PDP-8
Digital Software News

February — March 1979

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PDP-8 DIGITAL SOFTWARE NEWS

The **PDP-8 Digital Software News** (a bi-monthly publication) complements Software Reviews for COS-310, OS/8, and OS/78. 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 Review).

PRODUCTS SUPPORTED in the PDP-8 DIGITAL SOFTWARE NEWS

CAPS-8 V1	FOCAL/MPS V1	OS/8 FORTRAN IV PLOTTER V3C
COS-310 V3 (V7.00)	OS/8 V3D	OS/8 INDUSTRIAL BASIC V3
COS-310/2780 RDCP	OS/8 FORTRAN IV V3D	OS/8 MACREL/LINKER V1A
V6.05, V7	OS/8 EXTENSION KIT V3D	OS/78 V1, V2
DECnet-8 V1	RT-8 V2B	

DISTRIBUTION

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

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

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IMPORTANT
See the new DECUS Information and Membership Form at the back of this Dispatch.

SPR USER LETTER

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

How To Make The Best Use Of The SPR Form

What We Can Do For you

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

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

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

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

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

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

What You Can Do For Us

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

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

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

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

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

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

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

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

WRITING A SYMBIONT FOR OS/78 V2 (RJ)

        This article describes the concepts about symbionts that a
programmer should know if he wants to write a symbiont for OS/78.
        CCL performs various consistency checks before the symbiont is
started up. The command

        .REQUEST FOO

starts up a symbiont named FOO. The default extension for symbionts
is .SM . If FOO.SM is not found, then FOO.SV is looked for. If neither
of these is found, then FOO with no extension is used. A symbiont file
is a save image file. It is normally created via the usual PAL, LOAD,
SAVE sequence. The only difference is that the extension is usually
specified as .SM as a mnemonic that this save file is really a symbiont.

        The REQUEST command performs the following functions:

1.   it ensures that the symbiont is on SYS: . If not, the message
        SYMBIONT MUST BE ON SYS: is printed.

2.   it ensures that BATCH is not running. If BATCH is running, it
        prints CANNOT START SYMBIONT FROM BATCH.

3.   it sets the software core size to 2 (12K). This restricts OS/78
        to run in the lower 3 fields (fields 0,1, and 2) and the symbiont
        runs in field 3.

4.   it ensures that a symbiont is not already running. If one is
        already running, it prints REQUEST DENIED - SYMBIONT ALREADY
        RUNNING.

5.   it sets the symbiont running bit in the OS/78 resident. This is
        bit 9 of location 17726. If this bit is a 1, then a symbiont is
        running.

6.   it then prints [Starting Symbiont] and [12K Memory].

7.   Then it chains to the symbiont, starting it at its chain address
        (entry point plus one).

The CCL CANCEL command performs the following functions for you:

1.   it ensures that a symbiont is in fact running. If not, it prints
        NO SYMBIONT IS ACTIVE.

2.   it turns off the symbiont running bit in the OS/78 resident.

3.   if BATCH is not running, it sets the software core size to 0,
        meaning OS/78 can use all 16K of memory.

4.   it prints [Shutting down symbiont] and [16K Memory].

5.   then it branches to location 30003 in the symbiont, where the
        user has written any special shut-down code that may be necessary
        to turn off his symbiont.

Typical start-up code in a symbiont would perform the following functions:

1.   give an error message if the symbiont was accidentally run via
        the R or RUN command rather than the REQ command.

2.   disable interrupts from the keyboard and terminal and any other
        special devices that OS/78 is to be permitted to use without
        the symbiont's knowledge.
        The keyboard and terminal interrupts can be disabled by the
        following code:

                CLA
                KIE

3.   clear all flags and/or delay a while to let any devices quiet down.

4.   if the symbiont wishes to use the system device and/or other floppy
        drives, then it would replace the OS/78 system handler in memory
        with its own code that would drive a floppy using interrupts.
        Look at a listing of the SPOOLR symbiont to see an example of this.
        It might also be necessary to modify the OS/78 device handler
        residency table (DHRT) to indicate modified starting addresses
        for the user's floppy driver.
        Consult the OS/8 Software Support Manual for further information
        on the DHRT.

5.   start up any symbiont process that needs to run immediately.

6.   return control to OS/78 by branching to location 7605 (or 7600)
        in field 0. This is necessary because it re-reads the keyboard
        monitor into memory (the RUN overlay has been destroyed by the
        REQUEST command).

Communicating with the symbiont while it is running:

Another user program can easily communicate with a running symbiont,
by branching to the appropriate location in field 3 in the symbiont.
Upon completion of the desired function, control is returned to OS/78
by branching to location 07605.

Any interrupts that happen while the symbiont is running will automatically
give control to the symbiont at location 30001, almost as if the interrupt
vectored there. This is because the OS/78 monitor and all its CUSPs
contain the code

                CIF 30
                JMP .-1

at location 1 in field 0.
The user should write a standard interrupt routine to process the
interrupt. The interrupt routine must save the AC, LINK, flags, etc.
on entry and restore these on exit. The interrupt routine would poll
the various devices in use by the symbiont (via a normal skip chain)
and service the one that interrupted.
        A user must take care that any code that he writes does not
use location 0,1, or 2 in field 0 in any way.

Typical Cancel code in a symbiont:

This code must begin at location 3 in field 3.

1.   turn off interrupts

2.   clear all flags and/or delay a while to let any devices
        in use quiet down

3.   if the symbiont was using the floppies, it should now
        restore the original OS/78 system handler and fix up the
        DHRT if it had been modified.

4.   return control to OS/78 by branching to 07605.

EXAMPLE:

On the following pages is a trivial example of a symbiont that
prints the letters of the alphabet on the line printer in an infinite
loop while OS/78 is running.
If the source of this program were called DEMO.PA, then the
creation instructions would be:

                .PAL DEMO
                .LOAD
                .SAVE SYS:DEMO.SM;30200

to indicate that the starting address is location 200 in field 3.

```
            /DEMONSTRATION SYMBIONT
            /THIS SYMBIONT PRINTS THE ALPHABET ON THE LINE PRINTER IN AN INFINITE LOOP

       6661          LSF=6661          /SKIP ON LINE PRINTER READY
       6665          LIE=6665          /ENABLE LINE PRINTER INTERRUPTS
       6666          LLS=6666          /CLEAR FLAG AND SEND CHARACTER TO LINE PRINTER


       0003          FIELD 3           /SYMBIONTS RUN IN FIELD 3


       0001          *1                /INTERRUPTS VECTOR TO LOCATION 1 IN FIELD 3

30001  5402          JMP I .+1         /JUMP TO INTERRUPT CODE
30002  0215          INT


30003  6002          IOF               /CANCEL CODE STARTS AT LOCATION 3
30004  6007          CAF               /TURN OFF INTERRUPTS AND CLEAR ALL FLAGS
30005  6203          CIF CDF 0         /RETURN TO OS/78
30006  5407          JMP I .+1
30007  7605          7605


       0200          *200


30200  7402          HLT               /HALT IF USER ACCIDENTALLY RUNS THE SYMBIONT
30201  7200          CLA               /NORMAL CHAIN ADDRESS. THIS IS WHERE SYMBIONT STARTS UP
30202  6007          CAF               /CLEAR ALL STRAY FLAGS
30203  6001          ION               /TURN INTERRUPTS ON
30204  6035          KIE               /DISABLE KEYBOARD AND TERMINAL INTERRUPTS
30205  7201          CLA IAC
30206  6665          LIE               /ENABLE LINE PRINTER INTERRUPTS
30207  7200          CLA
30210  1377          TAD (14           /SEND FORM FEED TO LPT
30211  6666          LLS               /TO START IT UP
30212  7200          CLA
30213  6203          CIF CDF 0
30214  5776          JMP I (7605       /RESTART OS/78
```

/DEMONSTRATION SYMBIONT   PAL8-V10A 12-NOV-78 PAGE 2

```
30215   3245   INT,     DCA AC          /SAVE ACCUMULATOR AT TIME OF INTERRUPT
30216   6004            GTF             /GET LINK, INSTRUCTION FIELD, AND OTHER FLAGS
30217   3246            DCA INTFLG      /SAVE THEM TOO
30220   6201            CDF 0           /PICK UP LOCATION WHERE WE INTERRUPTED FROM
30221   1775            TAD I (0        /WHICH IS AT LOCATION 0 OF FIELD 0
30222   3000            DCA 0           /SAVE IT AT LOCATION 0 IN THIS FIELD
30223   6231            CDF 30          /RESTORE DATA FIELD TO A USEFUL VALUE
               /
               /        START OF INTERRUPT SKIP CHAIN
               /
30224   6661            LSF             /WAS INTERRUPT CAUSED BY LINE PRINTER?
30225   7402            HLT             /NO.  NORMALLY THIS WOULD BE A JUMP TO TO THE
                                        /NEXT FLAG TEST IN THE SKIP CHAIN
30226   1650            TAD I PTR       /YES, GET NEXT CHARACTER TO PRINT
30227   6666            LLS             /SEND IT TO LPT
30230   7200            CLA
30231   2250            ISZ PTR         /POINT TO NEXT CHARACTER TO BE SENT
30232   2247            ISZ COUNT       /WAS THIS THE LAST CHARACTER IN THE MESSAGE?
30233   5240            JMP LEAVE       /NO, LEAVE INTERRUPT LEVEL
30234   1374            TAD (-34        /YES
30235   3247            DCA COUNT       /SET UP TO REPEAT SENDING MESSAGE
30236   1373            TAD (LIST       /RESTORE CHARACTER COUNT
30237   3250            DCA PTR         /AND BUFFER POINTER
30240   1246   LEAVE,   TAD INTFLG      /LEAVE INTERRUPT LEVEL
30241   6005            RTF             /RESTORE ALL FLAGS AND GET SET
30242   7200            CLA             /TO JUMP TO USER'S INSTRUCTION FIELD
30243   1245            TAD AC          /RESTORE ACCUMULATOR
30244   5400            JMP I 0         /RETURN FROM INTERRUPT (WITH ION)

30245   0000   AC,      0               /HOLDS ACCUMULATOR AT TIME OF INTERRUPT
30246   0000   INTFLG,  0               /HOLDS FLAGS AT TIME OF INTERRUPT

30247   7744   COUNT,   -34             /28 (DECIMAL) CHARACTERS IN MESSAGE
30250   0251   PTR,     LIST            /CHARACTER POINTER INTO MESSAGE
```

/DEMONSTRATION SYMBIONT   PAL8-V10A 12-NOV-78 PAGE 3

```
30251  0301  LIST,    "A;"B;"C;"D;"E;"F;"G;"H;"I;"J;"K;"L;"M;"N        /MESSAGE CONSISTS
30252  0302
30253  0303
30254  0304
30255  0305
30256  0306
30257  0307
30260  0310
30261  0311
30262  0312
30263  0313
30264  0314
30265  0315
30266  0316
30267  0317           "O;"P;"Q;"R;"S;"T;"U;"V;"W;"X;"Y;"Z;15;12      /OF THE ALPHABET
30270  0320
30271  0321
30272  0322
30273  0323
30274  0324
30275  0325
30276  0326
30277  0327
30300  0330
30301  0331
30302  0332
30303  0015
30304  0012

30373  0251
30374  7744
30375  0000
30376  7605
30377  0014
       0400           PAGE
```

8 DIGITAL SOFTWARE NEWS
CUMULATIVE INDEX
FEBRUARY/MARCH 1979

This is a complete listing of all articles for current products supported in the 8 Digital Software News. Missing sequence numbers may pertain to problems unique to other versions of the same product.

IMPORTANT!

The following numerical system has been grouped in logical order.

Retracted articles are indicated: RETRACTION.

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

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

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

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

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

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Component	Sequence	Mon/Yr

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MARK SENSE BATCH FORTRAN II READS THROUGH DOLLAR SIGNS	02	Jun 76

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Component	Sequence	Mon/Yr
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MCR

Component	Sequence	Mon/Yr
SOME TIME-OF-DAY REQUESTS RUN 24 HOURS LATE	01	Mar 76
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Component	Sequence	Mon/Yr
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PWRF

Component	Sequence	Mon/Yr
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Component	Sequence	Mon/Yr
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OS/8 V3D

*Articles dated October 1977 appeared in OS/8 V3D Software Review, October 1977.

DOCUMENTATION

Component	Sequence	Mon/Yr
FAULTY DESCRIPTION FOR ERROR PERFORMANCE	01 N*	Oct 77

HANDLER

Component	Sequence	Mon/Yr
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NOTES/PROGRAMMING HINTS

Component	Sequence	Mon/Yr
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UTILITIES

Component	Sequence	Mon/Yr
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DEFAULT EXTENSIONS FOR TECO	02 O*	Oct 77
HOW TO COPY LARGE FILES	03 O*	Oct 77

Component	Sequence	Mon/Yr

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BASIC

RESTRICTION ON EXTENDED RANGE FOR-NEXT LOOPS	01 R	Oct 77

BATCH

CANNOT MOVE BATCH INPUT FILE	01 R	Oct 77
RESTARTING BATCH	02 N	Oct 77
RUNNING BATCH IN 32K	03 O	Oct 77

MSBAT

MARK SENSE BATCH FORTRAN II READS THROUGH DOLLAR SIGNS	01 O	Oct 77

GENIOX

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OS/8 FORTRAN IV V3D

FORLIB.RL V5A

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F4.SV V4A

PASSING ARGUMENTS	01 R	Oct 77
EQUIVALENCE STATEMENT	02 M	Oct 77
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COMPILER GENERATES WRONG LENGTH	04 O	Oct 77
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USE OF EAE MODE A	01 R	Oct 77
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RUNNING FORTRAN IV UNDER BATCH IN 32K	03 O	Oct 77
FPP-8A	04 O	Oct 77

Component	Sequence	Mon/Yr

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Component	Sequence	Mon/Yr

<div align="center">DECNET-8 V1</div>

DOCUMENTATION

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ERROR IN CCL (VERSION G) SOURCE PAPERTAPE	20.3.1 O	May 78

<div align="center">OS/8 V3D</div>

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CCL

	Sequence	Mon/Yr
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<u>CREF</u>

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FOTP

	Sequence	Mon/Yr
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MCPIP

	Sequence	Mon/Yr
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PAL8

	Sequence	Mon/Yr
INCORRECT CORE SIZE ROUTINE	21.22.1 M	Aug/Sep 78
ERRONEOUS LINK GENERATION NOTED ON PAGE DIRECTIVE	21.22.2 M	Aug/Sep 78

PIP

	Sequence	Mon/Yr
PIP /Y OPTION DOES NOT WORK PROPERLY WHEN TRANSFERRING A SYSTEM HEAD FROM A DEVICE WHICH IS NOT CO-RESIDENT WITH SYS.	21.23.1 M	Aug/Sep 78

PIP10

	Sequence	Mon/Yr
DATE '78 PATCH TO PIP10	21.24.1 M	Dec 78/Jan 79

Component	Sequence	Mon/Yr
SET		
USING SET WITH 2-PAGE SYSTEM HANDLERS	21.26.1 M	May 78
SCOPE RUBOUTS FAIL IN SET	21.26.2 M	May 78
PARSING OF = IN TTY WIDTH OPTION	21.26.3 M	Aug/Sep 78
HANDLERS		
ASR33		
HOW TO WRITE TWO-PAGE SYSTEM HANDLERS	21.40.1 N	May 78
LPQ		
LPQ01 HANDLER FAILS TO RECOGNIZE TABS	21.49.1 M	Mar 78

OS/8 EXTENSION KIT V3C

Component	Sequence	Mon/Yr
BASIC		
BRTS		
BASIC FAILS TO OUTPUT 132 CHARACTERS TO LA-36	30.11.1 O	Mar 78
MSBAT		
DIM STATEMENT NOT WORKING IN MSBAT	30.22.1 M	Dec 78/Jan 79

OS/8 EXTENSION KIT V3D

Component	Sequence	Mon/Yr
BASIC		
BASIC		
GOOD RANDOM NUMBERS FOR OS/8 BASIC	31.1.1 N	May 78
BASIC.UF		
BASIC.UF INCOMPATIBLE FROM OS/8 V3C	31.5.1 M	Aug/Sep 78
BRTS		
IOTABLE OVERFLOW	31.11.1 M	Mar 78
BASIC PNT FUNCTION	31.11.2 M	Jul 78
LINE SIZE ON OUTPUT OF BASIC	31.11.3 O	Jul 78
BASIC		
BASIC EDITOR HAS A FIELD BOUNDARY BUG	31.12.1 M	Aug/Sep 78
TECO		
CHANGING THE DEFAULT EU VALUE	31.20.1 O	Mar 78
CHANGING THE DEFAULT EH VALUE	31.20.2 O	Mar 78
REMOVING YANK PROTECTION	31.20.3 O	Mar 78
SCOPE SUPPORT FOR VT05 USERS	31.20.4 O	Mar 78
PROBLEM WITH AY COMMAND	31.20.5 M	Mar 78
CONDITIONALS INSIDE ITERATIONS	31.20.6 M	Mar 78
ECHOING OF WARNING BELLS	31.20.7 M	Mar 78
CTRL/U SOMETIMES FAILS AFTER *	31.20.8 M	May 78
MULTIPLYING BY 0 IN TECO	31.20.10 M	May 78
Q-REGISTERS DON'T WORK IN 8K	31.20.11 M	MAY 78
CAN'T SKIP OVER A "W"	31.20.12 M	May 78
UNSPECIFIED ITERATIONS AFTER INSERTS	31.20.13 M	Jul 78
NEW FEATURES IN TECO V5	31.20.14 N	Aug/Sep 78
FUTIL		
FUTIL PATCH	31.21.1 M	May 78
PATCH TO FIX 'SHOW CCB' AND MAPPING OF 'CD' MODULES	31.21.2 M	Aug/Sep 78
-237 PATCH	31.21.3 O	Aug/Sep 78
MSBAT		
DIM STATEMENT NOT WORKING IN MSBAT	31.22.1 M	Dec 78/Jan 79
BATCH		
MANUAL INTERVENTION REQUIRED ERRONEOUSLY	31.23.1 M	Aug/Sep 78

Component	Sequence	Mon/Yr

OS/8 V3D MACREL/LINKER V1A

USING FUTIL TO DEBUG OVERLAYS .... 40.0.1 N ... May 78

LINK
PATCH V1D TO LINK	40.2.1 M	May 78
PATCH V1E TO LINK	40.2.2 M	May 78
LINK CORRECTIONS	40.2.3 M	May 78

MACREL
PATCH V1D TO MACREL	40.5.1 M	May 78
PATCH V1E TO MACREL	40.5.2 M	May 78

OVRDRV
PATCH V1B TO OVRDRV.MA	40.6.1 M	May 78

OS/8 FORTRAN IV V3C

F4
FORTRAN COMPILER FAILS TO RECOGNIZE " AS AN ERROR	50.3.1 M	Mar 78

OS/8 FORTRAN IV V3D

F4
FORTRAN COMPILER FAILS TO RECOGNIZE " AS AN ERROR	51.3.1 M	Jul 78
FORTRAN COMPILER NOT RECOGNIZING SYNTAX ERROR	51.3.2 M	Jul 78
FORTRAN RUNTIME SYSTEM 2 PAGE HANDLER	51.3.3 O	Aug/Sep 78

RTS/8 V2B

PARAM
INCORRECT CLOCK VALUE IN PARAM FILE	61.2.1 N	Aug/Sep 78

OS8SUP
OS/8 TASKS HANGS WITH TIME SHARE NOT ENABLED	61.3.2 O	Aug/Sep 78

CLOCK
PROBLEM WITH DOUBLE PRECISION CLOCK REQUESTS	61.16.1 M	Aug/Sep 78

OS/78 V1

HANDLERS
LPQ
LPQ01 HANDLER FAILS TO RECOGNIZE TABS	70.49.1 M	May 78

BASIC
GOOD RANDOM NUMBERS FOR OS/8 BASIC	70.70.1 N	Aug/Sep 78

F4.SV
FORTRAN COMPILER FAILS TO RECOGNIZE " AS AN ERROR	70.93.1 M	Aug/Sep 78

OS/78 V2

NOTES & DOCUMENTATION
WRITING A SYMBIONT FOR OS/78 V2	71.1.1 N	Feb/Mar 79

UTILITIES
BITMAP FAILS WITH SPOOLER RUNNING	71.12.1 M	Aug/Sep 78

BASIC
BCOMP
STRING ARRAY CONCATENATION	71.71.1 N	Aug/Sep 78

BLOAD.SV
LARGE CORE IMAGE SAVE PROBLEM	71.72.1 M	Aug/Sep 78

digital
Software Product Description

DESCRIPTION:

MACREL/LINKER is an assembly language programming system. It contains the functions of the OS/8 PAL8 assembler and Absolute Loader programs with major enhancements. MACREL is a macro assembler producing relocatable modules. LINKER is a linking loader.

MACREL offers the following capabilities and features:

- Executes on any OS/8 configuration.
- Assembies current PAL-8 source modules with minor changes.
- Includes macros for program control of assembly functions, conditional assembly directives, program sectioning directives and user defined functions.
- Allows users to create MACRO definitions and call them in program modules.
- Allows users to create programs consisting of program sections. A program section can be located anywhere in memory, or restricted to particular pages or fields (or both) when loaded. Program sections can be absolute, relocatable, floating, data, page 0, or index register sections.
- Allows users to define groups of code as macros a convenient way technique to repeat selected areas of assembly language code.
- Provides improved text creation capabilities at assembly time.
- Allows assembly of a user program into as much as 128K of user memory.
- Permits overlay and level number specification in the assembly module.
- Allows use of secondary reference symbols.

> **NOTE:**
> Symbol tables are limited in 8K-word configurations.

LINKER offers the following capabilities and features:

- Executes under any OS/8 configuration.
- Takes output from the MACREL assembler and creates an executable image file by creating a Core Control Block and appending the linked and relocated object code.
- Provides a structure for program overlays.

- If the user so designates, LINKER allocates memory for the user's program sections, overlay structures, or real-time tasks, and produces an optional load map of the result.
- Links global references among sections, drawing upon library components, if necessary.
- Allows linking of a user program into as much as 128K of user memory
- Permits specification of overlay and level numbers in the assembly module rather than just at link time.
- Allows use of secondary reference type symbols.

MINIMUM HARDWARE REQUIRED:

Any valid OS/8 Operating System with at least 12K words of memory.

OPTIONAL HARDWARE:

None

PREREQUISITE SOFTWARE:

OS/8 Operating System, Version 3D or later or OS/78 Operating System, Version 1 or later

OPTIONAL SOFTWARE:

None

TRAINING CREDITS:

None

SUPPORT CATEGORY:

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

UPDATE POLICY:

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

ORDERING INFORMATION:

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

of the DIGITAL copyright notice and any DIGITAL proprietary notices on the software) only for use on such CPU. All source licensed software is furnished only under the terms and conditions of a separate Software Program Sources License Agreement between Purchaser and DIGITAL.

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

The following key (C, Y) represents the distribution media for the product and must be specified at the end of the order number, e.g., QF019-AC = binaries on DECtape.

C = DECtape
Y = RX01 Floppy Diskette

QF019 -A— Single-use license, binaries, documentation, support services (media: C, Y)

Source/Listing Options
QF019 -E— All sources (media: C, Y)

Update Options:
Users of OS/8 MACREL/LINKER whose specified Support Category warranty has expired may order under license the following software update at the then current charge for such update. The update is distributed in source or binary form on the appropriate medium and includes no installation or other services unless specifically stated.

QF019 -H— Binaries, documentation (media: C, Y)

QF019 -H— Right to copy for single-use (under existing license), no binaries, no documentation, no support services (media: Z)

Users of OS/8 MACREL/LINKER whose specified Support Category warranty has not expired may order under license the following software update for the then current media charge. The update is distributed in source or binary form on the appropriate medium and includes no installation or other services unless specifically stated.

QF019 -W— Binaries, documentation (media: C, Y)

ADDITIONAL SERVICES:
None

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Software Product Description

PRODUCT NAME: OS/8, Version 3D, Device Extentions for RL01, RX02 and KT8A   **SPD 4.12.0**

DESCRIPTION:

The OS/8 Version 3D Device Extentions for RL01, RX02, and KT8A is a multipurpose product containing necessary operating system upgrades for support of three (3) non-standard PDP-8 hardware options: RL01, RX02, and KT8A. The product consists of 20 files and a new monitor head.

These files contain the new handler modules, updated CUSPs and patches to various standard OS/8 modules. A user may need any one or more of the three sets of handlers; once installed, the handlers and patches are transparent during use in a standard OS/8 Version 3D system. Instructions for installing the modifications contained in this kit are furnished with the kit. Installation of this upgrade should be carried out by a person thoroughly familiar with the OS/8 operating system.

The RL01 Driver:

The RL01 disk drive is a highly reliable, fast, large capacity mass storage device, supported by OS/8 through this upgrade. The RL01 disk is treated by the system as three (3) independent logical devices because of the OS/8 device size limit. The three (3) devices are named RLxA, RLxB and RLxC, where A, B, and C are the three (3) logical devices on a single RL01 disk and x stands for the drive (0, 1, 2, or 3). The total capacity of an RL01 disk with this handler is 4 million characters (8-bit ASCII) or 2.6 million 12-bit words where device A and device B capacity is 1.6 million characters or 1.0 million words each and device C may contain .8 million characters or 500,000 words. Each device has a separate directory. Bad-block mapping is done by the handler and is transparent to the user. Up to 15 bad blocks may be recorded by the system on each logical device, thereby increasing the useful life of each disk significantly. Error recognition and handling is provided for the user through appropriate error messages.

A formatting program called RLFRMT is supplied with this upgrade. RLFRMT sets up sector numbering and directories on each device. All new disks must be formatted before use.

The RX02 Driver:

An RX02 diskette drive can read and write either single density or double density diskettes. The handler is able to sense if a diskette is single density or double density when reading or writing data. A formatting program is supplied for reformatting single density RX01 diskettes to double density RX02 format and vice versa. This feature is part of the RXCOPY program. On an RX02 drive, the system diskette must always be in double density (RX02) format.

128K Support

This software provides support for the KT8A extended memory hardware, which allows the user to address up to 128K words of contiguous main memory. KT8A software is not a driver module, but rather a collection of changes to the OS/8 operating system and its various functions and utilities.

SYSTEM FUNCTIONS

The heart of the KT8A software is the new 128K memory monitor head. The system contains a program to assign/recognize the amount of memory available to the system programs. The MEMORY command recognizes memories as large as 128K words.

RESORC — This program allows access to the list of all I/O handlers in the system, including a special handler called VXA0. The VXA0 handler allows the user to utilize the memory extension as though it were a separate pseudo device. Users who have the source programs and technical knowledge can use BUILD to help install user-written handlers into the system and into RESORC.

Some other system commands enhanced to recognize and manage up to 128K words of memory include GET, SAVE, R, RUN, ABSLDR.

LANGUAGE FUNCTIONS

PAL-8 Modifications:

FIELD — This pseudo operator allows the user to specify fields 0 to 37 for the loader (ABSLDR).

PAL-8 Instructions:

CDF — allows references to all fields from 0 through 37.

CIF — allows references to all fields from 0 through 37.

NOTES:

1. If you use OS/8 in RTS/8 background and the KT8A option is installed in the system, or if you run OS/8 in user mode with memory mapping and KT8A, then any PAL-8 programs containing the following sequence of instructions must be changed:

CIF	Change instruction field
IOT	Any PDP-8 IOT instruction
JMP I	The instruction that executes the CIF

If the sequence of instructions is not changed, the system can return to the wrong memory location on traps between CIF and JMP I, thereby causing a usually unrecoverable error.

2. BASIC & FORTRAN
There is no support for utilizing memory over 32K words when compiling and/or executing BASIC and FORTRAN programs.

UTILITY FUNCTIONS
ODT — This debugging utility is enhanced to deal with addressing up to 128K.

PIP — This copy utility recognizes the 128K monitor and provides utility support.

MINIMUM HARDWARE REQUIRED:

- PDP-8/A/E/M, DECstation 78, or DECstation 88 with at least 12K words of memory.
- Any OS/8 Version 3D supported mass storage device.
- Any OS/8 Version 3D supported console terminal.

OPTIONAL HARDWARE:

- RL8A disk system
- RX28 dual diskette system
- KT8A extended memory hardware and additional memory to a system total of 128K

PREREQUISITE SOFTWARE:

OS/8 Version 3D or OS/78 Version 2.0

OPTIONAL SOFTWARE:

None

TRAINING CREDITS:

None

SUPPORT CATEGORY:

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

UPDATE POLICY:

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

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

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

The following key (C, E, Q, X, Y, Z) represents the distribution media for the product and must be specified at the end of the order number, e.g., QF026-AC = binaries on DECtape.

C	=	DECtape
E	=	RK05 Disk Cartridge
Q	=	RL01 Disk Cartridge
X	=	RX02 Dual Density Floppy Diskette
Y	=	RX01 Floppy Diskette
Z	=	No hardware dependency

QF026 -A— Single-use license, binaries, documentation, support services (media: C, E, Q, X, Y)

QF026 -D— Single-use license only, no binaries, no documentation, no support services (media: Z)

Source/Listing Options
QF026 -E— All Sources (media: E, Q)

ADDITIONAL SERVICES:

None

-3-

ADDENDUM
SOFTWARE SUPPORT CATEGORIES

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

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

CATEGORY A

1. Upon notification by customer to the nearest DIGITAL office that the computer system, including all required prerequisite hardware and software, is ready for the installation of the SOFTWARE, DIGITAL will install such SOFTWARE in any location within the contiguous forty-eight (48) United States, the District of Columbia, or a country in which DIGITAL or a subsidiary of DIGITAL has a software service facility. The notification must be received by DIGITAL and the system must be ready for installation within thirty (30) days after the delivery of the SOFTWARE to customer or DIGITAL will have no obligation to install. Installation will consist of: (1) verification that all components of the SOFTWARE have been received by customer, (2) loading the SOFTWARE, and (3) executing a DIGITAL sample procedure.

2. During the ninety (90) day period after installation, if the customer encounters a problem with the current unaltered release of the SOFTWARE which DIGITAL determines to be a defect in the SOFTWARE, DIGITAL will provide the following remedial service (on site where necessary): (1) if the SOFTWARE is inoperable, apply a temporary correction (TC) or make a reasonable attempt to develop an emergency by-pass, and (2) assist the customer to prepare a Software Performance Report (SPR) and submit it to DIGITAL.

3. During the one (1) year period following installation, if the customer encounters a problem with the SOFTWARE which his diagnosis indicates is caused by a SOFTWARE defect, the customer may submit an SPR to DIGITAL. DIGITAL will respond to problems reported in SPRs which are caused by defects in the current unaltered release of the SOFTWARE via the Maintenance Periodical for the SOFTWARE, which reports SPRs received, code corrections, temporary corrections, generally useful emergency by-passes and/or notice of the availability of corrected code. Software Updates, if any, released by DIGITAL during the one (1) year period, will be provided to the customer on DIGITAL's standard distribution media as specified in the applicable SPD. The customer will be charged only for the media on which such updates are provided, unless otherwise stated in the applicable SPD, at DIGITAL's then current media prices.

CATEGORY B

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

CATEGORY C

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

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

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Software Product Description

DESCRIPTION:

WPS-8/FTS is a two-terminal hardware/software text processing system for office and business use. Both users have the full capabilities of the WPS-8 Word Processing System. A menu-driven editor creates and updates documents stored on floppy disks. Up to 200 documents of various lengths or up to a total of 125 pages can be stored on a single floppy disk. Editing capabilities make changes easy without retyping. Final or draft documents can be queued to a letter quality printer or a draft printer if so equipped. Printing and editing can be done concurrently.

WPS-8/FTS enables the user to:

- Prepare and edit reports which may require several drafts before final printing.
- Create contracts and other documents from a library of stored paragraphs.
- Print form letters using a stored form document and a list from which items, such as names and addresses, are automatically selected.

System features include:

- Dynamic floppy disk file allocation
- Responsive menu-driven operation
- Easy-to-learn commands
- Special editing keypad
- Full editing features:
  1. cut and paste of blocks of text
  2. operations by grammatical entity (character, tab position, sentence, paragraph, page, section, line)
  3. boilerplate insert from library file
  4. shorthand expressions
  5. swap transposed character key
  6. delete and rubout by word and character
- Full control of tabs, margins, justification, and pagination:
  1. automatic centering of text on a line
  2. discretionary pagination control
  3. semi-automatic hyphenation
  4. decimal and right-adjusted tabs
- Greater than 500 words per minute letter quality printed output
- Higher speed draft printer support
- Selectable pitch and type fonts

- Underlined and overstruck (bold) printout
- Proportional spaced printing
- Multi-column printing
- Superscript and subscript
- Mailing list utilities
- Form letter merge
- Time and date stamp
- Operator statistics
- Single sheet or continuous forms printing
- Document transfer between users with unattended receive
- User definable keys

Communication Features:

Using the WPS-8 communications option, documents prepared under WPS-8 can be sent to a remote time-sharing system or to another WPS-8 system. Transmission is serial asynchronous ASCII, RS232-C compatible. A variety of transmission options is possible. Used in conjunction with a TOPS-10, TOPS-20, RSX-11M, IAS, or RSTS/E timesharing system, WPS-8 allows data entry and verification to take place off-line. The WPS-8 editor makes file modifications easy. Once in final form, files can be sent to the remote system for processing. Files can also be sent from TOPS-10, TOPS-20, RSX-11M, IAS, or RSTS/E systems to a WPS-8 system for off-line editing, printing, and review.

When used to send documents to another WPS-8 system, printer control information is sent with each file. The document received at the remote system contains all margin, spacing, hyphenation and justification information found in the original. A special error detection protocol is used to insure accurate document transmission.

Features:

- Asynchronous serial transmission — RS232-C compatible
- Speeds to 9600 baud using XON/XOFF protocol
- Flexible control of keyboard, printer, and floppy
  1. input from keyboard, document, or remote host
  2. output to screen, printer, document, or remote host
  3. multiple combinations possible
- Special transmission mode between WPS-8 systems

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1. error detecting protocol
2. format control information sent with documents
- Buffered operation
- Automatic document send and receive
- IBM Communicating Mag Card I support

MINIMUM HARDWARE REQUIRED:
- WS202-AA or WS202-CA Word Processing System

OPTIONAL HARDWARE:
One of the following:
- Communications Interface add-on to a WS202-AA
- LE8 line printer or
- LA8 draft printer
- LQP8 letter quality printer

PREREQUISITE SOFTWARE:
None

OPTIONAL SOFTWARE:
None

TRAINING CREDITS:
None

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

Included in on-site installation is an explanation and demonstration of the system. Installation will be deemed complete when the Digital Sample Procedure included with the software has been successfully executed.

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

ORDERING INFORMATION:
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The following key (A) represents the form of power source for the product and must be specified at the end of the "WS" or "WP" code, i.e., WS100-AA = system power provided in United States.

A = United States (60 Hz)

Distribution for the WPS-8 software is on floppy diskette.

WS202 -AA—
    Word Processing System, single-use license, binaries, documentation, support services (Power: A)

WS202 -CA—
    Word Processing System with KL8-A, single-use license, binaries, documentation, support services (Power: A)

ADDITIONAL SERVICES:
None

ADDENDUM
SOFTWARE SUPPORT CATEGORIES

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

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

CATEGORY A

1. Upon notification by customer to the nearest DIGITAL office that the computer system, including all required prerequisite hardware and software, is ready for the installation of the SOFTWARE, DIGITAL will install such SOFTWARE in any location within the contiguous forty-eight (48) United States, the District of Columbia, or a country in which DIGITAL or a subsidiary of DIGITAL has a software service facility. The notification must be received by DIGITAL and the system must be ready for installation within thirty (30) days after the delivery of the SOFTWARE to customer or DIGITAL will have no obligation to install. Installation will consist of: (1) verification that all components of the SOFTWARE have been received by customer, (2) loading the SOFTWARE, and (3) executing a DIGITAL sample procedure.

2. During the ninety (90) day period after installation, if the customer encounters a problem with the current unaltered release of the SOFTWARE which DIGITAL determines to be a defect in the SOFTWARE, DIGITAL will provide the following remedial service (on site where necessary): (1) if the SOFTWARE is inoperable, apply a temporary correction (TC) or make a reasonable attempt to develop an emergency by-pass, and (2) assist the customer to prepare a Software Performance Report (SPR) and submit it to DIGITAL.

3. During the one (1) year period following installation, if the customer encounters a problem with the SOFTWARE which his diagnosis indicates is caused by a SOFTWARE defect, the customer may submit an SPR to DIGITAL. DIGITAL will respond to problems reported in SPRs which are caused by defects in the current unaltered release of the SOFTWARE via the Maintenance Periodical for the SOFTWARE, which reports SPRs received, code corrections, temporary corrections, generally useful emergency by-passes and/or notice of the availability of corrected code. Software Updates, if any, released by DIGITAL during the one (1) year period, will be provided to the customer on DIGITAL's standard distribution media as specified in the applicable SPD. The customer will be charged only for the media on which such updates are provided, unless otherwise stated in the applicable SPD, at DIGITAL's then current media prices.

CATEGORY B

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

CATEGORY C

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

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

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Software Product Description

PRODUCT NAME: WPS-8/78, Version 3.1, MICRO-8 Word Processing System   SPD 5.91.4

DESCRIPTION:

WPS-8/78 is a hardware/software text processing system for office and business use. A menu-driven editor creates and updates documents stored on floppy disks. Up to 200 documents of various lengths, or up to a total of 125 pages can be stored on a single floppy disk. Editing capabilities make changes easy without retyping. Final or draft documents can be queued to a letter quality printer or a draft printer (if so equipped). Printing and editing can be done concurrently.

WPS-8/78 enables the user to:

- Prepare and edit reports which may require several drafts before final printing.
- Create contracts and other documents from a library of stored paragraphs.
- Print form letters using a stored form document and a list from which items, such as names and addresses, are automatically selected.

System features include:

- Dynamic floppy disk file allocation
- Supports either two or four floppy system configuration
- Responsive menu-driven operation
- Easy to learn commands
- Special editing keypad
- Full editing features:
  1. cut and paste of blocks of text
  2. operations by grammatical entity (character, tab position, sentence, paragraph, page, section, line)
  3. boilerplate insert from library file
  4. shorthand expressions
  5. swap transposed character key
  6. delete and rubout by word and character
- Full control of tabs, margins, justification, and pagination:
  1. automatic centering of text on a line
  2. discretionary pagination control
  3. semi-automatic hyphenation
  4. decimal and right-adjusted tabs
- Greater than 500 words per minute letter quality printed output
- Higher speed draft printer support

- Selectable pitch and type fonts
- Underlined and overstruck (bold) printout
- Proportionally spaced printing
- Multi-column printing
- Superscript and subscript
- Mailing list utilities
- Form letter merge
- Time and date stamp
- Operator statistics
- Single sheet or continuous forms printing
- User definable keys

Communication Features:

Using the WPS-8 communications option, documents prepared under WPS-8 can be sent to a remote time-sharing system or to another WPS-8 system. Transmission is serial asynchronous ASCII, RS232-C compatible. A variety of transmission options is possible. Used in conjunction with a TOPS-10 , TOPS-20, RSX-11M, IAS, or RSTS/E timesharing system, WPS-8 allows data entry and verification to take place off-line. The WPS-8 editor makes file modifications easy. Once in final, form files can be sent to the remote system for processing. Files can also be sent from TOPS-10, TOPS-20, RSX-11M, IAS, or RSTS/E systems to a WPS-8 system for off-line editing, printing, and review.

When used to send documents to another WPS-8 system, printer control information is sent with each file. The document received at the remote system contains all margin, spacing, hyphenation and justification information found in the original. A special error detection protocol is used to insure accurate document transmission.

Features:

- Asynchronous serial transmission — RS232-C compatible
- Speeds to 9600 baud optionally using XON/XOFF protocol
- Flexible control of keyboard, printer, and floppy
  1. input from keyboard, document, or remote host
  2. output to screen, printer, document, or remote host
  3. multiple combinations possible

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- Special transmission mode between WPS-8 systems
  1. error detecting protocol
  2. format control information sent with documents
- Buffered operation
- Automatic document send and receive
- IBM Communicating Mag Card I support

MINIMUM HARDWARE REQUIRED:
WS78-AA or WS78-CA Word Station 78.

OPTIONAL HARDWARE:
- One WX78-BA Add-on communication/OCR interface to WS78-AA
- One LQP78-PA letter quality printer, or one LA78-PA draft printer, and/or
- One LA78-SA serial draft printer
- One additional RX78 dual floppy drive

PREREQUISITE SOFTWARE:
None

OPTIONAL SOFTWARE:
None

TRAINING CREDITS:
None

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

Included in on-site installation is an explanation and demonstration of the system. Installation will be deemed complete when the Digital Sample Procedure included with the software has been successfully executed.

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

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

between Purchaser and DIGITAL.

The following key (Y) represents the distribution media for the product and must be specified at the end of the order number, e.g., QF705-HY = binaries on floppy diskette.

Y = RX01 Floppy Diskette

WS78   AA   WPS-8/78 Word Processing System, single-use license, binaries, documentation, support services, distribution on floppy disk.

WS78   CA   WPS-8/78 Word Processing System with communication option, single-use license, binaries, documentation, support services, distribution on floppy disk.

Upgrade Options

The following option is available as an upgrade kit from a D308A-AA or D308A-AY COS-310 system and requires previous purchase of one license with support services.

WP78   CA   Single-use license, binaries, documentation, support services, distribution on floppy diskette, (powe: 115 volt/60Hz)

Update Options

Users of WPS-8/78, Version 3.0, whose specified Support Category warranty has expired may order under license the following software update at the then current charge for such update. The update is distributed in binary form on the appropriate medium and includes no installation or other services unless specifically stated.

QF705 -H— Binaries, documentation (media: Y)

Users of WPS-8/78, Version 3.0, whose specified Support Category warranty has not expired may order under license the following software update for the then current media charge. The update is distributed in binary form on the appropriate medium and includes no installation or other services unless specifically stated.

QF705 -W— Binaries, documentation (media: Y)

ADDITIONAL SERVICES:
None

ADDENDUM
SOFTWARE SUPPORT CATEGORIES

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

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

CATEGORY A

1. Upon notification by customer to the nearest DIGITAL office that the computer system, including all required prerequisite hardware and software, is ready for the installation of the SOFTWARE, DIGITAL will install such SOFTWARE in any location within the contiguous forty-eight (48) United States, the District of Columbia, or a country in which DIGITAL or a subsidiary of DIGITAL has a software service facility. The notification must be received by DIGITAL and the system must be ready for installation within thirty (30) days after the delivery of the SOFTWARE to customer or DIGITAL will have no obligation to install. Installation will consist of: (1) verification that all components of the SOFTWARE have been received by customer, (2) loading the SOFTWARE, and (3) executing a DIGITAL sample procedure.

2. During the ninety (90) day period after installation, if the customer encounters a problem with the current unaltered release of the SOFTWARE which DIGITAL determines to be a defect in the SOFTWARE, DIGITAL will provide the following remedial service (on site where necessary): (1) if the SOFTWARE is inoperable, apply a temporary correction (TC) or make a reasonable attempt to develop an emergency by-pass, and (2) assist the customer to prepare a Software Performance Report (SPR) and submit it to DIGITAL.

3. During the one (1) year period following installation, if the customer encounters a problem with the SOFTWARE which his diagnosis indicates is caused by a SOFTWARE defect, the customer may submit an SPR to DIGITAL. DIGITAL will respond to problems reported in SPRs which are caused by defects in the current unaltered release of the SOFTWARE via the Maintenance Periodical for the SOFTWARE, which reports SPRs received, code corrections, temporary corrections, generally useful emergency by-passes and/or notice of the availability of corrected code. Software Updates, if any, released by DIGITAL during the one (1) year period, will be provided to the customer on DIGITAL's standard distribution media as specified in the applicable SPD. The customer will be charged only for the media on which such updates are provided, unless otherwise stated in the applicable SPD, at DIGITAL's then current media prices.

CATEGORY B

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

CATEGORY C

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

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

digital

Software Product Description

PRODUCT NAME: WPS-8, Version 3.1, PDP-8 Word Processing System   SPD 5.94.6

DESCRIPTION:

WPS-8 is a hardware/software text processing system for office and business use. A menu-driven editor creates and updates documents stored on floppy disks. Up to 200 documents of various lengths, or up to 125 pages can be stored on a single floppy disk. Editing capabilities make changes easy without retyping. Final or draft documents can be queued to a letter quality printer or a draft printer(if so equipped). Printing and editing can be done concurrently.

WPS-8 enables the user to:

- Prepare and edit reports which may require several drafts before final printing.
- Create contracts and other documents from a library of stored paragraphs.
- Print form letters using a stored form document and a list from which items, such as names and addresses, are automatically selected.

System features include:

- Dynamic floppy disk file allocation
- Supports either two- or four-floppy system configuration
- Responsive menu-driven operation
- Easy-to-learn commands
- Special editing keypad
- Full editing features:
  1. cut and paste of blocks of text
  2. operations by grammatical entity (character, tab position, sentence, paragraph, page, section, line)
  3. boilerplate insert from library file
  4. shorthand expressions
  5. swap transposed character key
  6. delete and rubout by word and character
- Full control of tabs, margins, justification and pagination:
  1. automatic centering of text on a line
  2. discretionary pagination control
  3. semi-automatic hyphenation
  4. decimal and right-adjusted tabs
- Greater than 500 words per minute letter quality printed output
- Higher speed draft printer support
- Selectable pitch and type fonts

- Underlined and overstruck (bold) printout
- Proportional spaced printing
- Multi-column printing
- Superscript and subscript
- Mailing list utilities
- Form letter merge
- Time and date stamp
- Operator statistics
- Single sheet or continuous forms printing
- User definable keys

Communication Features:

Using the WPS-8 communications option, documents prepared under WPS-8 can be sent to a remote time-sharing system or to another WPS-8 system. Transmission is serial asynchronous ASCII, RS232-C compatible. A variety of transmission options is possible. Used in conjunction with a TOPS-10, TOPS-20, RSX-11M, IAS, or RSTS/E timesharing system, WPS-8 allows data entry and verification to take place off-line. The WPS-8 editor makes file modifications easy. Once in final form, files can be sent to the remote system for processing. Files can also be sent from TOPS-10, TOPS-20, RSX-11M, IAS, or RSTS/E systems to a WPS-8 system for off-line editing, printing, and review.

When used to send documents to another WPS-8 system, printer control information is sent with each file. The document received at the remote system contains all margin, spacing, hyphenation and justification information found in the original. A special error detection protocol is used to insure accurate document transmission.

Features:

- Asynchronous serial transmission — RS232-C compatible
- Speeds to 9600 baud using XON/XOFF protocol
- Flexible control of keyboard, printer, and floppy
  1. input from keyboard, document, or remote host
  2. output to screen, printer, document, or remote host
  3. multiple combinations possible
- Special transmission mode between WPS-8 systems
  1. error detecting protocol

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2. format control information sent with documents
- Buffered operation
- Automatic document send and receive

MINIMUM HARDWARE REQUIRED:

One of the following systems:
- WS100 Word Processing System
- DS310-K or DS310-L COS-310 system with WP310 upgrade

OPTIONAL HARDWARE:

One KL8-JA communications interface
One LE8 line printer or
One LA8 draft printer
One additional RX01 dual floppy drive

PREREQUISITE SOFTWARE:

None

OPTIONAL SOFTWARE:

None

TRAINING CREDITS:

None

SUPPORT CATEGORY:

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

Included in on-site installation is an explanation and demonstration of the system. Installation will be deemed complete when the Digital Sample Procedure included with the software has been executed successfully.

UPDATE POLICY:

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

ORDERING INFORMATION:

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

The following key (A) represents the form of power source for the product and must be specified at the end of the "WS" or "WP" code, i.e., WS100-AA = system power provided in United States.

A = United States (60 Hz)

WS100 -B— Word Processing System, Single-use license, binaries, documentation, support services (power: A)

WS100 -A— Word Processing System with KL8-JA, Single-use license, binaries, documentation, support services (power: A)

Upgrade Options

The following option is available as an upgrade kit from a DS310-K or DS310-L COS-310 system and requires previous purchase of one license with support services.

WP310 -A— Single-use license, binaries, documentation, support services (power: A)

The following key (Y) represents the distribution media for the product and must be specified at the end of the order number, e.g., QF700-HY = binaries on floppy diskette.

Y = RX01 Floppy Diskette

Update Options

Users of WPS-8, Version 3, whose specified Support Category warranty has expired may order under license the following software update at the then current charge for such update. The update is distributed in source or binary form on the appropriate medium and includes no installation or other services unless specifically stated.

QF700 -H— Binaries, documentation (media: Y)

Users of WPS-8, Version 3, whose specified Support Category warranty has not expired may order under license the following software update for the then current media charge. The update is distributed in binary form on the appropriate medium and includes no installation or other services unless specifically stated.

QF700 -W— Binaries, documentation (media: Y)

ADDITIONAL SERVICES:
None

ADDENDUM
SOFTWARE SUPPORT CATEGORIES

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

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

CATEGORY A

1. Upon notification by customer to the nearest DIGITAL office that the computer system, including all required prerequisite hardware and software, is ready for the installation of the SOFTWARE, DIGITAL will install such SOFTWARE in any location within the contiguous forty-eight (48) United States, the District of Columbia, or a country in which DIGITAL or a subsidiary of DIGITAL has a software service facility. The notification must be received by DIGITAL and the system must be ready for installation within thirty (30) days after the delivery of the SOFTWARE to customer or DIGITAL will have no obligation to install. Installation will consist of: (1) verification that all components of the SOFTWARE have been received by customer, (2) loading the SOFTWARE, and (3) executing a DIGITAL sample procedure.

2. During the ninety (90) day period after installation, if the customer encounters a problem with the current unaltered release of the SOFTWARE which DIGITAL determines to be a defect in the SOFTWARE, DIGITAL will provide the following remedial service (on site where necessary): (1) if the SOFTWARE is inoperable, apply a temporary correction (TC) or make a reasonable attempt to develop an emergency by-pass, and (2) assist the customer to prepare a Software Performance Report (SPR) and submit it to DIGITAL.

3. During the one (1) year period following installation, if the customer encounters a problem with the SOFTWARE which his diagnosis indicates is caused by a SOFTWARE defect, the customer may submit an SPR to DIGITAL. DIGITAL will respond to problems reported in SPRs which are caused by defects in the current unaltered release of the SOFTWARE via the Maintenance Periodical for the SOFTWARE, which reports SPRs received, code corrections, temporary corrections, generally useful emergency by-passes and/or notice of the availability of corrected code. Software Updates, if any, released by DIGITAL during the one (1) year period, will be provided to the customer on DIGITAL's standard distribution media as specified in the applicable SPD. The customer will be charged only for the media on which such updates are provided, unless otherwise stated in the applicable SPD, at DIGITAL's then current media prices.

CATEGORY B

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

CATEGORY C

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

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

digital
Software Product Description

PRODUCT NAME: WPS-8/MTS, Version 3.1, WPS-8 Multi Terminal System SPD 5.96.6

DESCRIPTION:

WPS-8/MTS is a two-terminal hardware/software text processing system for office and business use. Both users have the full capabilities of the WPS-8 Word Processing System. A menu-driven editor creates and updates documents stored on floppy disks. Up to 200 documents of various lengths or up to a total of 125 pages can be stored on a single floppy disk. Editing capabilities make changes easy without retyping. Final or draft documents can be queued to a letter quality printer or a draft printer. Printing and editing can be done concurrently.

WPS-8/MTS enables the user to:

- Prepare and edit reports which may require several drafts before final printing.
- Create contracts and other documents from a library of stored paragraphs.
- Print form letters using a stored form document and a list from which items, such as names and addresses, are automatically selected.

System features include:

- Dynamic floppy disk file allocation
- Responsive menu-driven operation
- Easy-to-learn commands
- Special editing keypad
- Full editing features:
  1. cut and paste of blocks of text
  2. operations by grammatical entity (character, tab position, sentence, paragraph, page, section, line)
  3. boilerplate insert from library file
  4. shorthand expressions
  5. swap transposed character key
  6. delete and rubout by word and character
- Full control of tabs, margins, justification, and pagination:
  1. automatic centering of text on a line
  2. discretionary pagination control
  3. semi-automatic hyphenation
  4. decimal and right-adjusted tabs
- Greater than 500 words per minute letter quality printed output
- Higher speed draft printer support
- Selectable pitch and type fonts

- Underlined and overstruck (bold) printout
- Proportional spaced printing
- Multi-column printing
- Superscript and subscript
- Mailing list utilities
- Form letter merge
- Time and date stamp
- Operator statistics
- Single sheet or continuous forms printing
- User definable keys

Communication Features:
Using the WPS-8 communications option, documents prepared under WPS-8 can be sent to a remote timesharing system or to another WPS-8 system. Transmission is serial asynchronous ASCII, RS232-C compatible. A variety of transmission options is possible. Used in conjunction with a TOPS-10, TOPS-20, RSX-11M, IAS, or RSTS/E timesharing system, WPS-8 allows data entry and verification to take place offline. The WPS-8 editor makes file modifications easy. Once in final form, files can be sent to the remote system for processing. Files can also be sent from TOPS-10, TOPS-20, RSX-11M, IAS, or RSTS/E systems to a WPS-8 system for off-line editing, printing, and review.

When used to send documents to another WPS-8 system, printer control information is sent with each file. The document received at the remote system contains all margin, spacing, hyphenation and justification information found in the original. A special error detection protocol is used to insure accurate document transmission.

Features:
- Asynchronous serial transmission — RS232-C compatible
- Speeds to 9600 baud using XON/XOFF protocol
- Flexible control of keyboard, printer, and floppy
  1. input from keyboard, document, or remote host
  2. output to screen, printer, document, or remote host
  3. multiple combinations possible
- Special transmission mode between WPS-8 systems
  1. error detecting protocol
  2. format control information sent with documents

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- Buffered operation
- Automatic document send and receive

MINIMUM HARDWARE REQUIRED:

One of the following systems:

- WS100 Word Processing System with WP102 upgrade
- DS310-K or DS310-L COS-310 system with WP310 and WP102 upgrades

OPTIONAL HARDWARE:

One of the following:

- KL8-JA Communications Interface
- LE8 line printer or
- LA8 draft printer

PREREQUISITE SOFTWARE:

None

OPTIONAL SOFTWARE:

None

TRAINING CREDITS:

None

SUPPORT CATEGORY:

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

Included in on-site installation is an explanation and demonstration of the system. Installation will be deemed complete when the Digital Sample Procedure included with the software has been successfully executed.

UPDATE POLICY:

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

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The following key (A) represents the form of power source for the product and must be specified at the end of the "WS" or "WP" code, i.e., WS100-AA = system power provided in United States.

A = United States (60 Hz)

Distribution for the WPS-8 software is on a floppy diskette.

For a WS100-A or WS100-B Word Processing System:

WP102 -B— MTS system upgrade, single-use license, binaries, documentation, support services (power: A)

For a DS310-K or a DS310-L COS-310 system both of the following are required:

WP310 -A— Word Processing System, single-use license, binaries, documentation, support services (power: A)

WP102 -B— MTS system upgrade, single-use license, binaries, documentation, support services (power: A)

The following key (Y) represents the distribution media for the product and must be specified at the end of the order number, e.g., QF702-HY = binaries on floppy disk.

Y = RX01 Floppy Diskette

Update Options

Users of WPS-8/MTS, Version 3.0, whose specified Support Category warranty has expired or whose standard program update services has expired may order under license the following software update at the then current charge for such update. The update is distributed in binary form on the appropriate medium and includes no installation or other services unless specifically stated otherwise.

QF702 -H— Binaries, documentation (media: Y)

Users of WPS-8/MTS, Version 3.0, whose specified Support Category warranty has not expired may order under license the following software update for the then current media charge. The update is distributed in source or binary form on the appropriate medium and includes no installation or other services unless specifically stated.

QF702 -W— Binaries, documentation (media: Y)

ADDITIONAL SERVICES:

None

ADDENDUM
SOFTWARE SUPPORT CATEGORIES

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

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

CATEGORY A

1. Upon notification by customer to the nearest DIGITAL office that the computer system, including all required prerequisite hardware and software, is ready for the installation of the SOFTWARE, DIGITAL will install such SOFTWARE in any location within the contiguous forty-eight (48) United States, the District of Columbia, or a country in which DIGITAL or a subsidiary of DIGITAL has a software service facility. The notification must be received by DIGITAL and the system must be ready for installation within thirty (30) days after the delivery of the SOFTWARE to customer or DIGITAL will have no obligation to install. Installation will consist of: (1) verification that all components of the SOFTWARE have been received by customer, (2) loading the SOFTWARE, and (3) executing a DIGITAL sample procedure.

2. During the ninety (90) day period after installation, if the customer encounters a problem with the current unaltered release of the SOFTWARE which DIGITAL determines to be a defect in the SOFTWARE, DIGITAL will provide the following remedial service (on site where necessary): (1) if the SOFTWARE is inoperable, apply a temporary correction (TC) or make a reasonable attempt to develop an emergency by-pass, and (2) assist the customer to prepare a Software Performance Report (SPR) and submit it to DIGITAL.

3. During the one (1) year period following installation, if the customer encounters a problem with the SOFTWARE which his diagnosis indicates is caused by a SOFTWARE defect, the customer may submit an SPR to DIGITAL. DIGITAL will respond to problems reported in SPRs which are caused by defects in the current unaltered release of the SOFTWARE via the Maintenance Periodical for the SOFTWARE, which reports SPRs received, code corrections, temporary corrections, generally useful emergency by-passes and/or notice of the availability of corrected code. Software Updates, if any, released by DIGITAL during the one (1) year period, will be provided to the customer on DIGITAL's standard distribution media as specified in the applicable SPD. The customer will be charged only for the media on which such updates are provided, unless otherwise stated in the applicable SPD, at DIGITAL's then current media prices.

CATEGORY B

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

CATEGORY C

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

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

digital

Software Product Description

PRODUCT NAME: **COS-310**, Version 8.0, Commercial Operating System-310 **SPD 5.98.7**

DESCRIPTION:

COS-310 is one of Digital Equipment Corporation's DATASYSTEM 300 Series Commercial Operating Systems. It is an applications development tool for EDP users who wish to implement data management functions for small- to medium-size business applications. COS-310 is a self-contained single use, disk-resident operating system. It provides an operation control monitor, an easy-to-learn high level programming language (DIBOL), program preparation and debugging utilities, and production utilities.

COS-310 Monitor — COS-310 provides software operation control through the system monitor. For memory economy, the monitor resides in two segments: one memory-resident and the other on the system device. The monitor includes a comprehensive set of commands which control the editing and execution of programs, and maintenance of file directories.

The monitor contains all the necessary I/O device handlers for the system. The direct implementation and changing of programs can be controlled and altered through conversational commands designed into the software. The COS-310 monitor device options include line printers and disk storage devices. The monitor size is 8K bytes and expands to 16K bytes when the LQP printer is used.

DIBOL Language — Digital Equipment Corporation's Business Oriented Language (DIBOL) is built around procedural verbs that permit the programmer to arrange information for desired execution and output. These procedural statements (commands plus data) permit data manipulation, calculation of arithmetic expressions, subscripting, overlaying of records, clearing of memory or buffers, file initialization, branching, tracing, program chaining, and printing overlapped with processing.

The language syntax is divided into two sections: a data definition section and procedure section. The data definition section stipulates the type and size of the data variables. The procedure section of the language consists of procedural verbs, each with comprehensive arguments. These verbs are: PROC, XMIT, READ, WRITE, GO TO, IF, CALL, RETURN, FORMS, STOP, CHAIN, ACCEPT, DISPLAY, TRAP, and INCR.

Editor — The system's editor is a text editor that is part of the monitor. It is an interactive editor with line numbers followed by the information to be inserted, deleted, or changed. The COS-310 editor provides a means to sequence and resequence line numbers with the use of simple commands. Input to the editor comes from the operation through the console keyboard. Output from the editor can be a listing of a file on the console display or the line printer.

COMP — This utility translates a DIBOL program created by the system's editor into interpretive code. This program can be stored on disk, listed on the printer, or run immediately. No linking is required to run a program. Without a program listing, program compilation usually takes 10 to 30 seconds. This results in substantial time savings over other products that have much slower compilers and require program linking.

SYSGEN (SYStem GENeration) — SYSGEN is a conversational utility program that allows the user to change the current device handlers or to create a new system disk. This is done using simple English statements, prompted to the operator from the program. Changing the handlers provides the operator with the ability to specify the disk and line printer I/O handlers that will operate most effectively in the system. In addition to changing the selected handlers in the current system, SYSGEN can copy the system from an RX01/RX02 to an RK05 and vice versa for installation start-up.

DFU (Data File Utility) — DFU allows the user to designate and examine logical unit assignments. The use of logical unit assignments for data files provides data file device independence for the programs using COS-310. Logical unit assignments can be input to DFU from the operator's keyboard, from a command file stored on the system device, or from the edit buffer. The current logical unit assignments can be displayed or printed.

FLOW (FLOW chart generator) — FLOW is a utility program designed to assist in the program documentation process. FLOW will generate a printed flowchart from a set of easily understood commands. The FLOW commands can optionally be included in the DIBOL source program.

PATCH — PATCH is used to fix either a system program or the monitor on a COS-310 system. All input information for the PATCH operation is distributed as official patches from Digital Equipment Corporation.

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The PATCH information is a line-by-line dialogue. Version 8.0 of the PATCH program introduces the capability to perform automatic patching of the COS-310 system.

Debugging Aids — COS-310 includes several features that facilitate DIBOL program debugging.

- CREF — Cross Reference provides an alphabetical listing of all symbols used in the DIBOL program, the line number where each symbol is defined, and all the line numbers where each symbol is used.
- DAFT — The Dump and Fix Technique has the ability to search for, examine, list, change records, and make minor adjustments to a data file.
- TRACE/NO TRACE — An integral DIBOL language feature. Each trace enables the DIBOL statement executed to print a line containing the source file line number.
- DDT — The DIBOL Debugging Technique features breakpoint, variable examination, subroutine call traceback and iteration.

SORT — COS-310 SORT is a multiphase sort which can reorder a data file containing fixed length records into a specified sequence. The user can specify up to eight (8) fields (with sub-fields) of a fixed length record as a sort key. A file can be sorted in either the ascending or descending sequence of the contents of the fields in each record. The SORT also has merge file capability. This allows each volume of a multi-volume file to be sorted independently and then merged with the other volumes within the file. Both sort and merge capabilities are parameterized by a sort control file.

PIP (Peripheral Interchange Program) — PIP is a utility program that transfers files from one device to another. It can replace an existing file with a new file and allow data files to be combined. It can accept input from disk and produce output on terminal, disk, or the line printer. PIP includes the capability to enter PIP commands from a predefined command file in addition to the keyboard. This eliminates the need for an operator response to PIP's prompts and therefore reduces the possibility of operator error.

PRINT — PRINT is a utility for the creation of report programs. Using a parameter file which describes the report, PRINT will generate a DIBOL program which will produce that report.

MENU — The MENU program allows the operator to select a function to be performed from a set of functions that is displayed on the screen. The function is a batch stream or a series of monitor commands. These are stored in a command file for operator use. The MENU program reduces operator errors in selecting programs to be run.

FILEX (File Conversion Program) — FILEX is a utility program that converts COS-310 formatted files stored on RK05 disks into OS/8 formatted files and vice versa. On RX02 diskettes, FILEX permits conversion of data files on RX02 diskettes to be moved onto an RX01 diskette loaded into the second RX02 disk drive. Conversion of RX01 disk files to RX02 files is also permitted.

In addition, FILEX can convert a COS-310 file stored on a flexible diskette or RK05 onto an RX01 flexible diskette in a format directly readable by the IBM 3740 series data entry terminal. IBM files on flexible diskettes can be converted to COS-310 format provided they are single volume and there are no bad tracks on the diskette media.

BATCH — Commands to run DIBOL programs and system utilities may be stored in a BATCH file. These job streams may be run by operator command or by the MENU utility.

START-UP FILE — A start-up file may be optionally specified in SYSGEN which would, if present, automatically start a job after the operator bootstrapped the system and entered a valid date.

Formats Programs — DKFMT formats RK05 disks. DYFMT converts an RX01 diskette into an RX02 diskette. Except for COS-310 software distributed on an RX02, any diskette used on an RX02 drive must be formatted before being used.

MINIMUM HARDWARE REQUIRED:

One of the following (with a minimum of 16K bytes of memory):
- DATASYSTEM 310
- DATASYSTEM 308
- DECstation 78/50, 78/70, 88/50, 88/70, or 88/80 (RL01 not supported on 88/80)

OPTIONAL HARDWARE:

D308 or DECstation-78
- Up to four (4) RX01 floppy disk drives[1]
- Up to four (4) RX02 floppy disk drives
- One (1) LA8, LQP8[2], or LA120 printer

D310 or DECstation-88
- Additional memory up to a system total of 64K bytes
- One (1) VT52 or VT100 console terminal
- Up to four (4) RX01 floppy disk drives
- Up to four (4) RX02 floppy disk drives[1]
- Up to four (4) RK05 disk drives (RK05 F counts as 2) and controller
- One (1) LA35, LQP8[2], LA8A, LA120, LA8, or LP05 printer

PREREQUISITE SOFTWARE:

None

OPTIONAL SOFTWARE:

COS-310/2780 Communications Software.

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[1]RX01 and RX02 drives are not supported by the same system.

[2]LQP requires a minimum of 32K bytes of memory of which 8K bytes are used by the LQP handler.

TRAINING CREDITS:

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

SUPPORT CATEGORY:

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

UPDATE POLICY:

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

ORDERING INFORMATION:

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

The following key (E, X, Y) represents the distribution media for the product and must be specified at the end of the order number, e.g., QF310-HX = binaries on RX02 floppy disk.

E = RK05 Disk Cartridge
X = RX02 Dual Density Floppy Diskette
Y = RX01 Floppy Diskette

This software is available only for the systems listed in the minimum hardware section of this SPD, and is offered with support services (includes hardware, single-use license, binaries, documentation, and support services). Systems are also available which include a single-use license only (no binaries, no documentation, and no support services).

Update Options

Users of COS-310 whose specified Support Category warrant has expired may order the following software update at the then current charge for such update, for use under the existing license. Except where the medium is designated as Z, the update is distributed in binary form on the appropriate medium. A software update where the medium is designated as Z grants the user of COS-310 the right to copy the previously ordered QF310-H or QF310-W software update for use on an additional single CPU for which a COS-310 license has been obtained.

QF310 -H— Binaries, documentation (media: E, X, Y)

QF310 -H— Right to copy for single use (under existing license), no binaries, no documentation, no support services (media: Z)

Users of COS-310 whose specified Support Category warranty has not expired may order under license the following software update for the then current media charge. The update is distributed in binary form on the appropriate medium and includes no installation or other services unless specifically stated.

QF310 -W— Binaries, documentation (media: E, X, Y)

Miscellaneous Options:
QF310 -G— Documentation only (media: Z)

ADDITIONAL SERVICES:

None

ADDENDUM
SOFTWARE SUPPORT CATEGORIES

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

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

CATEGORY A

1. Upon notification by customer to the nearest DIGITAL office that the computer system, including all required prerequisite hardware and software, is ready for the installation of the SOFTWARE, DIGITAL will install such SOFTWARE in any location within the contiguous forty-eight (48) United States, the District of Columbia, or a country in which DIGITAL or a subsidiary of DIGITAL has a software service facility. The notification must be received by DIGITAL and the system must be ready for installation within thirty (30) days after the delivery of the SOFTWARE to customer or DIGITAL will have no obligation to install. Installation will consist of: (1) verification that all components of the SOFTWARE have been received by customer, (2) loading the SOFTWARE, and (3) executing a DIGITAL sample procedure.

2. During the ninety (90) day period after installation, if the customer encounters a problem with the current unaltered release of the SOFTWARE which DIGITAL determines to be a defect in the SOFTWARE, DIGITAL will provide the following remedial service (on site where necessary): (1) if the SOFTWARE is inoperable, apply a temporary correction (TC) or make a reasonable attempt to develop an emergency by-pass, and (2) assist the customer to prepare a Software Performance Report (SPR) and submit it to DIGITAL.

3. During the one (1) year period following installation, if the customer encounters a problem with the SOFTWARE which his diagnosis indicates is caused by a SOFTWARE defect, the customer may submit an SPR to DIGITAL. DIGITAL will respond to problems reported in SPRs which are caused by defects in the current unaltered release of the SOFTWARE via the Maintenance Periodical for the SOFTWARE, which reports SPRs received, code corrections, temporary corrections, generally useful emergency by-passes and/or notice of the availability of corrected code. Software Updates, if any, released by DIGITAL during the one (1) year period, will be provided to the customer on DIGITAL's standard distribution media as specified in the applicable SPD. The customer will be charged only for the media on which such updates are provided, unless otherwise stated in the applicable SPD, at DIGITAL's then current media prices.

CATEGORY B

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

CATEGORY C

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

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

The Digital Equipment Computer Users Society

DECUS ▣

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

OBJECTIVES

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

ACTIVITIES

1. SYMPOSIA

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

2. SPECIAL USER GROUPS

DECUS encourages subgrouping of users with common interests and/or geographical proximity.

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

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

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

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

3. STANDARDS

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

4. PROGRAM LIBRARY

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

DECUS (continued)

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

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

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

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

MEMBERSHIP

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

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

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

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

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

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

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

NAME:_____

COMPANY:_____

ADDRESS:_____

_____

CITY:_____

STATE/COUNTRY:_____ZIP:_____

Membership Requested (check one):

☐ Installation   ☐ Associate   January 1979

DECUS OFFICES

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

SOFTWARE PROBLEMS OR ENHANCEMENTS

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

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

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