



TWIN Technical Note Software

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Number : SW 002 Date 29/11/76
Subject : SDOS ver. 2.0. TW 09002001 Rev. A.

This document describes the status of SDOS 2.0, i.e., it describes all the improvements and corrections added to SDOS 1.0 in order to create a new version called SDOS 2.0.

This document also describes all known anomalies.

This technical note supersedes technical note SW 001.

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I. New Files

SDOS 2.0 includes two new files: EQUATES and READY.

- a. EQUATES is a source file which defines all the standard Assembler symbols. If a programmer wishes to use these symbols, he appends this file to the beginning of his source file, e.g.:

```
EDIT FILENAME
***EDITOR VERSION 2.0***
*GET 100 EQUATES
*FILE
```

- b. READY is a command file which provides a quick check of the TWIN system in the SDOS environment by exercising each device, a slave memory test and the majority of system commands.

```
READY D LPT1
      CONO
```

D identifies the disk drive of the diskette containing READY. This diskette must be write enabled (TAB in place over slot) and have space for one file which will be written and then deleted. The printed output must be directed either to CONO (basic system) or to LPT1 (super system). (see appendix for a copy of the standard print out). Each command executed is displayed on the console. At the end of its execution, READY invokes the editor, which prints:

```
***EDITOR VERSION 2.0***
*
```

At this point enter the string: QUIT. The 'End of Ready Test' message notifies the user that the test has completed.

Two types of error messages may occur:

1. Memory type errors in the form:

```
ERROR ADDRESS XXXX
DATA WAS = XX
DATA S/B = XX
```

2. Standard SDOS Error messages.

Note: The memory test will only test the memory with a size as specified in the SLAVE, command, either by default or by explicit use of the command.

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II. System Modifications

A. Overall System Commands

1. SDOS initializes RAM in order to provide for parity checking on 16K dynamic RAM boards. This new feature causes a reload of the system to take at least 10 seconds.
2. The line printer handler is changed so that a form feed is not issued when a file is closed. This eliminates blank pages between printouts.
3. All LIST DIRECTORY commands (LDIR) now print the totals statistics:

TOTAL FILES
TOTAL BLOCKS USED
BLOCKS AVAILABLE
TOTAL BAD BLOCKS

4. The VERIFY command now requires that the drive number be specified, thus ensuring that the user cannot accidentally verify his system diskette.
5. SDOS initialization now disables the clock on initial start-up in order to stop the clock from interfering with any potential user I/O in the slave.
6. The line printer (LPTI) driver was modified to fix the problem described in technical note SW 001 in which SDOS 1.0 destroyed files on diskettes. This problem occurred when a write to the printer was followed by a write to the disk, e.g. during the following command to the assembler:

ASM SOURCE LPTI OBJECT

7. The PRINTL program now emits a form feed between pages everytime regardless of the designated output device.
8. The CLOSE function now waits until a channel's I/O progresses from "busy" to "ready", instead of rejecting a close request when the channel is "busy".
9. Errors are now printed in direct response to a command line instead of being reported after several command lines have been executed.
10. Initial spaces in a comment line of a command file after the first space or carriage return are no longer suppressed but are simply printed on CONO.

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B. Master/Slave Interface

1. Slave jobs requiring parameter input may now be invoked from a command file, e.g.:

ASM P1 P2 P3

EDIT P1 P2

LOAD SLAVEJOB P1 P2 P3...Pn
(GO XXXX)

XEQ SLAVEJOB P1 P2 P3...Pn

This facility was enabled by the addition of a new SVC function code, Hex '1C', which "gets slave job parameter." This SVC is structured the same as the SVC which retrieves parameters from the console.

2. An attempt to invoke the editor or the assembler while the slave is in either the partial or the full TWICE mode results in the error message:

★DOS★ ERROR 54★

This reminds the user that he must use the "SLAVE" command to reinstate the TWIN to mode 0.

C. Assembler

1. The assembler now recognizes only one address form for the ZBSR command.

ZBSR A

where A = 0 through 63 or
A = 8128 through 8191

The assembler will reject a negative address for this instruction.

D. Text Editor

1. The GET, PUT and COPY commands will now accept any valid I/O device name for the optional alternate file name, e.g.:

COPY 20-30 FILE1 CONO

GET 50 HSPT

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2. Under certain sporadic conditions, the editor pointed to the wrong line. This has been corrected.
3. The editor now rejects an extraneous number (not followed by the iteration left bracket, "<"), e.g. the following command,
4
would be neither processed nor rejected.
4. The editor processed superfluous input to a command as a new command, e.g., T 1 2 would not be flagged as an error. The editor now reports an error message under this condition. It also requires that commands on the same line be separated by a colon.
5. When a command line is rejected due to CONI buffer overflow, the message generated is now "ABORTED", not "TRUNCATED".
6. Under certain conditions, the "FILE" command would not retain the temporary text editor file as described in the manual. This occurred only when the diskette was full and a write error occurred on a PUT command. It is now fixed.
7. Under certain conditions, macros were not being handled properly. This occurred when the ASCII character being handled was equal to its column number in the input line. This has been corrected.
8. Whenever the editor cannot access CONI and CONO it will exit and print the message, "ASLJ* EOJ" instead of executing. This occurs whenever one of the devices is "down", or when the channels 0 or 1 are still in use.

E. PROM's

1. The default for 82S115's for the WPROM, CPROM and R PROM commands is now a size of 512 (IFF) bytes, not 256 (FF) bytes.

F. DEBUG/SLAVE

1. The GO command now accepts a blank address as input as specified in the TWIN manual.
2. Whenever a slave program is interrupted (e.g., with a breakpoint) and execution is under control of a command file, not the console, the next command is accepted only from the console. The next command was previously accepted from the command file.

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3. Under certain conditions the effective address would not be calculated correctly for a trace printout. This occurred only when the resultant address was calculated modulo 8192 and the instruction was a non-branch indirect address. This has been fixed for commands which reference page 0, but not for commands which reference other pages.
4. The virtual registers maintained by DEBUG and displayed to the users are cleared whenever DEBUG is loaded and set to the same status as that of the slave register only after the first execution of the slave under debug.
5. Once an error 46 (slave halted) has been generated, error 46 will continue to be reported. This will be corrected in the next release.
6. The execution of SVC overlays from slave jobs is not yet operational.

Appendix

Copy of READY print out on CONO

```
> SDOS VER 2.0

> READY 0 CONO
TYPE ON
*
*      TURN PROM POWER ON
*
*      MEMORY TEST
*
TYPE OFF
MEMORY SIZE IS 16K
*
COPY READY/0 ***HELP/0
*COP* EOJ
PRINT ***HELP/0 CONO
TYPE ON
*
*      TURN PROM POWER ON
*
*      MEMORY TEST
*
TYPE OFF
RPROM 0 2 0 1FF
CPROM 0 2 0 1FF
RPROM 0 1 0 FF
CPROM 0 1 0 FF
DEBUG 800
ABORT DEBUG
RHEX READY/$1
GO 00
TYPE ON
*
COPY READY/$1 ***HELP/$1
PRINT ***HELP/$1 $2
DEL ***HELP/$1
LDIR . / $1 $2
*
DEBUG
BKPT 0 W
BKPT 1000 R
DSTAT
CLBP 0
CLBP 1000
ABORT DEBUG
*
SLAVE 2650 1 1
SLAVE 2650 2 1
SLAVE 2650 0 1
*
* TYPE 'QUIT' WHEN EDIT ASK FOR INPUT
EDIT
*
```


* END OF READY TEST

*

ABORT *

```

:000003061F007018
:00401B370053004B006000068004A1A0201000000130147100100000000005B33
:005B1E51434F4E4F0D020100000013015A020100000013016DD4F775FF04FFCC018440
:00791ED920CC0188C2CE0187CB1870D8187ED0187980B0C819DL400980486109A6777
:00971D64CE01875252520E618BCC01560E618CCC0157D4F60C01848401E40498028B
:00B41EEED4F3CC01840C6180CC018A0601059FCE0185CDE185850159798601EE0187A3
:00D21D71986F059F0601CE01850DE185EC018ABC010B350159738601EE0187986969
:00EF1C871F00ABC144F0505050508430E43A1A028407450B530E53A1685071793
:010B1C1CCD01893F00F2CC017601CD01770C01868C01893F00F2CC016ACD016BB5
:01271CAC0C01853F00F2CC0168CD01690C018A3F00F2CC017DCD017ED4F5D4F4D7
:01431B330D0189174D454D4F52592053495A452049532020204B0D4552524FAB
:015E1E4D52204144445245535320585858580D44415441205741533D585820532F42F6
:017C1BCF3D58580D00FF55AAFF00000000000020302034203831323136323062
:01970846323432383332000001
:007000C100
*PRN* EOJ
DEL ***HELP/O
*DEL* EOJ
LDIR . / 0 CONO

```

SDOS VER 2.0 MASTER 8/9/76

FILE NAME	BLOCKS	SECTORS	BYTES	IDENT
SDOS	16	128	128	SDOS.. VER 2.0 8/9/76
.A	1	8	128	ASNCLS VER 2.0 8/9/76
.B	1	8	128	RNDDEL VER 2.0 8/9/76
.C	1	8	128	COPY.. VER 2.0 8/9/76
.D	1	8	128	DEBUG. VER 2.0 8/9/76
.E	9	65	128	EDIT.. VER 2.0 8/9/76
.F	1	8	128	FORMAT VER 2.0 8/9/76
.G	1	8	128	PRINTL VER 2.0 8/9/76
.H	1	8	128	SMS... VER 2.0 8/9/76
.J	1	8	128	TKDSC. VER 2.0 8/9/76
.K	1	8	128	ASCON. VER 2.0 8/9/76
.L	1	8	128	LDIR.. VER 2.0 8/9/76
.O	1	8	128	LDIR.. PART 2
.M	1	8	128	MODULE VER 2.0 8/9/76
.N	1	8	128	MODULE PART 2
.P	1	8	128	PROM.. VER 2.0 8/9/76
.R	1	8	128	RHEX.. VER 2.0 8/9/76
.S	1	8	128	SLAVE. VER 2.0 8/9/76
.T	1	8	128	STATUS VER 2.0 8/9/76
.U	1	8	128	DUPL.. VER 2.0 8/9/76
.V	1	8	128	VERIFY VER 2.0 8/9/76
.W	1	8	128	WHEX.. VER 2.0 8/9/76
.Z	14	109	128	ASSEM. VER 2.0 8/11
.1	1	8	128	EXAM.. VER 2.0 8/9/76
.2	1	8	128	DEBINL VER 2.0 8/9/76
.3	1	8	128	DEBTRC VER 2.0 8/9/76
.4	1	8	128	DEBCM1 2.1 10/12/76
.5	1	8	128	PATDUM 2.1 10/12/76
.6	1	8	128	DEBCM2 2.1 10/12/76
COPYSYS	1	5	96	
EQUATES	2	9	49	
READY	2	11	54	

TOTAL FILES 32
TOTAL BLOCKS USED 70
BLOCKS AVAILABLE 234
TOTAL BAD BLOCKS 0

*

DEBUG

BKPT 0 W

BKPT 1000 R

DSTAT

P=0000 BP=0000 W 1000 R R=00 00 00 00 00 00 00 00 00

CLBP 0

CLBP 1000

ABORT DEBUG

*

SLAVE 2650 1 1

SLV EOJ

SLAVE 2650 2 1

SLV EOJ

SLAVE 2650 0 1

SLV EOJ

*

* TYPE 'QUIT' WHEN EDIT ASK FOR INPUT

EDIT

** EDIT VER 2.0 **

** NO FILES SPECIFIED **

*QUIT

SLJ EOJ

*

* END OF READY TEST

*

ABORT *

READY TERMINATED

>