CP/M -> SOS TEXTMOVER

Transfer CP/M Text Files to SOS

by Arthur E. Anderson ///

See ad - Page 17!

You say you're tired because your Softcard /// (CP/M) programs can't mingle with your SOS files? Do you feel run-down because you can't use CP/M files with Business BASIC, the Pascal screen editor or Pascal, Applewriter ///, Access ///, and all your (sigh) nifty programs under SOS? You say that your software transfers the data from SOS to CP/M files, but *not* from CP/M to SOS? You say that your Softcard is a data sink, and you want some of it back?

Well, lift your head up high, fellow Apple///er, because this demented hacker has a cure for all of your ills (well, at least some of them). *You* need CP/M—>SOS TEXTMOVER. CP/M—>SOS TEXTMOVER is the key that lets files helplessly trapped in CP/M emerge to SOS; it will cure make you feel young again fast, *fast*, *FAST*, will cure all of mankind's ills, and it tastes good too! (Perhaps I've overstated things a bit.)

CP/M—>SOS TEXTMOVER is a program that transfers CP/M diskette files to SOS format files. If you transfer the CP/M file to a SOS floppy, then two diskette drives are required. CP/M—>SOS TEXTMOVER is menu driven, provides handy character filters, uses friendly I/O error-trapping, and allows CP/M cataloging capability. In short, it conveniently fills the CP/M to SOS gap.

Don't Blame Me . . .

No warranties, express or implied are offered, as is the case with all software. The only difference is that we're stating this up front, in the same size type as the rest of the article. Your sole recourse if you dislike this program is to erase the diskette and say nasty things about my ancestry. However, I have found this program an absolute godsend, if not a necessity, and I sincerely hope that you too will like this program. Best of all, this utility did not or will not set you back $100.00 or more. (*And, it worked for me when we transferred the text for this and other articles from CPM to SOS. That means it should work for almost anybody.—PCW*)

Who's in Control Here?

CP/M—>SOS TEXTMOVER is conveniently menu driven. The menu style was shamelessly stolen from the Apple /// utilities. It features cursor selection of input and output devices. It uses multiple menu screens to prompt and inform you. It traps I/O errors and responds with human-intelligible error messages. And if you have an Apple /// clock chip installed, it even ticks away the time.

Down to Business

Figure 1 shows the main menu of CP/M—>SOS TEXTMOVER. Typing '**L**', the first choice on the menu, will list the catalog of CP/M files. The catalog listing includes filename and type, USER number, the number of records used, file size in bytes, the number of file EXtents used, the ACCess attribute, and the SYS/DIR attribute for each file on the diskette. Under CP/M, system files such as MAG2.TXT and MAG3.TXT are so indicated with parentheses.

Typing "**T**", the second option of the main menu, initiates the "Transfer file" command. The program then requests a valid and unambiguous CP/M filename, as shown in Figure 2. (CP/M—>SOS TEXTMOVER considers upper and lower case filenames as different, thereby allowing access to "system files" which can be in lower case ASCII and "directory" files which are always in UPPER case ASCII.) The CP/M **filename.typ** is checked for syntax, and is verified to be on the disk. The transfer then proceeds.

Pascal I/O is not known for its lightning speed, so for long files, go get a cup of coffee. Just to show what's happening, CP/M—>SOS TEXTMOVER provides a block count on the

screen while it's doing its work. However, for faster operation you may turn the screen off (using the auxiliary keypad: CTRL-5), and the program will turn the screen back on after it finshes. With the display off, the transfer time will be reduced by about 20%. Transfer time is about 20 seconds per kilobyte when transferred to .CONSOLE, and 35 seconds per kilobyte when transferred to a floppy disk.

```
CP/M-->SOS TEXTMOVER                                        12:35:15
MAIN MENU                                                   Jul 13 1983
--------------------------------------------------------------------------------


   L(IST CPM DIRECTORY
   T(RANSFER FILE
   S(OURCE DRIVE.................[.D2]
   D(ESTINATION DEVICE...........[.CONSOLE]
   F(ILE ON DESTINATION DEVICE....[]
   M(ODE OF TRANSFER.............[TEXT]
   Q(UIT









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ENTER: L, S, T, D, F, M, OR Q(UIT
```

Figure 1

```
CP/M-->SOS TEXTMOVER                                        12:35:15
MAIN MENU                                                   Jul 13 1983
--------------------------------------------------------------------------------


   L(IST CPM DIRECTORY
   T(RANSFER FILE
   S(OURCE DRIVE.................[.D2]
   D(ESTINATION DEVICE...........[.CONSOLE]
   F(ILE ON DESTINATION DEVICE....[]
   M(ODE OF TRANSFER.............[TEXT]
   Q(UIT









ENTER CPM NAME.TYPE :
--------------------------------------------------------------------------------
```

Figure 2

The next two options on the main menu select the source drive and the destination device. After pressing the option, selection is made by cursor manipulation of an arrow which rotates through all the possible choices. Figure 3 shows the four CP/M floppy choices for the CP/M diskette. CP/M—>SOS TEXTMOVER does not support CP/M files on hard disk, so "PIP", your Profile files to floppy, if necessary. CP/M—>SOS TEXTMOVER does, however, support output to the .PROFILE driver. For floppy-to-floppy transfers, two disk drives are required. CP/M—>SOS TEXTMOVER will transfer most any CP/M file, with the exception of (rare) "random record" files.

When transferring data from a CP/M file, the destination device can be one of the following: .D1, .D2, .D3, .D4, .PROFILE, .CONSOLE, .PRINTER, .PARALLEL, .SILENTYPE, .RS232. Figure 4 illustrates this.

Of course, CP/M—>SOS TEXTMOVER disallows a transfer in which the source and destination drives are the same. Selection of the input and output devices is made with visual cursors. The cursor facilitates quick assignment of an output device. You can preview a file on the console, print the file on a printer, and transfer the CP/M file to a SOS disk with a minimum of fuss. For CP/M files sent to disk drives, a SOS ".ASCI" or ".DATA" file is created, based on the chosen mode of transfer. The ".ASCI" files are desirable because they may be accessed in both Pascal and BASIC, and most other programs. Pascal ".TEXT" files are not so accomodating!

```
CP/M-->SOS TEXTMOVER                                        12:35:15
MAIN MENU                                                   Jul 13 1983
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   L(IST CPM DIRECTORY
   T(RANSFER FILE
   S(OURCE DRIVE.................[.D2]                    --------
   D(ESTINATION DEVICE...........[.CONSOLE]             |      |
   F(ILE ON DESTINATION DEVICE....[]                    |  .D1 |
   M(ODE OF TRANSFER.............[TEXT]                 |->.D2 |
   Q(UIT                                                |  .D3 |
                                                        |  .D4 |
                                                        |______|









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SOURCE DRIVE: UP/DOWN ARROWS ROTATE, RETURN SELECTS, OR [ESC] ESCAPES
```

Figure 3

```
CP/M-->SOS TEXTMOVER                                        12:35:15
MAIN MENU                                                   Jul 13 1983
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   L(IST CPM DIRECTORY                                  ---------------
   T(RANSFER FILE                                       |             |
   S(OURCE DRIVE.................[.D2]                  |  .D1        |
   D(ESTINATION DEVICE...........[.CONSOLE]             |  .D2        |
   F(ILE ON DESTINATION DEVICE....[]                    |  .D3        |
   M(ODE OF TRANSFER.............[TEXT]                 |  .D4        |
   Q(UIT                                                |  .PROFILE   |
                                                        |->.CONSOLE   |
                                                        |  .PRINTER   |
                                                        |  .PARALLEL  |
                                                        |  .SILENTYPE |
                                                        |  .RS232     |
                                                        |_____________|









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SOURCE DRIVE: UP/DOWN ARROWS ROTATE, RETURN SELECTS, OR [ESC] ESCAPES
```

Figure 4

Where to Go

If a CP/M file is to be transferred to disk, then a filename is required. Typing "**F**" from the main menu commands CP/M—>SOS TEXTMOVER to request the pathname (including any ndesired subdirectories beyond the name of the destination device). Figure 5 shows such an example. This pathname is carried forward to the main manu as shown in Figure 6. Hence the CP/M file will be transferred to ".d2/letters/magazine.text". The filename is ignored if the transfer is not made to disk.

A la Mode, Please!

Typing "**M**", the last choice of the main menu, results in the mode menu shown as Figure 7. One of four modes of transfer may be chosen. Each mode represents a different set of

character filters applied to the transfer. This option allows the filtering out of nasty unprintable ASCII characters. Four filter options are offered which range from an unfiltered binary transfer to a transfer consisting of a very simple ASCII character

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CP/M-->SOS TEXTMOVER                                    13:42:34
FILE-TO-WRITE ENTRY                                     Jul 13 1983
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IF THE DESTINATION_DEVICE IS DISK , THEN A PATHNAME IS REQUIRED.
                                   OTHERWISE IT IS IGNORED.

 PLEASE ENTER PATHNAME ON DESTINATION_DEVICE AND [RETURN]
                          OR
              (<ESC> RETURN TO ESCAPE)









APPLE0
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```

Figure 5

```
CP/M-->SOS TEXTMOVER                                    12:35:15
MAIN MENU                                               Jul 13 1983
--------------------------------------------------------------------------------


   L(IST CPM DIRECTORY
   T(RANSFER FILE
   S(OURCE DRIVE.....................[.D2]
   D(ESTINATION DEVICE.............[.CONSOLE]
   F(ILE ON DESTINATION DEVICE....[APPLE]
   M(ODE OF TRANSFER...............[TEXT1]
   Q(UIT









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ENTER: L, S, T, D, F, M, OR Q(UIT
```

Figure 6

set. The binary transfer results in a ".DATA" file. A very handy mode is the "TEXT1" mode of transfer, which limits the character set to the printable ASCII, «RETURN», and «SPACE». This mode also re-expands tabs to every 8 columns. The mode menu explains each of the four preconfigured modes. Should you feel like inventing a new mode, feel free to hack at the source code and make a filter to your liking. That's an advantage of having the source code.

A Secret Map

The way that CP/M stores data on a diskette, at first, appeared as a secret. Armed with a disk zap routine, a sleepless night, and some researched information on Apple II and Apple /// formats, I proceeded to tear apart known CP/M formatted diskettes. The Apple II CP/M format is referred to as "Format RR", and appears to be mostly the same for Apple /// CP/M. This program has been used with both.

But all the Sectors Look the Same.

CP/M assigns each track to have 4 blocks of 1024 bytes (4 sectors) each. Consider a CP/M disk addressing scheme

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CP/M-->SOS TEXTMOVER                                    16:38:83
MODE_OF_TRANSFER MENU                                   Jul 13 1983
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 1..."TEXT1" TRANSFERS THE DATA INTO AN .ASCI TEXT FILE. IT LIMITS
     THE CHARACTER SET TO: PRINTABLE ASCII, CR, SPACE. IT EXPANDS
     TABS TO EVERY 8 COLUMNS. ALL OTHER CHARACTERS ARE FILTERED OUT.
     (THIS IS USEFULL FOR EDITORS.)

 2..."TEXT2" TRANSFERS THE DATA INTO AN .ASCI TEXT FILE. IT LIMITS
     THE CHARACTER SET TO: PRINTABLE ASCII,ACK, BEL, BS, HT, LF,
     VT, FF, CR, SO, SI, DLE, NAK, ESC,SPACE. ALL OTHER CHARACTERS
     ARE FILTERED OUT. (USEFUL FOR LINEPRINTER OUTPUTS.)

 3..."TEXT3" TRANSFERS DATA INTO AN .ASCI TEXT FILE.
     ONLY CNTRL-C(PASCAL EOF) IS FILTERED OUT. THIS MAY HAVE
     STRANGE EFFECTS ON NONDISK DRIVERS. USE WITH CARE!

 4..."BINARY" TRANSFERS THE DATA (BYTE FOR BYTE) INTO A .DATA FILE.
     NO TRANSLATION IS MADE ON THE DATA. THIS MAY HAVE STRANGE
     EFFECTS ON NONDISK DRIVERS. USE WITH CARE!

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  TYPE:   1, 2, 3, 4 OR [ESC] TO EXIT
```

Figure 7

where we start addressing at physical track 3. We continue addressing to track 35, then wrap around and pickup tracks 0, 1, and 2. Therefore, CP/M logical blocks 0, 1, 2, and 3 are on physical track 3. CP/M logical blocks #124 . . . 127 are on physical track 35 and CP/M logical blocks #128 . . . 139 are on physical tracks 0, 1, and 2.

The Apple/// blockread procedure reads 512-bytes, i.e. two 256-byte sectors. The high and low part of the 8 blockreads per track therefore yield the well known sixteen sectors per track. CP/M—>SOS TEXTMOVER addresses each sector by using either the high 256 bytes, or the low 256 bytes of the blockread. The required disk mappings and formulas were derived, by disk zapping many files. The details of the disk mappings are contained in the Pascal source code.

F.Y.I.

I hope this program solves your CP/M to SOS transfer problems and illuminates some of the CP/M data structures. For further reading on the subject I recommend the following references:

1. Art Messeler, "Disk Mapping the Z-80 CP/M System" *Call -A.P.P.L.E.* December 1982, pp. 45 & 46.
2. Dr. Jay H. Lieske, in a letter, *Call -A.P.P.L.E.*,February 1983, p. 66.
3. Val J. Golding, "CP/MUFFIN", *Call A.P.P.L.E.*, March 1983, pp. 81-86.
4. Inside CP/M, A guide for Users and Programmers with CP/M-86 and MP/M2, by David Cortessi, Holt, Rinehart And Winston, © 1982.
5. "CP/M USER", David P. Babcock, *Journal of Pascal and ADA*, Jan-Feb. 1983, pp. 13-14
6. Softcard /// manuals from Apple Inc.
7. Apple /// Pascal manuals from Apple, Inc.
8. Timothy C. O'Konski, "A Little Apple SOS with Your Pascal", *BYTE*, December 1982, pp. 448-482.
8. Apple /// SOS Reference Manual (Draft), copyright 1982, Apple Computer, Inc.
9. The Apple /// Pascal Technical Reference Manual (Draft), copyright 1982, Apple Computer, Inc.
10. SOS Device Driver Writer's Guide (Beta Draft), copyright 1982, Apple Computer, Inc.