DOS/BATCH
Installation Notes
Monitor Version V09

FOR THE DOS/BATCH OPERATING SYSTEM

August 1973

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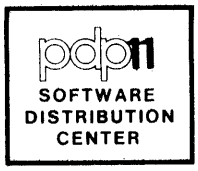


Your attention is invited to the last two pages of this document. The "How to Obtain Software Information" page tells you how to keep up-to-date with DEC's software. The "Reader's Comments" page, when filled in and mailed, is beneficial to both you and DEC; all comments received are acknowledged and are considered when documenting subsequent manuals.

Associated Documents:

DOS/BATCH Monitor
Programmer's Manual, DEC-11-OMPMA-A-D

DOS/BATCH Batch User's Guide, DEC-11-OBUGA-A-D

DOS/BATCH Assembler (MACRO)
Programmer's Manual, DEC-11-LASMA-A-D

DOS/BATCH FORTRAN Compiler and Object Time System
Programmer's Manual, DEC-11-LFRTA-A-D

DOS/BATCH System Manager's Guide, DEC-11-OSMGA-A-D

DOS/BATCH File Utility Package (PIP)
Programmer's Manual, DEC-11-UPPAA-A-D

DOS/BATCH Debugging Program (ODT-11R)
Programmer's Manual, DEC-11-UDEBA-A-D

DOS/BATCH Linker (LINK)
Programmer's Manual, DEC-11-ULKAA-A-D

DOS/BATCH Librarian (LIBR)
Programmer's Manual, DEC-11-ULBAA-A-D

DOS/BATCH Text Editor (EDIT-11)
Programmer's Manual, DEC-11-UEDAA-A-D

DOS/BATCH File Compare Program (FILCOM)
Programmer's Manual, DEC-11-UFCAA-A-D

DOS/BATCH File Dump Program (FILDMP)
Programmer's Manual, DEC-11-UFLDA-A-D

DOS/BATCH Verification Program (VERIFY)
Programmer's Manual, DEC-11-UVERA-A-D

DOS/BATCH Disk Initialization Program (DSKINT)
Programmer's Manual, DEC-11-UDKIA-A-D

PREFACE

This document lists all known problems in DOS/BATCH VØ9, the system programs, and FORTRAN. In addition, it lists changes and solutions to problems since the release of Versions VØ8-Ø8 of DOS-11 and BATCH-11.

This document should be used in conjunction with the DOS/BATCH System Manager's Guide (DEC-11-OSMGA-A-D) to install the new Monitor. It is recommended that the user read these Installation Notes carefully before bringing DOS/BATCH VØ9 up on his system.

NOTE

CONTENTS

CHAPTER 1

INTRODUCTION

DOS/BATCH VØ9 combines for the first time the DOS-11 and BATCH-11 Monitors for distribution. In addition to correcting software problems from the previous version (VØ8-Ø8), DOS/BATCH VØ9 supports the following new peripheral devices:

- RP11C Disk Controller
- CD11 Card Reader
- TA11 Cassette Tape Controller
- LP11R Line Printer
- LS11 Line Printer

The Monitor initialization procedure has been changed to simplify installation; these changes are reflected in the DOS/BATCH System Manager's Guide.

CHAPTER 2

NEW PROGRAMS

Two new programs are distributed with DOS/BATCH Version VØ9: a disk initializer program (DSKINT), and a linker program (LINK).

2.1 Disk Initializer (DSKINT)

DSKINT allows the user to initialize an RPØ3 Disk Pack. It can also be used to verify and mark bad areas on the disk. DSKINT does not perform these operations on a system pack or any disk other than an RPØ3. To initialize a system disk, the user must run SYSLOD, a stand-alone utility program.

The DSKINT program is described in the manual DOS/BATCH Disk Initialization Program (DSKINT) Programmer's Manual, DEC-11-UDKIA-A-D.

2.2 Linker (LINK)

LINK, the new linking loader program, is compatible with the old DOS-11/BATCH-11 linker.

The following is a list of the features and capabilities of the new LINK program (see Chapter 6 for a list of known differences from the older linker).

1. Load-on-call (also known as LOCAL or autoload) overlays are supported.
2. Manual load (force load) overlays are supported.
3. The new LINK processes overlays more rapidly than the old.
4. The new LINK accepts indirect files several levels deep (for example, if the command typed to LINK is @ABC, the commands for linking are taken from the file ABC).
5. The new LINK handles overlays automatically from any disk or DECtape; the old Linker handled overlays from the system disk only.
6. The new LINK provides improved map formats with short, normal, and long forms. It also provides an optional global cross-reference listing.
7. The new LINK supports an expanded program section capability (.PSECT's which generalize the .CSECT capability).
8. Error messages are no longer displayed as numbers only; they are displayed as English language phrases.

9. Either linked or contiguous output files can be generated; overlay builds produce contiguous output automatically. It is no longer necessary to use CILUS to build overlays.

10. The following options are available:

    a. absolute patches
    b. global patches
    c. control section extension
    d. defining global symbols

11. An overlay description language (ODL) allows simple overlay description and definition. The ODL is compatible with that used by RSX-11D.

12. Optional control of .PSECT and .CSECT placement is provided.

13. Library include (/IN) and exclude (/EX) switches are provided. These allow linking directly from libraries and force loading routines which would not otherwise be loaded.

The new LINK program is described in a new manual -- DOS/BATCH Linker (LINK) Programmer's Manual, DEC-11-ULKAA-A-D.

CHAPTER 3

CORRECTIONS TO PREVIOUS PROBLEMS

Version VØ9 of DOS/BATCH corrects problems that existed in earlier versions of the Monitor, system programs, and FORTRAN. These corrections are listed below.

3.1 MONITOR CORRECTIONS

1. The user can output the bell character on the console.
2. The default UIC is now 1,2 instead of 2,1.
3. The system works correctly when it encounters a $JOB card with a nonexistent UIC.
4. The blank BATCH Suppress and Mode cards work properly from job to job.
5. A problem in the 5Ø Hz time printout has been corrected.
6. OPENU with linked files issues a proper diagnostic message.
7. The CD and CR device drivers handle the stack check problem correctly.
8. The runaway magtape problem has been corrected.
9. A job can be killed while a file is being deleted without affecting the disk.
10. The bootstrap works correctly when the system disk is full.
11. To conform to hardware requirements, magtape in the read/write mode will not write short records at the end of a file.

3.2 SYSTEM PROGRAM CORRECTIONS

1. The SYSTEM.MAC macro URESEM has been corrected so that EMT's are resident at load time.
2. ODT works properly with all consoles and PDP-11 processors.
3. Problems in PIP have been corrected; specifically, the problem relating to wild card specifications has been fixed.

3.3 FORTRAN CORRECTICNS

The following is a list of corrections to the VØ4A FORTRAN Compiler that are incorporated in the VØ6 FORTRAN Compiler.

1. Multiple specifications in DEFINE FILE statements are now processed correctly.

2. Spurious source line printing in the case of EQUIVALENCE errors has been eliminated.
3. Classification logic for IF statements has been improved. BYTE mode expressions are allowed in arithmetic IF statements and disallowed in logical IF statements.
4. The internal threaded code Push routine for BYTE variables now uses the MOVB instruction instead of the MOV instruction.
5. The initialization of BYTE variables by DATA statements now works correctly.
6. Symbol Table overflow during the Compiler's assembly phase is now reported correctly and causes termination of compilation.
7. End-of-medium (device full) is now detected correctly and causes termination of compilation with an FØØ6 error message.
8. Detection and reporting of stack overflow during expression parsing and code generation has been improved.
9. The Hollerith constant = is now correctly identified in a DATA statement.

The following is a list of corrections to the V2ØA Object Time System that are incorporated in the V22 Object Time System.

1. Overflow in Integer subtraction is now detected and reported.
2. Overflow in comparison of Integer values in an arithmetic IF statement is correctly handled and results in the expected control transfer.
3. The subprogram CABS is now correctly positioned in the library following the subprogram CLOG, which calls it.
4. The complete divide routine no longer causes real division by zero during valid operations.

CHAPTER 4

NEW FEATURES

The following new features have been added to the Monitor, system programs, and FORTRAN.

4.1 MONITOR AND SYSTEM PROGRAMS ADDITIONS AND MODIFICATIONS

1. .GUT provides information on the type and frequency of the clock. It also allows the user to find the device and unit number from which a program is loaded.
2. The R command loads and starts programs from SY:[1,1].
3. .ALLOC allows allocation of large files on an RPØ3 disk.
4. .STAT and .SPEC EMT's have been modified to support new peripheral devices.
5. The system supports the following new devices:

   a. RP11C Disk Controller
   b. TA11 Cassette Controller
   c. LP11R Line Printer
   d. LS11 Line Printer
   e. CD11 Card Reader

6. The system LICIL (MONLIB.LCL) contains several LP and CD drivers, allowing the user to choose a desired Line Printer or Card Reader at system load time.
7. The control card for the CR/CM Card Reader driver blank suppress has been changed from 12-11-Ø-7-8-9 to 12-11-1-2-8-9 because the old code conflicted with the EOF Control Card code for DOS/BATCH VØ9.
8. Getting on the air (GOTA) procedures have been simplified; all GOTA procedures are contained in batch streams.
9. The system file BADB.SYS keeps track of bad disk areas; the file can be listed using FILDMP.
10. The system issues a message if the user is not logged in.
11. The system requests time and date before allowing the user to log in.
12. A magtape or cassette tape can support nonstandard records via a .SPEC call.
13. SYSLOD has several new switches that facilitate system building.
14. SYSLOD now handles upper and lower-case keyboard input, and accepts fill counts for several different terminals.

15. It is necessary to use an /FA switch on all PIP transfers from BI:, because the new PIP uses default unformatted transfers. For example, the command

```
KB:<BI:
```

must now be expressed as

```
KB:<BI:/FA
```

16. The /CK switch has been added to PIP to provide checksummed directories.

4.2 FORTRAN ADDITIONS AND MODIFICATIONS

The following are additions and modifications to the VØ4A FORTRAN Compiler that are incorporated in the VØ6 FORTRAN Compiler.

1. Significantly improved execution-time performance of FORTRAN programs has been implemented. The optimization of the generated code, which is now object processor dependent, is controlled by a new Compiler switch, /OP:n.
2. Radix-5Ø constants are now allowed in DATA statements to initialize Real variables.
3. Variable Format Expressions are now supported.
4. Array Descriptor Blocks (ADB's) for arrays are not generated unless reference is actually made to them.
5. Hollerith constants in DATA statements now completely fill the data elements to which they are assigned; trailing blanks are inserted as necessary.
6. A new format specification, Q, permits access to the actual number of characters input by a given formatted READ statement.
7. The Compiler checks to see if any output file has the same name as an input file. In such a case, the Compiler issues an error message instead of deleting the output file.
8. The Compiler has been improved to use optimized Polish.
9. The overlay builders now verify that allocation of contiguous space for FORTRN.OVR is successful before writing the file.

The following are additions and modifications to the V2ØA FORTRAN Object Time System that are incorporated in the V22 FORTRAN Object Time System.

1. A new subroutine, ASSIGN, provides a simplified alternative to the SETFIL subroutine.
2. A new subroutine, SECNDS, returns system time or elapsed time as a floating-point value, in seconds (a preferred alternative to the 2- and 3-argument forms of CALL TIME).

3. A new subroutine, SETPDU, allows PDUMP output to be directed to any logical unit.

4. Load-on-call overlay support is now provided through a new Linker facility.

5. A simplified method of free form input on formatted READ statements, called "short field termination," is now provided.

6. Three new subroutines, IRAD5Ø, RAD5Ø, and R5ØASC, are provided to perform conversions between Radix-5Ø and ASCII data representations.

7. A FORTRAN-level Trace package has been provided as an additional library.

8. The PDP-11/4Ø Floating Instruction Set (FIS) is now supported as a standard library option.

9. Two forms of FORTRAN calling sequence conventions ("R5" and "PC") are now supported as library options.

10. LPØ,LP1,LPA, and LPB have been added to the table of carriage control devices, allowing multiple listing devices.

CHAPTER 5

KNOWN PROBLEMS

The following problems are known to exist in DOS/BATCH VØ9:

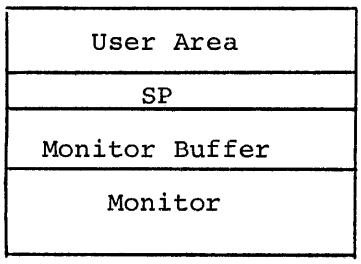
5.1 MONITOR PROBLEMS

1. There is a missing .ENDC in CONFIG, in the section that begins with

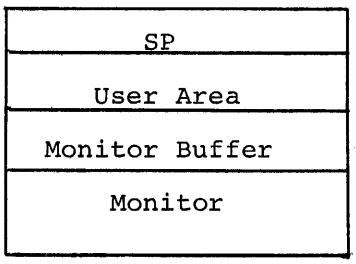
```
.IF DF,FTLP
```

   Thus, the user should try to assemble CONFIG unmodified.

2. The BE command does not work with programs that enable their own interrupts and use system routines to save and restore registers.
3. DOS/BATCH does not support DL-11C or DL-11D Communication gear. Problems exist in sending output to the keyboard (KB:). If necessary, system hardware can be modified to correct this problem.
4. The system date is not automatically updated past midnight.
5. When the Monitor buffer area is expanding, a check against SP is included to make sure it does not overwrite user core. If the stack is not the lowest area, then there is no protection for the user area, as shown in the two examples below:



SAFE



UNSAFE

6. The SAVE command does not work with overlays created by the new LINK program. It is recommended that the global patch facility of LINK be used instead of MODIFY and SAVE.
7. CTRL/C followed by START (↑C START) works properly but causes a spurious "ILLEGAL COMMAND" typeout.

8. The privileged user bit in the System Control Word (SCW) is not properly restored with UIC [1,1] at the completion of batchstreams. The bit is on after the following commands:

```
$LO 1,1
$JOB X[1,1]
```

but is off after the $FI command in a batchstream. The UIC is properly restored after the $FI command, but the privileged user bit is not restored. This can lead to S203 errors when running PIP with /UIC and /WD switches.

5.2 DEVICE DRIVER PROBLEMS

The cassette driver (CT) issues an FØ75 message (instead of an AØØ2 message) when trying to write on a cassette tape that is write-locked.

5.3 PIP PROBLEMS

PIP may not always handle physical end-of-tape (EOT) on magtape properly.

5.4 LINK PROBLEMS

1. The /OD switch does not work properly. Use the following format:

```
ODT[1,1]/OD
```

until fixed.

2. Output file defaults are not correct. For example:

```
#SY:<ABC/E
```

does not imply

```
#SY:ABC.LDA<ABC/E
```

Until the problem is fixed, the user must explicitly specify output file name(s).

3. If a command string error occurs following a previous ODL file error, the command string line will not be printed out correctly in the diagnostic.

4. Typing CTRL/C and EN, as follows:

```
↑C EN
```

to LINK causes LINK to go into a loop.

5.5 MACRO PROBLEMS

1. A missing .ENDM on a macro in a long file causes storage to be destroyed; it makes the entire file appear to be part of the macro.
2. The RUN EMT of CREF does not inform CREF of the device from which MACRO is running.

5.6 EDIT-11 PROBLEMS

1. Secondary output (EW command) loses text when used with file-structured devices. The amount lost depends upon the device.
2. P and EP commands do not operate as stated in the manual.

5.7 FILDMP PROBLEMS

If a block that was written in reverse is dumped, FILDMP loops and continues to dump until it reaches end-of-tape.

5.8 VERIFY PROBLEMS

When attempting to verify a device that has been zeroed and contains no files, a FORTRAN error message (illegal divide by Ø) is issued.

5.9 FILCOM PROBLEMS

When no two lines compare successfully between two files, only the line 1 differences are listed.

5.10 FORTRAN PROBLEMS

The following problems are known to exist in the FORTRAN Compiler:

1. In some cases, the Compiler fails to detect a missing comma between two constants in a DATA statement. This may appear to compile correctly, but the interpretations of the constant values are incorrect.

2. Some illegal expressions may cause a Compiler crash. The only known example is the combination .NOT..EQ., as in the expression:

```
X = A .NOT..EQ. B
```

The correct form of the expression is:

```
X = A .NE. B
```

The unary operator .NOT. should never precede another operator.

3. In some cases, a unary operator is treated as though it had a precedence greater than that of exponentiation (contrary to American National Standard FORTRAN specifications). This should be avoided by the use of parentheses. For example:

```
-A**2
```

should be written

```
-(A**2)
```

4. The FORTRAN Compiler overlay file, FORTRN.OVR, and the diagnostic file, FORCOM.DGN, must reside on the system disk under UIC [1,1].

5. Typing ↑C (CTRL/C) followed by BEGIN, while the Compiler is running, is not an acceptable way of restarting FORTRAN. The Compiler can be restarted only by the Monitor RESTART command.

6. If the data type of a variable is changed more than once in a program, the last such change takes precedence. No diagnostic is issued.

7. The words FORMAT, CALL, and BYTE are not allowed as variable names. In addition, no variable name of the form CALLx, CALLxx, BYTEx, or BYTExx (where x is any alphanumeric character) is acceptable.

8. The Compiler does not permit the value -32768 to be used as an integer. The value "1ØØØØØ (the octal equivalent of -32768) should be specified instead.

9. The up-arrow character (↑ or ^, depending upon the terminal) is not permitted in FORMAT statements; it is allowed, however, in a format specification stored in an array.

10. ENDFILE cannot appear as the first executable statement in a subroutine or as the conditionally executed statement of a logical IF.

5.11 SYSLOD PROBLEMS

The /BL switch in SYSLOD does not work properly. Use the /BL switch for CILUS to overcome the problem when replacing a CIL.

5.12 MISCELLANEOUS PROBLEMS

1. Use of CTRL/U (↑U) is not possible during the dialogue phase of system startup. Use the RUBOUT key to delete unwanted characters.

2. Remember that the system disk must be write-enabled if system parameters are to be changed during the dialogue phase of system generation. If the system disk is not write-enabled, the system halts without issuing a diagnostic. Once the disk has been write-enabled, processing can continue.

CHAPTER 6

DIFFERENCES BETWEEN THE OLD AND NEW LINKER PROGRAMS

The following list summarizes differences between the old Linker program and the new LINK linker.

1. STB (Symbol Table) file formats are different. STB files created by the old linker are not usable under LINK.
2. The /TA (Tapes) switch is not usable with LINK.
3. The /OV (Overlay) switch is not usable with LINK. If it is necessary to build old-style overlays with LINK, STB files may be used. Note that the old linker overlay capability is much slower and uses more overhead (about 650 words) than the new LINK overlay capability. In addition, old-style overlays can be run from the system disk only; new LINK overlays can be run from any disk or DECtape.
4. In the old linker, .CSECT's were consolidated in order of declaration; in LINK, they are consolidated alphabetically. This can be overridden, if desired, through a switch in the new LINK program. Also, LINK collects .CSECT's together instead of interspersing them throughout the blank .CSECT.
5. The /U switch is accepted, but ignored, in the new LINK.
6. The new LINK provides different map listings from those of the old linker. LINK also provides for short, normal, or long forms of these listings.
7. The old linker produced numeric diagnostics; LINK provides textual error messages.
8. The library format of the two linker programs is different. The new LINK library format will run with the old linker, but the old format causes errors in the map listing when run under LINK.
9. The new LINK program does not round to the nearest word at the end of a module, unlike the old linker. Thus, if a module ends on a byte boundary, the following module will start on the same boundary.
10. The new LINK program is described in a new manual: DOS/BATCH Linker (LINK) Programmer's Manual, DEC-11-ULKAA-A-D.

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