RT-11

March 1979

AD-C740B-11

THE
SOFTWARE
DISPATCH

RT-11 SOFTWARE DISPATCH

The RT-11 Software Dispatch complements the RT-11 V3B Software Dispatch Review. New and revised Software Product Descriptions, programming notes, software problems and solutions, and documentation corrections are published here. Much of the material is developed from Software Performance Report (SPR) answers significant to the general audience and is printed here to supplement the maintenance notebook (established by the Software Dispatch Review).

PRODUCTS SUPPORTED in the RT-11 SOFTWARE DISPATCH

APL-11 V1	FORTRAN/RT-11 Extensions V1B	PEAK-11 V2
BASIC-11/RT-11 V2	FORTRAN/RT-11 LSI Extensions V1	PLOT 11/RT-11 V1.1
BASIC/RT Extensions V1	FORTRAN IV/RT-11 V2	RT-11/03 FORTRAN
COS-350/2780	GAMMA-11 F/B V2, V2C	Extensions V1
CTS-300 V3, V4, V5	Industrial BASIC/RT-11 V1	REMOTE/RT-11 V1
CTS-300 DICAM V1	Lab Applications-11 V3	RT-11 V3, V3B
CTS-300 DICAM II V1	LSP-11 V1	RT-11 (CTS-300)/LSI-11
CTS-300/DIS V1	MSB11 V1	2780 V2
DECnet/RT V1	MSB/FORTRAN IV V1	RT-11/2780 (CTS-300/
FOCAL/RT-11 V1B	MU BASIC-11/RT-11 V1	2780) V2
FORTRAN Graphics	PDL/RT-11 V1	SSP-11/RT-11 V1
Package V1.1		

DISTRIBUTION

The Dispatch is directed to one software contact for each licensed Category A and B software product for one year after installation. No Mailing will be made to addresses without a software contact name. 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.

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

TRADEMARKS of DIGITAL EQUIPMENT CORPORATION
Maynard, Massachusetts

DEC	EDUsystem	RSTS
DECsystem-10	IAS	RSX
DECSYSTEM-20	MASSBUS	UNIBUS
DECUS	OMNIBUS	VAX
DIBOL	OS/8	VMS
DIGITAL	PDP	

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IMPORTANT

See the new <u>DECUS Information and Membership Form</u> at the back of this Dispatch.

SPR USER LETTER

The Dispatch **SPR User Letter** has been revised to reflect the new SPR form which has been available and has been in distribution for several months. This new SPR form can be readily identified by the priority section which uses a 1-5 numbering scheme rather than high, medium and low. These forms can be obtained from your local Digital office or SPR Center or by requesting them from SPR Administration.

How To Make The Best Use Of The SPR Form

What We Can Do For you

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

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

3. Your local office is provided status for submitted SPRs upon request by contacting SPR Administration.

4. Information is provided to the pertinent District Software Managers on High Priority SPRs that are submitted by customers in their districts.

5. SPRs marked PROBLEM/Error will have a response for supported Category A and B products. These SPRs should refer to suspected deficiencies in the software.

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

What You Can Do For Us

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

2. An SPR should be submitted with only one problem on it. Putting more than one problem on an SPR can greatly lengthen the turn-around time.

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

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

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

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

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

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

BASIC/RT-11 EXTENSION BUILD PROCEDURE RESTRICTION   (SPR 11-21070 JG)

The BASIC/RT-11 Extensions, both Lab & Graphics, can be linked only with
BASIC/RT-11 Version 1. Furthermore, only RT-11 V2, V2B or V2C and their
associated linkers can be used to perform this linking procedure successfully.
In particular, the BASIC/RT-11 Extensions can NOT be linked using RT-11 V3
or later.

This is a PERMANENT restriction.

Note, however, that though BASIC and the extensions must be BUILT using an
RT-11 version 2"X" monitor, the resulting load module (.SAV file) may be RUN
under an RT-11 version 3"X" monitor.

FORTRAN/RT-11 EXTENSIONS V2.1

NEGATIVE INTENSITY

Negative intensity is not maintained across graphics calls.

Negative intensities i.e., invisible drawings, are in effect only for **the call which specifies the negative** intensity level. It is only the **absolute value of the intensity level** that affects subsequent graphics calls.

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 or other major operating systems.

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-11/RT-11 V2		
RESEQUENCE PRODUCES AN INCORRECT PROGRAM UNDER CERTAIN CONDITIONS	01 M	Aug 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 78
RUN (NH) COMMAND MAY GIVE AN ERROR MESSAGE	05 M	Jul 78
TERMINAL MAY HANG	06 M	Jul 78
DATA FILES	07 M	Jul 78
SAVE DEV: AND REPLACE DEV:	08 M	Jul 78
SINGLE PRECISION HANG AND NUMERIC CONVERSION PROBLEM (PATCH F)	09 M	Aug 78
CONVERSION PROGRAM	10 M	Sep 78
OVERLAYING WHILE IN A SUBROUTINE	11 R	Nov 78
OPERATION OF CTRLC, AND RCTRLC AND SYS (6) FUNCTIONS AND THE CTRL/C COMMAND	12 N	Nov 78
BASIC-11/RT-11 V2 CONVERSION PROGRAM PATCH 1	13 M	Feb 79
OPERATION OF OLD, RUN, CHAIN AND OVERLAY WHEN THE SPECIFIED FILE IS NOT FOUND	14 N	Feb 79
CREATING AND ACCESSING VIRTUAL ARRAY FILES	15 N	Feb 79
REPUBLICATION OF PATCHES	16 N	Feb 79
PRINT USING - PATCH A	17 M	Feb 79
RESEQ - PATCH B	18 M	Feb 79
EDITING A DIM #n STATEMENT - PATCH C	19 M	Feb 79
DOUBLE PRECISION HANG - PATCH D	20 M	Feb 79
SAVE dev: AND REPLACE dev: - PATCH E	21 M	Feb 79
SINGLE PRECISION HANG AND NUMERIC CONVERSION PROBLEM - PATCH F	22 M	Feb 79
SAVE .XXX & UNSAVE .XXX - PATCH G	23 M	Feb 79
NEW - PATCH H	24 M	Feb 79
STORAGE OF THE NULL CHARACTER IN STRING VARIABLES AND VIRTUAL STRING ARRAYS	25 N	Feb 79

Component	Sequence	Mon/Yr
USE OF COMPILE COMMAND	26 N	Feb 79
RESEQ – PATCH I	27 M	Mar 79
LISTNH /OLD – PATCH J	28 M	Mar 79
SYS(1) – PATCH K	29 M	Mar 79
CALL – PATCH L	30 M	Mar 79

BASIC/RT-11 EXTENSIONS V1

Component	Sequence	Mon/Yr
"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
BASIC/RT-11 EXTENSION BUILD PROCEDURE RESTRICTION	06 R	Mar 79

CTS-300 V3

Component	Sequence	Mon/Yr
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
Component	Sequence	Mon/Yr
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
Component	Sequence	Mon/Yr
MULTIVOLUME FILES ON MAGTAPE	01 N	Feb 78
PAGE CORRECTION	02	Apr 78
DOCUMENT ERROR	03	Apr 78

DICOMP
Component	Sequence	Mon/Yr
IMPROPER GLOBAL INFORMATION	01	Jul 77
COMMENT CAUSES ERROR	02	Aug 77

FILEX
Component	Sequence	Mon/Yr
RESTRICTION ON FILEX	01	Sep 77
FILEX INFORMATION AND RESTRICTION	02 R	Mar 78
OUT ERR WITH 128-CHARACTERS RECORDS	03 M	Jul 78
BLANK RECORDS	04 M	Sep 78

ISMUTL
Component	Sequence	Mon/Yr
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
MORE INPUT RECORDS THAN SPECIFIED	13 M	Jul 78
THREE PROBLEMS IN ISMUTL	14 M	Sep 78
FOUR PROBLEMS IN ISMUTL	15 M	Oct 78
PROBLEM WITH SEVEN DATA VOLUMES	16 M	Jan 79

Component	Sequence	Mon/Yr
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
LP NO OUTPUT, ERROR 22 ON CLOSE	10 M	Jan 79
SORTG		
TAGSORTS NOT ALLOWED ON ISAM FILES	01	May 77
CORRECTION TO VERSION "A" PATCH	02	Oct 77
SORTM		
I/O ERROR INTERPRETED AS AN INPUT END OF FILE	01	Apr 77
NEGATIVE NUMBERS IN SORT/MERGE	02	Oct 77
SORTING CARETS	03 M	Jan 78
INCORRECT RECORD COUNT	04 M	Feb 78
FIRST RECORD OUT OF ORDER	05 M	Mar 78
ERR 16 IN TSD	06 M	Jul 78
MERGE WITH DESCENDING KEY	07 M	Sep 78
TSD		
CHANGE READS STATEMENT TO ACCEPT 8-BIT ASCII	01	Apr 77
REPLACEMENT PAGES	02	Apr 77
PROGRAM SIZE CALCULATIONS FOR TSD	03	May 77
I/O RACE CONDITION	04	Jun 77
GARBLED OUTPUT DUE TO ALPHA OR DECIMAL DISPLAYS	05	May 77
PROBLEM WITH RENAM	06	Jun 77
LOCASE CONVERTS UNDERLINE TO RUBOUT	07	Jun 77
ISAM FILE SHARING PROBLEM	08	Jun 77
IMPOSSIBLE TRAP ON OVERLAYING	09	Jun 77
ISAM RECORDS CROSSING BLOCK BOUNDARIES	10	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
LP NO OUTPUT, ERROR 22 ON CLOSE	16 M	Jan 79

CTS-300 V3 AND CTS-300/DIS V3.5

Component	Sequence	Mon/Yr
ISAM REPAIR PROGRAM	01 O	Mar 78

CTS-300 V4

Component	Sequence	Mon/Yr
DECFORM		
ADDITONAL INFORMATION ON MATH OPTION	01 N	Dec 77
UNDEFINED GLOBALS WITH DECFORM	02	Jan 78
TWO PROBLEMS IN FOCOMP	03 M	Feb 78
EOF AFTER CHANGED RECORD	04 M	Mar 78
LOST RECORD ON DUPLICATE KEY	05 M	Apr 78
MESSAGE FOR SPEED READERS	06 M	Apr 78
EXITING DECFORM VIA FIVE-PART QUESTION	07 M	Jun 78
TOO FEW DATA FIELDS RETURNED	08 M	Jun 78
USR NOSWAP CAUSES TRAP TO 4	09 M	Aug 78
RANDOM ERRORS WITH FIELD CHECK	10 M	Oct 78
ALTERNATE KEYPAD MODE	11 M	Nov 78
DICOMP		
TRAP TO 4 UNDER XM	01 M	Feb 78
TRAP TO 10 UNDER FB	02 M	Feb 78
DON'T WASTE PAPER	03 M	Jul 78

Component	Sequence	Mon/Yr
DOCUMENTATION		
REPLACEMENT PAGES	01 N	Dec 77
DOCUMENTATION CHANGES TO CTS-300 SYSTEM USER'S GUIDE	02 N	Jun 78
DOCUMENTATION CHANGES TO DECFORM USER'S GUIDE	03 N	Jun 78
ISMUTL		
THREE PROBLEMS IN ISMUTL	01 M	Dec 77
WRONG FILE SPACE ALLOCATION	02 M	Apr 78
ERRONEOUS ERROR MESSAGE	03 M	Apr 78
ERROR 28	04 M	Apr 78
LEGAL CHARACTERS IN ISAM RECORDS	05 R	May 78
DUPLICATE KEYS IN THE INPUT FILE	06 M	Jun 78
MORE INPUT RECORDS THAN SPECIFIED	07 M	Jul 78
THREE PROBLEMS IN ISMUTL	08 M	Sep 78
FOUR PROBLEMS IN ISMUTL	09 M	Oct 78
PROBLEM WITH SEVEN DATA VOLUMES	10 M	Jan 79
LPTSPL		
JOB MISHANDLING	01 M	Jan 78
LPTSPL HANGS IF STARTED DETACHED	02 M	Nov 78
REDUCE		
MULTIPLE FILE PROBLEM	01 M	Jan 78
BAD FILE CAUSES SYSTEM HALT	02 M	Sep 78
WILD CARD PROBLEMS	03 M	Nov 78
DEFAULT DEVICE WITH SHORT COMMAND	04 M	Dec 78
SINGLE USER DIBOL		
PROBLEM WITH CLOSING A FILE	01 M	Dec 77
RANDOM ACCESS PROBLEM	02 M	Jan 78
MINUS ZERO	03 M	Jan 78
LPQUE DOES NOT WORK	04 M	Jan 78
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 (See TSD, Seq 34 M)	15 M	Jun 78
LPNUM CAUSES FILE NOT FOUND	16 M	Jun 78
BAD OPEN	17 M	Jul 78
MONITOR TRAP WITH DIVIDE	18 M	Jul 78
RECORD NUMBERS GREATER THAN 65,535	19 M	Jul 78
PROBLEM ACCEPTING FROM A FILE	20 M	Jul 78
NO CTRL/C TRAP UNDER SUD	21 M	Aug 78
DIRECT CURSOR POSITIONING UNDER SUD	22 M	Aug 78
TTSTS DOES NOT WORK UNDER SINGLE USER DIBOL	23 M	Sep 78
CTRL/C TRAP AND TTSTS	24 M	Oct 78
ERR 23 WITH CARD READER	25 M	Oct 78
VERY LARGE RECORD NUMBERS	26 M	Nov 78
GARBAGE TO THE LP	27 M	Nov 78
LP NO OUTPUT, ERROR 22 ON CLOSE	28 M	Jan 79
SORTG		
KDTYP MISSING	01 M	Feb 78
THREE SORT PROBLEMS	02 M	Nov 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
ERR 16 IN TSD	04 M	Jul 78
THREE SORT PROBLEMS	05 M	Nov 78
MERGE DOES NOT ACCEPT EMPTY FILES	06 M	Jan 79
SORTP		
NO PROTECTION FROM MIXING DATA MODES	01 M	Jun 78

Component	Sequence	Mon/Yr
STATUS.TSD		
WRONG JX INFORMATION	01 M	Dec 77
PENDING MESSAGES	02 M	Jan 78
PROBLEM DURING JOB STARTUP	03 M	Mar 78
TSD		
PROBLEM WITH MULTIPLE ISAM FILES	01 M	Dec 77
TNMBR TRAPS TO 4	01a M	Jan 79
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 (See Single User DIBOL, Seq 15 M)	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
MAGTAPE READ DOES NOT WORK	41 M	Jul 78
MONITOR TRAP WITH DIVIDE	42 M	Jul 78
RECORD NUMBERS GREATER THAN 65,535	43 M	Jul 78
BAD BINARY FILE	44 M	Jul 78
STOP CHAIN FAILURE	45 M	Aug 78
SKIPPED TERMINALS CAUSE FORCED JOB STARTUP PROBLEM	46 M	Aug 78
SKIPPED TERMINALS CAUSE "SEND" PROBLEM	47 M	Aug 78
ANOTHER EXTENDED MEMORY ALLOCATION PROBLEM	48 M	Aug 78
REMOTE TERMINAL PROBLEM	49 M	Aug 78
SEND TO -2 SOMETIMES FAILS	50 M	Aug 78
WASTED SPACE	51 M	Aug 78
CANNOT INTERRUPT TIGHT I/O LOOPS	52 M	Aug 78
PROBLEM WITH SEND	53 M	Sep 78
CTRL/C TRAP AND TTSTS	54 M	Oct 78
ATTACH SOMETIMES GETS CONFUSED	55 M	Oct 78
SHUFFLER/LINE PRINTER CONFLICT	56 M	Oct 78
VERY LARGE RECORD NUMBERS	57 M	Nov 78
STOREs TO AN ISAM FILE CAN CAUSE I/O ERROR	58 M	Nov 78
GARBAGE TO THE LP:	59 M	Nov 78
LP NO OUTPUT, ERROR 22 ON CLOSE	60 M	Jan 79
TWO PROBLEMS WITH TSD/XMTSD	61 M	Mar 79
TSDGEN		
HARDWARE FORM FEEDS AND TSD	01 M	Nov 78
SET TT SCOPE GETS RESET	02 M	Nov 78

Component	Sequence	Mon/Yr

CTS-300 V5

TSD
TWO PROBLEMS: FILE CORRUPTION POSSIBILITY AND REPETITIVE I/O ERRORS	01 M	Mar 79

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
COMMENT 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
OUT ERR WITH 128-CHARACTERS RECORDS	03 M	Jul 78
BLANK RECORDS	04 M	Sep 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
MORE INPUT RECORDS THAN SPECIFIED	12 M	Jul 78
THREE PROBLEMS IN ISMUTL	13 M	Sep 78
FOUR PROBLEMS IN ISMUTL	14 M	Oct 78
PROBLEM WITH SEVEN DATA VOLUMES	15 M	Jan 79

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
LP NO OUTPUT, ERROR 22 ON CLOSE	07 M	Jan 79

SORTG
TAGSORTS NOT ALLOWED ON ISAM FILES	01	Oct 77
CORRECTION TO VERSION "A" PATCH	02	Nov 77

Component	Sequence	Mon/Yr
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
ERR 16 IN TSD	05 M	Jul 78
MERGE WITH DESCENDING KEY	06 M	Sep 78
TSD		
I/O RACE CONDITION	01	Nov 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
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
LP NO OUTPUT, ERROR 22 ON CLOSE	12 M	Jan 79

DECnet-RT V1

Component	Sequence	Mon/Yr
DAP		
DAP ROUTINES DO NOT ARBITRATE DAP SEGMENT SIZE PROPERLY	07 M	Jan 79
NOTES ON CHANGES TO DAP INTERFACE	09 N	Feb 79
DDCMP		
DDCMP LINE COUNTERS OVERFLOW TO ZERO	01 O	Jul 78
DMC		
DMC LINE COUNTERS OVERFLOW TO ZERO	01 O	Jul 78
FAL		
CORRECT FAL PROCESSING OF END OF STREAM MESSAGE	01 M	Jan 79
FAL INCORRECTLY ALLOCATES DISC SPACE FOR FILES	02 M	Feb 79
FAL INCORRECTLY HANDLES REMOTE FILE REQUESTS	04 M	Feb 79
FORTRAN INTERFACE		
DIFFERENCES IN RT AND RSX FORTRAN INTERFACE IMPLEMENTATIONS	01 N	Jul 78
USE OF THREADED AND INLINE FORTRAN COMPILER OPTIONS	04 R	Jan 79
FORTRAN REMOTE OPEN FOR WRITE MODIFIES FILE ATTRIBUTES	05 N	Jan 79
MODEM CONTROL		
SUPPORT OF ASYNCHRONOUS HALF DUPLEX MODEMS	01 R	Jul 78
NFARS		
DAP ROUTINES CHANGE MODE DURING FILE TRANSFER	02 M	Feb 79
CHECK FOR BLOCK MODE TRANSFER	03 M	Feb 79
DAP DEFAULTS DO NOT ALLOW RECORDS TO SPAN BLOCKS	06 O	Jan 79
ASCII FILE ACCESS TO VAX/RSX SYSTEMS	08 M	Feb 79
INVALID FILE TYPE SENT TO VAX IN ASCII TRANSFER	10 M	Mar 79
NSP		
PROTOCOL VIOLATION IN NODE INITIALIZATION	01 M	Jan 79
NFT		
NFT ASCII FILE TRANSFER TO VAX/RSX SYSTEMS	03 M	Feb 79

FOCAL/RT-11 V1B

Component	Sequence	Mon/Yr
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
LIBRARIES FROM FOCAL SOURCE DISK MUST BE REFORMATTED	09 N	Aug 78
CLOCK PROBLEM FOR PAPER TAPE (STAND-ALONE) FOCAL USERS	10 M	Nov 78

Component	Sequence	Mon/Yr

FORTRAN IV/RT-11 V2

COMPILER		
DISPOSE = 'KEEP' OPTION	01 R	Jan 79
CRASH DUMPS	02 N	Jan 79
SYNTAX ERRORS IN SOURCE PROGRAM MAY CAUSE COMPILER TO ABORT	03 M	Jan 79
SIMRT	04 M	Jan 79
SIMRT CONTINUED	05 M	Jan 79
KNOWN FORTRAN IV V2 BUGS	06 N	Jan 79
USE OF THE FIND STATEMENT	07 M	Jan 79
RAISING COMPLEX NUMBERS	08 M	Jan 79
EXTRA CHARACTERS MAY RESULT IN COMPILER TRAPPING	09 M	Jan 79
TRANSMITTING ASCII DATA	10 R	Jan 79
IN-LINE CODE	11 N	Jan 79
ERRORS OCCUR WITH NO DO LOOP	12 M	Jan 79
FORTRAN "ACCEPT" STATEMENT	13 R	Jan 79

FORTRAN IV/RT-11 V2.1

FORTRAN IV V2.1 MAINTENANCE RELEASE	01 N	Dec 78
COMPILER		
PATCH 1	02 M	Feb 79
PATCH 2	03 M	Feb 79
PATCH 3	04 M	Feb 79
OTS		
PATCH 4	05 M	Feb 79

FORTRAN GRAPHICS PACKAGE, V1.1

DECGRAPHIC		
NMBR SUBROUTINE IN DECgraphic	01 R	JAN 79

FORTRAN/RT-11 EXTENSIONS V1

RUNNING PROGRAM WITH "SETR"	01 M	Oct 78
IBEF NOT PROPERLY DECREMENTED	02 R	Oct 78
LPS DEVICE CONFLICT CAUSED BY CALL SETR AFTER CALL RTS	03 R	Oct 78
IADC AFTER RTS DOES NOT WORK	04 M	Oct 78
SUBROUTINE NAMING CONFLICT	05 N	Oct 78
PLOT55 DESCRIPTION	06 N	Oct 78
ILLEGAL MEMORY REFERENCE ERROR	07 M	Oct 78
DEVICE CONFLICT ERROR	08 R	Oct 78
TWO PROBLEMS WITH THE RT-11/FORTRAN GRAPHICS EXTENSIONS	09 M	Oct 78

FORTRAN/RT-11 EXTENSIONS V1B

FORTRAN CRASHES AFTER RUNNING PROGRAM WITH "SETR"	01 M	Oct 78
TWO PROBLEMS WITH THE RT-11/FORTRAN GRAPHICS EXTENSIONS	02 M	Oct 78
NEGATIVE INTENSITY	03 N	Nov 78

FORTRAN/RT-11 EXTENSIONS V2.1

FORTRAN CRASHES AFTER RUNNING PROGRAM WITH "SETR"	01 M	Mar 79
TWO PROBLEMS WITH THE RT-11/FORTRAN GRAPHICS EXTENSIONS	02 M	Mar 79
NEGATIVE INTENSITY	03 N	Mar 79

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

Component	Sequence	Mon/Yr
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

GAMMA-11 F/B V2C

Component	Sequence	Mon/Yr
GATED LIST MODE IMAGES	01 O	Sep 78
TU16 SUPPORT	02 M	Sep 78
PROBLEMS WITH PLAYBACK BUFFER COMMENTS AND FLOOD CORRECTIONS	03 M	Oct 78
STATIC FOREGROUND ACQUISITION FAILS ON RK06 OR RL01 SYSTEMS	04 M	Oct 78
DYNAMIC CURVE CALCULATIONS MAY FAIL	05 M	Dec 79
RK06, 7 AND RL01 FOREGROUND ACQUISITIONS PROBLEMS	06 M	Dec 78
PROBLEMS WITH FLOOD CORRECTIONS	07 M	Dec 78
PROBLEMS WITH REGION OF INTEREST	08 M	Dec 78
KW11-P REAL-TIME CLOCK INCORRECTLY INITIALIZED	09 M	Dec 78
GAMMA-11 V2C NCV11 REAL-TIME CLOCK CAN BE DISABLED	10 M	Dec 78
KW11-P REAL-TIME CLOCK RUNS TOO FAST DURING GSA STUDIES	11 M	Dec 78
BUILDING AN RL01 GAMMA-11 V2C SYSTEM	12 M	Dec 78
PREDEFINED GATED LIST MODE STUDIES	13 M	Dec 78
GATED LIST MODE DATA ACQUISITION SET-UP	14 M	Dec 78
PROBLEMS WITH MAGTAPE DISTRIBUTION	15 N	Dec 78
SUBROUTINE 'GMXG' GENERATES ILLEGAL ADDRESS MESSAGE	16 O	Feb 79
FGAMMA/BGAMMA RACE CONDITION	17 M	Feb 79
DELAYED START LIST MODE STUDIES	18 M	Feb 79
FORMATTING GATED LIST MODE STUDIES	19 M	Feb 79
SLICE PROBLEMS	20 M	Feb 79
DOUBLE INTERPOLATION OF 64 X 64 MATRIX DATA	21 M	Feb 79
GAMMA-11 AND RT-11 DATE ROLLOVER	22 M	Feb 79
PROBLEMS WITH PATIENT MONITOR AND GSA ADMIN BLOCKS	23 M	Feb 79
FOREGROUND GATED LIST MODE STUDIES FAIL	24 M	Feb 79

LABORATORY APPLICATIONS-11 V3

Component	Sequence	Mon/Yr
A NEW MODULE TO ENHANCE DATA FLOW WITHIN LA-11	01 N	Oct 76

HISTO.MAC
Component	Sequence	Mon/Yr
ACQUIRING AND PROCESSING HISTOGRAM DATA	01 M	Sep 76

LABMAC.SML
Component	Sequence	Mon/Yr
ERRONEOUS MACRO	01 M	Sep 77
INCLUDING LABMAC.SML IN SYSMAC.SML	02 M	Mar 79

PEAK.MAC
Component	Sequence	Mon/Yr
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
Component	Sequence	Mon/Yr
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
"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
SCALE FACTOR PRINT FOR THE FFT	20 M	Jan 79

SWEEP.MAC
Component	Sequence	Mon/Yr
SWEEP SAMPLING: FAST MODE	01 M	Aug 77

Component	Sequence	Mon/Yr
THRU		
HOW TO START DATA ACQUISITION WHEN CSTART EQUALS ZERO	01 N	Jun 76
MULTICHANNEL SINGLE RATE SCHMIT TRIGGER SWITCH BOUNCE	02 M	Dec 76
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

Component	Sequence	Mon/Yr
SUBROUTINE PLOT DOES NOT CORRECTLY REPRODUCT VT11 PICTURE	01 M	Apr 78

MU BASIC/RT-11 V1

Component	Sequence	Mon/Yr
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 76
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

Component	Sequence	Mon/Yr
REPLACEMENT PAGES	01	Jan 77
REPLACEMENT PAGES	02 N	Jan 78
REPLACEMENT PAGES	03 N	Jan 78

MU BASIC-11/RT-11 V2

Component	Sequence	Mon/Yr
MU BASIC-11/RT-11 V2 CONVERSION PROGRAM	01 R	Nov 78
OPERATION OF CTRL/C, RCTRLC AND SYS (6) FUNCTIONS AND THE CTRL/C COMMAND	02 N	Nov 78
MEMORY REQUIREMENTS OF OPTIONAL FUNCTIONS ETC.	03 O	Nov 78
MU BASIC-11/RT-11 V2 RELEASE NOTES AND INSTALLATION GUIDE CHANGES	04 N	Dec 78
ORDER OF COMMON STATEMENTS AT START OF MUCNFG.BOO, MUCNF1.BOO, MUCNF2.BOO	05 M	Dec 78
OPERATION OF OLD, RUN, CHAIN AND OVERLAY WHEN THE SPECIFIED FILE IS NOT FOUND	06 N	Feb 79
CREATING AND ACCESSING VIRTUAL ARRAY FILES	07 N	Feb 79
STORAGE OF THE NULL CHARACTER IN STRING VARIABLES AND VIRTUAL STRING ARRAYS	08 N	Feb 79
USE OF COMPILE COMMAND	09 N	Feb 79
MU BASIC-11/RT-11 V2 CONFIGURATION PROGRAM PATCH 1	10 O	Feb 79
CHAINING WITH COMMON -PATCH A	11 M	Feb 79
VIRTUAL FILE I/O - PATCH B	12 M	Feb 79
SYS (1,n) FUNCTION - PATCH C	13 M	Feb 79
RESEQ - PATCH D	14 M	Feb 79
VALUES IN PATCHES A, B, C	15 N	Feb 79
LISTNH / OLD - PATCH E	16 M	Mar 79
CALL - PATCH F	17 M	Mar 79

PDL/RT-11 V1B

Component	Sequence	Mon/Yr
CLARIFICATION OF SEARCH FAILURE IN SUBROUTINE FIND	01 N	Jul 78
FIND SUBROUTINE	02 R	Jul 78
PATCHES TO PDL	03 M	Jul 78
SUBROUTINE QKGT	04 M	Jul 78
PDL SUBROUTINE 'RDAA'	05 M	Sep 78
PDL PEAK ALGORITHM WILL NOT RECOGNIZE VALID PEAKS	06 M	Sep 78

PEAK-11 V1

Component	Sequence	Mon/Yr
"MREPRT" AND "REPRT" GET CONFUSED	01 M	Aug 78

Component	Sequence	Mon/Yr

REMOTE/RT-11 V1

Component	Sequence	Mon/Yr
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 M	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
@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
UNASSIGNED	24	XXX XX
@RE IN THE SATELLITE DOES NOT WORK	25 R	Mar 78
"HANG" CONDITIONS	26 R	Apr 78
UANSSIGNED	27	XXX XX
USING KG-11 CRC CALCULATOR	28 M	Aug 78
PASTE CAUSES LINE DUPLICATION	29 M	Aug 78
"DAISY CHAIN" ARRANGEMENT IN RTSIM.MAC	30 M	Aug 78
OPTIONAL RMON IS OMITTED FROM RTS1M BY DEFINING NORMON=0	31 M	Oct 78
DL-11 ERROR AND CRC ERROR IN HOST	32 M	Oct 78

RT-11 V3

DOCUMENTATION

Component	Sequence	Mon/Yr
TYPOGRAPHICAL ERRORS	01 N	Mar 78
ERROR IN FOREGROUND/BACKGROUND DEMONSTRATION	02 M	Aug 78
THE /LIST OPTION FOR THE DIBOL, FORTRAN, AND MACRO KEYBOARD MONITOR COMMANDS	03 M	Nov 78

EDIT

Component	Sequence	Mon/Yr
EDIT DOES NOT OPERATE CORRECTLY UNDER XM MONITOR	01 M	Mar 78

MACRO

Component	Sequence	Mon/Yr
.NARG FAILS WHEN AUTOMATIC LABEL GENERATION IS USED	01 M	Apr 78

MISCELLANEOUS

Component	Sequence	Mon/Yr
GETSTR AND PUTSTR ROUTINES FOR IN-LINE CODE	01 M	Jun 78
ERROR IN THE CONCAT ROUTINE	02 M	Jun 78
ERROR IN MTATCH ROUTINE	03 M	Nov 78

MONITOR

Component	Sequence	Mon/Yr
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
LINK/FRUN FAILS WHEN PROGRAM IS OVERLAYED AND USES LIBRARIES	08 M	Jul 78
MULTITERMINAL CORRECTIONS	09 M	Aug 78
PATCH TO XM ADDRESS CHECKING	10 M	Aug 78
FIXES FOR TWO FB/XM PROBLEMS	11 M	Aug 78
TERMINATING CONSOLE OUTPUT	12 M	Aug 78
ISSUING SEEKS TO DX HANDLER IN XM CAUSES RANDOM SYSTEM FAILURES	13 M	Oct 78
CERTAIN EXTENDED MEMORY REQUESTS CANNOT BE ISSUED FROM BOTH MAINLINE CODE AND COMPLETION ROUTINES	14 M	Oct 78

Component	Sequence	Mon/Yr
THE "RUN" AND "GET" MONITOR COMMANDS DO NOT CORRECTLY LOAD THE PORTION OF A PROGRAM THAT OVERLAYS KMON	15 M	Oct 78
DX SJ MONITOR BOOTSTRAP CORRECTIONS	16 O	Oct 78
TYPING CTRL/O TO THE CONSOLE TERMINAL SOMETIMES CRASHES	17 M	Nov 78
LINK CAUSES ODD MONITOR ADDRESS TRAP	18 M	Nov 78
CHAINING FROM A VIRTUAL JOB AND RELATED PROBLEMS	19 M	Dec 78
DIRECTORY CORRUPTION	20 M	Dec 78

SOURCES

Component	Sequence	Mon/Yr
UNRESOLVED DIFFERENCES IN DEMOX1.MAC	01 M	Aug 78
DISTRIBUTED MAGTAPE HANDLER CORRECTIONS	02 M	Sep 78

SYSTEM HANDLERS

Component	Sequence	Mon/Yr
DM HANDLER CORRECTIONS	01 M	Oct 78
DM SYSTEM HANDLERS CORRECTIONS	02 M	Dec 78
DM HANDLER ERROR HANDLING CORRECTIONS	03 M	Jan 79

UTILITIES

Component	Sequence	Mon/Yr
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
UNASSIGNED	06	XXX XX
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
LINK/FRUN FAILS WHEN PROGRAM IS OVERLAYED AND USES LIBRARIES	11 M	Jul 78
DUP DOES NOT DIFFERENTIATE BETWEEN DELETED .BAD FILES AND PERMANENT ONES	12 M	Jul 78
ERRORS IN FILEX INTERCHANGE FORMAT	13 M	Jul 78
LINK PRODUCES INCORRECT .LDA FILES	14 M	Sep 78
DUP DOES NOT DETECT END OF SEGMENT IF IT IS FIRST ENTRY IN A DIRECTORY SEGMENT DURING A SQUEEZE OPERATION	15 M	Oct 78
LIBR CLEARING OF LOCATION ZERO	16 M	Oct 78
LINK ERROR IN PSECTS MOVED TO ROOT	17 M	Oct 78
PIP ERRONEOUSLY DELETES FILES	18 M	Oct 78
LIBR BLOCK BOUNDARY PROBLEM	19 M	Dec 78
LINK CAN CAUSE TRAP TO 4	20 M	Feb 79

RT-11 V3B

DOCUMENTATION

Component	Sequence	Mon/Yr
ERROR IN FOREGROUND/BACKGROUND DEMONSTRATION	01 M	Aug 78
THE /LIST OPTION FOR THE DIBOL, FORTRAN, AND MACRO KEYBOARD MONITOR COMMANDS	02 M	Nov 78
UPDATE PAGES	03 N	Dec 78
RT-11 SOFTWARE SUPPORT DOCUMENTATION	04 M	Feb 79
SUMMARY OF UPDATES FOR RT-11 VO3B DOCUMENTATION	05 M	Feb 79

MISCELLANEOUS

Component	Sequence	Mon/Yr
ERRORS IN THE SYSGEN CONDITIONAL FILE	01 M	Jul 78
ERROS IN MTATCH ROUTINE	02 M	Nov 78

MONITOR

Component	Sequence	Mon/Yr
SOURCE PATCHING PROCEDURES FOR V3B	01 M	Aug 78
MULTITERMINAL CORRECTIONS	02 M	Aug 78
SINGLE JOB TIMER SUPPORT CORRECTIONS	03 M	Aug 78
FIXES FOR TWO FB/XM PROBLEMS IN VP3B	04 M	Aug 78
TERMINATING CONSOLE OUTPUT	05 M	Aug 78
EDITORS AND VO3B MONITORS	06 O	Aug 78
SEEK IN RK DRIVER	07 M	Aug 78
RL01 CONTROLLER VECTOR AT 160	08 M	Aug 78
FPU EXCEPTION HANDLING IN XM MONITOR	09 M	Sep 78
TWO EXTENDED MEMORY MONITOR PROBLEMS	10 M	Oct 78
TYPING CTRL/O TO THE CONSOLE TERMINAL SOMETIMES CRASHES RT-11	11 M	Oct 78
DX SJ MONITOR BOOTSTRAP CORRECTIONS	12 O	Oct 78
THE EDIT AND HELP MONITOR COMMANDS FAIL AFTER A VIRTUAL JOB HAS RUN	13 M	Nov 78
DIRECTORY CORRUPTION AND .UNPROTECT CORRECTIONS	14 M	Jan 79

Component	Sequence	Mon/Yr
SOURCES		
UNRESOLVED DIFFERENCES IN DEMOX1.MAC	01 M	Jul 78
ISSUING SEEKS TO DX HANDLER IN XM CAUSES RANDOM SYSTEM FAILURES	02 M	Sep 78
DISTRIBUTED MAGTAPE HANDLER CORRECTIONS	03 M	Sep 78
SYSTEM HANDLERS		
RL01 HANDLER CORRECTIONS	01 M	Sep 78
ISSUING A SEEK TO THE DY HANDLER CAUSES THE SYSTEM TO CRASH	02 M	Oct 78
DM HANDLER CORRECTIONS	03 M	Oct 78
DM SYSTEM HANDLERS CORRECTIONS	04 M	Dec 78
DY HANDLER SPFUN CORRECTION	05 M	Dec 78
DM HANDLER ERROR HANDLING CORRECTIONS	06 M	Jan 79
RL01 PATCH CLARIFICATION	07 N	Jan 79
UTILITIES		
ERRORS IN FILEX INTERCHANGE FORMAT	01 M	Jul 78
LINK PRODUCES INCORRECT .LDA FILES	02 M	Sep 78
LIBR CLEARING OF LOCATION ZERO	03 M	Oct 78
LINK ERROR IN PSECTS MOVED TO ROOT	04 M	Oct 78
DUP DOES NOT DETECT END OF SEGMENT	05 M	Oct 78
COPY/DEVICE FAILS ON DISK TO MAGTAPE	06 M	Oct 78
LINK CAUSES MONITOR ODD ADDRESS TRAP	07 M	Nov 78
LIBR BLOCK BOUNDARY PROBLEM	08 M	Jan 79
EDIT ESCAPE CODE CORRECTION	09 O	Dec 78
ERROR IN ODT	10 M	Feb 79
ERROR IN EDIT	11 M	Feb 79
LINK CAN CAUSE TRAP TO 4	12 M	Feb 79

RT-11/2780 V2

Component	Sequence	Mon/Yr
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	Jan 79
CHECK FOR ZERO LENGTH RECORD	04 M	Jan 79
RESTRICTION OF THE CONSOLE AS AN INPUT/OUTPUT DEVICE	05 R	Jan 79

digital

Software Product Description

PRODUCT NAME: DECnet-RT, Version 1.0, RT-11 Network Software   SPD 10.72.2

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. 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 nodes (a two-node network because DECnet-RT supports one communication line) 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.

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 the nodes are adjacent, the second node can be any Phase II DECnet system that supports synchronous communication lines. The DECnet messages sent and received by the two user programs can be in any data format.

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 a 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 are compatible between the Phase II DECnet nodes.

Additional facilities allow system command files or batch files to be submitted to a remote node where the list of commands is 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 dialog 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

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operation using serial synchronous or asynchronous facilities. DDCMP provides error detection/correction and physical link management facilities.

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

DECnet-RT Operation

DECnet-RT is implemented as a driver under RT-11 FB/XM and as 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 words (16K bytes) 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 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

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 accommodate one full-duplex character-interrupt device at 4.8KB.

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:

No training credits are included with a DECnet software license. Training courses on DECnet software are scheduled at regular intervals in DIGITAL's Training Center. Arrangements should be made directly with DIGITAL's Educational Services Department.

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 RESPONSIBILITES:

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 prepared jointly 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 License Agreement between Purchaser and DIGITAL.

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, Q, R, T, V, 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
Q = RL01 Disk Cartridge
R = Microfiche
T = RK06 Disk Cartridge
V = RK07 Disk Cartridge
Y = RX01 Floppy Diskette
Z = No hardware dependency

QJ685 -A— Single-use license, binaries, documen-
            tation, support services (media: D, E, Q,
            T, V, Y)

QJ685 -C— Single-use license, binaries, documen-
            tation, no support services (media: D,
            E, Q, T, V, 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, Q, T, V, Y)
QJ685 -F— Listings (media: R)

Miscellaneous Options
QJ685 -G— Documentation only (media: Z)

ADDITIONAL SERVICES:
QJ680 -S— DECnet Level I Services (media: Z)

Level II services are also available. Consult the DEC-
net 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

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 2.0, DECnet-11S Version 2.0, DECnet-IAS Version 2.0, DECnet/E Version 1.0, DECnet-RT Version 1.0, DECnet-VAX Version 1.0, and DECnet-20 Version 1.0. The DECnet user can configure a variety of networks, to satisfy a variety of applications, by choosing the appropriate CPUs, 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) — DDCMP 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
- Ability to connect nodes dynamically 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. Some DECnet products provide facilities for translating operating system's 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 heterogeneous) 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 Version 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 a 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 function 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 other systems, 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 a 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 SPDs 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 License 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
QJ680 -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-IAS Version 2.0	DECnet/E Version 1.0	DECnet-RT Version 1.0	DECnet-VAX Version 1.0	DECnet-20 Version 1.0
Task-to-Task	YES	YES	YES	YES	YES	YES	YES
Intersystem File Transfer	YES	NO	YES	YES	YES	YES	NO
Command/Batch File Submission	YES[1]	NO	YES[1]	YES	YES	YES[1]	NO
Command/Batch File Execution	YES	NO	YES	YES	NO	YES	NO
Remote File Access	YES	YES[2]	YES	NO	YES	YES	NO
Down-Line System Loading	YES	NO	YES	NO	NO	YES	NO
Down-Line Task Loading	YES	NO	YES	NO	NO	NO	NO

[1]Cannot submit files to DECnet/E systems. Can tell DECnet/E to execute batch files already at the DECnet node.
[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	Remote Sync 56Kb
DECnet-11M Version 2.0	DP11 DU11-DA DQ11-DA DV11	DUP11-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 DQ11-DA DV11 DUV11-DA	DUP11-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		
DECnet-VAX Version 1.0		DMC11-AR DMC11-DA			DMC11-AL DMC11-MD	DMC11-AL DMC11-MA		
DECnet-20 Version 1.0 2040/50/60 2020	DN20-BA (DUP11-DA)	DN20 BA/BB (DUP11-DA)						DN21-BA (DMC11-AR DMC11-FA)

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

DESCRIPTION:

CTS-300 is a disk based single-user or multi-user system designed to support commercial applications on small PDP-11s. CTS-300 applications are written in DIBOL, DIGITAL's own Business Oriented High-level Language. It is similar to COBOL in that it has a Data Division and a Procedure Division, but it is a more concise language. DIBOL provides the ability to do data manipulation, arithmetic expression evaluation, table subscripting, record redefinition, external calls to other programs, file merging/sorting, generation of screen formatted programs, spooling, sequential and random access, and indexed access to files. Exception conditions cause control to transfer to a user-specified statement to determine the cause of the condition.

Datasystem 320s and 350s can run single-user interactive DIBOL program development and production or multi-user DIBOL production systems. Datasystem 150s are production systems only. The following chart graphically summarizes these capabilities.

	D150	D320	D350
Single-user development program	No	Yes	Yes
Number of users	1	1-4	1-8
Number of tasks	1-4	1-4	1-16
Memory	32-60K bytes	32-56K bytes	32-248K bytes
Disk capacity	512K bytes	.5-20M bytes	.5-224M bytes

CTS-300 offers three Run-Time Systems (RTS):

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

TSD — Time Shared DIBOL RTS allows 1 to 4 DIBOL users or tasks to run simultaneously. It is designed for a medium-sized system running in 56K bytes of memory. File sharing facilities at the record level permit multiple users to share and update the same data files. TSD is an executive that normally is run on a SJ monitor SYSGENed for multi-terminal support. TSD controls loading of DIBOL programs, allocation and recovery of memory for DIBOL programs, program scheduling, detached programs, file-sharing, record I/O, intertask communication, as well as other less visible functions. A DIBOL line printer spooler also runs in the TSD environment. Program completion returns control to the TSD executive.

XMTSD — Extended Memory TSD RTS allows 1 to 8 DIBOL users or 1 to 16 DIBOL tasks simultaneously running (up to 8 could be attached to terminals with the remainder running in a detached environment). It is designed for larger systems running in up to 248K bytes of memory. XMTSD has the same features and functionality found in TSD.

The same DIBOL program will run on all RTS. It must be relinked with the RT-11 LINK utility when changing from SUD to TSD or XMTSD or vice versa. DIBOL programs linked for TSD or XMTSD will run under either RTS. A single-key ISAM facility is also available for each RTS.

CTS-300 Utility Programs are:

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

DECFORM — The DECFORM Data Entry 300 system utility is a program generator that processes screen format directives and produces a DIBOL program which, when compiled and executed, performs specified data entry functions. In addition to defining screen formats, auto-duplication, alphabetic or decimal checking, range checking, field totaling, cross-field validation, and auto-increment characteristics, DECFORM facilitates additions, inquiries, changes,

and verifications to sequentially ordered files or ISAM (Indexed Sequential Access Method) files. Deletions are possible only with ISAM files. DECFORM is primarily a tool to facilitate and reduce program development. Its major use is in data file creation, modification and inquiry.

DICOMP — DICOMP is the DIBOL compiler. It translates DIBOL source programs into interpretive code which, when linked, can be executed by the three RTS.

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

ISMUTL — ISAM files are created and maintained by means of the ISAM Utility Program. Its three major functions are CREATE, STATUS, and REORGANIZE.

CREATE is used to create a new ISAM file. Options are provided to create an empty ISAM file, convert a sequential file to an ISAM file, or create an existing ISAM file.

STATUS provides a concise view of the current structure of the file: length of keys, of records, and of groups, levels of indexing, and information about the use of load exclusion and overflow areas of the data file.

REORGANIZE is used to reorganize an ISAM file for more efficient operation. It is used when most of the groups in the file are filled and the overflow area or append area is filled. The effect of REORG is to redistribute the records of the file so it appears like a newly created file.

LPTSPL — The Line Printer Spooler is a utility program that prints data and program source files. In response to an LPQUE statement, the spooler program receives information on a file to be printed. The spooler queues the file and begins to print it when the line printer is available. In the SUD RTS, the spooler output to one line priner. In the TSD and XMTSD RTS, the spooler is a DIBOL program consisting of a queue manager and four satellite programs which output to four line printers.

SORT/MERGE — The Sort/Merge utility permits the user to define the parameters for the sorting or merging of data files. A DIBOL program is then generated by the system to perform the required sort or merge. The user can specify up to eight (8) key fields to control the ordering of the output records, in either ascending or descending sequence. A wide range of operating parameters, such as the number of work files to be used, is provided to enable the user to achieve maximum sort efficiency.

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

- Available free core
- List of active jobs
- Detailed information of a specified active job
- List of pending line printer jobs
- Pending messages
- Characteristics of the current version of TSDGEN

TSDGEN — The Time-Shared Generator Program is an interactive DIBOL-11 utility program that tailors the system to a user's needs. It can create a TSD or XMTSD RTS to match the specific hardware and software of the installation. Through TSDGEN a user specifies such items as the total number of terminals, tasks, messages, and files open at one time. Support for DDT and forced job start-up are also among the choices available.

The D150 can run SUD and TSD RTS, as well as DDT, DMS-300 ISMUTL, LPTSPL, and STATUS. Programs generated from DECFORM and SORT/MERGE can also be run on the D150. A VT50H, VT52, or VT100 terminal (in VT52 mode) is required for use with the DECFORM, ISMUTL, and STATUS utilities.

MINIMUM HARDWARE REQUIRED:

Any valid DEC Datasystem 150, 320, or 350 series configuration that includes:

- A VT05, VT50H, VT52, VT100, or LA36 console terminal. A VT50H, VT52, or VT100 terminal (in VT52 mode) is required for use with the DECFORM, ISMUTL, and STATUS utilities.
- The Extended Instruction Set (EIS or equivalent).
- Memory management hardware (KT11 or equivalent) is needed in the 350 series to use extended memory (memory above 64K bytes).

OPTIONAL HARDWARE:

The following options are available for D150 systems.

Additional memory up to a system total of 60K bytes.
LA180 or LA120 Serial Printer
VT100 Advanced Video Option (VT1XX-AB)

The following options are available for D320 systems:

Additional memory up to a system total of 56K bytes
VT100 advanced video option (VT1XX-AB)
Up to a system total of 4 VT05, VT50H, VT52, VT100, LA36 or LA120 terminals
Up to 4 LAV11 or LPV11 line printers
Up to 4 DLV11 asynchronous line interfaces (1 per terminal)
One DZV11 asynchronous line multiplexer with up to 4 lines
RKV11 disk cartridge system
RLV11 disk cartridge system
Up to 2 RXV11 floppy disk systems

The following options are available for D350 systems:

Additional memory to a system total of 248K bytes
VT100 advanced video option (VT1XX-AB)
Up to a system total of 8 VT05, VT50H, VT100, LA34, LA36, LA38, LA120, or terminals

Up to 4 LS11, LA11, or LP11 line printers
Up to 8 DL11 asynchronous line interfaces (1 per terminal)
A DZ11 multiplexer with up to 7 lines
RK11 disk cartridge system
RL11 disk cartridge system
RPR11 disk pack system
Up to 2 RX11 floppy disk systems
RK611 disk pack system
RK711 disk pack system
CR11 card reader
TME11 magnetic tape controller with up to 8 TU10 transports or a TJE16 controller with up to 2 TS03 transports.

PREREQUISITE SOFTWARE:

CTS-300 on a 320 or 350 with V5.0 or later is required before CTS-300 can be licensed for use on a D150.

The D150 for which software support is provided, must be located in the same facilities as the D320 or D350 on which D150 software development is done.

OPTIONAL SOFTWARE:

None

TRAINING CREDITS:

TWO (2) — Applies only to options that include support services. Consult the latest Educational Services Catalog at your local office for the available courses, course requirements, and guidelines.

SUPPORT CATEGORY:

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

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 License Agreement between Purchaser and DIGITAL.

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.

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

E = RK05 Disk Cartridge
Q = RL01 Disk Cartridge
T = RK06 Disk Cartridge
V = RK07 Disk Cartridge
X = RX02 Dual Density Floppy Diskette
Y = RX01 Floppy Diskette
Z = No hardware dependency

This software is available only with a valid DEC Datasystem 150, 320, or 350 that includes support services. It is also offered under a license for use with a valid DEC Datasystem 150, 320, or 350 that does not include software support services. Use of the software on a D150 is restricted to the execution of DIBOL in the production environment.

D150—Floppy Disk Based (RX01)
DS352—RX01 Floppy Disk Based
DS356—RPR02 Disk Pack Based
D322—RX01 Floppy Disk Based
D323—RX02 Floppy Disk Based
D325—RL01 Cartridge Disk Based
D324—RK05 Cartridge Disk Based
D354—RK05 Cartridge Disk Based
D355—RL01 Cartridge Disk Based
D357—RK06 Disk Based
D358—RK07 Cartridge Disk Based

Update Options

Users of previous CTS-300 versions whose specified Support Category warranty has expired may order the following software update at the then current charge for such update, for use under the existing license. Except where the medium is designated as Z, the update is distributed in source or binary form on the appropriate medium. A software update where the medium is designated as Z grants the user of CTS-300 the right to copy the previously ordered QJ354-H or QJ354-W software update for use on an additional single CPU on which a CTS-300 license has been obtained. No installation or other services are included unless specifically stated otherwise.

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

QJ354 -H— Right to copy for single use (under existing license), no binaries, no documentation, no support services (media: Z)

Users of previous CTS-300 versions whose specified Support Category warranty has not expired may order under license the following software update for the then current media charge. The update is distributed in binary form on the appropriate medium and includes no installation or other services unless specifically stated.

QJ354 -W— Binaries, documentation (media: E, Q, T, V, X, Y)

ADDITIONAL SERVICES:

QJ354 -3— Binary Program Update Service (media: E, Q, T, V, X, Y)

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

DESCRIPTION:

FMS-11 is a set of utilities and subroutines that provide a multi-terminal video forms capability for programs written in MACRO-11, BASIC-11, or FORTRAN IV under the RT-11 operating system. Forms defined using FMS-11 can use the following features of DIGITAL's VT100 terminal: reverse video, bold, underline, blink, 132-column lines, jump and smooth scrolling, split screen, and reverse screen. FMS-11 applications may be developed under the RT-11 operating system and executed under the control of either RT-11 or its execute-only subsets, RT^2 or RT^2/PDT.

The FMS-11 system can be used as a front end in traditional source data entry applications, and also as a general purpose manager of formatted operator I/O to programs written in any of the supported languages.

Each field in an FMS-11 form can be assigned attributes such as validation "picture," embedded text characters, right/left justification, fixed decimal, and "must complete". A default value and a line of explanatory "HELP" text can be associated with each field of a form. In addition, a separate "HELP" display can be associated at the form level. Another feature of FMS-11 is "named data," which allows named strings of constant data to be associated with a form at form creation time and retrieved dynamically by name or number during program execution.

FMS-11 applications written in MACRO-11 or FORTRAN IV can be built for either single- or multi-terminal. In multi-terminal applications the terminals can run different tasks and can change tasks independently of one another. The FMS-11 software will support the maximum number of VT100s allowed under each RT-11/hardware configuration.

FMS-11 consists of the following software components:

FRED — The application developer uses the interactive Form Editor to create and modify video forms by typing them on the screen as they are to appear to the application user. All of the form attributes and individual field attributes are assigned in this form editing process. Form descriptions can be stored as data files for further processing or in form libraries for immediate use by application programs.

FRMUTL — The Form Utility is a multi-function program which manipulates FMS-11 forms descriptions. It can be used to list the directory of a form library or to print a complete description of a form from a form library or from a data file. FRMUTL can also be used to produce an RT-11 object module of form descriptions to be linked with the application when memory-resident forms are desired.

FDV — The Form Driver is a reentrant subroutine called from application programs to perform screen processing. The Form Driver manages terminal I/O, displays forms, manipulates the screen, performs basic input validation, and responds to the operator's requests for "HELP". Operations are performed on a per-field or form-wide basis using the form description generated by FRED during the form editing process.

The Form Driver's high level language call interface allows applications written in BASIC-11 or FORTRAN IV to take full advantage of the Form Driver's capabilities.

ARTS — The Application Run-Time Supervisor allows each terminal to run a MACRO-11 or FORTRAN IV application program independently of the programs on the other terminals. As an interface between the application programs and the RT-11 monitor, ARTS acts as a multi-tasking submonitor, providing subroutines for terminal and mass storage I/O and for shared and private file access management. Unique ARTS features include resident tasks not attached to any terminal and intertask message services. ARTS (with all of its tasks) runs in the background partition of the RT-11 FB monitor.

KED — The Video Keypad Editor is a general purpose text editor which operates on standard ASCII files. KED uses the function keypad and the full spectrum of video features of the VT100. Most functions are implemented as only one or two keystrokes on the function keypad. When editing a main file, the user can also copy material in from one auxiliary file and write material out to one auxiliary output file. KED assists in the preparation of source programs by allowing the user to edit files through a full-screen, bidirectional scrolled "window" into the file. In addition to the standard character, word, and line operations, KED also provides flexible search, replace, cut, paste, and repeat functions.

MINIMUM HARDWARE REQUIRED:

For application execution:

Any valid RT-11, RT^2 or RT^2/PDT system with a VT100 terminal.

The table below summarizes the minimum memory requirement for systems executing FMS-11 applications. The figures include 8K bytes for the Form Driver and from 2K to 12K bytes for ARTS, depending on the functionality included at FMS-11 SYSGEN time.

	MACRO-11	FORTRAN IV	BASIC-11
Single-Terminal	32Kb	32Kb	56Kb
Multi-Terminal	56Kb	56Kb	—

Form application development:

Any valid RT-11 system with at least 56K bytes of memory and at least one VT100 terminal. The DIGITAL-supplied SYSGEN procedure for FMS-11 requires a disk of at least 2.5 MB capacity in addition to the software load device.

OPTIONAL HARDWARE:

Supports additional VT100 terminals up to the maximum allowed under the RT-11/hardware configuration.

PREREQUISITE SOFTWARE:

For application execution:

RT-11 Operating System, Version 3B, or RT^2/PDT, Version 03B
RT^2, Version 3B or later or RT^2/PDT, Version 3B

For application development:

RT-11 Operating System, Version 3B or later

OPTIONAL SOFTWARE:

BASIC-11/RT-11, Version 2.0
FORTRAN IV/RT-11, Version 2.1

TRAINING CREDITS:

None

SUPPORT CATEGORY:

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

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 License Agreement between Purchaser and DIGITAL.

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

The following key (E, G, Q, R, Y, Z) represents the distribution media for the product and must be specified at the end of the order number, e.g., QJ713-AY = binaries on RX01 floppy diskette..

E = RK05 Disk Cartridge
G = TU58 Tape Cartridge
Q = RL01 Disk Cartridge
R = Microfiche
Y = RX01 Floppy Diskette
Z = No hardware dependency

QJ713 -A— Single-use license, binaries, documentation, support services (media: E, G, Q, Y)

QJ713 -C— Single-use license, binaries, documentation, no support services (media: E, G, Q, Y)

QJ713 -D— Single-use license only, no binaries, no documentation, no support services (media: Z)

Miscellaneous Options

QJ713 -G— Documentation only (media: Z)

ADDITIONAL SERVICES:

None

ADDENDUM
SOFTWARE SUPPORT CATEGORIES

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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.

The Digital Equipment Computer Users Society

DECUS ◨

DECUS, the Digital Equipment Computer Users Society, was established in March of 1961 to advance the effective use of DIGITAL computers. It is a voluntary, not-for-profit users group, supported in part by Digital Equipment Corporation.

OBJECTIVES

The objectives of the Society are to advance the effective utilization of computers, computer peripheral equipment, and software manufactured and marketed by Digital Equipment Corporation, by promoting the interchange of information concerning their uses; advance the art of computation through mutual education and exchange of ideas and information; establish standards and provide channels to facilitate the exchange of computer programs among DECUS members; provide feedback to the computer industry on equipment and software needs; and to reduce the duplication of development efforts.

ACTIVITIES

1. SYMPOSIA
Symposia are held throughout the year in each of the DECUS Chapters. These meetings provide a forum for users of DIGITAL computers to meet with other users and with DIGITAL management, engineers, and Software Services and Field Service representatives. They are an opportunity for users to participate in DIGITAL Product Workshops and Product Planning feedback sessions. The technical papers and presentations from each symposium are published as DECUS Proceedings after each meeting and provide a permanent record of the meetings activities.

2. SPECIAL USER GROUPS
DECUS encourages subgrouping of users with common interests and/or geographical proximity.

Special Interest Groups (SIGs) promote the interchange of specialized information and have no geographical limitations. Specializations may be for application areas, subject areas (such as languages), or specific operating systems. A group of users must petition the Chapter Executive Board for recognition as a Special Interest Group. The group must have a chairman, and its organization must meet the guidlines of the Chapter Executive Board.

Examples of active SIGs are users of RSX-11, RSTS, RT-11 users, business system users, etc. For additional information, contact your Chapter Executive Secretary.

One of the most successful subgroupings are Local Users Groups (LUGs). There are numerous active LUGs in Australia, Canada, Europe, and the U.S. Local User Groups are basically geographic in nature; however, they may be geographic and specific as well.

The largest Special User Group is composed of users of the DECsystem-10 and DECsystem-20.

3. STANDARDS
DECUS promotes user activity in reviewing DIGITAL standards. Users are given the opportunity to comment on DIGITAL standards prior to their finalization.

4. PROGRAM LIBRARY
One of the major activities of the users group is the DECUS Program Library. The Library contains programs written and submitted by users and is maintained and operated separate from the Digital Software Distribution Center. A wide range of software is available, including languages, editors, numerical functions, utilities, display routines, and various other types of application software.

DECUS (continued)

Library catalogs, updated periodically, contain descriptive abstracts and ordering information.

Information and forms for submitting programs to the Library may be obtained from local DECUS offices.

Programs are available to all members on a request basis. Orders for programs are made on DECUS Library Order Forms and directed to the local DECUS Chapter office. Information on the nominal service charge applied to most programs is published in the Library Catalogs.

As of January 1979, the Library contained approximately 1500 active software packages.

MEMBERSHIP

Membership in DECUS is voluntary and is not subject to a membership fee. Members are invited to take an active interest in the Society by contributing to the Program Library, to DECUSCOPE, and by participating in its Special User Groups and symposia. There are two types of membership: Installation Membership and Associate Membership.

INSTALLATION

An organization, institution, or individual that has purchased, leased, or has on order a computer manufactured by Digital Equipment Corporation is eligible for Installation Membership in DECUS. Membership status is acquired by submitting a written application to the appropriate Chapter Executive Secretary for approval by the Chapter Executive Board.

On acceptance of the application for membership, literature covering numerous DECUS services is sent to the Installation Delegate for reference and aid in maintaining active participation in the Society.

ASSOCIATE

Any person, who is not an appointed Installation Delegate, who has a bona fide interest in DECUS is eligible for Associate Membership.

Like Installation Members, Associate Members receive DECUSCOPE, the Society's quarterly newsletter, automatically. They may receive other DECUS material on request. Written application indicating desire to join must be submitted to the appropriate Chapter Executive Secretary for approval by the Chapter Executive Board.

On acceptance of the application for membership, literature covering the numerous DECUS services is sent to the member for reference and to enable active participation in the Society.

To become a member of DECUS, please return this form to the appropriate Chapter office listed below.

NAME:_____

COMPANY:_____

ADDRESS:_____

_____

CITY:_____

STATE/COUNTRY:_____ZIP:_____

Membership Requested (check one):

☐ Installation   ☐ Associate   January 1979

DECUS OFFICES

DECUS Australia P.O. Box 491 Crows Nest, New South Wales 2065 Australia	DECUS Canada P.O. Box 11500 Ottawa, Ontario K2H 8K8 Canada	DECUS Europe C.P. 510 12, avenue des Morgines CH-1213 Petit-Lancy 1, Geneva, Switzerland	DECUS U.S. and Office of the Executive Director One Iron Way Marlboro, Massachusetts 01752 USA

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	AREAS COVERED	SPR CENTER
United Kingdom Middle East	DIGITAL EQUIPMENT CORP., Ltd. Fountain House, Butts Center RG1 7QN READING / England	United States, remainder of Far East, Africa, Latin America	Administrative Services Group, SWS P.O. Box F Maynard, MA 01754
Austria, Poland, Hungary, Rumania, East Germany, West Germany, Russia, Czechoslovakia, Bulgaria	DIGITAL EQUIPMENT CORP., Gmbh Wallensteinplatz 2 8 MUNICH 40 / Germany	Canada	Digital Equipment Canada P.O. Box 11500 Kanata Canada K2H 8K8 Ontario
Israel	DECSYS COMPUTERS, LTD. Yirmiyahou Street 4 TEL AVIV 63505 / Israel	Australia (Melbourne)	Digital Equipment Aust. Pty., LTD. 70-74 Park Street South Melbourne, Victoria Australia 3205
France	DIGITAL EQUIPMENT FRANCE Silic 225 18, rue Saarinen 94528 RUNGIS Cedex / France	Australia (Sydney)	Digital Equipment Aust. Pty., LTD. 123 - 125 Willoughby Road P.O. Box 491 Crows Nest NSW Australia 2065
Italy	DIGITAL EQUIPMENT SPA Viale Fulvio Testi 117 20092 CINISELLO/BALSAMO (Milan) Italy	Brazil	Digital Equipment Comercio Ind. Rua Batatais 429 Esq AL Campin 01423 Jardim Paulista Sao Paulo 0100 Brazil
Denmark	DIGITAL EQUIPMENT CORP. APS Kristineberg 3 2100 COPENHAGEN 0 / Denmark	Caribbean	De Latin America P.O. Box 11038 Fernando Juncos Sta.
Finland	DIGITAL EQUIPMENT CORP. OY P.L. 16 02201 ESPOO 20 / Finland		Santurce PR 00910
Norway	DIGITAL EQUIPMENT CORP. A/S Pottenmakerveien 8 OSLO 5 / Norway	Japan	Digital Equipment Corp., INTL 3rd Floor - Kowa Building 8-7 Sanban Cho Chiyoda Ku Tokyo 102 Japan
Sweden	DIGITAL EQUIPMENT CORP. A.B. Englundavagen 7 17124 SOLNA 1 / Sweden	New Zealand	Digital Equipment Corp., LTD Challenge House - 3 Wolfe Street P.O. Box 2471 Auckland New Zealand 10010
Switzerland, Spain, Greece, Portugal, Yugoslavia, Cyprus, Algeria, Morocco, Malta, Tunisia, Turkey	DIGITAL EQUIPMENT CORP. S.A. 9, route des Jeunes 1211 GENEVE 26 / Switzerland		
Holland, Belgium, Luxemburg	DIGITAL EQUIPMENT BV Kaap Hoorndreef 38 UTRECHT/OVERTRECHT / Holland		