XEROX
VIP

VENDOR INVOLVEMENT PROGRAM

the VIP newsletter

XEROX VIP

A Newsletter About Products and Services
That Complement the Xerox Information Products

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Introduction

Our Vendor Involvement Program or V.I.P. function is designed to assist vendors offering a complementary product or service for the Xerox Information Products. Initially, most of the effort is being concentrated on the Xerox Personal Computers, with more effort planned in the future for the Xerox 860, Information Processors, the Memorywriter family and the Xerox Telecopier line. Selected products are tested for operability by the V.I.P. Group on Xerox systems and, if appropriate, assistance is provided to the vendor to make the products operational. The V.I.P. function then provides information on the complementary vendor offerings to both sales and marketing personnel and also to the final end-users.

V.I.P. Data Base

A database of products and services that third party vendors state can be used with a Xerox computer is maintained by the V.I.P. Group. All information in the database is supplied by the vendor and, in general, has not been tested or verified as to its operability by Xerox. The V.I.P. database currently contains over 2,000 items from approximately 400 vendors. V.I.P. items are categorized by operating systems (CP/M and MS-DOS) and industry-related codes (e.g.: Word Processing, Accounting, plus vertical markets such as Agricultural, Medical, Educational, Hardware and Utility markets.) Any vendors wanting to be included in the database should contact the V.I.P. coordinator, Charles Kite, at the numbers listed above, for a V.I.P. registration form. Charles can also search the database by product category for anyone who is searching for a specific item. Just briefly state what you are looking for and leave your name and address. The listing is then mailed directly to the requester.

PC Commentary

Will this Software Work on My Computer?

Third party software that is most likely to run on the Xerox 16/8 Personal Computer is characterized in this article. The intent is to provide the 16/8 user or salesperson with a basic framework for determining if a package will run on the 16/8 (without actually purchasing and testing the package). There is only one way to absolutely qualify that a product will run and that is to test it thoroughly. Ruling out a piece of software is a different exercise and may be done with great confidence in many cases. We shall see why shortly. But now, back to "Will it Work?".

Let's start with a basic understanding of the way software is "called out" in the PC marketplace. "Runs under CP/M-80" or "runs under MS-DOS" informs the potential user that the software has been written for a particular operating system. This is necessary but not sufficient information for compatibility determination. "Works with the IBM-PC" or "works with Apple II" if not qualified by "under operating system ... implies that the software does not require an operating system in order to load and run. A number of games such as Frogger and Flight Simulator are of this type. These are written for a specific machine architecture such as IBM-PC or Atari, and so on. They provide their own operating environment. You can count on — with some trepidation — this type of software running on the specified machine and in the case of IBM, perhaps on some of the "clone" or compatible machines. Other pieces of software may make use of an operating system but not depend on it exclusively.

Lotus 1-2-3 is an example of such a program. Lotus uses the MS-DOS operating system for file handling but writes directly to the display, bypassing the operating system. A different version of Lotus is required for each different hardware architecture. Therefore, the IBM version of Lotus will not run on a Xerox 16/8 where a program like Multiplan, that works only through the operating system, will. Multiplan needs only to be installed so that the terminal attributes of the Xerox 16/8 are comprehended.

Software that is installable is often characterized as being "generic" MS-DOS or "generic" CP/M. By generic, it is meant that the program will run under the specified operating system, provided that it is installed to correctly use the terminal configuration of the host machine. This

[Handwritten notes at top: "16/8 SOFTWARE S   1) 'generic' MS-DOS, 'generic' CP/M ; installed to use terminal configuration + have enough memory of the host machine   have correct format   no bit-mapped graphics   VENDOR INVOLVEMENT PROGRAM"]

variety of software will usually provide an install routine to prompt the user for selection of an offered machine-type from a list. Or. given that the machine is not listed. to specify the machine terminal characteristics. Microsoft. to my knowledge. provides the most complete install programs and acutally installs a special screen driver.

In addition to being installable. this generic software must be in a format readable by the target machine. Obviously you can't put an 8" floppy in a 5¼" drive and certain formats may not be readable to the host machine's operating system. There are a number of methods of converting media formats to facilitate compatibility. Media format incompatibility can usually be overcome. if necessary. and is the subject of another article in this newsletter. (See — "Moving Files" . . . — ed)

Memory requirement is another area of concern. Vendors usually note the minimum amount of main memory required to run their software. You must be sure that the target machine has the minimum amount of memory installed or is capable of being upgraded to the required amount before considering a particular package. The Xerox 16/8 comes with 128K bytes and is upgradeable to 256K bytes.

Some software may make use of special hardware. Bit mapped graphics requires special hardware to support a bit mapped display. The Xerox 16/8 doesn't have a bit mapped display and therefore. cannot run programs that require bit mapped graphics (or bit mapped characters for that matter). Because Lotus 1-2-3 requires a bit mapped display to do graphics. either a major rewrite of Lotus is needed (one without the use of bit mapped graphics) or. bit mapped hardware must be provided.

A number of qualifiers are required to be certain that a particular piece of software will run on a specific piece of hardware. You will need to know the operating system the software uses. the disk format and storage space. the machine's specific hardware architecture. main memory size. and permanent memory (disk storage) capacity. The following check list helps you answer the question "Will the software work on the Xerox 16/8?". If you can give a positive answer to each of the four questions. then you can be reasonably sure it will operate on your system.

Criteria for Selecting 16/8 Software

1. Is the disk format correct for my system?
   - For the Xerox 820-II. 8" or 5¼". single or double sided.
   - For the Xerox 16/8, 8" single or double sided.
   - For the Xerox 16/8 with DEM. 5¼" double sided.
     a. Total disk storage is soft-sectored single or double density.
     b. Total disk storage requirements — 8". 960K; 5¼". 322K.
     c. Number of disks required — 1 or 2.
     d. Particular format — (usually called out by company name such as TI or Xerox or IBM). The Xerox 16/8 DEM may read IBM PC or XT format 5¼" disks. The 8" Xerox 16/8 will read Xerox single density or double density (IBM 3740 format). CP/M format under CP/M-80 or CP/M-86 and has a unique Xerox format for 8" MS-DOS.

2. Is the Operating system CP/M or MS-DOS?
   - Must be for MS-DOS compatibility only: not for IBM-PC DOS.
     a. Claimed to be generic. CP/M or MS-DOS?
        — Installation program included? If yes. good chance it will run. Check memory requirements.
     b. Only partially uses the operating system.
        — If so. then may not run. Communications and graphics software usually by-pass the operating system.
        — Probably will not run.
     c. Contains its own operating environment. No operating system required.
        — Will not run unless specifically stated "For Xerox."

3. Is it a Character Oriented Display Used?
   - Must be a single-color (e.g. white/green) and not bit mapped.
   - The Xerox screen emulates the ADM-3A terminal.
     a. Bit mapped.
        — Will not run.
     b. Character only.
        — May run.
     c. Color.
        — May not run.
        — Will possibly have difficult-to-distinguish shading if it does. Some colors display the same shading on single-color monitors.

4. Do I Have Enough System Memory?
   - Must run in a system configured as follows:
     a. Minimum required less than 128K bytes.
        — Will run.
     b. Minimum required more than 128K bytes and less than 256K bytes.
        — Will run if you have additional 128K byte option.

— Paul DeCicco

MS-DOS Software for the Disk Expansion Module

Announcement of the Disk Expansion Module (DEM) with 5¼" disk drives for the Xerox 16/8 brought an internal marketing request for the V.I.P. group to find and test software in the 5¼" format for operability under MS-DOS. This is because the wide commonality of software under CP/M is not true for MS-DOS.

The following list of products were found to be fully operational under MS-DOS on the Xerox 16/8. If you know of other software products operating under generic MS-DOS (see previous article). please let us know so we can test them.

[Handwritten notes at bottom: "— if it uses the MS DOS operating system, it could run.   if it uses ROM BIOS (IBM specify) it can't run"]

Software Operating Under MS-DOS
on the Xerox 16/8 DEM
As of August 8, 1984

ADS Software, Inc.
P.O. Box 8597
Roanoke, VA 24014
(704) 774-9270

- Accounts Payable
- Account Receivable
- Bookkeeping
- Church Accounting
- General Ledger
- Inventory
- Payroll
- Private Clubs
- Residential Services
- Retail Florist
- Veterinarian Accounting

American CompuSoft
23113 Plaza Pointe Drive
Suite A
Laguna Hills, CA 92653

- Legal Tender & Legal Tender Partner -
  Legal Billing Package
- Convoy - Transportation Billing Program
- The Bottom Line - CPA Time & Billing Prog.
- The Professional - Time & Billing Program
- Time & Billing Membership Org - For
  Country Clubs
- Firm 1 - Accounting Programs
- Matchpt 86 - Run CP/M 86 programs under
  PC/MS - DOS with compatible file structure

American Planning Corporation
4600 Duke Street, Suite 425
Alexandria, VA 22304
(703) 751-2574 or (800) 368-2248

- MegaBasic

Armor Systems, Inc.
324 N. Orlando Avenue
Maitland, FL 32751
(305) 629-0753

- General Ledger
- Accounts Payable
- Payroll
- Accounts Receivable
- Billing
- Order Entry
- Counter Sales
- Inventory
- Work - in - Process
- Customer Information
- Depreciation

Chang Laboratories, Inc.
5300 Stevens Creek Boulevard
San Jose, CA 95129
(408) 246 - 8020

- Micro - Plan - Financial Spreadsheet

Computing!
2519 Greenwich
San Francisco, CA 94123

- Menu
- Power! - System Utilities

CompuView Products
1955 Pauline Boulevard
Suite 300
Ann Arbor, MI 48103
(313) 996-1299

- VEDIT - visual editor

Champion Software Corp.
66 S. Van Gordon
Suite 155
Lakewood, CO 80228
(303) 987-2588

- General Ledger
- Accounts Receivable
- Accounts Payable
- Inventory
- Payroll

Contract Research Software Corp.
Two Illinois Center
Suite 2222
233 North Michigan Avenue
Chicago, IL 60601

- Lexiter (Legal Client Billing)
- General Ledger
- Accounts Payable
- Escrow
- Document Index
- Docket

Digital Research
160 Lighthouse Avenue
Pacific Grove, CA 93950
(800) 772-3545

- PL 1
- Programmer's Utilities
- Access Manager
- C Compiler
- Cbasic
- Cbasic Compiler
- CIS COBOL
- Pascal MT+

Dynamic Microprocessor Associates
545 Fifth Avenue
Suite 1103
New York, NY 10017
(212) 687-7115

- ASCOM - TTY communications
  (Specify Xerox 16/8 version)

HumanSoft
661 Massachusetts Avenue
Arlington, MA 02174
(617) 641-1880

- DB Plus - Enhancements for dBase II

Infocom. Inc. (Text Games)
55 Wheeler Street
Cambridge. MA 02138
(617) 492-1031
- Deadline
- Enchanter
- Infidel
- Planetfall
- Sorcerer
- Starcross
- Suspended
- Witness
- Zork I
- Zork II
- Zork III

MAG Software. Inc.
21054 Sherman Way #305
Canoga Park. CA 91303
(213) 883-3267
- Mag Base — database manager

Microsoft
10700 Northup Way
Bellevue. WA 98004
(206) 828-8080
- Basic Compiler
- Basic Interpreter
- C Compiler
- Cobol Compiler
- Fortran 77 Compiler
- Multi - Tool Budget
- Multi - Tool Financial Statement
- Pascal Compiler
- MuLISP Language

North America MICA. Inc.
11772 Sorrento Valley Road
San Diego. CA 92121
(619) 481-6998
- Project Management Software (PMS)

O'Hanlon Computer Systems
8383 158th Avenue
Redman. WA 98052
(206) 885-2502
- Sensible Solution - database manager

Oasis Systems
2765 Reynard Way
San Diego. CA 92103
(619) 222-1153
- The Word Plus Dictionary and Spelling Checker
  Punctuation and Style

Obsidian
236 North Santa Cruz Avenue
Suite 243
Los Gatos. CA 95030
- Super Encryptor II

Quelo
2464 33rd Avenue
Suite 173
Seattle. WA 98199
(206) 285-2528
- 68000 Assembler - conforms to Motorola specs

Software Arts
27 Mica Lane
Wellesley. MA 02181
(617) 237-4000
- TK!SOLVER - Equation Processor
- Financial Management for TK!SOLVER
- Mechanical Engineering for TK!SOLVER
- Building Design & Const. for TK!SOLVER
- Introductory Science for TK!SOLVER

Software Toolworks
15233 Ventura Blvd.
Suite 1118
Sherman Oaks. CA 91403
(213) 986-4885
- Pack & Crypt - compress & encode files
- LISP/80 - A/I programming language
- SPELL - spellchecker
- MYCALC - spreadsheet
- Text 4.0 - text formatting
- MYCHESS - computer chess game
- Word Wiggle - word game
- Adventure - text game
- Eliza - analyst game
- Computer Chef - computer cookbook
- What's For Dinner - database for Computer Chef
- The Best of Wok Talk - Chinese cooking

Star Software Systems
20600 Gramercy Place
Torrance. CA 90501
(213) 538-2511
- The Accounting Partner
- Star Accounts Payable
- Star Accounts Receivable
- General Ledger
- Legal Billing
- Payroll
- Property Management

Software Technology Inc.
Century Square Court
620 N. 48th. Suite 312
Lincoln. NE 68504
(402) 466-7871
- Legal Time Accounting and Billing System
- Trust Accounting System

Unlimited Processing. Inc.
(a/k/a Abacus Data Inc.)
8382 Baymeadows Road
Suite 8
Jacksonville. FL 32216
(904) 731-8330
- Informa 15 Database System (requires 256K)

— The Staff

Software/Hardware Items of Interest

Sheet feeders are now being evaluated by Tim Lee. Sr.. Evaluation Analyst. Included here is Tim's summary of sheet feeders and other products he has evaluated to date... —ed

There are two different ways to classify feeders. First. continuous feed units. those that act like tractor-feed devices using continuous forms (you set a large bottom margin or page length within your document to time the feed sequence). Second. demand feeders. those that feed pages only upon "seeing" software commands.

Additionally. the feeders may have their own drive motor and require an electrical interface with the printer. Or. they may receive mechanical drive directly from the printer via the platen drive gear.

BDT Lettermate 1/c

Single bin. continuous feed. with a mechanical drive interface. Collates in direct or reverse order. Has an optional "paper out" feature which connects to the printer to cause a fault indication. Of the units evaluated. this unit has the most features for the dollar.

— Lists for $435.

BDT Lettermate 1

Demand feed version of the BDT Lettermate 1/c. "paper out" feature is standard.

— Lists for $695.

Diablo F10 (Ziyad Personal feeder)

Single bin. continuous feed. with mechanical interface. (Documents come out forwardly collated.)

— Lists for $495

Diablo F32 (Ziyad)

Dual bin. demand feed. with electrical interface. also has single envelope feed capability. Diablo's OEM "deluxe model" for the 630. has the most features of all the feeders evaluated to date.

— Lists for $1750

Datamarc 3000

Single bin. continuous feed. with mechanical interface. which handles both cut sheets and envelopes. Electronically connects to the printer to indicate a "paper out" condition.

— Lists for $1195

Diablo Color Ink Jet Printer Comments

Also evaluated was the Diablo C150 Color Ink Jet printer. The C150 seems to be an excellent alternative to a plotter but is rather laborious in its installation: definitely not for the first-time printer customer. It also requires quite a bit more day-to-day maintenance than a typical dot-matrix. daisy wheel. or even pen plotter. It is critical of table level. requiring the complete de-servicing and reinstallation procedure to be performed if any type of move of the unit is made. Also. supplies are in very short supply with the initial installation kit of inks and maintenance fluids not lasting more than a couple of weeks of light-duty printing.

— Tim Lee

Books and Reference Sources

Information you may find useful for more efficient use of your PC is included here. The V.I.P. Group does not verify each and every article. so use it accordingly.

From *PC World*. July 1984. product guide:

- Public Domain Software
  National Public Domain Library
  1062A Taylor St.. St. Vista. CA 92083
  Software library is rented so you can copy it yourself.
  The charge is about $100.
  619-727-1015

- PC Software Interest Group
  1556 Hatford Ave.. No. 130W. Santa Clara. CA 95051
  Directory is $3.95 plus $1 s/h
  10 popular disks $59
  100 disks $595
  408-247-6303

Should the V.I.P. Group collect and distribute public domain software? What type of programs should be included?

From *Business Software*. April 1984. "Business Buying Guide to Software"
Discusses the National Software Library. a product of PC Telemart. Fairfax. VA. Managers can obtain information to help them make software decisions. Also included are discussions of other software information sources. This article provides a wealth of source information about PC Software and services.

Technical Notes

Xerox 5¼" Disk Formats

The following tabular information is provided to explain the various Xerox 5¼" disk formats and their compatibility between each other and with IBM formats.

A. **Xerox 820 with 5¼" Drives**
   CP/M Only Format
   • Single density: 17 sectors/track: 128 bytes/sector
   • Track zero for CP/M is single density
   Format Options
   1. Single sided
   2. Double sided (implemented as large single side)

B. **Xerox 820-II**
   CP/M Only Format
   • Both of the 820 options and additionally
   • Double density: 17 sector/track: 256 bytes/sector
   • Track zero for CP/M is still single density
   Format Options
   1. Single sided
   2. Double sided (implemented as true double side)

C. **Xerox 16/8 with 5¼" Disk Expansion Module (DEM) CP/M Format**
   • All tracks, including track zero, are double density
   Single Sided Format Options.
   1. 17 sectors/track: 256 bytes/sector (called 820-II compatible on the INIT utility — but track zero is double density) (Cannot SYSGEN with CP/M)
   2. 9 sectors/track: 512 bytes/sector (called standalone CP/M on the INIT utility — IBM XT format)
   3. 9 sectors/track: 512 bytes/sector (called dual CP/M on the INIT utility — sector skewing optimized for concurrent CP/M
   4. 8 sectors/track: 512 bytes/sector (called special format on the INIT utility — IBM PC format)
   MS-DOS Formats
   Single Sided Format Options
   1. 9 sectors/track: 512 bytes/sector (IBM XT format)
   2. 8 sectors/track: 512 bytes/sector (IBM PC format)
   Double Sided Format Options
   3. Same as No. 1 on two sides
   4. Same as No. 2 on two sides

IMPORTANT CONCLUSIONS AFTER READING THE ABOVE TABLES ARE:
1. Bootable disks with CP/M operating system on them are not compatible between the Xerox 820-II and the Xerox 16/8 with the Disk Expansion Module (DEM).
2. Double sided disks initialized on the Xerox 820-II can be read on the Xerox 16/8 DEM, but the opposite is not true. In order to access the 820-II files, you must "Log" the 820-II disk (use CTRL C) to notify the system of the format change.
3. The Xerox 16/8 CP/M and MS-DOS disk formats (8 and 9 sectors per track) are Both compatible with the IBM PC and XT disk formats.

— Keats Soder

Moving Files-Xerox 820-II 8" Disks to Xerox 820-II 5¼" Disks

A. Back-to-Back/Modem
   This method is the safest. However you need two machines than can communicate. A File Transfer Program can be used in a Back-to-Back mode or you can use a Modem program, such as ASCOM, to transfer programs over the phone. (I use a simple file transfer program for back-to-back operation. — ed.) Note that this method can also be used to send programs from one type of disk format to another (e.g. Xerox 820-II 17 sectors per track to IBM 9 sectors per track).

B. Y Connector
   This method is also safe but requires special hardware and software. The hardware is a connector box with built-in Y terminals to attach both 8" and 5¼" drives to your 820-II at the same time. The necessary parts are available from the V.I.P. Group here in Dallas. With this system, you only need to PIP under CP/M or COPY under MS-DOS and make the transfers as you would normally do. For CP/M transfers standard 8" or 5¼" CP/M is used. MS-DOS transfers require a special 5¼" diskette from the V.I.P. Group.

C. Use of DDT
   CP/Ms DDT utility (on the Xerox 820-II or Xerox 16/8) can be used to move files from one size disk drive to the other. You need to have the two drives in close proximity, and the technique can be risky and confusing. But, it does work and has been used successfully many times. To move a file from an 8" disk to a 5¼" disk follow these steps:

   1. Prepare the system for this operation by putting both drives next to the 820-II. Make it possible to easily connect either of the two drives as required.

   2. Start with the 8" drive plugged into the back. Put a disk with the DDT utility on it in drive A: and do a normal power-up system boot. (Note: you must press the RESET button on the back each time you change from one drive to the other.)

   3. Put the disk with the file(s) to be moved in drive B:.
   **DO NOT TURN POWER OFF AT ANY TIME DURING THIS PROCEDURE.

   4. Load the file to be moved into memory with DDT using this sequence from the command line:

      A >DDT B:filename.ext
         Where: filename.ext = the program wanted

   5. At this point, the DDT utility will load the file you want to move into memory and display a message that looks similar to this:

      A >DDT B:filename.ext
      DDT   VERS 2.2
      NEXT   PC
      2680   0100

6. You must now convert the left two digits which are in hexadecimal notation to a decimal value. If the third most digit is an 8, you will use the number you calculate. If this digit is a zero, subtract 1.

Example:
2680 0100
26 hex = 38 decimal (blocks to same)
2600 0100
26 hex = 38-1 = 37 decimal (blocks to save)

WRITE DOWN THE DECIMAL NUMBER FOR USE
IN STEP 9

7. Now disconnect the 8" drive and carefully connect the 5¼" drive. Press the RESET button on the back.

8. With an INITed and SYSGENed disk in the A: drive, boot the 5¼" disk. Make sure that the disk will not auto-execute any programs — it will destroy the memory image that you intend to save.

9. Type: Save nn filename.ext
        Where: nn = the decimal number you
        calculated

That's all there is to using DDT to move a file from one size disk to another. You can of course. use the procedure in either direction. It is important to remember that this procedure is not without risks. One program. dBASE II. has been reported to not work properly after using this procedure. It may be that the wrong size block of memory was saved. Or. that the area of memory to be saved was garbaged in the process of transfer. You need to take special care that no other program is allowed to run when you make the boot with the second drive. If this happens. a portion of the program you intend to save is over written by the program that was executed at boot time. Another problem occurs when the conversion from hex to decimal is not done correctly. If you calculate too few blocks. you won't get all of the program (or file) and it won't work right or at all.

— Chuck Carpenter

820-II and 16/8 ROM Levels

From the initial Xerox 820-II to the current 16/8 with the DEM. there have been several Monitor (boot) ROM changes. These have been both functional and cosmetic. The fundamental operations of the machine are controlled from the boot ROMs. Here's what the changes are and what they mean.

4.01 — Initial Xerox 820-II U.S. 3-ROM set; support for double density disks.

4.01 — Corrected overflow problem with large data files.

4.02 — Rank Xerox (European) boot ROM version of US 4.01.

4.03 — Incorporate programmable communications option and support for the low-profile keyboard (4-ROM* set and type-ahead input buffer).

4.04 — Changes sign-on message from **Xerox 820-II** to **Xerox.**

5.0 — Operating system modifications for DEM and new 5¼" disk controller (4 new boot ROMs).

— Chuck Carpenter

820-II and 16/8 PCB Etch Levels

Two different processor circuit boards have been used with the Xerox 820-II and the Xerox 16/8 PCs. Because etching is the method used to create the conductive patterns on the circuit boards. the boards are referred to as Etch 1 and Etch 2. The following summarizes the key differences:

Etch 1 — Initial 820-II Circuit Board. Jumper selectable async-sync communications capability only — no special keyboard functions.

Etch 2 — Inclusion of the 16 character FIFO (type-ahead) buffer. Hardware changes to allow programmable async-sync communications capability. (In special software programs.) The 4th ROM is included. and therefore requires the low-profile keyboard. Will work with the original keyboard if the extra ROM. U36. is removed.

— Chuck Carpenter

About Keyboards

Basically. there have been two types (styles) of keyboards used with the 820-II and the 16/8 PCs. A High Profile keyboard was issued to the 820-II and the Low Profile keyboard to the 16/8. (The low profile keyboard is about an inch high and has a pencil tray along the back edge.)

High Profile — A standard ASCII keyboard. Some early keyboards were found to lose characters if a key was typed rapidly. Note that you can also lose characters when a disk access occurs. Also. some software will prevent reading the keyboard during certain operations. Before booting a software package. type a series of characters. If you can backspace them off the screen rapidly without a miss. you don't have the dropped character problem. The condition was most pronounced with high-speed typists. Later keyboards corrected the problem.

Low Profile — A position encoded keyboard. Requires an additional ROM on the CPU PCB in position U36 which is included on Etch 2 PCBs. This ROM provides keyboard I O control for the look-up tables. Note that Xerox does not separately sell the additional ROM. The knowledgeable user can install a U36 ROM in order to use the keyboard on an 820-II with Etch 1. Type-ahead and other features will not be available because they are part of Etch 2.

— Chuck Carpenter

The Xerox 16/8 and 5¼" Drives

Use of Xerox 5¼" drives from a Xerox 820 or 820-II with the Xerox 16/8 is possible even though this combination is not sold or supported by Xerox. If you have product code 929 (single sided) or T66 (double sided) drives. you can use them with your Xerox 16/8.

Just plug the drives into the appropriate connector like you always do. With some risk. you can use the 5¼" drives without modification. The risk is that you will have marginal power supply capacity. The risk is small but it

does exist. (I have two machines running this way, without problems, for over a year.-ed.) Or, alternately, modify the 5¼" drive to use a separate power supply. You can obtain a dual voltage supply to provide the required voltages. These are 5 volts at 2 amps and 12 volts at 1 amp. You will need to remove the connectors from the drive power sockets. Then make a cable with the appropriate connectors to supply the voltages from your external supply. Make sure the connections are per the data sheets for the Shugart type 400 drives. Note that in the Xerox 5¼" drives, the violet wire is the 5 volt supply and the orange wire is the 12 volt supply.

— Chuck Carpenter

Readers and Users Input

Your input is valued. To help the V.I.P. Group provide data and information you need, your feedback is requested to let us know what's happening and how you are doing with the PC. Call us at numbers listed at the beginning of the newsletter. Or, send us a message through the electronic mail system. VIPdlos.dlos. is the one to use to contact the VIP newsletter editor. We have had many problems with the phone system. There have been times when callers claim "the phone rings off the wall and no one answers." But we know the person being called was in the office or nearby all the time. So don't give up; we really want to hear from you — and we don't like answering-machines either.

Next Time

Make a note that our address is changing. This is the result of our move to Lewisville, TX. The new address is printed at the beginning of this newsletter. Our phone numbers will be changing and the old and new ones are shown at the beginning of this newsletter too.

Coming next in the V.I.P. Newsletter will be the standard fare of information including the latest up-dates. Also, there will be reviews of several new products. The list will include:
- Design Intelligence — A printing package by: Infographics, Inc.
- Media conversion utilities
- Calendar/Clock utility by: Optronics Technology
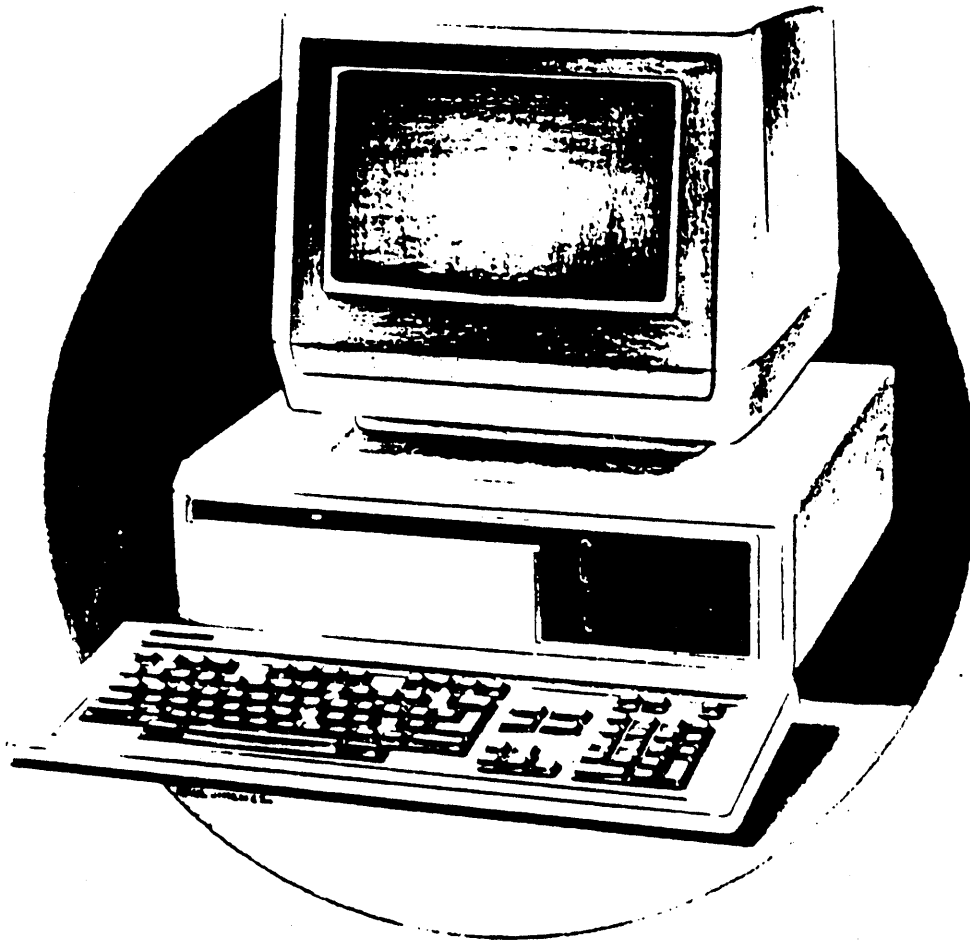- Computer (hardware) Organizer for more desk space by: JWK Engineering
  And more.

Chuck Carpenter, Editor
V.I.P. Newsletter
Dallas, TX August 1984

XEROX VIP

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● Books and References ● Technical Notes ● Remote Terminal 820-II ● General Software Installs
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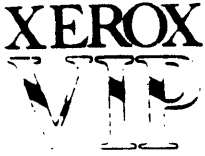
**A Newsletter About Products and Services
That Complement the Xerox Information Products**

XEROX
VIP

Introduction

Our Vendor Involvement Program or V.I.P. function is designed to assist vendors offering a complementary product or service for the Xerox Information Products. Initially. most of the effort is being concentrated on the Xerox Personal Computers. with more effort planned in the

future for the Xerox 860. the Information Processors. the Memorywriter family and the Xerox Telecopier line. Selected products are tested for operability by the V.I.P. Group on Xerox systems and. if appropriate. assistance is provided to the vendor to make the products operational. The V.I.P. function then provides information on the complementary vendor offerings to both sales and marketing personnel and also to the final endusers.

PC Commentary

TURBO PASCAL — A Language for All Systems

If you're looking for a development language for use on the 820-II and 16/8. and you want something that's more substantial than MBASIC. is available for MS-DOS both in 5.25 and 8 inch. is available for CP/M-80 and CP/M-86. is well supported. and is the most widely used and highly regarded Pascal system. then look at Turbo Pascal. Turbo is a full-featured Pascal editor and compiler from Borland International of Scotts Valley, CA. Borland's strategy is to deliver a premium product at a price that is so reasonable that potential pirates will opt for a legitimate version. Turbo is sold for a mere $49.95 and comes complete with 300 pages of bound documentation. Several reviews have rated the product superior to other Pascal compilers selling for $500.00 or more.

Turbo is installed on your system via a menu driven install program (if you are ordering MS-DOS be sure to specify MS-DOS not PC-DOS or you won't get the correct version for the Xerox 16/8) or by installing the Xerox 820-II (or 16/8) screen commands on a one-by-one basis. After installation. the user types "turbo" and is greeted with:

```
-------------------------------------------
TURBO Pascal system          Version 2.008

Copyright (C) 1983, 1984 by BORLAND Inc.
-------------------------------------------

Include error messages (Y/N)?

    ( ...  ...s  or  ... c...

Logged drive: A
Active directory : \lang\pascal

Work file:
Main file:

Edit      Compile    Run    Save

Dir       Quit    Compiler Options

Text:        0 bytes
Free:    62635 bytes
```

Upon specifying a work file name. the file is either retrieved (if available). or created. This file may not be (E)dited. (C)ompiled in memory. Compiled as a ".COM" file via the (O)ptions command. or (R)un. Let's assume we have a new file. We proceed by choosing Edit. This flips us into a full screen edit mode. which makes use of commands almost identical to WordStar. We key in our program and press CONTROL-K + D. This gives us back the main menu. To compile the program for testing in memory. simply press "C." Turbo is a super fast compiler and before you can say "hexidecimal" you've got a compiled version of your program. Press R to run.

If you're like me. your first compile will rarely be your last. In cases of compile errors Turbo's interface shines. The compiler displays an error message and requests you to press "ESC". You are then placed in edit mode with the cursor sitting right on the alleged violation. With most cursor sitting right on the alleged violation. With most compilers you're required to compile a source file. then you are given an error message. or worse yet an error number. Next you have to load your separate editor. find the error. correct the error. close the file. leave the editor and recompile. Not a lot of fun. Not very productive. Turbo takes care of all that for you and does so with lightning speed.

These simplified Turbo Pascal features make the learning of a compiled language almost as easy as an interpreted language like BASIC. Thus. there is a painless transition path from BASIC to Pascal via Turbo's friendly and efficient user interface. Turbo. unlike other compiled languages. has no link phase. External code must be brought in (for the most part) as source at compile time. This is done with an INCLUDE option. Although this is no problem for most situations. certain large applications may require conventional linkage of object code.

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PC Commentary

With approximately 5,000 copies a week being sold and 125,000 copies of Turbo sold to date, a rather large user community has developed. General information, source code, and programming assistance is available via local bulletin boards, the official Turbo user's group (TUG), and

Compuserve. If you are a Compuserve subscriber, at the "!" prompt, type GO PCS-158 for the programmer's SIG (Special Interest Group). There is plenty of dialogue on Turbo as well as a number of Turbo source programs. The programs may be downloaded via XMODEM (or other COMM program). Borland closely monitors this SIG and you may ask them questions directly. Their response is excellent. You may purchase Turbo Pascal by calling Borland International directly at 1-800-255-8008 or through local computer retailers.

MS-DOS Software for the Disk Expansion Module

In the Sep./Oct. 1984 issue of the VIP Newsletter, there were 108 MS-DOS packages listed from 25 suppliers. Since that time, additional packages have been tested. Add these sources to the list included in the earlier Newsletter.

American Business Systems, Inc.
3 Littleton Road
Westford, MA 01886
(617) 692-2600

- Order and Inventory Management System
- Accounts Receivable System
- Accounts Payable System
- Payroll System
- General Ledger System
- Point of Sale
- Manufacturing Management System
- Medical Practice Management System
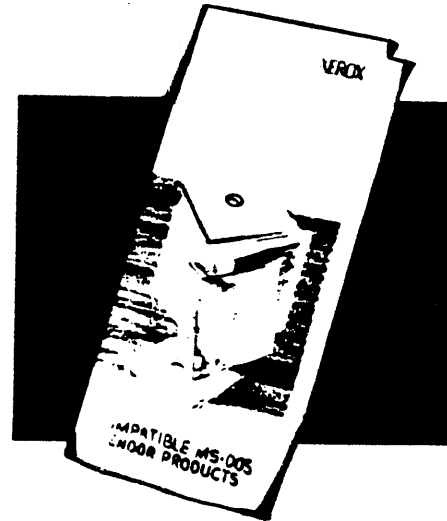- Client Accounting System

Borland International
4113 Scotts Valley Drive
Scotts Valley, CA 95066
(408) 438-8400

- Turbo Pascal

BV Engineering
P.O. Box 3351
Riverside, CA 92519
(714) 781-0252

- ACNAP — Electronic Circuit Analysis Program
- SPP — Signal Processing Program / Sig. Gen.

DISCO-TECH
600 B Street
P.O. Box 1659
Santa Rosa, CA 95402
(707) 523-1600

SURVEY 2000 Surveying Software
- LOCATOR — Reduces survey field data
- COGO 2000 — Performs coordinate geometry functions
- MAP 2000 — Calculates course bearings and distances
- PLOT 2000 — Data plotting/printing program

SURVEY 80 Series packages for Surveyors
- FiNDeR — Field Note Data Reduction
- CoGo — Coordinate geometry program
- EDM/Topo — Topographic survey program
- MapCheck — Processing for FiNDeR, CoGo, and EDM/Topo
- Plotter — Data plotting/printing program

Other surveying
- HCS — Horizontal Curve Staking
- STADIA — Does Stadia reduction

Civil Engineering
- VertiCurve — Vertical curve design
- CUT & FILL — Cut and fill for grade work
- The HYDRAULICS PACKAGE — Full pipe hydraulics

Structural Engineering
- BEAM-1 — Simple beam design and analysis
- RETWALL — Retaining wall design
- TILTWALL — Cost effective tilt-up wall design
- PolEM — Pole Embedment Design
- FOOTING — Easy job of isolated footing design
- PGB — Pier and Grade Beam Design
- ELFAN — Elastic Foundation Analysis

Others
- DISCO-SPECS — Architectural spec-writing package
- NRG-2 — Commercial Energy Analysis to CA title 24

RealWorld Corporation
Dover Road
Chichester. NH 03263
(603) 798-5700

- Accounts Receivable
- Accounts Payable
- Inventory Control
- Order Entry
- Sales Analyses
- Payroll
- General Ledger

Ryan-McFarland
609 Deep Valley Drive
Rolling Hills Estates. CA 90274
(213) 541-4828

- RM/COBOL — Programming Language/Operating System
Ryan-McFarland (RM) has an extensive applications directory relating software sources using their excellent programming language. The contents of the directory lists 163 domestic applications. five applications from Canada and ten from international companies. Additionally. there are 39 Service and Utility programs to support programming activities. There are 78 machines from 45 companies officially supported by RM. There is also a non-officially supported list that includes 56 machines from 38 additional companies. Programs from these non-supported-by-RM machines have been reported as operational by various companies and users as successfully running under RM/COBOL. Included in the later category are the Xerox 820-II with CP/M and the Xerox 16/8 PC with MS-DOS. In order to use applications running under RM/COBOL on the Xerox PCs. you will need to make patches to the runtime module. Contact us if you want the information to make the patch.

Softquest Inc.
P.O. Box 3456
McLean. VA 22103
(703) 281-1621

- The Smart Checkbook — Personal Finance Management

Sunray Sales Inc.
707 North Freeway. Suite 119
Fort Worth. TX 76102
(817) 338-1217

- Timesaver 10 — Text processing utilities for typesetting use and so on.

— *The Staff*

Software/Hardware Items of Interest

Calendar/Clock

Optronics Technology (Box 81. Pittsford. NY 14534. 716-377-0369) has developed a real-time calendar/clock option called MC-1 for the Xerox Personal Computers. The retail price is $69.00 plus $2.00 shipping and handling.

The option is a printed circuit board about the size of a business card and the required CP/M-80 software. The board includes an OKI clock-calendar chip. a socketed lithium battery, and support electronics. One software
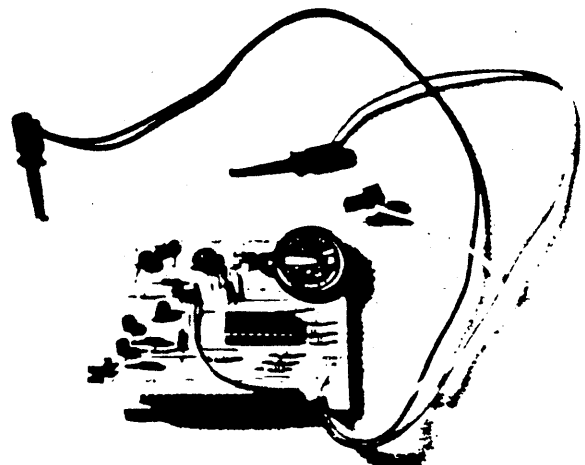
Software/Hardware

program is used to set the clock board initially and when daylight savings time comes around. Another software program must be run each time the computer is powered up to move the current date and time from the clock board to the computer memory. After that, any CP/M program

doing calls to the standard clock locations gets the correct day and time. The clock and software has been successfully tested on a Xerox 820-II, 16/8 and DEM (Disk Expansion Module). The Xerox Menu program correctly picks up the date and time. The MS-DOS operating system from Xerox correctly picks up the time (after the clock set and move program are run under CP/M) but not the date at the time this Newsletter went to print.

— *Keats Soder*

SmartKey II Plus

SmartKey II Plus is a software utility that allows a user to take any long, repetitive, boring, or difficult-to-remember set of keystrokes and assign them to a single key. These assignments can be changed at any time, even while you are in an application program like WordStar without affecting the application itself. When a group of truly useful assignments have been made, you then can save them in a definition file for recall later.

To define a key, you touch the setup key which you choose (on the 16/8, I have chosen the "Accept" key). Then you touch the key you want to redefine. Next you type the characters you want to store under the single key. You complete the redefinition by touching the setup key twice. If you want to get fancy you can put pauses in the definitions by touching the setup key only once for each group. You might use this feature if you were defining a block of text with the date in the middle and wanted to insert the current date.

If you still need to define more keys after defining all the unused special character keys, unused shifted keys, and unused control key combinations, then you can define a super shift key (on the 16/8, I have chosen the "Home" key). When this super shift key is followed by any character, it is redefinable as another string of characters. This essentially doubles the number of keys on your keyboard.
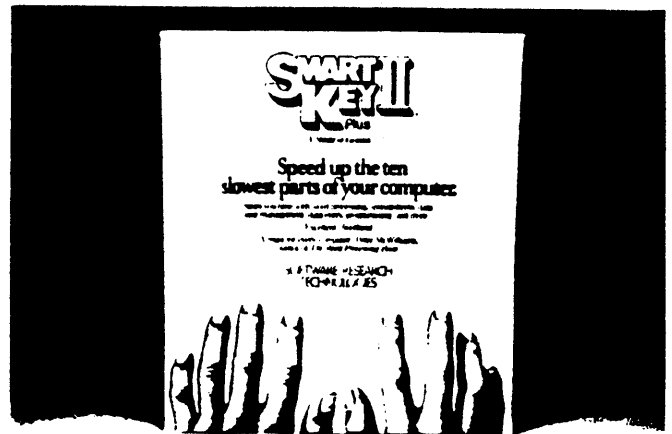
When used on the Xerox 16/8 with the low profile keyboard you need to install SmartKey by running the program SKPATCH.COM to set the option of bit 7 to ignore and to choose your setup key and super shift key.

A different software package is needed for CP/M-80, CP/M-86, and MS-DOS (It doesn't currently operate under Xerox MS-DOS) so be sure to specify which one you want. Order from Software Research Technology (previously Heritage Software) at 3757 Wilshire Blvd., Suite 211, Los Angeles, CA 90010, 213-384-4120.

— *Keats Soder*

## WHAT? You mean I CAN do color graphics with my 820-II?

As you might recall, in the Sep./Oct. Newsletter, we mentioned the Diablo C150 color ink jet printer (now sold also as the Xerox C150). Well, already, a vendor known as Infographics, Inc. is manufacturing software allowing not only IBM-PC and PC compatible machines, but also the 820-II and 16/8 to print full color pie charts, parallel bars, stacked bars, horizontal bars, line graphs, stepped graphs, along with bars and lines using the Xerox/Diablo C150.

The software, known as Infographics 2.0, requires no previous knowledge of graphics or computers, assumes no previous expertise in color harmony, aesthetic design or accurate representation experience using graph formats.

Menus are employed using an easy fill-in-the-blanks approach. Although the program primarily operates in an automatic Design Intelligence manner, a Choice feature allows the user different levels of interaction with the software's decision rules.

These decision rules select the type of graphs (over 3,500 combinations), continuous scale or split-scale, the number of graphs per page (up to four), centered or justified titles, colors or patterns, chooses the highest resolution, and makes as many as 120 decisions concerning effective presentation of the user's data. The user is able to override
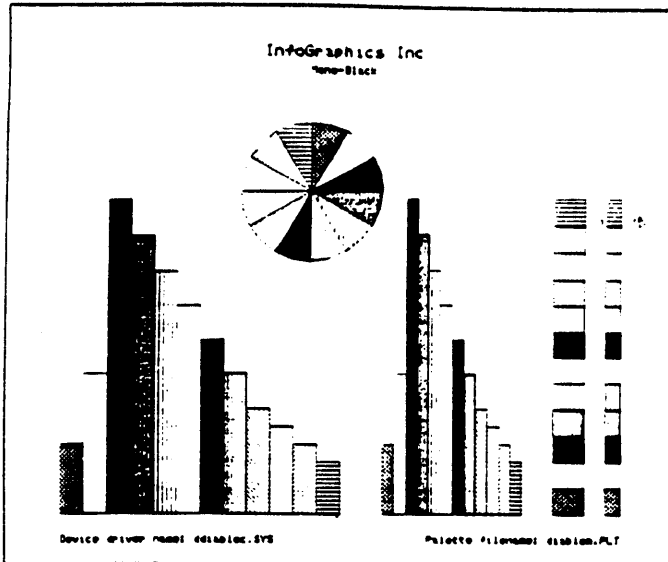
any of the defaults and modify one or all of the decisions made by the program.

In addition to supporting the Xerox C150 color ink jet printer, the program also includes device drivers enabling usage of other color printers, pen plotters, and even several of the monochrome dot matrix printers (using various grids and patterns). These drivers also allow users with high resolution graphics capabilities to display the created graphs directly on the computer's graphics screen.

Recently, in a cooperative effort between Infographics, BSG, IPD, and PSD, a demo version of the 2.0 software was developed in order for the Xerox sales representative to more effectively show the attributes of primarily the C150, and to a lesser degree the 820-II and 16/8 products.

The Infographics 2.0 software is now available internally
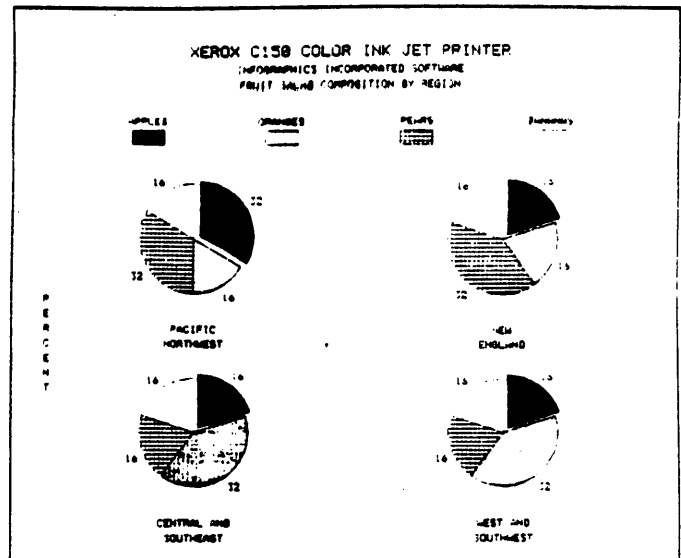
by completing an Internal Software Request form, and submitting it to B. Gannon at MS179 — DLOS. Xerox customers and dealers can call Software Telemarketing at 1-800-822-8221. The available formats are:

- 5¼" DSDD CP/M-80 for the 820-II or 16/8.
- 5¼" DSDD CP/M-86 for the 16/8 with DEM.
- 5¼" DS 9 sect MS-DOS for the 16/8 with DEM.
- 5¼" DS 9 sect MS-DOS for the IBM-PC and PC compatibles
- 8" SSDD CP/M-80 for the 820-II or 16/8.
- 8" SSDD CP/M-86 for the 16/8.
- 8" MS-DOS for the 16/8.

— Tim Lee

Media Conversion Software
UNIFORM

Since the last Newsletter, the Vendor Products group has been working with MicroSolutions, Inc. of DeKalb, Illinois on a disk media conversion program known as UNIFORM. UNIFORM allows you to redefine the operating format of one of your 5¼" floppy drives to enable disk formats created on non-Xerox computers to be read. The program also allows the user to initialize blank disks, and write disks to be read by non-Xerox computers. The program is self-prompting and all entries are made from menus. UNIFORM will also enable MS-DOS and CP/M file and program transfers between machines. The 820-II version of the package should be available October 15, from MicroSolutions at (815) 756-3421 for $69.95. Note that this program will operate only on the original 5¼"

version of the 820-II, and not the new 5¼" Disk Expansion Module. This is due to the differences in the disk controllers between the two machines. Microsolutions will consider a version for the DEM based on request level.

CONVERT

Another media conversion program which has been evaluated for use on the IBM-PC and PC compatibles was CONVERT from Selfware in Fairfax, Virginia. This disk conversion allows the IBM-PC user to transfer document files over to 35 + different CP/M disk formats, including the Xerox 820-II CP/M 5¼" SSDD format. CONVERT also allows custom formats to be designed by the user.

There are special cases where CONVERT may have trouble reading disks preformatted on CP/M machines, especially

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disks formatted by a Lobo MAX-80, Zorba 7, or Kaypro's models 4 and 10. Those disks must first be formatted by the CONVERT program prior to the other machine using them. There are also other cases where a disk must be

formatted on the intended machine first, i.e.: Cromemco, then reformatted by CONVERT. Also, CONVERT will not read, write, or format any machine's single density format. The list price for CONVERT is $99.00. To purchase CONVERT, check with your dealer, or call Selfware at 1-800-242-4355.

— *Tim Lee*

Technical Notes

The 820-II as a Remote Terminal

Occasionally, a need arises that will allow remote control of your central or main terminal. Under some conditions, this is possible with two 820s connected through a serial cable. Janet Hall, Marketing Analyst, determined the requirements. Here's the configuration requirements she developed. — ed.

Main 820-II terminal and DEM with fixed drive.

- Connect an RS232 serial cable to the COMM port.
- Using the CONFIGUR program, set the COMM options to:

19200	Baud Rate
1	Stop Bits
8	Word Length
NONE	Parity
HIGH	Request to Send
HIGH	Terminal Ready

Remote 820-II terminal.

- Connect the RS232 serial cable to the COMM port. A keyboard is the only other connection that needs to be made for this application.

- Verify that the jumpers on J9 are connected as follows:

5-6, 9-10, 13-14, 17-18, 21-22, 25-26, 29-30

Put a jumper on E5 also if you do not want to use the floppy controller card.

- Verify that the ROMs in positions U33, U34, U35 are level 4.01, and the ROM in position U36, if you are using a low-profile keyboard, is level 4.03.

- To transfer control from the main terminal to the remote host:

On the main terminal at the command line prompt, A>, type: STAT CON: = TTY: <RETURN>

On the remote terminal from the monitor prompt, *, type: bf a <RETURN>
and: h <RETURN> <RETURN>

You should now see the CP/M command line prompt

- To transfer from the remote to main:

At the remote command line prompt, A>, type: CON: = CRT: <RETURN>

The command line prompt, A> will appear at the main terminal.

Note: If dBASE II is to be used with this procedure, set the value for data bits to 7 rather than 8 on the CONFIGUR program, keyboard data format option.

— *Janet Hall*

General Software Installation

Some software requires an installation program or table to be set for the specifics of the computer. The following set of information should help in the installation of most software programs.

Display Manipulation with Escape (ESC) Sequences:

Escape (ESC or esc) is 1B Hex or 1BH; 27 decimal.

esc Followed by	28H or (	Disables the display attribute
esc	" 29H or)	Enables the display attribute
esc	" 2AH or *	Clears the screen
esc	" 34H or 4	Sets blink attribute mode
esc	" 35H or 5	Sets graphics attribute mode
esc	" 36H or 6	Sets blink attribute mode also
esc	" 37H or 7	Sets Inv. Video attribute mode
esc	" 38H or 8	Sets Low Inten. attribute mode

esc	" 3DH or =	Row-column cursor position lead-in character an offset of 32 or 20H is added to the position code. The positioning formula is: esc = "row + 20H" "column + 20H" Where row is between 0 and 23 and column is 0 to 79
esc	" 45H or E	is line insert
esc	" 51H or Q	is character insert
esc	" 52H or R	is line delete
esc	" 54H or T	is clear to end of line
esc	" 57H or W	is character delete
esc Followed by	59H or Y	is clear to end of screen

Additional information about the Xerox Low Profile keyboard is included in the following tables:

KEY STATION NUMBERING AND KEY CODES (Low Profile Keyboard)

Key	Output Unshifted in Hex	Output Shifted in Hex	Output Control + in Hex	Key	Output Unshifted in Hex	Output Shifted in Hex	Output Control − in Hex
ESC	1b	1b	9b*	m	6d	4d	0d
1	31	21	91	Comma (,)	2c	3c	1c
2	32	40	92	Period (.)	2e	3e	7c
3	33	23	93	Slash (/)	2f	3f	5c
4	34	24	94	Right Shift	None	None	None
5	35	25	95	Help	1e	1e	9e****
6	36	5e	96	Right Ctrl	None	None	None
7	37	26	97	Space Bar	20	20	00
8	38	2a	98	Shift Lock	None	None	None
9	39	28	99	Function 1	f1	f1	d1
0	30	29	90	Function 2	f2	f2	d2
Minus (-)	2d	5f	1f	Function 3	f3	f3	d3
Equal (=)	3d	2b	9a	Function 4	f4	f4	d4
Back Space	08	08	88**	Function 5	f5	f5	d5
Tab	09	09	89	Function 6	f6	f6	d6
q	71	51	11	Function 7	f7	f7	d7
w	77	57	17	Function 8	f8	f8	d8
e	65	45	05	Function 9	f9	f9	d9
r	72	52	12	Function 10	fa	fa	da
t	74	54	14	Function 11	fb	fb	db
y	79	59	19	Function 12	fc	fc	dc
u	75	55	15	7 from Pad	37	37	b7
i	69	49	09	8 from Pad	38	38	b8
o	6f	4f	0f	9 from Pad	39	39	b9
p	70	50	10	Comma (,) from Pad	2c	2c	ac
[	5b	7b	1b	4 from Pad	34	34	b4
]	5d	7d	1d	5 from Pad	35	35	b5
Carrier Return	0d	0d	8d***	6 from Pad	36	36	b6
Left Ctrl	None	None	None	= /Enter from Pad	bd	bd	fe
a	61	41	01	1 from Pad	31	31	b1
s	73	53	13	2 from Pad	32	32	b2
d	64	44	04	3 from Pad	33	33	b3
f	66	46	06	0 from Pad	30	30	b0
g	67	47	07	Next	e7	e7	c7
h	68	48	08	Down Arrow	82	82	02
j	6a	4a	0a	Left Arrow	84	84	04
k	6b	4b	0b	Right Arrow	83	83	03
l	6c	4c	0c	Home	80	80	1e
Semicolon (;)	3b	3a	7e	Up Arrow	81	81	01
Apostrophe (')	27	22	60	Previous	e6	e6	c6
Line Feed	0a	0a	8a	Accept	fd	fd	dd
Left Shift	None	None	None	Delete (Del)	7f	7f	ff*****
Period (.) from Pad	2e	2e	ae	Plus (+) from Pad	2b	2b	ab
z	7a	5a	1a	Minus (-) from Pad	2d	2d	ad
x	78	58	18	Multiply (X) from Pad	2a	2a	aa
c	63	43	03	Divide (÷) from Pad	2f	2f	af
v	76	56	16	Blank	f0	f0	d0
b	62	42	02	Undo	18	18	de
n	6e	4e	0e				

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Technical Notes

Notes:

9bh*	Control + ESC is a reserved key used to perform a cold boot from *either* keyboard.
88h**	Control + Backspace is a reserved key used to switch from the Z80A to the 8086 from *either* keyboard.
8dh***	Control + Return is a reserved key used to switch from the 8086 to the Z80A from *either* keyboard.
9eh****	Control + Help key is a reserved key used to perform a screen print from *either* keyboard.
ffh*****	Control + Del is a reserved key for future use by Xerox Corporation.

Installation of Multiplan on the Xerox 16/8

The following answers to the INSTALL program of Multiplan properly install the standard Microsoft Multiplan version 1.2 of the Xerox 16/8. The Characters "&E" are entered by touching the "ESC" key, "∧" is for the control key, and "&H" indicates that the following characters are in hexadecimal notation. More than one key can be defined to do the same function. Just separate the definition by a comma. A sequence of several keys is indicated by a + sign between them.

(Start Here)		(Continue Here)	
Cancel	&E	Bottom of +	& +
Up Dir Key	&H81	Top of +	& +
Home	&H80	Horizontal bar	- DASH key
END	&HFC	Clear Screen	∧Z
Right Dir Key	&H83	Start Pntr Pos	&E =
Left Dir Key	&H84		
Down Dir Key	&H82		
Backspace	∧H	Is Upper lft crnr row/column? N
Delete	&X	Is row given first? Y
Return	(Touch RETURN key)	Funct applied to row nmbr? 5
Help	∧∧ (HELP key)	Value added 32
Tab	∧I (TAB key)	What Separates row/clmn? RETURN
Char Left	&HF1	Funct applied to clmn nmbr? 5
Char Right	&HF4	Value added 32
Word Left	&HF2	End cursor psn — RETURN
Word Right	&HF3	Initialize Terminal — &E7
Next Window	&HF9	Reset Terminal — RETURN
Page Up	&HF6	Terminal has non-destructive
Page Down	&HF7	screen attributes? Y
Page Left	&HF5	Spcl sequence to turn off? N
Page Right	&HF8	What begins rev. video? &E)
Next UL Cell	∧J	What ends reverse video? &E(
Reference	&HFA	Turn on keyboard click — RETURN
Recalc	&HFB.!	Turn off keyboard click — RETURN
Begin Graph.	(Touch RETURN key)	Turn on cursor — ˙E˙B
End Graph.	(Touch RETURN key)	Turn off cursor — ˙E space
Vertical Bar	∧.(CTRL dot)	Sound bell — ∧G
Upper Rt Cor.	& +	Number of rows — 24
Lower Lft Cor.	& +	Number of columns — 80
Lower Rt Cor.	& +	Name of Terminal — Xerox 16/8 PC
Upper Lft Cor.	& +	

The DEM and 8 Sector Disks

There are going to be times when MS-DOS software will only be available to you in the 8 sector (and sometimes in the 9 sector single-sided) formats. This is because the original version of PC-DOS, levels below 2.0, were in the 8 sector format, and many upgraded systems have only single-sided drives. Therefore, because there are many systems on the market that use the older operating system and drive configurations, suppliers of software often ship their product in the 8 sector format. Levels above 2.0 are backward compatible so there is no problem — most of the time.

This is also true of the Xerox 16/8 DEM — most of the

time. In the process of testing lots of MS-DOS software, the VIP group has become aware of things you need to do before you try to read an 8 sector or 9 sector single-sided MS-DOS disk in the DEM.

- **READ THE DIRECTORY** of a 9 sector, double-sided disk first before you try to read or use the 8 sector or 9 sector single-sided disk.

Once you do this, you should be able to read the 8 sector or 9 sector single-sided disk without problems. You can use the files directly from the 8 sector floppy or move them with the COPY utility to other disks such as your fixed drive. Note that without doing the 9 sector double-sided read, you are likely to get garbage or a no-read condition.

— Chuck Carpenter

Books and Reference Sources

Book Review

To help you better understand the intricacies of MS-DOS, get a copy of the book "Running MS-DOS" by Van Wolverton. The book is a Microsoft Press publication and does an excellent job of bringing the neophyte user up-to-speed. Everything you need to know about MS-DOS and the related utilities is included in the book. If you are an IBM-PC user, there are special sections describing features unique to the "PC".

Contents of the book are arranged in three sections. Part 1, Getting to know DOS, describes what DOS is and shows you the basics of the various commands. The second part, Learning to Use DOS, teaches you the more in-depth features of the system. Part 3 includes a DOS Command Reference and an appendix with four sections to supplement the general instructions in the text.

Part 1 includes four chapters to familiarize you with the workings of MS-DOS. You learn that DOS is a software program linked to the hardware to make the various functions and capabilities possible. Also you become acquainted with the elementary controls needed to bring-up the system, initialize and copy a disk, print, deal with directories, and take a first look at files.

Part 2 continues to build on the early chapters with in-depth discussions and examples. Managing files and the contents of your disks are thoroughly covered in five chapters. Creating and editing text files with the EDLIN utility comprises two chapters. And, you learn how to create and use batch files as a prelude to more sophisticated use of the MS-DOS utilities. The next four chapters then lead you into the depths of the system to let you take control of the functions and capabilities. The last of these four chapters describes ways for you to tailor your own system.

Those who are familiar with CP/M will find many similarities. There are also many differences. The resident utilities are more extensive than with CP/M. Utilities such as EDLIN text editor seem easier to use to me. The syntax of many commands is in reverse order from CP/M but you quickly adjust and confusion is minimal. Those using only MS-DOS for the first time will have no problems because the book's examples facilitate learning. Files organized in a tree structure seem confusing at first but the system includes required management capability. The power of the tree of files becomes apparent when coupled with a fixed drive system. "Running MS-DOS" is an excellent tutorial book. Your personal skills with your computer will be greatly enhanced once you have read, practiced and implemented the included exercises.

— Chuck Carpenter

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Books and Reference Sources

V.I.P. Library

To help the VIP group keep up with the software explosion. and find product information. we keep a fairly extensive library. The library is managed by Peter Hamilton. Here's what he has to say about this VIP function. — ed

Recently. the Vendor Involvement Program has developed a resource capability for hardware and software applications. This is accomplished by using a variety of technical books and periodicals relating to Xerox Personal Computers. Articles of specific interest are kept on file for use in competitive analysis and general information; e.g.. software. hardware. tutorials and so on.

Information compiled to date relates to present and planned products. The goals of the V I P Library include becoming an authoritative source of research. Future Newsletter

issues are planned to include some of these comparative analyses and types of data we can supply to meet the needs of Team Xerox.

— *Peter Hamilton*

Readers and Users Input

Don't forget to send us your tips and suggestions that will help make the Xerox 16/8 and 820-II easier to use. We will consider them for inclusion in future Newsletters and give credit where due. too. Just think how nice it will be for

other users to know about some of the operating aids you have discovered. You will get your name published and become famous. too. (Sorry about rich.) We prefer articles about MS-DOS but CP/M articles are quite acceptable.

Corrections and Updates

Corrections

In the Sep./Oct. Newsletter. in the section about Software Operating Under MS-DOS. make the following corrections.

Change the address for ADS Software. Inc. to:
707 5th Street. N. E.
Roanoke. VA 24014
(703) 344-6818

Add the phone number to American CompuSoft:
(714) 472-8186

Add the phone number to Computing:
(415) 567-1634

Add the phone number to Contract Research Software Corp.
(312) 938-9000

Add the phone number to Obsidian:
(408) 395-7900

From the list under Software Toolworks. Delete:
MYCALC — Spreadsheet
Word Wiggle — Word Game

Updates

We wanted to be sure that compatibility between the Xerox 16/8 DEM and the IBM-PC was understood. To reinforce the information included in the Sep./Oct. '84 Newsletter. here's the description of the FORMAT.COM program as it is published in the software description.

FORMAT.COM — This program will format diskettes both 8 and 9 sectors per track. single and double sided. Remember. only double sided diskettes may be SYSGENed. Note: Diskettes formatted with this program can NOT be read on an IBM-PC . . . This is a hardware restriction. Diskettes formatted

Corrections and Updates

the IBM can be read and written to on the Xerox 16/8 DEM. but they cannot be SYSGENed.

Diablo's C150 color inkjet printer was discussed in the Sep./Oct. Newsletter. Updating the previous article. note that the printers are now being installed. without cost to the purchaser. by the Xerox service organization. The problems of initial installation positioning and leveling are thus eliminated for the regular customer. Also. supplies for the printer are available in adequate quantity by contacting

a Diablo dealer. If you are an internal Xerox user of this printer. you will need to find a dealer who is supporting the C150 in order to get replacement supplies. The C150 is a quiet. easy-to-use printer. There are now several programs available to help you use the C150 with many computers. including the Xerox 16/8. (See article elsewhere in this Newsletter.) Colors are bright and distinctive. Text is high-contrast and charts and graphs come out clear and distinctive. If your project requires a lot of color plotting then the C150 is an excellent choice.

Next Time

The move from Dallas to Lewisville has been completed. Note the new Address and telephone numbers at the beginning of this Newsletter. You can reach any of the V.I.P. Group through these numbers.

Again. in the next Newsletter. we will include many things you will find helpful to better understand your Xerox PC. There will be more reviews of the current products we know about. And. we will include the latest updates and changes. Some of the items that are in the works are:

- A review of the Diablo P-38 high-speed printer.
- A review of the PopCom modem.
- GILTRONIX Peripheral Sharing Device will be reviewed.
- The SALESEYE. Sales Territory Management Tool software package will be described here.
- And. we'll include more technical information like a comprehensive procedure to Set-up and Install the Xerox 16/8 DEM.

Chuck Carpenter. Editor
V.I.P. Newsletter
Lewisville. TX October 1984

16/8 Professional Computer

A 2-in-1 computer for the best of both worlds.

The Xerox 16/8 PC includes two processors and two memories.

So it's a logical, cost-efficient choice to meet both present and future needs. This highly advanced microcomputer has a 16-bit processor with a 128K standard memory, upgradable to a 256K memory. In addition, it includes an 8-bit processor with a 64K standard memory.

Maximum compatibility.

The Xerox 16/8 PC accepts the comprehensive and proven 8-bit software. And it also accepts the latest 16-bit software. So you get both 8-bit and 16-bit processing under CP/M 80®, CP/M 86®, and MS-DOS®. The CP/M® and MS-DOS® data files can be used by both processors and operating systems providing complete data file compatibility and maximum flexibility in sharing data between processor.

Major Benefits

Another significant plus: The 16/8 PC can use both processors simultaneously. On the 16-bit side, there's an 8086® chip with true 16-bit capacity. On the 8-bit side, there's an exceptional Z80®-A chip. By referencing first one and then another processor, you obtain data from one CP/M® program and insert it into the other CP/M® program. In effect, you can do two things at once with your advanced 16/8 PC.

Flexible Expansion

The 16/8's Disk Expansion Module provides you with your choice of 5¼" Disk Drive storage options, from 696 Kb useable storage in the two floppy drives, to 10.2 Mb useable storage in the Rigid Drive.

This module also provides the 16/8 PC with 4 expansion slots for system enhancements for MS/DOS and CP/M operating systems, such as high resolution graphics, additional memory, or communications protocols. The 16/8 never loses its stamina as your needs grow.

Great software selections.

Xerox gives you industry-standard operating systems with the CP/M-80® (8-bit), CP/M-86® (16-bit), and MS-DOS® (alternate 16-bit). So you have a full section of software:

☐ *Word Processing* — WordStar™ and
  SELECT™
☐ *Financial Analysis* — Multiplan™
☐ *Data Management* — dBASE II™
☐ *Graphics* — Business Graphics and
  Multiplan conversion
☐ *Accounting* — BOSS™
☐ *Custom* — with BASIC-80™

Vast Communications.

Use our BIS-3270™ software to emulate IBM® 3270™ data terminals and access large IBM computers. Use BIS-3780® software to communicate with IBM mainframes, word processors, ink jet printers, and DEC™ PDP-II™ and VAX™ series computer. Our menu-driven TTY software communicates with optical character readers, teletype terminals, mainframes, minicomputers and personal computers, word processors and information networks. And your 16/8 can do even more with various communications packages.

Superior speed.

The 16/8 is actually faster than competitive 8-bit units and other 16-bit personal computers. One reason is that its "logical disk drive reassignment" lets you redefine disk drives.

Example: when using a rigid disk one of the four disk segments can be reassigned as drive "A" for faster data retrieval and less disk manipulation. Result: Your operations can be simplified and sped up by reassigning logical disk drives to fit your everyday environment.

Options and enhancements.

A Xerox Shared Interface Unit (SIU) transforms the 16/8 into a low-cost workstation that's an integral part of the Ethernet Information System. This lets you use print, file and mail services via Network Services software; gives you local resource sharing; provides dial-up access via a modem for interfacing with other location networks. Another optional accessory is an anti-glare filter screen to enhance images.

Specifications   16/8 Disk Expansion Module Disk Drive Storage Options

2 x 5¼" Floppy Double Sided/ Double Density

Systems Specifications — Disk:	
Format Options:	Sectors: 17, 9, 8 Tracks: 80, 80, 80
	Number Bytes Per Sector: 256, 512, 512
Storage Capacity Disk Drive:	Unformatted: 500K, 500K, 500K Formatted: 338K, 368K, 328K
	Usable: 322K, 348K, 310K

5¼" Rigid/Floppy Rigid

Systems Specifications — Disk:	
Format Options:	Sectors: 17 Tracks: 1224 Number Bytes Per Sector: 512
Storage Capacity Disk Drive:	Unformatted: 12.7mb Formatted: 10.4mb Usable: 10.2mb

Equipment Specifications:

Keyboard:	Height 1.6", Depth 8.25", Width 19.9", Weight 5 lbs. max.
Display Processor:	Height 13.20", Depth 14.75", Width 15.00", Weight 30 lbs.
Expansion Module:	Height 5.5", Depth 15.5", Width 18.25", Weight 30 lbs.
Expansion Slots:	Height 5", Depth 7.5", Width 4.6"

Electrical Requirements:

Display Processor:	Voltage: 115 VAC, Frequency: 60 HZ, Current: 2 Amps. Receptacle: Two Pole
Expansion Module:	Voltage: 115 VAC, Frequency: 60 HZ, Current: 2.5 Amps. Receptacle: Two Pole

Operating Environment:

Display Processor:	Three Wire Grounded Duplex, Temperature: 50° to 90° F Relative Humidity: 20%-80%
Expansion Module:	Three Wire Grounded, Temperature: 50° to 90° F, Relative Humidity: 20%-80%

Non-Operating Environment:

Display Processor:	Temperature: -20° to -150° F, Relative Humidity: 15%-90%
Expansion Module:	Temperature: -20° to -150° F, Relative Humidity: 15%-90%

XEROX VIP

VENDOR INVOLVEMENT PROGRAM NEWSLETTER

Issue #3   March 1985

In This Issue

● Introduction ● PC Commentary ● Technical Notes ● Software/Hardware Items
● Books and References ● Reader/User Input

A Newsletter About Products and Services
That Complement the Xerox Information Products

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Introduction

The Vendor Involvement Program, or V.I.P. function, assists vendors who offer a complementary product or service for the Xerox Information Products. Our initial efforts concentrated on the Xerox Personal Computers. Future plans will include the Information Processors (e.g.

Xerox 860), the Memorywriter family and the Xerox Telecopier line. Selected products are tested for operability by the V.I.P. Group on Xerox systems. If appropriate, assistance is provided to the vendor to make the products operational. The V.I.P. function then provides the complementary vendor offering information to both sales and marketing personnel and also to the final end-users.

PC Commentary

Compatibility: MS-DOS vs PC-DOS

Why won't some of the IBM-PC programs that are becoming so popular run on the Xerox 16/8? That's a question we hear often in the V.I.P. Group. The answer plagues not only the users of the Xerox 16/8 but many of the owners of the IBM work-a-likes. Additionally, software engineers who write programs for the current range of computers are plagued by the problem. Here are some of the factors involved in lack of compatibility.

First, some background on the nature of the problem. PC Commentary in issue number 1 of the V.I.P. Newsletter discussed several aspects of compatibility. (The article included steps to help you decide what is compatible too.) Confusion about operating systems was the theme of that article. Operating systems have to be considered. You can't run programs written for the CP/M-80 operating system on CP/M-86 or MS-DOS operating systems. CP/M-80 is an operating system compatible with the Intel 8080 and Zilog Z80 8-bit microprocessor families. CP/M-86 and MS-DOS are operating systems designed for 16-bit PCs and PC work-a-likes, and the Intel 8086 used in the Xerox 16/8. Furthermore, programs written for use with CP/M-86 are not compatible with those written for generic MS-DOS. You can use text files from some programs between the various operating systems. These are usually called ASCII files and are often the only common denominator between operating systems. Most files from wordprocessors, spread sheets, databases, and Basic programs saved with the 'A' option are in this category.

However, even programs written for generic MS-DOS and IBMs version, called PC-DOS by IBM, are often not compatible.

The major reasons:

- PC-DOS includes the use of some system routines in a read only memory (ROM). The ROM routines are copyrighted by IBM Corporation.

Generic MS-DOS cannot use the PC-DOS ROM routines. In some systems the PC-DOS ROM routines are emulated, but this in itself often leads to incompatibility.

- Hardware design and input/output ports are specific to the circuit design of the PC. PC software will make 'calls' in software according to the circuit design.

  Input/output in the Xerox 16/8 is not the same as in the PC. Software that would run on the PC will fail in the Xerox 16/8 if you attempt to run it there.

- IBM uses bit-mapped graphics. Many of the programs now on the market for the IBM-PC use graphics to provide special screen capabilities.

  Generic MS-DOS programs have to be written to avoid machine-specific capabilities. Therefore, many MS-DOS programs are only text oriented.

- Xerox 16/8 has only block graphics capability. There is no internal circuitry (or programmed routine) to let the Xerox 16/8 display graphics like the PC.

  If an MS-DOS program is written to use only the text capability of a computer, it has a good chance of being compatible with the Xerox 16/8.

These last two items are probably the most significant reason why IBM-PC specific programs will not run on many MS-DOS machines (especially, the Xerox 16/8).

Peter Norton, well known author of software and technical books for the IBM-PC, has described the software compatibility problem in various articles. One article, in the July 24, 1984 issue of 'PC MAGAZINE', is called 'When DOS Is Not Enough'.

Peter is a software engineer and his business includes writing software for personal computers. His article is about the problems he has experienced in attempting to develop software for the IBM PC and so-called compatibles. He points out that many of the functions or 'services' needed to process your input and display the results are handled by the computer's internal software routines. These routines are often stored in ROM to ensure

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PC Commentary

that they will be there when needed. For instance, the initial boot routines. Or the keyboard input routines. Or the routines to read and write to the disk. The lowest level of graphics capability is often included here too.

If these internal routines can do the functions the programmer wants to do then they will be used in the application program. If the routines are not adequate, the programmer will write the routines needed for the program. DOS provides the most portable level of capability. If the program uses only routines provided by DOS it will work on any DOS machine. If one version of DOS is not exactly the same as another version of DOS, there can be problems. If the programmer uses machine-dependent routines, the program is likely to work only on one specific machine.

Considering that DOS provides the highest level of services for the programmer, the PCs built-in ROM BIOS (basic input/output system) services fall in the middle. Programs that use the BIOS services are tied to the IBM PC design. Because the ROM BIOS in the PC is unique, programs that make use of the ROM routines will usually run only on the PC. As mentioned earlier, some machines attempt to emulate the PC ROM. Emulation is not always 100% successful.

Because of internal program limitations, Peter Norton feels that sophisticated programs are destined to be machine limited. To achieve performance, programmers must resort to using routines that are not included in the supplied internal routines. These limitations are often the result of cost trade-offs. To keep the selling price low, the manufacturer includes only necessary functions. Once a particular machine with limited capability captures a large part of the market, work-a-likes will usually have the same limitations. Having to use their own software to overcome the shortcomings of the machines built-in functions, programmers are forced to write (at the lowest level) machine dependent code. Once that happens, a program written for one brand isn't likely to work on another brand. Only those programs written at the most basic level the

DOS, often called Generic DOS, are likely to work across a wide range of machines using DOS variations. Generic DOS programs then, won't be able to take advantage of special machine capabilities.

Another viewpoint for the more technically minded, goes like this:

Q — Why don't programmers write generic, transportable code that runs on every machine with MS-DOS?

A — Two reasons:
1. DOS provides only limited, 'plain vanilla' services to the software. It handles keyboard, disc, and CRT functions OK. But no color, no graphics, and no sound/music. To get these enhanced capabilities, the programmer must go beyond DOS and use hardware (ROM-BIOS) services.
2. Performance — MS-DOS services are often slower than using the ROM-BIOS or your own code to perform a function. Screen display is a good example.

Slow — Use MS-DOS service interrupt INT 21 to write to the screen.

Medium — Use ROM-BIOS INT 10 to do the same thing.

Fast — Write directly into video memory.

With each increase in speed, the degree of compatibility is decreased. As the program gets faster, fewer machines would be able to use the program. For example, the Microsoft Flight Simulator MUST write its complex graphics display direct to video memory (hardware) to get minimal acceptable screen performance. Programs like this become machine dependent.

One positive note. There are many excellent MS-DOS programs available that run on the Xerox 16/8. Inluded are such notables as dBASE II and Multiplan. There are also many vertical-market MS-DOS programs that run on the Xerox 16/8. Accounting packages, programming languages, legal packages and several others are available to do a variety of tasks. Over 200 of the available packages have been tested by the V.I.P. Group. You can find them listed in newsletters 1 and 2, and in our MS-DOS compatible software catalog.

— Chuck Carpenter

Technical Notes

Installing the 16/8 DEM Rigid Drive

When you install the Disk Expansion Module, you will discover that several manuals are needed for the job. This situation creates some confusion and makes the task more difficult. Janet Hall, Marketing Analyst, has summarized the steps needed to make the installation. Here's the result

— ed.

PREPARING THE RIGID DISK EXPANSION

MODULE FOR USE

I. Getting Started

The required steps along with the necessary responses are given here step-by-step. Follow the instructions here and on the screen. DO the actions in **BOLD TYPE** and **ALL CAPS**.

Before anything can be copied onto a new rigid Disk Expansion Module (DEM), the rigid disk must be prepared to accept recorded information. This is referred to as 'formatting' (or initializing) the rigid DEM. **Formatting the DEM erases the entire contents of the rigid disk!**

II. Formatting And Partitioning The Rigid DEM

A. **LOAD THE STANDALONE CP/M OPERATING SYSTEM**

B. Formatting the Rigid Disk

This procedure will erase the entire contents of the rigid disk.

● **INSERT** the CP/M Development Disk in Drive A

● **TYPE** the command **FMT** and **PRESS** the **RETURN** key

It is recommended that you use option 1 the first time your system is formatted.

C. Partitioning the Rigid Disk

● **TYPE** the command **PART** and **PRESS** the **RETURN** key

Please do not respond to the message on the screen until you have read the following important information.

This is the most important step in setting up the Rigid DEM. You need to consider the long range use of this system. Once set up and data input on the rigid, it is not an easy task to go back and change the partitioning of the drives. Before continuing, please read the following four configurations carefully and decide which one fits your needs. Once you have decided, follow the
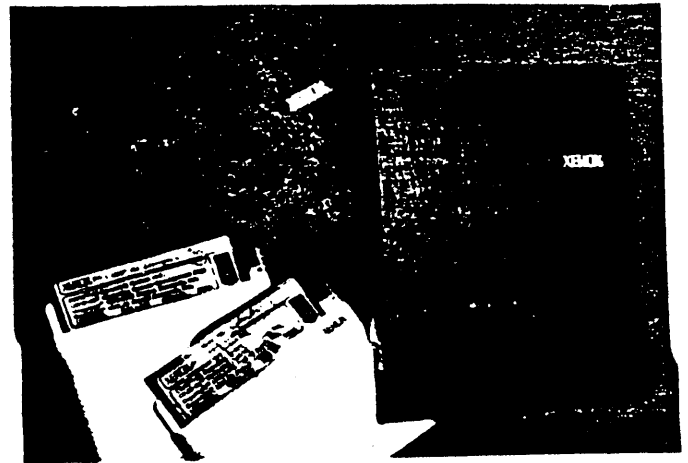
instructions on the screen to partition your system.

1. CP/M Operating System ONLY with the standard four partitions

2. CP/M Operating System ONLY, but with a change to the partitioning of your system

   Note: In CP/M, you *cannot* have one large partition nor one larger than 8100K.

3. CP/M and MS-DOS Operating Systems with the standard four partitions

4. CP/M and MS-DOS Operating Systems, but with a change to the partitioning of your system

   Note: It's recommended that MS-DOS be installed on partition E

D. Transferring the CP/M Operating System and Files to the Rigid Disk

1. Copy the CP/M Operating System onto the Rigid Disk

   ● **TYPE** the command **SYSGEN** and **PRESS** the **RETURN** key

2. Copy the CP/M Files to the Rigid Disk

   You will need to copy all the files from the **CP/M System Disk**

● **TYPE** the command **PIP G: = A:*.*[DV]** and **PRESS** the **RETURN** key

The CP/M Development Disk contains CP/M files which would be used most by a programmer. There is only one file and its supporting files on this disk that you may need to use and that is the BACKUP.COM file and its support files of XERBACK.BOS, XERCPY.BOS, XERMAIN.BOS, and

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Technical Notes

TERMINAL.BAX. They are used for backing up and replacing files on the rigid disk. If you want just the BACKUP.COM and its supporting files copied to drive G, do Option 1

● TYPE the command PIP and PRESS the RETURN key

● INSERT the CP/M Development Disk in Drive A

Option 1

— TYPE the command G: = C:*.BOS[OV] and PRESS the RETURN key

— TYPE the command G: = C:TERMINAL.BAX[OV] and PRESS the RETURN key

— TYPE the command G: = C:BACKUP.COM[OV] and PRESS the RETURN key

Option 2

— TYPE the command G: = C:*.*[OV] and PRESS the RETURN key

3. Change the Keyboard Data Format to 8 Bits on the Rigid Disk

When you used SYSGEN to copy CP/M to the rigid disk, the Keyboard Data Format setting defaulted to 7 bits. You will use the CONFIGUR program to change

Drive G's Keyboard Data Format to 8 bits.

● TYPE the command CONFIGUR and PRESS the RETURN key

4. Store the two CP/M disks in a safe place

E. Transferring the MS-DOS Operating System and Files to the Rigid Disk

1. LOAD MS-DOS FROM THE FLOPPY DISK DRIVE

2. Copy the MS-DOS Operating System Onto the Rigid Disk

● TYPE the command RIGIDSYS and PRESS the RETURN key

● TYPE E: and PRESS the RETURN key to log onto the rigid drive

3. Copy MS-DOS Files Onto the Rigid Disk

● TYPE the command A:COPY2RIG and PRESS the RETURN key

● INSERT the MS-DOS Development Disk into Drive A

● TYPE the command A:COPY2RIG and PRESS the RETURN key

4. Store the two MS-DOS disks in a safe place

You are now ready to use your XEROX Rigid Disk Expansion Module

— Janet Hall

Assembly Language with Basic-86

Many times when writing Basic-86 programs, it becomes necessary to include assembly language. An example would be sending a character from the 8086 side to the COMM port on the Z80 side. There is no way to do this directly in Basic so assembly language must be used. Once you decide to use assembly language, you next need to decide whether or not you want to compile the Basic program. Different approaches can be used with interpreted (uncompiled) Basic than are needed with compiled Basic. First, let's look at the assembly language program that will be used an example.

MS-DOS Function Request to send a character to Auxiliary Output.

```
aux_output
          mov     dl, character
          mov     ah, 04h
          int     21h
          ret f
```

This routine, from the MS-DOS Programmers Reference Manual, can be used as a macro subroutine in a larger program or as a standalone program. As I learned when I attempted to link this program to a basic program, there are some subtle differences in how this is done.

At this point, it is useful to assemble this program and see what the machine language code will be. To do this, you can use the MS-DOS DEBUG utility and type in the assembly language program using the 'A' command. After you do this, use the 'D' command to dump the program and look at the machine language. Code is assembled at address 0100 by DEBUG so you should use D0100 to dump this routine. This is what you will see on the first line:

```
XXXX:0100 B2 41 B4 04 CD 21 CB 00 ...
```

The segment — XXXX — and the segment address — 0100 — are displayed first. The next 7 bytes of code are the machine language code in ASCII values. Note that the character selected for the program is an 'A' which has an

ASCII value of 41 Code after the value CB is not part of this program and is usually ignored. The two zeros shown were included to provide an equal number of code groups for use in the Basic program.

Now you can include this code in a Basic program to send a character to the COMM port. Here's one way to do it.

```
10 DIM AX(4)
20 FOR I=1 TO 4 : READ AX(I) : NEXT I
30 DEF SEG : PRT=VARPTR(AX(0))
40 CALL PRT : END
50 DATA &H41B2, &H04B4, &H21CD, &H00CB
```

Assembly code is stored in the DATA statement in pairs that are in reverse order. Remember that this application will only work in an interpreted Basic program. If you were to compile this routine, you would get an "Unresolved Call" error. And there is no way to resolve it. The CALL function is looking for a subroutine that is stored outside the Basic program.

Note that this method will work only if you do not compile the Basic source code. In a future newsletter, we'll
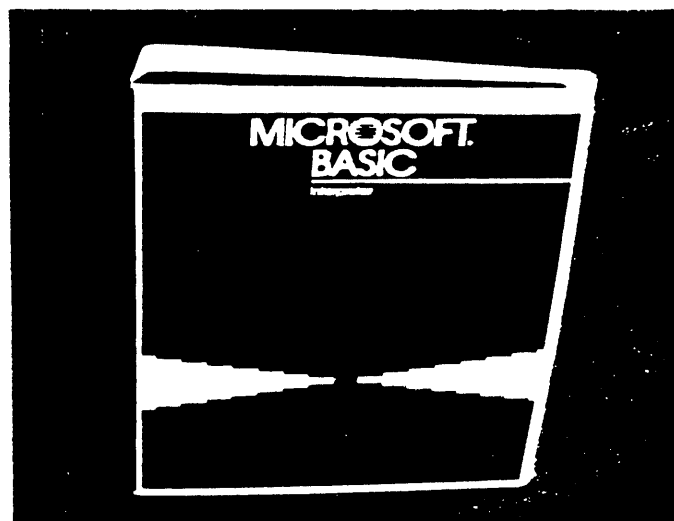
continue the discussion with two techniques to place the machine language outside the memory area used by the Basic program.

— *Chuck Carpenter*

MS-DOS Software for the Disk Expansion Module

Known compatible MS-DOS packages (for the Xerox 16/8) were listed in the first two issues of the V.I.P. Newsletter. Since that time, additional packages have been tested. Packages listed in the first two newsletter, along

with others tested since, have been combined in an MS-DOS compatible software catalog. Contact the V.I.P. Group if you would like a copy of the catalog.

Software / Hardware Items of Interest

Saleseye

Saleseye was developed on the idea that salespeople would rather spend time selling than doing paperwork. High Caliber Systems recognized that a salesperson spends a good portion of time on mundane, repetitive tasks. Because computers rarely get bored, it's logical to let the computers take care of the drudgery.

Saleseye's features are as follows:

- Keeps a database of all the detailed information you need to know about leads, prospects, customers, dealers, vendors, reps and other items.

- Increases the number of people that you can track at one time.

- Reminds you when to follow-up on someone.

- Helps you focus your attention on your most qualified leads.

- Allows you to create, edit and store form letters using a built-in text editor.

- Prints personalized letters, envelopes, and/or labels for a single prospect or for selected groups of prospects.

- Prints out detailed profiles on selected groups of prospects including a history of your three most recent follow-up calls.

- Keeps track of your daily calendar of meetings, luncheons, and other activities.

Features of the Saleseye program include a sales lead-tracking database manager, a word processor, and mail-merge. All of these are combined in a single program.

Saleseye is especially beneficial for people who have one or more of the following tasks to manage at any one time:

Software / Hardware

Continued from page 5

- Involved in 'generative' selling where closing a sale requires follow-up calls.

- Must correspond with 20-30 or more 'leads,' on a regular basis.

- Pursuing orders or donations of relatively high dollar value.

- Need to organize account information, follow-up efforts, and appointments.

- Need to send out customized form letters to selective groups of people.

- Need to track vendors, rep's, or sales team's performances.

The program itself is very user friendly, designed for individuals with little or no experience using computers or keyboards. There are extensive built-in Help features and menus which operate with single letter commands.

The program can be configured to run on a system with only a single disk drive. However, a dual floppy or rigid drive configuration is recommended.

The program is available in CP/M-80, CP/M-86, and MS-DOS versions by ordering direct from High Caliber

Systems at (212) 684-5553. The list price for Saleseye is $495, including extensive telephone technical support. User upgrades are available for a reasonable fee.

High Caliber Systems will also provide custom modified and industry specific versions of the software. Nominal charges are based on the amount of modification required to the existing program.

— *Tim Lee*

Prentice Popcom X100, A Smarter 'Smart' Modem

At first, the Popcom X100 might leave the mistaken impression that it's another me-too entry into the smart modem marketplace. The X100 does include standard features like the Hayes command set, Bell 212A signaling, 300/1200 baud, tone or rotary auto-dial, and auto-answer. What makes this modem stand out is its user-oriented features like an extended command set, its ability to do voice/data switching easily, call-progress signal detection, and a unique 'intelligent' RS-232C port. (To end the confusion when one finds the RS-232C standard is anything but.)

One user-oriented intelligent feature is the ability to alternate between voice and data transmission on the same call. If the person on the other end picks up the phone and speaks, the X100 senses this and goes to the voice mode without hanging up. As soon s the X100 senses the other modem online, it toggles back to the data mode. This feature effectively ends the need for separate data and voice lines. Repetitive calling when both voice and data exchange is necessary within the same call is also reduced.

The same circuits used for voice/data sensing are also used in the call progress feature. The X100 automatically
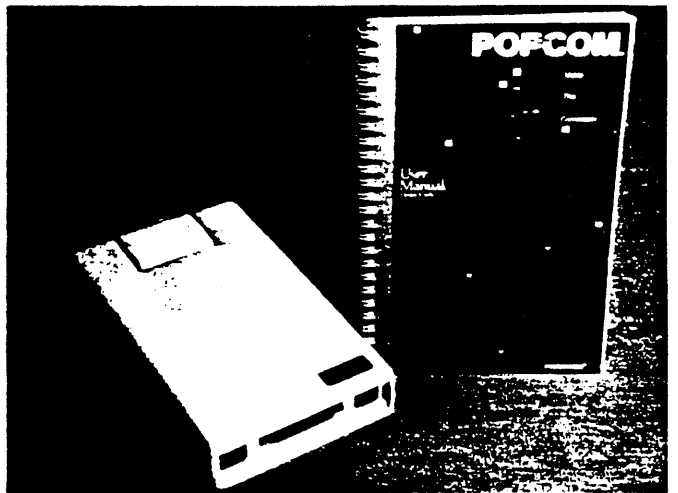
reports dialtone, busy signal, remote ringing, voice, or line disconnect. This allows the unit to be additionally used as a memory or 'demon dialer' for voice communications. As an example, lets say you need to call a number that is frequently busy. You can allow the X100 to dial and redial

it When the called party answers the phone, the modem will go into the voice mode. Then, you need only to pickup the phone and begin talking.

Only people who have experienced the not-so-standard RS-232 ports can appreciate what Prentice has done with automatic port configuring. The installation of an RS-232C device often involves 3-wire, 25-wire, straight through, crossed transmission and receive data lines, or some other wiring combination. Not so with the X100. Connect the modem to the computer using any of the cables described, and it configures itself to the cable used.

The Popcom X100 is a product of Prentice Corporation of Sunnyvale, California. It has a suggested list price of $475 and includes technical assistance via a toll-free 800 number. (You find out what the number is 'after' you buy the product.) A C100 plug-in version for the IBM is also available and has a suggested list price of $445.

To find out who in your area sells the Popcom Modem, call Prentice's Customer Service at (408) 734-9855.

— *Tim Lee*

Media Conversion Service for the 860

Summit Research Corporation has developed a service to convert documents from all forms of magnetic media to the Xerox 860 Eight inch diskette format. This allows customers to be able to use text created on a different Word processor, microcomputer, or mainframe, on the 860. Summit will provide detailed price quotations depending upon the number of source diskettes or other magnetic media. The price varies from $25/source to $50/source diskette.

The service presently can convert the following media formats to the 860:

● Nine-Track Tape (ASCII/EBCIDIC)

● Cassettes

Three formats including the Xerox 800 Series

● 5¼" inch floppy diskettes

Numerous formats of 21 different manufacturers including Apple and IBM.

● 8 inch Floppy Diskettes

Numerous formats of 25 different manufacturers including the IBM Displaywriter, Wang, and the Xerox 820 and 850.

A complete list of the various source media which can be converted can be received by calling Mr. Lynn Shanton with Summit Research at (301) 840-1707. Summit's mailing address is One West Deer Park Road, Gaithersburg, Maryland 20877.

— *Tim Lee*

Books and Reference Sources

MS-DOS User's Guide

For those users who have some experience and don't need a tutorial, MS-DOS User's Guide is an excellent resource. The book is the work of Chris DeVoney who was frustrated by the complexity of documentation supplied with his new operating system. His response was to write this excellent book. The various functions and capabilities of the MS-DOS operating system are explained in detail. But, only as much detail as is needed to make the point. Each feature is supported with examples of actual transactions. Also included are summaries of many of the utilities found on MS-DOS system disks. Information about the utility includes purpose, syntax, exit codes, rules of use, and notes about using the utility. MS-DOS User's Guide is published by QUE, one of the better publishers of computer books. You can find the book at better book stores and at many computer stores.

— *Chuck Carpenter*
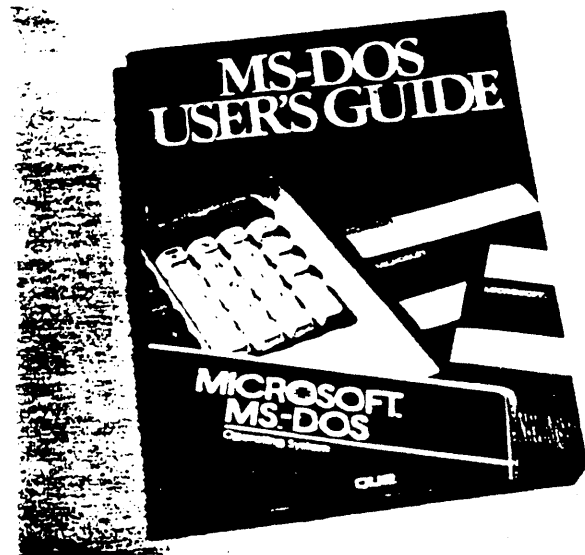
Turbo Tutor

Have you wanted to learn to program in Pascal and didn't know where to start? Well. Borland International. the company who sells Turbo Pascal has anticipated the need. Along with their Turbo Pascal Compiler. reviewed in issue number 2 of the VIP Newsletter. they have also published a Turbo Pascal Tutorial. The book leads you through the steps of developing Pascal programs and explains the reasons why along the way. Many useful routines you will learn to use are included in the text. Many more are included in the section on MS-DOS routines. One is a utility to control a Mouse. In addition to the routines provided in the text. a disk containing several subroutines is included with the book.

Use of this book with the Turbo Pascal Compiler is certain to develop your skills as a Pascal programmer. The book is available from Borland International and from most software suppliers. You may have seen it advertised in many of the computer magazines. The price with disk is $39.95.

— *Chuck Carpenter*

Understanding UNIX
A Conceptual Guide

UNIX is rapidly becoming the de-facto standard for multi-user systems. If you would like to learn what UNIX is. get a copy of this new QUE publication. Understanding UNIX is not a training book: it won't teach you how to program. It will help you understand what UNIX is and how it can be used. Most of the first level commands are explained. There are several hundred commands and dozens of subcommands. So, only the most significant are included.

Chapter 1. Introduction. helps you become familiar with UNIX and its features. Chapter 2. A UNIX Perspective. discusses the origin of UNIX and how it compares to other operating systems. This chapter also includes a comparison of the various UNIX levels and other UNIX-like systems. Other chapters provide you with. A Structural Overview. The File System. The Shell. Multiuser Operation. and many other functions and capabilities.

I found this book to be very helpful. Once I completed it. I was more readily able to handle books that described the system in detail. I found it was much easier to learn and actually use the system after reading 'Understanding UNIX' first. If you are only interested in a functional overview of the system. then 'Understanding UNIX' is the only book you will need to read. .

— *Chuck Carpenter*

Readers and Users Input

Jim Finch has contributed a SuperCalc2 help program for this issue of the newsletter. This program will allow you to make proper use of the arrow keys when you use the 16/8 and keyboard combination. Here is his contribution — ed.

NOTE: Make this change on a back-up copy; archive the original.

A fix for SuperCalc2

If you have SuperCalc2 and have been running it on the 16/8 with the low profile keyboard, you have probably been frustrated because you can no longer use the arrow keys to move the cursor like you did on the older version of SuperCalc. Now you have to hold down the Control key while you push the arrow keys and you have lost the auto-repeat feature.

Take heart because I have a very simple solution, using DDT or SID. Use the following command sequence:

```
REN SC2.XXX=SC2.COM  (return)

DDT SC2.XXX  (return)
DDT VERS 2.2
NEXT  PC
6F80  0100
-SUICI  (return)

OICI 01 81  (return)
OIC2 04  (return)
OIC3 02 82  (return)
OIC4 03  (return)
OIC5 04 84  (return)
OIC6 01  (return)
OIC7 03 83  (return)
OIC8 02 .  (return)        (The
sorted gets you out of the set mode.)
-GO  (return)      (That is a gee zero, not a gee oh)
A)SAVE 111 SC2.COM  (return)
A)ERA SC2.XXX
```

That's all there is to it. You can now load SuperCalc2 and enjoy using the arrow keys as they were meant to be used.

— Jim Finch

One of our suppliers has contributed an article. The information will help you organize your disk files. The supplier is Optronics, and the contributors are Jim and Linda Chamberlain. Here is their very useful article — ed.

Organizing Files with Date and Time Stamping

Maybe you are one of those people who knows the location of every file on every disk. And, in seconds, you can bring up on the screen just what you need. If so, read no further. However, if you find it ironic that the name of a character in a ten page story can be changed in seconds, but you spent several minutes searching for the disk that has the story, read on; help is coming.

Once upon a time we were organized. We printed out a directory of the disk each time we were finished working. We attached the hard copy to the disk jacket and for about two months we had a useful listing of every file. Then, things began to get busy and we started looking for ways to catalog our disks.

There is an alternative to pawing through dozens of disks searching for a certain file. You are not alone in your disorganization, for others have shared your frustration and found a solution. Ward Christensen, for one, has developed a program called CATALOG with an updated version, NEWCAT.

NEWCAT is a popular public domain file cataloging system. It uses a master disk which contains a list of all the files on all the disks. NEWCAT reads each file name and disk identification number and automatically merges that information onto one master disk.

First you identify each disk by creating a dummy file with the same name as the identification number of the disk. This dummy file name always starts with a minus sign so that it will be the first one listed on the directory display. Let's say that you have labeled your current data disk number five. First, create an ID file named '-D.005' on that data disk. Now, put NEWCAT, which is on the master disk, in Drive A. By running NEWCAT the disk in Drive B, (-D.005) will be read and the file names will merge alphabetically onto your master disk in Drive A.

NEWCAT is easily updated with the file names and accepts utilities like FIND for locating the file even if you don't know its full name. However, for those of you who may have several versions of a file on one or several different disks, your problems are not over. We are incorrigible revisionists. On one of our disks for example, there are files containing one outline and several revisions of the article you are reading.

Which one is the final version? One quick way to find out is by running, STAMP, a public domain program. STAMP, short for date and timestamp, is a nifty utility by Arthur Larkey that solves the version labeling problem. Suppose you're involved in lengthy correspondence with the IRS. You receive a notice that refers to your letter of September 6th. Chances are, you have fifteen files relating

Readers and Users Input

Continued from page 9

to IRS and not one of them mentions September. If you had STAMP, it would be easy to locate that particular file because STAMP could tell you the date and time of the file's creation.

Stamp with Micron Provides the Shortcut

STAMP records the file information with just a few keystrokes. It will record (STAMP) filename, date saved, time saved, and the version number. MICROCHRON, the hardware clock from OPTRONICS TECHNOLOGY, maintains the time and date information so that you don't have to input it every time you turn on your system.

After changing or adding a file, run STAMP to update the records. If a new file is added, the stamp file will merge it alphabetically. If an existing one was changed, you may re-stamp it and the version number will automatically be updated and the new time entered on the master file.

This is the same file used for disk ID on NEWCAT. It was empty and served only to show the name of the disk at the beginning of the directory. With STAMP, this file contains the filename, date, time, and version of each file on that disk.

STAMP has many options. You can time and date stamp files, list the files as a directory with the stamp data next to the file name, or send the output to a new file.

Creating Disk Identification

Disk ID should be marked on a label and on the directory track in the form -x.yyy. This is done on each disk with a consecutive number in the file type: ie; D.001, D.002, D.003

With the disk to be identified logged-in on drive B type:

A)SAVE 0 -D.001

This creates a directory entry for a file named -D.001 with file size of 0 bytes.

Time and Date Examples

Stamping or Updating the Stamp File

With STAMP in drive A and the disk to be 'STAMPED' in drive B, type:

A)STAMP -DB   which calls STAMP, selects Drive B, then updates the timestamp file on that disk if any changes were made in the directory. If -D isn't specified, then the logged-in drive 'A' will be stamped.

A)STAMP -DBS   which calls STAMP, selects Drive B, then selectively updates the time stamp file for only the files you specify.

Listing the File Version and Date Stamped

With STAMP in A drive and the disk to be 'STAMPED' in drive B, type:

A) STAMP -DBL   which calls STAMP, selects Drive B, then Lists its contents.

the response is:

FILE NAME		DATE	TIME	VERSION
-D	001	84/09/31	16:43	000
CAT		84/06/01	08:12	001
NEWCAT		84/06/01	08:51	003
OUTCAT		84/07/12	12:16	001
STAMP		84/07/31	16:43	006
STAMPOUT		84/07/30	09:43	001

Here are the STAMP options:

STAMP	Without options, does the updating function on the currently logged-in disk.
STAMP -a	Normally, STAMP ignores files with SYStem bit set. This option causes SYS files to be included in the stamp file list. The updating function is turned on.
STAMP -dx	Uses disk x: (x = a thru p) as the disk to be read and written.
STAMP -h	Prints a help list.
STAMP -l	Lists the stamp file, also turns off the updating function, which can be turned back on with the -u option.
STAMP -o file	The output of the program is written to the named file. More than one file may be named (depends upon what else you do) and the file can have the usual disk specifier.
STAMP -p	The output is written to the LST: device.
STAMP -q	Quiet mode — only error messages appear at the console. Presumably you are sending everything else to a file or the LST: device.
STAMP -s	Selective update mode — you will be asked for the names of the files you wish to have updated. Ambiguous names m(be used. The program does not permit (to edit the names if you make a mistake in

typing them. but will reject them if you do something like backspace or delete. The version number of the file entry is incremented.

STAMP -u   The -i option turns off the up dating. but -u turns it back on. (So does the -s option).

STAMP and NEWCAT make it easier to keep track of our innumerable files. Both access time and aggravation have been reduced. Now that we let our system organize our files. we have more time to create and write. And recreate. And rewrite.

All software discussed here comes with the MICROCHRON real time hardware clock along with utilities for automatic timestamping of dBASE and other programs.

— *Jim and Linda Chamberlain*

Jim Chamberlain is with: Optronics Technology
2990 Atlantic Avenue
Penfield. New York 14526
(716) 377-0369

16/8 Professional Computer

A 2-in-1 computer for the best of both worlds.

The Xerox 16/8 PC includes two processors and two memories.

So it's a logical, cost-efficient choice to meet both present *and* future needs. This highly advanced microcomputer has a 16-bit processor with a 128K standard memory, upgradable to a 256K memory. In addition, it includes an 8-bit processor with a 64K standard memory.

Maximum compatibility.
The Xerox 16/8 PC accepts the comprehensive and proven 8-bit software. And it also accepts the latest 16-bit software. So you get both 8-bit and 16-bit processing under CP/M 80®, CP/M 86®, and MS-DOS®. The CP/M® and MS-DOS® data files can be used by both processors and operating systems providing complete data file compatibility and maximum flexibility in sharing data between processor.

Major Benefits
Another significant plus: The 16/8 PC can use *both* processors simultaneously. On the 16-bit side, there's an 8086® chip with *true* 16-bit capacity. On the 8-bit side, there's an exceptional Z80®-A chip. By referencing first one and then another processor, you obtain data from one CP/M® program and insert it into the other CP/M® program. In effect, you can do two things at once with your advanced 16/8 PC.

Flexible Expansion
The 16/8's Disk Expansion Module provides you with your choice of 5¼" Disk Drive storage options, from 696 Kb useable storage in the two floppy drives, to 10.2 Mb useable storage in the Rigid Drive.

This module also provides the 16/8 PC with 4 expansion slots for system enhancements for MS/DOS and CP/M operating systems, such as high resolution graphics, additional memory, or communications protocols. The 16/8 never loses its stamina as your needs grow.

Great software selections.
Xerox gives you industry-standard operating systems with the CP/M-80® (8-bit), CP/M-86® (16-bit), and MS-DOS® (alternate 16-bit). So you have a full section of software:

☐ *Word Processing* — WordStar™ and SELECT™
☐ *Financial Analysis* — Multiplan™
☐ *Data Management* — dBASE II™
☐ *Graphics* — Business Graphics and Multiplan conversion
☐ *Accounting* — BOSS™
☐ *Custom* — with BASIC-80™

Vast Communications.
Use our BIS-3270™ software to emulate IBM® 3270™ data terminals and access large IBM computers. Use BIS-3780® software to communicate with IBM mainframes, word processors, ink jet printers, and DEC™ PDP-11™ and VAX™ series computer. Our menu-driven TTY software communicates with optical character readers, teletype terminals, mainframes, minicomputers and personal computers, word processors and information networks. And your 16/8 can do even more with various communications packages.

Superior speed.
The 16/8 is actually faster than competitive 8-bit units and other 16-bit personal computers. One reason is that its "logical disk drive reassignment" lets you redefine disk drives.

Example: when using a rigid disk one of the four disk segments can be reassigned as drive "A" for faster data retrieval and less disk manipulation. Result: Your operations can be simplified and sped up by reassigning logical disk drives to fit your everyday environment.

Options and enhancements.
A Xerox Shared Interface Unit (SIU) transforms the 16/8 into a low-cost workstation that's an integral part of the Ethernet Information System. This lets you use print, file and mail services via Network Services software; gives you local resource sharing; provides dial-up access via a modem for interfacing with other location networks. Another optional accessory is an anti-glare filter screen to enhance images.

Specifications   16/8 Disk Expansion Module Disk Drive Storage Options

2 x 5¼" Floppy Double Sided/ Double Density

Systems Specifications — Disk:

Format Options:	Sectors: 17, 9, 8 Tracks: 80, 80, 80
	Number Bytes Per Sector: 256, 512, 512
Storage Capacity Disk Drive:	Unformatted: 500K, 500K, 500K Formatted: 338K, 368K, 328K
	Usable: 322K, 348K, 310K

5¼" Rigid/Floppy Rigid

Systems Specifications — Disk:

Format Options:	Sectors: 17 Tracks: 1224 Number Bytes Per Sector: 512
Storage Capacity Disk Drive:	Unformatted: 12.7mb Formatted: 10.4mb Usable: 10.2mb

Equipment Specifications:

Keyboard:	Height 1.6", Depth 8.25", Width 19.9", Weight 5 lbs. max
Display Processor:	Height 13.20", Depth 14.75", Width 15.00", Weight 30 lbs.
Expansion Module:	Height 5.5", Depth 15.5", Width 18.25", Weight 30 lbs.
Expansion Slots:	Height 5", Depth 7.5", Width 4.6"

Electrical Requirements:

Display Processor:	Voltage: 115 VAC, Frequency: 60 HZ, Current: 2 Amps. Receptacle: Two Pole
Expansion Module:	Voltage: 115 VAC, Frequency: 60 HZ, Current: 2.5 Amps. Receptacle: Two Pole

Operating Environment:

Display Processor:	Three Wire Grounded Duplex, Temperature: 50 to 90 F, Relative Humidity: 20% -80%
Expansion Module:	Three Wire Grounded, Temperature: 50° to 90° F, Relative Humidity: 20% -80%

Non-Operating Environment:

Display Processor:	Temperature: -20° to -150° F, Relative Humidity: 15% -90%
Expansion Module:	Temperature: -20° to -150° F, Relative Humidity: 15% -90%

This module also provides the 16/8 PC with 4 expansion slots for system enhancements for MS/DOS and CP/M operating systems such as high resolution graphics, additional memory, or communications protocols. The 16/8 never loses its stamina as your needs grow.
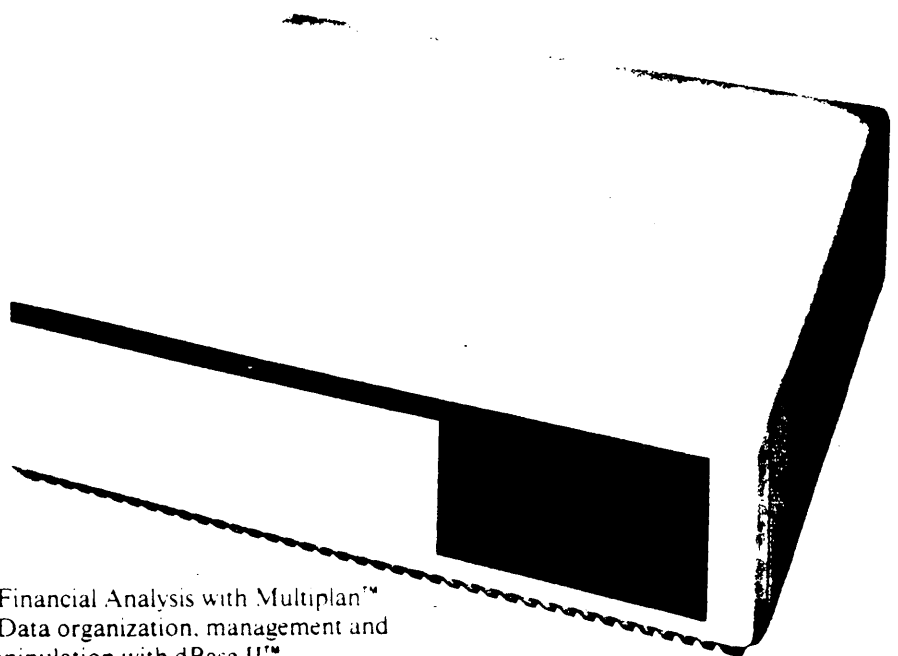
Hard Working Networking

You can transform your 16/8 Professional Computer into a low-cost network workstation, allowing you to take advantage of Ethernet print, file server and electronic mail services via Network Services Software. Using the Xerox Shared Interface Unit, you work under the operating system you desire, and you still have access to the network. For instance, you can use MS-DOS to do your work... transfer the data to CP/M...then send it through the network. The Shared Interface Unit directly connects two 16/8's for local resource sharing and also provides dial-up access via a modem. This allows multiple remote 16/8's to interface with headquarters or other location networks. With remote access, you can call the office while working at home!

A Huge Workforce of Software

Three industry standard operating systems come free with the 16/8 — CP/M-80 (for 8-bit processing), CP/M 86 (the 16-bit version of CP/M), and MS-DOS (an alternate 16-bit operating system).

Available Xerox software includes:

• Word processing—with a choice of professional packages, Wordstar™ and SELECT™.

• Financial Analysis with Multiplan™
• Data organization, management and manipulation with dBase II™
• Graphics representation of statistical information with Business Graphics, including the ability to take existing Multiplan data and convert it into graphics representation.
• Accounting with THE BOSS™
• Writing your own application packages with Basic-80™ high level language software.

Hard Working Communications Programs

The Xerox 16/8 offers you vast communications capabilities. By using our BIS-3270™ software, your PC can emulate IBM® 3270™ data terminals. By using our BIS-3780™ software you can access a number of popular, large IBM computers, word processors and ink jet printers as well as DEC™, PDP™-11 and VAX™ series computers.

Our menu-driven TTY software enables your PC to communicate with optical character readers, teletypewriters, mainframes, mini and microcomputers, word processors and information networks. Through communications, you can take advantage of information stored in external data bases and information resource services, such as The Source™

And, It's IBM Data Compatible

Xerox designs its products to work the way you do. That's why the 16/8 can read and write to data disks formatted on IBM and IBM-compatible PCs. This means the 16/8 will work, talk to, and interact with IBM and other PCs, making it a natural addition to your office.