CAUSES ERROR	02	Aug 77
FILEX		
RESTRICTION ON FILEX	01	Sep 77
FILEX INFORMATION AND RESTRICTION	02 R	Mar 78
ISMUTL		
INDEXING PROBLEM	01	Jul 77
WRONG RECORD COUNT	02	Jul 77
CTS-300 SYSTEM REFERENCE MANUAL	03	Oct 77
INCORRECT APPEND CALCULATION	04	Sep 77
ERR 16 IN REORG	05	Oct 77
THREE PROBLEMS IN ISMUTL	06 M	Jan 78
REPLACEMENT PAGES	07 N	Feb 78
WRONG FILE SPACE ALLOCATION	08 M	Apr 78
ERRONEOUS ERROR MESSAGE	09 M	Apr 78
ERROR 28	10 M	Apr 78
LEGAL CHARACTERS IN ISAM RECORDS	11 R	May 78
DUPLICATE KEYS IN THE INPUT FILE	12 M	Jun 78
LPTSPL		
NO CONTINUE AFTER PROGRAM ABORT	01 M	May 78
SINGLE USER DIBOL		
SPURIOUS I/O ERRORS DURING ISAM STORE	01	Jun 77
CHANGE READS STATEMENT TO ACCEPT 8-BIT ASCII	02	Apr 77
LOCASE CONVERTS UNDERLINE TO RUBOUT	03	Jun 77
ISAM RECORDS CROSSING BLOCK BOUNDARIES	04	Aug 77
PROBLEM WITH 32KB OR LESS	05	Sep 77
REPLACEMENT PAGES	06	Oct 77
"NOT ENOUGH MEMORY" CONDITION	07 M	Jan 78
RECORDS BEING LOST	08 M	Feb 78
RUNNING V3 ON LSI	09 M	Apr 78

Component	Sequence	Mon/Yr
SORTG		
TAGSORTS NOT ALLOWED ON ISAM FILES	Ø1	May 77
CORRECTION TO VERSION "A" PATCH	Ø2	Oct 77
SORTM		
I/O ERROR INTERPRETED AS AN INPUT END OF FILE	Ø1	Apr 77
NEGATIVE NUMBERS IN SORT/MERGE	Ø2	Oct 77
SORTING CARETS	Ø3 M	Jan 78
INCORRECT RECORD COUNT	Ø4 M	Feb 78
FIRST RECORD OUT OF ORDER	Ø5 M	Mar 78
TSD		
CHANGE READS STATEMENT TO ACCEPT 8-BIT ASCII	Ø1	Apr 77
REPLACEMENT PAGES	Ø2	Apr 77
PROGRAM SIZE CALCULATIONS FOR TSD	Ø3	May 77
I/O RACE CONDITION	Ø4	Jun 77
GARBLED OUTPUT DUE TO ALPHA OR DECIMAL DISPLAYS	Ø5	May 77
RENAM FEATURE OF DIBOL	Ø6	Jun 77
LOCASE CONVERTS UNDERLINE TO RUBOUT	Ø7	Jun 77
ISAM FILE SHARING PROBLEM	Ø8	Jun 77
IMPOSSIBLE TRAP ON OVERLAYING	Ø9	Jun 77
ISAM RECORDS CROSSING BLOCK BOUNDARIES	1Ø	Aug 77
RECORDS BEING LOST	11 M	Feb 78
PERMANENTLY LOCKED GROUP	12 M	Mar 78
RUNNING V3 ON LSI	13 M	Apr 78
CLOSING ISAM FROM AN EXTERNAL SUBROUTINE	14 M	Apr 78
PROBLEM WITH ISAM INPUT	15 M	Apr 78
CTS-300 V3 AND CTS-300/DIS V3.5		
ISAM REPAIR PROGRAM	Ø1 O	Mar 78
CTS-300 V4		
DECFORM		
ADDITONAL INFORMATION ON MATH OPTION	Ø1 N	Dec 77
UNDEFINED GLOBALS WITH DECFORM	Ø2	Jan 78
TWO PROBLEMS IN FOCOMP	Ø3 M	Feb 78
EOF AFTER CHANGED RECORD	Ø4 M	Mar 78
LOST RECORD ON DUPLICATE KEY	Ø5 M	Apr 78
MESSAGE FOR SPEED READERS	Ø6 M	Apr 78
EXITING DECFORM VIA FIVE-PART QUESTION	Ø7 M	Jun 78
TOO FEW DATA FIELDS RETURNED	Ø8 M	Jun 78
DICOMP		
TRAP TO 4 UNDER XM	Ø1 M	Feb 78
TRAP TO 1Ø UNDER FB	Ø2 M	Feb 78
DOCUMENTATION		
REPLACEMENT PAGES	Ø1 N	Dec 77
DOCUMENTATION CHANGES TO CTS-3ØØ SYSTEM USER'S GUIDE	Ø2 N	Jun 78
DOCUMENTATION CHANGES TO DECFORM USER'S GUIDE	Ø3 N	Jun 78
ISMUTL		
THREE PROBLEMS IN ISMUTL	Ø1 M	Dec 77
WRONG FILE SPACE ALLOCATION	Ø2 M	Apr 78
ERRONEOUS ERROR MESSAGE	Ø3 M	Apr 78
ERROR 28	Ø4 M	Apr 78
LEGAL CHARACTERS IN ISAM RECORDS	Ø5 R	May 78
DUPLICATE KEYS IN THE INPUT FILE	Ø6 M	Jun 78
LPTSPL		
JOB MISHANDLING	Ø1 M	Jan 78
REDUCE		
MULTIPLE FILE PROBLEM	Ø1 M	Jan 78
SINGLE USER DIBOL		
PROBLEM WITH CLOSING A FILE	Ø1 M	Dec 77
RANDOM ACCESS PROBLEM	Ø2 M	Jan 78
MINUS ZERO	Ø3 M	Jan 78
LPQUE DOES NOT WORK	Ø4 M	Jan 78

Component	Sequence	Mon/Yr
CHANNEL 1	05 M	Jan 78
FIELD EDITING	06 M	Jan 78
WRONG ERROR MESSAGE	07 M	Feb 78
MINUS ZERO	08 M	Feb 78
S.U. DIBOL WORKS ONLY UNDER XM	09 M	Feb 78
RECORDS BEING LOST	10 M	Feb 78
NO SINGLE USER ON 11/10	11 M	Feb 78
RENAME PROBLEM	12 M	Apr 78
NO MAGTAPE IN V4	13 M	Apr 78
ABORT ON SECOND LPQUE STATEMENT	14 M	Jun 78
XCALL VERSN BEGETS TRAP TO 4	15 M	Jun 78
LPNUM CAUSES FILE NOT FOUND	16 M	Jun 78
SORTG		
KDTYP MISSING	01 M	Feb 78
SORTM		
SORTING CARETS	01 N	Dec 77
TAGSORTS WITH MULTIPLE KEYS	02 M	Jan 78
FIRST RECORD OUT OF ORDER	03 M	Mar 78
SORTP		
NO PROTECTION FROM MIXING DATA MODES	01 M	Jun 78
STATUS.TSD		
WRONG JX INFORMATION	01 M	Dec 77
PENDING MESSAGES	02 M	Jan 78
PROBLEM DURING JOB STARTUP	03 M	Mar 78
TSD		
TNMBR TRAPS TO 4	01 M	Jan 78
RANDOM ACCESS PROBLEM	02 M	Jan 78
MINUS ZERO	03 M	Jan 78
DELETE CAUSES STACK OVERFLOW	04 M	Jan 78
FIELD EDITING	05 M	Jan 78
PROBLEM WTIH ISAM INPUT	06 M	Jan 78
SEND CAUSES STACK OVERFLOW	07 M	Feb 78
STATUS GIVES FALSE REPORT	08 M	Feb 78
FILE SHARING	09 M	Feb 78
CHANNEL IN USE PROBLEM	10 M	Feb 78
PROGRAMS CREATED IN REGION 0	11 M	Feb 78
IMPLICIT JOB STARTUP PROBLEM	12 M	Feb 78
PENDING MESSAGES DESTROY SYMBOL TABLE	13 M	Feb 78
TERMINALS IGNORED	14 M	Feb 78
TROUBLE WITH TSD UNDER FB	15 M	Feb 78
MEMORY FAULT WITH SEND/RECV	16 M	Feb 78
PERMANENTLY LOCKED GROUP	17 M	Mar 78
SLOW TERMINAL I/O	18 M	Mar 78
PROBLEM WITH FORCED JOB AND TERMINAL NUMBER	19 M	Mar 78
INCORRECT CHECK FOR FREE SPACE	20 M	Mar 78
SYSGEN/TSDGEN PROBLEM	21 M	Mar 78
OPENING LP: GENERATES ERRORS	22 M	Mar 78
RECORDS BEING LOST	23 M	Apr 78
BAD I/O, FLAG NOT CLEARED	24 M	Apr 78
CLOSING ISAM FROM EXTERNAL SUBROUTINE	25 M	Apr 78
DISPLAY FROM DETACHED PROGRAM TO DETACHED TERMINAL	26 M	Apr 78
NO MAGTAPE IN V4	27 M	Apr 78
BASE LEVEL 2	28 M	Apr 78
R6 STACK OVERFLOW	29 M	May 78
TSD HANGS IF LP GOES OFF LINE	30 M	Jun 78
SLEEP PAST MIDNIGHT, NEVER WAKE UP	31 M	Jun 78
LOWER CASE CONVERTS TO UPPER CASE	32 M	Jun 78
THREE PROBLEMS IN XMTSD	33 M	Jun 78
XCALL VERSN BEGETS TRAP TO 4	34 M	Jun 78
SLAVE REFUSES TO WORK	35 M	Jun 78
MORE LP: NOHANG DIFFICULTIES	36 M	Jun 78
MORE TRAPS TO 4 AND 10	37 M	Jun 78
NO ALIGN OR DELETE WITH LPQUE	38 M	Jun 78
TRAP TO 10 CAUSED BY OPEN ISAM FILE	39 M	Jun 78
NO ROOM FOR BUFFER CAUSES TRAP TO 4/10	40 M	Jun 78

Component	Sequence	Mon/Yr
CTS-300/DIS V3.5		
USE OF RSTAT WITH ISAM FILES	01 R	NOV 77
DECFORM		
SEARCHMODE AND RENAM PROBLEM - NEW VERSION NUMBER	01	Oct 77
MICRO CODE CAUSES TRAP TO 10	02	Oct 77
DECFORM RESTRICTIONS	03	Nov 77
EXTRA CHARACTERS AT STATEMENT END	04	Nov 77
FOCOMP INCORRECTLY ALLOCATES AN EXTRA CHARACTER	05	Nov 77
CONDITIONAL GOTO AND CONDITIONAL SKIP	06	Nov 77
DECFORM PROBLEMS AND RESTRICTION	07	Nov 77
HANG ONE EXIT	08 M	Jan 78
TWO PROBLEMS IN FOCOMP	09 M	Feb 78
EOF AFTER CHANGED RECORD	10 M	Mar 78
NEGATIVE NUMBER ENDING IN ZERO	11 M	Mar 78
LOST RECORD ON DUPLICATE KEY	12 M	Apr 78
MESSAGE FOR SPEED READERS	13 M	Apr 78
EXITING DECFORM VIA FIVE-PART QUESTION	14 M	May 78
DICOMP		
IMPROPER GLOBAL INFORMATION	01	Nov 77
COMMON CAUSES ERROR	02	Nov 77
DOCUMENTATION		
MULTIVOLUME FILES ON MAGTAPE	01 N	Feb 78
PAGE CORRECTION	02 N	Apr 78
DOCUMENT ERROR	03 N	Apr 78
FILEX		
RESTRICTION ON FILEX	01 R	Nov 77
FILEX INFORMATION AND RESTRICTION	02 R	Mar 78
ISMUTL		
INDEXING PROBLEM	01	Nov 77
INCORRECT APPEND CALCULATION	02	Nov 77
ERR 16 IN REORG	03	Nov 77
WRONG RECORD COUNT	04	Nov 77
THREE PROBLEMS IN ISMUTL	05	Jan 78
REPLACEMENT PAGES	06 N	Feb 78
WRONG FILE SPACE ALLOCATION	07 M	Apr 78
ERRONEOUS ERROR MESSAGE	08 M	Apr 78
ERROR 28	09 M	Apr 78
LEGAL CHARACTERS IN ISAM RECORDS	10 R	May 78
DUPLICATE KEYS IN THE INPUT FILE	11 M	Jun 78
LPTSPL		
NO CONTINUE AFTER PROGRAM ABORT	01 M	May 78
SINGLE USER DIBOL		
LOCASE CONVERTS UNDERLINE TO RUBOUT	01	Oct 77
ISAM RECORDS CROSSING BLOCK BOUNDARIES	02	Nov 77
PROBLEM IN 32K OR LESS	03	NOV 77
"NOT ENOUGH MEMORY" CONDITION	04	JAN 78
SPURIOUS I/O ERRORS CURING ISAM STORE	05	JAN 78
RECORDS BEING LOST	06 M	Feb 78
SORTG		
TAGSORTS NOT ALLOWED ON ISAM FILES	01	Oct 77
CORRECTION TO VERSION "A" PATCH	02	Nov 77
SORTM		
NEGATIVE NUMBERS IN SORT/MERGE	01	Nov 77
SORTING CARETS	02 N	Jan 78
INCORRECT RECORD COUNT	03 M	Feb 78
FIRST RECORD OUT OF ORDER	04 M	Mar 78
TSD		
I/O RACE CONDITION	01	Sep 77
ERRONEOUS PATCH TO TSD	01a	Nov 77
INCORRECT JOB NUMBER AT STARTUP TIME	02	Sep 77
PROBLEM WITH RENAM	03	Sep 77
LOCASE CONVERTS UNDERLINE TO RUBOUT	04	Oct 77

Component	Sequence	Mon/Yr
ISAM FILE SHARING PROBLEM	05	Nov 77
IMPOSSIBLE TRAP ON OVERLAYING	06	Nov 77
ISAM RECORDS CROSSING BLOCK BOUNDARIES	07	Nov 77
RECORDS BEING LOST	08 M	Feb 78
PERMANENTLY LOCKED GROUP	09 M	Mar 78
CLOSING ISAM FROM AN EXTERNAL SUBROUTINE	10 M	Apr 78
PROBLEM WITH ISAM INPUT	11 M	Apr 78

DECLAB-03 FORTRAN EXTENSIONS

FORTRAN CRASHES AFTER RUNNING PROGRAM WITH "SETR"	01 M	Mar 78

FOCAL/RT-11 V1B

FOR COMMAND WITHOUT AN ARGUMENT	01 M	Oct 75
OPERATE COMMAND CAUSES ERROR	04 M	Aug 76
FCLK ROUTINE GIVES INCORRECT TIME	05 O	Aug 76
"LIBRARY ASK" COMMAND	06 O	Feb 77
"/Z" SWITCH	07 M	Aug 77
@START NOT WORKING WHEN DOWN-LINE LOADING	08 M	Mar 78

FORTRAN IV/RT-11 V1C

CLARIFICATION: INTERFACING ASSEMBLY LANGUAGE ROUTINES TO FORTRAN	01	Feb 75
FLOATING MULTIPHY FAILS TO DETECT UNDERFLOW IN NHD VERSION OF OTS	42	May 76
COMPILING MULTIPHY PROGRAM UNITS FROM A SINGLE CASSETTE	43	May 76
STAND-ALONE FORTRAN STACK USAGE	44	May 76
WRITING ON READ-ONLY FILE	45	May 76
WRITING BEYOND END OF RANDOM ACCESS FILE	47	May 76
ASYNCHRONOUS I/O, EVENT DRIVER I/O, AND FORTRAN PROGRAMS	49	May 76
OBJECT TIME FORMATTING WITH H FORMAT SPECIFICATION, FORMATTED RECORD WRITING GREATER THAN 132 CHARACTERS IN LENGTH MAY FAIL	51	May 76
OBJECT TIME ENCODE/DECODE	52	Sep 76
CLARIFICATION OF I/O LIST ELEMENTS	53	Jun 76
MORE THAN 19 NULL ARGUMENTS CAUSE FATAL ERROR Y	54	Jul 76
CALL ASSIGN WITH FILE NAME TERMINATED WITH SPACE ABORTS	55	Jul 76
I-FORMAT CONVERSION ERROR	56	Jul 76
J=J-J GIVES INCORRECT RESULTS	57	Jul 76
LISTING FILES DIRECTED TO MAGTAPE	58	Jul 76
CALL CLOSE ON INACTIVE UNIT	59	Aug 76
ARITHMETIC STATEMENT FUNCTIONS WITH NO ARGUMENTS	60	Aug 76
COMPUTED GO TO	61	Aug 76
CLARIFICATION: COMPARING ASCII DATA ITEMS	62	Aug 76
IBEF NOT PROPERLY DECREMENTED	63	Aug 76
LPS DEVICE CONFLICT CAUSED BY CALL SETR AFTER CALL RTS	64	Aug 76
LOGICAL*1 VARIABLES AS DO-LOOP TERMINATORS	65	Sep 76
IADC AFTER RTS DOES NOT WORK	66	Sep 76
MISSING LEFT QUOTE IN CALL STATEMENT CAUSES COMPILER TO TRAP	67	Sep 76
CALL OR FUNCTION ARGUMENTS MAY CAUSE THE COMPILER TO TRAP	68	Sep 76
INCORRECT CODE GENERATION FOR ASSIGNMENT STATEMENTS INVOLVING BOTH INTEGER*2 AND INTEGER*4 SUB-SCRIPTED ARRAYS	69	Nov 76
WRITING RECORDS GREATER THAN 132 BYTES LONG	70	Sep 76
USING FORTRAN COMPLETION ROUTINES WTIH SYSLIB	71	Oct 76
EXTENDING COMMON BLOCK BACKWARDS MAY CAUSE TRAP TO 10	73	Oct 76
INCORRECT CODE GENERATION FOR CERTAIN FUNCTION CALLS IN SUBSCRIPT LISTS	74	Dec 76
CERTAIN "ENCODE/DECODE" STATEMENTS ARE FLAGGED AS SYNTAX ERRORS	75 M	Feb 77
STACK OVERFLOW CONDITION CAN RESULT IN SYSTEM FAILURE	76	Mar 77
END-OF-LINE COMMENTS	77	Apr 77
RUNNING FORTRAN PROGRAMS IN FOREGROUND MODE	78	May 77
FORMAT STATEMENT PROCESSING	79	MAY 77
SUBROUTINE NAMING CONFLICT	80	Nov 77
PLOT55 DESCRIPTION	81	Nov 77

Component	Sequence	Mon/Yr
ASSIGNMENT STATEMENTS WITH EQUIVALENCE VARIABLES AS THE TARGET	82 R	Dec 77
ILLEGAL MEMORY REFERENCE ERROR	83	Jan 78
DEVICE CONFLICT ERROR	84 R	Jan 78
FORTRAN CRASHES AFTER RUNNING PROGRAM WITH "SETR"	85 M	Feb 78
RUNNING PROGRAM WITH "SETR"	86 M	Mar 78
TWO PROBLEMS WITH THE RT-11/FORTRAN GRAPHIC EXTENSIONS	87	May 78
TWO PROBLEMS WITH THE RT-11/FORTRAN GRAPHIC EXTENSIONS	88 M	Apr

FORTRAN IV/RT-11 V2

COMPILER		
KNOWN FORTRAN IV V2 BUGS	01 N	Feb 78
USE OF THE FIND STATEMENT	02 M	Feb 78
RAISING COMPLEX NUMBERS	03 M	Feb 78
EXTRA CHARACTERS MAY RESULT IN COMPILER TRAPPING	04 M	Feb 78
SIMRT	05 M	Feb 78
SIMRT CONTINUED	06 M	Feb 78
TRANSMITTING ASCII DATA	07 R	Mar 78
IN-LINE CODE	08 N	Mar 78
DOSPOSE= 'KEEP' OPTIN	09 R	Apr 78
CRASH DUMPS	10 N	Apr 78
SYNTAX ERRORS IN SOURCE PROGRAM MAY CAUSE COMPILER TO ABORT	11 M	May 78
ERRORS OCCUR WITH NO DO LOOP	12 M	Jun 78

GAMMA-11 F/B V2

DATA ANALYSIS PROGRAM	01 M	Feb 77
STUDY TRANSFER PROGRAM DISPLAYS TOO MANY INDEX LINES PER PAGE	02 M	Feb 77
BASIC AND FOCAL	03 M	Feb 77
BACKGROUND PROGRAM CAN HANG THE FOREGROUND TERMINAL	04 M	Feb 77
CNTL/C UNDER SINGLE JOB MONITOR	05 M	Feb 77
CROSSHAIRS FAIL TO APPEAR IN SLICE	06 M	Feb 77
UNDOCUMENTED PROGRAMS	07 N	Mar 77
FORTRAN SUPPORT INCORRECTLY CONVERTS DATA AND TIME OF INQUISITION	08 M	May 77
"RS" COMMAND IS INCORRECTLY	09 N	Jun 77

LABORATORY APPLICATIONS-11 V3

A NEW MODULE TO ENHANCE DATA FLOW WITHIN LA-11	01 N	Oct 76
HISTO.MAC		
ACQUIRING AND PROCESSING HISTOGRAM DATA	01 M	Sep 76
LABMAC.SML		
ERRONEOUS MACRO	01 M	Sep 77
PEAK.MAC		
WIDE PEAKS	01 M	MAR 76
PEAK PROBLEMS AND CORRECTIONS	02 M	Jul 76
ARITHMETIC CORRECTION FOR PEAK AREA	03 M	Dec 76
MISSING PATCH IN RELEASE NOTES	04 M	Oct 77
SPARTA		
LPS AND AR-11 VECTOR AND STATUS REGISTER	01 N	Dec 75
USING SPARTA AND FLOATING POINT BUFFERS	02 N	Feb 76
AR-11 TIMING PROBLEMS WITH ADSAM AND SPARTA	03 O	Feb 76
FFT SCALING CORRECTION	04 M	Feb 76
SCALE FACTOR CORRECTION FOR SPARTA COMMANDS FAC AND FCC	05 M	Mar 76
DATA DISPLAYS USING LA-11	06 N	Mar 76
DATA PREPARATION FOR SPARTA COMMANDS FAC AND FCC	07 N	Apr 76
SPARTA CORRECTIONS FOR POINT-PLOT DISPLAY	08 M	Apr 76
ADDING COMMANDS TO SPARTA	09 M	May 76
CORRECTION FOR THE DPV COMMAND WITH POINT PLOT DISPLAY	10 M	Jun 76
GENERAL SUBROUTINE MODULE FOR EAE	11 O	Jun 76
INCORRECT PHASE ANGLE CALCULATION	12 M	Oct 76

Component	Sequence	Mon/Yr
"MOU" AND "MIN" COMMANDS CAN BE READ OUT AND IN CORRECTLY	13 N	Jan 77
MULTIPLE SYNCH PULSES	14 M	Jan 77
AUTO AND CROSS CORRELATION	15 M	Jan 77
ALLOCATING MORE THAN 16K BUFFERS IN SPARTA	16 M	Feb 77
A/D SAMPLING: FAST MODE	17 M	Jul 77
A/D SAMPLING: FAST MODE EXIT	19 M	Mar 78
SWEEP.MAC		
SWEEP SAMPLING: FAST MODE	01 M	Aug 77
THRU		
HOW TO START DATA ACQUISITION WHEN CSTART EQUALS ZERO	01 N	Jun 76
MULTICHANNEL SINGLE RATE SCHMIT TRIGGER SWITCH BOUNCE	02 M	Dec 75
CONTINUOUS SAMPLING: CONDITIONAL ASSEMBLY ERRORS	03 M	Jul 77
CONTINUOUS SAMPLING: DMA WITH DUAL SAMPLE + HOLD	04 M	Jul 77
DOCUMENTATION CORRECTIONS	05 M	Nov 77
LV11/RT-11 PLOTTING PACKAGE V2		
SUBROUTINE PLOT DOES NOT CORRECTLY REPRODUCT VT11 PICTURE	01 M	Apr 78
MU BASIC/RT-11 V1		
BUILDING MU BASIC/RT-11 UNDER RT-11 V2C	01	Feb 76
REMOTE TERMINAL SUPPORT ON MODEMS	02	May 76
OVERLAY... LINE WORKS INCORRECTLY	03	May 76
USING IMMEDIATE MODE "GOSUBs"	04	Dec 75
CLOCK LOSES TIME ON RT-11 WHEN RUNNING MU BASIC	05	Jul 77
REM STATEMENTS	06	Feb 78
ADDITIONAL FILES ON RELEASE KIT (MUB*.*)	07 N	May 78
MU BASIC/RT-11 SYSTEM INSTALLATION GUIDE DEC-11-LIBMA-A-DN1		
REPLACEMENT PAGES	01	Jan 77
REPLACEMENT PAGES	02 N	Jan 78
REPLACEMENT PAGES	03 N	Jan 78
PDL/RT-11 V1		
CLARIFICATION OF SEARCH FAILURE IN SUBROUTINE FIND	01 R	Apr 77
FIND SUBROUTINE	02 R	Apr 77
REPLACEMENT PAGES	03 N	Jun 77
PATCHES TO PDL	04 M	Mar 78
SUBROUTINE QKGT	05 M	Mar 78
REMOTE/RT-11 V1		
SCHEDULER DOES NOT PROPERLY SET PROCESSOR PRIORITY	01 M	May 76
NOEDIT- 0 HALTS	02 M	May 76
NUSERS=1 STAYS IN A FILE MESSAGE LOOP	03 M	May 76
INCORRECT SWAP AREA ALLOCATION FOR FOUR OR MORE USERS	04 M	May 76
REBOOT FROM SATELLITE DURING EDIT HANGS HOST	05 M	Jun 76
HARD ERROR ON LOOKUP IS FATAL	06 M	Jun 76
SECONDARY MODE PROGRAM LOAD FEATURE NOT COMPLETELY FUNCTIONAL	07 M	Jun 76
ONE SECOND TIMER FOR LINE TIMEOUTS IS SET INCORRECTLY	08 M	Aug 76
LINE FEEDS MAY CAUSE SYSTEM ERRORS--ASSEMBLY ERROR WITH DIAL AND NODDC	09 M	Aug 76
PROPER GENERATION OF REMOTE IS DEPENDENT ON MODULE ORDER	10 M	Aug 76
ASCII CODES 173 AND 174 DO NOT PRINT	11 M	Aug 76
IMPROPER FILLER HANDLING FOR VT05	12 O	Aug 76
SYSTEM CRASHES IF RUN IN FOREGROUND WITHOUT /N	13 O	Aug 76
"UNSAVE" COMMAND CAUSES SYSTEM ERRORS	14 M	Dec 76
FLET WILL REMOVE MORE THAN ONE USER FROM THE WAIT QUEUE	15 M	Dec 76
STACK FOR USER THREE IMPROPERLY SET	16 O	Dec 76
SECONDARY MODE LOADS DO NOT OPERATE PROPERLY	17 M	Jan 77

Component	Sequence	Mon/Yr
@START COMMAND GIVEN ON TERMINAL WITHOUT SATELLITE CAUSES CRASH	18 O	Jan 77
"RTSIM" DOES NOT SUPPORT 50 Hz LINE CLOCK	19 O	Jan 77
CHANNEL ACTIVE ERROR	20 M	Mar 77
THREE WORDS LOST ON DOWNLINE LOAD	21 M	Mar 77
CSISPC NOT PROPERLY SIMULATED	22 M	May 77
EXCEEDING CHARACTERS PER LINE LIMIT	23 M	Oct 77
@RE IN THE SATELLITE DOES NOT WORK	25 R	Mar 78
"HANG" CONDITIONS	26 R	Apr 78

RT-11 V2C

BATCH		
/RUN SWITCH IN BATCH COMMAND FAILS	02	Nov 76
BOUNDARY PROBLEM IN BATCH HANDLER	03	Jun 77
DOCUMENTATION		
RT-11 SOFTWARE SUPPORT MANUAL		
APPENDIX D CORRECTIONS	01	Oct 75
INCOMPLETE PATCH IN THE RT-11 SOFTWARE SUPPORT MANUAL	02	Jun 77
RT-11 SYSTEM GENERATION MANUAL		
REPLACEMENT PAGES	01	Jul 76
INSTRUCTIONS FOR BUILDING DISKETTE SYSTEM	02	Oct 76
INSTRUCTION FOR BUILDING	03	Oct 76
INCORRECT PATCH IN RT-11 SYSTEM GENERATION MANUAL	04	Aug 77
NEW MAGTAPE DRIVES TE10, TE16, AND NEW FORMATTER TM03	05	Aug 77
RT-11 SYSTEM MESSAGE MANUAL		
REPLACEMENT PAGES	01	Jul 76
RT-11 SYSTEM REFERENCE MANUAL		
RT-11 CLARIFICATION	01	Sep 75
INCORRECT MSTAT VALUES	03	Oct 75
CASSETTE AND MAGTAPE ARE NOT LEGAL RT-11 DEVICES UNDER FILEX	04	Dec 75
REPLACEMENT PAGES	05	Jul 76
DOCUMENTATION CORRECTION	06	Oct 76
REPLACEMENT PAGES	07 N	Dec 77
RT-11 SYSTEM RELEASE NOTES		
REPLACEMENT PAGES	01	Jul 76
EDIT		
EDIT ERRORS OCCUR WHEN THE FIRST CHARACTER IN THE TEXT BUFFER IS A LINE FEED	05	Oct 77
CHARACTER IS LOST WHEN EXECUTING A READ COMMAND	06	Oct 77
EXTRA TEXT APPENDED TO EDIT OUTPUT	07	Oct 77
FILEX		
TRANSFERRING FILES TO DOS FORMAT	02	Sep 76
HANDLER		
PATCHING LP VECTOR	02	Apr 76
LP HANGS SYSTEM	03	May 76
CORRECTIONS AND ENHANCEMENTS TO THE KB HANDLER AND INSTALLING HANDLERS	04	Sep 76
PROBLEMS WITH RSX-11D TO RT-11 MAGTAPE TRANSFERS	05	Sep 76
ERRORS IN KB.MAC	06	Jan 77
CAPS-11 CASSETTE FILE HEADERS DIFFER FROM RT-11 CASSETTE FILE HEADERS	07	Nov 77
READ FROM TT: AFTER A CTRL-Z, SOMETIMES PRINTS INCORRECTLY	08	Dec 77
MAGTAPE OPERATIONS	09	Feb 78
LINK		
PERFORMANCE IMPROVEMENT IN LINKER	01	Jul 76
FORTRAN "BLOCK DATA" INITIALIZATIONS ARE INCORRECT WHEN LINKED TO A FORTRAN PROGRAM FROM A LIBRARY	02	Oct 76

Component	Sequence	Mon/Yr
MONITOR		
ERROR IN F/B	13	Mar 76
FIS EXCEPTION ERROR	17	Apr 76
MIDNIGHT ROLLOVER FOR R/B MONITOR MALFUNCTIONS	19	May 76
RETRACTED ARTICLE	20	XXX XX
GARBAGE OUTPUT TO TERMINAL ON BOOTING	21	Sep 76
DEVICE HANDLERS HAVE A MINIMUM SIZE AND POSITION REQUIREMENT	22	Sep 76
LISTINGS SENT TO CONSOLE HANG MONITOR WHEN "GTON" IS ACTIVE	23	Feb 77
S/J MONITOR NOT RESPONDING TO CTRL/C AFTER 81 CHARACTERS ENTERED AT KEYBOARD	24	Feb 77
CODING ERROR IN READ/WRITE ROUTINE CAUSES TRANSFER MANFUNCTION	25	Jun 77
ERRORS OCCUR WHEN SAVING OR EXAMINING PROGRAMS THAT OVERLAY KMON	26	Aug 77
BOOTING AN RK06 SYSTEM	27	Oct 77
MESSAGE CHANNEL IS NOT RESET AFTER TASK TERMINATION	28	Nov 77
RESTART LOCATIONS ARE CLEARED WHEN UNLOADING CERTAIN HANDLERS	29	Nov 77
READ FROM TT: AFTER A CRTL-Z, SOMETIMES PRINTS INCORRECTLY	30	Dec 77
CORRECTIONS MADE TO READ/WRITE PROGRAMMED REQUESTS ROUTINES	30a	Feb 78
ERROR IN TTYOUT INTERRUPT SERVICE ROUTINE	31 M	Jan 78
INCORRECT IDENTIFIER IN .TWAIT	32	Feb 78
VOLUME DIRECTORY CORRUPTION	33 M	Apr 78
PATCHO		
ERR 61 MESSAGE FROM PATCHO	02	May 76
PIP		
CODING ERROR IN PIP CREATES OVERSIZED FILES	01 M	Jan 78
SYSLIB		
CALL TO ILUN FUNCTION APPEARS TO LOSE A CHANNEL	01	Jan 77
ERROR IN THE CONCAT ROUTINE	02 M	Jun 78
SYSTEM INFORMATION		
LOW SPEED READER SUPPORT	01	Apr 74

RT-11 V3

DOCUMENTATION		
TYPOGRAPHICAL ERRORS	01 N	Mar 78
EDIT		
EDIT DOES NOT OPERATE CORRECTLY UNDER XM MONITOR	01 M	Mar 78
MACRO		
.NARG FAILS WHEN AUTOMATIC LABEL GENERATION IS USED	01 M	Apr 78
MISCELLANEOUS		
GETSTR AND PUTSTR ROUTINES FOR IN-LINE CODE	01 M	Jun 78
ERROR IN THE CONCAT ROUTINE	02 M	Jun 78
MONITOR		
INCORRECT IDENTIFIER IN .TWAIT REQUEST CAUSES PROBLEMS	01 M	Mar 78
.CHAIN, .EXIT FROM VIRTUAL JOB; USR MOVING INTO PAR1 AREA	02 M	Apr 78
PATCH TO INTERRUPT EXIT ROUTINE	03 M	Apr 78
IMPROPER HANDLING OF THE KW11-P CLOCK	04 M	May 78
SPECIFYING 50-CYCLE CLOCK SUPPORT DURING SYSGEN OPERATIONS	05 M	Jun 78
EDITORS AND V3B MONITORS	06 M	Jun 78
TYPING NON-ASCII FILES TO CONSOLE AFTER ISSUING A GTON HANGS THE SYSTEM	07 M	Jun 78

Component	Sequence	Mon/Yr
UTILITIES		
DUP DEFAULT FILE SIZE AND NULL FILE TYPES ARE INCORRECT	01 M	Mar 78
DIR MAY INCORRECTLY LIST DIRECTORIES OF MAGTAPES	02 M	Mar 78
/L OPTION TO PIP MAY CUASE SYSTEM CRASH	03 M	Mar 78
LINK OUTPUT INVALID IF OBJ HAS AN EMPTY GSD RECORD	04 M	Mar 78
PAT GIVES FATAL ERROR IF OBJ HAS AN EMPTY RECORD	05 M	Apr 78
EDIT VT11 DISPLAY FUNCTIONS WILL NOT OPERATE UNDER XM MONITOR	07 M/R	Apr 78
TRANSFERS IN INTERCHANGE FORMAT WHEN NO SYSTEM DATE IS GIVEN	08 M	Jun 78
DUP SCAN RATE FOR FLOPPY	09 M	Jun 78
DUP /I AND /W SWITCHES DO NOT WORK PROPERLY	10 M	Jun 78

RT-11/2780 V2

CORRECTIONS TO 2780 PACKAGE	01	Sep 77
RUNNING 2780 ON RT-11 V3	02	Nov 77
PATCHING THE 2780 IN RT-11 V3	03 M	Jun 78

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Software Product Description

PRODUCT NAME: DECnet-RT, Version 1.0 **SPD 10.72.1**

DESCRIPTION:

DECnet-RT, Version 1.0, allows a suitably configured RT-11 system to participate as a Phase II DECnet node in point-to-point computer networks. DECnet-RT offers task-to-task communications, network file transfer and network resource-sharing capabilities, using the DIGITAL Network Architecture (DNA) protocols. DECnet-RT communicates with adjacent nodes over synchronous and asynchronous communication lines, and parallel interfaces. Access to DECnet-RT is supported for RT-11 user programs written in MACRO-11 and FORTRAN.

DECnet-RT is a Phase II network product and is warranted for use only with Phase II DECnet products supplied by DIGITAL.

The functionality available to an RT-11 user depends, 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 (a two node network because DECnet-RT supports one communication line) nodes have the full functionality described in this SPD. Networks that mix DECnet-RT nodes with other DECnet products may limit the functions available to the DECnet-RT user because some DECnet-RT features may not be supported by all DECnet products.

The Phase II 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 Phase II DECnet SPD (10.78).

Task-to-Task Communication

Using DECnet-RT, an RT-11 user program written in MACRO-11 or FORTRAN can exchange messages with other programs using Phase II DECnet DNA protocols. The two user programs must be adjacent DECnet nodes. (Adjacent nodes control opposite ends of a point-to-point communication line.) If on adjacent nodes, the second node can be any Phase II DECnet System that supports synchronous or asynchronous communication lines.

Network File Transfer Utilities

Using DECnet-RT utilities, a user can transfer sequential ASCII files between Phase II DECnet nodes. Files can be transferred in both directions between locally supported RT-11 File System device and the file system of an adjacent DECnet node.

In addition, other types of files may be transferred where formats between the Phase II DECnet nodes are compatible.

Additional facilities allow system command files or batch files to be submitted to a remote node where the list of commands must be in the format expected by the node responsible for the execution. DECnet-RT does not support system command or batch files to be submitted from other systems.

Network Resource Access

File Access

File access is supported to and from remote DECnet systems by explicit subroutine calls in FORTRAN and MACRO tasks.

READ, WRITE, OPEN and CLOSE, and DELETE operations can be initiated by local FORTRAN and MACRO tasks for sequential files residing at remote DECnet systems. Other nodes supporting File Access can exercise this capability for files located on the RT-11 node. Fixed and variable length record formats are supported. Further, files accessed remotely can contain either ASCII or binary information.

Network Information Program

Using the DECnet-RT NIP utility, a user can set node name and password, and display statistics related to the communication lines, including data on traffic and errors. Output can be directed to the terminal or to a log file.

Terminal Communication Utility

The DECnet-RT TLK utility allows a user at a DECnet-RT node to send messages to adjacent 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 on the two systems to type messages to one another.

Communications

- DECnet-RT Version 1.0 supports the DIGITAL Data Communications Message Protocol (DDCMP) for full or half-duplex transmission in point-to-point operation using serial synchronous or asynchronous facilities. DDCMP provides error detec-

tion/correction and physical link management facilities.

- one point-to-point link can be supported by a RT-11 node. Only one link may connect any pair of nodes.

DECnet-RT Operation

DECnet-RT is implemented as a driver under RT-11 FB/XM and subroutines that would be linked with the Foreground or Background RT-11 program. Minimum memory residency requirements for a driver and network code are 7K words (14K bytes), and at least 1K words (2K bytes) for temporary data storage. Consequently, the user should plan to dedicate at least 8K (16 bytes) words of memory storage to network control functions. Additional memory will be required for a user written network task or any DECnet utility functions to be invoked (file transfer, TLK).

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 user's application requirements. It can be readily expected that network applications will run the full gamut 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). Thus, 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 that the rate at which user data may be shipped ("throughput") over a communications line may sometimes approach, but will never equal or exceed, the actual line speed; the same may be said for multiple lines as well. The reason, simply stated, 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 upon CPU utilization.

- The DMC11 is a direct memory access (DMA) device. Also the DDCMP line protocol is executed in microcode by the DMC11 communication controller, thus off-loading the PDP-11. Thus, the only DECnet load the processor sees is completed 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 may reduce the line speed which can effectively be supported.

DECnet-RT

Maximum Line Configurations On 11/03 CPUs

Device Group	Max. No. of Lines	Maximum Linespeed (Kilobits/sec)	Maximum Device Bandwidth (Kilobits/sec)	Mode
DUV11, DLV11-E	1	2.4	2.4	FDX,HDX

DECnet-RT

Maximum Line Configurations On 11/04-11/70 CPUs

Device Group	Max. No. of Lines	Maximum Linespeed (Kilobits/sec)	Maximum Device Bandwidth (Kilobits/sec)	Mode
DL11				
DU11, DUP11	1	9.6*	9.6*	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

* restricted to maximum of 4.8 on PDP-11/10 or 11/04

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

Maximum Number of Lines

The largest number of physical lines which can be attached and driven by the DECnet-RT system.

Maximum Device Bandwidth

The maximum total number of bits per second which can be handled by a CPU for a given communication device. For example, DECnet-RT on a PDP-11/04 can accomodate one full-duplex character-interrupt device at4.8KB.

Maximum Line Speed

The fastest clock rate at which the device can be driven under DECnet-RT. This means that even if specific devices have the ability to operate at a maximum rate, they must be configured subject to the "maximum device bandwidth" restriction above.

Mode

This indicates whether the line is operating in either half-duplex (a single-bit stream) or full-duplex (two concurrent bit streams) mode. In some instances in the tables, a half-duplex line is quoted as having maximum bandwidth approximately double that of the comparable full-duplex line. This reflects the single bit stream character of half-duplex lines, and the fact that two of them place a load on the CPU roughly

equivalent to one full-duplex line with traffic in both directions.

MINIMUM HARDWARE REQUIRED:

Any valid RT-11 FB/XM system configuration with:

- a minimum of 8K words (16K bytes) additional available memory for the DECnet-RT software and data storage
- PDP-11/04 through PDP-11/70 central processor with one or more of the following communications devices:
  - DU11-DA low speed synchronous interface
  - DUP11-DA low speed synchronous interface
  - DMC11-AR-DA high speed synchronous EIA interface
  - DMC11-AL-MD high speed local synchronous interface
  - DMC11-AL-MA high speed local synchronous interface
  - DL11-E asynchronous interface with modem control
  - DL11-C asynchronous interface, 20mA current loop (1)
  - DL11-WA asynchronous interface,20mA current loop (1)

PDP-11/03 central processor with one of the following communications devices:

- DUV11-DA low speed synchronous interface
- DLV11-E asynchronous interface with modem control

NOTE:
(1) Requires either the H319 option for optical isolation or one side of the 20mA line to be in passive mode.

OPTIONAL HARDWARE:

None

PREREQUISITE SOFTWARE:

RT-11 FB/XM operating system, Version 3.0

OPTIONAL SOFTWARE:

None

TRAINING CREDITS:

None

SUPPORT CATEGORY:

A — Software Support will be provided as stated in the Software Support Categories Addendum to this SPD.

Installation under Category A support will convert the RT-11 system into a node with connection potential to a DECnet Phase II network. This installation does not include a demonstration of network connection.

The Customer may purchase DECnet-RT licenses with options that do not include support services. The category of support applicable to such software is Category C. 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 that network is Category C.

CUSTOMER RESPONSIBILITIES:

Before installation of the Software, the Customer must:

1. Install or have installed all hardware, including terminals, to be used on the system.
2. Make available to DIGITAL personnel all hardware, including terminals, to be used during installation for a reasonable period of time each day, 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.

UPDATE POLICY:

Software Updates, if any, released by DIGITAL during the one (1) year period following installation, will be provided to the customer for a media charge (includes no installation). After the first year, updates, if any, will be made available according to then prevailing DIGITAL policies.

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 Agreement between Purchaser and DIGITAL.

Standard options with no support services are only available after the purchase of one supported license. When a software license is ordered without support services, the category of support applicable to such software is Category C.

A single-use license only option is a license to copy the software previously obtained under license, and use such software in accordance with DIGITAL's Standard Terms and Conditions of Sale. The category of support applicable to such copied software is Category C.

Source and/or listing options are only available after the purchase of at least one binary license and after a source license agreement is in effect.

The following key (D, E, F, R, T, Y, Z) represents the distribution media for the product and must be specified at the end of the order number, e.g., QJ685-AD = binaries on 9-track magnetic tape.

D = 9-track Magnetic Tape
E = RK05 Disk Cartridge
F = 7-track Magnetic Tape
R = Microfiche
T = RK06 Disk Cartridge
Y = Floppy Diskette
Z = No hardware dependency

Standard Options

QJ685 -A— Single-use license, binaries, documentation, support services (media: D, E, F, T, Y)

QJ685 -C— Single-use license, binaries, documentation, no support services (media: D, E, F, T, Y)

QJ685 -D— Single-use license only, no binaries, no documentation, no support services (media: Z)

Source/Listing Options

QJ685 -E— All sources (media: D, E, F, T, Y)
QJ685 -F— Listings (media: R)

Miscellaneous Options

QJ685 -G— Pre-delivery kit (media: Z)

ADDITIONAL SERVICES:

QS680 -S— DECnet Level I Services (media: Z)

Level II services are also available. Consult the DECnet Phase II Products SPD (10.78) for a description of Level I and Level II services.

ADDENDUM
SOFTWARE SUPPORT CATEGORIES

Each software product (hereinafter 'SOFTWARE') with a designated Support Category A or B in the applicable Software Product Description (SPD) existing at the time of order will be the current release at the time of delivery and will conform to the SPD. DIGITAL's sole obligation shall be to correct defects (nonconformance of the SOFTWARE to the SPD) as described below. Any SOFTWARE with a designated Support Category C will be furnished on an 'as is' basis.

For SOFTWARE with a designated Support Category A or B, DIGITAL will provide the services set forth below without additional charge.

CATEGORY A

1. Upon notification by customer to the nearest DIGITAL office that the computer system, including all required prerequisite hardware and software, is ready for the installation of the SOFTWARE, DIGITAL will install such SOFTWARE in any location within the contiguous forty-eight (48) United States, the District of Columbia, or a country in which DIGITAL or a subsidiary of DIGITAL has a software service facility. The notification must be received by DIGITAL and the system must be ready for installation within thirty (30) days after the delivery of the SOFTWARE to customer or DIGITAL will have no obligation to install. Installation will consist of: (1) verification that all components of the SOFTWARE have been received by customer, (2) loading the SOFTWARE, and (3) executing a DIGITAL sample procedure.
2. During the ninety (90) day period after installation, if the customer encounters a problem with the current unaltered release of the SOFTWARE which DIGITAL determines to be a defect in the SOFTWARE, DIGITAL will provide the following remedial service (on site where necessary): (1) if the SOFTWARE is inoperable, apply a temporary correction (TC) or make a reasonable attempt to develop an emergency by-pass, and (2) assist the customer to prepare a Software Performance Report (SPR) and submit it to DIGITAL.
3. During the one (1) year period following installation, if the customer encounters a problem with the SOFTWARE which his diagnosis indicates is caused by a SOFTWARE defect, the customer may submit an SPR to DIGITAL. DIGITAL will respond to problems reported in SPRs which are caused by defects in the current unaltered release of the SOFTWARE via the Maintenance Periodical for the SOFTWARE, which reports SPRs received, code corrections, temporary corrections, generally useful emergency by-passes and/or notice of the availability of corrected code. Software Updates, if any, released by DIGITAL during the one (1) year period, will be provided to the customer on DIGITAL's standard distribution media as specified in the applicable SPD. The customer will be charged only for the media on which such updates are provided, unless otherwise stated in the applicable SPD, at DIGITAL's then current media prices.

CATEGORY B

During the one (1) year period following delivery, the services provided to the customer will be the same as set forth in 3 above.

CATEGORY C

SOFTWARE is provided on an 'as is' basis. Any software services, if available, will be provided at the then current charges.

DIGITAL shall have the right to make additional charges for any additional effort required to provide services resulting from customer use of other than current unaltered release of the SOFTWARE operated in accordance with the SPD.

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Software Product Description

PRODUCT NAME: DECnet Phase II Products, Version 1 **SPD 10.78.0**

DESCRIPTION:

DECnet Phase II is the collective name for the set of software products that extend various DIGITAL operating systems by enabling the user to interconnect these systems with each other to form computer networks. The DECnet Phase II products include DECnet-11M Version 2, DECnet-11S Version 2, DECnet-11D Version 2, DECnet-IAS Version 2, DECnet/E Version 1, and DECnet-RT Version 1. The DECnet user can configure a variety of networks, to satisfy a variety of applications, by choosing the appropriate CPU's, line interface (and speeds), and operating system software.

In order to satisfy these widely varying applications, DECnet allows the user to build networks from a range of systems and communications components. DECnet allows users to interconnect systems using serial asynchronous, serial synchronous, and parallel facilities. When configuring DECnet systems, both ends of any given link must use the same type of communications discipline (e.g., synchronous, asynchronous or parallel) running at the same line speed.

DIGITAL Network Architecture:

DECnet includes a set of network protocols, each of which is designed to fulfill specific functions within the network. Collectively, these protocols are known as the DIGITAL Network Architecture, or DNA. The major protocols, and their functions, are:

DIGITAL Data Communications Message Protocol (DDCMP) — DDMCP handles the physical link traffic control and physical link error recovery within DECnet. DDCMP operates over both full and half duplex facilities, using serial synchronous or serial asynchronous facilities in a point-to-point mode. DDCMP has the following important characteristics:

- operates over a wide variety of hardware types
- makes efficient use of full-duplex channel capacity
- allows transmission of all data types (including binary) with low overhead
- allows standard (character-oriented) communications hardware to be used
- uses CRC-16 for error detection, with recovery by retransmission
- effective on earth/satellite links (or other links) with long signal propagation delays

A full specification for DDCMP Version 4.0 is available on request. DIGITAL does not regard DDCMP as a proprietary protocol, and allows others to implement and use the protocol, providing an acknowledgment of the source is made in any public documentation.

Network Services Protocol (NSP) — NSP handles network management functions within DECnet. This includes sending messages between two nodes and routing messages within any given node. NSP makes it possible for two programs on different machines to establish a logical communications channel (or logical link) between the programs, and to exchange data using this logical link. These programs need not be aware of either the nature of the physical link (full/half duplex, parallel or serial) or the nature of the protocols supporting the physical link. NSP has the following important characteristics:

- dynamic creation of logical links between tasks
- exchange of data between tasks on a solicited basis
- exchange of data between tasks on a non-solicited (e.g., interrupt) basis
- nodes can be dynamically connected within the network once NSP initialization occurs over a previously established physical link

A full specification for the Network Services Protocol Version 3.0 is available on request. NSP is not a proprietary protocol.

Data Access Protocol (DAP) — The Data Access Protocol enables programs on one node of the network to use the I/O services available on other network nodes. Each operating system in DECnet provides facilities for translating its own unique I/O calls into the DAP standard, and vice versa. Thus, DAP enables data requests to be processed in a meaningful way by many (possibly heterogenous) operating systems. DAP's facilities include:

- remote file access, including OPEN, READ, WRITE, CLOSE and DELETE for sequential and random access files, and command files

It should be noted that each DAP function requires support at both ends of the link. At the local node, where the user program initiates a data request, the DAP support must package the request for transmission through the network. At the remote node (where the device or file resides), the DAP support must cause the appropriate actions to be performed. Not all systems support both local and remote portions of each DAP operation.

A full specification for the Data Access Protocol Ver-

sion 4.1 is available on request. DAP is not a proprietary protocol.

DECnet Functions:

Digital Network Architecture, implemented across a wide range of operating systems and hardware configurations, enables users to build a variety of networks. While such networks have a common attribute, individual systems in the network may have certain system-specific attributes. The common attribute is:

- Task-to-task communication: Programs or tasks on one system can create logical links and exchange data with programs or tasks on other systems in a real-time fashion.

Additionally, many DECnet systems support other features which are useful in network environment. These include:

- Inter-system File Transfer: This facility allows an entire data file to be moved between systems, at either program or operator request. The common file type supported across systems that provide this functionality is sequential ASCII.
- Batch/Command File Submission: Local users can submit batch or command files to remote systems for execution.
- Batch/Command File Execution: Remote users can cause a batch or command file which resides at a remote node to be submitted for execution at the local node.
- Remote File Access: Tasks or programs can access sequential files on a record-by-record basis from files located on remote nodes.
- Down-line System Loading: Initial memory images for DECnet-11S systems in the network can be stored on the local system, and loaded on request into other systems in the network. Remote systems usually require the presence of a network bootstrap loader, implemented in read-only memory.
- Down-line Task Loading: Programs to be executed on DECnet-11S systems in the network can be stored on the local system, and loaded on request into the DECnet-11S system, under the joint control of the operating systems at both ends of the physical link. This and the preceding feature simplify the operation of network systems which do not have mass storage devices.

Table I provides the information for determining if the preceding functions are available on a particular DECnet system. Note that the above descriptions define the minimum capabilities provided by a given function. Additional capabilities, above those described as the minimum for a function, may be available between two of the same or different DECnet systems.

Configuring DECnet Networks:

DECnet provides a basic level of interconnection between specific products. However, each DECnet system has its own level of functions. The user can recognize specific constraints when configuring a network of heterogeneous DECnet systems. Table II lists the communication interfaces supported by each DECnet Phase II product for particular class of line characteristics (e.g., 9.6 kilobits/second, synchronous). Each column lists the connections that are permissible for those line characteristics in cross-product network configurations. Individual product SPD's must be consulted to determine whether any particular configuration violates the maximum number of communications interfaces and line speeds for an individual product.

TRAINING CREDITS:

No training credits are 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:

Category A Software Support, as described in the Software Support Categories Addendum to this SPD, will be provided with DECnet Phase II product options that include support services.

The installation of DECnet software under Category A Support Services in any host system will convert that system to a node with the potential of being connected to a DECnet network. Category A installation does not include demonstration of network connection.

The Customer may purchase DECnet Phase II product license options that do not include support services. The category of support applicable to such software is Category C. When a DECnet product option that does not include support services is connected to a DECnet network, the category of support applicable to all DECnet products in that network is Category C.

INSTALLATION SERVICE:

The installation of the Software under Category A Software Support shall consist of:

1. Verifying that the software kit contains all software modules and manuals offered.
2. Generating the DECnet software.
3. Demonstrating the use of the majority of operator commands and system utilities.
4. Running a sample DIGITAL-supplied program.
5. Introducing the Customer to the sources of software information and services.

Before installation of the Software, the Customer must:

1. Install or have installed all hardware, including terminals, to be used on the system.
2. Make available to DIGITAL personnel all hardware, including terminals, to be used during installation for a reasonable period of time each day, 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 Support Plan covering all intended network nodes and their support must be

prepared jointly by the Customer and DIGITAL.

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 Agreement between Purchaser and DIGITAL.

When multiple systems are connected in a single network, each individual system must be licensed separately with regard to both operating system and DECnet software.

ADDITIONAL SERVICES:

Software Consulting Services are offered on a time and materials basis to meet specific customer needs. Two levels of consulting services are available:

Level I Services

QS680 -S— DECnet Level I Services (media: Z)

Level I services provide for the integration of DECnet nodes that carry Category A support into an interconnected network, with verification of network integrity and demonstration of DECnet functions. Level I services use DIGITAL sample procedures only.

Before installation of the Network, the Customer must:

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

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

Level II Services

QS912 -S— Daily Software Consulting Services (media: Z)

QS926 -S— Weekly Software Consulting Services (media: Z)

QS922 -S— 6-Month Resident Software Consulting Services (media: Z)

QS924 -S— 12-Month Resident Software Consulting Services (media: Z)

Level II services provide for additional support as mutually agreed upon by DIGITAL and the Customer in the DECnet Customer Support Plan.

Table I

	DECnet-11M Version 2.0	DECnet-11S Version 2.0	DECnet-11D Version 2.0	DECnet-IAS Version 2.0	DECnet/E Version 1.0	DECnet-RT Version 1.0
Task-to-Task	YES	YES	YES	YES	YES	YES
Intersystem File Transfer	YES	NO	YES	YES	YES	YES
Command/Batch File Submission	YES[1]	NO	YES[1]	YES[1]	YES	YES
Command/Batch File Execution	YES	NO	YES	YES	YES	NO
Remote File Access	YES	YES[2]	YES	YES	NO	YES
Down-Line System Loading	YES	NO	YES	YES	NO	NO
Down-Line Task Loading	YES	NO	YES	YES	NO	NO

[1]Cannot submit files to DECnet/E systems.

[2]Offers local users network access to remote file systems. Does not allow users on remote systems to access local files.

Table II

	EIA Sync <9.6K bits/sec	EIA Sync <19.2K bits/sec	EIA Async <9.6K bits/sec	20ma Async <9.6 bits/sec	Local Sync 56K bits/sec	Local Sync 1M bits/sec	Local Parallel
DECnet-11M Version 2.0	DP11 DU11-DA DUP11-DA DV11	DQ11-DA DMC11-AR DMC11-DA	DL11-E DZ11-A DZ11-B	DL11-C DL11-WA DZ11-C DZ11-D	DMC11-AL DMC11-MD	DMC11-AL DMC11-MA	DA11
DECnet-11S Version 2.0	DP11 DU11-DA DUP11-DA DV11 DUV11-DA	DQ11-DA DMC11-AR DMC11-DA	DL11-E DZ11-A DZ11-B	DL11-C DL11-WA DZ11-C DZ11-D	DMC11-AL DMC11-MD	DMC11-AL DMC11-MA	DA11
DECnet-11D Version 2.0	DP11 DU11-DA DUP11-DA DV11	DQ11-DA DMC11-AR DMC11-DA	DL11-E DZ11-A DZ11-B	DL11-C DL11-WA DZ11-C DZ11-D	DMC11-AL DMC11-MD	DMC11-AL DMC11-MA	DA11
DECnet-IAS Version 2.0	DP11 DU11-DA DUP11-DA DV11	DQ11-DA DMC11-AR DMC11-DA	DL11-E DZ11-A DZ11-B	DL11-C DL11-WA DZ11-C DZ11-D	DMC11-AL DMC11-MD	DMC11-AL DMC11-MA	DA11
DECnet-RT Version 1.0	DU11-DA DUP11-DA DUV11-DA	DMC11-AR DMC11-DA	DL11-E	DL11-C DL11-WA	DMC11-AL DMC11-MD	DMC11-AL DMC11-MA	
DECnet/E Version 1.0		DMC11-DA DMC11-AR			DMC11-AL DMC11-MD	DMC11-AL DMC11-MA	

ADDENDUM
SOFTWARE SUPPORT CATEGORIES

Each software product (hereinafter 'SOFTWARE') with a designated Support Category A or B in the applicable Software Product Description (SPD) existing at the time of order will be the current release at the time of delivery and will conform to the SPD. DIGITAL's sole obligation shall be to correct defects (nonconformance of the SOFTWARE to the SPD) as described below. Any SOFTWARE with a designated Support Category C will be furnished on an 'as is' basis.

For SOFTWARE with a designated Support Category A or B, DIGITAL will provide the services set forth below without additional charge.

CATEGORY A

1. Upon notification by customer to the nearest DIGITAL office that the computer system, including all required prerequisite hardware and software, is ready for the installation of the SOFTWARE, DIGITAL will install such SOFTWARE in any location within the contiguous forty-eight (48) United States, the District of Columbia, or a country in which DIGITAL or a subsidiary of DIGITAL has a software service facility. The notification must be received by DIGITAL and the system must be ready for installation within thirty (30) days after the delivery of the SOFTWARE to customer or DIGITAL will have no obligation to install. Installation will consist of: (1) verification that all components of the SOFTWARE have been received by customer, (2) loading the SOFTWARE, and (3) executing a DIGITAL sample procedure.
2. During the ninety (90) day period after installation, if the customer encounters a problem with the current unaltered release of the SOFTWARE which DIGITAL determines to be a defect in the SOFTWARE, DIGITAL will provide the following remedial service (on site where necessary): (1) if the SOFTWARE is inoperable, apply a temporary correction (TC) or make a reasonable attempt to develop an emergency by-pass, and (2) assist the customer to prepare a Software Performance Report (SPR) and submit it to DIGITAL.
3. During the one (1) year period following installation, if the customer encounters a problem with the SOFTWARE which his diagnosis indicates is caused by a SOFTWARE defect, the customer may submit an SPR to DIGITAL. DIGITAL will respond to problems reported in SPRs which are caused by defects in the current unaltered release of the SOFTWARE via the Maintenance Periodical for the SOFTWARE, which reports SPRs received, code corrections, temporary corrections, generally useful emergency by-passes and/or notice of the availability of corrected code. Software Updates, if any, released by DIGITAL during the one (1) year period, will be provided to the customer on DIGITAL's standard distribution media as specified in the applicable SPD. The customer will be charged only for the media on which such updates are provided, unless otherwise stated in the applicable SPD, at DIGITAL's then current media prices.

CATEGORY B

During the one (1) year period following delivery, the services provided to the customer will be the same as set forth in 3 above.

CATEGORY C

SOFTWARE is provided on an 'as is' basis. Any software services, if available, will be provided at the then current charges.

DIGITAL shall have the right to make additional charges for any additional effort required to provide services resulting from customer use of other than current unaltered release of the SOFTWARE operated in accordance with the SPD.

DECUS SPECIAL INTEREST GROUPS

A DECUS Special Interest Group (SIG) is an activity whereby members of the DIGITAL Equipment Computer Users Society who share common interests in a particular field, join together to promote the interchange of information. Specialization may be in application areas such as education or industry, specific software systems such as OS/8 and RSX-11, or a specific mainframe such as the DECsystem-10/20.

SIG members derive numerous benefits from communicating with others who share specialized interests and who may wish to share their experiences. SIG s sponsor business meetings, tutorials, and workshops at the various chapter symposia which fulfill the two-fold purpose of fostering communication among users and between users and DIGITAL. Channeled communication provides DIGITAL and the users with insight into the direction of future developments. SIG s provide direct feedback to DIGITAL's in-house activities and have thereby made substantial contributions to OS/8, RSX-11, RSTS and TOPS-10.

User submitted articles, minutes of local meetings, and letters comprise the major portion of the individual SIG newsletters. Suggestions, hints, bug fixes, program plans, or questions of a non-commercial nature are suitable material for SIG newsletters.

SIG members are encouraged to make presentations at the SIG sessions held during DECUS Symposia.

The semi-annual U.S. Symposia sessions are organized by special interest areas. Submissions received from the user community are reviewed by symposia committee members from the special interest groups for appropriate placement on the agenda.

Special Interest Group participation in the review of programs submitted to the DECUS Program Library provides an opportunity to improve the quality and utility of programs available to you and to fellow users.

DIGITAL standards are issued to DECUS members for review and on the theory and philosophy of the standards. DECUS is a voting member of ANSI X3. Users are encouraged to register their areas of expertise with DECUS and assist with reviewing standards. SIG s often play a role in this process.

Below is a list of U.S. based Special Interest Groups within DECUS.

If you would like information regarding membership in any of the Special Interest Groups, contact DECUS U.S. Chapter, 129 Parker Street, PK3-1/E55, Maynard, Massachusetts 01754 or one of the other DECUS Chapter offices in Kanata, Sidney or Geneva.

MCPU SIG - Multi-CPU Special Interest Group
NETSIG - Networks Special Interest Group
Biomed SIG - Biomedical Special Interest Group
RSTS SIG - RSTS and RSTS/E Special Interest Group
SIGIG - Special Interest Group on Interactive Graphics
ESIG - Engineering Applications Special Interest Group
SIG-18 - 18-Bit Users Special Interest Group
12-Bit SIG - 12-Bit User Special Interest Group
RSX-11/IAS SIG
RT-11 SIG
EDUSIG - Educational Users Special Interest Group
DEBUG - Digital Equipment Business Users Group
MUSIG - Mumps Special Interest Group
PASCAL SIG
DBMS SIG
TECO SIG
SIGIL - Special Interest Group on Implementation Languages
LSI-11 SIG
FOCAL SIG
STANDARDS SIG

RT-11 SPECIAL INTEREST GROUP

A Special Interest Group has been formed to serve users of RT-11. The organization of the SIG consists of a SIG Chairman and working committees for standards, documentation, library submissions, newsletter, and help for new users.

Submissions to the newsletter should be directed to:

John T. Rasted
CAM Systems, Inc.
17 Brown Street
Waterbury, CT 06702
(203) 757-8010

Other communications can be sent to:

Thomas J. Provost
P. O. Box 95
Middleton, MA 01949
(617) 774-2370
(617) 245-6600 (Boston tie line)

or

Thomas J. Provost
RT-11 SIG Chairman
c/o DECUS
129 Parker Street, PK3-1/E55
Maynard, MA 01754
(617) 897-5111, ext: 2414

SIG's activities encompass the following:

1. Preparation of a SIG newsletter (user submissions are strongly encouraged).
2. Exchange of user-written programs. This exchange could include TASKS representing user-written extensions to RT-11 (including, but not limited to device drivers) as well as utility and applications programs, etc.
3. Establishment of communications with the DECUS staff to obtain for SIG members early information on RT-11 related additions to the DECUS Library. These communications will also serve to provide prompt testing of such submissions.
4. Establishment of user input to appropriate groups within DEC, so that they will receive user feedback on any additions or needed changes to RT-11. Additionally, SIG members may receive early warning from DEC about RT-11 changes.
5. Establishment of SIG-maintained files of RT-11 errors and error solutions, where they exist, independent of DEC publications.
6. Establishment of RT-11 "Welcome Wagon" type services to aid new users.
7. Coordination of user input to standards and documentation work.

If you wish to become a member of the RT-11 SIG, please fill out the form below and return it to the DECUS Office. (Please type or print).

NAME _____ *DECUS MEMBERSHIP NO. _____

AFFILIATION _____

ADDRESS _____

CITY _____ STATE _____ ZIP CODE _____

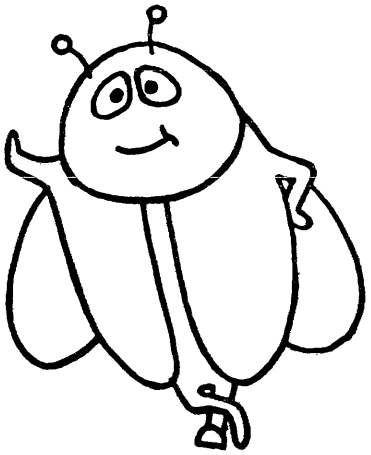
Are you registered with DEC as an RT-11 user? _____

Version Number _____

Fortran? _____

Basic? _____

**Please note one must be a member of DECUS prior to requesting RT-11 SIG involvement. For general membership information, contact the DECUS Office, 129 Parker Street, Maynard, MA 01754*



debug

DEBUG is dedicated to establishing an interchange of ideas between business users of DEC computers in accounting allied applications, and between the users and DEC.

DEBUG MEMBERSHIP APPLICATION

Name _____ Title _____ _____

Firm _____

Address _____ Telephone _____

City _____ State _____ Zip _____

DECUS NO. *

_____ _____

_____ BACKGROUND AND EXPERIENCES _____

Like all non-profit service orgnaizations, DEBUG can best serve its members by utilizing the skills, experiences and viewpoints of its own membership. To let us know where your own experiences and interests lie, we ask that you fill out the following vitae form. You may, of course, decline to do so – we will treat your response with respect and confidentiality in any case.

ACADEMIC BACKGROUND	favorite subject area	minor subject area	also studied
BUSINESS AREAS AND/OR FUNCTIONS	most experience with	fair experience with	worked around
COMPUTER SYSTEMS WORKED WITH	favorite system, language	also experienced with	smattering of

*Please note one must be a member of DECUS prior to requesting DEBUG SIG involvement. For general membership information, contact the DECUS office, 129 Parker Street, PK3-1/E55, Maynard, MA 01754.

I would consider:

- ☐ Chairing a DEBUG session
- ☐ Organizing a session
- ☐ Working with the DEBUG steering committee

2/18/76

DIGITAL EQUIPMENT COMPUTER USERS SOCIETY

Special Interest Group in Implementation Languages

SIGIL

A Special Interest Group on System Implementation Languages, Tools and Techniques (SIGIL) was formed at the 1973 Fall DECUS Symposium.

The initial goals of the group are to provide the following:

1. Interchange of ideas and modules among programmers working in the system implementation area. The chief aim in this area is to avoid inventing square wheels when someone else has already developed round ones. The contributions in this area can range from core management modules to internal documentation practices, with distribution by newsletter.

2. Work with DEC Software Development for the user community on improving the existing languages used for systems implementation (MACRO-10, BLISS-10 and ALGOL). This is envisioned as a small group of users willing to spend the time and effort necessary.

To make a success of SIGIL, or to widen the area of interest across product lines, requires active participation of the members. Submissions to the newsletter or other communications may be sent to the following address:

SIGIL
c/o DECUS Office
129 Parker Street, PK3/E55
Maynard, MA 01754

**Please note one must be a member of DECUS prior to requesting SIGIL involvement. For general membership information, contact the DECUS Office, 129 Parker Street, Maynard, MA 01754*

To join SIGIL, please fill out the form below and return it to the DECUS Office.

Are you a DECUS Member? _____ DECUS Membership Number _____

NAME _____

AFFILIATION _____

ADDRESS _____

CITY _____ STATE _____ ZIP CODE _____

TELEPHONE NUMBER _____

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	Administrative Services Group, SWS P.O.Box F Maynard MA 01754
Canada	Digital Equipment Canada P.O.Box 11500 Kanata Canada K2H 8K8 Ontario
United Kingdom	Digital Equipment Corp., LTD Fountain House Butts Centre RG1 7QN Reading England
Australia-Melbourne	Digital Equipment Aust. Pty., LTD 60 Park Street South Melbourne Victoria Australia 3205
Australia-Sydney	Digital Equipment Aust. Pty., LTD 123 125 Willoughby Road P.O.Box 491 Crows Nest NSW Australia 2065
Brazil	Digital Equipment Comercio Ind Rua Batatais 429 Esq AL Campin 01423 Jardim Paulista Sao Paulo 0100 Brazil
Caribbean	De Latin America P.O.Box 11038 Fernando Juncos Sta. Santurce PR 00910
France	Digital Equipment Corp., LTD. Centre Silic Cidex L225 18 Rue Saarinen 94533 Rungis France

AREAS COVERED	SPR CENTER
Italy	Digital Equipment SPA Viale Fulvio Testi 117 20092 Cinisillo Balsamo Italy
Japan	Digital Equipment Corp., INTL 3rd Floor Kowa Building 8-7 Sanban Cho Chiyoda Ku Tokyo 102 Japan
New Zealand	Digital Equipment Corp., LTD Challenge House 3 Wolfe Street P.O.Box 2471 Auckland New Zealand 10010
Belgium, Holland	Digital Equipment BV Kaap Horndreef 38 3563 AV Utrecht Netherlands
Denmark, Finland, Norway, Sweden	Digital Equipment Corp., AB Englundavaegen 73 TR 171 41 Solna Sweden
Switzerland, Spain, Greece, Romania, Portugal, Bulgaria Yugoslavia	Digital Equipment Corp., SA 20 Quai Ernest Ansermet Boite Postale 23 CH 1211 Geneva Switzerland
Austria, Poland Hungary, Rumania East Germany, West Germany, Russia, Czechslovakia	Digital Equipment Corp., GMBH Wallsteinplatz 2 8000 Munchen 40 Germany 8000
Israel	DECSYS Computers, LTD 7 Habakuk Street Il-Tel Aviv 63505 Israel

DIGITAL EQUIPMENT CORPORATION, Corporate Headquarters: Maynard, Massachusetts 01754, Telephone: (617)897-5111—SALES AND SERVICE OFFICES: UNITED STATES—ALABAMA, Huntsville • ARIZONA, Phoenix and Tucson • CALIFORNIA, El Segundo, Los Angeles, Oakland, Ridgecrest, San Diego, San Francisco (Mountain View), Santa Ana, Santa Clara, Stanford, Sunnyvale and Woodland Hills • COLORADO, Englewood • CONNECTICUT, Fairfield and Meriden • DISTRICT OF COLUMBIA, Washington (Lanham, MD) • FLORIDA, Ft. Lauderdale and Orlando • GEORGIA, Atlanta • HAWAII, Honolulu • ILLINOIS, Chicago (Rolling Meadows) • INDIANA, Indianapolis • IOWA, Bettendorf • KENTUCKY, Louisville • LOUISIANA, New Orleans (Metairie) • MARYLAND, Odenton • MASSACHUSETTS, Marlborough, Waltham and Westfield • MICHIGAN, Detroit (Farmington Hills) • MINNESOTA, Minneapolis • MISSOURI, Kansas City (Independence) and St. Louis • NEW HAMPSHIRE, Manchester • NEW JERSEY, Cherry Hill, Fairfield, Metuchen and Princeton • NEW MEXICO, Albuquerque • NEW YORK, Albany, Buffalo (Cheektowaga), Long Island (Huntington Station), Manhattan, Rochester and Syracuse • NORTH CAROLINA, Durham/Chapel Hill • OHIO, Cleveland (Euclid), Columbus and Dayton • OKLAHOMA, Tulsa • OREGON, Eugene and Portland • PENNSYLVANIA, Allentown, Philadelphia (Bluebell) and Pittsburgh • SOUTH CAROLINA, Columbia • TENNESSEE, Knoxville and Nashville • TEXAS, Austin, Dallas and Houston • UTAH, Salt Lake City • VIRGINIA, Richmond • WASHINGTON, Bellevue • WISCONSIN, Milwaukee (Brookfield) • INTERNATIONAL—ARGENTINA, Buenos Aires • AUSTRALIA, Adelaide, Brisbane, Canberra, Melbourne, Perth and Sydney • AUSTRIA, Vienna • BELGIUM, Brussels • BOLIVIA, La Paz • BRAZIL, Rio de Janeiro and Sao Paulo • CANADA, Calgary, Edmonton, Halifax, London, Montreal, Ottawa, Toronto, Vancouver and Winnipeg • CHILE, Santiago • DENMARK, Copenhagen • FINLAND, Helsinki • FRANCE, Lyon, Grenoble and Paris • GERMAN FEDERAL REPUBLIC, Cologne, Frankfurt, Hamburg, Hannover, Munich, Nuremburg, Stuttgart and West Berlin • HONG KONG • INDIA, Bombay • INDONESIA, Djakarta • IRELAND, Dublin • ITALY, Milan, Rome and Turin • IRAN, Tehran • JAPAN, Osaka and Tokyo • MALAYSIA, Kuala Lumpur • MEXICO, Mexico City • NETHERLANDS, Utrecht • NEW ZEALAND, Auckland and Christchurch • NORWAY, Oslo • PUERTO RICO, Santurce • SINGAPORE • SPAIN, Madrid • SWEDEN, Gothenburg and Stockholm • SWITZERLAND, Geneva and Zurich • UNITED KINGDOM, Birmingham, Bristol, Epsom, Edinburgh, Leeds, Leicester, London, Manchester and Reading • VENEZUELA, Caracas •