The PCPI Appli-Card. (evaluation) *Loftus E. Becker.*

The PCPI Appli-Card

Adding CP/M and extra speed to your Apple

Microsoft has lost its monopoly on CP/M cards for the Apple. At least half a dozen manufacturers now offer Z80 cards for Apples; most are considerably cheaper (albeit generally with far less software and documentation) than Microsoft's Z80 card. Moreover, the new generation of fast Z80 chips, running at 4 and 6 MHz--two or three times the speed of Microsoft's--has spawned several new cards.

One of the available alternatives to the Microsoft card for all forms of the Apple II is the Appli-Card from PCPI, Personal Computer Peripherals, Inc. The Appli-Card is available in 4MHz and 6MHz versions; the 6 MHz Appli-Card is the subject of this review. As compared with other CP/M cards, it has several features of special interest in addition to its high processing speed.

Features

The Appli-Card is effectively a whole computer on a plug-in card. It contains not only the microprocessor, but also 64K of RAM used for CP/M and the running program. The 64K of Apple memory is used only for drivers controlling input and output. The net effect of this is that the available memory for CP/M programs is about 57K--somewhat more than is available to users of the Microsoft card. No use is made of the addition 64K of memory on the Apple IIe extended 80-column card.

The Appli-Card has been configured to accept additional plug-on boards. At the moment, the only such board available is a RAM extension, which can be configured for 64K or 128K of additional memory. The RAM extension can be used as a RAM disk under CP/M, giving either 64K or 128K of phantom disk space. Since some of this space is used for the directory, the usable space for programs or data is slightly less--about 110K on the 128K board. In addition, software is provided by PCPI to use both the 64K on the Appli-Card and any additional RAM as a pseudodisk under DOS.

Finally, the Appli-Card provides several interesting options for screen display. Users who lack an 80-column card can choose between a scrolling display of up to 255 columns per line and a 70-column display created using the high-resolution graphics page. (Since the Appli-Card does not use Apple RAM except for I/O drivers, there is no loss of program space when this option is chosen.) Hence it can be operated quite usefully in CP/M for applications such as word processing without buying an 80-column card for display.

The appli-Card comes packaged with four disks, two of which are superseded versions, provided as "backups' to the useful ones: a brief 28-page manual; a copy of Murtha and Waite's excellent CP/M Primer; and, thoughtfully for Apple II owners, a useful kit for easy installation of the SHIFT-key modification. The disks are not copy-protected.

Installation

Installation is not difficult; nor is it well explained in the manual. You must, of course, plug in the card. In addition, however, you must determine which of many options (mostly regarding video display) to choose for the

installed system. This requires first running a program to configure SFTVIDEO, the driver that runs the console output, and then running a second program, INSTALL, to patch CP/M for the drivers chosen and create a file containing those drivers for loading at boot time.

Both programs are menu-driven, a real blessing since the documentation is quite fuzzy on these points, and leaves many of the available options unexplained. In any event, however, you can always keep rerunning the program until you obtain satisfactory results. If you dislike experimentation, you should purchase the card from a dealer who will hold your hand through the installation process.

Supplied Programs

In addition to the programs provided for installation, the Appli-Card comes with nine standard Digital Research utilities: ASM (the 8080 Assembler); LOAD (used with the assembler to create executable programs); DDT (a very useful debugger and monitor); DUMP (which displays a disk file in binary form); ED (a primitive, line-oriented text editor); PIP (a general-purpose file transfer program); STAT (a utility to display and change disk and system information); and SUBMIT and XSUB (used with text files in a manner similar to Applesoft EXEC files).

All of these utilities except DUMP are documented in the Murtha and Waite Primer. This program needs little documentation (DUMP A:NAME.EXT will show A:NAME.EXT, in hex on the screen), but that nothing is said about it is some indication of the hasty manner in which the current documentation was apparently compiled.

Finally, PCPI provides two (four if you have purchased the RAM extender) additional and necessary programs. COPYFRMT substitutes for the COPY and FORMAT programs familiar to Microsoft mavens; it allows copying and formatting of disks. COPYFRMT is a bit slower than the Microsoft version, but also more user-friendly. It is slower because it displays more information while operating and does more verification of the copied or formatted disk.

ADOXFER transfers files (text, Applesoft, Integer, or binary) between DOS and CP/M disk formats. DOSRDSK allows use of the Appli-Card and extra RAM as a RAM disk under DOS (128K of 192K). And ERADIR is a program necessary for use of the extra memory as a RAM disk under CP/M.

Compatibility

Compatibility is a serious problem on nonstandard high-performance Apple accessories. With the Appli-Card, compatibility problems arise with both software and hardware. As far as software is concerned, PCPI claims that all "generic' CP/M programs--that is, programs not written with the Apple and Microsoft card specifically in mind--will run with the Appli-Card, and I have no reason to doubt this. Certainly all the ones I have tried--public domain and commercial programs-- have run without a flaw.

However, that is not the end of the matter. PCPI says (on the phone, but nowhere in their advertising or documentation) that very few of Microsoft's programs will work with the Appli-Card. The only ones I own are MBasic and GBasic, and it is certainly true that they will not run properly with the Appli-Card.

PCPI claims that this is because the programs regularly check for the presence of a Microsoft card and hang if the card is not present. Perhaps, but I question this explanation. MBasic works perfectly on my machine except when one of the cursor movement commands (HOME, VTAB, HTAB) is called; GBasic also bombs with graphic commands. My own suspicion is that the reason for the failure is that both programs use the Apple monitor built-in subroutines for cursor (and graphics) control: Microsoft CP/M even comes with a specific explanation of how 6502 subroutines can be called from Z80 assembly language programs. Although PCPI provides nothing in its documentation to answer the question one way or another, I suspect that PCPI's CP/M either does not support this (occasionally useful) feature or implements it in a different manner.

If I am correct in this supposition, two conclusions follow. First, it should be possible for PCPI to develop patches to allow MBasic and GBasic to run with their card. And second, that any Apple-specific programs that rely on

calls to 6502 subroutines as implemented under Microsoft CP/M will similarly bomb.

The final compatibility problem relates to hardware. Microsoft has been the standard for so long that manufacturers (of, for example, nonstandard, high-capacity disk drives) routinely refer to drives as "CP/M compatible' when they are compatible only with Microsoft CP/M. Whether a particular peripheral will also be compatible with the Appli-Card is always a question.

In general, unless the peripheral manufacturer provides specific support for the Appli-Card, it will not be. Vista (at a small extra charge) supports the Appli-Card for its V1200 drive and presumably for its other high-capacity drives as well. Since many CP/M programs require large quantities of disk space, CP/M users quite often add high-capacity drives, so you should investigate this question thoroughly before investing in an expensive disk drive.

The compatibility problem is not insoluble. Indeed, the Appli-Card, since it can be installed with many complicated drivers, is well-adapted to conform with disparate equipment. However, on this matter in particular, PCPI's documentation is woefully inadequate. Additional information is available from PCPI at a $45 charge and at PCPI's discretion; whether the additional information provided would be sufficient for the technically-oriented user to make the required patches I do not know. Almost certainly the nontechnical user could not.

Operation

If compatibility problems are overcome (and I should emphasize that many or most users will never encounter compatibility problems) one can almost forget about the card and simply go about the business of running whatever CP/M programs you choose. The "almost' in the previous sentence refers to one aspect of operation. When CP/M is first booted, a file called DRIVERS must be on the boot disk. This file will vary in length depending on the drivers loaded; on my system it is about 8K. What this means is that you must reserve the extra space (in addition to the boot tracks) on the disks from which you plan to boot the system. If you are content always to boot from one master disk and then switch to whatever program disk you use, this presents no problem at all. The DRIVERS file need not be the disk for a warm boot.

Once up and running, the card functions admirably. How much you will notice the increase in speed depends to some extent on the programs you run. Of those that I have tried, word processing programs, in particular, benefit from the quicker operation. The notoriously slow print-spooling operation of WordStar is speeded up sufficiently that editing while printing is quite tolerable. Formatting and printing operations in Final Word are now quite fast, and I have yet to lose even a character during print spooling. dBase II benefits substantially in some operations, such as sorting or indexing, but not noticeably in others. MBasic computational programs that formerly ran slower than Applesoft equivalents now run substantially faster.

The RAM Extender

The optional RAM Extender functions as a RAM disk drive with software provided for CP/M and DOS. (Hopefully, if and when PCPI provides CP/M 3.0 for the Appli-Card, it will be useful for this as well.)

Under CP/M, the RAM disk functions perfectly and is an enormous boon for programs that require a great deal of disk access. The 64K version is useful for some things, but the 128K version is more than twice as good, since an entire disk can be dumped to the pseudo-drive. The software functions perfectly with my Vista V1200.

Under, DOS, the RAM disk is less useful: it works quite well, but I have several reservations. First, installing the software lowers HIMEN by about 700 bytes. The documentation never mentions this; and the consequence is that programs which expect HIMEM to be in a particular location may bomb. Screenwriter II, for example, will not work with the RAM disk.

PCPI is reported to be testing a revised version of the software that will disable the INIT command but not alter HIMEM. This is a mixed blessing, since such a modified DOS would make it incompatible with most high-

capacity disk drives. If both versions are made available, however, the user would have a useful choice.

In any event, the speedup under DOS is not as dramatic as one might hope. Although BLOAD, BRUN, CATALOG, and RUN are, indeed, speeded up dramatically, text file manipulations are less impressive. A program to write 1000 38-character records to a text file took about two minutes to run with the RAM disk and normal Apple DOS. The same program ran in only 50 seconds with Diversi-DOS and a real disk drive. Interestingly, the RAM disk is apparently compatible with Diversi-DOS; using both, the program ran in only 25 seconds.

Conclusion

The PCPI Appli-Card is an excellent product. The technically-oriented user will find the documentation poor by any standard, and awful when compared with that provided by Microsoft. The nontechnical user, however, may find the lack of specifics and detail more than outweighed by PCPI's inclusion of the excellent Murtha and Waite CP/M Primer at no extra charge.

Apple owners who do not have 80-column cards will find that the Appli-Card gives them a quite acceptable 70-column display. The RAM Extender is extremely useful in CP/M; if you are willing to put up with a short delay at the outset, a diskful of programs can be dumped to the RAM disk and operation of heavily overlaid programs (which includes most commercial CP/M programs with which I am familiar) speeded immensely.

The most serious problem with the card is its incompatibility with Microsoft Basic and GBasic. Owners of Microsoft cards who have an extensive library of programs in these languages will find the graphics programs unusable, and will have to purchase another Basic (and probably rewrite at least some of the programs) to get even nonpraphic programs to run properly. If this is important to you, the cost of the additional Basic ($100 or more) must be factored into the equation. (PCPI does say that if you can get a copy of Microsoft's "plain Vanilla' Basic as supplied on 8 disks and download it to your computer, it will run properly.) And if graphic capabilities in a CP/M Basic are critical, you may have to eliminate this card from consideration.

Customer support appears decent. My one call was not taken immediately but was returned by PCPI (a long-distance call at their expense) quite promptly. As mentioned above, I am a bit dubious about the accuracy of the explanation they provided but they were quite open about the fact that Microsoft Apple Basic and GBasic would not run.

The Appli-Card presently lists at $375. It is also available, bundled with WordStar for $500 list--good value if WordStar is the word processing program you want. The RAM Extender is another $200 or so, depending on whether you get the 64K or 128K version. The 64K version is said to be upgradable to 128K by the addition of eight 150ns 4164 chips, at a cost of about $50.

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Products: PCPI Appli-Card (computer apparatus)

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