The Software Dispatch

RSX

RSX-11M/S
RSX-11M-PLUS
Micro/RSX
October 1986
AD-FD06A-13

digital
software

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The RSX Software Dispatch complements the Software Dispatch Reviews for RSX-11M/S, RSX-11M-PLUS and Micro/RSX. 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 RSX SOFTWARE DISPATCH

BASIC-PLUS-2	FMS-11/RSX	RSX-11/3271 Protocol Emulator
COBOL, PDP-11	FORTRAN IV/VAX to RSX	RSX-11M 2780/3780 Emulator
COBOL-81/RSX	FORTRAN-77/RSX, PDP-11	RSX-11M/FORTRAN Enhancement
CORAL 66, PDP-11	FORTRAN-77 DEBUG, PDP-11	Pkg. for MINC
DATATRIEVE-11	LSP-11	RSX-11M/FORTRAN Real-Time Pkg.
DBMS-11	MUX200/RSX-IAS	for MINC
DECnet-11M	PASCAL/RSX, PDP-11	RSX-11M/SNA Protocol Emulator
DECnet-11M-PLUS	RGL/11	RTEM-11
DECnet-11S	RPG II, PDP-11	SORT-11
DECnet/SNA Gateway Products	RSX MDE/T-11	SSP-11
DPM	RSX-11M	UN1004/RSX
DPM-PLUS Software	RSX-11S	
DT07-11M	RSX-11M-PLUS	

DISTRIBUTION

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

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

EDITOR'S NOTE

Article Sequence No. 10.20.1.2 N was published in the RSX
Software Dispatch, September 1986, but omitted from the
cumulative index. A corrected index appears in this Dispatch.

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The following list contains date and version of the latest release of supported software products. Customers who are in warranty or have a software product service agreement during the month the product became available, are eligible to receive the new release. Eligible customers who have not received the new release should contact their local DIGITAL office.

PRODUCT	VERSION		AVAILABLE
BASIC-PLUS-2 for RSX-11M and RSX-11M-PLUS,PDP-11	2.3		JUN 85
COBOL,PDP-11	4.4		MAY 82
COBOL-81/RSX	2.4		MAY 86
DATATRIEVE-11	3.1		SEP 84
DBMS-11	2.1		JAN 83
DECdx/RSX	1.0		NOV 84
DECmail-11 for RSX-11M-PLUS and Micro/RSX	2.0		AUG 84
DECnet Router Server	1.1	SPD ONLY	OCT 85
DECnet-11M	4.2		FEB 86
DECnet-11M-PLUS	3.0		FEB 86
DECnet-11S	4.2		FEB 86
DECnet/SNA Gateway Products	1.3		JAN 86
DPM	4.1		AUG 82
DPM-PLUS SOFTWARE	1.1		AUG 82
FORTRAN IV/RSX	2.6		JUN 83
PDP-11 SYMBOLIC DEBUGGER/RSX (formerly FORTRAN-77 DEBUG/RSX, PDP-11)	2.0		APR 86
FORTRAN-77/RSX,PDP-11	5.0	SPD ONLY	JAN 86
LSP-11	1.2	DOC ONLY	JAN 86
MicroPower/Pascal-RSX	2.2		JUN 86
PASCAL/RSX,PDP-11	1.2		JAN 86
RGL/11	1.1	DOC ONLY	JAN 86
RPG II,PDP-11	8.8		JUL 83
RSX MDE/T-11	1.0		DEC 82
RSX-11 2780/3780 Emulator	4.1		JUL 82
RSX-11 PSI/M	2.1		FEB 86
RSX-11 PSI/M-PLUS	2.1		FEB 86
RSX-11/3271 Protocol Emulator	3.1		MAR 86
RSX-11M	4.2		JAN 86
RSX-11M V4.2 UPDATE	B		MAY 86
RSX-11M/FORTRAN Enhancement Pkg. for MINC	1.3	RETIRED	MAR 86
RSX-11M/FORTRAN Real-Time Pkg. for MINC	1.2	RETIRED	MAR 86

PRODUCT	VERSION	AVAILABLE
RSX-11M-PLUS	3.0	JAN 86
RSX-11M-PLUS DECgraph-11	1.2 RETIRED	FEB 86
RSX-11M-PLUS DECtype	3.1	JUN 86
RSX-11M-PLUS DIBOL	1.2	APR 86
RSX-11M-PLUS V3.0 UPDATE	B	MAY 86
RSX-11S	4.2	JAN 86
RSX-11S V4.2 UPDATE	B	MAY 86
RTEM-11	2.2	APR 86
SORT/MERGE,PDP-11	3.0	JUN 84
SPM-11M	2.1 RETIRED	APR 86
SPM-11M-PLUS	2.1 RETIRED	APR 86
SSP-11	1.3 DOC ONLY	JAN 86

RSX-11M V4.2

ASN /ALL GIVES SYNTAX ERROR (SPR 11-M90341 JF)

PROBLEM
STATEMENT:

The Monitor Console Routine (MCR) command ASN /ALL gives a syntax error.

RESPONSE:

The description of the /ALL keyword in the RSX-11M MCR Operations Manual is
incorrect.   The /ALL keyword is only available on RSX-11M-PLUS systems. On
RSX-11M systems, please use the /GBL keyword that performs the same function.

RSX-11M V4.2   Seq. No. 3.1.3.7 M
DRIVERS
FDX-TTDRV   1 of 1

SIX CORRECTIONS TO TTDRV (SPR 11-M00295X SA)

PROBLEM
STATEMENT:

The following problems exist in the terminal driver:

   1.   When a control character (such as ^S, ^Q, ^R, etc.) has been declared
        out-of-band include, its special function should be disabled.

   2.   A comment in the module TTATT is incorrect.

   3.   A nonprivileged terminal should be allowed to issue a break-through
        write to its own TI:.

   4.   The pass-through and no-echo characteristics should be initialized to
        false when a remote line is answered.

   5.   There is a redundant instruction in TTRW.

   6.   When a task issues a read from an RT:, and the user enters   no   input
        characters and terminates the read with a carriage return or CTRL/Z,
        the terminator will be passed as input to the task.

RESPONSE:

These problems are corrected in RSX-11M Version 4.2 Update D.

RSX-11M V4.2   Seq. No. 4.1.4.1 M
BATCH/QUEUE MGR
QUE/PRI   1 of 1

QUE /MOD FAILS TO CHANGE /DELETE ATTRIBUTE (SPR 11-M90099 LP)

PROBLEM
STATEMENT:

Once you have queued a file with the /DELETE file attribute, you cannot change
it to /NODELETE with the QUE/MOD/EN:n/FI:n/NODELETE command, as documented in
the Batch and Queue Operations Manual.

RESPONSE:

The /[NO]DELETE switch was being created with the CSI$SW macro using incorrect
parameter values.   This prevented QMGCLI from processing the QUE/MOD command
file qualifier /NODELETE properly.

This problem is corrected in RSX-11M Version 4.2 Update D.

This is a complete listing of all articles for RSX-11M V4.2 and layered products. Missing sequence numbers may pertain to problems unique to other versions of the same product or other major operating systems.

IMPORTANT!

Unassigned articles are indicated: UNASSIGNED.

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

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

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

R = Restriction. These articles discuss areas that will not be patched in the current release because they require major modification or because they are not consistent with the design of the product. Restrictions, except those described as permanent, are reviewed and modified when possible as part of the normal release cycle.

N = Note. These articles provide explanatory information that supplements the manual set and provide more detailed information about a program or package. They also provide procedural information to make it easier to use a program or package.

* = Articles appeared in the RSX Software Dispatch Review, September 1985.

Component	Sequence	Mon/Yr
RSX-11M V4.2		
SYSGEN		
SYSGEN PHASE 1 ASKS QUESTIONS THAT SHOULD NOT BE ASKED	1.1.1.1 R*	Sep 85
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ACF MAY NOT CORRECTLY SET UP DV.NUC IN CONFIG.DAT FOR RSO3/4s	1.1.1.3 M	Apr 86
SYSGEN DOES NOT USE AUTOCONFIGURE RESULTS IF NONSTANDARD EXEC	1.1.1.4 M	May 86
SYSGEN TRAPS DURING PHASE 1 ONLY ON PDP-11/34 WHEN ACF HAS RUN	1.1.1.5 M	Jun 86
DECIMAL NUMBER CAUSES ERROR IN OCTAL RADIX SYSGEN QUESTION	1.1.1.6 F	Jul 86
SYSGEN FOR NONZERO MU: PHYSICAL UNIT NUMBERS	1.1.1.7 M	Jul 86
BUILDING FCPSML GIVES ILLEGAL MEMORY LIMITS	1.1.1.8 M	Aug 86
SGNPER ABORTS WHEN CREATING DATABASE FOR VT11	1.1.1.9 M	Sep 86

Component	Sequence	Mon/Yr
EXECUTIVE		
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Component	Sequence	Mon/Yr
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Component	Sequence	Mon/Yr

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TASK BUILDER

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Component	Sequence	Mon/Yr
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RSX-11 2780/3780 PROTOCOL EMULATOR V4.1

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DECnet-11M/S V4.2

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DECnet-RSX DELUA DEVICE SUPPORT	10.8.3.2 N	May 86

Component	Sequence	Mon/Yr
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RSX-11S V4.2

SIX CORRECTIONS TO TTDRV (SPR 11-S00295X SA)

PROBLEM
STATEMENT:

The following problems exist in the terminal driver:

1. When a control character (such as ^S, ^Q, ^R, etc.) has been declared
    out-of-band include, its special function should be disabled.

2. A comment in the module TTATT is incorrect.

3. A nonprivileged terminal should be allowed to issue a break-through
    write to its own TI:.

4. The pass-through and no-echo characteristics should be initialized to
    false when a remote line is answered.

5. There is a redundant instruction in TTRW.

6. When a task issues a read from an RT:, and the user enters   no   input
    characters and terminates the read with a carriage return or CTRL/Z,
    the terminator will be passed as input to the task.

RESPONSE:

These problems are corrected in RSX-11S Version 4.2 Update D.

This is a complete listing of all articles for RSX-11S V4.2 and layered products. Missing sequence numbers may pertain to problems unique to other versions of the same product or other major operating systems.

IMPORTANT!

Unassigned articles are indicated: UNASSIGNED.

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

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

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Component	Sequence	Mon/Yr
RSX-11S V4.2		
SYSGEN		
COMMAND FILES		
SGNPER ABORTS WHEN CREATING DATABASE FOR VT11	1.1.1.1 M	Sep 86
11SGEN2		
11SGEN2 RETURNS "COMMAND FILE OPEN ERROR"	1.1.6.1 M	Feb 86
11SGEN2 PROBLEMS	1.1.6.2 M	Apr 86
11SGEN LOOKS FOR UML, RCT, AND CDA BLD FILES IN [1,20]	1.1.6.3 M	May 86
EXECUTIVE		
DIRECTIVES		
ACD SUPPORT CAUSES AN UNDEFINED SYMBOL IN SYSGEN	2.1.1.1 M	Jun 86

Component	Sequence	Mon/Yr
DRIVERS		
MUDRV		
MUDRV DOES NOT SUPPORT MULTIPLE-DENSITY TAPE DRIVES	3.1.2.1 M	Mar 86
SYSTEM CRASHES WITH MUDRV/PUCOM MAPPED	3.1.2.2 M	Mar 86
FDX-TTDRV		
GET/SET CHARACTERISTIC DOES NOT WORK WHEN GET OPTIONS NOT SELECTED	3.1.3.1 M	Jun 86
BIC OF S6.EIO NOT CONDITIONALIZED ON EXTENDED I/O	3.1.3.2 M	Jul 86
SIX CORRECTIONS TO TTDRV	3.1.3.3 M	Oct 86
UTILITIES		
BRU		
BRU "NO FILES FOUND" PROBLEM CORRECTED	5.1.17.1 M	Dec 85
SYSTEM LIBRARIES		
CSI		
CSI$1 AND CSI$2 MEMORY PROTECT	5.2.6.1 M	Mar 86
MISC SYS TASKS		
RCT		
RCT DOES NOT REPLACE ALL BAD BLOCKS	5.7.15.1 M	Feb 86

DECnet-11M/S V4.2

DECnet-11M/S PROBLEMS FIXED ON RSX-11M AND RSX-11S LAYERED UPDATE B	10.8.3.1 N	May 86
DECnet-RSX DELUA DEVICE SUPPORT	10.8.3.2 N	May 86

RSX-11M-PLUS V3.0

RSX-11M-PLUS V3.0   Seq. No. 2.1.1.11 M
EXECUTIVE
DIRECTIVES   1 of 1

FEAT$C DIRECTIVE DOES NOT WORK IN I- AND D-SPACE TASKS (SPR 11-P00296X JB)

PROBLEM
STATEMENT:

The FEAT$C directive puts the directive parameter block (DPB) into instruction
space rather than data space. This prevents the use of that directive in an
I- and D-space task.

RESPONSE:

This problem is corrected in RSX-11M-PLUS Version 3.0 Update D.

RSX-11M-PLUS V3.0   Seq. No. 2.1.6.5 M
EXECUTIVE
MISC ROUTINES   1 of 1

TASKS RUN WITH /UIC SWITCH GET WRONG UIC (SPR 11-P00200P JB)

PROBLEM
STATEMENT:

When running multiple tasks from the clock queue from a single terminal using
the /UIC switch, the user identification code (UIC) of the task is not always
correct.

RESPONSE:

This problem occurs when a second RUN installed task command is issued from
the same terminal with a different UIC specified, prior to the first task
starting to execute.

This problem is corrected in RSX-11M-PLUS Version 3.0 Update D.

SIX CORRECTIONS TO TTDRV (SPR 11-P00295X SA)

PROBLEM
STATEMENT:

The following problems exist in the terminal driver:

1. When a control character (such as ^S, ^Q, ^R, etc.) has been declared
    out-of-band include, its special function should be disabled.

2. A comment in the module TTATT is incorrect.

3. A nonprivileged terminal should be allowed to issue a break-through
    write to its own TI:.

4. The pass-through and no-echo characteristics should be initialized to
    false when a remote line is answered.

5. There is a redundant instruction in TTRW.

6. When a task issues a read from an RT:, and the user enters no input
    characters and terminates the read with a carriage return or CTRL/Z,
    the terminator will be passed as input to the task.

RESPONSE:

These problems are corrected in RSX-11M-PLUS Version 3.0 Update D.

RSX-11M-PLUS V3.0   Seq. No. 4.1.4.1 M
BATCH/QUEUE MGR
QUE/PRI   1 of 1

QUE /MOD FAILS TO CHANGE /DELETE ATTRIBUTE (SPR 11-P90099 LP)

PROBLEM
STATEMENT:

Once you have queued a file with the /DELETE file attribute, you cannot change
it to /NODELETE with the QUE/MOD/EN:n/FI:n/NODELETE command, as documented in
the Batch and Queue Operations Manual.

RESPONSE:

The /[NO]DELETE switch was being created with the CSI$SW macro using incorrect
parameter values.   This prevented QMGCLI from processing the QUE/MOD command
file qualifier /NODELETE properly.

This problem is corrected in RSX-11M-PLUS Version 3.0 Update D.

RSX-11M-PLUS V3.0   Seq. No. 4.2.1.6 M
MULTI-USER TASK
ACNT   1 of 1

ACNT HANGS WHEN DELETING [GGGMMM] TYPE DIR (SPR 11-P00297X RK)

PROBLEM
STATEMENT:

When deleting an account using ACNT and responding Yes to the "Delete UFD and
files?" question, if there does not exist a default-directory string entry,
ACNT will appear to hang. This problem occurs only when running an
RSX-11M-PLUS V3.0 or later ACNT task and using the account files created
before RSX-11M-PLUS V3.0 or with the account files created on RSX-11M.

RESPONSE:

ACNT uses the default directory string to construct a command line which it
then sends to PIP to delete the directory. Since the concept of named
directories did not exist prior to RSX-11M-PLUS V3.0, there is no entry for
this field for account files created before RSX-11M-PLUS V3.0 and account
files created on RSX-11M. ACNT does not check to see whether there is a
default directory string entry or not. If there is no entry for the default
directory string, an erroneous command line is constructed and sent to
PIP. When PIP receives this command line, PIP hangs. We are currently
investigating this problem with PIP. Since ACNT waits for PIP to complete,
ACNT will appear to hang.

ACNT has been modified so that if a default directory entry for that account
does not exist, it will use the GROUP and MEMBER entries to construct the PIP
command line to delete the directory.

As a workaround to this problem, the files in the directory and the directory
file itself can be deleted manually. Another workaround is to enter the
MODIFY mode of ACNT and enter the same [gggmmm] as the new default directory.
This will initialize the default directory string field. At this point, the
directory and directory files may be deleted by ACNT.

This problem is corrected in RSX-11M-PLUS Version 3.0 Update D.

RSX-11M-PLUS V3.0   Seq. No. 4.2.4.4 M
MULTI-USER TASK
HELLO   1 of 1

HELLO ERROR MESSAGE INCORRECT WHEN LOGGED IN (SPR 11-P03113 RDH)

PROBLEM
STATEMENT:

Typing HELLO or HELLO LAST_NAME from a terminal   that   is   already   logged   in
results   in   the   "Unknown HELP qualifier" message rather than the "Other user
logged on" message from HELLO.

RESPONSE:

The HELP/HELLO task root was previously changed   so   that the user command HEL
would be   interpreted   as HELLO if the user were not logged   in   and as HELP if
he were, thereby eliminating   the need   to   input   the   distinguishing   fourth
character   from   the   terminal.   The implementation of this change erroneously
results in all variations of   HEL,   HELP,   or   HELL(O)   calling   HELP   if   the
terminal is logged in.

RSX-11M-PLUS Version 3.0 Update D will include   a correction for this problem.
The HELL(O) commands   will   call HELLO   independent of whether the terminal is
logged in.

PDP-11 BASIC-PLUS-2 V2.3   Seq. No. 10.20.1.2 N
      for RSX-11M-PLUS V3.0
                                                                      1 of 1

BASIC-PLUS-2 V2.3 RSX UPDATE B NOTICE

The BASIC-PLUS-2 V2.3 update files received with Update B of RSX-11M V4.2 and
RSX-11M-PLUS V3.0 introduce a problem which under certain circumstances
corrupts data values used by a program or written to a file. The situation is
as follows:

Arrays declared within MAP or COMMON statements are not mapped properly. As a
result, subsequent implicit or explicit assignments to elements of this array
may overwrite the contents of other variables declared within the MAP or
COMMON.

        For example:
          10   MAP (TSTDAT)   STRING FOO = 4%,   &
                                  STRING ARRAY_1(7%) = 10%
          20   FOO = ´ABCD´
               PRINT ´FOO before making array assignment =´; FOO
               ARRAY_1(0%) = ´ZZZZZZZZZZ´
               PRINT ´FOO after making array assignment =´; FOO
               END

This program, when compiled and taskbuilt, will produce the following
incorrect output:

        FOO before making array assignment = ABCD
        FOO after making array assignment = ZZZZ

This same program will work correctly when executed from the BASIC-PLUS-2
environment (i.e., OLDed and RUN) or if you do a COMPILE/MAC and then assemble
the resultant file.

                                   NOTE

            This problem exists only if you have applied the
            BASIC-PLUS-2 V2.3 corrections distributed with Update B
            of RSX-11M V4.2 and RSX-11M-PLUS V3.0. The problem
            will be corrected in Update C.

To avoid this problem, the following alternatives exist:

        1. Before applying the update, edit the BASIC-PLUS-2 update command
            file, BP2PCH.CMD, and remove the following line:
                WRITE LBR ~37 RSXLIB.OLB/RP = ~37 objgsd
        2. Do not apply the BASIC-PLUS-2 Update B files
        3. COMPILE/MAC and assemble the resultant file
        4. RUN from the BASIC-PLUS-2 environment

This is a complete listing of all articles for RSX-11M-PLUS V3.0 and layered products. Missing sequence numbers may pertain to problems unique to other versions of the same product or other major operating systems.

IMPORTANT!

Unassigned articles are indicated: UNASSIGNED.

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

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

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

R = Restriction. These articles discuss areas that will not be patched in the current release because they require major modification or because they are not consistent with the design of the product. Restrictions, except those described as permanent, are reviewed and modified when possible as part of the normal release cycle.

N = Note. These articles provide explanatory information that supplements the manual set and provide more detailed information about a program or package. They also provide procedural information to make it easier to use a program or package.

* = Articles appeared in the RSX-11M-PLUS V3.0 Software Dispatch Review, August 1985.

Component	Sequence	Mon/Yr
RSX-11M-PLUS V3.0		
SYSGEN		
SYSGEN		
AUTOCONFIGURE DOES NOT PASS MULTIPLE T(MSCP) INFO TO SYSGEN	1.1.0.1 M	Apr 86
ACF MAY NOT CORRECTLY SET UP DV.NUC IN CONFIG.DAT FOR RS03/4s	1.1.1.1 M	Apr 86
UNDEFINED REFERENCE IN DR4COM.MAP	1.1.1.2 M	May 86
ACT FAILS TO DETECT FIFTH DZ11	1.1.1.3.N	Jun 86
COMMAND FILES		
SYSGEN FOR NONZERO MU: PHYSICAL UNIT NUMBERS	1.1.1.4 M	Jul 86
APPLICATION NOT PROPERLY INSTALLED	1.1.1.5 M	Sep 86

Component	Sequence	Mon/Yr
DISTRIB KITS		
DAPRES NOT PROPERLY INSTALLED	1.1.2.1 M	Feb 86
CANNOT COPY SECOND BACKUP SET USING CERTAIN MS TAPE DRIVES	1.1.2.2 N	Sep 86
EXECUTIVE		
EXECUTIVE		
DISK CACHE FLUSH PARTIAL BLOCK WRITES TO SUPPORT RTEM-11	2.1.0.1 M	Mar 86
DIRECTIVES		
FAST MAP FACILITY HAS ADDITIONAL RESTRICTION AND ERROR CODE	2.1.1.1 M	Mar 86
GSSW$ CRASHES SYSTEMS WITH NO SWITCH REGISTER	2.1.1.2 R	Apr 86
DEVICE NORMALIZATION OCCURS ON ALL LOGICAL NAME DIRECTIVES	2.1.1.3 M	May 86
TASKS WITHOUT EXTERNAL HEADERS CRASH SYSTEM WITH CRAW$	2.1.1.4 M	Jun 86
A PARSE OF "_" CRASHES THE SYSTEM	2.1.1.5 M	Jul 86
FSS$ ALWAYS RETURNS SUCCESS	2.1.1.6 N	Jul 86
DRPFN $LNFCS REMOVES ZEROS	2.1.1.7 M	Jul 86
RESCHEDULED COPIES OF TASK ARE INITIATED WITH WRONG UIC	2.1.1.8 M	Jul 86
SYSTEM CORRUPTION IN DEFAULT UIC	2.1.1.9 N	Sep 86
RPOI RETURNS IE.IDU FROM A VT:	2.1.1.10 M	Sep 86
FEAT$C DIRECTIVE DOES NOT WORK IN I- AND D-SPACE TASKS	2.1.1.11 M	Oct 86
SHF		
SHUFFLER MAY CAUSE SYSTEM CRASH	2.1.2.1 M	Sep 86
LOADR		
DRIVER WITH A CLOCK BLOCK IN THE CTB CRASHES THE SYSTEM	2.1.5.1 M	Apr 86
MISC ROUTINES		
CERTAIN CALLS TO $QRMVT SHOULD BE CHANGED TO $QRMVA	2.1.6.1 M	Jan 86
DRMAP HAS UNDEFINED SYMBOL IN FAST MAPPING SUPPORT	2.1.6.2 M	May 86
UNMAPPED FAST MAP WINDOW DESCRIPTOR CAUSES SYSTEM CRASH	2.1.6.3 M	Aug 86
ERROR LOGGER REPORT FOR RK07 IS MEANINGLESS	2.1.6.4 M	Aug 86
TASKS RUN WITH /UIC SWITCH GET WRONG UIC	2.1.6.5 M	Oct 86
DATA CACHING		
MOUNTING A DU: DEVICE MAY CAUSE CRASH IF ANOTHER IS CACHING	2.1.7.1 M	Jun 86
CACHE REGION NAME	2.1.7.2 M	Aug 86
MCR		
INTERNAL CMDS		
CBD NEEDS TO KNOW ABOUT NEW REGION CHARACTERISTICS	2.2.1.1 M	Jan 86
ASN COMMANDS WITH NULL LOGICALS CAUSE SYSTEM CRASH	2.2.1.2 M	Apr 86
SET /CACHE EXTENT SIZE = 0 CRASHES SYSTEM	2.2.1.3 M	Jun 86
CACHE READ-AHEAD LESS THAN VIRTUAL CAN CRASH SYSTEM	2.2.1.4 M	Jul 86
SET /SPEED DOES NOT ACCEPT EXTA OR EXTB	2.2.1.5 M	Jul 86
INS		
NEW "TASK IMAGE I/O ERROR" MESSAGE FOR DEVICES	2.2.2.1 M	Apr 86
DELETING THE DISK IMAGE OF AN INSTALLED TASK	2.2.2.2 R	Jul 86
INSTLL,RUN,REMOVE WINDOW ALLOWS OTHER TASKS TO ACTIVATE IT	2.2.2.3 M	Sep 86

Component	Sequence	Mon/Yr
INDIRECT, ICQ, ICM, ICP		
INDIRECT EXITS WITHOUT WARNING ON I/O ERROR	2.2.3.1 M	Jan 86
LOGICAL NAME AND SUBSTITUTION ERRORS IN INDIRECT	2.2.3.2 M	Jan 86
INDIRECT PROBLEMS CORRECTED IN UPDATE B	2.2.3.3 M	Feb 86
SPECIAL SYMBOL <UIC> SOMETIMES ERRONEOUS IN NAMED MODE	2.2.3.4 M	Feb 86
24-HOUR MAXIMUM FOR .DELAY DIRECTIVE	2.2.3.5 M	Mar 86
INVALID CHARACTERS IN SUBSTITUTION SYMBOL NAMES	2.2.3.6 M	Mar 86
INDIRECT COMMAND .SETT <ERSEEN> LEAVES IT FALSE	2.2.3.7 M	Mar 86
.EXIT DIRECTIVE WITHIN BEGIN-END BLOCK	2.2.3.8 M	Mar 86
ERROR IN EXECUTION OF @/LB:MODULE FROM DCL OR MCR	2.2.3.9 M	Mar 86
.ASK DOES NOT WORK AS DOCUMENTED WITH <ESC> RESPONSE	2.2.3.10 M	Apr 86
ERASING LOCAL SYMBOLS WITH DOLLAR-SIGN NAMES	2.2.3.11 M	Apr 86
CORRUPTED BEGIN-END BLOCK POINTERS IN LOCAL SYMBOL TABLE	2.2.3.12 M	Apr 86
DIRECTIVE .ASK WITH TIME-OUT CANNOT CHECKPOINT	2.2.3.13 M	Aug 86
IMBEDDED PERIODS NOT ALLOWED IN .TESTPARTITION	2.2.3.14 M	Aug 86
VMR		
SET /NOTYPEAHEAD CAUSES CRASH	2.2.5.1 M	May 86
SET /NOECHO DOES NOT WORK	2.2.5.2 M	Sep 86
SAV/BOO		
SAV DOES NOT SIZE MEMORY ABOVE 1920 kW ON Q-BUS SYSTEMS	2.2.6.1 M	Feb 86
SAV'd/BOOTED 11/70 SYSTEMS DO NOT CORRECTLY IDENTIFY RH11s	2.2.6.2 M	Mar 86
SAV DOES NOT SIZE MEMORY CORRECTLY ON UNIBUS SYSTEMS	2.2.6.3 M	Apr 86
SAV CRASHES WHEN SYSTEM DISK IS DUAL-ACCESS DEVICE	2.2.6.4 M	Apr 86
LOA		
LOA /EXP DOES NOT ACCEPT SIZE VALUES OF 40000 OR GREATER	2.2.7.1 M	Aug 86
DRIVERS		
RX02 SUPPORT FOR 22-BIT Q-BUS SYSTEMS	3.1.1.1 M	Aug 85
DLDRV's ERROR RECOVERY SHOULD MAKE COMPLETE DRIVE-STATUS CHECK	3.1.1.2 M	Mar 86
DDDRV TIMES OUT WHILE COPYING LARGE FILES	3.1.1.3 M	Mar 86
BYE HANGS WHEN SPINNING DOWN REMOVABLE RC25 BEFORE FIXED	3.1.1.4 R	Jun 86
DUDRV's LBN RANGE CHECKING IS INADEQUATE	3.1.1.5 M	Jul 86
SYSTEM CRASH AFTER SHADOWING	3.1.1.6 M	Sep 86
MUDRV		
MUDRV DOES NOT SUPPORT MULTIPLE-DENSITY TAPE DRIVES	3.1.2.1 M	Mar 86
SYSTEM CRASHES WITH MUDRV/PUCOM MAPPED	3.1.2.2 M	Mar 86
MSDRV SPACING TIME-OUT VALUE IS INSUFFICIENT	3.1.2.3 M	Jul 86
MSDRV RETURNS IE.EOF SPACING REVERSE TO BOT	3.1.2.4 M	Jul 86
CANNOT USE MS: DEVICE ON 22-BIT, Q-BUS I/D SYSTEM	3.1.2.5 M	Jul 86
FDX-TTDRV		
DRIVER DOUBLE FORK CAUSES SYSTEM CRASH ON Q-BUS SYSTEM	3.1.3.1 N	Feb 86
VARIOUS TTDRV PROBLEMS	3.1.3.2 M	Mar 86
CONTROL CHARACTERS TYPED TO CONTINUATION PROMPT CRASH SYSTEM	3.1.3.3 M	Jun 86
BIC OF S6.EIO NOT CONDITIONALIZED ON EXTENDED I/O	3.1.3.4 M	Jul 86
ASSEMBLY ERRORS IN THE TTATT MODULE	3.1.3.5 M	Jul 86
LAT TERMINALS DO NOT ALLOW I/O HANG UP	3.1.3.6 M	Jul 86

Component	Sequence	Mon/Yr
POWERFAIL TO OUTPUTTING DHV LEAVES LINE HUNG	3.1.3.7 M	Sep 86
SIX CORRECTIONS TO TTDRV	3.1.3.8 M	Oct 86
XEDRV		
VARIOUS XEDRV PROBLEMS	3.1.5.1 M	Mar 86
CODRV		
CONSOLE LOGGING TASK COT DOES NOT SUPPORT NAMED DIRECTORIES	3.1.6.1 M	Aug 86
FCS		
RECORDS MAY SPAN BLOCKS	3.2.1.1 M	May 86
FCS DOES NOT PARSE ANSI FILE SPECIFICATION CORRECTLY	3.2.1.2 M	Sep 86
F11ACP		
LARGE DISK SUPPORT	3.2.2.1 N	Jul 86
ERROR LOGGING		
CONTROL FILES		
UPDATE ERROR-CODE TABLE IN MSCP60.CNF	3.3.5.1 M	Mar 86
END MESSAGE PACKETS FOR MU ARE NOT ANALYZED PROPERLY	3.3.5.2 M	Mar 86
ERROR LOG MESSAGE PACKETS FOR TK50 ARE NOT ANALYZED PROPERLY	3.3.5.3 M	Mar 86
RPT ABORTS WITH MESSAGE ERLRPT-F-CASENOMAT FOR DU: ERRORS	3.3.5.4 M	Jul 86
LBN FOR RM80s ARE INCORRECT IN ERROR LOG REPORT	3.3.5.5 M	Jul 86
RPT FAILS WHEN A GEOMETRY SUMMARY IS REQUESTED	3.3.5.6 M	Jul 86
BATCH/QUEUE MGR		
BPR		
BPR GIVES CRYPTIC ERROR MESSAGE WHEN FILE IS DELETED	4.1.1.1 M	Apr 86
SUBMIT /NOPRINT PUTS LOG FILE IN WRONG PLACE	4.1.1.2 M	May 86
QMG		
INCORRECT ERROR MESSAGE IF DEVICE IS INVALID	4.1.3.1 M	Mar 86
STICKINESS IS LOST IN FILE EXTENSION IF FILES DO NOT EXIST	4.1.3.2 M	Mar 86
EXTERNAL HEADER INCONSISTENCY IN QMG CRASHES SYSTEM	4.1.3.3 M	Aug 86
QUE/PRI		
QUE /MOD FAILS TO CHANGE /DELETE ATTRIBUTE	4.1.4.1 M	Oct 86
LPP		
LPP LOOPS ON NEGATIVE RECORD LENGTH	4.1.5.1 M	Apr 86
LPP MISCOUNTS PAGES IN PRINT JOB	4.1.5.2 M	May 86
LN03 PRINTS 51 LINES PER SHEET IN LANDSCAPE MODE	4.1.5.3 M	Jun 86
LPP HANGS WHEN USING SIMULATED FORM FEEDS	4.1.5.4 M	Aug 86
UNSOLICITED INPUT FROM PRINT DEVICES CRASHES THE SYSTEM	4.1.5.5 M	Aug 86
MULTI-USER TASK		
ACNT		
IF LAST NAME CHANGED IN ACNT, PASSWORD DOES NOT WORK	4.2.1.1 N	May 86
A NAMED DIRECTORY OF [G,M] TYPE NOT DELETED BY ACNT	4.2.1.2 M	May 86
ACNT PUTS USER IN NAMED MODE IF ANYTHING TYPED FOR DEFAULT DIRECTORY	4.2.1.3 N	May 86
NULL PASSWORD NOT ALLOWED IN PSW	4.2.1.4 M	Jun 86

Component	Sequence	Mon/Yr
ACNT DOES NOT ALLOW REMOVAL OF DEFAULT FILE PROTECTION	4.2.1.5 M	Jul 86
ACNT HANGS WHEN DELETING [GGGMMM] TYPE DIR	4.2.1.6 M	Oct 86
BRO		
BRO ON SYSTEMS WITHOUT ACCOUNTING: GARBAGE IN USER NAME	4.2.2.1 N	Apr 86
BYE		
BYE HANGS WITH LOW POOL	4.2.3.1 M	Jun 86
BYE FROM BATCH JOB OR SILENT CLI DOES NOT ABORT INDIRECT	4.2.3.2 M	Sep 86
HELLO		
SYSTEM CRASH WHEN USER ENTERS INCORRECT PASSWORD	4.2.4.1 M	Jul 86
ODD ADDRESS TRAP IN HELLO IF SYSGEN WITHOUT ALTERNATE CLI	4.2.4.2 M	Jul 86
DEFAULT CLI PROMPT MUST BE THREE OR MORE BYTES	4.2.4.3 M	Sep 86
HELLO ERROR MESSAGE INCORRECT WHEN LOGGED IN	4.2.4.4 M	Oct 86
SHUTUP		
MISLEADING ACCOUNTING WARNINGS IN SHUTUP	4.2.5.1 M	May 86
UTILITIES		
BAD		
/ALLOCATE AND /NOEXERCISE GIVE I/O ERROR CODE -2 IN ANALYZE	5.1.1.1 M	Jun 86
INI		
INI WILL NOT EXECUTE A COMMAND LINE GREATER THAN 80 CHARACTERS	5.1.8.1 M	Aug 86
MOU		
MOUNT DOES NOT WAIT FOR RA80/81 TO SPIN DOWN1	5.1.10.1 M	Mar 86
MOUNT ACCEPTS EXTENT SIZES OF ZERO FOR CACHE OPTIONS	5.1.10.2 M	Jul 86
CACHE READ-AHEAD LESS THAN VIRTUAL CAN CRASH SYSTEM	5.1.10.3 M	Jul 86
MOU WILL CLEAR VOLUME VALID ON LABEL ERROR ON SHARED DISK	5.1.10.4 M	Jul 86
MOUNT ACCEPTS EXTENT SIZE OF ZERO FOR CACHE OPTIONS	5.1.10.5 M	Jul 86
PIP		
DELETING FILE, ;0 DOES NOT ALWAYS WORK PROPERLY	5.1.12.1 M	Apr 86
PIP DISPLAYS NEGATIVE NUMBER OF FILES	5.1.12.2 M	Aug 86
PIPRES/APPEND TERMINATES WITH ODD ADDRESS	5.1.12.3 M	Sep 86
BRU		
BRU "NO FILES FOUND" PROBLEM CORRECTED	5.1.17.1 M	Dec 85
BRU ENDS WITH MEMORY PROTECTION VIOLATION DURING RESTORES	5.1.17.2 N	Mar 86
BRU INDICATES OUTPUT DISK IS TOO FRAGMENTED DURING VERIFY	5.1.17.3 N	Mar 86
BRU MAY FAIL ON THE VERIFY PASS OF A BACKUP OPERATION	5.1.17.4 N	Mar 86
BRU REPORTS ATTACH FAILED AS SECOND FATAL ERROR	5.1.17.5 N	Mar 86
BRU REPORTS I/O STATUS OF -255	5.1.17.6 N	Mar 86
BRU REPORTS ERRORS ABOUT FILES THAT DO NOT EXIST	5.1.17.7 N	Mar 86
BRU USES WRONG IMAGE FILE FOR RESTORE/COMPARE	5.1.17.8 N	Mar 86
BRU DOES NOT RECOVER PROPERLY FROM TAPE-LABEL ERRORS	5.1.17.9 M	Mar 86
BRU--MISLEADING ERROR MESSAGE/ACTION FOR UNMOUNTED TAPES	5.1.17.10 N	Apr 86
BACKUPS TO TAPE FAIL UNDER A-TO-Z CONTROL	5.1.17.11 M	Jun 86
BRU /IMAGE:RESTORE DISPLAYS ERRORS DESPITE SUCCESS	5.1.17.12 M	Jun 86
BRU64K /COMPARE/IMAGE:SAVE DOES NOT WORK PROPERLY	5.1.17.13 M	Jul 86

Component	Sequence	Mon/Yr
STAND-ALONE BRU /IMAGE:SAVE INCORRECTLY INITIALIZES DISKS	5.1.17.14 M	Sep 86
BRU SKIPPING OVER BOOTABLE SYSTEM IMAGE	5.1.17.15 M	Sep 86
BRU PROBLEM WITH LARGE FID NUMBERS	5.1.17.16 M	Sep 86
BRU /VERIFY INCORRECTLY RESTORES DISK WITH ONLY EMPTY UFDs	5.1.17.17 M	Sep 86

SYSTEM LIBRARIES
FORTRAN EXEC, RSXMAC

Component	Sequence	Mon/Yr
LOGICAL NAME FORTRAN INTERFACE ROUTINES RETURN IE.SDP	5.2.4.1 M	May 86
GDVI$ MACROS MISSING FROM RSXMAC.SML	5.2.4.2 M	May 86
MINOR ERROR IN GCII$ MACRO	5.2.4.3 M	May 86
FORTRAN CALLS WFLORS AND STLORS DO NOT WORK	5.2.4.4 M	Aug 86
CSI$1 AND CSI$2 MEMORY PROTECT	5.2.6.1 M	Mar 86
R1 NOT PROPERLY UPDATED IN MODULE INTDAS	5.2.6.2 M	Jun 86
SYSLIB $DIVD CONFLICTS WITH FORTRAN IV $DIVD	5.2.6.3 N	Jun 86

TASK BUILDER
TASK BUILDER

Component	Sequence	Mon/Yr
TKB SWITCH /CL DOES NOT WORK	5.3.0.1 M	Apr 86
MULTIPLE REFERENCES TO .PSECT IN SEGMENT CAUSE TKB TO ABORT	5.3.0.2 M	Apr 86

TKB

Component	Sequence	Mon/Yr
NOTES REGARDING CLUSTER LIBRARY USE	5.3.1.1 M	Aug 85
TKB OPENED AND CLOSED THE COMMAND FILE FOR EACH OPTION	5.3.1.2 N	Nov 85
I/D TASK LINKED TO LIBRARY AND COMMON DOES NOT BUILD	5.3.1.3 M	Feb 86
I/D TASK WITH DATA IN COMMON PSECT DOES NOT GET CAUGHT CORRECTLY	5.3.1.4 M	Jun 86
ASG OPTION REJECTED IF LUN IS GREATER THAN UNITS OPTION	5.3.1.5 M	Sep 86

DEBUGGING AIDS
ODT

Component	Sequence	Mon/Yr
TASK WITH LARGE NUMBER OF LUNs HANGS IN ODT	5.5.1.1 M	Apr 86

MISC SYS TASKS
HELP

Component	Sequence	Mon/Yr
HELP /OUT:TTNN: <PARAMETER> DOES NOT WORK	5.7.1.1 N	Apr 86

PMD/SNAP

Component	Sequence	Mon/Yr
PMD SNAPSHOT FOR I/D SNAPSHOT DUMPS I-SPACE AND NOT D-SPACE	5.7.3.1 M	Apr 86
PMD PUTS OUTPUT IN WRONG PLACE	5.7.3.2 N	Jun 86

RMDEMO

Component	Sequence	Mon/Yr
RMD C PAGE DISPLAY WRONG WHEN CACHING SET TO 4096.	5.7.5.1 M	Jul 86

COT

Component	Sequence	Mon/Yr
COT... ABORTS WITH ODD ADDRESS TRP	5.7.14.1 M	Jul 86

RCT

Component	Sequence	Mon/Yr
RCT DOES NOT REPLACE ALL BAD BLOCKS	5.7.15.1 M	Feb 86

DCL
DCL

Component	Sequence	Mon/Yr
DCL LINK DOES NOT WORK CORRECTLY IN SET DEBUG/EXECUTE MODE	6.1.0.1 M	Mar 86
DCL LINK/OPTION DOES NOT FUNCTION AS DOCUMENTED	6.1.0.2 M	Apr 86

Component	Sequence	Mon/Yr
DCL "LIBRARY @FILESPEC" DOES NOT WORK	6.1.0.3 M	Apr 86
DCL "SET DE" SHOULD NOT DEFAULT TO SET DEC_CRT	6.1.0.4 M	Jun 86
FORTRAN /CHECK REQUIRES /F77	6.1.0.5 M	Jun 86
ADD SUPPORT FOR COBOL-81 /CONDITIONALS QUALIFIED	6.1.0.6 M	Jul 86
DCL SHOULD NOT ACCEPT TERMINAL TYPE RT02 OR RT02C	6.1.0.7 M	Jul 86
DCL SHOW ASSIGNMENTS RETURNS "ILLEGAL FUNCTION" ERROR	6.1.0.8 M	Jul 86
DCL EDIT WITH NULL FILE NAME DOES NOT WORK	6.1.0.9 M	Aug 86
DCL SET PROTECTION DOES NOT WORK WITH FILES STARTING WITH "L"	6.1.0.10 M	Aug 86

RSX-11 2780/3780 PROTOCOL EMULATOR V4.1

CONDITIONS FOR AUTOMATIC SIGN ON	10.5.1.1 N	Aug 85

DECnet-11M-PLUS V3.0

DECnet-11M-PLUS PROBLEMS FIXED ON RSX-11M-PLUS LAYERED UPDATE B	10.8.2.1 N	May 86
DECnet-RSX DELUA DEVICE SUPPORT	10.8.2.2 N	May 86

BASIC-PLUS-2 V2.3

PROBLEM WITH PRINT USING	10.20.1.1 N	Dec 85
BASIC-PLUS-2 V2.3 RSX UPDATE B NOTICE	10.20.1.2 N	Oct 86

FORTRAN IV/RSX V2.6

OTS
LIST-DIRECTED READ	16.1.1.1 N	Dec 85

UPDATE C
FORTRAN IV PROBLEMS CORRECTED ON UPDATE C	16.1.2.1 N	Jun 86

FORTRAN IV/VAX TO RSX V2.7

INSTALLATION GUIDE/RELEASE NOTES ERRATA	16.2.1.1 N	Jul 86

PDP-11 SYMBOLIC DEBUGGER V2.0

ANNOUNCING THE PDP-11 SYMBOLIC DEBUGGER V2.0	17.1.1.1 N	Apr 86

Micro/RSX V3.0

Micro/RSX V3.0   Seq. No. 2.1.1.9 M
EXECUTIVE
DIRECTIVES   1 of 1

FEAT$C DIRECTIVE DOES NOT WORK IN I- AND D-SPACE TASKS (SPR 11-X00296X JB)

PROBLEM
STATEMENT:

The FEAT$C directive puts the directive parameter block (DPB) into instruction
space rather than data space. This prevents the use of that directive in an
I- and D-space task.

RESPONSE:

This problem will be corrected in a future release of Micro/RSX.

Micro/RSX V3.0   Seq. No. 2.1.6.2 M
EXECUTIVE
MISC ROUTINES   1 of 1

TASKS RUN WITH /UIC SWITCH GET WRONG UIC (SPR 11-X00200P JB)

PROBLEM
STATEMENT:

When running multiple tasks from the clock queue from a single terminal using
the /UIC switch, the user identification code (UIC) of the task is not always
correct.

RESPONSE:

This problem occurs when a second RUN installed task command is issued from
the same terminal with a different UIC specified, prior to the first task
starting to execute.

This problem will be corrected in a future release of Micro/RSX.

Micro/RSX V3.0   Seq. No. 3.1.3.2 M
DRIVERS
FDX-TTDRV   1 of 1

SIX CORRECTIONS TO TTDRV (SPR 11-X00295X SA)

PROBLEM
STATEMENT:

The following problems exist in the terminal driver:

   1. When a control character (such as ^S, ^Q, ^R, etc.) has been declared
       out-of-band include, its special function should be disabled.

   2. A comment in the module TTATT is incorrect.

   3. A nonprivileged terminal should be allowed to issue a break-through
       write to its own TI:.

   4. The pass-through and no-echo characteristics should be initialized to
       false when a remote line is answered.

   5. There is a redundant instruction in TTRW.

   6. When a task issues a read from an RT:, and the user enters no input
       characters and terminates the read with a carriage return or CTRL/Z,
       the terminator will be passed as input to the task.

RESPONSE:

These problems will be corrected in a future release of Micro/RSX.

Micro/RSX V3.0   Seq. No. 4.1.4.1 M
BATCH/QUEUE MGR
QUE/PRI   1 of 1

QUE /MOD FAILS TO CHANGE /DELETE ATTRIBUTE (SPR 11-X90099 LP)

PROBLEM
STATEMENT:

Once you have queued a file with the /DELETE file attribute, you cannot change
it to /NODELETE with the QUE/MOD/EN:n/FI:n/NODELETE command, as documented in
the Batch and Queue Operations Manual.

RESPONSE:

The /[NO]DELETE switch was being created with the CSI$SW macro using incorrect
parameter values.   This prevented QMGCLI from processing the QUE/MOD command
file qualifier /NODELETE properly.

This problem will be corrected in a future release of Micro/RSX.

Micro/RSX V3.0   Seq. No. 4.2.1.6 M
MULTI-USER TASK
ACNT   1 of 1

ACNT HANGS WHEN DELETING [GGGMMM] TYPE DIR (SPR 11-X00297X RK)

PROBLEM
STATEMENT:

When deleting an account using ACNT and responding Yes to the "Delete UFD and
files?" question, if there does not exist a default-directory string entry,
ACNT will appear to hang. This problem occurs only when running an
RSX-11M-PLUS V3.0 or later ACNT task and using the account files created
before RSX-11M-PLUS V3.0 or with the account files created on RSX-11M.

RESPONSE:

ACNT uses the default directory string to construct a command line which it
then sends to PIP to delete the directory. Since the concept of named
directories did not exist prior to RSX-11M-PLUS V3.0, there is no entry for
this field for account files created before RSX-11M-PLUS V3.0 and account
files created on RSX-11M. ACNT does not check to see whether there is a
default directory string entry or not. If there is no entry for the default
directory string, an erroneous command line is constructed and sent to
PIP. When PIP receives this command line, PIP hangs. We are currently
investigating this problem with PIP. Since ACNT waits for PIP to complete,
ACNT will appear to hang.

ACNT has been modified so that if a default directory entry for that account
does not exist, it will use the GROUP and MEMBER entries to construct the PIP
command line to delete the directory.

As a workaround to this problem, the files in the directory and the directory
file itself can be deleted manually. Another workaround is to enter the
MODIFY mode of ACNT and enter the same [gggmmm] as the new default directory.
This will initialize the default directory string field. At this point, the
directory and directory files may be deleted by ACNT.

This problem will be corrected in a future release of Micro/RSX.

Micro/RSX V3.0   Seq. No. 4.2.4.2 M
MULTI-USER TASK
HELLO   1 of 1

HELLO ERROR MESSAGE INCORRECT WHEN LOGGED IN (SPR 11-X03113 RDH)

PROBLEM
STATEMENT:

Typing HELLO or HELLO LAST_NAME from a terminal that is already logged in
results in the "Unknown HELP qualifier" message rather than the "Other user
logged on" message from HELLO.

RESPONSE:

The HELP/HELLO task root was previously changed so that the user command HEL
would be interpreted as HELLO if the user were not logged in and as HELP if
he were, thereby eliminating the need to input the distinguishing fourth
character from the terminal. The implementation of this change erroneously
results in all variations of HEL, HELP, or HELL(O) calling HELP if the
terminal is logged in.

A future release of Micro/RSX will include a correction for this problem.
The HELL(O) commands will call HELLO independent of whether the terminal is
logged in.

This is a complete listing of all articles for Micro/RSX V3.0 and layered products. Missing sequence numbers may pertain to problems unique to other versions of the same product or other major operating systems.

IMPORTANT!

Unassigned articles are indicated: UNASSIGNED.

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

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

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

R = <u>Restriction.</u> These articles discuss areas that will not be patched in the current release because they require major modification or because they are not consistent with the design of the product. Restrictions, except those described as permanent, are reviewed and modified when possible as part of the normal release cycle.

N = <u>Note.</u> These articles provide explanatory information that supplements the manual set and provide more detailed information about a program or package. They also provide procedural information to make it easier to use a program or package.

Component	Sequence	Mon/Yr
	Micro/RSX V3.0	
<u>SYSGEN</u>		
AUTOCONFIGURE		
ACF FAILS TO DETECT FIFTH DZ11	1.1.1.1 N	Jun 86
DISTRIB KITS		
DAPRES NOT PROPERLY INSTALLED	1.1.2.1 M	Feb 86
<u>EXECUTIVE</u>		
EXECUTIVE		
DISK CACHE FLUSH PARTIAL BLOCK WRITES TO SUPPORT RTEM-11	2.1.0.1 M	Mar 86

Component	Sequence	Mon/Yr
DIRECTIVES		
FAST MAP FACILITY HAS ADDITIONAL RESTRICTION AND ERROR CODE	2.1.1.1 M	Mar 86
ERROR IN EXECUTION OF @/LB:MODULE FROM DCL	2.1.1.2 M	Mar 86
DEVICE NORMALIZATION OCCURS ON ALL LOGICAL NAME DIRECTIVES	2.1.1.3 M	May 86
TASKS WITHOUT EXTERNAL HEADERS CRASH SYSTEM WITH CRAW$	2.1.1.4 M	Jun 86
FSS$ ALWAYS RETURNS SUCCESS	2.1.1.5 N	Jul 86
RESCHEDULED COPIES OF TASK ARE INITIATED WITH WRONG UIC	2.1.1.6 M	Jul 86
SYSTEM CORRUPTION IN DEFAULT UIC	2.1.1.7 N	Sep 86
RPOI RETURNS IE.IDU FROM A VT:	2.1.1.8 M	Sep 86
FEAT$C DIRECTIVE DOES NOT WORK IN I- AND D-SPACE TASKS	2.1.1.9 M	Oct 86
SHF		
SHUFFLER MAY CAUSE SYSTEM CRASH	2.1.2.1 M	Sep 86
MISC ROUTINES		
UNMAPPED FAST MAP WINDOW DESCRIPTOR CAUSES SYSTEM CRASH	2.1.6.1 M	Aug 86
TASKS RUN WITH /UIC SWITCH GET WRONG UIC	2.1.6.2 M	Oct 86
DATA CACHING		
MOUNTING A DU: DEVICE MAY CAUSE CRASH IF ANOTHER IS CACHING	2.1.7.1 M	Jun 86
CACHE REGION NAME	2.1.7.2 M	Aug 86
MCR		
INTERNAL CMDS		
ASN COMMANDS WITH NULL LOGICALS CAUSE SYSTEM CRASH	2.2.1.1 M	Apr 86
SET /CACHE EXTENT SIZE = 0 CRASHES SYSTEM	2.2.1.2 M	Jun 86
CACHE READ-AHEAD LESS THAN VIRTUAL CAN CRASH SYSTEM	2.2.1.3 M	Jul 86
INS		
NEW "TASK IMAGE I/O ERROR" MESSAGE FOR DEVICES	2.2.2.1 M	Apr 86
DELETING THE DISK IMAGE OF AN INSTALLED TASK	2.2.2.2 R	Jul 86
INSTALL,RUN,REMOVE WINDOW ALLOWS OTHER TASKS TO ACTIVATE IT	2.2.2.3 M	Sep 86
INDIRECT, ICQ, ICM, ICP		
LOGICAL NAME AND SUBSTITUTION ERRORS IN INDIRECT	2.2.3.1 M	Jan 86
INDIRECT PROBLEMS IDENTIFIED ON Micro/RSX V3.0	2.2.3.2 M	Feb 86
SPECIAL SYMBOL <UIC> SOMETIMES ERRONEOUS IN NAMED MODE	2.2.3.3 M	Feb 86
INVALID CHARACTERS IN SUBSTITUTION SYMBOL NAMES	2.2.3.4 M	Mar 86
24-HOUR MAXIMUM FOR .DELAY DIRECTIVE	2.2.3.5 M	Mar 86
INDIRECT COMMAND .SETT <ERSEEN> LEAVES IT FALSE	2.2.3.6 M	Mar 86
.EXIT DIRECTIVE WITHIN BEGIN-END BLOCK	2.2.3.7 M	Mar 86
ERASING LOCAL SYMBOLS WITH DOLLAR-SIGN NAMES	2.2.3.8 M	Apr 86
CORRUPTED BEGIN-END BLOCK POINTERS IN LOCAL SYMBOL TABLE	2.2.3.9 M	Apr 86
DIRECTIVE .ASK WITH TIME-OUT CANNOT CHECKPOINT	2.2.3.10 M	Aug 86
IMBEDDED PERIODS NOT ALLOWED IN .TESTPARTITION	2.2.3.11 M	Aug 86
DRIVERS		
DDDRV, DUDRV, DLDRV		
DDDRV TIMES OUT WHILE COPYING LARGE FILES	3.1.1.1 M	Mar 86
DLDRV's ERROR RECOVERY SHOULD MAKE COMPLETE DRIVE-STATUS CHECK	3.1.1.2 M	Mar 86
DUDRV's LBN RANGE CHECKING IS INADEQUATE	3.1.1.3 M	Jul 86

Component	Sequence	Mon/Yr
MUDRV, MSDRV		
MUDRV DOES NOT SUPPORT MULTIPLE-DENSITY TAPE DRIVES	3.1.2.1 M	Mar 86
SYSTEM CRASHES WITH MUDRV/PUCOM MAPPED	3.1.2.2 M	Mar 86
MSDRV SPACING TIME-OUT VALUE IS INSUFFICIENT	3.1.2.3 M	Jul 86
FDX-TTDRV		
CONTROL CHARACTERS TYPED TO CONTINUATION PROMPT CRASH SYSTEM	3.1.3.1 M	Jun 86
SIX CORRECTIONS TO TTDRV	3.1.3.2 M	Oct 86
CODRV		
CONSOLE LOGGING TASK COT DOES NOT SUPPORT NAMED DIRECTORIES	3.1.6.1 M	Aug 86
FILE SYSTEM		
FCS		
RECORDS MAY SPAN BLOCKS	3.2.1.1 M	May 86
FCS DOES NOT PARSE ANSI FILE SPECIFICATION CORRECTLY	3.2.1.2 M	Sep 86
F11ACP		
LARGE DISK SUPPORT	3.2.2.1 N	Jul 86
ERROR LOGGING		
CONTROL FILES		
END MESSAGE PACKETS FOR MU ARE NOT ANALYZED PROPERLY	3.3.5.1 M	Mar 86
ERROR LOG MESSAGE PACKETS FOR TK50 ARE NOT ANALYZED PROPERLY	3.3.5.2 M	Mar 86
RPT ABORTS WITH MESSAGE ERLRPT-F-CASENOMAT FOR DU: ERRORS	3.3.5.3 M	Jul 86
RPT FAILS WHEN A GEOMETRY SUMMARY IS REQUESTED	3.3.5.4 M	Jul 86
BATCH/QUEUE MGR		
BPR		
BPR GIVES CRYPTIC ERROR MESSAGE WHEN FILE IS DELETED	4.1.1.1 M	Apr 86
SUBMIT /NOPRINT PUTS LOG FILE IN WRONG PLACE	4.1.1.2 M	May 86
QMG		
EXTERNAL HEADER INCONSISTENCY IN QMG CRASHES SYSTEM	4.1.3.1 M	Aug 86
QUE/PRI		
QUE /MOD FAILS TO CHANGE /DELETE ATTRIBUTE	4.1.4.1 M	Oct 86
LPP		
LPP LOOPS ON NEGATIVE RECORD LENGTH	4.1.5.1 M	Apr 86
LPP MISCOUNTS PAGES IN PRINT JOB	4.1.5.2 M	May 86
LN03 PRINTS 51 LINES PER SHEET IN LANDSCAPE MODE	4.1.5.3 M	Jun 86
LPP HANGS WHEN USING SIMULATED FORM FEEDS	4.1.5.4 M	Aug 86
UNSOLICITED INPUT FROM PRINT DEVICES CRASHES THE SYSTEM	4.1.5.5 M	Aug 86
MULTI-USER TASK		
ACNT		
IF LAST NAME CHANGED IN ACNT, PASSWORD DOES NOT WORK	4.2.1.1 N	May 86
A NAMED DIRECTORY OF [G,M] TYPE NOT DELETED BY ACNT	4.2.1.2 M	May 86
ACNT PUTS USER IN NAMED MODE IF ANYTHING TYPED FOR DEFAULT DIRECTORY	4.2.1.3 N	May 86
NULL PASSWORD NOT ALLOWED IN PSW	4.2.1.4 M	Jun 86

Component	Sequence	Mon/Yr
ACNT DOES NOT ALLOW REMOVAL OF DEFAULT FILE PROTECTION	4.2.1.5 M	Jul 86
ACNT HANGS WHEN DELETING [GGGMMM] TYPE DIR	4.2.1.6 M	Oct 86

BYE

BYE HANGS WITH LOW POOL	4.2.3.1 M	Jun 86
BYE FROM BATCH JOB OR SILENT CLI DOES NOT ABORT INDIRECT	4.2.3.2 M	Sep 86

HELLO

DEFAULT CLI PROMPT MUST BE THREE OR MORE BYTES	4.2.4.1 M	Sep 86
HELLO ERROR MESSAGE INCORRECT WHEN LOGGED IN	4.2.4.2 M	Oct 86

SHUTUP

MISLEADING ACCOUNTING WARNINGS IN SHUTUP	4.2.5.1 M	May 86

UTILITIES

BAD

/ALLOCATE AND /NOEXERCISE GIVE I/O ERROR CODE -2 IN ANALYZE	5.1.1.1 M	Jun 86

INI

INI WILL NOT EXECUTE A COMMAND LINE GREATER THAN 80 CHARACTERS	5.1.8.1 M	Aug 86

MOU

CACHE READ-AHEAD LESS THAN VIRTUAL CAN CRASH SYSTEM	5.1.10.1 M	Jul 86
MOUNT ACCEPTS EXTENT SIZE OF ZERO FOR CACHE OPTIONS	5.1.10.2 M	Jul 86
MOU WILL CLEAR VOLUME VALID ON LABEL ERROR ON SHARED DISK	5.1.10.3 M	Jul 86

PIP

PIP DISPLAYS NEGATIVE NUMBER OF FILES	5.1.12.1 M	Aug 86
PIPRES/APPEND TERMINATES WITH ODD ADDRESS	5.1.12.2 M	Sep 86

BRU

BRU--MISLEADING ERROR MESSAGE/ACTION FOR UNMOUNTED TAPES	5.1.17.1 N	Feb 86
BRU ENDS WITH MEMORY PROTECTION VIOLATION DURING RESTORES	5.1.17.2 N	Mar 86
BRU INDICATES OUTPUT DISK IS TOO FRAGMENTED DURING VERIFY	5.1.17.3 N	Mar 86
BRU MAY FAIL ON THE VERIFY PASS OF A BACKUP OPERATION	5.1.17.4 N	Mar 86
BRU REPORTS ATTACH FAILED AS SECOND FATAL ERROR	5.1.17.5 N	Mar 86
BRU REPORTS I/O STATUS OF -255	5.1.17.6 N	Mar 86
BRU REPORTS ERRORS ABOUT FILES THAT DO NOT EXIST	5.1.17.7 N	Mar 86
BRU USES WRONG IMAGE FILE FOR RESTORE/COMPARE	5.1.17.8 N	Mar 86
BRU DOES NOT RECOVER PROPERLY FROM TAPE-LABEL ERRORS	5.1.17.9 M	Mar 86
BACKUPS TO TAPE FAIL UNDER A-TO-Z CONTROL	5.1.17.10 M	Jun 86
BRU /IMAGE:RESTORE DISPLAYS ERRORS DESPITE SUCCESS	5.1.17.11 M	Jun 86
BRU64K /COMPARE/IMAGE:SAVE DOES NOT WORK PROPERLY	5.1.17.12 M	Jul 86
BRU SKIPPING OVER BOOTABLE SYSTEM IMAGE	5.1.17.13 M	Sep 86
BRU PROBLEM WITH LARGE FID NUMBERS	5.1.17.14 M	Sep 86
BRU /VERIFY INCORRECTLY RESTORES DISK WITH ONLY EMPTY UFDs	5.1.17.15 M	Sep 86

SYSTEM LIBRARIES

FORTRAN EXEC, RSXMAC

LOGICAL NAME FORTRAN INTERFACE ROUTINES RETURN IE.SDP	5.2.4.1 M	May 86
GDVI$ MACROS MISSING FROM RSXMAC.SML	5.2.4.2 M	May 86

Component	Sequence	Mon/Yr
MINOR ERROR IN GCII$ MACRO	5.2.4.3 M	May 86
FORTRAN CALLS WFLORS AND STLORS DO NOT WORK	5.2.4.4 M	Aug 86
MISC SYSLIB		
CSI$1 AND CSI$2 MEMORY PROTECT	5.2.6.1 M	Mar 86
R1 NOT PROPERLY UPDATED IN MODULE INTDAS	5.2.6.2 M	Jun 86
SYSLIB $DIVD CONFLICTS WITH FORTRAN IV $DIVD	5.2.6.3 N	Jun 86
TASK BUILDER		
TASK BUILDER		
MULTIPLE REFERENCES TO .PSECT IN SEGMENT CAUSE TKB TO ABORT	5.3.0.1 M	Apr 86
TKB SWITCH /CL DOES NOT WORK	5.3.0.2 M	Apr 86
TKB		
I/D TASK WITH DATA IN COMMON PSECT DOES NOT GET CAUGHT CORRECTLY	5.3.1.1 M	Jun 86
ASG OPTION REJECTED IF LUN IS GREATER THAN UNITS OPTION	5.3.1.2 M	Sep 86
MISC SYS TASKS		
PMD/SNAP		
PMD PUTS OUTPUT IN WRONG PLACE	5.7.3.1 N	Jun 86
RMDEMO		
RMD C PAGE DISPLAY WRONG WHEN CACHING SET TO 4096.	5.7.5.1 M	Jul 86
RCT		
RCT DOES NOT REPLACE ALL BAD BLOCKS	5.7.15.1 M	Feb 86
DCL		
DCL		
DCL LINK DOES NOT WORK CORRECTLY IN SET DEBUG/EXECUTE MODE	6.1.0.1 M	Mar 86
DCL LINK/OPTION DOES NOT FUNCTION AS DOCUMENTED	6.1.0.2 M	Apr 86
DCL "LIBRARY @FILESPEC" DOES NOT WORK	6.1.0.3 M	Apr 86
DCL "SET DE" SHOULD NOT DEFAULT TO SET DEC_CRT	6.1.0.4 M	Jun 86
FORTRAN /CHECK REQUIRES /F77	6.1.0.5 M	Jun 86
DCL EDIT WITH NULL FILE NAME DOES NOT WORK	6.1.0.6 M	Aug 86
DCL SET PROTECTION DOES NOT WORK WITH FILES STARTING WITH "L"	6.1.0.7 M	Aug 86
DOCUMENTATION		
DOCUMENTATION		
DOC.ERROR IN CREATING AN OPTIONAL SOFTWARE TAPE KIT	7.1.0.1 M	Jan 86

Below is a list of new and revised SPDs which appear on the following pages:

NEW:

09.26.00   Ethernet Terminal Server, Version 2.1
09.27.00   DECserver 100, Version 1.2

REVISED:

12.27.09   FMS-11/RSX, Version 2.0
13.41.01   KMV1A RSX and Micro/RSX Development Tools, Version 1.0
13.43.01   KMV1A X.25 Link Level Software, Version 1.0
13.65.01   RSX-11M-PLUS VSV21 Support Software, Version 2.0
14.22.01   KMV1A RSX and Micro/RSX HDLC Framing Software, Version 1.0
14.83.04   MicroPower/Pascal-RSX, Version 2.2
18.14.02   Micro/RSX DECtype, Version 3.1
18.24.04   MicroPower/Pascal-Micro/RSX, Version 2.2
18.47.01   Micro/RSX VSV21 Support Software, Version 2.0
20.95.15   Micro/RSX Optional Software Cross Reference Table
20.98.32   RSX-11M Optional Software Cross Reference Table
20.99.31   RSX-11M-PLUS Optional Software Cross Reference Table

Software
Product
Description

DESCRIPTION

The Ethernet Terminal Server is a network terminal switch for Ethernet Local Area Networks. The Ethernet Terminal Server provides a convenient method to logically connect up to 32 DIGITAL RS-232 asynchronous terminals to one or more service nodes (hosts) on an Ethernet. Once the terminal is connected to the service node, a user can utilize application programs and utilities as though the terminal was directly connected to a host via a DZ11, DMF32, or DHU11 device, with a few restrictions. Thus, it may be possible to utilize the Ethernet Terminal Server to connect all terminals to service nodes in place of traditional interfaces, except for host console terminals. Remote connection via dial-in modems is fully supported.

The Ethernet Terminal Server also provides the capability to connect host systems that do not support the LAT protocol, DIGITAL personal computers, and dial-out modems directly to ports on the server. Interactive server users can issue commands to connect to services which are offered on such ports. Port-to-port connections on the same server are also supported.

The Ethernet Terminal Server implements the Local Area Transport (LAT) protocol for communication with service nodes that implement this protocol on the same Ethernet. This interface has been optimized for high terminal I/O performance over an Ethernet, while reducing host CPU cycles required to handle interrupts. Hence, under most I/O loading conditions, a significant performance gain may be realized by using the Ethernet Terminal Server, versus direct terminal connections via DZ11s.

Software that runs on the Ethernet Terminal Server is downline loaded over the network from a Phase IV DECnet load host. Terminal access to a service node from the Ethernet Terminal Server requires DECnet (for RSX-11M-PLUS and Micro/RSX systems) to be running in the same service node; LAT uses the Ethernet addressing mechanism to transport terminal messages. Refer to the Prerequisite Software section for more information.

Features such as login load balancing, multiple terminal sessions, and automatic failover can lead to greater user productivity.

Features

Terminal Connection Management

Through the use of a simple command, users can establish a logical connection, called a session, to any service node that implements the LAT protocol on the same Ethernet LAN. This connection makes the terminal appear as if it were physically connected to the service node, and the terminal user can use standard system utilities and applications supported by that node. Each terminal connected to the server can connect to the same or a different service node on the Ethernet. Furthermore, several servers can be used to connect many terminals to one or more service nodes.

A service node can have one or more services that are offered to Ethernet Terminal Server users. Services and nodes are identified by name. Users usually connect to services, not to nodes, although often one of the service names will be the node name. Users can optionally specify a node and/or a port name when they connect to a service.

Non-LAT Host Support

The Ethernet Terminal Server can be used to provide logical terminal connections to hosts that do not implement the LAT protocol. In this type of configuration, the server becomes the Ethernet connection and protocol support for these hosts. This expands the LAT network accessibility to the terminal user to include LAT hosts directly connected to the same Ethernet and hosts connected to the LAT network via the Ethernet Terminal Server.

A host that supports XON/XOFF, ASCII standards and RS-232-C interfaces can be connected to the Ethernet Terminal Server. This provides the terminal user with a transparent connection to the non-LAT host. It is strongly recommended that server port and the host side port utilize modem control signals to automatically signal the host upon session disconnection. In this application the server port appears to the host as a dial-in-modem. However, hosts that require more than one transition of the RING signal are not supported.

In this configuration, there is a one-to-one correspondence between the port on a Ethernet Terminal Server

digital

soft=ware

and the connection on the host. The Server Manager assigns service names to individual ports or groups of ports that connect the host interface to the server.

Load Balancing

When a connection is made to a service, the actual node for the connection is determined by load balancing. Load balancing is a process the server uses when more than one node offers the same service. Service nodes with the same names may be running different operating systems. Using the load balancing process, the server connects to the node with the highest rating for the service desired. This rating is typically based on the current loading on the nodes that offer the service.

Multiple Sessions

The Ethernet Terminal Server allows each user to establish and maintain multiple sessions to one or more service nodes, up to a maximum of 255 per Ethernet Terminal Server. Only one session can be active at a time on each port. Through simple switching commands, the user can access his or her sessions without repeating a login dialog each time.

Local Mode and Service Mode

For the most part, the environment provided by the Ethernet Terminal Server is identical to that the user would experience if attached directly to the service node, with some exceptions. When operating in this mode, the user is said to be in Service Mode. Occasionally, such as during connection establishment, the user interacts directly with the Ethernet Terminal Server. When operating in this mode, the user is in Local Mode.

In Local Mode, the terminal input is interpreted directly by Ethernet Terminal Server as commands to be performed by the server.

Local Mode has three different levels of privilege: privileged, nonprivileged and secure. Privileged mode is provided for the Server Manager to control the environment of the server and the terminal users. Access to this mode is password protected. Nonprivileged commands allow the terminal user to control their service sessions, set their terminal characteristics and show server information. The Server Manager can set the server to secure mode on a per-terminal basis which further limits the commands users can enter to only those which directly relate to the user's own terminal.

The Server Manager environment is a logical extension of the user environment. The Server Manager is treated as a server user with a privileged status. The Server Manager sets a port to this status using a command which requires a password. This privileged status allows the Server Manager to enter commands not normally available to server users. These commands set server characteristics, provide control over server port usage, and provide the ability to control the user's access to the server and network services.

In Service Mode, the terminal input is passed directly to the connected service node with several exceptions. One exception, called the Local Switch Character, allows the user to enter Local Mode from Service Mode. The

<BREAK> key may also be used for this function. Another exception, called the forward switch character, allows the user to switch between sessions without the need to enter Local Mode. The switch characters are disabled by default but may be enabled by command. Both CTRL/S and CTRL/Q are normally interpreted locally but flow control using these characters can be disabled.

Autoconnection

In conjunction with this function, a dedicated or preferred service can be specified for each terminal user.

If a dedicated service is specified, the Ethernet Terminal Server will attempt to connect to that service when a character is typed on the terminal keyboard or when an existing connection fails. In dedicated service mode, only one session is available. As this mode is designed to simulate a direct terminal connection, no Local Mode commands or messages are available to the terminal user. Ports with dedicated service can be automatically logged out of the server when the user logs out of the service node.

If a preferred service is specified, the Ethernet Terminal Server will attempt to connect to that service as with the dedicated service mode of operation. However, the terminal user can enter Local Mode and establish other sessions.

Automatic Session Failover

If a service is available on two or more service nodes and a connection to a service fails, the server will attempt to connect the user to another service node offering the same service. The user does not have to be already connected to that service node. However, the user's context at the time of failure is not automatically restored and login to the new service is required.

Groups

Every terminal and service node in a LAT network is a member of one or more groups, which are specified by a list of numbers from 0 - 255. Groups allow an easy means of subdividing the network into what appears to be many smaller networks. A terminal user is only aware of the services that are offered by nodes in the same group(s).

The Server Manager can specify groups for the server. This filtering feature permits the Server Manager to control the amount of memory used by the server to maintain its node database. The Server Manager can also enable the server's own service node groups if the server is offering its own ports as services. The user can specify groups for his or her port that are a subset of the server group codes.

Groups provide a restrictive view of the network. This restricted view is mainly for user convenience and, although it also provides a form of security, it is not intended to be the primary form of access authorization or system security for a node.

Security

The Ethernet Terminal Server provides functions which enhance security features already available in the service nodes. Ethernet Terminal Server security includes the

ability to lock a terminal's keyboard from other users, optional login protection, and nonprivileged Local Mode of operation as a default.

A user may lock the terminal using a lock password. This allows the user to leave sessions running at the terminal without fear of security violations. When a terminal is locked, all input from the terminal is ignored until the lock password is re-entered. The lock feature may be disabled by the Server Manager, but not on a per-port basis.

Each terminal port can be set to operate in a secure mode which causes all commands that relate to other users to be disabled for that port.

Login passwords can be enabled on a per-line basis by the Server Manager. If enabled, the terminal user must enter a login password to access server functions. If a dedicated service is specified, login protection is not available.

Ethernet Terminal Server users normally have access to the nonprivileged Local Mode. In this mode, users may only issue commands that affect their own terminal environment. The server has a privileged mode for Server Manager's use. This mode is password protected.

Ethernet Terminal Server Services may be established with password protection.

Hot Swap of Line Cards

Server line cards can be replaced individually while the server is running without affecting other ports. This increases uptime for users and provides an easy means of correcting certain hardware problems without taking down the entire server. Additional line cards (up to the limit for the hardware configuration) may be added while the server is running.

Online HELP Facility

A full online reference HELP facility is available. The server's HELP command provides information on the correct syntax and details about each command. It also presents information on topics not directly related to commands such as creating/switching multiple sessions.

Directory Service

Any Ethernet Terminal Server user can obtain a directory of services available to that user with a SHOW SERVICES command. Services offered by nodes that do not share at least one group code with the server and user's port will not be displayed to the user.

Permanent Characteristics

Each Ethernet Terminal Server has a unique software image on its downline load host. A database of permanent characteristics is kept within each image. These characteristics can be changed prior to downline load by the Server Manager or load host manager. Permanent characteristics are maintained for service and server parameters as well as per-port parameters.

Port Parameter Configuration

Parameters governing the operation of an individual port can be modified and displayed by a nonprivileged user

(logged into that port) interactively (from the user's terminal). In the privileged mode, a Server Manager can modify parameters for other users' ports or for the server as a whole.

A System/Network Manager can also use the Terminal Server Configurator (TSC) utility to make changes in a host-based Terminal Server image before being downline loaded to a server. Both server and port parameters can be modified interactively or by using TSC. Port parameters that can be set and displayed interactively and by TSC include: speed, character size, group codes, parity, terminal type, autobaud, modem, and password protection.

Terminal Operation

The Ethernet Terminal Server software supports the simultaneous operation of up to thirty-two asynchronous devices at speeds from 50 bps to 19.2K bps. The software also supports:

* Full modem control support
* Data leads only support
* XON/XOFF flow control
* CTS/RTS and flow control
* Split speed (transmit and receive) terminal operation
* Block Mode transfers
* Automatic line speed detection for most of the supported line speeds
* DIGITAL Personal Computer file transfer
* Data transparency mode
* Ability to pass BREAK condition and port characteristics to service nodes

Terminals Supported

The Ethernet Terminal Server software supports the following DIGITAL terminal devices that have keyboards:

* LA12, 34, 35, 36, 38
* VT200, 101, 102, 125, 131
* VT220, 240, 241

Supported terminal parameters are:

* Character size: 7 or 8 bits per character
* Parity: Even, Odd, or None

The automatic line speed detection (Autobaud) feature is supported for either seven-bit characters with even parity or eight-bit characters with no parity.

The Ethernet Terminal Server software also supports the following DIGITAL Personal Computers in both terminal emulation mode and file transfer mode:

* Professional 325, 350, 380
* Rainbow 100, 100B, 100+, 190
* DECmate II
* DECmate III

Note: This product is NOT WARRANTED to support non-DIGITAL terminal devices or Personal Computers. However, terminals supporting VT200-like characteristics and Personal Computers supporting IBM PC, IBM PC/XT, and IBM PC/AT characteristics MAY operate with this product.

Modems Supported

The Ethernet Terminal Server Software supports the following full-duplex asynchronous modems for dial-in and/or dial-out use:

• DF01, DF02, DF03, DF112, DF124, and DF224

Ethernet Terminal Server also supports private or leased-line modem applications. However, connections to data switches are NOT WARRANTED but MAY operate with this product.

Server Management

Several facilities exist for managing and troubleshooting server operation. The Server Manager in privileged mode can set up server identification information, change port characteristics, or fine tune the operating characteristics of the server. The Server Manager can also assign service names to groups of one or more ports which are connected to non-LAT hosts or modems. Troubleshooting facilities include diagnostic tests, a remote console feature, and online statistics.

A privileged user can diagnose Ethernet communications problems by looping messages from an Ethernet host and through the Ethernet hardware interface at the server. To diagnose terminal or port problems, users can execute a command to transmit test data to their terminal, or the Server Manager can send test data to any terminal.

The server maintains a variety of statistics and counters. These include the following: Ethernet data link statistics, LAT protocol statistics, and port error statistics. These data can be displayed and zeroed by the Server Manager. Server parameters that can be modified and displayed include the server identification, circuit timer, session limits, and login limits.

Remote Server Management

The Ethernet Terminal Server implements the console carrier feature which enables access to the Ethernet Terminal Server Local Mode from a suitably configured Phase IV DECnet host on the same LAN. The usual set of Local Mode functions are available to a console carrier user. This capability provides a form of centralized server management and remote server diagnosis.

Communications

Ethernet Terminal Server software is designed to run on Ethernet Communications Server hardware exclusively which includes an Ethernet interface for connection to an Ethernet transceiver cable.

On the Ethernet Terminal Server, each port on the server can be set up by the Server Manager to operate using full-duplex modem control. The Ethernet Terminal Server is compatible with DIGITAL's family of modems and with Bell 100 and 200 series modems and their equivalents. A

BREAK feature is available and can be set on a per-port basis. This allows the Ethernet Terminal Server user to pass a BREAK indication to a service node. If the service node is an Ethernet Terminal Server, then BREAK can be asserted to a non-LAT host on the server connected via reverse LAT.

Terminal Server Operation

The Ethernet Communications Server hardware provides the necessary maintenance operation protocols for downline loading Terminal Server software from an Ethernet Phase IV DECnet load host, over the Ethernet, and into server memory. All software, including diagnostics, is downline loaded into the unit. In the event of certain hardware or software malfunctions, the unit will attempt to upline dump the Terminal Server memory and automatically reload the server software.

Ethernet Terminal Server Configuration and Performance

The process of configuring the Ethernet Terminal Server is based primarily on tradeoffs of cost and performance within the realm of satisfying user application requirements. Network applications will range from low-speed, low-cost situations (e.g. connecting remote terminals through low-speed modems) to those of relatively high performance (e.g., connecting high-speed local terminals to local hosts within a local area network or connecting to non-LAT systems). The performance of a given server is a function of the expected network traffic, the load on hosts to which terminals are connected, and resultant processing pursuant to the dedicated function of the unit. Thus performance depends on several factors:

• Number of terminals

• Number of systems on the LAN

• Number of active connections to service nodes from the server

• Terminal speeds

• Terminal user applications

• Number and size of host buffers

• Terminal workload

The Terminal Server can sustain an aggregate character throughput of over 61,000 characters per second running 32 terminals at 19,200 bits per second (provided that no more than 4 service nodes are connected to the server concurrently).

In order to achieve a viable configuration, the user and/or a DIGITAL software specialist should perform a level of application analysis which addresses the factors above. The actual maximum data throughput cannot be calculated by multiplying the number of lines by the line speed, since many factors already discussed in this section may reduce the actual throughput.

Restrictions on Ethernet Terminal Server Usage

While terminal connections using the Ethernet Terminal Server have been designed to simulate direct terminal

connections as much as possible, a few differences necessarily exist because of the nature of the product. Under most circumstances, these differences are not noticed by terminal users or service node application programs. However, applications which are directly dependent on the following functions may not operate as with a direct connection:

- Applications that depend on reading or setting the terminal speed, character size and parity by manipulating system data structures

- Applications that depend on an extremely fast response time (typically less than 200 ms) to operate

- Applications that utilize an alternate terminal driver in the service node

- For connections from a server to a host system, the LAT device created has an unpredictable name.

- For host-initiated connections, application programming will not be supported.

- Applications that expect incoming connections to have fixed device names.

MINIMUM HARDWARE REQUIRED

The Terminal Server software runs on the following Ethernet Communications Server packaged hardware:

- DECSA-DA Ethernet Communications Server hardware, including sixteen DCSAX-LC line cards (dual line RS-232-C asynchronous to 19.2K bps, full duplex) 32 physical ports

One of the following SHIELDED cables should be used with each of the physical lines on the line card:

- BC17D—Null modem cable for local connections requiring full modem control

- BC22D—Null modem cable for local connections

- BC22E—EIA extension cable for remote (modem) connections

- BC22R—Recommended null modem cable for host systems and other devices, including those which utilize CTS/RTS flow control

- BC17L—EIA adapter cable (for customers who supply their own terminal cables)

The Ethernet Communications Server hardware requires both a transceiver drop cable and either an Ethernet transceiver (H4000 for baseband or DECOM for broadband) or the Local Network Interconnect (DELNI) to connect to the Ethernet physical channel.

All software that runs on the Ethernet Terminal Server is downline loaded over the network from a DECnet-11M-PLUS, or DECnet-Micro/RSX load host. This node must be a valid RSX-11M-PLUS or Micro/RSX system.

- Disk space required for installation: 2300 blocks
  (1,178 Kbytes)

- Disk space required for use (permanent):2300 blocks
  (1,178 Kbytes)

These block counts refer to the disk space required on the system disk. The sizes are approximate; actual sizes may vary depending on the user's system environment, configuration, and software options selected.

GROWTH CONSIDERATIONS

The minimum hardware requirements for any future version of this product may be different from the minimum hardware requirements for the current version.

OPTIONAL HARDWARE

Spare Ethernet Communications Server line cards (DCSAX-LC)

- DCSAX-LC—Dual line RS-232-C asynchronous to 19.2K bps, full-duplex. Use BC17D or BC22D (null modem), BC22E (EIA extension) or BC17L (adapter) cables

PREREQUISITE SOFTWARE

A DECnet Phase IV end node licensed load host on the Ethernet is required to downline load Ethernet Terminal Server, Version 2.1 software.

The Terminal Server software license applies to the Terminal Server on which the server software runs, not to the host CPU upon which the server software is installed for downline loading.

RSX-11M-PLUS or Micro/RSX Operating System

* Both the Operating System and DECnet are required for RSX-11M-PLUS or Micro/RSX downline load hosts.

Refer to the RSX-11M-PLUS and Micro/RSX Optional Software Cross Reference Tables (SPD 20.99.xx and SPD 20.95.xx) for the required versions.

OPTIONAL SOFTWARE

None

SOFTWARE WARRANTY

Warranty for this software product is provided by DIGITAL with the purchase of a license for the product as defined in the Software Warranty Addendum of this SPD.

INSTALLATION

This software product can be installed by the customer using the step-by-step documentation available for this product. Optionally you can purchase DIGITAL Installation Services which provide for the installation of the software product by an experienced DIGITAL Software Specialist.

Customer Responsibilities

Before installation of the software, the customer must:

- Previously have installed all requisite hardware including terminals

- Obtain, install, and demonstrate as operational any modems and other communications equipment and facilities necessary to interface to DIGITAL's communication equipment

- Demonstrate equivalency of modem operation to that of DIGITAL modems

- Make available for a reasonable period of time, as mutually agreed by DIGITAL and the customer, all hardware, communication facilities, and terminals that are to be used during the installation

- For multinode networks, designate one Ethernet host to verify installation/connectivity

- For non-DIGITAL terminal interfaces, the customer must demonstrate equivalency to DIGITAL asynchronous interfaces such as DZ11 or DMF32 options

Installation of Ethernet Terminal Server software will consist of the following:

- Verification that all components of Ethernet Terminal Server have been received

- Verification that all hardware and software prerequisites have been met

- Installation of Ethernet Terminal Server Software

- Configuration of the host LAT software in up to five (5) host CPUs

- Installation verification, customer orientation/demonstration

Courtesy Installation Service

This software product will be installed by DIGITAL at no additional charge if you purchase it concurrent with a Startup Service Package that includes installation service. Both the host operating system and this product must be installed concurrently.

ORDERING INFORMATION

Single-Use licensed software 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 Server CPU on which the software is first installed, and may be copied, in whole or in part (with the proper inclusion of DIGITAL's copyright notice and any proprietary notices on the software) for use on that same CPU.

You will need a separate license for each Ethernet Terminal Server on which you will be using the software product (except as otherwise specified by DIGITAL). Then Materials and Service Options are selected to utilize the product effectively. **THE LICENSE OPTIONS ARE DESCRIBED BELOW. IF YOU ARE NOT FAMILIAR WITH THE SERVICE OPTIONS, YOU MAY OBTAIN THE APPROPRIATE SOFTWARE PRODUCT SERVICE DESCRIPTION(S) FROM YOUR LOCAL DIGITAL OFFICE.** If you are already familiar with these options, you may obtain the ordering information directly from the Software Options Chart.

LICENSE OPTIONS

Single-Use License Option

The Single-Use License is your right to use the software product on a single Ethernet Terminal Server.

For your first installation of this software product you must purchase as a **minimum:**

- Single-Use License Option, and

- Distribution and Documentation Option

The license gives you the right to use the software on a single Ethernet Terminal Server and the Distribution and Documentation Option provides the machine-readable software and related documentation.

To use this software product on additional Ethernet Terminal Servers, you must purchase for each Server as a **minimum:**

- Single-Use License Option

In addition to the right to use, the license gives you the right-to-copy the software from your original downline load host CPU to alternate downline load host CPUs, but not to other servers unless they also have a Single-Use License.

Distribution and Documentation Option

The Distribution and Documentation option provides the machine-readable software and the basic documentation. You must have, or order, a Single-Use License to obtain this option. You will need this option to install the software for the first time. When revised versions of this software product become available, they may also be obtained by purchasing this option again.

Software Revision Right-To-Copy Option

The Right-To-Copy Option allows a customer with multiple terminal servers to copy a revised version of a software product from the downline load host into multiple terminal servers. Each terminal server must be licensed for that product. You first install the revised software on a downline load host; then you can downline load additional terminal servers by purchasing the Right-To-Copy Option for each additional terminal server.

Documentation-Only Option

The Documentation-Only Option provides one copy of the basic documentation.

Software Product Services

A variety of service options are available. For more information on these or other services, please contact your local DIGITAL office.

SOFTWARE OPTIONS CHART

The distribution Media Codes used in the Software Options Chart are described below. You specify the desired Media Code at the end of the Order Number, e.g. QC925-HG = binaries on TU58 DECtape II Cartridge.

3 = RX50 Floppy Diskette   M = 9-track 1600 BPI Magtape (PE)
5 = TK50 Tape Cartridge   Z = No hardware dependency

NOTE: **The availability of these software product options and services may vary by country. Customers should contact their local DIGITAL office for information on availability.**

OPTIONS	ORDER NUMBER Micro/RSX	ORDER NUMBER RSX-11M-PLUS
LICENSE OPTIONS:A LICENSE IS REQUIRED FOR EACH CPU.		
Single-Use License	QY726-UZ	QP726-UZ
MATERIALS AND SERVICE OPTIONS:		
Distribution and Documentation Option	QY726-H3 QY726-H5	QP726-HH QP726-HM
Software Revision Right-To-Copy Option	QY726-HZ	QP726-HZ
Documentation-Only Option	QL726-GZ	QP726-GZ
Installation Service Option	QY726-I3 QY726-I5	QP726-IH QP726-IM
DECsupport Service	QY726-93 QY726-95	QP726-9H QP726-9M
Basic Service	QY726-83 QY726-85	QP726-8H QP726-8M
Self-Maintenance Service	QY726-33 QY726-35	QP726-3H QP726-3M

Software
Product
Description

PRODUCT NAME: DECserver 100, Version 1.2
(For RSX-11M-PLUS and Micro/RSX)

DESCRIPTION

The DECserver 100 Terminal Server is a network terminal switch for Ethernet Local Area Networks. The DECserver 100 provides a convenient method to logically connect up to eight DIGITAL asynchronous terminals to one or more service nodes (hosts) on an Ethernet. Once the terminal is connected, the user can utilize application programs and utilities as they would through a terminal directly connected to a host via a DZ11, DMF32, or DH11 device, with a few exceptions. Thus, it may be possible to utilize the DECserver 100 to connect all terminals to service nodes in place of traditional interfaces, except for host console terminals.

The DECserver 100 implements the Local Area Transport (LAT) protocol for communication with service nodes that implement this protocol on the same Ethernet. This new interface has been optimized for high terminal I/O performance over an Ethernet, while reducing host CPU cycles required to handle interrupts. Hence, under most I/O loading conditions, a significant performance gain may be realized by using the DECserver 100 versus direct terminal connections via DZ11s.

Software that runs on the DECserver 100 is downline loaded over the network from a Phase IV DECnet load host running on the same Ethernet.

Terminal access using the DECserver 100 requires DECnet to be running in the same service node for RSX-11M-PLUS and Micro/RSX. LAT uses the Ethernet addressing mechanism to transport terminal messages.

For wide area network communications, terminal users can connect to a local service node running DECnet, where they can "SET HOST" to a remote system via the DECnet network terminal protocol. Note, too, that if this system has the requisite X.29 or SNA 3270 access routines, a terminal user could communicate to a remote SNA or X.25 host through the appropriate gateway and this intervening host. A DECserver 100 terminal user cannot communicate directly to remote hosts through DECnet Routers or X.25/SNA Gateways. Wide area network traffic will not provide the same high level of performance as local terminal connections, due to the additional DECnet and internet protocol overhead.

Features such as login load balancing, multiple terminal sessions, and automatic login failover can lead to greater user productivity.

Features

Terminal Connection Management

Through the use of a simple command, users can establish a logical connection, called a session, to any local service node that implements the LAT protocol. This connection makes the terminal appear as if it were physically connected to the service node, and the terminal user can use standard system utilities and applications supported by that node. Each terminal connected to the server can connect to the same or a different service node on the Ethernet. Furthermore, several servers can be used to connect many terminals to one or more service nodes.

A service node can have one or more services that are offered to DECserver 100 users. Services and nodes are identified by name. Users always connect to services, not to nodes, although often one of the service names will be the node name.

Load Balancing

When a connection is made to a service, the actual node for the connection is determined by load balancing. Load balancing is a process the server uses when more than one node offers the same service. Service nodes do not have to be configured in a VAXcluster in order for load balancing to be used. Using the load balancing process, the server connects to the node with the highest rating for the service desired. This rating is based on the current loading, memory, CPU class, and number of users on the nodes that offer the service.

Multiple Sessions

The DECserver 100 allows each user to establish and maintain up to six sessions to one or more service nodes, up to a maximum of 28 per DECserver 100 depending on the number of nodes in the server database. Only one session can be active at a time. Through simple switching commands, the user can access the different sessions without repeating a login dialog each time.

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Local Mode and Service Mode

For the most part, the environment provided by the DECserver 100 is identical to that the user would experience if attached directly to the service node. When operating in this mode, the user is said to be in Service Mode. Occasionally, such as during connection establishment, the user interacts directly with the DECserver 100. When operating in this mode, the user is in Local Mode.

In Local Mode, the terminal input is interpreted directly by DECserver 100 as commands to be performed by the server. Local Mode has two different levels of operation: nonprivileged and privileged. Nonprivileged commands allow the terminal users to control their service sessions, set terminal characteristics, and show server information. Privileged mode is provided for the Server Manager to control the environment of the server and of the terminal users. Access to this mode is password protected.

The Terminal Server Manager environment is a logical extension of the user environment. The Server Manager is treated as a server user with a privileged status. The Server Manager sets a terminal to this status using a command which requires a password. This privileged status allows the Server Manager to enter commands not normally available to server users. These commands set server characteristics, provide control over server port usage, and provide the ability to control the user's access to the server and network services.

In Service Mode, the terminal input is passed directly to the connected service node with several exceptions. One exception, called the Local Switch Character, allows the user to enter Local Mode from Service Mode. Other exceptions, called the Forward and Backward Switch Characters, allow the user to switch between sessions without the need to enter Local Mode. The switch characters are disabled by default but may be enabled by command. Both CTRL/S and CTRL/Q are normally interpreted locally but flow control using these characters can be disabled.

Autoconnection

Autoconnection is a function that automatically connects a user terminal to a service node when connection failures occur or upon user login to the server. In conjunction with this function, a dedicated or preferred service can be specified for each terminal user.

If a dedicated service is specified, the DECserver 100 will attempt to connect to that service when a character is typed on the terminal keyboard or when an existing connection fails. In dedicated service mode, only one session is available. As this mode is designed to simulate a direct terminal connection, no Local Mode commands or messages are available to the terminal user. Ports with dedicated service can be automatically logged out of the server when the user logs out of the service node.

If a preferred service is specified, the DECserver 100 will attempt to connect to that service as with the dedicated service mode of operation. However, the terminal user can enter Local Mode and establish other sessions.

Automatic Session Failover

If a service is available on two or more service nodes and a connection to a service fails, the server will attempt to connect the user to another service node offering the same service. Autoconnection must be enabled for this feature to work. The user does not have to be already connected to that service node. Furthermore, the user's context at the time of failure is not automatically restored and login to the new service is required.

Groups

Every terminal and service node in a LAT network is a member of one or more groups. These groups are identified by numbers called group codes. Group codes allow an easy means of subdividing the network into what appears to be many smaller networks. A terminal user is only aware of the services that are offered by nodes in the same group(s).

A privileged user can change the group(s) in which a terminal is a member. Group codes provide a restrictive view of the network. This restricted view is mainly for user convenience and, although it also provides a form of security, it is not intended to be the primary form of access authorization or system security for a node.

Security

The DECserver 100 provides functions which enhance security features already available in the service nodes. DECserver 100 security includes the ability to lock a terminal's keyboard from other users, optional login protection, and nonprivileged Local Mode of operation as a default.

A user may lock the terminal using a lock password. This allows the user to leave sessions running at the terminal without fear of security violations. When a terminal is locked, all input from the terminal is ignored until the lock password is re-entered.

Login passwords can be enabled on a per-line basis by the privileged user. If enabled, the terminal user must enter a login password to access server functions. If a dedicated service is specified, login protection is not available.

DECserver 100 users normally have access to the nonprivileged Local Mode. In this mode, users may only issue commands that affect their own terminal environment. The server has a privileged mode for Server Manager's use. The mode is password protected.

Online HELP Facility

A limited online HELP facility is available to remind users of command syntax. It is not intended as a replacement for the documentation set.

Directory Service

Any DECserver 100 user can obtain a directory of services available to that user with a SHOW SERVICES command. Services for which the user is not authorized will not be displayed.

Terminal Parameter Configuration

Parameters governing the operation of an individual terminal can be modified and displayed by a nonprivileged terminal user interactively from their terminal. In the privileged mode, a Server Manager can modify parameters for other users' ports or for the server as a whole.

Permanent characteristics are maintained in DECserver 100 memory, even when the power is disconnected. Permanent characteristics are maintained for server-wide parameters as well as per-terminal parameters. Permanent characteristics can be reset to factory defaults by pressing the software reset button on the hardware unit while plugging in the power cord. Terminal parameters that can be set and displayed include: speed, character size, group codes, parity, and terminal type.

Port Access

A port on a DECserver 100 with Version 1.2 software may be set up in different ways depending on the device attached to the port and its intended use. However, RSX-11M-PLUS and Micro/RSX service nodes do not support Remote or Dynamic ports. RSX-11M-PLUS and Micro/RSX service nodes do support ports set in Local Mode.

Terminal Operation

The DECserver 100 software supports the simultaneous operation of up to eight terminals at speeds from 75 bps to 19.2K bps. The software also supports:

* Split speed (transmit and receive) terminal operation

* Block Mode transfers

* Automatic line speed detection

* DIGITAL Personal Computer file transfer

* XON/XOFF handling

* Data transparency mode

* Ability to pass break character and error notification

Terminals Supported

The DECserver 100 software supports the following DIGITAL terminal devices that have keyboards:

* LA34, LA38,

* VT52, VT100, VT101, VT102, VT125,

* VT220, VT240, VT241

Supported terminal parameters are:

* Character size: 7 or 8 bits per character

* Parity: Even, Odd, Mark, or None

The Automatic Line Speed Detection (Autobaud) feature is supported for either seven-bit characters with even parity, or eight-bit characters with no parity.

The DECserver 100 software also supports the following DIGITAL Personal Computers (PCs) in both terminal emulation mode and file transfer mode:

* Professional 325, 350, 380

* Rainbow 100A, 100B, 100+, 190

* DECmate II, III

Note: This product is not warranted to support non-DIGITAL terminal devices and Personal Computers. However, those supporting VT100-like characteristics may operate with this product.

Modems Supported

None, however the signals available on each DECserver 100 port connector are Tx, Rx, and Gnd.

Server Management

Several facilities exist for managing and troubleshooting server operation. A Server Manager in privileged mode can set up server identification information, change terminal parameters, or fine tune the operating characteristics of the server. Troubleshooting facilities include diagnostic tests and online statistics.

A privileged user can diagnose Ethernet communications problems by looping messages to an Ethernet host and through the Ethernet hardware interface at the server. To diagnose terminal problems, users can execute a command to transmit test data to their terminal, or the Server Manager can send test data to any terminal.

The server maintains a variety of statistics and counters. These include the following: Ethernet data link statistics, LAT protocol statistics, and terminal line error statistics. These data can be displayed and zeroed by a privileged terminal user. Server parameters that can be modified and displayed include the server identification, circuit timer, and login limits.

Remote Server Management

The DECserver 100 implements the console carrier feature which enables access to the DECserver 100 Local Mode from a Phase IV DECnet host on the same LAN. A restricted set of Local Mode functions are available to a console carrier user. This capability provides centralized server management and remote server diagnosis.

Communications

DECserver 100 software is designed to run on DECserver hardware exclusively. This hardware includes an Ethernet interface for connection to an Ethernet transceiver cable, and eight RS-232 asynchronous line interfaces for connecting terminals to the unit. This product is designed for local terminal use only. Support for remote terminals and modem control is not provided.

DECserver 100 Operation

The DECserver 100 ROM-based firmware provides the necessary maintenance operation protocols for downline loading DECserver 100 software from a Phase IV DECnet load host over the Ethernet into server memory. All self-test diagnostics are in DECserver ROM, so downline loading is not a precondition for DECserver self-test. In the event of a bugcheck caused by a fatal error, the unit

will normally attempt to upline dump server memory to a DECnet Phase IV host. Following this, the unit will automatically initialize itself and invoke a downline load.

Restrictions on DECserver 100 Usage

While terminal connections using the DECserver 100 have been designed to simulate direct terminal connections as much as possible, a few differences necessarily exist because of the nature of the product. Under most circumstances, these differences are not noticed by terminal users or service node application programs. However, applications which are directly dependent on the following functions may not operate as with a direct connection:

- Applications that depend on reading or setting the terminal speed, character size and parity by manipulating system data structures

- Applications that depend on an extremely fast response time (typically less than 200 ms) to operate

- Applications that utilize an alternate terminal driver in the service node

- Applications that directly receive and send BREAK signals and/or the XON/XOFF flow control characters (since these characters are normally intercepted and processed locally by the DECserver 100)

- Applications that expect incoming connections to have fixed device names.

MINIMUM HARDWARE REQUIRED

The DECserver 100 software runs on either of the following packaged hardware options:

- DSRVA-AA—DECserver 100 hardware, including eight EIA RS-232-C/CCITT V.24 asynchronous lines supporting speeds up to 19.2K bps, factory set at 120V.

- DSRVA-AB—DECserver 100 hardware, including eight EIA RS-232-C/CCITT V.24 asynchronous lines supporting speeds up to 19.2K bps, factory set at 240V.

Use the following SHIELDED cable with each of the physical lines on the unit:

- BC22D—Null modem cable for local terminal connections

The DECserver hardware requires both a transceiver drop cable and Ethernet connection, H4000 or DELNI, to connect to the Ethernet physical channel.

RSX service node software requires a valid RSX-11M-PLUS or Micro/RSX system configuration. Please refer to the RSX-11M-PLUS Software Product Description (SPD 14.70.xx) or Micro/RSX Software Product Description (SPD 14.28.xx) for more information.

Refer to the Software Options Chart below to determine the distribution media available for a particular processor and operating system.

Block Space Requirements:

Disk space required for installation: 300 blocks
                                           (153 Kbytes)

Disk space required for use (permanent):   300 blocks
                                             (153 Kbytes)

These block counts refer to the disk space required on the system disk. The sizes are approximations; actual sizes may vary depending on the user's system environment, configuration, and software options.

GROWTH CONSIDERATIONS

The minimum hardware requirements for any future version of this product may be different from the minimum hardware requirements of the current version.

OPTIONAL HARDWARE

None

PREREQUISITE SOFTWARE

RSX-11M-PLUS (at a minimum of Version 3.0) and DECnet-11M-PLUS (at a minimum of Version 3.0)

Micro/RSX (at a minimum of Version 3.0) and DECnet-Micro/RSX (at a minimum of Version 1.0)

Host initiated connect capability is only available on VMS (at least at Version 4.2) service nodes running LATplus/VMS, Version 1.0. LATplus/VMS, Version 1.0 is included with the DECserver 100, Version 1.2 distribution and documentation.

The DECserver 100 software license applies to the DECserver 100 on which the server software runs, not to the service node CPUs in the network. Service node based LAT software is bundled with the host operating system.

OPTIONAL SOFTWARE

None

SOFTWARE WARRANTY

Warranty for this software product is provided by DIGITAL with the purchase of a license for the product as defined in the Software Warranty Addendum of this SPD.

INSTALLATION

This software product can be installed by the customer using the step-by-step documentation available for this product. Optionally you can purchase DIGITAL Installation Services which provide for the installation of the software product by an experienced DIGITAL Software Specialist.

The installation service consists of:

- Installation of DECserver 100 software on one DECnet load host

- Configuration of up to ten DECserver 100 units on that host

- Configuration of LAT service node software (i.e. LTDRIVER) on one service node

- Installation verification and checkout

- Customer Orientation Demo

Customer Responsibilities

Before installation of the software, the customer must:

* Previously have installed all requisite hardware including terminals.

* Obtain, install, and demonstrate as operational other communications equipment and facilities necessary to interface to DIGITAL's communication equipment.

* Make available for a reasonable period of time, as mutually agreed by DIGITAL and the customer, all hardware, communication facilities, and terminals that are to be used during the installation.

* For multinode networks, designate one Ethernet host to verify installation/connectivity.

Courtesy Installation Service

This software product will be installed by DIGITAL at no additional charge if you purchase it concurrent with a Startup Service Package that includes installation service. Both the host operating system and this product must be installed concurrently.

ORDERING INFORMATION

Single-Use licensed software 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 Server CPU on which the software is first installed, and may be copied, in whole or in part (with the proper inclusion of DIGITAL's copyright notice and any proprietary notices on the software) for use on same CPU.

You will need a separate license for each TERMINAL SERVER on which you will be using the software product (except as otherwise specified by DIGITAL). Then Materials and Service Options are selected to utilize the product effectively. **THE LICENSE OPTIONS ARE DESCRIBED BELOW. IF YOU ARE NOT FAMILIAR WITH THE SERVICE OPTIONS, YOU MAY OBTAIN THE APPROPRIATE SOFTWARE PRODUCT SERVICE DESCRIPTION(S) FROM YOUR LOCAL DIGITAL OFFICE.** If you are already familiar with these options, you may obtain the ordering information directly from the Software Options Chart.

LICENSE OPTIONS

Single-Use License Option

The Single-Use License is your right to use the software product on a single Server.

For your first installation of this software product you must purchase as a **minimum:**

* Single-Use License Option, and

* Distribution and Documentation Option

The license gives you the right to use the software on a single Server and the Distribution and Documentation Option provides the machine-readable software and related documentation.

To use this software product on additional Servers, you must purchase for each Server as a **minimum:**

* Single-Use License Option

In addition to the right to use, the license gives you the one-time right to copy the software from your downline load host CPU to additional terminal servers. Therefore, the Distribution and Documentation Option is not required, but optional.

Distribution and Documentation Option

The Distribution and Documentation option provides the machine-readable software and the basic documentation. You must have, or order, a Single-Use License to obtain this option. You will need this option to install the software for the first time. When revised versions of this software product become available, they may also be obtained by purchasing this option again.

Software Revision Right-To-Copy Option

The Right-To-Copy Option allows a customer with multiple terminal servers to copy a revised version of a software product from the downline load host to another terminal server. Each terminal server must be licensed for that product. You first install the revised software on one downline load host CPU; then you can LOAD additional terminal servers by purchasing the Right-To-Copy Option for each additional terminal server.

Documentation-Only Option

The Documentation-Only Option provides one copy of the basic documentation.

Software Product Services

A variety of service options are available. For more information on these or other services, please contact your local DIGITAL office.

SOFTWARE OPTIONS CHART

The distribution Media Codes used in the Software Options Chart are described below. You specify the desired Media Code at the end of the Order Number, e.g., QYAAC-H3 = binaries on an RX50 Floppy Diskette.

3 = RX50 Floppy Diskette   H = RL02 Disk Cartridge
5 = TK50 Tape Cartridge   M = 9-track 1600 BPI Magtape (PE)

Chart I

NOTE: The availability of these software product options and services may vary by country. Customers should contact their local DIGITAL office for information on availability.

OPTIONS	ORDER NUMBER Micro/RSX	ORDER NUMBER RSX-11M-PLUS
LICENSE OPTIONS: A LICENSE IS REQUIRED FOR EACH SERVER.		
Single-Use License	QYAAC-UZ	QR925-UZ
MATERIALS AND SERVICE OPTIONS:		
Distribution and Documentation Option	QYAAC-H3 QYAAC-H5	QR925-HH QR925-HM
Software Revision Right-To-Copy Option	QYAAC-HZ	QR925-HZ
Documentation-Only Option	QYZZC-GZ	QR925-GZ
Installation Service Option	QYAAC-I3 QYAAC-I5	QR925-IH QR925-IM
DECsupport Service	QYAAC-93 QYAAC-95	QR925-9H QR925-9M
Basic Service	QYAAC-83 QYAAC-85	QR925-8H QR925-8M
Self-Maintenance Service	QYAAC-33 QYAAC-35	QR925-3H QR925-3M

PRODUCT NAME: FMS-11/RSX, Version 2.0　　　　　　　　　　**SPD 12.27.09**

DESCRIPTION

FMS-11/RSX is a forms-oriented, video I/O management system for the RSX-11M, RSX-11M-PLUS, and RSX-11S Real-Time Operating Systems. FMS-11/RSX functions as an independent software front end that logically off-loads the complexities of interactive video I/O management from the application program.

Call statement, high-level language interfaces are provided for applications written in BASIC-PLUS-2 for RSX-11M and RSX-11M-PLUS, COBOL-81/RSX, FORTRAN-IV/IAS-RSX, FORTRAN-77/RSX, PDP-11 COBOL, RSX-11M-PLUS DIBOL, as well as MACRO-11 assembly language. FMS-11/RSX is equally effective for implementing applications with question and answer, menu, or fill-in-the-blank type forms.

Forms defined using FMS-11/RSX can use the following features of DIGITAL's VT100 and VT200 terminals:

- Reverse video characters
- Bold characters
- Underlined characters
- Blinking characters
- 132-column lines
- Jump and smooth scrolling
- Split screen and reverse screen
- Full 8-bit communication including escape sequences and access to function keys

FMS-11/RSX can be used as a general-purpose manager of operator I/O or as a front end in traditional source data entry applications. Possible FMS-11/RSX applications range from data base inquiry/response/update to uses such as periodically displaying the status of a real-time process or accepting control information from the operator for the process.

FMS-11/RSX application programs can be developed and executed under the RSX-11M or RSX-11M-PLUS Operating Systems. They may be coded in MACRO-11 or one of the following high-level languages:

- BASIC-PLUS-2 for RSX-11M and RSX-11M-PLUS

- COBOL-81/RSX
- FORTRAN-IV/IAS-RSX
- FORTRAN-77/RSX
- PDP-11 COBOL
- RSX-11M-PLUS DIBOL

FMS-11/RSX applications can be executed under the RSX-11S Operating System, provided that all required forms are linked with each application as a memory-resident form library.

FMS-11/RSX forms are data structures created using FED, the interactive form editor. Forms normally reside in form library files on disk and are retrieved as needed by application programs at execution time. This results in a high degree of independence between form definitions and application programs. In many cases form definitions can be modified without requiring recompilation or relinking of the application program.

In the case where extra fast response time is required or in an RSX-11S environment with no mass storage support, forms can be linked to applications as a memory-resident form library.

Each data field in FMS-11 forms 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/RSX is "named data". This allows application parameters to be stored and edited within the form as named strings of constant data and retrieved dynamically by name or number during program execution.

FMS-11/RSX consists of the following software components:

FED (Form Editor) — Used by the application developer to create and modify video forms by typing them on the screen as they are likely to appear to the application user. In addition, a variety of editing functions may be invoked using the VT100 function keypad. All form attributes, individual field attributes, and named data constants are assigned in this form editing process. The result of a FED

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session is an intermediate form file, ready for processing by the Form Library Utility.

FUT (Form Library Utility) — Multifunction utility program for manipulating files of FMS-11/RSX form descriptions. FUT provides a full range of form library management functions, such as merge, insert, update, extract, and delete a form. It can be used to print a complete description of one or more forms from a form file or library or to list the names of all forms in a form library. FUT can produce an object module of forms to be linked with the application when memory-resident forms are desired. Finally, FUT can write out COBOL Data Division code for a form definition, which can then be copied into COBOL programs.

FDV (Form Driver) — Reentrant subroutine called from application programs to control screen processing. The FDV manages all screen input and output, displays forms, manipulates the screen, performs basic input validation, and responds to the operator's requests for HELP. Applications may interact with the operator one field at a time or on a whole record basis using the form description generated by FED during the form editing process.

FDV can be built as part of a clustered library and the form definition data can be prepared to reside in that address space known by the KT11 memory manager as d-space.

All references to fields in a form are by name, so that application programs are not dependent on the physical layout of the form. Furthermore, FDV performs its editing, data preparation, and HELP functions without the knowledge or intervention of the application program. Separate subroutine libraries must be generated for either VT52 or VT100/VT200 support.

SOURCE CODE INFORMATION

Source code for the Form Driver is provided on 9-track 800 BPI Magtape (NRZI).

This source code is provided on an **"AS IS"** basis without any warranty of any kind either express or implied.

MINIMUM HARDWARE REQUIRED

For Application Execution

The form driver requires from 6K to 9K bytes of main memory, depending on the options selected when the Form Driver is generated. An addition 1K bytes is required for interface code if the Form Driver is called from any high-level language.

Terminal	Form Development	Application Execution
VT52	N	Y
VT100	Y	Y
VT100 with AVO	Y	Y
VT101	Y	Y
VT102	Y	Y
VT125	Y	Y
VT220	Y	Y
VT240	Y	Y

Key:

Y = Fully Supported
N = Not Supported
AVO = Advanced Video Option

For Application Development

The Form Editor requires 36K bytes and one of the terminals listed above.

The Form Utility requires 16K bytes. It does not require a VT100 terminal.

PREREQUISITE SOFTWARE

One of the following:

For Application Execution

RSX-11M Operating System*

RSX-11M-PLUS Operating System*

RSX-11S Operating System, Version 4.2

For Application Development

RSX-11M Operating System*

RSX-11M-PLUS Operating System*

Note: FMS-11/RSX application programs must be developed using MACRO-11 (which is included in the prerequisite operating systems) or one of the higher level languages listed in the Optional Software section.

FMS-11/RSX requires that the operating system be generated with the full-duplex terminal driver, which requires memory management hardware. Execution of the Form Utility (FUT) in a multitask environment requires that checkpointing to a system file be enabled.

* Refer to the RSX-11M and RSX-11M-PLUS Optional Software Cross Reference Tables (SPD 20.98.xx and SPD 20.99.xx) for the required versions.

OPTIONAL SOFTWARE

- BASIC-PLUS-2 for RSX-11M and RSX-11M-PLUS
- COBOL-81/RSX
- FORTRAN-IV/IAS-RSX
- FORTRAN-77/RSX
- PDP-11 COBOL
- RSX-11M-PLUS DIBOL

SOFTWARE WARRANTY

Warranty for this software product is provided by DIGITAL with the purchase of a license for the product as defined in the Software Warranty Addendum of this SPD.

INSTALLATION

This software product can be installed by the customer using the step-by-step documentation available for this product. Optionally you can purchase DIGITAL Installation Services which provide for the installation of the software product by an experienced DIGITAL Software Specialist.

ORDERING INFORMATION

Single-Use licensed software 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 DIGITAL's copyright notice and any proprietary notices on the software) for use on that same CPU.

You will need a separate license for each CPU on which you will be using the software product (except as otherwise specified by DIGITAL). Then Materials and Service Options are selected to utilize the product effectively. **THE LICENSE OPTIONS ARE DESCRIBED BELOW. IF YOU ARE NOT FAMILIAR WITH THE SERVICE OPTIONS, YOU MAY OBTAIN THE APPROPRIATE SOFTWARE PRODUCT SERVICE DESCRIPTION(S) FROM YOUR LOCAL DIGITAL OFFICE.** If you are already familiar with these options, you may obtain the ordering information directly from the Software Options Chart.

LICENSE OPTIONS

Single-Use License Option

The Single-Use License is your right to use the software product on a single CPU.

You purchase a Single-Use License according to the category to which your CPU belongs:

* Class H Single-Use License (for high-end systems)

  - All UNIBUS models and systems

  - MicroPDP-11/83

* Class L Single-Use License (for low-end systems)

  - All Q-BUS models and systems except MicroPDP-11/83

  - KD11, KDF11, KDJ11 CPU modules

  - DCT11, DCF11, DCJ11 microprocessor chips

For your first installation of this software product you must purchase as a **minimum:**

* Single-Use License Option, and

* Distribution and Documentation Option

The license gives you the right to use the software on a single CPU and the Distribution and Documentation Option provides the machine-readable software and related documentation.

To use this software product on additional CPUs, you must purchase for each CPU as a **minimum:**

* Single-Use License Option

In addition to the right to use, the license gives you the one-time right to copy the software from your original CPU installation to the additional CPU. Therefore, the Distribution and Documentation Option is not required, but optional.

Single-Use License Option For Forms Driver

If you have FMS-11/RSX installed on a CPU fully licensed for that product and you wish to use the Forms Driver portion of it on an additional CPU, you can purchase a Single-Use License for FMS-11/RSX Forms Driver. This license gives you the right to use only the Forms Driver and does not include software warranty.

Distribution and Documentation Option

The Distribution and Documentation option provides the machine-readable software and the basic documentation. You must have, or order, a Single-Use License to obtain this option. You will need this option to install the software for the first time. When revised versions of this software product become available, they may also be obtained by purchasing this option again.

Software Revision Right-To-Copy Option

The Right-To-Copy Option allows a customer with multiple CPUs to copy a revised version of a software product from one CPU to another. Each CPU must be licensed for that product. You first install the revised software on one CPU; then you can make copies for additional CPUs by purchasing the Right-To-Copy Option for each additional CPU.

Documentation-Only Option

The Documentation-Only Option provides one copy of the basic documentation.

Software Product Services

A variety of service options are available. For more information on these or other services, please contact your local DIGITAL office.

SOURCE MATERIALS OPTIONS

You can obtain optional source materials for this software product by signing DIGITAL's Software Program Sources License Agreement and then purchasing the source option(s) you want. The agreement entitles you to use the source materials at one customer facility or location which is specified in the agreement.

Most users do not require source materials. They are used primarily to make modifications to the software product. Source kits provided by DIGITAL do not necessarily contain all source files used by DIGITAL to build binary kits.

Source License and Sources Distribution Option

This option provides you with the machine-readable source code for this software product. It gives you the right to use the source code on any CPU at the facility/location specified in the agreement which has a Single-Use License for the object code.

Sources Update Distribution Option

This option provides you with the revised version of the machine-readable source code for this software product. You must have purchased the Source License and Source Distribution Option to obtain this option.

SOFTWARE OPTIONS CHART

The distribution Media Codes used in the Software Options Chart are described below. You specify the desired Media Code at the end of the Order Number, e.g. QJ715-HD = binaries on 9-track 800 BPI Magtape (NRZI).

D = 9-track 800 BPI Magtape (NRZI)   T = RK06 Disk Cartridge
H = RL02 Disk Cartridge   V = RK07 Disk Cartridge
M = 9-track 1600 BPI Magtape (PE)   Z = No hardware dependency
Q = RL01 Disk Cartridge

NOTE: The availability of these software product options and services may vary by country. Customers should contact their local DIGITAL office for information on availability.

OPTIONS	ORDER NUMBER
LICENSE OPTIONS: A LICENSE IS REQUIRED FOR EACH CPU.	
Single-Use License	QJ715-UZ
Single-Use License for Forms Driver (Class L)*	QY717-DZ
Single-Use License for Forms Driver (Class H)*	QJ717-DZ
MATERIALS AND SERVICE OPTIONS:	
Distribution and Documentation Option	QJ715-HD QJ715-HH QJ715-HM QJ715-HQ QJ715-HT QJ715-HV
Software Revision Right-To-Copy Option	QJ715-HZ
Software Revision Right-To-Copy Option for Forms Driver (Class L)	QY717-HZ
Software Revision Right-To-Copy Option for Forms Driver (Class H)	QJ717-HZ
Documentation Only Option	QJ715-GZ
Installation Service Option	QJ715-ID QJ715-IH QJ715-IM QJ715-IQ QJ715-IT QJ715-IV
DECsupport Service	QJ715-9D QJ715-9H QJ715-9M QJ715-9Q QJ715-9T QJ715-9V

OPTIONS	ORDER NUMBER
Basic Service	QJ715-8D QJ715-8H QJ715-8M QJ715-8Q QJ715-8T QJ715-8V
Self-Maintenance Service	QJ715-3D QJ715-3H QJ715-3M QJ715-3Q QJ715-3T QJ715-3V
SOURCE MATERIALS OPTIONS:	
Source License and Sources Distribution	QJ715-ED
Sources Distribution	QJ715-ND

* Refer to the descriptions of Class H and Class L single-use licenses in the License Option section of this SPD.

Software Product Description

PRODUCT NAME: **KMV1A RSX and Micro/RSX Development Tools,**   SPD 13.41.01
Version 1.0 (Formerly KMV11-A Development Tools)

DESCRIPTION

The KMV1A RSX and Micro/RSX Development Tools consists of a software/firmware package that facilitates the development of layered telecommunications protocols in the KMV1A communications controller.

The KMV1A Development Tools operate under the RSX-11M, RSX-11M-PLUS, RSX-11S and Micro/RSX Operating Systems, and should be used by programmers with MACRO-11 skills.

Features

The KMV1A Tools package contains a set of utilities which interface with the KMV1A firmware routines residing in the KMV1A ROM implementing the Communication Executive functionality. The ROM resident firmware consists of:

* The power up code (Root Firmware)
* The communication executive routines
* The self test routines to detect hardware malfunctions
* Demonstration package

Tools Features

* A "LINKER" which allows the user to create a working image (Loadable Firmware Image) from the user-written source programs.
* A "LOADER" to load the image created by the "LINKER" into the KMV1A RAM.
* A DEBUG utility program which enables a programmer to interactively debug KMV1A firmware. This utility uses XDT like commands and provides facilities for:
  — Examining and modifying the contents of the micro-processor internal registers and RAM
  — Inserting and removing breakpoints
  — Starting, stopping and single stepping the micro-processor
* A DUMP analyzer, so that files created by the unload function of the debug utility can be formatted and dumped to a disk.

MINIMUM HARDWARE REQUIRED

Any valid PDP-11/23-PLUS , PDP-11/23S, MicroPDP-11/23, MicroPDP-11/73, or MicroPDP-11/83 configuration with:

* One KMV1A-M communication controller module
* One DLV11-J Interface, required for the interactive debugger
* One of the following cable kits:
  — CK-KMV1A-AA RS-232 for PDP-11/23S and BA123 cabinet
  — CK-KMV1A-AB RS-232 for BA23 cabinet
  — CK-KMV1A-AC RS-232 for PDP-11/23-PLUS
  — CK-KMV1A-AF RS-232 for H9642 cabinet
  — CK-KMV1A-EA RS-422 for PDP-11/23S and BA123 cabinet
  — CK-KMV1A-EB RS-422 for BA23 cabinet
  — CK-KMV1A-EC RS-422 for PDP-11/23-PLUS
  — CK-KMV1A-EF RS-422 for H9642 cabinet
  — CK-KMV1A-FA RS-423 for PDP-11/23S and BA123 cabinet
  — CK-KMV1A-FB RS-423 for BA23 cabinet
  — CK-KMV1A-FC RS-423 for PDP-11/23-PLUS
  — CK-KMV1A-FF RS-423 for H9642 cabinet
* Disk Block Usage:

  Disk space required for installation: 1,410 blocks (722 Kbytes)

  Disk space required for use (permanent):2,000 blocks (1,024 Kbytes)

GROWTH CONSIDERATIONS

The minimum hardware requirements for any future version of this product may be different from the minimum hardware requirements for the current version.

OPTIONAL HARDWARE

None

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PREREQUISITE SOFTWARE

RSX-11M, RSX-11M PLUS, RSX-11S, or Micro/RSX Operating System (This software will only run on MicroPDP-11 systems.)

Refer to the appropriate Optional Software Cross Reference Table for the required versions:

Micro/RSX Optional Software Cross Reference Table (SPD 20.95.xx)
RSX-11M Optional Software Cross Reference Table (SPD 20.98.xx)
RSX-11M PLUS Optional Software Cross Reference Table (SPD 20.99.xx)

OPTIONAL SOFTWARE

None

SOFTWARE WARRANTY

Warranty for this software product is provided by DIGITAL with the purchase of a license for the product as defined in the Software Warranty Addendum of this SPD.

INSTALLATION

This software product can be installed by the customer using the step-by-step documentation available for this product.

ORDERING INFORMATION

Single-Use licensed software 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 DIGITAL's copyright notice and any proprietary notices on the software) for use on that same CPU.

All source licensed software is furnished only under the terms and conditions of a separate Software Program Sources License Agreement between Purchaser and DIGITAL. Options with no support services are only available after the purchase of one supported license.

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

No binary is separately available from DIGITAL for this software product. The sources and/or listings option(s) is available for use only on the single CPU on which it is first installed, and after a source license agreement is in effect.

Refer to the Software Options Chart for ordering information.

SOFTWARE OPTIONS CHART

The following key (3, 5, D, M, X, Z) represents the distribution media for the product and must be specified at the end of the order number, e.g., QJS98-X3 = sources on RX50 Floppy Diskette.

3 = RX50 Floppy Diskette
5 = TK50 Cartridge
D = 9-track 800 BPI Magtape (NRZI)

M = 9-track 1600 BPI Magtape (PE)
X = RX02 Double Density 8'' Diskette
Z = No hardware dependency

OPTIONS	ORDER NUMBER Micro/RSX SYSTEMS	ORDER NUMBER RSX-11M RSX-11M-PLUS RSX-11S SYSTEMS
Single use source license, sources, documentation, warranty	QYS98-X3 QYS98-X5	QJS98-X5 QJS98-XD QJS98-XM QJS98-XX
Single-use license-only option	QYS98-DZ	QJS98-DZ
Documentation only option	QYS98-GZ	QJS98-GZ

Software Product Description

PRODUCT NAME: KMV1A X.25 Link Level Software, Version 1.0   SPD 13.43.01
(Formerly KMV11 RSX X.25 LAPB Link Level Software)

DESCRIPTION

The KMV1A RSX and Micro/RSX X.25 Link Level Software consists of:

* X.25 LAPB Link Level Firmware for the KMV1A
* Firmware loader
* Device driver for the KMV1A Q-BUS communication controller
* Installation test program
* Trace dump module
* Trace interpreter

This package allows the RSX or Micro/RSX Operating System user to perform medium speed synchronous communications in a point-to-point environment.

Driver Features

* Support for RSX-11M, RSX-11M PLUS, RSX-11S and Micro/RSX Operating Systems.
* Full-duplex operation.
* Loads the X.25 LAPB Link Level Firmware into the KMV RAM at driver load time or after a power failure.
* Does line initialization and link set-up upon user application software request.
* Full-duplex message oriented QIO interface for data transmission and reception.
* Disconnects link and de-initializes line upon user software request or upon detection of non-recoverable transmission errors.
* Maintains error counters and transmission and reception statistics that are available to the user application software.

Firmware Features

* Basic X.25 LAPB Link Level Framing executed in the KMV complying with the CCITT 1980 recommendation for X.25 LAPB Link Level Protocol and the Digital Network Architecture.
* User selection of the following X.25 parameters and options:

— K: Number of outstanding information frames ($1=<K=<7$).

— N1B: Maximum number of 8-bit bytes in an information frame ($1=<N1B=<1024$ bytes).

— N2: Maximum number of retransmissions for an information frame before the link is reset and an error status is returned to the driver ($1=<N2=<6$)

— T1: Delay timer at the end of which retransmission of a frame is initiated ($50ms=<T1=<32767ms$)

— T2: Delay timer at the end of which the response or acknowledgment is returned ($20ms=<T2=<T1$)

— ADDRESS CHARACTER for transmission of command and reception of response.

— ADDRESS CHARACTER for transmission of response and reception of command.

— Selection of internal loopback

— Selection of internal clock with the following possible line speeds:

——> 1.2 Kbps
——> 2.4 Kbps
——> 4.8 Kbps
——> 9.6 Kbps
——> 19.2 Kbps

— Full modem control for leased lines (no Ring Indicator)

— Direct Memory Access (DMA)

Tracing Facility

* Trace dump module — This module consists of routines, to be linked with the user application program, creating the trace dump file.
* Trace Interpreter — This utility is provided to analyze and display in a user friendly format the trace dump file created by the installation test program or the user application program.

Test Program

Installation test program — Test programs are provided to verify the installation of the product.

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software

Performance

The driver in conjunction with the X.25 LAPB Link Level Firmware can handle up to four KMV1As each running one full-duplex line at up to 19.2 Kbps for frame size up to 1024 bytes.

MINIMUM HARDWARE REQUIRED

Any valid PDP 11/23 PLUS, PDP 11/23S, Micro/PDP 11/23, Micro/PDP 11/73 or Micro/PDP 11/83 configuration with:

* Up to four KMV1A-M communication controller modules

* One of the following cable kits:

  — CK-KMV1A-AA RS-232 for PDP-11/23S & BA123 cabinet

  — CK-KMV1A-AB RS-232 for BA23 cabinet

  — CK-KMV1A-AC RS-232 for PDP-11/23 PLUS

  — CK-KMV1A-AF RS-232 for H9642 cabinet

  — CK-KMV1A-EA RS-422 for PDP-11/23S & BA123 cabinet

  — CK-KMV1A-EB RS-422 for BA23 cabinet

  — CK-KMV1A-EC RS-422 for PDP-11/23 PLUS

  — CK-KMV1A-EF RS-422 for H9642 cabinet

  — CK-KMV1A-FA RS-423 for PDP-11/23S & BA123 cabinet

  — CK-KMV1A-FB RS-423 for BA23 cabinet

  — CK-KMV1A-FC RS-423 for PDP-11/23 PLUS

  — CK-KMV1A-FF RS-423 for H9642 cabinet

Disk Block Usage:

Disk space required for installation	640 blocks	(328K bytes)
Disk space required for use (permanent)	1,000 blocks	(512K bytes)

GROWTH CONSIDERATIONS

The minimum hardware requirements for any future version of this product may be different from the minimum hardware requirements for the current version.

OPTIONAL HARDWARE

None

PREREQUISITE SOFTWARE

RSX-11M, RSX-11M PLUS, RSX-11S or Micro/RSX (this software will only run on MicroPDP-11 systems) Operating System.

Both the Micro/RSX base kit and the Micro/RSX Advanced Programmers Kit are required.

Refer to the appropriate Optional Software Cross Reference Table for the required version:

Micro/RSX Optional Software Cross Reference Table (SPD 20.95.xx)
RSX-11M Optional Software Cross Reference Table (SPD 20.98.xx)
RSX-11M-PLUS Optional Software Cross Reference Table (SPD 20.99.xx)

OPTIONAL SOFTWARE

None

SOFTWARE WARRANTY

Warranty for this software product is provided by DIGITAL with the purchase of a license for the product as defined in the Software Warranty Addendum of this SPD.

INSTALLATION

This software product can be installed by the customer using the step-by-step documentation available for this product.

ORDERING INFORMATION

Single-Use licensed software 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 DIGITAL's copyright notice and any proprietary notices on the software) for use on that same CPU.

All source licensed software is furnished only under the terms and conditions of a separate Software Program Sources License Agreement between Purchaser and DIGITAL. Options with no support services are only available after the purchase of one supported license.

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

No binary is separately available from DIGITAL for this software product. The sources and/or listings option(s) is available for use only on the single CPU on which it is first installed, and after a source license agreement is in effect.

Refer to the Software Options Chart for ordering information.

SOFTWARE OPTIONS CHART

The following key (3, 5, D, M, X, Z) represents the distribution media for the product and must be specified at the end of the order number, e.g., QJS97-XD = sources on 9-track 800 BPI Magtape (NRZI).

3 = RX50 Floppy Diskette   M = 9-track 1600 BPI Magtape (PE)
5 = TK50 Cartridge   X = RX02 Double Density 8'' Diskette
D = 9-track 800 BPI Magtape (NRZI)   Z = No hardware dependency

OPTIONS	ORDER NUMBER MICRO/RSX SYSTEMS	ORDER NUMBER RSX-11M RSX-11M-PLUS RSX-11S SYSTEMS
Single use source license, sources, documentation, warranty	QYS97-X3 QYS97-X5	QJS97-X5 QJS97-XD QJS97-XM QJS97-XX
Single-use license-only option	QYS97-DZ	QJS97-DZ
Documentation only option	QYS97-GZ	QJS97-GZ

Software Product Description

PRODUCT NAME: RSX-11M-PLUS VSV21 Support Software, Version 2.0   SPD 13.65.01

DESCRIPTION

The VSV21 Support Software is the software and firmware component of the VSV21 Q-22 Bus Color Graphics Module. The VSV21 Module requires some elements of its software to be down-loaded prior to operation, in particular, certain code must be loaded into the module to allow on-board interpretation of graphics display commands. The VSV21 Support Software is a necessary option to enable use of the extensive capabilities of the VSV21 Module.

The VSV21 Support Software comprises the following components:

* Device Driver
* Software Modules
* Configuration and Control Utility Program (VCP)
* Installation Verification Procedure (IVP)
* VIVID Subroutine Library (VSL)

The firmware modules, which are loaded into the VSV21 Module using the VCP, allow VT100/VT220 terminal emulation, VSV11 emulation or VSV21 VIVID display list processing.

Terminal Emulation

The VSV21 Module provides a serial port for connection to the host processor via the system console port or any other suitable serial port.

The VT100 emulation operates via the host serial communications port of the VSV21 Module. Sufficient logic is resident within the module to enable the VSV21 to be used as the system console on power-up of the system.

The emulation provides all the main features required to support DIGITAL standard utilities, certain VT220 features, and VT100 emulation, except the following:

* VT100 set-up mode
* Selectable tabs
* Interlace operation
* Advanced Video Option (AVO)
* Double height, double width characters

* Changes to host terminal port options
* VT52 emulation and special ROMs
* 132-column operation
* Full screen reverse video

The following VT220 emulation features are provided:

* 8-bit multinational character sets
* Compose key
* Function keys

VSV11 Emulation

Utilizing the VCP, software modules may be down-loaded into the VSV21 Module to provide emulation of the following fixed VSV11 hardware configuration:

* Single channel display
* one or two image memory modules
* Single sync board

VSV11 features not supported by emulation include:

* Dynamics
* VSV11 color look-up option
* Direct register access
* Wrap
* Difference bitmaps

VSV21 Instructions for Visual Display VIVID

Utilizing the VCP, software modules may be down-loaded into the VSV21 Module to provide extensive display list processing as an alternative to VSV11 emulation.

VSV21 Serial Port Device Drivers (Pointing and General)

Device Drivers are provided which support a specified range of pointing devices and other serial peripherals attached to two of the VSV21's serial ports. (Refer to the current Technical Data Sheet for further details).

VSV21 Device Driver

The normal interface between the host software and the VSV21 Module is the VSV21 Device Driver which provides for up to eight VSV21 Modules on one host processor.

This loadable Device Driver provides an emulation of the VSV11 Device Driver at QIO function level and the GLUN$ system service. This allows existing VSV11 applications software which complies with the constraints described above to run without source code change once the VSV21 Module has been configured for VSV11 Emulation (Refer to Configuration and Control Utility (VCP)).

The VSV21 Device Driver also permits use of VSV21 in VIVID display list processing and provides a device control interface to allow loading of the on-board software and certain changes in the configuration of the on-board software.

Device error logging is provided to enable service personnel to monitor results of VSV21 Module self-test and potential driver to on-board software interface problems. The Device Driver also provides protection against unauthorized configuration changes by requiring certain functions to be issued by a privileged user.

Configuration and Control Utility (VCP)

The Configuration and Control Utility provides the facility to down-load the VSV21 software modules to a VSV21 Module (up to four VSV21 Modules are supported).

VCP commands use a straightforward syntax and may be entered directly from a system terminal, which may be a VSV21 in VT220 emulation mode, or may be included in the system or user start-up file. In order to operate correctly, the VCP requires that the software modules are available to it within the system library area.

To assist system security the VCP may only be operated from a system account.

In addition to the down-loading of on-board software, the VCP provides the facility to modify certain characteristics of the VSV21 Module's serial port(s) operation, VSV11 and VT220 Emulation.

The system manager can alter certain operational characteristics of the VSV21 device which may optionally retain their setting upon system power-down.

Installation Verification Procedure (IVP)

The Installation Verification Procedure is provided as an aid to the user in testing that the VSV21 Module has been correctly installed and is operational.

MINIMUM HARDWARE REQUIRED

* PDP-11/23-PLUS or PDP-11/73 system with a minimum of 30K words of memory and at least one disk storage device

* At least one (maximum of four) VSV21 Modules

* *Block space requirement (Block Cluster Size =1):*

  Disk space required for installation   1500 blocks
  (768K bytes)

  Disk space required for use (permanent)
                                          1500 blocks
                                          (768K bytes)

These block counts refer to the disk space required on the system disk. The sizes are approximate; actual sizes may vary depending on the user's system environment, configuration, and software options selected.

GROWTH CONSIDERATIONS

The minimum hardware required for any future version of this product may be different from the minimum hardware requirements for the current version.

OPTIONAL HARDWARE

* LK201 keyboard (Required if the VSV21 Module is to be used as an emulated VT220 Terminal)

* A DIGITAL-suggested color monitor

* A DIGITAL-suggested pointing device

PREREQUISITE SOFTWARE

RSX-11M-PLUS Operating System

Refer to the RSX-11M-PLUS Optional Software Cross Reference Table (SPD 20.99.xx) for the required version.

Note: PDP-11/23-PLUS systems will require the pregenerated RL02-based system. Refer to the RSX-11M-PLUS Software Product Description (SPD 14.70.xx) for information.

OPTIONAL SOFTWARE

None

SOFTWARE WARRANTY

Warranty for this software product is provided by DIGITAL with the purchase of a license for the product as defined in the Software Warranty Addendum of this SPD.

INSTALLATION

This software product can be installed by the customer using the step-by-step documentation available for this product. Optionally you can purchase DIGITAL Installation Services which provide for the installation of the software product by an experienced DIGITAL Software Specialist.

ORDERING INFORMATION

Single-Use licensed software 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 DIGITAL's copyright notice and any proprietary notices on the software) for use on same CPU.

You will need a separate license for each CPU on which you will be using the software product (except as otherwise specified by DIGITAL). Then Materials and Service Options are selected to utilize the product effectively. **THE LICENSE OPTIONS ARE DESCRIBED BELOW. IF YOU ARE NOT FAMILIAR WITH THE SERVICE OPTIONS, YOU MAY OBTAIN THE APPROPRIATE SOFTWARE PRODUCT SERVICE DESCRIPTION(S) FROM YOUR LOCAL DIGITAL OFFICE.** If you are already familiar with these options, you may obtain the ordering information directly from the Software Options Chart.

LICENSE OPTIONS

Single-Use License Option

The Single-Use License is your right to use the software product on a single CPU.

For your first installation of this software product you must purchase as a **minimum:**

* Single-Use License Option, and

* Distribution and Documentation Option

   The license gives you the right to use the software on a single CPU and the Distribution and Documentation Option provides the machine-readable software and related documentation.

   To use this software product on additional CPUs, you must purchase for each CPU as a **minimum:**

* Single-Use License Option

   In addition to the right to use, the license gives you the one-time right to copy the software from your original CPU installation to the additional CPU. Therefore, the Distribution and Documentation Option is not required, but optional.

Distribution and Documentation Option

The Distribution and Documentation option provides the machine-readable software and the basic documentation. You must have, or order, a Single-Use License to obtain this option. You will need this option to install the software for the first time. When revised versions of this software product become available, they may also be obtained by purchasing this option again.

Software Revision Right-To-Copy Option

The Right-To-Copy Option allows a customer with multiple CPUs to copy a revised version of a software product from one CPU to another. Each CPU must be licensed for that product. You first install the revised software on one CPU; then you can make copies for additional CPUs by purchasing the Right-To-Copy Option for each additional CPU.

Documentation-Only Option

The Documentation-Only Option provides one copy of the basic documentation.

Software Product Services

A variety of service options are available. For more information on these or other services, please contact your local DIGITAL office.

SOFTWARE OPTIONS CHART

The distribution Media Codes used in the Software Options Chart are described below. You specify the desired Media Code at the end of the Order Number, e.g., QJ185-H3 = binaries on RX50 Floppy Diskette.

3 = RX50 Floppy Diskette   M = 9-track 1600 BPI Magtape (PE)
H = RL02 Disk Cartridge   Z = No hardware dependency

NOTE: The availability of these software product options and services may vary by country. Customers should contact their local DIGITAL office for information on availability.

OPTIONS	ORDER NUMBER
LICENSE OPTIONS:A LICENSE IS REQUIRED FOR EACH CPU.	
Single-Use License	QJ185-UZ
MATERIALS AND SERVICE OPTIONS:	
Distribution and Documentation Option	QJ185-H3 QJ185-HH QJ185-HM
Software Revision Right-To-Copy Option	QJ185-HZ
Documentation Only Option	QJ185-GZ

Software Product Description

DESCRIPTION

The KMV1A HDLC Framing Software is a package consisting of basic HDLC/SDLC framing firmware, a firmware loader, and an RSX or Micro/RSX device driver for the KMV1A programmable communication controller. The driver, in conjunction with the HDLC/SDLC framing firmware, loader, and the KMV1A hardware, allows the RSX or Micro/RSX Operating System user to perform medium speed synchronous communication in a point-to-point or multi-point environment.

The driver provides the interface for transfer of command, control, and data information between the RSX or Micro/RSX Operating System and the KMV1A basic HDLC/SDLC framing firmware.

The KMV1A driver is full-duplex and maintains internal queues, enabling the supplied firmware, to control to receive and to transmit buffers at the same time. This allows efficient use of the device during transmission and reception of data.

KMV1A HDLC Framing Software was designed according to the specification for HDLC/SDLC frame structure as defined in the ISO 3309 standard.

Driver Features

* Support for RSX-11M, RSX-11M PLUS, RSX-11S and Micro/RSX Operating Systems

* Full-duplex operation

* Loads the HDLC/SDLC framing firmware at load time or after power failure

* Supports the KMV1A selftest for hardware diagnosis

* Supports line configuration and deconfiguration

* Has full modem control or monitors data leads only

* Has secondary station address recognition support for multi-point lines

* Supports DTE clock source from 1200 bps (bits per second) up to 64K bps

Firmware Features

The major features provided by the HDLC/SDLC framing firmware are:

* Basic HDLC framing according to the International Standards Organization standard for the HDLC frame structure, ISO 3309 (1976), with an integral number of 8-bit bytes.

* Basic SDLC framing is also supported in accordance with ISO 3309.

* Direct Memory Access (DMA) for high throughput.

* Line speed can be up to 64K bps with a maximum frame size of 1,030 bytes. Line utilization in full duplex mode depends on frame size and host CPU loading.

MINIMUM HARDWARE REQUIRED

Any valid PDP-11/23-PLUS, PDP-11/23S, MicroPDP-11/23, MicroPDP-11/73, or MicroPDP-11/83 configuration with a minimum of 2k words of additional memory for the driver and 4k words of additional memory for the firmware loader.

* Up to 4 KMV1A-M communication controller module

* One of the following cable kits:

  — CK-KMV1A-AA RS-232 for PDP-11/23S and BA123 cabinet

  — CK-KMV1A-AB RS-232 for BA23 cabinet

  — CK-KMV1A-AC RS-232 for PDP-11/23-PLUS

  — CK-KMV1A-AF RS-232 for H9642 cabinet

  — CK-KMV1A-EA RS-422 for PDP-11/23S and BA123 cabinet

  — CK-KMV1A-EB RS-422 for BA23 cabinet

  — CK-KMV1A-EC RS-422 for PDP-11/23-PLUS

  — CK-KMV1A-EF RS-422 for H9642 cabinet

  — CK-KMV1A-FA RS-423 for PDP-11/23S and BA123 cabinet

  — CK-KMV1A-FB RS-423 for BA23 cabinet

software | **digital**

— CK-KMV1A-FC RS-423 for PDP-11/23-PLUS

— CK-KMV1A-FF RS-423 for H9642 cabinet

* Disk Block Usage:

Disk space required for installation: 330 blocks
                                             (169 kbytes)

Disk space required for use (permanent): 500 blocks
                                             (256 kbytes)

GROWTH CONSIDERATIONS

The minimum hardware requirements for any future version of this product may be different from the minimum hardware requirements for the current version.

OPTIONAL HARDWARE

None

PREREQUISITE SOFTWARE

RSX-11M, RSX-11M-PLUS, RSX-11S, or Micro/RSX Operating System (This software will only run on MicroPDP-11 systems.)

Refer to the appropriate Optional Software Cross Reference Tables for the required versions:

Micro/RSX Optional Software Cross Reference Table (SPD 20.95.xx)
RSX-11M Optional Software Cross Reference Table (SPD 20.98.xx)
RSX-M PLUS Optional Software Cross Reference Table (SPD 20.99.xx)

OPTIONAL SOFTWARE

None

SOFTWARE WARRANTY

Warranty for this software product is provided by DIGITAL with the purchase of a license for the product as defined in the Software Warranty Addendum of this SPD.

INSTALLATION

This software product can be installed by the customer using the step-by-step documentation available for this product.

ORDERING INFORMATION

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No binary is separately available from DIGITAL for this software product. The sources and/or listings option(s) is available for use only on the single CPU on which it is first installed, and after a source license agreement is in effect.

Refer to the Software Options Chart for ordering information.

SOFTWARE OPTIONS CHART

The following key (3, 5, H, X, Z) represents the distribution media for the product and must be specified at the end of the order number, e.g., QJS39-X3 = sources on an RX50 Floppy Diskette.

3 = RX50 Floppy Diskette
5 = TK50 Disk Cartridge
H = 9-track 800 BPI Magtape (NRZI)

X = RX02 Double Density 8'' Diskette
Z = No hardware dependency

OPTIONS	ORDER NUMBER Micro/RSX SYSTEMS	ORDER NUMBER RSX-11M RSX-11M-PLUS RSX-11S SYSTEMS
Single use source license, sources, documentation, warranty	QYS39-X3 QYS39-X5	QJS39-X5 QJS39-XH QJS39-XX
Single-use license-only option	QYS39-DZ	QJS39-DZ
Documentation only option	QYS39-GZ	QJS39-GZ

Software Product Description

DECSRIPTION

MicroPower/Pascal-RSX is an RSX-11M/M-PLUS layered product which belongs to the MicroPower/Pascal product family. MicroPower/Pascal is a modular executive and software development package for PDP-11 (Q-BUS) based microcomputer applications. It includes software components needed to create, build and debug/test concurrent real-time application software running stand-alone on a target runtime microcomputer system.

MicroPower/Pascal is offered in different packaging options according to the Host Development System required. MicroPower/Pascal-RSX requires RSX host development systems. This SPD describes only MicroPower/Pascal-RSX.

MicroPower/Pascal-RSX supports application software development using two distinct hardware environments:

* Host RSX development system

* Target PDP-11 (Q-BUS only) runtime system for the microcomputer application

The application software is created and linked with the appropriate MicroPower/Pascal runtime software components on the host development system. When the application software is ready for debugging/testing, it is transported to the target runtime system. The application software can then be executed in the target runtime system. If a serial line is connected between the host development system and the console port of the target runtime system, the execution of the application software in the target can be controlled and tracked from the host with the help of the debugging tools provided in MicroPower/Pascal-RSX.

The separation of the host development system from the target runtime system allows the user to make use of a high-performance host development system and test the application software in the target runtime environment.

The MicroPower/Pascal-RSX Software Package includes the following components:

* MicroPower/Pascal-RSX Installation/Verification Command Procedures

* Host Development System Software Components
  — Extended Pascal Compiler

— PASDBG Pascal Symbolic Debugger

— MicroPower/Pascal-RSX Utilities

— MPBUILD Application Building Command Procedure

* MicroPower/Pascal Target Runtime System Software

— Modular Real-Time Executive

— Target Runtime Device Handlers

— RT-11 Compatible File System

— Communications Service (Network Services Process)

— Timer Services

— Pascal Object Time System (OTS) for target

An extended version of Pascal is provided as the system implementation language suitable for most user applications. The extensions in the language enable the user to write real-time applications entirely in Pascal; however, MACRO-11 can also be used as the implementation language for sections of code.

All MicroPower/Pascal-RSX components (such as the MicroPower/Pascal-RSX Utilities, Compiler and Debugger) are native RSX tasks. To facilitate the use of MicroPower/Pascal-RSX, MPBUILD, a utility command procedure, is provided. The user specifies the details of the operations desired in a simple question and answer session with the required command procedure. The command procedure then generates the required sequence of RSX commands to perform the user-specified operations.

Features

* Pascal* language with extensions that support concurrent real-time programming

* Pascal Symbolic Debugger (PASDBG) to aid debugging of application programs running on the target runtime system

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* Based upon the ISO Specification for Computer Programming Language Pascal Draft Proposal 7185, Level 0.

software

- Modular target Runtime System Software with sharable language interfaces for both Pascal and MACRO-11. Includes RT-11 compatible file system, communications service, selected device handlers, and executive service routines

- Flexible set of utility programs and command procedures to build and load the application software into target systems

- Installation/Verification Command Procedures simplify installation

- Supports development of applications where the application software will be entirely ROM/RAM resident in the target runtime system

- MPBUILD command procedure to facilitate building application programs

Transporting an application to the target system can be done by:

- Down-line loading via an ansychronous serial line from the host RSX system to the console port of the target microcomputer

- Programming PROM chips and transferring them to the target system (PROM programming hardware and software are not included with this product)

- Manually transferring a bootable application via a TU58 DECtape II cartridge, RX02 diskette, RL01/RL02 cartridge disk, or RX50 diskette

Components

- *Pascal Compiler* - Supports a superset of the Pascal language plus real-time extensions.

- *Runtime System Software* - This consists of a kernel and system processes included in the kit in the form of object libraries. The kernel is a modular executive which supports the following target system features: process synchronization, interprocess communication and scheduling, exception handling, interrupt handling, timer services, and memory management. The system processes consist of device drivers, an RT-11 compatible file system, and communications service. The communications service comprises DECnet end node support on Ethernet and asynchronous serial lines, as well as MicroPower point-to-point on synchronous serial lines. The MACRO-11 interface to the Runtime System Software is included in the form of a macro library. Also included is an extensive library of Object Time System (OTS) routines that provide the above Pascal compiler with runtime support for Pascal functions and arithmetic routines, including floating-point support, utility, I/O and math routines.

- *PASDBG (Pascal Symbolic Debugger)* - Aids debugging of application programs on the target system. It allows users to examine program variables and kernel data structures, and control the execution of the application software on the target runtime system. Also enables users to downline load fully debugged software into the target for standalone execution.

- *Documentation*

  — MicroPower/Pascal-RSX Documentation

MicroPower Utilities

- *MERGE* - Combines user-developed object modules into a single object module, resolving intermodule references

- *RELOC* - Relocates merged object modules to specific virtual memory addresses

- *MIB* - Creates memory image files for execution on the target system. These files can be booted, loaded by the Pascal Symbolic Debugger with an optional symbol file, or used for PROM blasting.

- *COPYB* - Writes a bootstrap for loading application images from a mass-storage device on the target runtime system. Currently supported runtime mass-storage devices include the TU58 DECtape II cartridge, RX02 dual-drive floppy disk system (both single density RX02 diskettes and double density RX02 diskettes are supported), RX50 diskette, and RL01/RL02 cartridge disk systems.

- *MPBUILD Command Procedure* - Automatically generates command files to run COMPILER, MERGE, RELOC, and MIB

MINIMUM HARDWARE REQUIRED

Host Development System

The MicroPower/Pascal-RSX package can be run on any PDP-11 host development system which conforms to the minimum hardware requirements as specified in the RSX-11M Operating System SPD (14.35.xx), or the RSX-11M-PLUS Operating System SPD (14.70.xx), with the following added restrictions:

- 248K bytes memory for RSX-11M systems

- 512K bytes memory for RSX-11M-PLUS systems

- A device capable of reading one of the available distribution media for the product.

- An asynchronous serial line from the host system to the console port of the target microcomputer is needed to use PASDBG for application debugging and to downline load the application software into the target. On the host side, any asynchronous terminal port supported by RSX software may be used for this link.

Storage Requirements:

- System Disk: 100 blocks (51.2K bytes)

- User Disk: 5000 blocks (2560K bytes)

Target Runtime System

MicroPower/Pascal supports application execution on component and packaged microcomputer systems using SBC-11/21, SBC-11/21-PLUS, LSI-11, LSI-11/2, LSI-11/23, LSI-11/73, KXT11-C (IOP), and LSI-11/23-PLUS processors. PDP-11/03, PDP-11/23, PDP-11/23-PLUS, PDP-11/73, PDP-11/83, MicroPDP-11 and CMR21 packaged systems are also supported.

The following memory and peripheral hardware is required:

* Memory - Any combination of RAM and ROM (PROM or EPROM) with a minimum of 4KW RAM and a maximum of 4MB total ROM and RAM. Users should note that these memory requirements could change with future versions of MicroPower/Pascal.

* Serial line interface when using PASDBG

* If the SBC-11/21 is being used as the target processor, the KXT11-A2 ROM chips are required during debugging.

* If the SBC-11/21-PLUS is being used as the target processor, the KXT11-A5 ROM chips are required during debugging.

OPTIONAL HARDWARE

Host System

For optional hardware on host RSX development systems, please refer to the OPTIONAL HARDWARE section of the RSX-11M Operating System SPD (14.35.xx) or the RSX-11M-PLUS Operating System SPD (14.70.xx).

Target Runtime System

MRV11-C, MRV11-D PROM modules

MSV11-D, -L, -P RAM modules

MXV11-A, MXV11-B multifunction modules (includes PROM, RAM, two serial lines, 50/60Hz clock)

DLV11, DLV11-F, -E, and DLVJ1 serial line units (DLVJ1 not supported with RQDX1)

DRV11, DRV11-J parallel line units

DPV11 synchronous serial line unit

ADV11-C analog input module

AAV11-C analog output module

AXV11-C analog input/output module

KWV11-C real-time clock

TU58 DECtape II cartridge tape unit

RXV21 dual-density floppy disk system

RLV12 controller for RL01/RL02 disk cartridge systems

RQDX1 controller for RD51 fixed Winchester disk and RX50 5 1/4" floppy diskette (not supported with DLVJ1)

RQDX2, RQDX3 controllers

RD52, RD53 Winchester disk

KEF11, FPF11 floating point options (for LSI-11/23 microcomputers)

KEV11 EIS/FIS arithmetic option (for LSI-11 or LSI-11/2 microcomputers)

IEQ-11 IEEE-488 interface

KXT11-CA

SBC-11/21 parallel port

DEQNA Ethernet controller

DHV11

DZV11

TK50 (non-file structured)

PREREQUISITE SOFTWARE

RSX-11M or RSX-11M-PLUS Operating System

Refer to the RSX-11M and RSX-11M-PLUS Optional Software Cross Reference Tables (SPD 20.98.xx and SPD 20.99.xx) for the required versions.

OPTIONAL SOFTWARE

A PROM programming utility is currently available for VAX/VMS hosts. This utility will program PROMS from MicroPower/Pascal image (MIM) files.

* VAX DECprom

SOFTWARE WARRANTY

Warranty for this software product is provided by DIGITAL with the purchase of a license for the product as defined in the Software Warranty Addendum of this SPD.

INSTALLATION

This software product can be installed by the customer using the step-by-step documentation available for this product. Optionally you can purchase DIGITAL Installation Services which provide for the installation of the software product by an experienced DIGITAL Software Specialist.

Courtesy Installation Service

This software product will be installed by DIGITAL at no additional charge if you purchase it concurrent with a Startup Service Package that includes installation service. Both the host operating system and this product must be installed concurrently.

ORDERING INFORMATION

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LICENSE OPTIONS

Single-Use License Option

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For your first installation of this software product you must purchase as a **minimum:**

- Single-Use License Option, and

- Distribution and Documentation Option

The license gives you the right to use the software on a single CPU and the Distribution and Documentation Option provides the machine-readable software and related documentation.

To use this software product on additional CPUs, you must purchase for each CPU as a **minimum:**

- Single-Use License Option

In addition to the right to use, the license gives you the one-time right to copy the software from your original CPU installation to the additional CPU. Therefore, the Distribution and Documentation Option is not required, but optional.

Migration Option

Current licensed users of MicroPower/Pascal-RT are eligible for the migration option. This is a Single-Use License offered at a reduced price and provides all of the License rights described above.

For your first installation of this software product you must purchase as a **minimum:**

- Migration Option, and

- Distribution and Documentation Option

To use this software product on additional CPUs currently licensed for MicroPower/Pascal-RT, you must purchase for each CPU as a **minimum:**

- Migration Option

Single-Use License Option For MicroPower/Pascal Target Runtime System Software

If you have MicroPower/Pascal-RSX installed on a CPU fully licensed for that product and you wish to use the MicroPower/Pascal Target Runtime System Software portion of it on an additional CPU, you can purchase a Single-Use License for MicroPower/Pascal Target Runtime System Software. This license gives you the right to use only the MicroPower/Pascal Target Runtime System Software and does not include software warranty.

Distribution and Documentation Option

The Distribution and Documentation option provides the machine-readable software and the basic documentation. You must have, or order, a Single-Use License to obtain this option. You will need this option to install the software for the first time. When revised versions of this software product become available, they may also be obtained by purchasing this option again.

Software Revision Right-To-Copy Option

The Right-To-Copy Option allows a customer with multiple CPUs to copy a revised version of a software product from one CPU to another. Each CPU must be licensed for that product. You first install the revised software on one CPU; then you can make copies for additional CPUs by purchasing the Right-To-Copy Option for each additional CPU.

Documentation-Only Option

The Documentation-Only Option provides one copy of the basic documentation.

Software Product Services

A variety of service options are available. For more information on these or other services, please contact your local DIGITAL office.

SOURCE MATERIALS OPTIONS

You can obtain optional source materials for this software product by signing DIGITAL's Software Program Sources License Agreement and then purchasing the source option(s) you want. The agreement entitles you to use the source materials at one customer facility or location which is specified in the agreement.

Most users do not require source materials. They are used primarily to make modifications to the software product. Source kits provided by DIGITAL do not necessarily contain all source files used by DIGITAL to build binary kits.

Source License and Sources Distribution Option

This option provides you with the machine-readable source code for this software product. It gives you the right to use the source code on any CPU at the facility/location specified in the agreement which has a Single-Use License for the object code.

Sources Distribution Option

This option provides you with the revised version of the machine-readable source code for this software product.

SOFTWARE OPTIONS CHART

The distribution Media Codes used in the Software Options Chart are described below. You specify the desired Media Code at the end of the Order Number, e.g. QP029-HH = binaries on RL02 Disk Cartridge.

D = 9-track 800 BPI Magtape (NRZI)   M = 9-track 1600 BPI Magtape (PE)
H = RL02 Disk Cartridge   Z = No hardware dependency

NOTE: The availability of these software product options and services may vary by country. Customers should contact their local DIGITAL office for information on availability.

OPTIONS	ORDER NUMBER
LICENSE OPTIONS: A LICENSE IS REQUIRED FOR EACH CPU.	
Single-Use License*	QP029-UZ
Single-Use License for MicroPower/Pascal Runtime System Software (Quantity 1)	QJ042-DZ
Single-Use License for MicroPower/Pascal Runtime System Software (Quantity 10)	QJ043-DZ
Single-Use License for MicroPower/Pascal Runtime System Software (Quantity 25)	QJ044-DZ
Single-Use License for MicroPower/Pascal Runtime System Software (Quantity 50)	QJ045-DZ
Single-Use License for MicroPower/Pascal Runtime System Software (Quantity 100)	QJ046-DZ
Single-Use License for MicroPower/Pascal Runtime System Software (Quantity 200)	QJ047-DZ
Single-Use License for MicroPower/Pascal Runtime System Software (Quantity 500)	QJ048-DZ
Migration Option from MicroPower/Pascal-RT	QP030-UZ
MATERIALS AND SERVICE OPTIONS:	
Distribution and Documentation Option	QP029-HD QP029-HH QP029-HM
Software Revision Right-To-Copy Option	QP029-HZ
Documentation Only Option	QP029-GZ

OPTIONS	ORDER NUMBER
Installation Service Option	QP029-ID QP029-IH QP029-IM
Basic Service	QP029-8D QP029-8H QP029-8M
Self-Maintenance Service	QP029-3D QP029-3H QP029-3M
SOURCE MATERIALS OPTIONS:	
Source License and Sources Distribution	QP029-ED QP029-EH QP029-EM
Sources Distribution	QP029-ND QP029-NH QP029-NM

*   Includes a single-use license (QJ042-DZ) for use of the MicroPower/Pascal runtime system software on one target system.

Software Product Description

DESCRIPTION

DECtype is a DECmate-style word processor providing most of the features of DECmate and WPS-8. Experienced WPS or DECmate users can begin using DECtype immediately. DECtype supports the WPS keyboard so that DECtype users can execute most of the editing functions just as they would when using DECmate or WPS-8. DECtype documentation is organized and formatted to closely resemble WPS documentation. Users will be able to quickly learn any features unique to DECtype; WPS or DECmate users do not need to retrain to use DECtype.

DECtype permits concurrent word and data processing in a multi-user environment which extends a data processing system with word processing capabilitites. The DECtype editor creates and maintains documents stored on the full range of disk devices supported by Micro/RSX. Storage available for documents will vary depending upon other data storage requirements on the same disk media.

Features

- Concurrent word processing and data processing
- Center screen editing allowing view of preceding and following text
- Document index includes:

  Document name
  Description of document
  Date document was created
  Date document was modified
  Number of revisions
  Total time spent editing a document
  Number of lines in a document

Document Preparation

- Menu driven operation
- Ten user-defined keys (UDKs) for predetermined repetitive operations that can be recalled with a two keystroke sequence. UDKs allow sequences of frequently used steps to be stored, including repetitive looping and storage of up to 250 keystrokes per UKD.
- Full control of tabs, margins justification and pagination with ragged, or justified margins
- Automatic line centering
- Discretionary pagination control
- Standard, decimal and right aligned tabs
- Automatic page numbering
- Selectable pitch and type fonts
- Underlined and overstruck (bold) printout
- Superscripts, subscripts, and composite characters (where the hardware supports it)
- Running page headers and footers
- Automatic insertion of current date in printed document

Editing Capabilities

- Special editing keypad
- Cut and paste for manipulating portions of text and for transferring text from one document to another
- Automatic word wrapping
- Operations by grammatical entity (character, word, tab position, sentence, paragraph, line, page)
- Stored documents, paragraphs, phrases and abbreviations can be inserted into the document being edited with a few keystrokes
- "Undelete" capability allows retrieval of accidentally deleted text
- Swap function for transposed characters
- Search and replace - Search for a phrase; search and select the phrase found; replace the selected

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phrase with the contents of a paste buffer; search forward, backward, case sensitive or insensitive

* Delete by character and word, rubout by line, sentence, word, or character
* Edit wide documents (132 columns)
* Date and time stamp key for inserting current date and time into text
* Ten stored rulers for repeated settings
* Four function math capability
* Jump to page
* Edit while viewing special control characters
* View the index of documents while editing a document
* "Quit" editing without changing document
* Support for the arrow keys

Printer Utilities

* Ten stored printer settings for repeated use
* Queued printing (spooling) allows printers to be shared by all users without tying up terminals
* Single sheet or continuous forms printing
* Printer management enables users to:

    Add, remove and maintain spoolers (system manager)

    Remove documents from the queue

    Change print priority of documents in a queue

    View the list of documents in the print queue

    View printer status of all defined printers

    Defer a print request

    Print to a terminal connected to a terminal printer port

List Processing

List processing creates customized form letters and reports from stored information (lists).

Lists can be prepared by Micro/RSX DECtype or other data processing programs and merged with a form to create unique and customized documents.

Documentation

DECtype user documentation is written in a clear, consistent style, and is designed for users of varying backgrounds. The documentation includes a tutorial introduction to the product and separate, detailed reference material.

MINIMUM HARDWARE REQUIRED

Any valid Micro/RSX system configuration with 512 KB of memory and RX50 diskette drives or TK50 drives.

When using VT100 terminals, the configuration must include either one VT100-NA or VT100-WA; or VT102-WA terminal with the Advanced Video Option (AVO).

OPTIONAL HARDWARE

* LQP02-AA Letter Quality Printer with LQPX2-AA bidirectional tractor
* Any valid line printer supported by the prerequisite software
* LA100 Letterprinter 100, supported in character mode
* Additional VT100-WAs or VT102-WAs
* Any valid disk storage device supported by the prerequisite software
* VT1XX-CE Keyboard upgrade kit for VT100-NA to VT100-WA

PREREQUISITE SOFTWARE

Micro/RSX Operating System

Refer to the Micro/RSX Optional Software Cross Reference Table (SPD 20.95.xx) for the required version.

OPTIONAL SOFTWARE

None

SOFTWARE WARRANTY

Warranty for this software product is provided by DIGITAL with the purchase of a license for the product as defined in the Software Warranty Addendum of this SPD.

INSTALLATION

This software product can be installed by the customer using the step-by-step documentation available for this product. Optionally you can purchase DIGITAL Installation Services which provide for the installation of the software product by an experienced DIGITAL Software Specialist.

Courtesy Installation Service

This software product will be installed by DIGITAL at no additional charge if you purchase it concurrent with a Startup Service Package that includes installation service. Both the host operating system and this product must be installed concurrently.

ORDERING INFORMATION

Single-Use licensed software 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 DIGITAL's copyright notice and any proprietary notices on the software) for use on same CPU.

You will need a separate license for each CPU on which you will be using the software product (except as otherwise specified by DIGITAL). Then Materials and Service

Options are selected to utilize the product effectively. **THE LICENSE OPTIONS ARE DESCRIBED BELOW. IF YOU ARE NOT FAMILIAR WITH THE SERVICE OPTIONS, YOU MAY OBTAIN THE APPROPRIATE SOFTWARE PRODUCT SERVICE DESCRIPTION(S) FROM YOUR LOCAL DIGITAL OFFICE.** If you are already familiar with these options, you may obtain the ordering information directly from the Software Options Chart.

LICENSE OPTIONS

Single-Use License Option

The Single-Use License is your right to use the software product on a single CPU.

For your first installation of this software product you must purchase as a **minimum:**

* Single-Use License Option, and

* Distribution and Documentation Option

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* Single-Use License Option

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Documentation-Only Option

The Documentation-Only Option provides one copy of the basic documentation.

Software Product Services

A variety of service options are available. For more information on these or other services, please contact your local DIGITAL office.

SOFTWARE OPTIONS CHART

The Distribution Media Codes used in the Software Options Chart are described below. You specifiy the desired Media Code at the end of the Order Number, e.g., QY038-H3 = binaries on RX50 Floppy Diskette.

3 = RX50 Floppy Diskette   5 = TK50 Streaming Tape
Z = No hardware dependency

NOTE: The availability of these software product options and services may vary by country. Customers should contact their local DIGITAL office for information on availability.

OPTIONS	ORDER NUMBER
LICENSE OPTIONS: A LICENSE IS REQUIRED FOR EACH CPU.	
Single-Use License Class H[1]	QP038-UZ
Single-Use License Class L[2]	QY038-UZ
MATERIALS AND SERVICE OPTIONS:	
Distribution and Documentation Option	QY038-H3 QY038-H5
Software Revision Right-To-Copy Option	QY038-HZ
Documentation Only Option	QY038-GZ
Installation Service Option	QY038-I3 QY038-I5
DECsupport Service	QY038-93 QY038-95
Basic Service	QY038-83 QY038-85
Self-Maintenance Service	QY038-33 QY038-35

1. Class H (high-end systems) include:

   All UNIBUS models and systems

   MicroPDP-11/83

2. Class L (low-end systems) include:

   All Q-BUS models and systems except MicroPDP-11/83

   KD11, KDF11, KDJ11 CPU models

   DCT11, DCF11, DCJ11 microprocessor chips

Software Product Description

PRODUCT NAME: MicroPower/Pascal-Micro/RSX, Version 2.2   SPD 18.24.04

DESCRIPTION

MicroPower/Pascal-Micro/RSX is a Micro/RSX layered product which belongs to the MicroPower/Pascal product family. MicroPower/Pascal is a modular executive and software development package for PDP-11 (Q-BUS) based microcomputer applications. It includes software components needed to create, build and debug/test concurrent real-time application software running stand-alone on a target runtime microcomputer system.

MicroPower/Pascal is offered in different packaging options according to the Host Development System required. MicroPower/Pascal-Micro/RSX requires Micro/RSX host development systems. This SPD describes only MicroPower/Pascal-Micro/RSX.

MicroPower/Pascal-Micro/RSX supports application software development using two distinct hardware environments:

* Host Micro/RSX development system

* Target PDP-11 (Q-BUS only) runtime system for the microcomputer application

The application software is created and linked with the appropriate MicroPower/Pascal runtime software components on the host development system. When the application software is ready for debugging/testing, it is transported to the target runtime system. The application software can then be executed in the target runtime system. If a serial line is connected between the host development system and the console port of the target runtime system, the execution of the application software in the target can be controlled and tracked from the host with the help of the debugging tools provided in MicroPower/Pascal-Micro/RSX.

The separation of the host development system from the target runtime system allows the user to make use of a high-performance host development system and test the application software in the target runtime environment.

The MicroPower/Pascal-Micro/RSX Software Package includes the following components:

* MicroPower/Pascal-RSX Installation/Verification Command Procedures

* Host Development System Software Components
  — Extended Pascal Compiler
  — PASDBG Pascal Symbolic Debugger
  — MicroPower/Pascal-Micro/RSX Utilities
  — MPBUILD Application Building Command Procedure

* MicroPower/Pascal Target Runtime System Software
  — Modular Real-Time Executive
  — Target Runtime Device Handlers
  — RT-11 Compatible File System
  — Communications Service (Network Services Process)
  — Timer Services
  — Pascal Object Time System (OTS) for target

An extended version of Pascal is provided as the system implementation language suitable for most user applications. The extensions in the language enable the user to write real-time applications entirely in Pascal; however, MACRO-11 can also be used as the implementation language for sections of code.

All MicroPower/Pascal-Micro/RSX components (such as the MicroPower/Pascal-Micro/RSX Utilities, Compiler and Debugger) are native Micro/RSX tasks. To facilitate the use of MicroPower/Pascal-Micro/RSX, MPBUILD, a utility command procedure, is provided. The user specifies the details of the operations desired in a simple question and answer session with the required command procedure. The command procedure then generates the required sequence of Micro/RSX commands to perform the user-specified operations.

Features

* Pascal* language with extensions that support concurrent real-time programming

* Pascal Symbolic Debugger (PASDBG) to aid debugging of application programs running on the target runtime system

* Based upon the ISO Specification for Computer Programming Language Pascal Draft Proposal 7185, Level 0.

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- Modular target runtime system Software with sharable language interfaces for both Pascal and MACRO-11. Includes RT-11 compatible file system, communications service, selected device handlers, timer services and executive service routines

- Flexible set of utility programs and command procedures to build and load the application software into target systems

- Installation/Verification Command Procedures simplify installation

- Supports development of applications where the application software will be entirely ROM/RAM resident in the target runtime system

- MPBUILD command procedure to facilitate building application programs

Transporting an application to the target system can be done by:

- Down-line loading via an ansynchronous serial line from the host Micro/RSX system to the console port of the target microcomputer

- Programming PROM chips and transferring them to the target system (PROM programming hardware and software are not included with this product.)

- Manually transferring a bootable application via a TU58 DECtape II cartridge, RX02 diskette, RX50 diskette or RL01/RL02 cartridge disk.

Components

- *Pascal Compiler* - Supports a superset of the Pascal language plus real-time extensions.

- *Runtime System Software* - This consists of a kernel and system processes included in the kit in the form of object libraries. The kernel is a modular executive which supports the following target system features: process synchronization, interprocess communication and scheduling, exception handling, interrupt handling, timer services, and memory management. The system processes consist of device drivers, an RT-11 compatible file system, and communications service. The communications service comprises DECnet end node support on Ethernet and asynchronous serial lines, as well as MicroPower point-to-point on synchronous serial lines. The MACRO-11 interface to the Runtime System Software is included in the form of a macro library. Also included is an extensive library of Object Time System (OTS) routines that provide the above Pascal compiler with runtime support for Pascal functions and arithmetic routines, including floating-point support, utility, I/O and math routines.

- *PASDBG (Pascal Symbolic Debugger)* - Aids debugging of application programs on the target system. It allows users to examine program variables and kernel data structures, and control the execution of the application software on the target runtime system. Also enables users to downline load fully debugged software into the target for standalone execution.

- Documentation

  — MicroPower/Pascal-Micro/RSX Documentation

MicroPower Utilities

- *MERGE* - Combines user-developed object modules into a single object module, resolving intermodule references

- *RELOC* - Relocates merged object modules to specific virtual memory addresses

- *MIB* - Creates memory image files for execution on the target system. These files can be booted, loaded by the Pascal Symbolic Debugger with an optional symbol file, or used for PROM blasting.

- *COPYB* - Writes a bootstrap for loading application images from a mass-storage device on the target runtime system. Currently supported runtime mass-storage devices include the TU58 DECtape II cartridge, RX02 dual-drive floppy disk system (both single density RX02 diskettes and double density RX02 diskettes are supported), RX50 floppy diskette and RL01/RL02 cartridge disk systems.

- *MPBUILD Command Procedure* - Automatically generates command files to run COMPILER, MERGE, RELOC, and MIB

MINIMUM HARDWARE REQUIRED

Host Development System

The MicroPower/Pascal-Micro/RSX package can be run on any MicroPDP-11 host development system which conforms to the minimum hardware requirements as specified in the Micro/RSX SPD (14.28.xx) with the following added restrictions:

- 512K bytes memory for Micro/RSX systems

- RX50 diskette drive to read distribution media

- An asynchronous serial line from the host system to the console port of the target microcomputer is needed to use PASDBG for application debugging and to downline load the application software into the target. On the host side, any asynchronous terminal port supported by Micro/RSX software may be used for this link.

Storage Requirements:

- System Disk: 100 blocks (51.2K bytes)

- User Disk: 5000 blocks (2560K bytes)

Target Runtime System

MicroPower/Pascal supports application execution on component and packaged microcomputer systems using SBC-11/21, SBC-11/21-PLUS, LSI-11, LSI-11/2, LSI-11/23, LSI-11/73, KXT11-C (IOP), and LSI-11/23-PLUS processors. PDP-11/03, PDP-11/23, PDP-11/23-PLUS, PDP-11/73, PDP-11/83, MicroPDP-11 and CMR21 packaged systems are also supported.

The following memory and peripheral hardware is required:

- Memory - Any combination of RAM and ROM (PROM or EPROM) with a minimum of 4KW RAM and a maximum of 4MB total ROM and RAM. Users should note that these memory requirements could change with future versions of MicroPower/Pascal.

* Serial line interface when using PASDBG

* If the SBC-11/21 is being used as the target processor, the KXT11-A2 ROM chips are required during debugging.

* If the SBC-11/21-PLUS is being used as the target processor, the KXT11-A5 ROM chips are required during debugging.

OPTIONAL HARDWARE

Host System

For optional hardware on host Micro/RSX development systems, please refer to the OPTIONAL HARDWARE section of the Micro/RSX SPD (14.28.xx).

Target Runtime System

MRV11-C, MRV11-D PROM modules

MSV11-D, -L, -P RAM modules

MXV11-A, MXV11-B Multifunction modules (includes PROM, RAM, two serial lines, 50/60Hz clock)

DLV11, DLV11-F, -E, DLVJ1 serial line units (DLVJ1 not supported with RQDX1)

DRV11, DRV11-J parallel line units

DPV11 synchronous serial line unit

ADV11-C analog input module

AAV11-C analog output module

AXV11-C analog input/output module

KWV11-C real-time clock

TU58 DECtape II cartridge tape unit

RXV21 dual-density floppy disk system

RLV12 controller for RL01/RL02 disk cartridge systems

RQDX1 controller for RD51 fixed Winchester disk and RX50 5 1/4" floppy diskette (not supported with DLVJ1)

RQDX2, RQDX3 controllers

RD52, RD53 Winchester disk

KEF11, FPF11 floating point options (for LSI-11/23 microcomputers)

KEV11 EIS/FIS arithmetic option (for LSI-11 or LSI-11/2 microcomputers)

IEQ-11 IEEE-488 interface

KXT11-CA

SBC-11/21 parallel port

DEQNA Ethernet controller

DHV11

DZV11

TK50 (non-file structured)

PREREQUISITE SOFTWARE

* Micro/RSX Base Kit

* Micro/RSX Advanced Programmer's Kit

Refer to the Micro/RSX Optional Software Cross Reference Table (SPD 20.95.xx) for the required versions.

OPTIONAL SOFTWARE

A PROM programming utility is currently available for VAX/VMS hosts. This utility will program PROMS from MicroPower/Pascal image (MIM) files.

* VAX DECprom

SOFTWARE WARRANTY

Warranty for this software product is provided by DIGITAL with the purchase of a license for the product as defined in the Software Warranty Addendum of this SPD.

INSTALLATION

This software product can be installed by the customer using the step-by-step documentation available for this product. Optionally you can purchase DIGITAL Installation Services which provide for the installation of the software product by an experienced DIGITAL Software Specialist.

Courtesy Installation Service

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ORDERING INFORMATION

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You will need a separate license for each CPU on which you will be using the software product (except as otherwise specified by DIGITAL). Then Materials and Service Options are selected to utilize the product effectively. **THE LICENSE OPTIONS ARE DESCRIBED BELOW. IF YOU ARE NOT FAMILIAR WITH THE SERVICE OPTIONS, YOU MAY OBTAIN THE APPROPRIATE SOFTWARE PRODUCT SERVICE DESCRIPTION(S) FROM YOU LOCAL DIGITAL OFFICE.** If you are already familiar with these options, you may obtain the ordering information directly from the Software Options Chart.

LICENSE OPTIONS

Single-Use License Option

The Single-Use License is your right to use the software product on a single CPU.

For your first installation of this software product you must purchase as a **minimum**:

* Single-Use License Option, and

* Distribution and Documentation Option

The license gives you the right to use the software on a single CPU and the Distribution and Documentation

Option provides the machine-readable software and related documentation.

To use this software product on additional CPUs, you must purchase for each CPU as a **minimum:**

*   Single-Use License Option

In addition to the right to use, the license gives you the one-time right to copy the software from your original CPU installation to the additional CPU. Therefore, the Distribution and Documentation Option is not required, but optional.

Single-Use License Option For MicroPower/Pascal Target Runtime System

If you have MicroPower/Pascal-Micro/RSX installed on a CPU fully licensed for that product and you wish to use the MicroPower/Pascal Target Runtime System Software portion of it on an additional CPU, you can purchase a Single-Use License for MicroPower/Pascal Target Runtime System Software. This license gives you the right to use only the MicroPower/Pascal Target Runtime System Software and does not include software warranty.

Distribution and Documentation Option

The Distribution and Documentation option provides the machine-readable software and the basic documentation. You must have, or order, a Single-Use License to obtain this option. You will need this option to install the software for the first time. When revised versions of this software product become available, they may also be obtained by purchasing this option again.

Software Revision Right-To-Copy Option

The Right-To-Copy Option allows a customer with multiple CPUs to copy a revised version of a software product from one CPU to another. Each CPU must be licensed for that product. You first install the revised software on one CPU; then you can make copies for additional CPUs by purchasing the Right-To-Copy Option for each additional CPU.

Documentation-Only Option

The Documentation-Only Option provides one copy of the basic documentation.

Software Product Services

A variety of service options are available. For more information on these or other services, please contact your local DIGITAL office.

SOURCE MATERIALS OPTIONS

You can obtain optional source materials for this software product by signing DIGITAL's Software Program Sources License Agreement and then purchasing the source option(s) you want. The agreement entitles you to use the source materials at one customer facility or location which is specified in the agreement.

Most users do not require source materials. They are used primarily to make modifications to the software product. Source kits provided by DIGITAL do not necessarily contain all source files used by DIGITAL to build binary kits.

Source License and Sources Distribution Option

This option provides you with the machine-readable source code for this software product. It gives you the right to use the source code on any CPU at the facility/location specified in the agreement which has a Single-Use License for the object code.

Sources Distribution Option

This option provides you with the revised version of the machine-readable source code for this software product.

SOFTWARE OPTIONS CHART

MicroPower/Pascal-Micro/RSX is only available on RX50 Floppy Diskette.

NOTE: The availability of these software product options and services may vary by country. Customers should contact their local DIGITAL office for information on availability.

OPTIONS	ORDER NUMBER
LICENSE OPTIONS: A LICENSE IS REQUIRED FOR EACH CPU.	
Single-Use License*	QY029-UZ
Single-Use License for MicroPower/Pascal Runtime System Software (Quantity 1)	QJ042-DZ
Single-Use License for MicroPower/Pascal Runtime System Software (Quantity 10)	QJ043-DZ
Single-Use License for MicroPower/Pascal Runtime System Software (Quantity 25)	QJ044-DZ
Single-Use License for MicroPower/Pascal Runtime System Software (Quantity 50)	QJ045-DZ
Single-Use License for MicroPower/Pascal Runtime System Software (Quantity 100)	QJ046-DZ
Single-Use License for MicroPower/PascalRuntime System Software (Quantity 200)	QJ047-DZ
Single-Use License for MicroPower/Pascal Runtime System Software (Quantity 500)	QJ048-DZ
MATERIALS AND SERVICE OPTIONS:	
Distribution and Documentation Option	QY029-H3
Software Revision Right-To-Copy Option	QY029-HZ
Documentation Only Option	QY029-GZ
Installation Service Option	QY029-I3
Basic Service	QY029-83
Self-Maintenance Service	QY029-33
SOURCE MATERIALS OPTIONS:	
Source License and Sources Distribution	QY029-E3
Sources Distribution	QY029-N3

*   Includes a single-use license (QJ042-DZ) for use of the MicroPower/Pascal runtime system software on one target system.

Software Product Description

DESCRIPTION

The VSV21 Support Software is the software and firmware component of the VSV21 Q-22 Bus Color Graphics Module. The VSV21 Module requires some elements of its software to be down-loaded prior to operation; in particular, certain code must be loaded into the module to allow on-board interpretation of graphics display commands. The VSV21 Support Software is a necessary option to enable use of the extensive capabilities of the VSV21 Module.

The VSV21 Support Software comprises the following components:

* Device Driver
* Software Modules
* Configuration and Control Utility Program (VCP)
* Installation Verification Procedure (IVP)
* VIVID Subroutine Library (VSL)

The firmware modules, which are loaded into the VSV21 Module using the VCP, allow VT100/VT220 terminal emulation, VSV11 emulation or VSV21 VIVID display list processing.

Terminal Emulation

The VSV21 Module provides a serial port for connection to the host processor via the system console port or any other suitable serial port.

The VT100 emulation operates via the host serial communications port of the VSV21 Module. Sufficient logic is resident within the module to enable the VSV21 to be used as the system console on power-up of the system.

The emulation provides all the main features required to support DIGITAL standard utilities, certain VT220 features, and VT100 emulation, except the following:

* VT100 set-up mode
* Selectable tabs
* Interlace operation
* Advanced Video Option (AVO)
* Double height, double width characters

* Changes to host terminal port options
* VT52 emulation and special ROMs
* 132-column operation
* Full screen reverse video

The following VT220 emulation features are provided:

* 8-bit multinational character sets
* Compose key
* Function keys

VSV11 Emulation

Utilizing the VCP, software modules may be down-loaded into the VSV21 Module to provide emulation of the following fixed VSV11 hardware configuration:

* Single channel display
* one or two image memory modules
* Single sync board

VSV11 features not supported by emulation include:

* Dynamics
* VSV11 color look-up option
* Direct register access
* Wrap
* Difference bitmaps

VSV21 Instructions for Visual Display VIVID

Utilizing the VCP, software modules may be down-loaded into the VSV21 module to provide extensive display list processing as an alternative to VSV11 emulation.

VSV21 Serial Port Device Drivers (Pointing and General)

Device Drivers are provided which support a specified range of pointing devices and other serial peripherals attached to two of the VSV21's serial ports. (Refer to the current Technical Data Sheet for further details).

VSV21 Device Driver

The normal interface between the host software and the VSV21 Module is the VSV21 Device Driver which provides for up to four VSV21 Modules on one host processor.

software digital

This loadable Device Driver provides an emulation of the VSV11 Device Driver at QIO function level and the GLUN$ system service. This allows existing VSV11 applications software which complies with the constraints described above to run without source code change once the VSV21 Module has been configured for VSV11 Emulation (Refer to the Configuration and Control Utility (VCP)).

The VSV21 Device Driver also permits use of VSV21 in VIVID display list processing and provides a device control interface to allow loading of the on-board software and certain changes in the configuration of the on-board software.

Device error logging is provided to enable service personnel to monitor results of VSV21 Module self-test and potential driver to on-board software interface problems. The Device Driver also provides protection against unauthorized configuration changes by requiring certain functions to be issued by a privileged user.

Configuration and Control Utility (VCP)

The Configuration and Control Utility provides the facility to down-load the VSV21 software modules to a VSV21 Module (up to eight VSV21 Modules are supported).

VCP commands use a straightforward syntax and may be entered directly from a system terminal, which may be a VSV21 in VT220 emulation mode, or may be included in the system or user start-up file. In order to operate correctly, the VCP requires that the software modules are available to it within the system library area.

To assist system security the VCP may only be operated from a system account.

In addition to the down-loading of on-board software, the VCP provides the facility to modify certain characteristics of the VSV21 Module's serial port(s) operation, VSV11 and VT220 Emulation.

The system manager can alter certain operational characteristics of the VSV21 device which may optionally retain their setting upon system power-down.

Installation Verification Procedure (IVP)

The Installation Verification Procedure is provided as an aid to the user in testing that the VSV21 Module has been correctly installed and is operational.

MINIMUM HARDWARE REQUIRED

* Micro/RSX system configuration with a minimum of 30K words of memory and at least one disk storage device
* RX50 drive is required
* At least one (maximum of four) VSV21 Modules
* Block space requirement (Block Cluster Size =1):

Disk space required for installation   1500 blocks
                                            (768K bytes)
Disk space required for use (permanent)
                                            1500 blocks
                                            (768K bytes)

These block counts refer to the disk space required on the system disk. The sizes are approximate; actual sizes may vary depending on the user's system environment, configuration, and software options selected.

GROWTH CONSIDERATIONS

The minimum hardware required for any future version of this product may be different from the minimum hardware requirements for the current version.

OPTIONAL HARDWARE

* LK201 keyboard (Required if the VSV21 Module is to be used as an emulated VT220 Terminal)
* A DIGITAL-suggested color monitor
* A DIGITAL-suggested pointing device

PREREQUISITE SOFTWARE

Micro/RSX Operating System (including Advanced Programmer's Kit)

Refer to the Micro/RSX Optional Software Cross Reference Table (SPD 20.95.xx) for the required version.

OPTIONAL SOFTWARE

None

SOFTWARE WARRANTY

Warranty for this software product is provided by DIGITAL with the purchase of a license for the product as defined in the Software Warranty Addendum of this SPD.

INSTALLATION

This software product can be installed by the customer using the step-by-step documentation available for this product. Optionally you can purchase DIGITAL Installation Services which provide for the installation of the software product by an experienced DIGITAL Software Specialist.

ORDERING INFORMATION

Single-Use licensed software 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 DIGITAL's copyright notice and any proprietary notices on the software) for use on same CPU.

You will need a separate license for each CPU on which you will be using the software product (except as otherwise specified by DIGITAL). Then Materials and Service Options are selected to utilize the product effectively. **THE LICENSE OPTIONS ARE DESCRIBED BELOW. IF YOU ARE NOT FAMILIAR WITH THE SERVICE OPTIONS, YOU MAY OBTAIN THE APPROPRIATE SOFTWARE PRODUCT SERVICE DESCRIPTION(S) FROM YOUR LOCAL DIGITAL OFFICE.**If you are already familiar with these options, you may obtain the ordering information directly from the Software Options Chart.

LICENSE OPTIONS

Single-Use License Option

The Single-Use License is your right to use the software product on a single CPU.

For your first installation of this software product you must purchase as a **minimum:**

* Single-Use License Option, and

* Distribution and Documentation Option

The license gives you the right to use the software on a single CPU and the Distribution and Documentation Option provides the machine-readable software and related documentation.

To use this software product on additional CPUs, you must purchase for each CPU as a **minimum:**

* Single-Use License Option

In addition to the right to use, the license gives you the one-time right to copy the software from your original CPU installation to the additional CPU. Therefore, the Distribution and Documentation Option is not required, but optional.

Distribution and Documentation Option

The Distribution and Documentation option provides the machine-readable software and the basic documentation. You must have, or order, a Single-Use License to obtain this option. You will need this option to install the software for the first time. When revised versions of this software product become available, they may also be obtained by purchasing this option again.

Software Revision Right-To-Copy Option

The Right-To-Copy Option allows a customer with multiple CPUs to copy a revised version of a software product from one CPU to another. Each CPU must be licensed for that product. You first install the revised software on one CPU; then you can make copies for additional CPUs by purchasing the Right-To-Copy Option for each additional CPU.

Documentation-Only Option

The Documentation-Only Option provides one copy of the basic documentation.

Software Product Services

A variety of service options are available. For more information on these or other services, please contact your local DIGITAL office.

SOFTWARE OPTIONS CHART

Micro/RSX VSV21 Support Software is available only on RX50 Floppy Diskette.

NOTE: The availability of these software product options and services may vary by country. Customers should con-
        tact their local DIGITAL office for information on availability.

OPTIONS	ORDER NUMBER
LICENSE OPTIONS: A LICENSE IS REQUIRED FOR EACH CPU.	
Single-Use License	QY185-UZ
MATERIALS AND SERVICE OPTIONS:	
Distribution and Documentation Option	QY185-H3
Software Revision Right-To-Copy Option	QY185-HZ
Documentation Only Option	QY185-GZ

Software
Product
Description

Micro/RSX Optional Software Cross Reference Table   **SPD 20.95.15**

This table has been prepared to assist in determining which Micro/RSX optional software products are supported by Versions 1.1 and 3.0 of the Micro/RSX Base System. Refer to the appropriate SPD for all other details on a particular product.

Optional Software	Micro/RSX (SPD 14.28.xx)		
	SPD No.	V1.1	V3.0
A-to-Z Base System for MicroPDP-11	18.16.xx	1.5†	2.0†
CMR21 Host Utility	30.39.xx	–	1.1
DECmail-11 (RSX)	13.27.xx	2.0	2.0
DECnet-Micro/RSX	18.27.xx	–	1.0
DECserver 100 Terminal Server	30.43.xx	–	1.2
Ethernet Terminal Server	30.43.xx	–	2.1
IEX-RSX-Driver	12.68.xx	2.0	2.0
Micro/RSX 2780/3780 Emulator	18.32.xx	–	1.0
Micro/RSX 3271 Protocol Emulator	18.33.xx	–	1.0
MicroPower/Pascal-Micro/RSX	18.24.xx	2.0	2.2
Micro/RSX Advanced Programmer's Kit	14.28.xx	1.0	3.0
Micro/RSX BASIC-PLUS-2	18.06.xx	2.3	2.3
Micro/RSX COBOL-81	18.03.xx	2.3	2.4
Micro/RSX DATATRIEVE-11	18.15.xx	1.0	3.1
Micro/RSX DECgraph-11	13.26.xx	1.2	1.2
Micro/RSX DECtype	18.14.xx	3.0	3.1
Micro/RSX DIBOL	18.05.xx	1.1	1.2
Micro/RSX FORTRAN-77	18.04.xx	5.0	5.0
Micro/RSX FMS-11	18.34.xx	1.0	1.0
Micro/RSX PDP-11 PASCAL	18.07.xx	1.1	1.2
Micro/RSX PDP-11 Symbolic Debugger (Formerly Micro/RSX FORTRAN-77 DEBUG)	14.79.xx	–	2.0

software **digital**

Optional Software	Micro/RSX (SPD 14.28.xx)		
	SPD No.	V1.1	V3.0
Micro/RSX SORT/MERGE	18.13.xx	3.0	3.0
Micro/RSX VSV21 Support Software	18.47.xx	–	2.0
Multiuser Digital Accounting System Starter Kit for Micro/RSX	18.39.xx	–	3.0
Peripheral Processor Tool Kit Micro/RSX (Formerly KXT11-CA Peripheral Processor Tool Kit/RSX)	18.48.xx	–	2.0
RAINBOW CONNECTION Software	50.17.xx	–	1.0
RTEM-11	15.63.xx	–	2.2

* These products are currently being scheduled for certification.

† The Micro/RSX Base System is an integral part of this product.

Software
Product
Description

RSX-11M Optional Software Cross Reference Table   **SPD 20.98.32**

This table has been prepared to assist in determining which RSX-11M optional software products are supported by Versions 4.1 and 4.2 of RSX-11M. Refer to the appropriate SPD for all other details on a particular product.

For some products this table may indicate support on operating system versions other than those stated in the product's SPD. In such cases, this table takes precedence.

Optional Software	RSX-11M (SPD 14.35.xx)		
	SPD No.	V4.1	V4.2
ADF01/RSX Subroutine Library	13.33.xx	1.0	1.0*
BASIC-PLUS-2 for RSX-11M and RSX-11M-PLUS, PDP-11	14.11.xx	2.3	2.3
BCP	14.72.xx	1.0	1.0
CMR11/CMV11 Software Driver	14.76.xx	3.0	3.0
CMR21 Host Utility	30.39.xx	1.1	1.1
COBOL PDP-11	12.40.xx	4.4	4.4
COBOL-81/RSX	14.26.xx	2.3	2.4
DATATRIEVE-11	12.48.xx	3.0	3.1
DECdx/RSX	13.39.xx	1.0	1.0
DECnet Router Server	30.34.xx	1.1	1.1
DECnet-11M	10.75.xx	4.0	4.2
DPM Software	15.06.xx	4.1	4.1
DRU11-C RSX-11 Driver	13.35.xx	4.2	4.2
DRX11-C/RSX Driver	12.72.xx	4.5	4.5*
DT07-11M/M-PLUS	14.36.xx	2.0	2.0

digital
software

Optional Software	RSX-11M (SPD 14.35.xx)		
	SPD No.	V4.1	V4.2
FMS-11/RSX	12.27.xx	1.0	2.0
FORTRAN IV/RSX	14.63.xx	2.6	2.6
FORTRAN-77/RSX, PDP-11	14.31.xx	5.0	5.0
IEC11-M	14.64.xx	3.0	3.0
IEX-RSX-Driver	12.68.xx	2.0	2.1
IP11 Industrial I/O Subsystem Handler	15.07.xx	–	4.0
IXV-11/RSX Driver	13.34.xx	1.0	1.0*
KMC11 TOOLS	12.49.xx	1.0	1.0*
KMS11 RSX X.25 LAPB Link Level Software	13.42.xx	1.0	2.0
KMV11 RSX X.25 LAPB Link Level Software	13.43.xx	1.0	1.0
KMV11-A Development Tools	13.41.xx	1.0	1.0
KMV11-A HDLC Framing Software	14.22.xx	1.0	1.0
LCP01 Software	30.46.xx	–	1.0
LSP-11	15.44.xx	1.2	1.2
MicroPower/Pascal-RSX	14.83.xx	1.5	2.2
MIOS-11/RSX Driver	10.07.xx	4.3	4.3
MUX200/RSX-IAS	10.77.xx	2.1	2.1*
PASCAL/RSX, PDP-11	14.18.xx	1.1	1.2
PDP-11 Symbolic Debugger/RSX (Formerly FORTRAN-77 DEBUG/RSX)	12.78.xx	–	2.0
Peripheral Processor Tool Kit-RSX (Formerly KXT11-CA Peripheral Processor Tool Kit/RSX)	13.25.xx	–	2.0
PLXY-11M	14.39.xx	1.3	1.3
Professional Host Tool Kit	30.28.xx	2.0	3.0
Professional Host Tool Kit BASIC-PLUS-2	30.27.xx	2.3	2.3
Professional Host Tool Kit COBOL-81	30.31.xx	2.3	2.4
Professional Host Tool Kit DIBOL	30.26.xx	1.6	1.7
Professional Host Tool Kit FORTRAN-77	30.38.xx	5.0	5.0

Optional Software	RSX-11M (SPD 14.35.xx)		
	SPD No.	V4.1	V4.2
Professional Host Tool Kit Pascal	30.30.xx	1.2	1.2*
Professional Host Tool Kit PDP-11 Symbolic Debugger (Formerly Professional Host Tool Kit FORTRAN-77 DEBUG)	30.42.xx	–	2.0
RGL/11	14.62.xx	1.1	1.1
RPG II, PDP-11	13.21.xx	8.8	8.8
RSX-11 2780/3780 Emulator	10.01.xx	4.1	4.1
RSX-11 PSI/M	10.42.xx	2.0	2.1
RSX-11/3271 Protocol Emulator	10.88.xx	3.0	3.1
RSX-11M/FORTRAN Enhancement Package for MINC (FEP)	14.44.xx	1.2†	1.3†
RSX-11M/FORTRAN Real-Time Package for MINC (FRP)	14.74.xx	1.1†	1.2†
RSX-11M/M-PLUS RJE/HASP	10.48.xx	1.3	1.3
RSX-11S	09.21.xx	4.1	4.2
RSX-11 TSU05 Device Driver	12.77.xx	1.0	1.0
RTEM-11	15.63.xx	2.0	2.2
SORT/MERGE, PDP-11	12.07.xx	3.0	3.0
SSP-11	15.45.xx	1.3	1.3
UN1004/RSX	10.79.xx	2.0	2.0*
VSV11-M/M-PLUS Driver	14.53.xx	2.2	2.3

*   These products are currently scheduled for certification.

†   RSX-11M required for upgrades only.

Software
Product
Description

RSX-11M-PLUS Optional Software Cross Reference Table   **SPD 20.99.31**

This table has been prepared to assist in determining which RSX-11M-PLUS optional software products are supported by Versions 2.1 and 3.0 of RSX-11M-PLUS. Refer to the appropriate SPD for all other details on a particular product.

For some products this table may indicate support on operating system versions other than those stated in the product's SPD. In such cases, this table takes precedence.

Optional Software	RSX-11M-PLUS (SPD 14.70.xx)		
	SPD No.	V2.1	V3.0
ADF01/RSX Subroutine Library	13.33.xx	1.0	1.0*
A-to-Z Base System for UNIBUS PDP-11	13.29.xx	—	2.0
BASIC-PLUS-2 for RSX-11M and RSX-11M-PLUS, PDP-11	14.11.xx	2.3	2.3
CMR11/CMV11 Software Driver	14.76.xx	3.0	3.0
CMR21 Host Utility	30.39.xx	1.1	1.1
COBOL, PDP-11	12.40.xx	4.4	4.4
COBOL-81/RSX	14.26.xx	2.3	2.4
DATATRIEVE-11	12.48.xx	3.0	3.1
DECdx/RSX	13.39.xx	1.0	1.0
DECmail-11 (RSX)	13.27.xx	2.0	2.0
DECnet Router Server	30.34.xx	1.1	1.1
DECnet-11M-PLUS	10.66.xx	2.0	3.0
DECserver 100 Terminal Server	30.43.xx	—	1.2
DPM-PLUS SOFTWARE	15.11.xx	1.1	1.1
DRU11-C RSX-11 Driver	13.35.xx	4.2	4.2
DRX11-C/RSX Driver	12.72.xx	4.5	4.5*

digital
software

Optional Software	RSX-11M-PLUS (SPD 14.70.xx)		
	SPD No.	V2.1	V3.0
DT07-11M/M-PLUS	14.36.xx	2.0	2.0
Ethernet Terminal Server	30.35.xx	–	2.1
FMS-11/RSX	12.27.xx	1.0	2.0
FORTRAN IV/RSX	14.63.xx	2.6	2.6
FORTRAN-77/RSX, PDP-11	14.31.xx	5.0	5.0
IEC11-M	14.64.XX	3.0	3.0
IEX-RSX-Driver	12.68.xx	2.0	2.0
IP11 Industrial I/O Subsystem Software Driver	15.07.xx	–	4.0
IXV-11/RSX Driver	13.34.xx	1.0	1.0*
KMS11 RSX X.25 LAPB Link Level Software	13.42.xx	1.0	2.0
KMV11 RSX X.25 LAPB Link Level Software	13.43.xx	1.0	1.0
KMV11-A Development Tools	13.41.XX	1.0	1.0
KMV11-A HDLC Framing Software	14.22.xx	1.0	1.0
LCP01 Software	30.46.xx	–	1.0
MicroPower/PASCAL-RSX	14.83.xx	2.0	2.2
MIOS-11/RSX Driver	10.07.xx	4.3	4.3
MUX200/RSX-IAS	10.77.xx	2.1	2.1*
PASCAL/RSX, PDP-11	14.18.xx	1.1	1.2
PDP-11 Symbolic Debugger/RSX (Formerly FORTRAN-77 DEBUG/RSX)	12.78.xx	–	2.0
Peripheral Processor Tool Kit-RSX (Formerly KXT11-CA Peripheral Processor Tool Kit/RSX)	13.25.xx	–	2.0
PLXY-11M-PLUS	14.71.xx	1.3	1.3
Professional Host Tool Kit	30.28.xx	2.0	3.0
Professional Host Tool Kit BASIC-PLUS-2	30.27.xx	2.3	2.3
Professional Host Tool Kit COBOL-81	30.31.xx	2.3	2.4
Professional Host Tool Kit DIBOL	30.26.xx	1.6	1.7

Optional Software	RSX-11M-PLUS (SPD 14.70.xx)		
	SPD No.	V2.1	V3.0
Professional Host Tool Kit FORTRAN-77	30.38.xx	5.0	5.0
Professional Host Tool Kit Pascal	30.30.xx	1.2	1.2*
Professional Host Tool Kit PDP-11 Symbolic Debugger (Formerly Professional Host Tool Kit FORTRAN-77 DEBUG)	30.42.xx	–	2.0
RAINBOW CONNECTION Software	50.17.xx	–	1.0
RPG II, PDP-11	13.21.xx	8.8	8.8
RSX-11 PSI/M-PLUS	10.43.xx	2.0	2.1
RSX-11 2780/3780 Emulator	10.01.xx	4.1	4.1
RSX-11/3271 Protocol Emulator	10.88.xx	3.0	3.1
RSX-11M-PLUS DECgraph-11	13.26.xx	1.2	1.2
RSX-11M-PLUS DECtype	14.82.xx	3.0	3.1
RSX-11M-PLUS DIBOL	14.24.xx	1.1	1.2
RSX-11M/M-PLUS RJE HASP	10.48.xx	1.3	1.3
RSX-11M-PLUS VSV21 Support Software	13.65.xx	—	2.0
RSX-11S	09.21.xx	4.1	4.2
RSX-11 TSU05 Device Driver	12.77.xx	1.0	1.0
RTEM-11	15.63.xx	2.0	2.2
SORT/MERGE, PDP-11	12.07.xx	3.0	3.0
VSV11-M/M-PLUS Driver	14.53.xx	2.2	2.3

* These products are currently scheduled for certification.

SOFTWARE PERFORMANCE REPORT (SPR) SUBMISSIONS

Digital Equipment Corporation guarantees a response to every SPR submitted by DIGITAL specialists and customers who purchase software product service agreements.

Blank SPR forms are available upon request in desired quantities from SPR Administration. P.O. Box F, Maynard, MA 01754, or your local DIGITAL office.

Inquiries on the progress of submitted SPRs should be directed to your local DIGITAL office or SPR Administration at (617) 493-4722.

An SPR Answer Survey Card is enclosed with each SPR response. Please complete the survey card; it provides essential feedback for monitoring the quality of our SPR responses.

Completing an SPR Form

Complete the entire form by either typing or printing clearly. Remove "Customer File Copy" for your records. Leave carbon in tact.

Include customer name and **complete** mailing address.

To expedite the processing of your SPR, enter your **Customer Number** in the space provided. This number is located in the upper left-hand corner of your Dispatch label. It can also be obtained from your local DIGITAL office or by calling SPR Administration at (617) 493-6683.

If you do not want your SPR to be published, check the "DO NOT PUBLISH" box on the SPR form. However, if the SPR is determined to be of universal value and it does not describe a security problem, DIGITAL may elect to publish it. For SPRs which describe security problems, it is imperative that the "DO NOT PUBLISH" box be marked.

Describe one problem per SPR form. If an SPR is submitted with more than one problem, it can lengthen the turnaround time.

State the problem clearly. If necessary, summarize the problem. then describe in detail.

Include all the information needed to reproduce the problem. The easiest problems to fix are those reported in statements similar to the following: if you do X. Y happens when Z should.

State all version numbers and all inserted patches. The problem can be fixed sooner if the version is known. Please include the operating system version even on operating system SPRs, since operating system bugs sometimes manifest themselves as "bugs" in other programs. A statement of patches inserted in the relevant software is also helpful. State the type of terminal or work station on which the software is running, e.g., VT100. VT220. PRO 350. DECmate.

Include as much information as possible; too much information is better than not enough. Send all information in machine-readable format if it occupies more than half a page. Please include the following:

1. Program causing the problems

2. All necessary auxiliary files, such as DBMS or LIBRARY files

3. Assembly switches which are on (if applicable)

4. Switches handed to the software, since different switches cause different sections of the code to be executed

5. All necessary run-time files for language run-time problems

6. A directory listing of media, when included; label media carefully

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SUGGESTIONS FOR SUBMITTING TAPES WITH SPRs

To insure timely processing of SPRs submitted with tapes, please follow the suggestions below:

1. Use either a floppy or a magnetic tape.

2. If a magnetic tape is used, it should be either 800, 1600, or 6250 bpi.

3. Include a directory with each tape submitted.

4. Label each tape with the following information:

   a. Customer name
   b. Tape format
   c. bpi
   d. Track
   e. Preprinted number of the SPR submitted with the tape

5. Remove from the tape any unnecessary or confidential files.

Thank you.

SOFTWARE PROBLEMS OR ENHANCEMENTS

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

AREAS COVERED	SPR CENTER
United States	Corporate Administrative Services Group P.O. Box F Maynard, MA 01754
Canada	Digital Equipment of Canada, Ltd. P.O. Box 13000 Kanata, Ontario Canada, K2K 2A6
Mexico	Digital Equipment de Mexico S.A. de C.V. Apartado Postal 12-1009 Mexico 12, O.F. Mexico
Puerto Rico	Digital Equipment Latin America P.O. Box 11038 Fernandez Juncos Station Santurce 00910 Puerto Rico
Australia, New Zealand	Digital Equipment Aust Pty Ltd 754 Pacific Hwy 1st floor M/SSNH/B-1 Chatswood, New South Wales 2067 Australia
Brazil	Digital Equipment Comercio e Industria Ltda. Avenida Augusto Severo, 156-A 20021 Rio de Janeiro, RJ Brazil
China	Digital Equipment Hong Kong Ltd. 5-7th Floor Intercontinental Plaza 94 Granville Road Tsimshatsui East Kowloon Hong Kong
Remainder of General International District (GID)	Digital Equipment Corp. General International District - SWS 100 Nagog Park Acton, MA 01720-3499 United States
United Kingdom, Bahrein, Egypt, Iraq, Jordan, Kuwait, Lebanon, Libya, Qatar, Oman, Saudi Arabia, Syria, United Arab Emirates, Yemen Arab Republic	Digital Equipment Co. Ltd. Jays Close Basingstoke, Hampshire RG22 4DE England
France	Digital Equipment France Zone Industrielle Bois de L'Epine 11 Avenue Joliot Curie BP 202 91007 Evry Cedex France

AREAS COVERED	SPR CENTER
Italy	Digital Equipment S.p.A. Viale Fulvio Testi, 11 Ang. Via Gorki 105 1-20092 Cinisello Balsamo Milan Italy
Japan	Nihon Digital Equipment Corp. Sunshine 60, P.O. Box 1135 1-1 Higashi Ikebukuro 3-Chome, Toshima-Ku, Tokyo, 170 Japan
Belgium, Luxemburg	Digital Equipment N.V./S.A. Rue De L'Aeronef 1 B-1140 Brussels Belgium
Holland	Digital Equipment B.V. Kaap Hoorndreef 38 NL-3563 AV Utrecht Holland
Sweden	Digital Equipment AB SPR Admin. M-B Duff/CSC Allen 6 S-172 89 Sundbyberg Sweden
Denmark	Digital Equipment Corp. A/S Sandtoften 9 DK-2820 Gentofte Denmark
Finland	Digital Equipment Corp. OY Box 16 02201 ESPOO Finland
Norway	Digital Equipment Corp. A/S Ammerudveien 22 N-0958 Oslo 9 Norway
Austria, East Germany, West Germany, Poland, Hungary, Rumania, Czechoslovakia, Russia, Bulgaria	Digital Equipment Corp. GmbH SPR Centre - D2 Freischuetzstrasse 91 8000 Muenchen 81 West Germany
Israel	Digital Equipment Ltd. Digital House Acadia Junction Herzlia 46 733 Israel
Greece, Portugal, Spain, Switzerland, Yugoslavia, (Morocco, Algeria, Tunisia, Cyprus, Turkey, Malta)	Digital Equipment Corp. AG Kanalstrasse 21 CH-8152 Glattbrugg (Zurich) Switzerland

This data sheet explains what software licenses are and why customers must obtain a software license to run any item of DIGITAL proprietary software.

DIGITAL does not sell software; DIGITAL offers software under a license agreement. DIGITAL has a license agreement for source software and object software. Since DIGITAL software programs are made available primarily in object code, this data sheet focuses on the purchase of object programs.

Introduction to Software Licensing

When DIGITAL hardware is purchased, all rights of ownership (legally called "title") to the hardware pass to the customer. This is not the case with software. DIGITAL regards software as proprietary information. Since software is easily reproduced, it must be legally protected from improper copying. Therefore, DIGITAL uses a combination of trade secret and copyright legal protection for software. DIGITAL protects its investment by retaining title to its software at all times and requires anyone wishing to use it to obtain a license.

How DIGITAL Licenses Software

The license agreement for object programs is contained in DIGITAL's standard Terms and Conditions of Sale and Corporate Volume Purchase Agreements instead of as a separate agreement. Therefore, when software products are purchased under DIGITAL's Terms of Sale, the software license agreement is made at the same time.

Key Principles of the License Agreement

Object code is licensed for single use. This means obtaining a license for a product allows the associated software to be used on the "single" CPU on which it was first installed. Other key points are as follows:

- If the licensed CPU temporarily malfunctions, the software may be run on another machine while the CPU is down.

- Copies of the software may be made for backup purposes if appropriate proprietary and copyright notices are included.

- The software may be modified or merged with other software if appropriate proprietary and copyright notices are included.

- The software may be used by the customer's employees and its agents directly concerned with the internal use, but may not be made available to anyone else.

Modification to the Software Product

Any modification to licensed software does not exempt the product from DIGITAL license terms. Every line of code from a software product falls under the terms of the license. Only those modifications that are not part of the original software are the customer's property. It is important to note that warranty on the product is limited to the original software supplied by DIGITAL.

Transferability of Licensed Software Products

License Transfer - A license agreement does not automatically allow transfer of licensed software to another party or another CPU. If the customer intends to sell the licensed CPU and pass on the software with the sale or move the software onto another CPU, permission must be obtained from DIGITAL. A case-by-case License Transfer is required to relicense the software.

Software Sublicensing - DIGITAL customers with a purchase agreement authorizing sublicensing, such as OEMs, may transfer licensed object products to their customers without a License Transfer. A valid sublicense, executed by an OEM with its customer, gives the OEM's customer the same license rights and responsibilities as a license agreement made directly with DIGITAL.

Source Software

Sources are only available for selected products. A license agreement for source software must be separately executed for each facility/location which intends to purchase sources in machine-readable, listing, or microfiche form. Further information and availability of sources can be found in the applicable Software Product Description (SPD).

Software Warranty

Each licensed software product offered has an SPD describing the warranty commitment for the product. Software products under DIGITAL warranty must conform to the description provided for a 90-day period, which generally begins upon product installation or 30 days after delivery. All other products are provided AS IS, without warranty. The SPD clearly states under which warranty category the product falls.

Purchasing the License for the Software Product

A license must be obtained for each CPU on which the licensed software will be used (unless otherwise specified by DIGITAL).

A Single-use License for object code is generally ordered according to the type/classifcation of the CPU or system configuration intended to run the product. Further information and availability can be found in the applicable SPD.

Software Product

A license is a prerequisite to purchase the associated software. The Media and Documentation Option for a product is ordered according to media type. Further information and availability of media can be found in the applicable SPD.

Purchasing Software Product Revisions/Updated Versions

If a licensed customer is not covered by a product service agreement, updated versions can be purchased when they are made generally available. Updated versions are ordered according to media type. A customer can also choose to run updated versions on additional CPUs, but not purchase multiple media distributions. If this is the case, the Software Revision Right-to-Copy option must be purchased for each CPU which runs the updated version.

Software Product Services

A licensed customer can purchase annual product service agreements to receive updated versions on media when available. A customer may choose to copy updated versions onto additional CPUs during this service agreement period. In this case, the software Service Right-to-Copy must be purchased for each CPU which runs the updated version. Further information and availability can be found in the applicable SPD. Your local DIGITAL office can be contacted for additional assistance.

DIGITAL EQUIPMENT COMPUTER USERS SOCIETY

BENEFITS OF BELONGING

The Digital Equipment Computer Users Society (DECUS) is one of the largest and most respected users groups in the computer industry today. Membership in DECUS, which is free and voluntary, provides the individual user with information and services not found anywhere else.

DECUS provides an environment where users of Digital Equipment Corporation products can share information with other users and with DIGITAL. Members can find out the latest news on DIGITAL's hardware, software, and educational products. The feedback exchange with DIGITAL allows the users of DIGITAL's products to have a voice in the company's future.

Founded in 1961, DECUS now has three autonomous areas worldwide- DECUS U.S., DECUS Europe, made up of eight independent chapters, and DECUS GIA (General International Area), made up of four independent chapters. DECUS services and activities are shared between these chapters through mutual agreements.

All DECUS services promote the exchange of information in a noncommercial environment. Included in these services are:

Special Interest Groups (SIGs)

These groups, formed around an area of common interest, exist for a variety of hardware, operating systems, languages, applications, and marketing areas. Participation in these groups allows fellow users to exchange information and share technical expertise in the areas of most interest to the users.

Local Users Groups (LUGs) and National Users Groups (NUGs)

LUGs and NUGs are licensed groups of individuals who gather to share information with other users on a periodic basis. Not only do they have common professional interest, but they also have geographic and cultural ties. DIGITAL representatives attending these meetings often unveil new products and services and supply updates on existing policies and procedures.

Symposia

DECUS holds symposia each year in the different chapters, two per year in the U.S. These meetings provide a unique opportunity for users with a wide spectrum of experience to meet for up to five days of intensive technical exchange. Symposium activities include workshops, clinics, panels, tutorials, and formal paper presentations. DIGITAL participates in symposia by sending Product Group managers and developers to discuss strategies, products, problems, and solutions.

Publications

The flow of information among users, as well as between users and DIGITAL, is the primary goal of DECUS. Various publications generated by DECUS support this communication. They include chapter newsletters and *The Proceedings*, a technical volume published after each symposium. DECUS also publishes Special Interest Groups' newsletters that provide information pertaining to specific DIGITAL products.

Program Library

The DECUS Program Library is the main vehicle for the exchange of software among users of all DIGITAL systems. The Library contains over 1000 software programs written and voluntarily submitted by users. These programs include compilers, editors, utilities, numerical and statistical functions, as well as games and graphic routines. The Library publishes an annual software catalog that lists and describes all the DECUS programs available to all users for a minimal charge.

You are cordially invited to join over 60,000 other users of DIGITAL products around the world and begin to share your experiences, both successes and problems.

For more information, contact the appropriate DECUS chapter office listed here.

DECUS CHAPTER OFFICES — WORLDWIDE

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