

PC-Eighty

*Phil Cohen looks at an Australian product
which allows MS-DOS-based machines to run CP/M.
Sounds strange? Read on . . .*

Remember CP/M? It started way back when microcomputers were the domain of boffins only, and the only people that used them in an office were futurologists. CP/M was developed, like a lot of operating systems in those days, by a lone designer to fill a need of his own. It grew in size, complexity and following from that point on, to provide the basic ideas, and a lot of the traditons, that led to MS-DOS.

CP/M also gained a solid reputation for user-unfriendliness. Error messages like 'BDOS Error on A:' abound. To copy a file from one disk to another in a single floppy machine, you had to load the file into memory using the debugger, at the same time noting on a piece of paper the size of the file in decimal, then exit the debugger, convert the number to hex, put the other disk in, enter the first two digits, (I think) in a command like SAVE 99 FILE, cross your fingers and whistle the national anthem.

Although the early versions of CP/M (running on 8in floppies only) were interchangeable, later versions (for 5in systems) were totally incomprehensible to each other. There are literally hundreds of different disk formats for CP/M, almost as many versions as there are machines. Even on the same machine, different versions of CP/M worked in different ways, and it wasn't unusual to have to call in a programmer to get even the most commercial of packages running. As a standard, CP/M was a failure.

But for all that, it attracted the growing number of backroom boys and girls who were interested enough in computers to prefer an operating system that made you think.

Out of those years of fertile CP/M soil and equally fertile minds came an enormous outpouring of software to suit the most vertical of vertical markets. CP/M software must be almost as varied as Apple software (of which there is an awful lot) – and of course by adding a board to the Apple you could run CP/M on it too!

The upshot of all of this is that whatever your application (beekeeping?

escort agency management? stock car racing?) someone out there has written a package to run it under CP/M.

For a good number of years I owned an Apple II+ computer which, by dint of having a special card fitted, could run CP/M. In the fast-moving world of microcomputing, what surprised me more than anything else was the fact that, once you had an application, (mine was word processing) up and running, there was precious little reason for upgrading to a bigger or better machine. Once I was happy with all of the printer formats, standard files and backup procedures I had set up, I could see no reason to change. Until the IBM PC and MS-DOS came along. Then I bought a clone.

There must be a lot of people who have old CP/M machines running old applications, who would dearly like to upgrade to MS-DOS but couldn't face the difficult period of adjustment. I was lucky – as most of what I write is published and then forgotten, I didn't have to worry about porting files from the Apple to the clone. But for other applications – in particular databases and vertical market software – it would definitely be easier to just keep the old workhorse running.

For a while now the NEC V20 chip has been available. This is a clever little device which is plug-compatible with the 8088 (there's also a version called the V30 which is compatible with the 8086). It runs 8088 code without a hitch – in fact, there's one in my clone now, as I write this article under MS-DOS. But as well as being an 8088, the V20 is also an 8080 – the processor that runs CP/M.

Why Intel didn't do this in the first place (now that NEC has shown that it's possible) is a mystery to me. I suppose it wanted to cut the knot from the 8080 in order to clear the way for the 80286, 80386 *et al.* Anyway, by gingerly taking the 8080 out of your machine and replacing it with a V20 you can convert your MS-DOS-only PC into an MS-DOS and CP/M machine.

So far, so good. But what about actually getting that old CP/M software

onto your PC? That's not so easy – especially since there are all those hundreds of different CP/M disk formats.

But only recently an Australian company called FBN Software has developed a package that comes complete with a V20, which solves the whole sticky problem in one hit. The package is called PC-Eighty.

Installation

The PC-Eighty package contains a disk with the software, a 30-page manual and a V20 chip in its own plastic container. The first thing you have to do (after having backed up the software, which the manual wisely tells you to do first) is to change your CPU.

Now, for those of you who have never removed a 40-pin IC from its socket and replaced it with another, I can tell you that it is not particularly easy. Throughout the whole process you will be conscious of the fact that you are performing, (literally) open-heart surgery on your PC. In order to do this, you must really want to run CP/M software, or write reviews like this one. The process involves covering a table with aluminium foil and grounding it to a water tap. Always, by the way, use the cold water tap for this – the hot tap might not be earthed.

It also involves a very tricky bit of manoeuvring with a small screwdriver in a confined space, plus gently bending 20 pins at a time of an expensive IC so that they would fit a socket. However, once accomplished, you need never tackle it again.

In fact, there is a possibility that unbeknown to you, your PC already contains a V20 chip. Alternatively, it may contain an 8086, which means that you need a V30 instead. I suggest that you find this out before you start taking the chip out. Especially since, if your PC does have an 8086 you will have to buy your own V30, as FBN does not supply them. (They will, however, give you a refund on that unwanted V20 – I think they're worth about \$20 each).

Of course, if you have an AT-

FDCopy Version 1.0b

Copyright (c) 1986 FBN Software, Australia

CP/M Disk Formats Supported:

(Page 1 of 7)

- | | |
|--------------------------------------|--|
| 1 PC-Eighty Format SS | 14 AMPRO (type 1) SS (96 TPI) |
| 2 PC-Eighty Format DS | 15 AMPRO (type 1) DS (96 TPI) |
| 3 Abacus DS (96 TPI) | 16 AMPRO (type 2) SS |
| 4 Actrix AM SS | 17 AMPRO (type 2) DS |
| 5 Actrix AM DS | 18 AMPRO (type 2) SS (96 TPI) |
| 6 ADDS Multivision DS | 19 AMPRO (type 2) DS (96 TPI) |
| 7 Adler Alphasatronic P3 DS (96 TPI) | 20 Amstrad CPC 464 SS |
| 8 Adler Alphasatronic DS | 21 AMUST Executive (Early) DS (96 TPI) |
| 9 Adler Alphasatronic SS | 22 AMUST Executive DS (96 TPI) |
| 10 Adler TA/ScreenTyper DS | 23 Archive DS |
| 11 Altos DS (96 TPI) | 24 Archive DS (96 TPI) |
| 12 AMPRO (type 1) SS | 25 Associate DS |
| 13 AMPRO (type 1) DS | 26 Avatar TC10 DS |

Use Function Keys to select new page ± or enter number of required format:

The FDCOPY utility supports nearly 200 CP/M disk formats.

```
C >
C >
C > cd \pc80

C > pc80

PC-Eighty version 1.0b
Copyright (c) 1986, FBN Software, Australia

CP/M Version 2.2
Copyright (c) 1979, Digital Research Corp

CPU Type: NEC uPD70108 (V20)
Floppy Disk — Drive A: 320K
RAM Disk — Drive B: 512K
Terminal Emulation: Lear Siegler ADM31

A >
```

From MS-DOS to CP/M with a single command!

```
A >
A >
A > dir
A: EXIT COM: CLSANSI COM: CLSADM31 COM: EXTEND COM
A: QSUB COM: PC COM: PC SWP: PC OVL
A >
A >
A >
A > exit

Terminate CP/M and return to DOS (Y/N)? y
C > dir /w

Volume in drive C is HARDDISK C
Directory of C:\pc80

FDCOPY COM .. CPM PC80 COM SETUP COM
6 File(s) 1216512 bytes free

C >
```

Directory in CP/M — then back to MS-DOS.

compatible you might as well forget the whole thing, because no-one has produced an equivalent to the V20 for the 80286 chip.

Running CP/M software

Having installed the hardware (ie, your new CPU), you then have to install the software. Now, this is not as simple as it sounds, particularly if you do not have a CP/M machine *and* a copy of CP/M itself handy. I found this out when I first tried to get the product working. When I came to the part in the manual that said "if you do not have [CP/M saved as a file] you can generate one on your eight bit machine ..." I suddenly realised that I needed a CP/M machine to get the product to work.

So before you buy PC-Eighty, make sure you have access to a CP/M machine and a copy of CP/M that both fit the CP/M software you want to run. I asked someone at FBN why they didn't just supply a copy of CP/M with PC-Eighty and they said that Digital Research, the holder of the CP/M copyright, wanted a lot of money for it. Seems reasonable — but be warned that you need that CP/M machine.

Having got your hands on the CP/M machine, you have to do some real old-fashioned CP/M jiggy-pokery to get CP/M onto a file. Having done that, you load onto your MS-DOS machine a piece of software called FDCOPY, supplied with PC-Eighty, which lets your MS-DOS machine read any of a couple of hundred different CP/M disk formats.

Now, to my mind that's half of the battle over. FDCOPY lets you read data files from CP/M disks and convert them into readable MS-DOS files. That alone would be worth the price of the whole package. FDCOPY also lets you copy files from MS-DOS to any of those formats, and even allows you to FORMAT blank CP/M disks. So in principle, you could even use FDCOPY as a means of passing CP/M files between different CP/M machines.

FDCOPY, like the rest of the software in the package, is very well put together, with a thoughtfully-designed user interface. I have a couple of minor quibbles about the COPY command — which is deceptively similar in operation to the MS-DOS COPY, but not similar enough to actually do what I thought I was telling it to do — but all in all the whole thing works smoothly. The other little disappointment was that one of the few formats it couldn't read was Apple — so all of my old Apple files will have to stay where they are. Of course, FBN is the company that brought you PC-Alien, which is


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display: Global, Line, or Column?          default * a10

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CP/M PerfectCalc running on an IBM PC clone.

obviously the backbone of FDCOPY. PC-Alien does, in fact, just what FDCOPY does, and has been sold as a separate product for some time. In fact, if you're thinking of buying PC-Alien, take a look at PC-Eighty instead.

After you have copied CP/M itself, and the software you want to run, onto your PC, you are just about ready to roll. First, you have to install CP/M into the PC-Eighty software itself. The SETUP program supplied with PC-Eighty does this—it actually reads CP/M and copies it into part of a file called PC80, which holds the rest of the initialisation software.

SETUP also allows you to choose which type of terminal emulation you want—either Lear Siegler ADM-31 or an ANSI standard one like a DEC VT-100. And if you want to use a hard disk, SETUP will let you select two files which CP/M will treat as two separate hard disks. To MS-DOS each file will look just like any other MS-DOS file, except that they will expand when CP/M puts something into them. But to CP/M each of the files will look like a complete CP/M hard disk, capable of holding up to 8 Mbytes (or the capacity of the real hard disk, whichever comes first).

Because CP/M can only handle 64k of RAM (only 64k? Yes—that was a lot a few years ago) the rest of your system's RAM appears to CP/M as one giant RAM disk, which should speed up your applications no end.

Of course, the serial and parallel ports at the back of your machine are also accessible from CP/M. All in all, PC-

Eighty is a very nice implementation, and is perhaps an indication of what CP/M might have turned into with cheap hardware and no MS-DOS.

Along with the PC-Eighty software itself, there are a couple of useful CP/M utilities. The first, and most important, of these is EXIT, which takes you back to MS-DOS from CP/M.

There are also a couple of little routines to clear the screen in either of the two terminal emulation modes. A program called EXTEND alters the running of CP/M so that the user number and drive letter are both shown in the prompt (like this: 'AO>'), and searches user area 0 for .COM files if they are not found in the current user area. This is as close as CP/M gets to having directories. FBN has also thrown in a little routine called QSUB which allows you to run more than one command in a list without putting them in a file and running SUBMIT (the CP/M equivalent of a batch file).

Actually running CP/M after all that is a bit of an anti-climax. The only excitement (apart from seeing a lot of very old software running) was getting PC-Eighty to run at all. A bug—which FBN assures me will be fixed before anymore are sent out—meant that the whole thing dies when you try to run it with any memory-resident software installed. You nearly got this review next month.

Prices

FBN is selling PC-Eighty for \$140,

which includes a V20 processor. For that price you get the \$20 processor, plus \$100 worth of software in the form of a renamed PC-Alien, plus the utilities which allow you to actually run CP/M usefully. To my mind, that's a bargain.

Conclusion

There is a lot of CP/M software around. Much of it is cheap, and some of it (public-domain software) is free. There are advertisers in a number of magazines who for a nominal fee will send you a whole disk full of public domain CP/M software.

If you have a very vertical application (rat breeding? Venezuelan tax law advice? review writing?) then there may well be a piece of software around that does *just* what you want. Or you could be the type of person who just likes playing with obscure software (I know I do). In either case, PC-Eighty makes possible in a single package what otherwise could only have been produced by a vast amount of messing around. And it was developed—and is supported—in Australia.

END



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