

Mac In The DEC Environment: Mixing Apples And Oranges

Hardcopy investigates the growing Macintosh/Ethernet environment/by Brad Harrison and Evan Birkhead

From the start, Apple functioned outside the mainstream of corporate computing. Steve Jobs' vision of the personal computer put Apple on the map, but IBM made the PC an acceptable machine for business and Apple's had to play catch-up ever since.

The 8-bit Apple II was a rousing success in the grade school and home computing markets. So successful, in fact, that when the Macintosh was announced in January of 1984, it was perceived as the sequel to the Apple II. But the unorthodox Mac was really too powerful for these arenas, and it couldn't establish a stable market until the MacPlus found a made-in-heaven match with desktop publishing.

This proved to be the inroad to the business world that the company needed. Apple introduced its LaserWriter (Adobe Systems' PostScript page-description capability was later added), Aldus followed up with PageMaker for the Mac, and desktop publishing boomed. Apple took the ball and ran with it, and the rest is history. By the end of 1986, Apple was firmly established in homes, small businesses, and, most importantly, large corporations.

The momentum has carried this unique machine into the mainstream of corporate America, and it's now accomplishing tasks ranging from technical illustration and software design to project planning and management. But the company's emphasis on providing personal productivity caused the Mac to become an isolated, standalone device, unable to integrate with other computers found in large corporations. In addition, the opinion was often expressed that Apple made a mistake by not including an open architecture in the Mac.

With AppleTalk, a local area network that connects Apple IIs, Macs, and IBM PCs, Apple attempted to ad-



Macintosh—Apple's inimitable Mac is right at home in the DEC environment.

dress the problem. Moving data at just 230.4 Kbits per sec., AppleTalk's strongest characteristics are its elegant protocols (see Table) and simple "plug and play" connectivity. But the fact remains that the Mac environment, though now quite popular with software enthusiasts, has evolved as a corporate island.

Only recently has the situation begun to change ... and Apple's inroad this time? Connectivity with the Digital Equipment Corp. environment.

VAX And Macs

Various studies estimate that Macintoshes are used at approximately 30% of all VAX sites, though few are as yet running on Ethernet. A recent survey by the Yankee Group, a Boston-based firm specializing in technology and market research, indicates 46% of all VAX sites are considering purchasing Macs for their Digital networks.

Products for Mac-to-Digital connectivity are pouring onto the market. But they're not coming from Apple or Digital—they're coming from third party companies, some of which have emerged specifically to address this arena.

According to Tim McCreery, president of Kinetics Inc., one of the earliest and most active third party Apple-to-Digital firms, the main reason for the

rapidly increasing number of Macs in the Digital environment is that the two companies are culturally similar. For instance, both have developed an image as giant-killers, busy chiseling at monolith IBM's marketshare.

Additionally, both companies are on a roll. Many in the third party market are even optimistic about a pending agreement between Digital and Apple. David Ryter of Pacer Software Inc., one of the prominent Mac-VAX software developers, predicts that "DEC and Apple will eventually recognize each other."

But, if something between Digital and Apple is on the horizon, you can't tell from talking to them. "They like us and we like them," said Ken Olsen, Digital's president, at DECworld '87. "Some day we'll do something, but it won't be corporate."

"There is a synergy between the DEC customer base and ours," explains Peter Hirschberg, Apple's manager of desktop communications, large systems. "They found out that the Mac is a fabulous device to work into a DECnet."

Apple has even developed a product called the Macintosh II EtherTalk Interface card that allows Mac II users to operate on an Ethernet-based network. The card uses the Apple File Exchange protocol to translate files from one application into other formats.

"We've thrown more marketing into DEC connectivity than IBM connectivity," adds Hirschberg.

"We've always been close to Apple," concurs Olsen. "We meet with them once a year or so."

Indeed, there were three Macintoshes on the DECworld show floor, running on the huge Ethernet system that interconnected every computer at the show. They were located in the Institutions of Education display area and demonstrated AppleTalk-Ether-

net connectivity (Figure 1). Products were demonstrated by third party players Alisa Systems, White Pine Software, and Odesta Corp.

Another indicator of Digital's recognition of the Macintosh can be found at Digital's Application Center for Technology (ACT) in Atlanta. A Macintosh has been integrated into the ACT office environment simulation so that Digital customers can observe firsthand what the Mac adds to office productivity.

Additionally, Digital is now cooperatively developing products with Odesta, a developer of database products for the Mac-VAX environment. This activity is the first of its kind in the Apple-Digital environment.

Third Party Enthusiasm

Under the guidance of President Bob Denny, Alisa Systems was one of the original third party companies to break through on Mac-VAX connectivity. As a veteran of the Digital third party wrangling, Denny was impressed with Apple's willingness to support its growing list of third party vendors. Apple is exercising a very active third party support philosophy and targeting many of the traditional Digital third party companies for participation in the Apple environment.

Two other Digital third party companies making a strong stand in the Apple environment are Excelan and Technology Concepts. Excelan recently purchased Kinetics and it has been set up as a wholly-owned subsidiary. Also, Technology Concepts just recently announced DECnet availability for the Mac.

The Apple-Digital third party realm is attacking the opportunity like a pack of hungry wolves, while they are signing co-marketing agreements with each other left and right. At a Mac-World seminar called "Connecting the Mac to the DEC World," several third party representatives showed a surprisingly focused plan of attack toward the same goals.

"The goal is to design an application on a Mac and run it, without changes, on a VAX," says Daniel Cheifetz of Odesta. "What's happening is a coalescence of systems that makes sense," he believes.

"The application is the most important thing to the user, not the interface," says Alisa's Denny. Working closely with Apple, Alisa developed AppleTalk for the VAX. This approach, which uses Alisa's AlisaTalk software

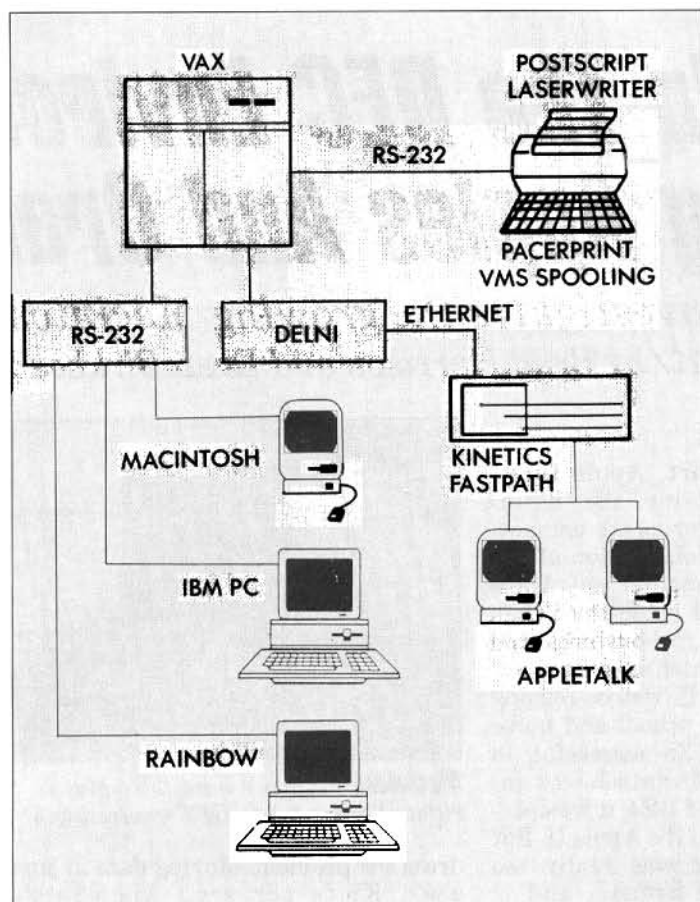


Figure 1—Pacer's pcLINK integrates a variety of computers, supporting standard RS-232 communications as well as AppleTalk/Ethernet.

Table—AppleTalk Communications Architecture

Layer	Description
Application layer	Application-specific protocols
Presentation layer	AppleTalk Filing Protocol PostScript (Adobe Systems' page layout standard) Future: X.400
Session layer	AppleTalk Session Protocol AppleTalk Data Stream Protocol Printer Access Protocol
Transport layer	AppleTalk Transaction Protocol Echo Name Binding Protocol Zone Information Protocol Routing Table Maintenance Protocol
Network layer	Data Delivery Protocol Future: X.25
Data link layer	AppleTalk Link Access Protocol Ethernet (IEEE 802.3) Future: Token ring (IEEE 802.5)
Physical layer	Twisted pair (AppleTalk, Personal Network Cabling, telephone wire), coaxial, fiber optic, private branch exchange

and Kinetics' FastPath hardware to link AppleTalk networks with Ethernet, permits Macs on AppleTalk to share files stored on a VAX and to queue files for print from the VAX.

Alisa has since extrapolated this solution. "In the past, the right way to connect Mac to VAX was AppleTalk and a VAX server," explains Denny. "Now we have TSS (software developed by Thursby Software Systems but being marketed via a strategic alliance with Alisa), which is an implementation of DECnet for the Macintosh. We can now connect to database servers and mail, and people on the VAX can get to information on the Mac DECnet node."

Fundamental Capabilities

Basic terminal emulation packages can be used for connection to PDPs and VAXes, and new DECnet capabilities are arriving. Apple's MacTerminal program offers basic VT100 emulation (see "The Mac-to-DEC Link," *Hardcopy*, p. 117, August 1987). In addition to the Ethernet adapter, Apple will also support transmission control protocol/internet protocol (TCP/IP) under AU/X, its implementation of UNIX for the Mac. Apple also offers AppleTalk for VMS.

Pyramid Technology's UNIX supercomputer connects to AppleTalk networks. Pyramid's AppleTalk Connectivity Package networks to both Mac IIs and SEs, allowing Mac users to store and retrieve documents from the Pyramid, or use it as a gateway to other computers and networks.

Technology Concepts' CommUnity, an implementation of DECnet, can also integrate UNIX machines and Macintoshes into the same networking environment.

"A lot of people will be writing new programs utilizing UNIX hosts," claims Apple's Hirschberg.

Many third party VT emulation packages exist for the Mac. One of the first companies in this area was White Pine Software with its Mac240. Mac240 includes the complete implementation of ReGIS (particularly effective using the graphics capabilities of the Mac), and also supports Tektronix 4010/4014 terminal standards. White Pine was the first Macintosh connectivity company to be invited to DECworld—the company was there in 1986 and in 1987.

White Pine has two, additionally important VAX-Mac connectivity products. Reggie converts MacDraw, MacPaint, and Macintosh clipboard

files to ReGIS or Sixel, making graphics created with the Macintosh accessible to Digital-based applications. The VMacS product functions under VMS to provide file transfer and conversion capabilities to Mac users—the Xmodem file transfer protocol is used to transfer files over a serial communications line to/from the VAX, where Mac files are catalogued in any VAX subdirectory. A file conversion utility can be used to convert Macintosh documents

into VMS formats.

Another early, full-functioned emulator was pcLINK from Pacer Software. Pacer has focused on providing software for a variety of operating systems (DOS, Macintosh, VMS, UNIX/ Ultrix), providing advanced, seamless interconnectivity. Ideally, by using Pacer's products, program and data files can be fully shared with all processors and operating systems on the network (Figure 1).



PRIVATE

ENCRYPTION — THE KEY TO DATA PRIVACY

Beyond security — there is ultimate privacy.

With **DataLock**, high speed VAX/VMS data encryption software, only you know which one of the 70 billion possible keys will decipher your most confidential information. **DataLock** protects your data — for safekeeping on your own system or while sending it privately to someone else.

Essential whenever sensitive information must be kept secure, **DataLock** transparently encrypts and decrypts data to the US Government Data Encryption Standard. All your data resides on the disk in encoded form so your file appears meaningless to anyone but you.

In exclusive tests, DR Labs found **DataLock** "was easy to use and performed flawlessly."

From the most confidential memos to the most sensitive medical records... from the transfer of electronic bank funds to the prevention of unauthorized software copying... the **DataLock** defense takes you generations beyond VMS password protection.

DataLock

The Key to Ultimate Privacy

Call today. Find out how **DataLock** can protect your sensitive data.

800-362-6203
In Canada call: 800-255-6378



INTERACTIVE TECHNOLOGY, INC.
460 Park Plaza West
10700 SW Beaverton-Hillsdale Hwy.
Beaverton, Oregon 97005
(503) 644-0111

VAX and VMS are trademarks of Digital Equipment Corporation. **DataLock** is a trademark of JPY Associates.

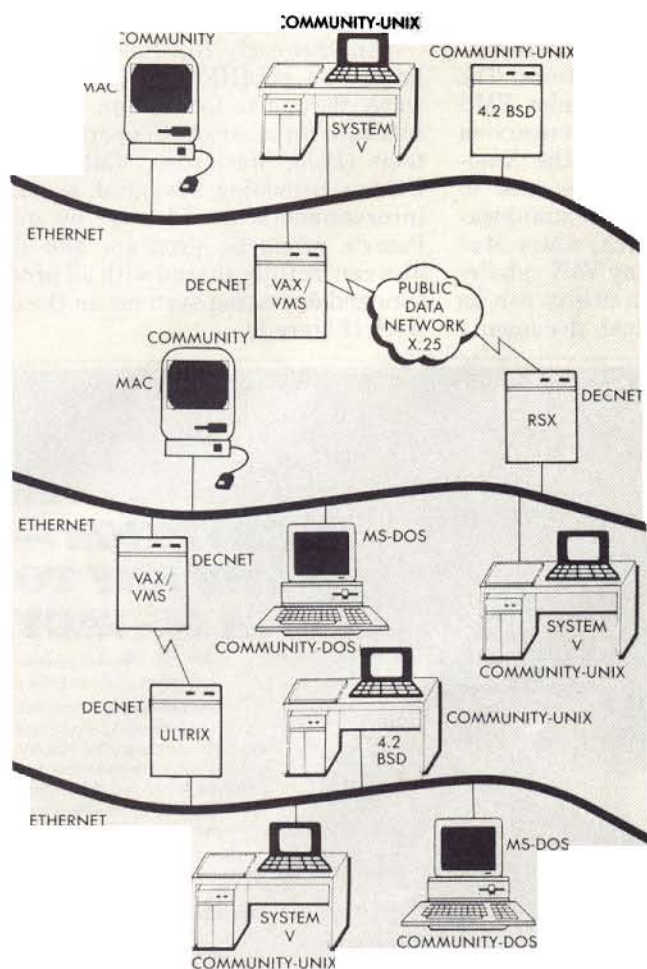


Figure 2.—Using Technology Concepts' Com
Macintosh integrated with virtually any computer, as well as a variety of PC and percomput

ble with P ppor
 Macintosh.

Other VT emulation software for the Macintosh is available from Communications Research Group; Mainstay; Touchstone Software Corp. Hayes MicroComputer Products; Software Ventures; and Peripherals, Computers & Supplies. Most emulation software packages function over a serial RS-232 connection between the Mac and Digital hardware, though some offer support for more advanced networking capabilities.

With more advanced networks, file transfer and support of shared files on virtual VAX disks (the Mac or other PC thinks it's working from its own disk) become more important than mere terminal emulation. However, files are difficult to share between dissimilar computers and applications, requiring some sort of conversion. Keyword Office Technologies is one company developing Mac/VAX conversion hardware and software that will operate in the background to make networks more functional in their file-sharing ties.

Networking

Kinetics worked with Apple to develop the first Apple-to-Digital networking hardware. Its FastPath product has been widely used to interconnect AppleTalk and Ethernet. The company has since developed a variety of product offerings for the full spectrum of Macintosh computers, including the following:

- **FastPath**—The AppleTalk-to-Ethernet gateway that enables an entire AppleTalk network of Macs and LaserWriters to connect to Ethernet.
- **EtherSC**—A direct connection from a Macintosh to Ethernet through the small computer system interface (SCSI) port on the Mac.
- **Etherport SE**—An internal Ethernet controller card for the Mac SE (a version of the Plus implementing a single expansion slot).
- **FastPath/Q**—An AppleTalk controller board for the Q-bus (MicroVAX or PDP Q-bus).

Currently this hardware is usually used to carry AppleTalk protocols between Macintoshes and VAXes, but with Excelan's acquisition of Kinetics TCP/IP will become an important Mac-to-VAX protocol. Excelan has been an industry leader in developing TCP/IP LANs, and recently won a VAXBI license to put TCP/IP interconnect hard

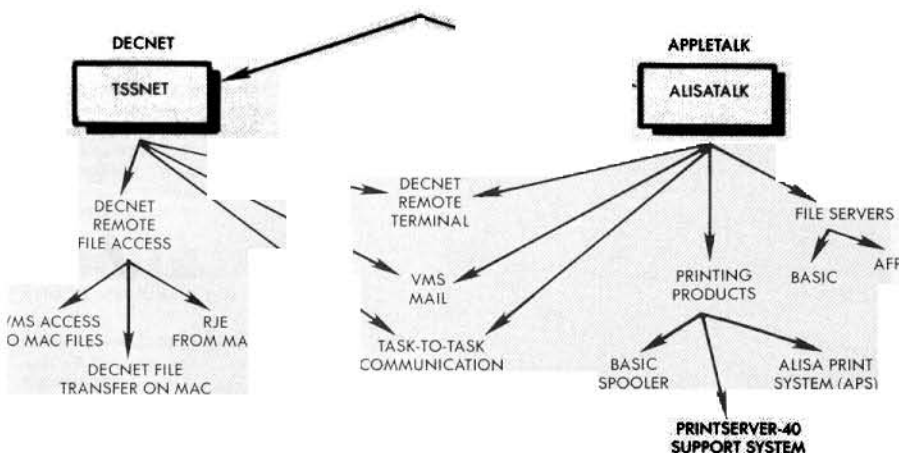


Figure 3.
 DECnet

product th nt

pcLINK now includes features for moving data between the DOS and Macintosh environments, and provides an integrated software product for high speed VAX Ethernet connectivity for both Macintosh and the IBM PC. It provides VT241 emulation, virtual disks on the VAX, and enables PCs and

Macs to be integrated into the Digital All-In-1 environment. Kinetics hardware is used to transport the Mac or AppleTalk network onto Ethernet. The AppleTalk protocol is used over the Ethernet network and interpreted by the VAX portion of pcLINK. pcLINK coexists with DECnet, and is also avail-

ware on the BI. TCP/IP is available on virtually every computer used in the Digital environment, so the Mac will be able to take part as a full partner on LANs containing VAXes, PDPs, Suns, Apollos, supercomputers, and IBM PCs. Both Apple and Pacer are also very keen on supporting TCP/IP on Ethernet.

A new competitor to Kinetics is Dove Computer. Dove, a manufacturer of productivity enhancement products for the Macintosh, recently announced its FastNet product, a SCSI LAN gateway for the Macintosh similar to Kinetics' EtherSC. SCSI ports are available on the Macintosh 512E, Macintosh Plus, Macintosh SE, and Macintosh II. Dove plans to provide connection to StarLAN and Token Ring topologies as well as Ethernet.

The Dove product is being marketed in conjunction with the CommUnity products from Technology Concepts. Technology Concepts is the well-known Digital third party supplier of DECnet for machines ranging from the IBM PC to the Elxsi 6400 supercomputer. The marketing arrangement provides Digital users with a complete implementation of the Digital Network Architecture (DNA), including virtual terminal, task-to-task communications, remote directory, remote file access/transfer, remote file access services, and network management. This means that the Mac can be fully networked in a LAN with VMS, DOS, UNIX System V, UNIX 4BSD, Ultrix, and PDP computers (Figure 2).

Alisa Systems is also offering DECnet. In conjunction with Thursby Software Systems' TSSnet product, Alisa provides combined AppleTalk-DECnet networking (Figure 3). Ethernet access is via Kinetics' hardware.

Popular Mac-to-Digital networking products in the UNIX world are available from Top Sun Microsystems (formerly Centram), Eurosoft, mt. Xinu, and Kinetics. Kinetics offers AppleTalk protocols for UNIX systems. Eurosoft offers Mac-to-UNIX integration strategies and will soon be announcing products for Mac-to-VMS. Top Sun Microsystems, a Sun subsidiary, offers its TOPS network for the Macintosh, and, on the other end of the network, mt. Xinu offers the TOPS product with its UNIX 4BSD VAX operating systems. TOPS, under development almost from the time of Macintosh's inception, is also available for the IBM PC and provides sophisticated networking functions for a variety of machines on a sin-

gle LAN. TOPS is compatible with Sun's Network File System (NFS) and Digital now supports NFS under Ultrix.

Other companies involved in Mac-to-Digital connectivity are 3Com and FEL Computing. 3Com is developing Mac II Ethernet expansion cards, and FEL offers communications software that allows Apple IIs to communicate with VAXes.

Mac Database System On VAX

From Odesta comes an application development/database system. The Helix VMX products from Odesta use the VAX as a database server to applications running on the Macintosh. Odesta's eye-catching introduction of the Helix product line at DEXPO West '86 in San Francisco stole the show.

Interestingly, Helix applications are themselves graphically developed in the user-friendly Macintosh envi-

ronment, providing an extremely innovative, flexible system suitable to many businesses. As the product matures, its capabilities from both the Macintosh and VAX sides will carry the system into a wide variety of new application environments for both technical and nontechnical users.

Interestingly, Digital has recently entered into an agreement with Computer Methods Corp. to teach seminars on Mac-VAX connectivity. Digital's interest in this area seems to be growing, and at DEXPO East next February, there will be an Apple-DEC Computer Center sponsored by Apple. Apple is extremely interested in connecting with Digital, but it remains to be seen if the feelings are mutual.

Brad Harrison is Hardcopy technical editor. Evan Birkhead is Hardcopy's East Coast editor.

The following vendors were mentioned in this article

Adobe Systems
1585 Charleston Rd.
Mountain View,
CA 94039-7900
415-961-4400
Circle No. 172

Aldus Corp.
411 First Ave. S.,
Ste. 200
Seattle, WA 98104
206-622-5500
Circle No. 173

Alisa Systems Inc.
221 E. Walnut St. #230
Pasadena, CA 91101
818-792-9474
Circle No. 174

Apple Computer Inc.
20525 Mariani Ave.
Cupertino, CA 95014
408-996-1010
Circle No. 175

Communications Research Group
5615 Corporate Blvd,
3rd Fl.
Baton Rouge, LA 70808
800-24-BLAST
Circle No. 176

Computer Methods Corp.
525 Rt. 73 S., Ste. 300
Marlton, NJ 08053
609-596-4360
Circle No. 177

DEXPO Expoconsul International Inc.
3 Independence Way
Princeton, NJ 08540
609-987-9400
Circle No. 178

Dove Computer Corp.
1200 N. 23rd St.
Wilmington, NC 28405
919-763-7918
800-622-7627
Circle No. 179

Eurosoft Inc.
14082 Loma Real Dr.
Saratoga, CA 95070
408-741-0739
Circle No. 180

Excelan Inc.
2180 Fortune Dr.
San Jose, CA 95131
408-434-2300
Circle No. 181

FEL Computing
10 Main St.
P.O. Box 72
Williamsville, VT 05362
802-348-7171
Circle No. 182

Hayes MicroComputer Products
705 Westech Dr.
Norcross, GA 30092
404-441-1617
Circle No. 183

Keyword Office Technologies Ltd.
2816 Eleventh St. N.E.
Calgary, Alberta
Canada T2E 7S7
403-250-1770
Circle No. 184

Kinetics Inc.
2500 Camino Diablo
Walnut Creek, CA 94596
415-947-0998
Circle No. 185

Mainstay
5311-B Derry Ave.
Agoura Hills, CA 91301
818-991-6540
Circle No. 186

mt. Xinu
2560 Ninth St., Ste. 312
Berkeley, CA 94710
415-644-0146
Circle No. 187

Odesta Corp.
4084 Commercial Ave.
Northbrook, IL 60062
312-498-5615
Circle No. 188

Pacer Software Inc.
7911 Herschel Ave.,
Ste. 402
La Jolla, CA 92307
619-454-0565
Circle No. 189

Peripherals, Computers & Supplies Inc.
2457 Perkiomen Ave.
Mount Penn, PA 19606
215-779-0476
Circle No. 190

Pyramid Technology Corp.
1295 Charleston Rd.
Mountain View,
CA 94039
415-965-7200
Circle No. 191

Software Ventures
2907 Claremont Ave.
#220
Berkeley, CA 94705
415-644-3232
Circle No. 192

Technology Concepts Inc.
40 Tall Pine Dr.
Sudbury, MA 01776
617-443-7311
800-777-2323
Circle No. 193

3Com Corp.
3165 Kifer Rd.
Santa Clara, CA 95052
408-562-6400
Circle No. 194

Thursby Software Systems
5840 W. Interstate 20,
Ste. 145
Arlington, TX 76017
817-478-5070
Circle No. 195

Top Sun Microsystems
2560 Ninth St., Ste. 220
Berkeley, CA 94710
415-549-5900
Circle No. 196

Touchstone Software Corp.
909 Electric Ave.,
Ste. 207
Seal Beach, CA 90740
213-598-7746
Circle No. 197

White Pine Software Inc.
94 Route 101A
P.O. Box 1108
Amherst, NH 03031
603-886-9050
Circle No. 198