HP Professional

THE MAGAZINE FOR HEWLETT-PACKARD ENTERPRISE COMPUTING ▲ VOL. 7 NO. 12

DECEMBER 1993

INFORMATION MANAGEMENT

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- AT&T
- Conner Peripherals
- Crystal Point

▶ **STRATEGIC DIRECTIONS:**
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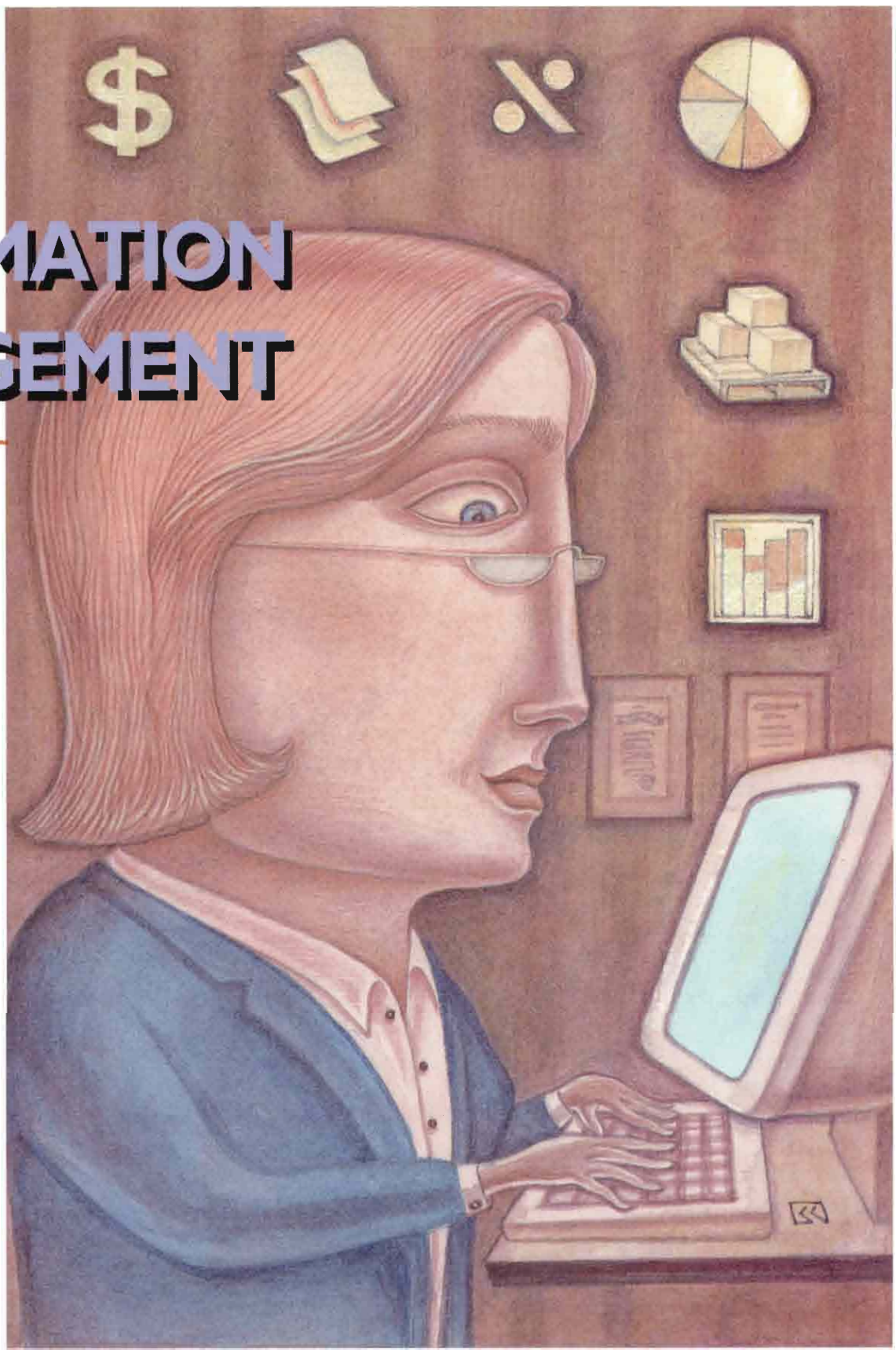

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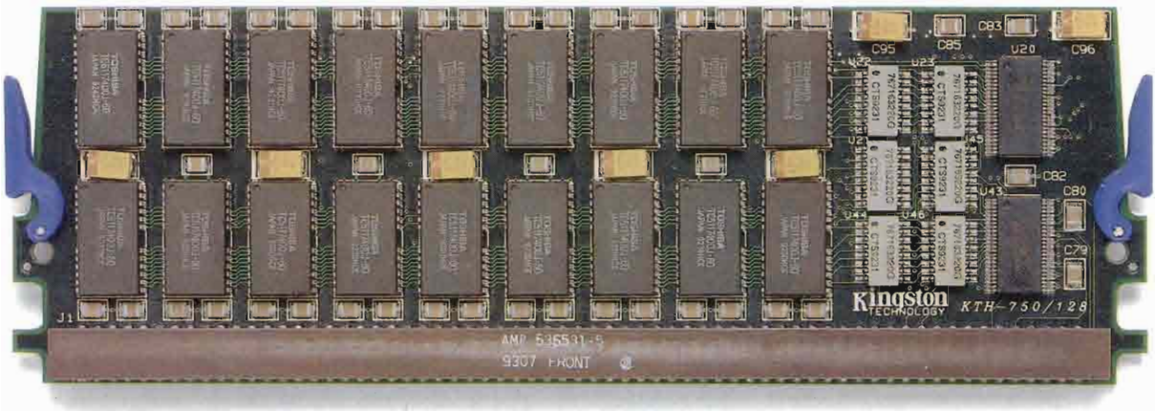

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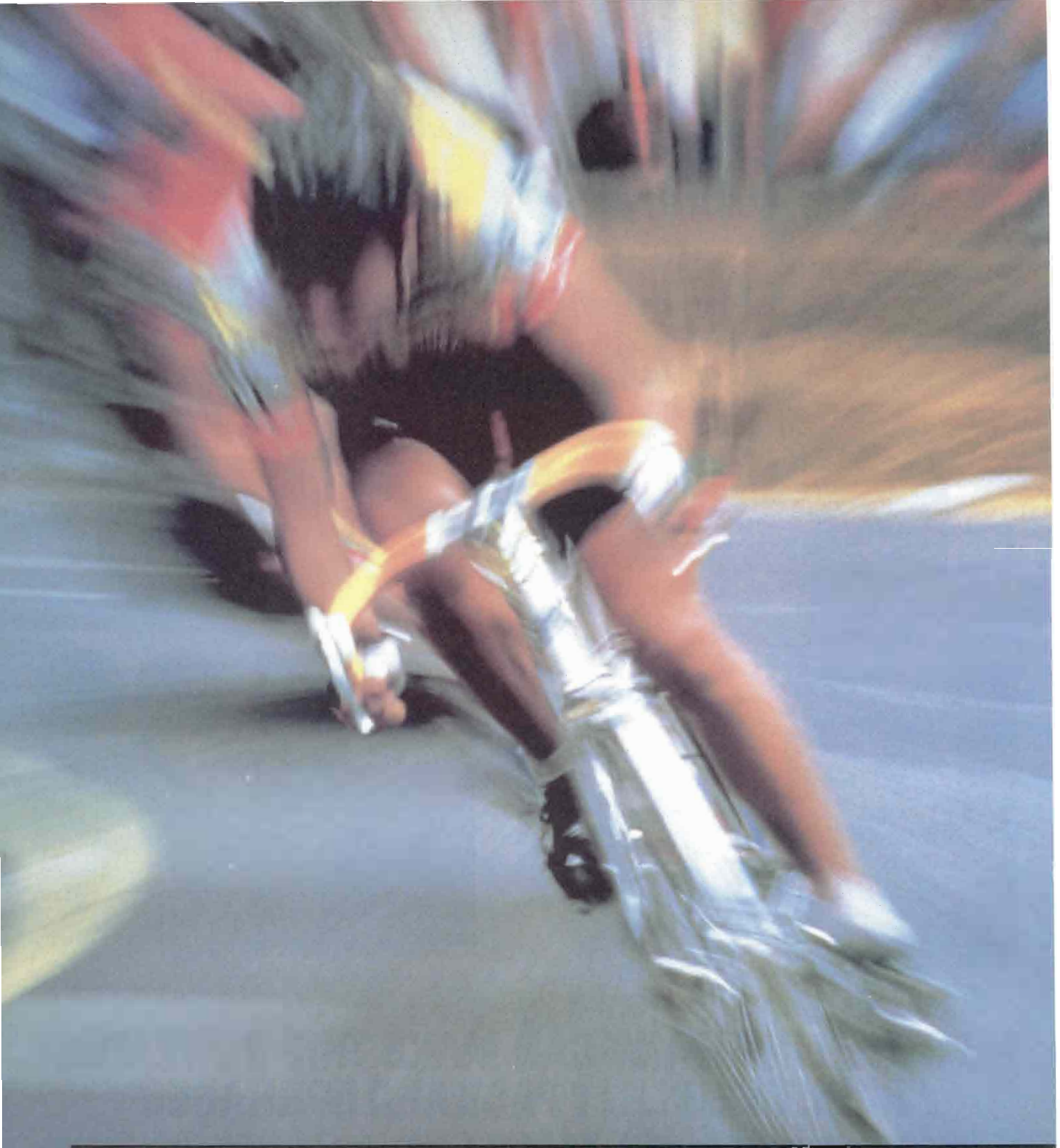

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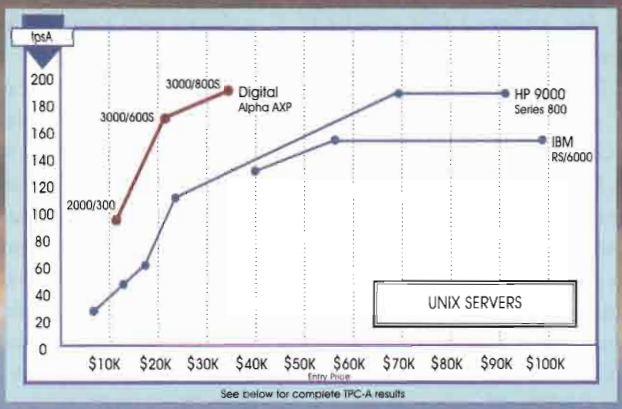

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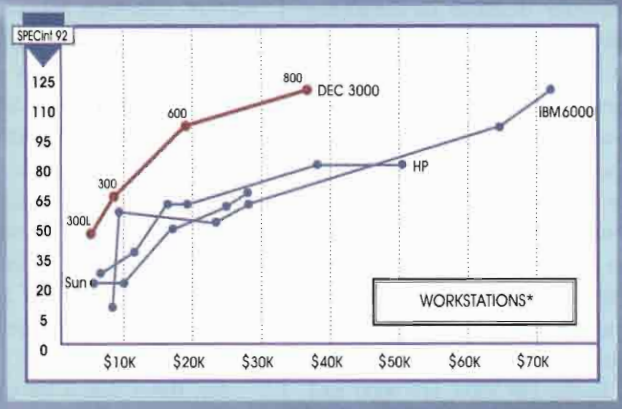

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That Was Then . . .

By Charlie Simpson

Seven months ago I became Editor of HP Professional Magazine. Since then, I've seen HP honored and attacked, praised and humbled.

David Packard, co-founder of HP 54 years ago, retired at age 81, from his position as chairman of the HP Board of Directors. Lew Platt, president and CEO, was named Packard's replacement. Shortly there after, HP was called on the carpet on national TV. Amid cheers of support and cries for boycotts, the company managed to ride out the controversy in true HP fashion.

Another pressing issue on users' minds this year was, "How will HP support us under the New HP Way?"

HP was criticized for how it treats, or rather for how it doesn't treat, existing customers with its order fulfillment program. To meet the growing customer demand in shrinking economies, HP implemented a new approach to support including tele- and audio conferences, telesales and enhancements to its Channel Partners Programs. Lew Platt admitted HP had not reached its objective to solve the old order fulfillment problem and he committed top personnel to address this issue in 1994.

Service and support may have become the buzz words of the last year; but let's face it, without products, none of us would be here. Whether or not hardware becomes the often predicted "commodity," someone still has to build things. And HP kept up with the nuts and bolts throughout 1993 with a steady stream of new products and enhancements to their existing lines. Some of the new iron included growth in the HP 3000, HP 9000 and the workstation lines.

To the pleasure of its base customers, HP boosted its ever popular HP 3000 to offer 40 percent more transaction-processing performance. Now, if these customers could only get one.

For its HP 9000, HP announced a two-prong strategy. HP added symmetrical multiprocessing and uniprocessor servers for mainframe alternative and client-server business-critical applications. For high-end database servers, HP reduced prices 45 percent to 51 percent. Carrying the hardware growth throughout '93, HP extended its 700 series workstations that promised an application performance increase of up to 80 percent. They also introduced the Windows/Client device that is still being enhanced.

In early '93, HP continued its move toward object technology stating: "object technology will be to the information industry what electricity was to the industrial age." In midyear, HP and IBM agreed to integrate their respective object technologies into a standards-based architectural framework for distributed computing.

HP teamed up not only with IBM but with Banyan, Hitachi, Informix, Microsoft, Next, Software AG, SunSelect, Synon and Wang Laboratories as we saw a popular business trend come to life in 1993 — the partnership, or alliance program.

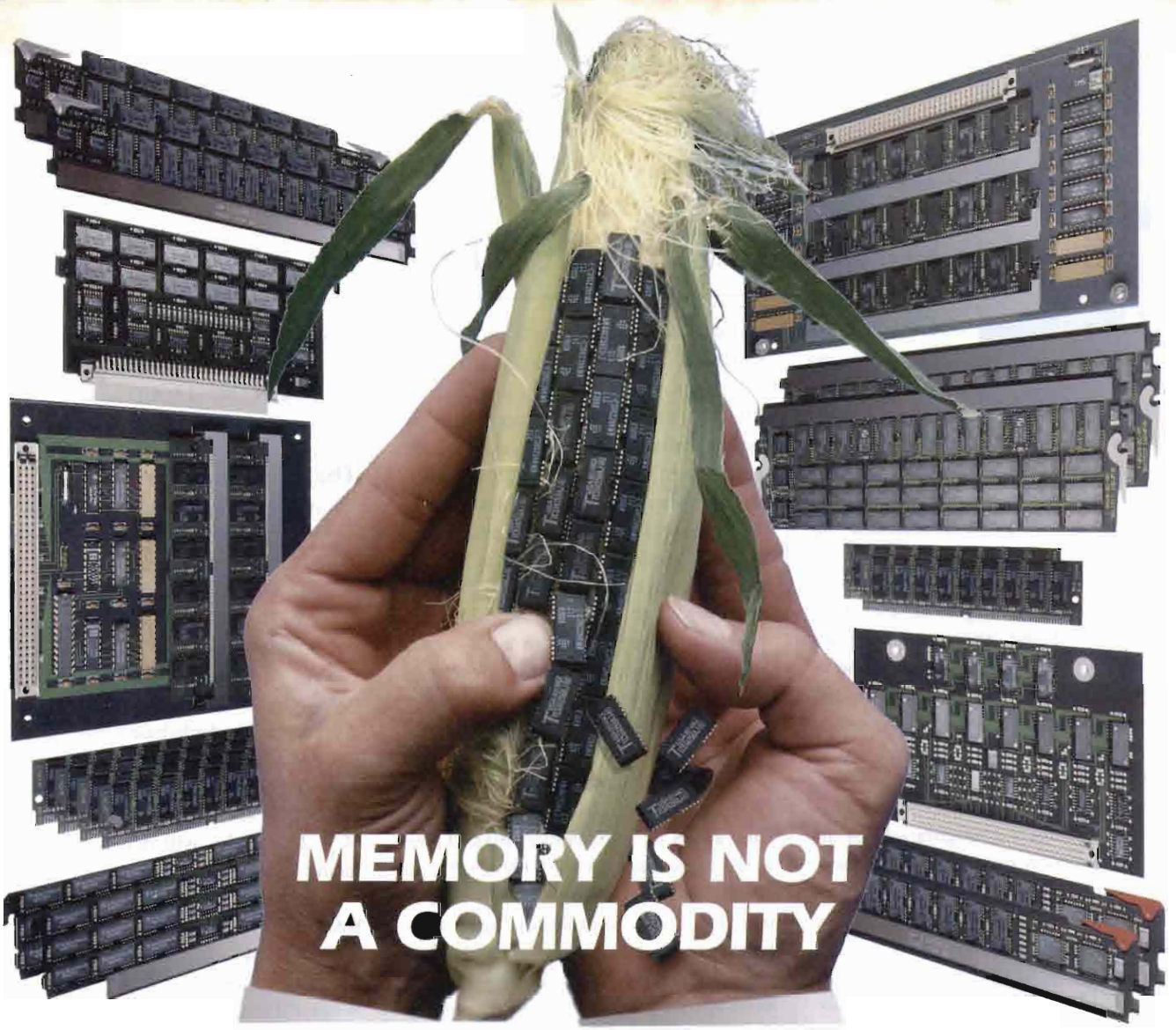
More interesting than the technology itself is who is using it and why. HP accumulated an impressive client list throughout 1993. From 7-Eleven Japan to the U.S. Navy, HP systems and software were implemented in force.

7-Eleven Japan chose HP as its strategic supplier of an open-system-based computer network worth more than $12.5 million. Boeing Commercial Airplane Group selected HP as a primary source for its line of business application servers in a two-year contract that emphasized UNIX-based application servers. Chevron announced that it would replace its 30-year-old financial system with software from SAP America running on HP 9000 servers in a client-server environment. For the Navy, HP allied with SAIC and Harris Corp. to compete for the Navy's procurement of tactical computer workstations under the TAC-4 program.

Finally, on a financial note, as this page was going to bed, HP announced that its net earnings more than quadrupled, $298 million, in the fiscal fourth quarter 1993. Unfortunately, this crescendo fell short of analysts' expectations and the firm still took a hit on Wall Street, with HP stock slipping almost 5 percent.

So, there was a lot of information and a lot of choices for HP users in 1993. And HP Professional was there to help you form opinions and make decisions. And, we will continue to be here throughout 1994; but, just as the computer industry grows and changes as we enter the new year, so will we.

Charlie Simpson



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INDUSTRY WATCH

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It Ain't Natural

Fast and wide may seem to contradict all laws of nature. Have you ever seen a ten foot wide cheetah? And if data were meant to go fast and wide, it would heve been born that way. It's illogical, nonsensical. So there.

I suppose that's why some smart aleck just had to go and do it. Just for spite. Disk arrays from HP and other vendors are intended by nature to function at about 10 MB per second burst synchronous transfer rate — a normal, natural burst synchronous transfer rate. It should have been good enough, but nooooooooooo, somebody at HP had to go and make it 20 MB per second. In a RAID 5 configuration for an online transaction processing application with a large database, this kind of performance will make a significant difference in system functionality.

That's probably the reason why HP introduced Fast/Wide Differential (FWD) SCSI-2 disk arrays for HP 9000 Series 800 business systems and servers and for HP 9000 Series 700 workstations. The new products are supported by HP-UX Release 9.04 on the HP 9000 Series 800, and by HP-UX Release 9.01 on the HP 9000 Series 700.

The Standard Bearer

The best way for HP to get more of the market is to champion standards and beat other vendors to market with the latest versions. FWD SCSI-2 in RAID configuration is just such an opportunity for HP, and while it is now only available for HP systems, it is a signal of things to come. At the time of this writing it gave HP twice the speed of any competing RAID storage, with attractive prices to boot.

FWD SCSI-2 provides a burst transfer rate of 20 MB per second, with speeds of up to 40 MB per second possible, says HP. Data bus width is 16 bits plus 2 parity bits through a 68-pin connector with a maximum cable length of 25 meters.

Maximum connectivity is seven arrays per interface card, and 15 SCSI disks per interface. This allows storage of up to 8 GB per five-drive array of protected data, and a total of up to 50 GB of unprotected or 40 GB of protected data in a 1.6-meter-high cabinet housing five arrays. Individual arrays range in capacity from 2 to 8 GB in either 5 1/4- or 3 1/2-inch formats. According to HP, cost per MB with the system can be as low as $5.50.

RAID, by the way, stands for redundant arrays of inexpensive disks. These RAID arrays support RAID levels 0, 3, 5 and independent mode. Level 0 distributes data across an array for higher performance, but does not provide data protection. Level 3 stores encoded data from working drives on a separate parity disk. If one drive should fail, the parity disk allows that data to be reconstructed. Level 5 is similar to Level 3, but distributes encoded data across all the drives. Again, the system recovers on the fly from a lost drive. Your data is safe from most failures. Independent mode allows the drives to function as standalone disks for separate storage tasks without data protection.

In both RAID levels 3 and 5, the HP FWD SCSI-2 systems allow an administrator to replace a failed drive while the system is running. The RAID system rebuilds encoded data on the replacement drive automatically, without system shutdown or reconfiguration. In industry parlance, this is a "hot pluggable" system.

Prices for these products vary considerably depending upon the features and capacities desired. An 8 GB array of five 2GB disk modules for either the HP 9000 Series 700 or 800 costs $44,544. HP began shipping PC-based RAID arrays earlier in the year.

The Fibre Factor

HP is offering upgrades to customers using HP's proprietary fiberoptic interface, HP-FL, to interest them in FWD SCSI-2. The new interface is faster and less expensive. And, HP's commitment to standards means that, while it will support HP-FL, development efforts will be for standards-based systems. HP says it is at work on a standards-based fiberoptic interface called Fibre Channel, intended to offer better performance and interoperability at a lower price than even FWD SCSI-2. But this will depend upon HP selling its concept as an industry standard.

For now, the cheapest and fastest RAID for HP users is FWD SCSI-2. But there is always a place for proprietary systems, and HP-FL still has a place for now. While FWD SCSI-2 is cheaper and faster, SCSI-2 implementations can detect errors, but cannot correct them. HP-FL offers both error detection and correction. And in applications where distance and protection from electromagnetic interference is important, HP-FL is superior. While SCSI-2 implementations support connections for up to 25 meters, HP-FL supports connections of up to 500 meters, clinching the distance derby.

HP is determined to take a larger slice of the growing storage business, and is getting set up to do that by moving strongly into standards-based storage systems. Pat Webb, product marketing manager, and Ed Pavlinik, product manager for HP DMD in Boise, Idaho, won't divulge when HP will step into providing storage for more than just HP systems, but it appears to be in their plans. ■

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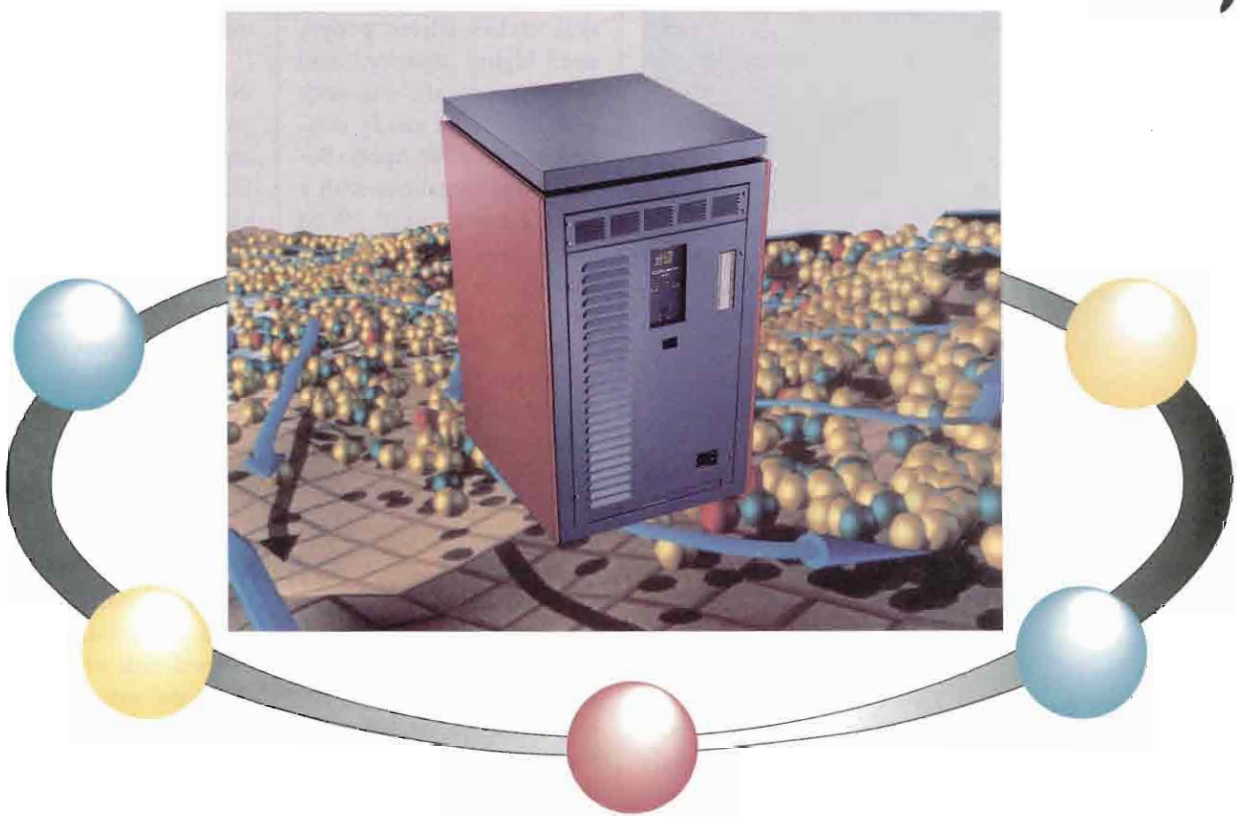

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When Bigger Isn't Better

Conner Peripheral's Floptical Storage System Proves Less Is More

As children, we believed that bigger meant better. As we got older, we realized that this was not always true, especially in technological fields where designers strive to put the most power, storage, capacity or whatever into the smallest package possible. Conner Peripherals (Lake Mary, Fla.) has succeeded by providing more storage than a standard floppy disk in a package that is no bigger than that standard floppy disk.

The Conner SF21e floptical storage system is a 21 MB external floptical disk drive plus cabling, install disk, install manual and floptical disk. The drive provides high-capacity file storage for data-intensive applications, such as desktop publishing, presentation graphics and CAD/CAM. The large storage capacity allows users to transfer large files on a single disk.

According to Bernie Wu, vice president of Conner Storage Systems Group, "flopticals are falling in certain niches where people need higher capacity," and workstations are one such area. The SF21e can be connected to any HP Apollo Series 700 workstations with a SCSI adapter card. SCSI daisy-chaining of additional flopticals or other SCSI devices also is possible.

Each drive can read and write the standard 2 MB floppy format used by HP workstations. According to Wu, 10 percent to 15 percent of HP workstations come with standard floppy drives included and the SF21e "could be used as a direct replacement."

Besides higher capacity and interchangability, Wu says users are interested in flopticals because they offer the opportunity to add storage externally while leaving the bays available for additional hard drives.

Floptical technology is a combination of a floppy's magnetic recording medium and a CD-ROM's optical head alignment. An LED device reflects off of embedded servo tracks providing better feedback for head alignment. The precise alignment provides a greater track density and capacity.

Servo tracking improves head alignment, permitting higher track density, which results in increased storage capacity. Also, floptical servo tracks are not magnetic and cannot be accidentally erased.

With a "dual gap" head, the SF21e can read and write both floptical and standard 1 MB and 2 MB floppy formats.

Each removable disk stores 21 MB of data, approximately 14 times the data capacity of a conventional 3 1/2-inch floppy disk. Doubling the rotation speed means seek times of 80 ms. A faster disk rotation rate provides quicker access to files. Data transfer rates of 1.6 MB/second are about two to three times higher than that of lower capacity floppy drives.

HP and 3M Corp. recently took part in a joint agreement with Conner where 3M manufactured and developed a 3 1/2-inch, 21 MB floptical disk while HP provided the software required to make the Conner drive compatible with the HP Apollo Series 700s. "This joint venture provides alternative removable media for HP users," Wu says.

The drives are supported under HP-UX 8.07 and HP-UX 9.0. Price for the drive starts at $900.— *Deborah Schwartz, Assistant Editor*

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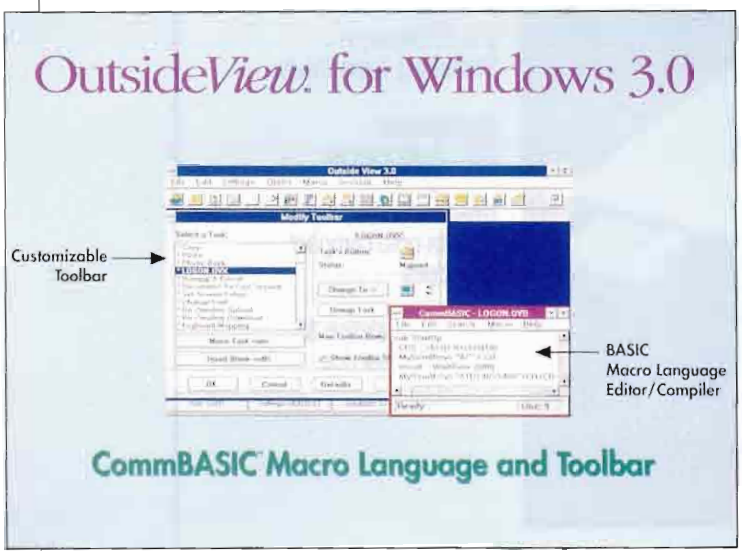

Outside Views For Windows Makes Your Data Infinitely Accessible

• • •

Mainframes. Minicomputers. PC LANs. Sometimes it seems like it's easier to mix oil and water — unless you're using PC-to-host connectivity software like Outside View for Windows from Crystal Point Inc. (Bothell, Wash.). Outside View for Windows 3.0 combines a variety of Windows-based terminal emulations with broad-based network support including LAN, TCP/IP asynchronous and X.25 communications.

Among the 28 terminal emulations included in Outside View for Windows are HP 2392 and HP 700/92A, as well as Data General DG 200, DG 210, DG 400, DG 410, DataPoint 8220, DEC VT 100, VT 220, VT 320, IBM 3101, IBM 3162, NCR 401 and NCR 7901. Emulations for Honeywell, Prime, Sun Microsystems, Televideo, Textronics, ANSI 3.64, TTY and Wyse 50 also are available.

"In the early 80s, when we talked about [PC-to-] host connectivity, we were only talking about terminal emulation," says Chris Stephens, Crystal Point's CEO, "then when PCs began to be networked, emulation products needed to work across local area networks."

Introduced in September 1993, Outside View 3.0 adds IBM TN 3270 emulation, supporting 3278 display models 2,3,4 and 5 with additional support for extended attributes and color. Outside View 3.0 now also includes CommBasic, a macro language that is compatible with Microsoft's Visual Basic. CommBasic provides an advantage over other terminal emulation packages with proprietary scripting languages that take time to learn.

CommBasic scripts also can be assigned to an icon or icons on Outside View's customizable on-screen toolbar which provides 75 programmed functions and 40 pre-set icons. A command library (with over 100 commands) can be used to create personalized routines to access E-mail systems like Data General's CEO, DEC's ALL-IN-1 or IBM's PROFS. According to Stephens, the macro language will handle "everything from the login [to] opening applications and retrieving data."

Although still evaluating Outside View 3.0, Astinder Singhera, of the Technology and Planning Office in the Canadian Administry of the Attorney General in British Columbia, says, "the macro language is a big help for automating some of our processes."

Now in the process of standardizing on Outside View for Windows 2.2, Singhera says Outside View provides the terminal emulation for his Data General, Datapoint and DEC VAX systems using FTP Software's TPC/IC as the transport layer. "We've seen packages providing both DG and DEC emulations, but no one provided Datapoint," says Singhera.

Because you can have separate administrator and end-user versions, protect software configurations through password-secured parameter files and create pre-set user routines, Outside View helps you to manage complex enterprise-wide networks. File transfer protocols supported by Outside View for Windows include Xmodem, Xmodem-1K, Ymodem, Zmodem, Kermit and ASCII.

Outside View for Windows costs $349 and is available in single-user and network versions. System requirements include a PC with 2 MB RAM, Windows 3.0 or higher, a serial 232-C port with an asynchronous communication card and Hayes-compatible internal or external modem. — *George A. Thompson, Technical Editor*

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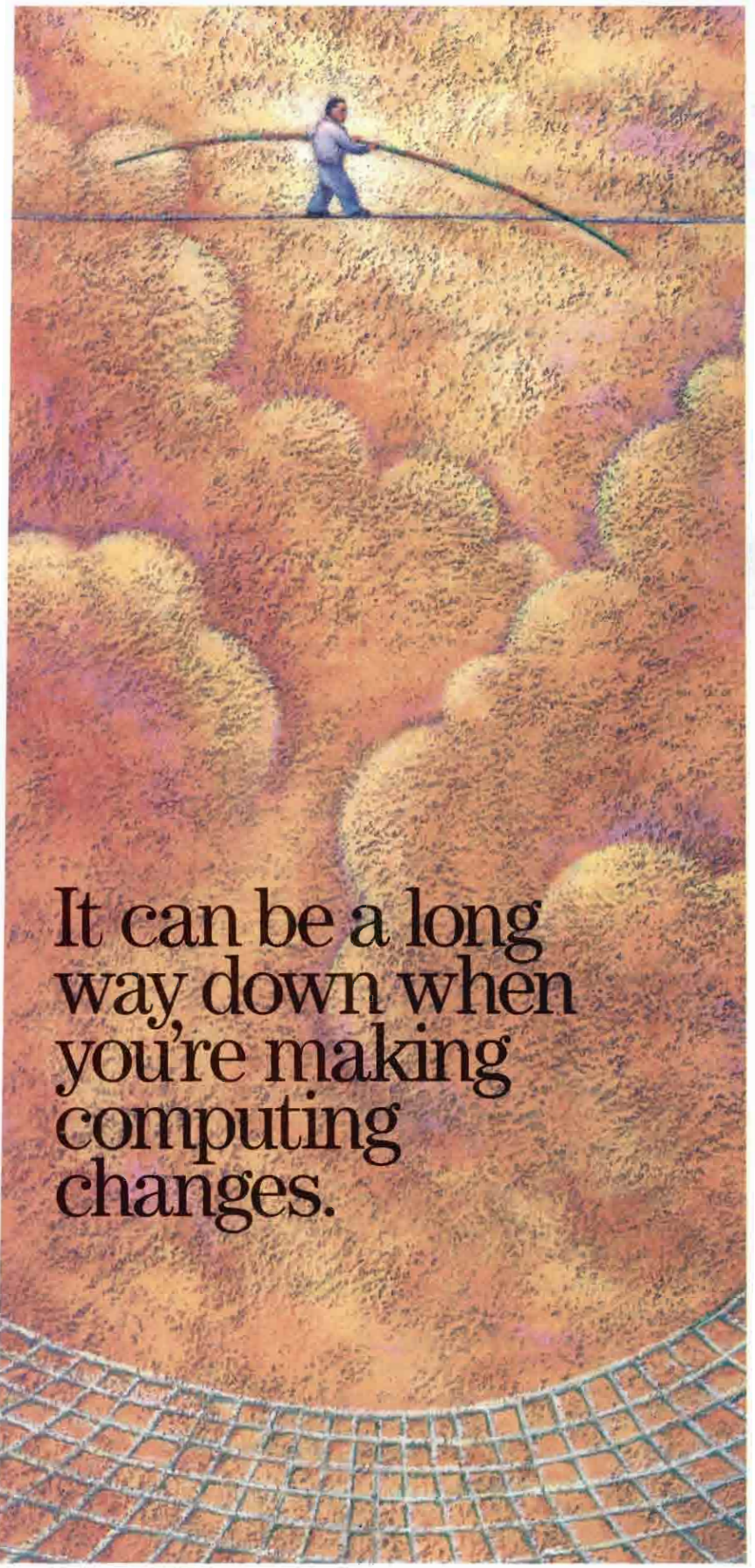

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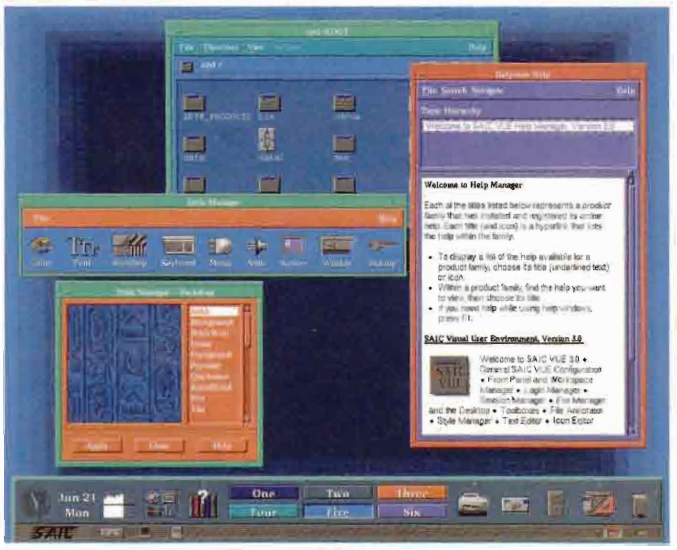
Getting COSE With Your GUI



Artecon Brings SAIC's VUE To IBM And Sun Workstations

• • •

Unlike the PC market, where Microsoft Windows has become the graphical user interface (GUI) of choice for the DOS desktop, UNIX workstation users have long been without a standardized GUI.

Although the Common Open Software Environment (COSE) intends to incorporate HP's Visual User Environment (VUE) as part of its Common Desktop Environment (CDE), widespread adoption, especially across different hardware platforms, is not a foregone conclusion. But with SAIC's VUE 3.0, COSE GUIs are on the way.

Under a license from HP, SAIC has ported HP's VUE to both Sun SPARC and IBM RS/6000 platforms. Because SAIC VUE 3.0 is OSF/Motif Style Guide compliant and adheres to POSIX and ANSI C standards, consistency among HP, Sun and IBM platforms and their respective applications is assured. But sometimes having a good technology product is not always good enough.

As a systems integrator with revenues of $1.6 billion, 15,000 employees and over 350 offices, SAIC was not organized to sell products. "We sell people's skills on projects," says John Benepe, SAIC's corporate vice president of advanced systems development and integration. "We put a small sales and marketing force together, and ... we didn't do too well. So, we came to Artecon."

According to Dana Kammersgard, Artecon's vice president of marketing and sales, "SAIC didn't have the marketing dollars or the experience. So, we are leveraging the strengths of all three companies [HP, SAIC and Artecon]." Artecon became the worldwide marketing agent for SAIC VUE 3.0 in April 1993.

SAIC VUE 3.0 improves on the usability of SAIC's previous version — VUE 2.01 — through multicolor icons, backdrops, front-panel images and slide-up sub-panels as well as a bitmap/pixmap editor and a file annotator.

Online help is available via the Help Manager. Built on HP's Help System, Help Manager includes graphics, hypertext links, multiple fonts and dynamic resizing.

SAIC VUE 3.0 is identical to HP's VUE 3.0 which is bundled with every HP 9000 workstation. "The only difference is the logo," says Kammersgard who expects "to sell about 30,000 seats the first year." According to Kammersgard, "Leahman Brothers already has 400 to 500 seats and has plans to expand to about 1,000 to 1,500 seats."

At Leahman Brothers (New York), Steve Ruegnitz, first vice president for equity systems, has been using SAIC's VUE on the equity trading floor for about two years. "We are a Sun shop and at the time, we knew if we wanted Motif, we weren't going to get it from Sun," he says.

"Now SAIC VUE, is an integral part of our application suite." So integral in fact, that Ruegnitz says, "it's another part of the desktop, we just don't think about it anymore."

At $350 per single seat, Kammersgard says SAIC VUE is easy to justify. Quantity pricing is available, ranging from $280 per copy for two to 250 users, to $175 per copy for 251 to 500 users. SAIC VUE is now shipping for SPARC Solaris 2.x as well as RS/6000 AIX 3.2.x platforms.

Artecon sells SAIC VUE 3.0 through both direct sales and strategic partners, including Sun Federal, Sun-Express, GTSI and various resellers in the United States and 50 international distributors. — *George A. Thompson, Technical Editor*

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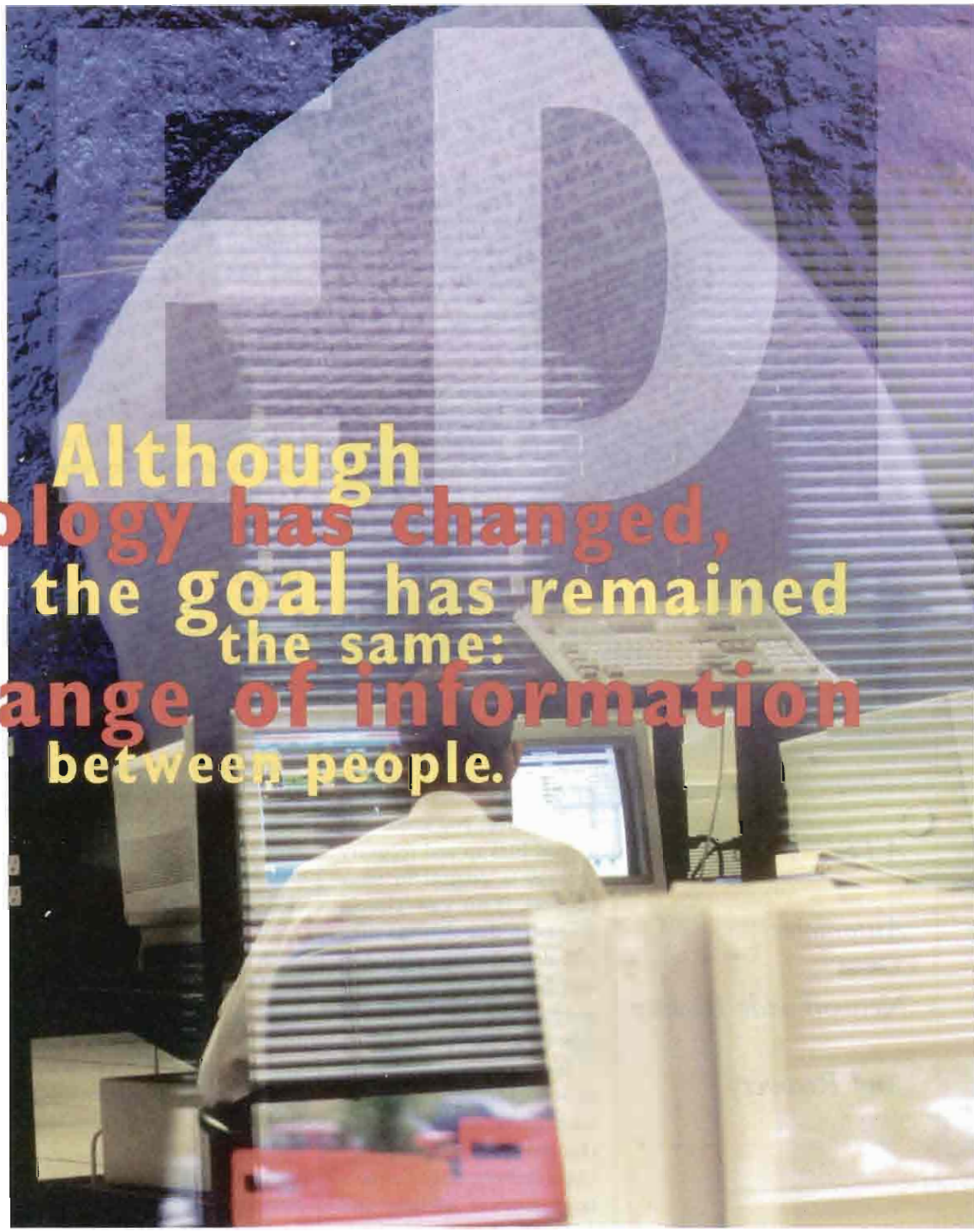

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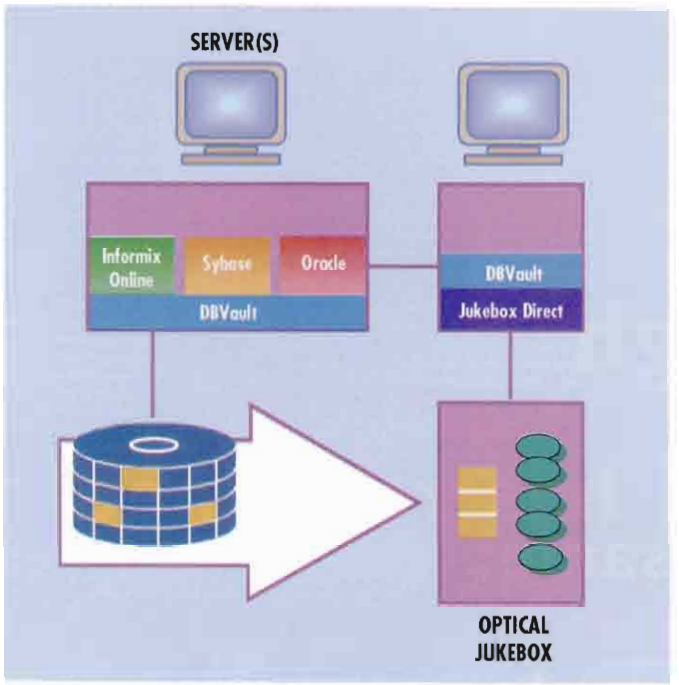

AT&T's DBVault Automates Networkwide Backup And Recovery

If you are a network administrator, you know that a good backup and recovery strategy is critical to your success. You can almost guarantee that the one time you don't backup your data will be the one time your system fails. And when it fails, so do you.

It's not unusual for all data to be backed-up regardless of whether or not it has been changed since the last backup. Unfortunately, this takes up a large amount of time and space. If only there was a way to just backup the data that has been modified. Now, there is with DBVault from AT&T (Eatontown, N.J.).

DBVault is a centralized, fully automated networkwide backup and recovery solution for large UNIX databases installed in multiplatform distributed environments.

According to Chuck Grady, senior analyst and ITS Operations group leader, DBVault was a good alternative backup solution for Star Enterprises (Delaware City, Del.) to replace AT&T's automated backup, archiving and recovery software (ABARS). ABARS had provided full backups of all their data, so recently they were looking for a change. "Technology has changed a lot since we got involved," Grady says.

Star Enterprises is currently running Oracle databases on NCR machines with 100 percent redundancy using mirrored drives. Each evening, the drives are unmirrored; the Oracle databases, containing mostly historical data, are restarted and DBVault is run against the shadowed drives. Grady says, "DBVault does a very good job of only backing up what is currently active."

DBVault uses patented signature technology and compression algorithms which backup only the data blocks that have been modified. Once the signature is created, it describes the full status of the data without needing to access it.

New signatures are compared to old signatures. All data blocks relating to those signatures, that have changed since the last backup, are collected and copied. Empty blocks are automatically compressed. Data is restored in reverse chronological order ensuring that the latest version of each block is backed up first, and no block is touched twice.

On a daily basis, DBVault simultaneouly backups the changed blocks of an entire active database while partial full backups are done on a cumulative basis. With databases spanning several disks, if one disk crashes, only that disk needs to be restored. If the entire system goes down, data can be restored to the path originally archived.

DBVault is part of the AT&T CommVault System's network storage management solutions, which includes: 3DArchive, a direct access, online archiving solution; DataMigrator for hierarchical storage management; AT&T Backup, an automated backup and recovery system for UNIX, Novell, DOS and VMS environments; related network productivity solutions; and high-capacity WORM and rewritable optical jukeboxes.

Grady says that DBVault has made Star Enterprises more productive. "We figured out that we would be spending one person's time to backup all our servers and that would be bothering our customers during prime time. With DBVault, we can now maintain the same number of servers with the same amount of people at no extra cost."—*Deborah Schwartz, Assistant Editor*

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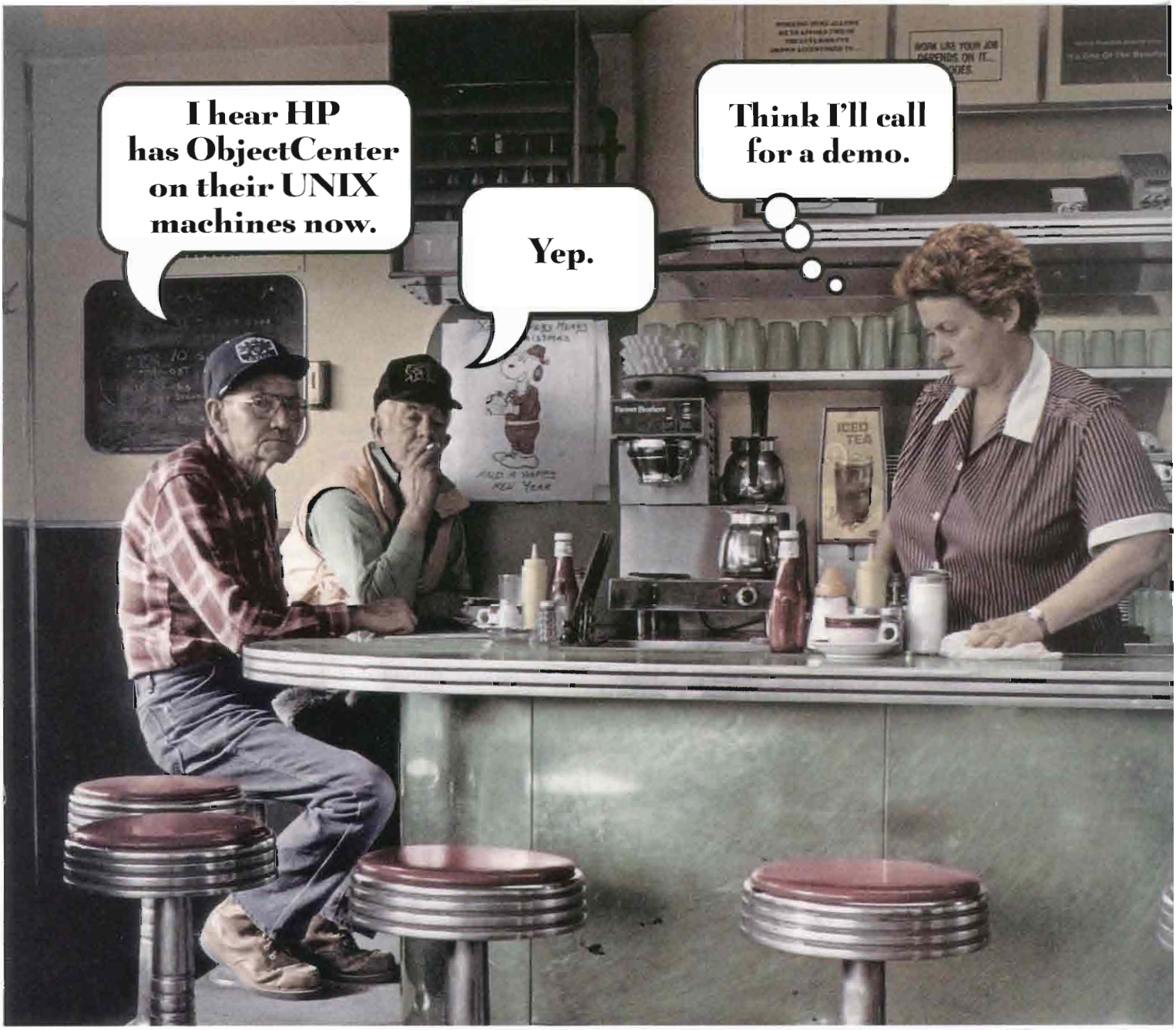

News travels fast. Hewlett-Packard UNIX workstations now run ObjectCenter™ for C++.

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A Rite Of Passage

Baan International Expands In The United States And Europe

"Baan's challenge is to assure that its menu of functionality can satisfy the more demanding tastes of multiplant global manufacturers."

Ted Rybeck
Director of Research
Advanced Manufacturing Research

Baan International b.v., founded in The Netherlands in 1978 by Jan and Paul Baan, is currently in the midst of a major expansion in both Europe and North America that is transforming it into one of HP's most strategic software partners.

"They've developed a much higher profile, having had good reviews in industry watcher publications," says Jeff Kargen, European marketing manager for discrete manufacturing industries, based in the U.K.

"They've taken on new capital to hire people and get new offices and have been expanding in the U.S. very aggressively for the last six to 12 months," Kargen says.

Andries Bottema, Baan's vice president in Ede, The Netherlands, confirms that the company is using a recent cash infusion to "boom onto the U.S. market." It anticipates growing from a staff of between 30 and 35, to 250 in the next 18 months. Also hired was Ron Weilert, formerly vice president of Oracle's manufacturing systems, to run U.S. operations.

The organizational changes at Baan are part of a shift in their customer focus, says Ted Rybeck, director of research at Boston, Mass.-based Advanced Manufacturing Research. "They are trying to move from dealing with smaller manufacturers in The Netherlands to dealing with multinationals who won't deal with distributors," he says.

In a recent report on Baan, Rybeck notes that only 10 percent of Baan's installed base are sites with more than 100 users, but says he expects 20 percent of the 1993 sales to come from that category. The company predicts that percentage will rise in 1994-1995 to between 40 percent and 50 percent of new sales.

The organizational and technical challenges Baan faces revolve around that new customer, Rybeck's report says. "The tough organizational question for Baan is whether it can re-engineer its service network to cope with the requirements of global manufacturers ... Baan's challenge is to assure that its menu of functionality can satisfy the more demanding tastes of multiplant global manufacturers."

Triton, Baan's manufacturing management system got a boost when it was chosen by the ASK Group as the basis for its new MANMAN/X. Baan has just released an MPE/iX version and a standard version 2.0, Bottema says.

The MPE/iX version was developed with HP in Palo Alto, Calif. The two companies are exploring cooperative, global customer support schemes for Triton. Bottema acknowledges that Baan "would like to have even more cooperation with HP's MPE experts and Baan's UNIX experts for those customers who want to migrate from MPE to UNIX, particularly in the U.K. and Germany." Of Baan's 600 Triton installations worldwide, 240 are on HP platforms.

ABB/CMC Systems AG, a manufacturer of electrical systems for bridges, tunnels and industry in Lenzburg, Switzerland, should complete its changeover to Triton version 2.0 on its HP 9000/827 by year-end, says Tuno Werner, director of finance and administration. EDP Manager Hanspeter Doebele says that in the new version, "the forms handling is better and it's written in the new generation of their 4GL."

Despite being in competition with heavyweights like Oracle, SAP AG and Dun & Bradstreet, Rybeck gives Baan good odds for survival, even prosperity. "Baan's size [1992 revenues of $50 million] and maturity gives it a unique window of opportunity for growth in 1993-1994," he says. After that, he notes that "the larger vendors will be further developed [with their products] and tougher to beat."— *Marsha Johnston, International Editor*

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UNIX Safety Net

Computer Associates' HP-UX Port Appeals To Commercial Computing Users

"With CA-UNICENTER, CAI can provide the safety net that makes the [UNIX] environment attractive to commercial processing."

Alan Paller
Director of Open Systems
Computer Associates Int'l. Inc.

To gain the confidence of the commercial computing community, UNIX needed an endorsement from a heavy-duty, business application developer. Scientific/technical applications alone have never been enough to lure users off their mainframes. Few business application vendors have more credibility among mainframe users than Computer Associates International (CAI; Islandia, N.Y.)

For the past two and a half years, CAI has worked closely with HP porting 15 of its applications to HP-UX. Why the interest in UNIX? According to Alan Paller, CAI's director of open systems, "We have meetings with around 80 chief information officers every three months. About three years ago, the percentage of those planning to do at least one commercial application in UNIX shot up from about 18 percent to about 70 percent."

CAI responded by moving its business and manufacturing applications to UNIX. In every case CAI's first choice for a target platform was HP-UX. According to Paller, "Experimentation was easy, but users didn't feel the environment was well managed or protected. Now, with CA-UNICENTER, CAI can provide the safety net that makes the environment attractive to commercial processing."

The CAI/HP alliance has struck a responsive chord among mainframe users. At Brigham Young University (Provo, Utah), it was a green light to begin downsizing. Currently running CA-DATACOM database applications on an IBM 3090, BYU's financial services department is in the process of migrating from the mainframe to the HP-UX environment.

According to Brent Moore, computer specialist for financial services at BYU, the decision to downsize from the mainframe to HP 9000 hardware running CAI applications was based on past experience with both companies.

"We're in the midst of a beta test for CAI's UNIX versions of CA-DATACOM and CA-IDEAL, the 4GL for DATACOM," Moore says. "All of our applications, with the exception of one or two, were written for DATACOM in IDEAL so the port will be easy. We are writing all our new applications in UNIX."

Moore's experience with HP as well as CAI influenced the choice to migrate to HP. "We have had one HP 9000 827 for over two years. We've used it to run our accounts payable and purchasing system and it has worked well for us," Moore says.

Another reason, according to Moore, was that HP was CAI's first target platform for its UNIX products. "As we looked at other boxes, we had to look at whether or not the products we were interested in were on that box. Our experience with HP and the availability of CAI's products made our decision easier."

But, Moore says, the bottom line for the move was cost. "The UNIX boxes are much less expensive, and we get a better choice of what kind of hardware we want to put our applications on once we move them to UNIX. If HP has a box that fits our needs, great. If not, there may be another vendor out there that fits our needs better. We have a little more freedom of choice."

Eventually, Moore expects about 15 HP 9000s to be in use at BYU. "Getting the machines up and talking to users is easy. We haven't tried getting the databases talking to each other yet, but we do have enough connectivity to our mainframe to transfer files back and forth so we can at least move data around to where it needs to be," he says.

What do the programmers think of the move? "Some of the old main-framers are a little scared," Moore says, "but everybody's been able to approach it with an open mind. There will be a learning curve, but we figure that's part of being in the computer business." — *Sam Dickey, Contributor*

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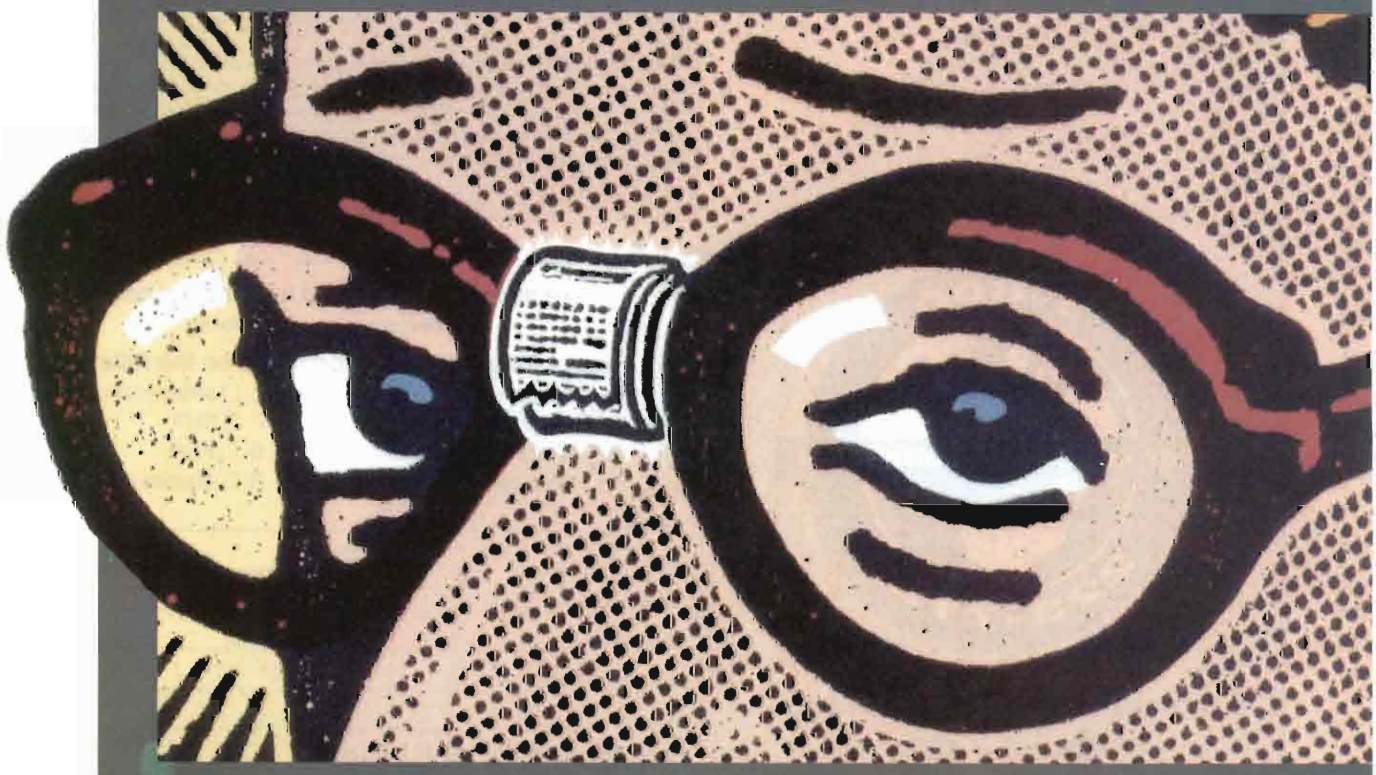

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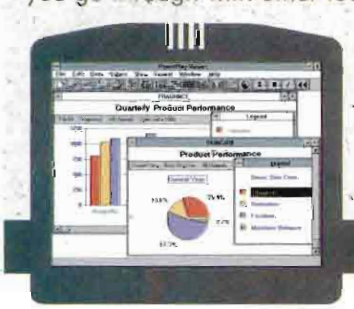

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D

When It Comes

To Report Generation,

Demand Drives

The Data

The Devil Is In The ETAILS

OK, let's admit it. Most modern-day, mainframe-driven, information systems have been designed with an almost single-minded focus on "collecting" or "capturing" the necessary business data for the corporate enterprise. In fact, much of the data has been captured so successfully that getting useful information back out has often been frustrating at best, and impossible at worst, for most corporate users. Consequently, most corporate users have had to "hurry up and wait" while their requests for reports were processed by MIS departments working with 4GL tools and traditional report writing programs.

Unfortunately, however, the reports they got back usually contained too many or too few details. Or, they just arrived too late to be useful. Now, MIS departments, in companies that are in the midst of downsizing, are finding that their reporting problems are no less formidable as they consolidate a myriad of incompatible and geographically dispersed systems and databases.

That's why both MIS departments, as well as their users, are finding their answers in new, flexible and easy-to-use report writers and report management software. Report writers provide the best of both computing worlds. Besides allowing users to create and format single and multitable reports, report writers also give end-users powerful ad hoc query capabilities. And while MIS personnel provide the design, control and security necessary over production data and online transactions, knowledge workers can filter, as well as sort and manipulate only the data they need without having to understand how databases work.

Consequently, IDC (Framingham, Mass.) predicts that the worldwide 4GL and SQL report writer market, after growing at a compound annual growth rate of 15.9 percent from 1991 to 1992, will continue to grow at 17.2 percent through 1997. Worldwide revenues will increase from $2.4 billion in 1992 to $5.3 billion by 1997. Sophisticated 4GL tools from well-established ISVs like Oracle, Computer Associates, Software AG, Cognos, Information Builders, Informix and Sybase will continue to remain popular, but it's no secret that many companies are already using or thinking about using Microsoft Windows-based PCs to get at data on UNIX databases as well as on PC-based LANs.

So, it's not surprising, that UNIX and PC platforms are expected to experience the largest growth in the next several years. According to Stephen Hendrick, a software analyst for IDC, Crystal Reports from Crystal Computer Services (Vancouver, British Columbia), Impromptu from Cognos (Burlington, Mass.) and ReportSmith from ReportSmith (San Mateo, Calif.) are a few of the currently popular Windows-based report writers that are ready to benefit from that growth.

GEORGE A. THOMPSON

Hendrick thinks that although 4GLs probably have an advantage with their native SQL connectivity "4GL [vendors] may not have the depth in report writing that the report writing companies have." In fact, many 4GL vendors are adding Windows-based reporting software to their packages. For example, Hendrick says that 4GL vendors, such as ASK and Unify, have become resellers of ReportSmith. "Report writers are primarily focused on flexibility and customizability when it comes to massaging and presenting the data — that's the area where they excel," says Hendrick.

Promoting Ad-hocracy

FOR HAN GALLDIN, COGNOS' marketing director for client-server tools, report writers are "like a Rubik's Cube allowing you to view data from all different dimensions." And by allowing the end-user to easily construct ad hoc queries, without needing to know SQL, report writers let users take responsibility for looking at and using their data. "Report writers provide a clear separation between the physical and logical arrangement of data. The end user shouldn't have to use SQL commands and shouldn't have to worry where the data is located," says Galldin.

With Cognos' Impromptu, queries and reports are created through "catalogs." The catalogs serve as the point of control for the MIS departments, allowing them to enforce such things as limits on the number of records received and the number of tables joined. Users see a logical grouping of data folders, columns and reports. Impromptu supports the following databases: Oracle SQL*Net, SQL Server/Sybase with direct access to dBase and Paradox. Impromptu also has host-based Query Servers for non-server databases such as DEC's Rdb, Borland's Interbase and HP's Allbase. Impromptu supports desktop integration through the use of DDE and OLE links.

Crystal Reports and ReportSmith are less sophisticated than Impromptu but are still useful for working with a number of SQL-compliant databases. Crystal Reports allows MIS to set up

FORMING ANOTHER SOLUTION

A distant relation of report writing and report management is forms automation. Like report writers, forms automation software allows you to intelligently filter and calculate data, as well as design and print a variety of forms like purchase orders, invoices, checks or shipping labels (which can be thought of as specialized reports) and automatically distribute and print them wherever they are needed. And like report management software, forms automation software allows you to route and distribute forms to specific printers and destinations.

Besides increasing the efficiency of your operation, forms automation packages eliminate the costs associated with handling or processing forms. For example, according to the Gartner Group, within most corporations, processing a form today costs around $60.

Although more often used as "intelligent data entry" screens, forms automation software like JetForm (Waltham, Mass.) can still help you if you already have your data stored on a HP 3000 or HP 9000 system. If you want to get that data out onto a form, then "form automation reporting functions can be extremely sophisticated," according to Barry Gillespie, spokesperson for JetForm.

For example, says Gillespie, by using JetForm Server, a client-server product that runs on the HP 9000, you can take data from a purchasing application and print-out a multipart purchase order. "But instead of printing it on multipart carbon snap, which is environmentally unfriendly and very expensive to process; with JetForm Server you can print a vendor copy in the mailroom, a file copy in file room, and receiver's copy at the receiving dock after removing all the data the receiver shouldn't see," explains Gillespie. He also adds, "You could even have the receiver's copy print in landscape mode for the receiver to make notations."

The next step is designing and filling-in your own forms which helps to save on outside printing costs and improves keying accuracy. Forms design and "filler" products, pioneered by companies like JetForm and Delrina in the PC and PC LAN markets, are also coming to the HP 9000 and other UNIX platforms, says Gillespie. Currently, JetForm Design is available for the PC while JetForm Filler is available in DOS, Windows, OS/2 and Macintosh versions.

According to Gillespie, it is now becoming fashionable for the filler products to become mail-enabled. "Not only can you fill out the form, but you can send it to someone else in the organization using the underlying E-mail backbone. In the case of the HP 9000, that will be HP Open Mail," says Gillespie.

There are other forms solutions for HP platforms. For example, Kelly Computer Systems (Mountain View, Calif.), a JetForm VAR, provides a one-step turnkey solution to electronic forms for MPE users with FormMaster/3000. By combining JetForm's JetForm Merge, which allows you to combine data from any supported server application, and a Kelly FormMaster printer cartridge, a flash memory-based laser printer cartridge for either HP Series III or Series IV LaserJet or any PCL5 compatible printers you can generate, fill and print electronic forms .

According to Catharine Beier, director of marketing communications for Kelly, you install the cartridge (with a digitized copy of the electronic form) at the printer, "so that when it comes time to print, all you have to really download is the actual data that is going into each field; you don't have to download the entire form itself which is typically bulky and difficult."

Beier says, that "digitizing the form, programming the cartridge, and supporting it" are also included with the FormMaster 3000 product. Beier says, "the fact that the form is in the cartridge allows it to be protected from unauthorized use."

Fantasia from Proactive Systems (Los Altos, Calif.) is an integrated solution for forms, graphics and typeset quality reports. Fantasia includes a PC-based forms design tool and can work with report writers and other application programs. — *GAT*

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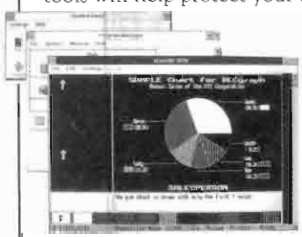

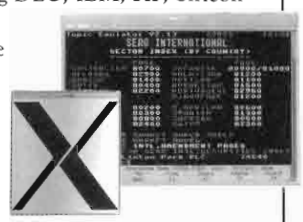

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a run-time version of a report with replaceable selection criteria. Crystal Reports works with NetWare SQL, Oracle SQLBase, Microsoft/Sybase SQL server and other ODBC-compliant database servers. ReportSmith, unlike Crystal Reports and Impromptu, allows users to edit their SQL queries. ReportSmith also provides automation capabilities with a macro language called ReportBasic. ReportSmith supports the following databases: Btrieve, DB2, dBase, FoxPro, Ingres, Microsoft Access, Microsoft/Sybase SQL Server, Oracle, Paradox, SQLBase and Teradata.

But while the trend towards PC-based report writers will continue, report writers designed for client-server applications also will be in demand as businesses take advantage of distributed and decentralized IT architectures. For HP-specific platforms, that includes packages like User Data Management System 4.0 CN from Interactive Software (Denver, Colo.); 4S-Report from Four Seasons Software (Edison, N.J.); Easy Reporter from Speedware (Toronto, Ontario); and Intelligent Query and Access Tools from IQ Software Corp. (Norcross, Ga.).

According to Jim Maughan, Interactive's regional sales manager, "most PC-based report writing tools are limited to databases that are SQL-compliant. And they typically require a network communication extension [e.g., SQL/Net or Ingres/Net for example]. UDMS is a client-server report writer running on HP MPE/iX and HP-UX platforms. In a client-server model," he explains, "with a separation of the application into separate client and server pieces, the server [rather than the PC] talks directly to the database. Servers may download a file directly from UDMS to a PC via WRQ's Reflection software."

With UDMS, you can access the following file structures and databases: TurboImage, CSAM, Oracle, Ingres, Sybase, Informix, C-ISAM, D-ISAM, Acucobol, RMS, Rdb, RS1, Infoplus, System 1032, Supra DB2, VSAM, IDMS, IMS and Progress.

Ivan Michaels, manager of VAR Business Development for Four Seasons Software, views the market for UNIX-based report writers: "While there has been more activity in the Windows/PC-based markets, we want to provide desktop tools to those companies doing corporate downsizing over UNIX networks."

EDITOR'S NOTE

The November issue's manufacturing focused article — *Factory Floor Re-formed* — contained the wrong address for Lucas Management. The correct address and phone number follows:

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Traditional electronic reporting and management software vendors for HP-specific platforms also are making their products more accessible to the end-user

Like Interactive's UDMS, 4S-Report processes SQL requests from the client on the server wherever the particular database resides. 4S-Report supports the following databases: Oracle, Allbase, SCO ISM, dBase, Informix, EDA/SQL, Teradata, ASCII, Ingres, C-ISAM, DB2/6000, Sybase, Rdb, Progress, Cobol ISAM, Btrieve and dbf files.

Built upon Four Season's 4GL called SuperNova, 4S-Report, provides a menu- and window-driven user interfaces for 22 varieties of UNIX (including OSF/1 and all versions of HP-UX), MS-DOS, DEC VMS and HP MPE platforms across UNIX or Novel TCP/IP-based networks. 4S-Report supports dumb terminals, UNIX- and MS-DOS-based clients; support for native Motif and MS Windows interfaces were recently introduced.

Rusty Babock, Speedware's product marketing specialist for reporting products, feels that the "need for end-user reporting tools has been there for a long time. But getting data from the mainframe to the PC has been a real bottleneck." With Speedware's EasyReporter 7 running on a HP 3000 MPE/iX or HP-UX host and a PC running WRQ's Reflection, users can access Oracle, Sybase, Allbase, TurboImage, KSAM and C-ISAM databases. EasyReporter can take advantage of Reflection's Dynamic Data Exchange (DDE) capability to facilitate the distribution of data from the host to the PC. Data can then be manipulated on the PC in file formats that include SYLK, Excel, WK1 and dbf. Future versions of Easy Reporter will also run on RS/6000, SCO UNIX, OS/2 and Windows.

IQ Software Corp.'s Intelligent Query report generator and IQ Access data retrieval utility help organizations with UNIX databases make use of their accumulated data. Intelligent Query lets a user select data by highlighting various criteria and then combine them in a report. IQ Access allows the user to import data from a UNIX database to a variety of microcomputer applications such as dBase, Lotus 1-2-3, Excel and WordPerfect.

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These two packages work with many UNIX database management systems, such as Informix, Sybase, Oracle, Ingres and Unify.

Reports For The Masses

TRADITIONAL ELECTRONIC REPORTING and management software vendors for HP-specific platforms also are making their products more accessible to the end-user. For example, REVEAL from O'PIN Systems (Bloomington, Minn.) and VISTA Plus from Quest Software (Newport Beach, Calif.) enables end-users running on MPE, MPE/iX and HP-UX platforms to access reports electronically from any PC or HP terminal and print only the information they need.

According to Kevin Mitchell, O'PIN's executive vice president and COO, "When REVEAL was introduced several years ago, report handling tools focused on MIS departments." But now we are focused on providing capabilities that are end-user friendly." For example, REVEAL/CS, a client-server version of REVEAL, runs on HP 9000 Series 800 or the HP 3000 Series 900 (MPE/iX 4.5 or greater) systems. REVEAL/CS supports Windows-based PC or Macintosh clients. With REVEAL/CS, users can create graphs and charts directly from report files.

REVEAL's "pinpoint distribution" feature provides targeted delivery of information so that individuals or departments receive only the information they need. O'PIN also offers REVEAL 3.2, with a similar set of features, running on MPE V or MPE/iX systems. REVEAL 3.2 requires a HP terminal or PC running terminal software.

Similarly, VISTA Plus from Quest Software is a comprehensive report management system that automatically captures and stores information allowing users to first view reports online and subsequently decide how much and which portions for the reports to print. VISTA Plus is available for both MPE and HP-UX platforms and downloads information directly to PCs to either DOS or Windows applications.

According to Carlos Caballero, director of product management for Quest, report management software like VISTA Plus helps to reduce the "number of headaches" you have when routing the report to different users and departments. "Users were intimidated by the enormous amount of paper they had to search through to find the data they needed.

"Eighty percent of those who received such reports, probably didn't even look at it," says Caballero. "Spooling queues are intimidating to end-users, so VISTA Plus creates folders for the reports, which can then be accessed by the end-users. They can then cut and paste information, or download it to their Excel spreadsheet."

Report management software like VISTA Plus and REVEAL not only capture, organize and use data, they also help to archive it. For example, REVEAL 3.2 features an automatic tape archiving process. With VISTA Plus, according to Caballero, after a user acknowledges a report it can be archived using magnetic or optical storage.

With the continuing shift towards client-server architectures, the ability for end-users to get at corporate data and work with it in a very detailed and flexible manner is becoming a fashionable trend, if not a primary goal for MIS departments.

At the same time, knowledge workers within these corporations need access to the variety of corporate databases that now make up an enterprise. However, getting at the data shouldn't become a training course in database design.

But no matter where the data resides, these information-driven workers are demanding and getting access to the data they need to get their work done with a new generation of report writers and report management software.

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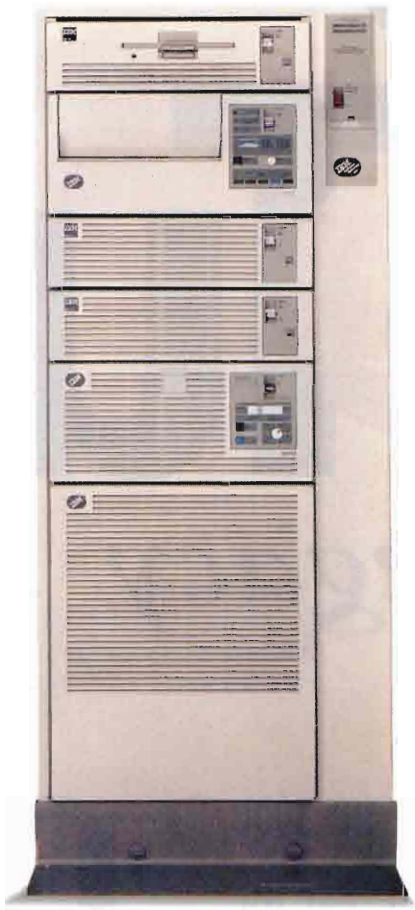

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Give Your HP 3000 System A Face Lift, But Use The Right Instruments

JOHN P. BURKE

Today from every direction, IS is bombarded with new technologies: client-server, GUI, relational, object, distributed, LAN, etc. Whether from the executive suite, or from the end-user, the message is clear: provide ease and consistency of use, and rapid, flexible access to accurate and timely data.

For some organizations, the goal will be to migrate rapidly and completely to distributed, client-server systems. For others, client-server will do no more than supplement host-based systems for many years. In either case, few organizations should

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continue investing precious resources developing less efficient older technologies.

The near-term goal must be to integrate the revolutionary technology with existing systems in an evolutionary way. Few, if any, modifications to existing systems should be made — add functionality or replace existing modules with ones developed using the new tools.

A cornerstone of HP's marketing for the HP 3000 has always been investment protection. In fact, HP is fond of saying that an application program written for the earliest systems will run on the newest PA-RISC systems, in most cases without even recompiling. Rumor has it that there are still some 20-year-old programs merrily running along, performing useful work. At the very least, there are systems still performing capably that were designed and first implemented in the 1970s or early 1980s.

Legacy systems on the HP 3000 invariably use IMAGE, a modified network model DBMS. This is because IMAGE, as the first integrated DBMS for midrange computing platforms, was the principle reason for the success of the HP 3000 in commercial data processing.

However, emerging client-server and GUI-based tools use the relational model for data and make use of SQL as the database access mechanism. Consequently, all HP 3000 legacy systems and their owners were in a precarious position. Why? Because conversion of an application system from IMAGE to a relational DBMS is a Herculean task.

The replacement of a major system by purchasing a new one can destroy a capital budget for years. But there were no good alternatives for HP 3000 shops. So, some companies probably deserted the HP 3000 for UNIX-based systems.

But, bringing relational access to IMAGE with IMAGE/SQL probably saved the HP 3000 by creating opportunities for IS departments to integrate the latest client-server, relational and GUI tools into application systems designed 10, 15, and even 20 years ago, long before commercial RDBMSs even existed.

Choices. I Need More Choices!

IN UPDATING LEGACY systems, the key challenge is to choose the appropriate PC-based tools and the appropriate implementation strategy for both the system and the organization. For example, some tools work only in a LAN environment. Performance of the tool is likely to be noticeably better over a LAN connection than over a serial connection. If PCs are being used to access a legacy system, chances are there are still serial connections in use. And don't forget remote sites that may only have serial connections via dial-up access.

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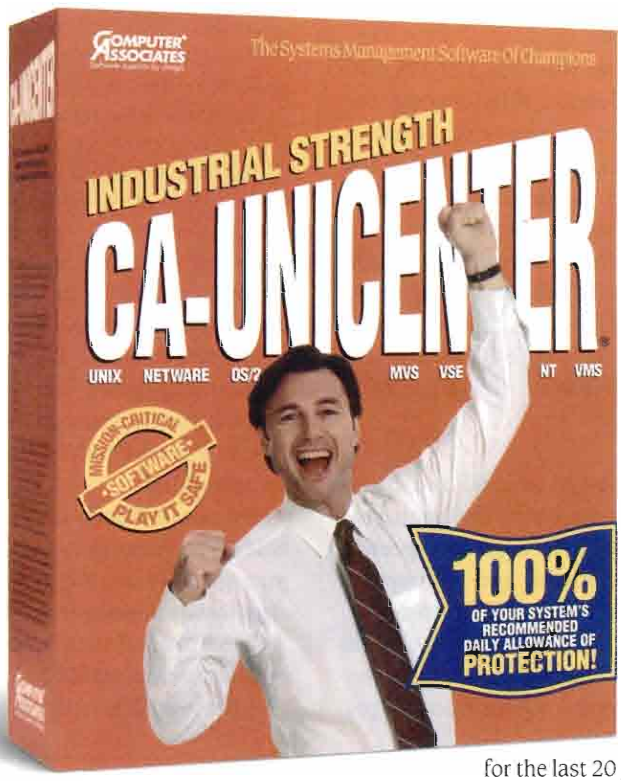

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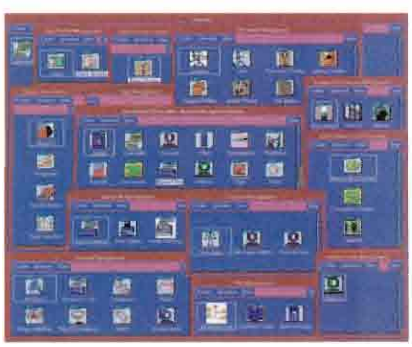

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The tools available for a legacy system face lift can be organized into seven categories:

- Decision Support Systems (DSS)
- Executive Information Systems (EIS)
- Application Development Tools
- Application Enablers
- 4th Generation Languages (4GLS)
- Encapsulation/Integration Tools
- Empowering Tools

Legacy databases were not designed for relational access, so the tools will likely suffer a performance penalty. Applying tools using SQL against a legacy database could adversely affect the performance of the key remaining components (usually transaction processing) of the legacy system.

Furthermore, many experts believe that DSS and EIS tools should not be run against any production databases and certainly not against any legacy databases. As long as real-time access to data is not required, experts contend that the best approach is to download the data in pre-determined intervals to a RDBMS either on the host or a separate server.

Any implementation strategy for client-server tools must take into account usage patterns and levels, and the design of the legacy databases. Until the third-party indexing interface is completely integrated into IMAGE/SQL (i.e., the SQL shell knows about the existence of third-party indexes), certain SELECTs may have disappointing performance.

Decision Support Systems

Decision Support Systems are the easiest to install and implement providing the biggest bang for the buck. DSS tools provide drag-and-drop analysis, reporting, graphing and exporting facilities. They can also bring your network and your system to its knees unless access is monitored and queries restricted.

Microsoft Windows compatible DSS tools that can access IMAGE/SQL databases on the HP 3000 include Information Access from HP, Impromptu from Cognos, Quest from Gupta, and Q+E from Pioneer Software. Information Access and Impromptu support both LAN and serial connections.

"LEGACY" IS NOT AN EPITHET

If you are a regular reader of the trade press, you might think that "legacy" is a four letter word. It seems that it's now fashionable to trash anything that is smacking of host-based legacy systems in favor of the concept du jour: client-server.

But legacy systems exist everywhere. They can represent millions of dollars, thousands of work-hours and decades of investment. Scrapping these systems, just because they may be based upon 3GLs, makes no sense; especially if they perform reasonably well, contain large amounts of critical data and possess a good core database design.

For example, the oldest documented program still in use on my HP 3000 was last compiled in 1977 on a Series II. It runs fine on a HP 9x7, in compatibility mode of course, because I don't have the source code — as if I ever did. It has a clunky interface, but it does what it's supposed to do.

The point? Keep in mind who has the most to gain from any mad rush to embrace a new technology. — *JPB*

Executive Information Systems

EISs are similar to DSSs, but with additional features like exception management, where information is monitored within user-defined limits, and deviations are highlighted with visual alarms. EISs also provide historical trend and drill-down analysis capabilities.

Microsoft Windows compatible EIS tools that can access IMAGE/SQL databases include Forest & Trees from Channel Computing and PowerPlay from Cognos.

Application Development Tools

Modules and even whole subsystems of an application can be selectively replaced by using these powerful new tools.

Microsoft Windows compatibe tools that can access IMAGE/

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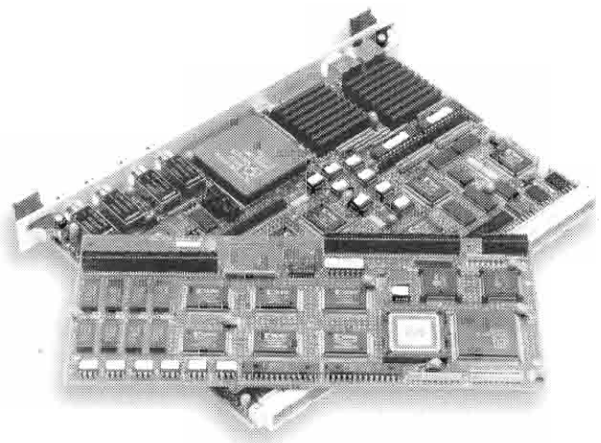

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SQL databases on the HP 3000 are PowerBuilder from Powersoft and SQLWindows from Gupta.

Application Enablers

Enablers provide the link between the host database and PC development tools such as Microsoft's Visual Basic. These include OMNIDEX for Client-Server from DISC and Q+E MultiLink VB from Pioneer Software.

4th Generation Languages

Many existing legacy systems on the HP 3000 actually use 4GLs for at least part of their functionality. While the traditional 4GLs have been character and terminal based, many are now adding client-server and GUI features and will certainly be adding more in the future. Some have native access to IMAGE in addition to SQL access to a fully relational DBMS. This gives you performance in the near term and flexibility for the future.

Some 4GL toolsets that can be used to extend the life of HP 3000 legacy systems are SPEEDWARE from Speedware, Powerhouse from Cognos, Uniface from Uniface and Focus from Information Builders.

Empowering Tools

Empowering tools add functionality to an existing application without altering any code. An example of an Empowering tool is EasyWindows from On-Line Data Systems. EasyWindows enhances an existing terminal-based HP 3000 application with windows, hotkeys, keyword lookups (through an OMNIDEX or SUPERDEX interface) and tag notes.

Encapsulation/Integration Tools

Encapsulation/Integration tools integrate legacy applications under a GUI umbrella or replace existing terminal screens with a GUI front end. Enterface from Enterface Inc. works in either a terminal or MS Windows environment to integrate existing programs with a consistent interface that includes overlapping windows, hot keys to switch among programs and point-and-shoot control.

Faces (formerly Frontender!) from Holland House/API is a MS Windows product that can automatically create a GUI front-end for existing terminal screens (block mode as well as character mode) without changing any application source code.

Believe it or not, you can have the best of all worlds. IMAGE/SQL plus an intelligent choice of new client-server tools creates a winning combination for extending the life of legacy systems and the HP 3000.

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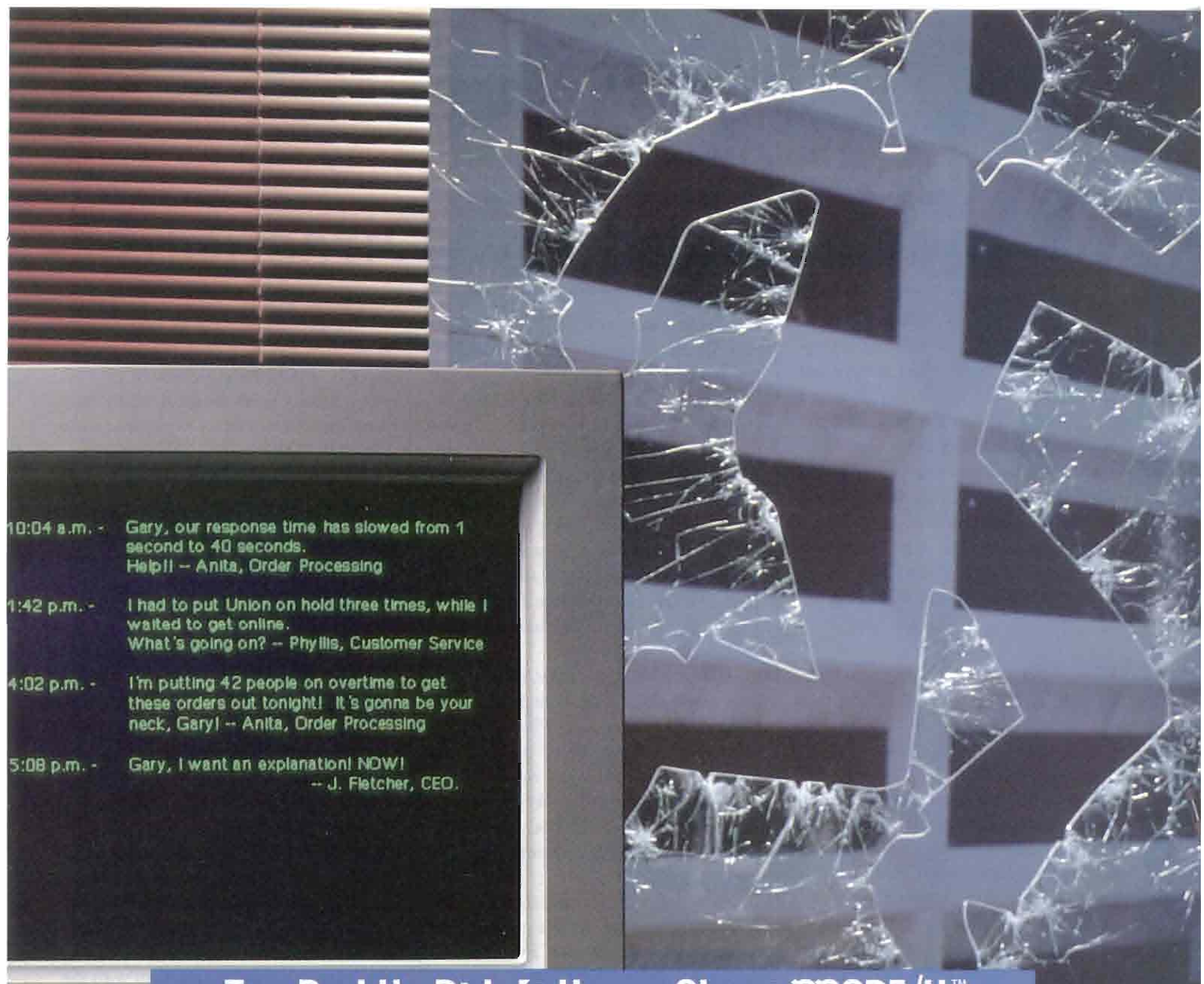

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UNIX SYS_ADMIN

Fred Mallett

Mapping New Directions

Driving down the road, feeling hungry and cold, I saw a sign that said "If you are here, you are lost, get a map." Think about that. How do you get where you need to go, to get a map? If you don't have a map, how do you know where you could go? If you are lost, where is here? And what does this have to do with system administration? I can at least answer that last question.

Get A Map

I presume that anyone reading this column knows what NIS is, but just in case: NIS is a network wide database server. That is, it serves database information to processes on any host that requests records from a database it stores. You feed it raw text data files that are turned into database (makedbm) format (with ypinit to create, and ypmake to update), and are now called maps.

Processes that need access to these databases send a request consisting of a map name and a "key" index into a database. Most modern UNIX OS's are written to use NIS maps for certain things. One example is a host name to internet address lookup. On HP-UX, if DNS is not in use and a host is using NIS (ypbind is running), then the host will always request an NIS lookup. For example, if you rlogin to host "nine44," the OS will request the data record for the key of "nine44" in the hosts.byname map. Another program, the NFS automount, "knows" about NIS also.

Automounter Maps

The automount uses text files called maps, which are record structures, that contain three fields.

The first field is a pathname (relative or absolute) to watch for attempts at access. When a program tries to access (stat) that pathname, the automount intercepts that access, and does an NFS mount using the optional second and required third fields. The second field is the options you would like passed to the mount command. The third field is the directory to be mounted, and it is soft linked to the pathname in the first field, so the user access to the pathname may proceed. Also note that there may be fourth, fifth, and so on fields. This means mount whichever responds first.

The problem with these maps is that they have to be maintained, and new hosts and users added. Then the files must be distributed to all hosts. Using NIS to distribute the maps can save a lot of time. You must only keep the NIS maps correct, which means edits on one host, then issuing one command: /usr/etc/yp/ypmake.

Looking at the structure of an automount map, it seems a perfect fit to be used as an NIS database. Evidently the developers also thought so, because they built in NIS access. To get the automount to use an NIS map is simple: Start it without any options.

```
/usr/etc/automount Look for an NIS map named auto.master
/usr/etc/automount -m Do not use NIS auto.master map
/usr/etc/automount -f "file" Use "file" before NIS auto.master map
/usr/etc/automount -m -f "file" Do not use NIS auto.master map, use "file" instead
```

The third sample is good for testing a textfile map on one host before distributing the map with NIS.

We could put all of our automount instructions in one file called auto.master as below:

```
/etc/auto.master
_____________
/net -hosts
/usr/mail -soft gasping:/usr/mail
/user/fredm -intr nine44:/local_user/fredm
/user/renee -intr other:/local_user/renee
/apps/fleaf cj5:/fleaf
/apps/frame aero:/frame
```

The problem here is in later editing. If we had 200 users and 30 applications this file would be a nightmare to read, so we usually break things down by type. This also makes it easier to generate these files with shell scripts.

Here is a better set-up for my maps:

```
/etc/auto.master
_____________
/net -hosts
/usr/mail -soft gasping:/usr/mail
/- auto.user #if /etc/auto.user NIS not used
/apps auto.apps

/etc/auto.user
_____________
/user/fredm -intr nine44:/local_user/fredm
/user/renee -intr other:/local_user/renee

/etc/auto.apps
_____________
fleaf cj5:/usr/fleaf
frame aero:/local_apps/frame
```

In these examples, auto.master is my primary map. It has two direct entries, the catch-all special map called -hosts, which mounts all filesystems on a host when /net/"host" is accessed. The second entry will mount /usr/mail with the -soft option from the gasping host.

The third and fourth entries are map entries. That is they do not specify what to mount, instead they say to go read another map.

The third entry is for a direct map. This means that the map is "standalone." The first field in each record is the full pathname to watch, and also the name of the symbolic link created that points to the /tmp_mnt directory where the remote file system is really mounted. This will become the "record key" when turned into an NIS

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database. The other fields will create the "mount" command line.

For example, if a user accesses the /user/fredm pathname, the following is the equivalent of what the automount will do:

```
mkdir /tmp_mnt/fredm
mount -intr nine44:/local_user/fredm /tmp_mnt/fredm
ln -s /tmp_mnt/fredm /user/fredm
```

The fourth entry is for an indirect map. This means that the map is referenced to the directory entry in the map file that "calls" it. In this case — auto.master. The first field in each record is the name to watch, under the directory entry that called this name. In this case, /apps will be watched for any of the "key" names in the auto.apps map. When accessed, the remote directory will be mounted, but all of them will be mounted as subdirectories under the same local directory "/apps."

It seems I have lost track of the original goal — putting the maps into NIS. This is not quite so simple. Although automount knows how to look for NIS maps, the NIS shell scripts as shipped do not create automount maps, so some editing is required.

Here are the basic steps:

- Create the raw text map files and put them on the NIS master.
- Edit the following files so they will build the new maps: /usr/etc/yp/ypmake and /usr/etc/yp/ypinit (for building or rebuilding slaves).
- Execute the new ypmake to build and distribute the new maps to all slaves.
- Test with ypcat and ypwhich -m.
- Set up cron files to ypxfr the new map around automatically.
- If previously using a text file automount map, edit /etc/netnfsrc2 to use NIS auto.master map (remove options).

Now I'll go into more detail on those steps that need it.

Creating the map files is easy, but keep in mind how the files are put into dbm format: key data data data.

Also remember that the more places you allow comments the more work it is to strip them back out when putting them into the database.

Editing the ypmake is a tough one. There are four edits that need to be made:

First edit: We need to add a function that will prepare the text file for, then send it through makedbm. This is usually done in two steps: remove comments, and set up keys and values if out of order.

The following examples are for the first two maps as shown above. The third would be done the same way, but I'm saving trees. The raw text files live in /etc. Add these functions after the vhe_list function:

```
auto_master() {
grep -v "^[ ]*#" $1 | grep -v "^[ ]*$" | \
$MAKEDBM - $MAPDIR/auto.master ; }
auto_user() {
grep -v "^[ ]*#" $1 | grep -v "^[ ]*$" | \
$MAKEDBM - $MAPDIR/auto.user ; }
```

This strips blank and comment lines, then pipes the result to makedbm, because the fields are in the correct order already. Note that auto.master would be an invalid name for a function, so the function is named auto_master.

Second edit: In the CASE statement below add a new section for each map:

```
for ARG in $*; do
case "$ARG" in
...
...
auto.master)
if [ `expr "$MAPS" : .* auto.master.*"` -eq 0 ]; then
MAPS="$MAPS auto.master"
fi;;
auto.user)
if [ `expr "$MAPS" : .* auto.user.*"` -eq 0 ]; then
MAPS="$MAPS auto.user"
fi;;
```

Third edit: The "MAP" variable. Add the name of the function:

```
MAPS=${MAPS:-'passwd group hosts networks rpc services protocols netgroup
vhe_list auto_master auto_user'}
```

Last edit: The CASE statement that builds the maps:

```
for MAP in $MAPS; do
case $MAP in
...
...
auto_master) build $DIR/auto.master auto.master;;
auto_user) build $DIR/auto.user auto.user;;
```

Editing the ypinit script is easy. All you have to do is add the new map names to the variable MASTER_MAPS. Then remember to copy the edited /usr/etc/yp/ypinit to all slaves and master. Don't forget future slaves.

Getting It Going

All you need to do is execute ypmake at the master NIS host. Then test to see if it is all correct before trying the whole network. I use the following groups of commands.

Use this to ensure the maps are listed:

```
ypwhich -m
```

Use this to see that the contents of the maps are correct:

```
ypcat -k auto.master
ypcat -k auto.direct
```

If this all works OK, it is time to restart the automount on a test host to be sure it all works. Use kill -TERM to properly kill automount. When you restart, use no options and it should pickup the NIS auto.master map. In the future any edits need only be done to the master NIS host to ensure that all hosts always have a map when they need one. Good luck and enjoy the winter holidays.

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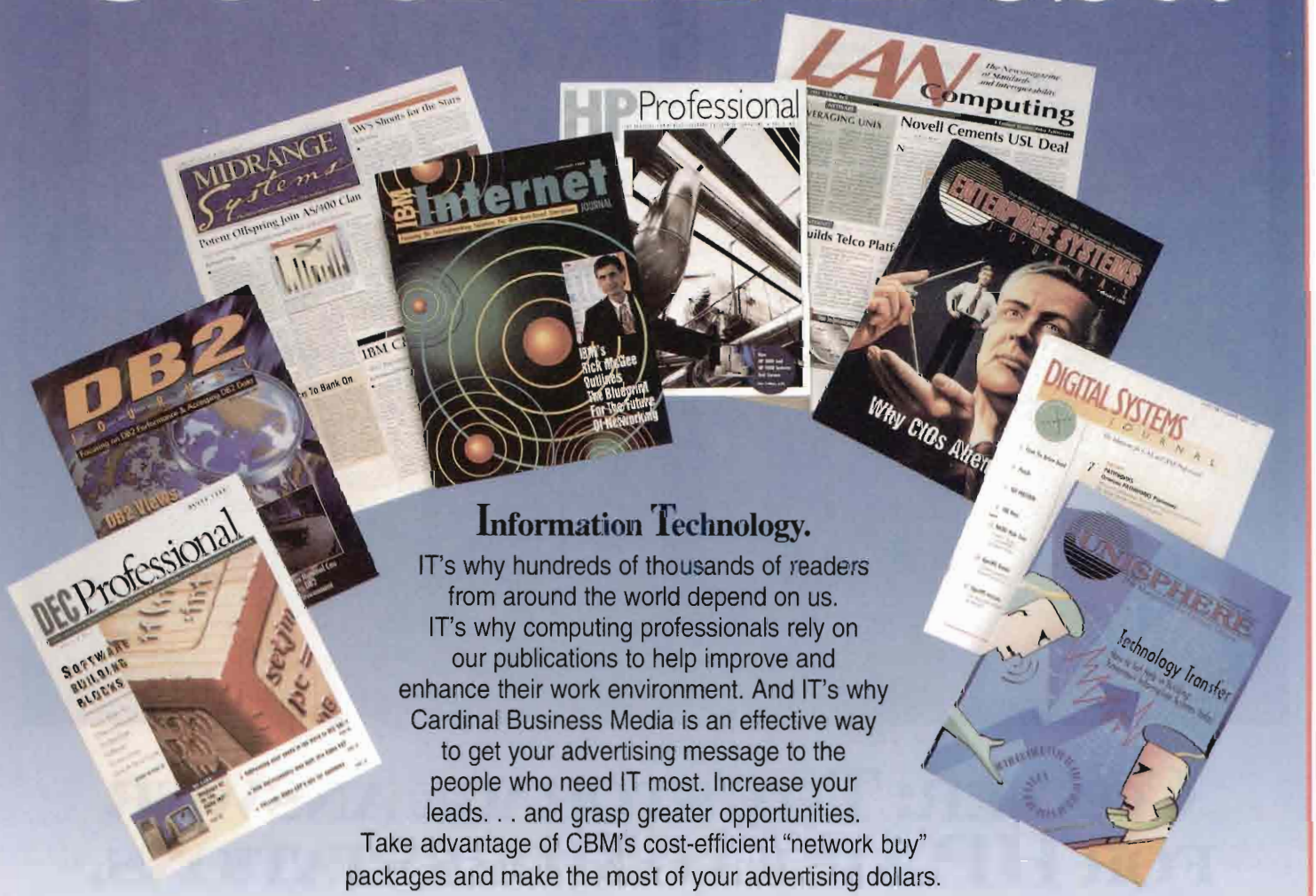

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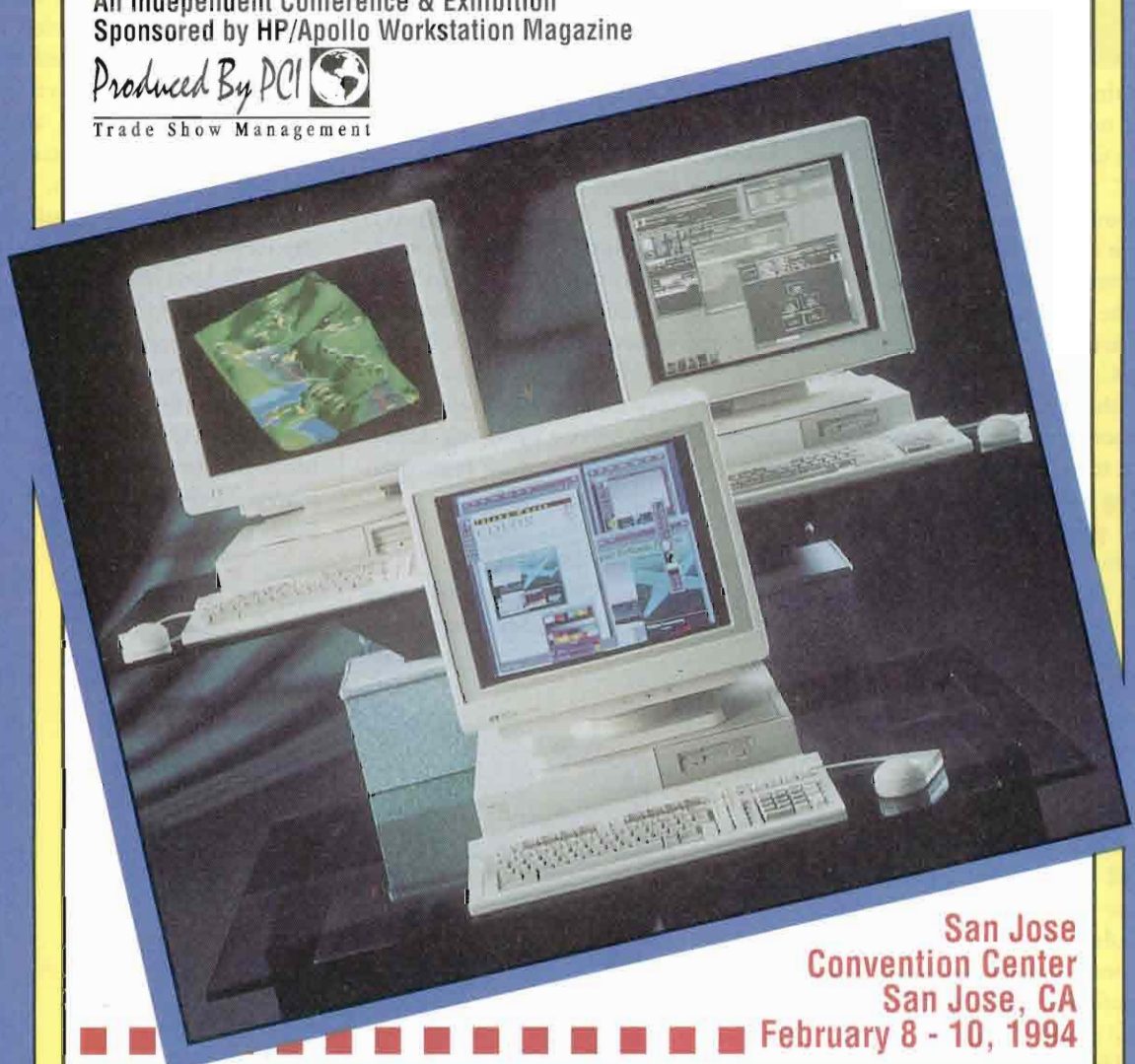

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PC Tips

Miles B. Kehoe

BASIC Resolution

Because it's the end of the year, and because the holidays tend to be popular times to make resolutions, I thought I'd make a suggestion for your "To Do" list for the coming year — learn Visual BASIC.

I can almost hear the groan.

Despite it's popularity, especially in the HP community, BASIC continues to be one of the most maligned computer languages around. To programmers working in C and C++, BASIC is a toy language with wordy syntax, inefficient code and poor structure. To Pascal programmers, it represents the worst in poor programming discipline.

After all, you can use variables you never declare, write incredibly hard to follow code and have none of the tight typing of a pure language. Even programmers who know and love Rocky Mountain BASIC may look down on PC BASIC, which just hasn't measured up to HP's powerful version of the language.

I'm not in the business of recommending software, and I don't want to sound like I'm reviewing the product, but I can tell you without a doubt that it's now time to look at Microsoft's Visual BASIC development environment. Not only does it provide the fastest way to write professional-quality Windows applications, it will change all of your earlier prejudices about BASIC. And, I can almost guarantee that most applications written for internal use by major accounts in the next few years will be based on Visual BASIC.

Microsoft introduced Visual BASIC almost two years ago, and like many 1.0 products, it had its limitations. However, Microsoft is now shipping Version 3.0, a powerful tool for developing front-ends and interfaces for even complex client-server applications. And, with the announcement of Visual Basic for Applications (VBA), I think you'll find any time you spend learning the environment now will pay off handsomely later.

BASIC Window Dressing

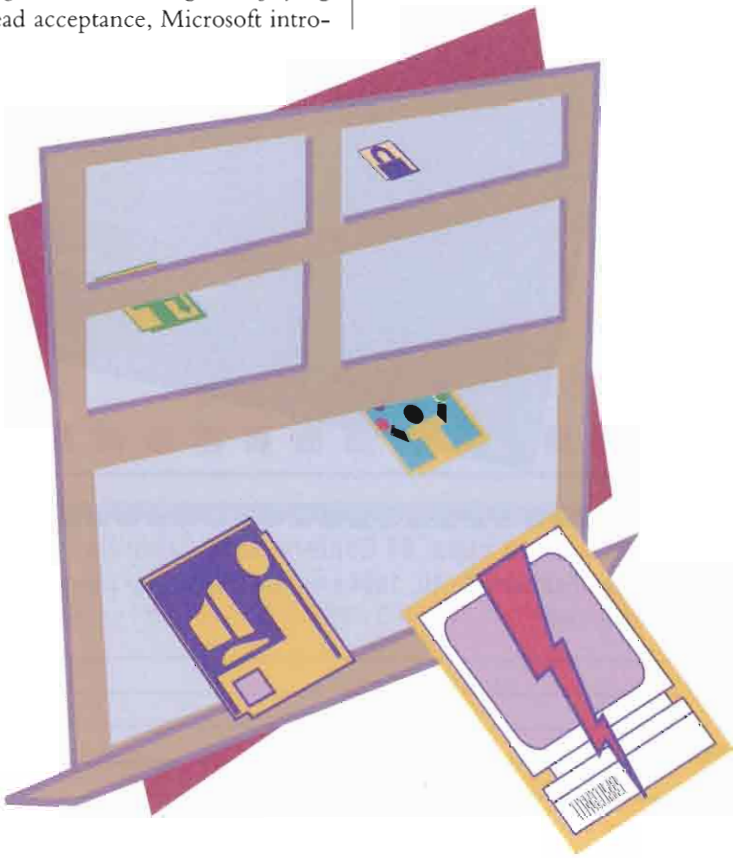
The first member of the VB family was Visual BASIC for Windows (VBW). It is truly a professional development environment, supporting DDE, calls to Windows and C DLLs, OLE 2.0 and access to local and remote SQL databases. In fact, with VB applications, your code can access data on a number of different relational database servers including Allbase and Oracle, as well as from local databases like Paradox and Access.

Other BASIC Views

Not long after VBW began enjoying widespread acceptance, Microsoft introduced Visual BASIC for DOS. This product was somewhat less of a hit than it's predecessor, but nonetheless offers the ability to develop multiplatform applications with a minimum of effort.

In addition, rumors abound that Microsoft will soon be announcing Visual BASIC for Macintosh, a bold move which, if successful, should be a giant step forward for programming shops with both Windows and Mac needs.

And if you've been frustrated by the multitude of macro languages within the Microsoft application family, you'll be happy that Microsoft has started talking about VBA. Over the next year or two, Microsoft plans to implement a common macro environment based on Visual BASIC for Windows for all its Microsoft



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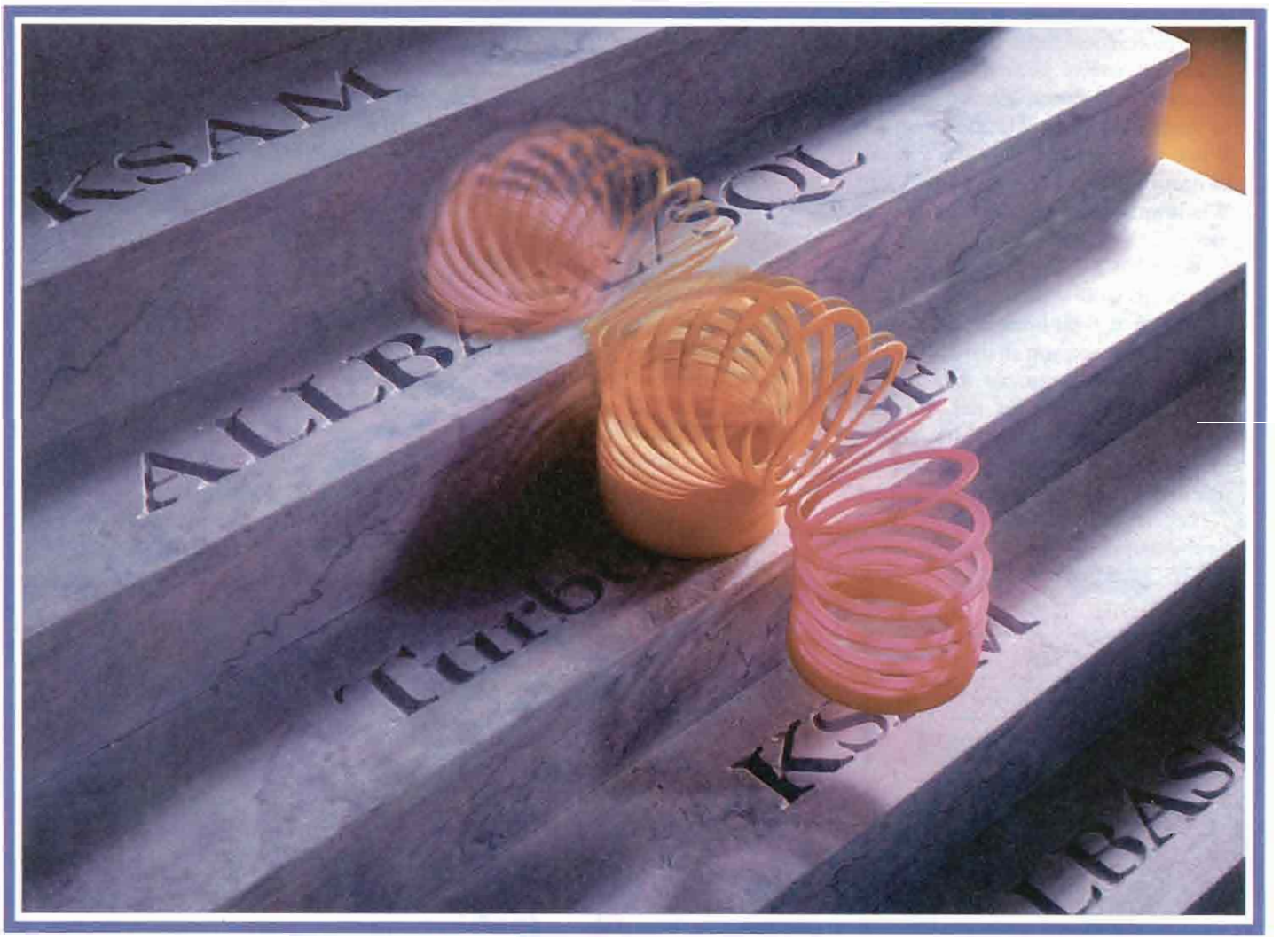

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A BASIC Front-End Tool

What really makes VBW worth your while is the ease with which you can write professional front-ends and applications. If you've poured through the Windows API documentation, or tried to write a "hello world" program for Windows, you know how tiring it can be unless you're already experienced with Windows and a pretty good C programmer.

With VBW, all you need is a few minutes to write a hello world program — complete with buttons, menus and icons. And, once you understand a few simple concepts, you can start writing real applications in days, not weeks or months. I know of some MIS departments that have prototyped complete applications in weeks using VBW after opting to toss out the months of work done in C and C++. It really is that simple.

Once you understand a few concepts, you can write applications in days, not weeks or months.

Once VBA is common in Microsoft's products, and possibly in applications from other vendors, it will be the glue that finally lets you use data from any application within any other application. When you click a cell in a Word for Windows table, you can initiate a VBA subroutine to access a remote database, calculate a value and display the result. From Excel, you will be able to write routines that execute whenever a range changes and pass the results to MS Project.

The fact that you can do it isn't that amazing and it doesn't require VBA. OLE 2.0 provides the foundation for almost all of these examples. The fact you use a common language to perform all of these tasks is the real news, and reiterates why learning Visual BASIC should be on your "To Do" list for the coming year. Who knows, you'll probably thank me this time next year.

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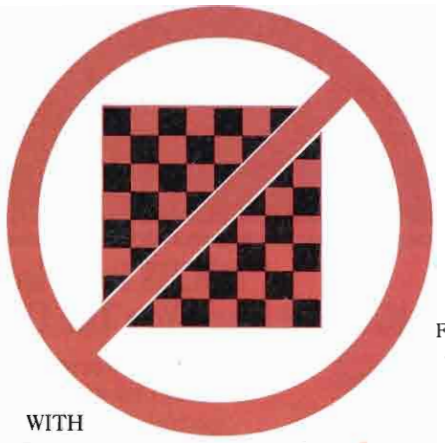

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NETWORKING

Tim Cahoon

Working The Network

The world of TCP/IP, bridges and routers confuses even the best of networkers at one time or another. But for the beginner there are some things that can help make life easier. The first is to get some UNIX experience.

I found that many of the commands, ideas and concepts found in routers and networking were easier to understand when working with UNIX. Pattern matching is an especially good example.

The UNIX editor, VI and other common utilities use the same pattern matching syntax. This syntax then can be transferred to routers when building tables to control routing or access lists. Shell programming, the UNIX equivalent to UDC's and MPE/iX COMMAND FILES, are also great practice for the neophyte networker.

With TCP/IP so tightly integrated into the UNIX operating system, setting up a new system forces you to learn as you go. With the results so easily visible, it becomes one of the best laboratories in which to learn. **Inetd**, **bootp**, **ftp**, **tftp**, **telnet**, **daemons**, **gettys**, and the **/usr/adm/syslog** file are just some of topics you need to understand.

Once you learn about the syslog file, you then must monitor what is being written into it. As I have mentioned in the past, many of the new network concentrators and network-ready LaserJets use **bootp** to download software. Be sure you either disable that feature or have the correct **bootp** server running at all times to reduce network overhead and to keep the syslog file from filling up your disk.

The first function of the Internet is using the newgroups for support information.

If you start to learn UNIX and wish to practice at home, Mix Software (Richardson, Texas) has a product called UX-DOS in their C/Utilities Toolchest. This product allows you to change your DOS machine into a psuedo-UNIX machine. This is not a new operating system, just a set of programs to make DOS act like UNIX. It is fast, fun and inexpensive.

Reference texts also are needed to help both the experienced and novice networker. O'Reilly & Associates Inc. (Sebastopol, Calif.) is a great source for books on networking.

They publish a complete line covering UNIX system administration, X-terminals, networking and UNIX utilities. The only caveat for HP-UX users is that you should skim it first before buying it. Many times the various authors deal only with Sun, DEC and SCO systems. It may not always matter, but HP-UX is substantially different than Sun UNIX, so pick carefully.

Professional Press Books (Horsham, Pa.) has many titles in its library. One I use quite often is *UNIX, QUICK!* This is a great book for DOS users trying to move to UNIX. It gets you going quickly, hence the name, and takes you into some advanced topics painlessly.

Moving Right Along

Once you have that UNIX foundation and understand the complexities of your network, it's time to get onto the Internet, where you'll have access to a world of help and information. There are many different providers of Internet access across the country. The TELECOM forum library on CompuServe has a list which can be downloaded to get you started. I am using MSEN (Ann Arbor, Mich.) to get access to the Internet. For $20 per month I can log onto their system via modem and have full Internet access. They can provide access from just

continued on page 57

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about anywhere in the United States.

What do you do on the Internet? The first function is using the newsgroups for support information. A newsgroup is kind of a big bulletin board focused on one topic. There is a newsgroup for HP users called comp.sys.hp. There are newsgroups for Telebit, Cisco, IBM, DEC, Novell and all sorts of other computer vendors. While these newsgroups are not funded or supported directly by any particular company, many times you will see technical support people answering questions.

Newsgroups provide a way for a large body of users to communicate their problems and solutions to other individuals. Newsgroups are not just limited to technical subjects, but also cover a large range of recreational, social and political topics. Many should only be read after business hours.

Several other popular uses are electronic mail and File Transfer Protocol (FTP). E-mail allows vendors to send you patches quickly. Rather than waiting a day or two for a Federal-Express package, you could receive it in minutes via E-mail. FTP allows you to go directly to another machine and pick up or send files.

Need a binary patch that is not easily sent via E-mail? Then go get it with FTP. Need to send a dump file to a vendor? Put it on the vendors machine with FTP. Using FTP, vendors on the Internet have a machine that you can logon to as ANONYMOUS. This is what is called anonymous ftp.

Telnet is also used, although more rarely, to logon directly in an interactive manner to a vendors' machine. The HP Supportline system is accessible this way as an alternative to dialing in via modem. Cisco Systems also has an online support system available via modem or Internet. The help and information is there, it's up to you to ask for it.

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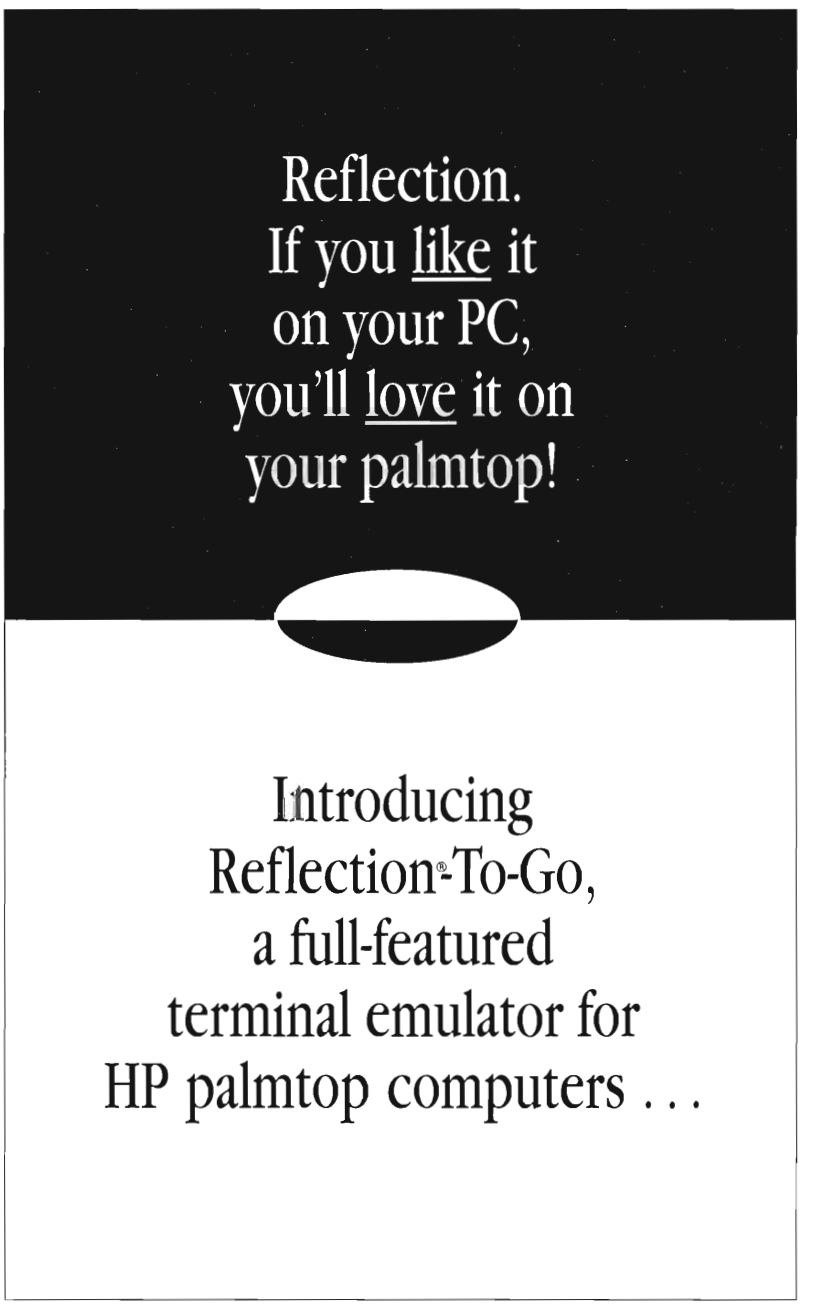

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NEW PRODUCTS

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SE Technologies Inc. introduced EDI services to provide its customers with an interface between most major EDI translators and MRPII applications.

Some key transactions offered include: uploading customer purchase orders (POs) into the order management system as a sales order; sending PO acknowledgements from the order management system directly to a customer; sending invoices from the other management system to a customer; and sending Outbound POs to a vendor directly from the order management system.

Contact SE Technologies Inc., 15 Bank St., Stamford, CT 06901; (203) 357-1772.

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Extended Systems Provides Fax/Printer Accessory

Extended Systems announced a fax/printer-accessory device for HP LaserJet printers. Functioning as both a fax server and a print server, users can send faxes from their PC, and receive faxes to the network or directly to an HP LaserJet printer.

FAXit software from SofNet comes with the product at no extra charge. FAXit enables users to send faxes from within their exisiting DOS and Windows applications. CAS, FaxBIOS and Class 2 standards are supported.

The FaxConnection MFP card is installed into an HP LaserJet IIISi, 4, 4M, 4Si or 4SI MX printer. The PocketFaxServer attaches directly to the FaxConnection MFP. The fax/print services support Novell NetWare 2.11 or later, 386 and 4.0.

FaxConnection MFP with PocketFaxServer ESI-5029A costs $1,095. Single user models, FaxConnection MFP ESI-5020A with 512 KB memory buffer and ESI-5021A with 1 MB memory buffer cost $695 and $890, respectively.

Contact Extended Systems, 5777 N. Meeker Ave., Boise, ID 83704; (800) 235-7576.

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Proton Debuts Multimedia Monitor

Proton Corp. introduced the FM-1561A 15-inch Multimedia Monitor with built-in stereo speakers.

The FM-1561A is a computer color monitor and complete audio/video playback system which includes a 15-inch data grade CRT, a two watt per channel stereo amplifier and integral, shielded, side-mounted three-inch stereo loudspeakers. The audio capability makes this monitor ideal for the new generation of disk-based games and interactive software.

The FM-1561A provides wide input signal compatibility, accepting VGA, Super VGA and non-interlaced video input signals at a maximum resolution of 1,280 x 1,024 pixels.

It offers digital control of 10 standard factory presets that automatically adjust image parameters for optimal reproduction of several software formats, and 10 additional user-adjustable video presets allow for custom setttings.

The Proton FM-1561A Multimedia Monitor costs $799.

Contact Proton Corp., 16826 Edwards Rd., Cerritos, CA 90701; (310) 404-2222.

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The FM-1561A provides enhanced multimedia capability.

SpiderTCP Integrated Into ONline System Concentrator

Chipcom Corp. announced the integration of SpiderTCP from Spider Software into its ONline System Concentrator line of intelligent switching hubs.

SpiderTCP is a portable STREAMS-based implementation of the TCP/IP protocol suite. It includes a full Symmetric Multiprocessor kernel stack that enables users to build multiprocessor-based systems that support open systems networking.

SpiderTCP will allow users of Chipcom's 17-Slot or 6-Slot ONline System Concentrator to remotely manage these devices via TelNet.

Contact Chipcom Corp., Southborough Office Park, 118 Turnpike Rd., Southborough, MA 01772-1886; (508) 460-8900.

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Data Visualizer Achieves Interactive Data Analysis

Wavefront announced Data Visualizer 3.0, an interactive data analysis and presentation package that offers exceptional performance and usability with multiple forms of 3D and time-dependent field data.

The software provides a set of data inspection tools for viewing complex scalar and vector information from within a "direct manipulation" user interface.

Data Visualizer is data and image compatible with Wavefront's line of presentation graphics products. It is available on workstations from HP, IBM, Sun Microsystems and Silicon Graphics. Cost ranges from $6,500 to $9,500.

Contact Wavefront, 530 E. Montecito St., Santa Barbara, CA 93103; (805) 962-8117.

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Optical Jukebox Solution Provided For UNIX

Advanced Archival Products Inc. (AAP) and Cygnet Systems Inc. announced the availability of the AMASS optical disk jukebox file system

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Circle 395 on reader card

SQLWatch Monitors Client-Server RDBMS

Pace Systems Inc. announced that their online performance monitor for Sybase and Microsoft SQL servers will be marketed and supported by Bradmark Technologies Inc.

SQLWatch is an online performance monitor running on a DOS Windows PC as a client, while monitoring Sybase or Microsoft SQL servers on any platform.

Contact Bradmark Technologies Inc., 4265 San Felipe, Ste. 800, Houston, TX 77027; (713) 621-2808.

Circle 394 on reader card

McLean Group Supports High-Speed Printing

The McLean Group Inc. announced TMG-4, a family of Advanced Printer Servers that enable medium to large HP 3000 and HP 9000 system users to connect to high-speed system printers as provided by IBM, Xerox and Siemens.

TMG-4 employs high-speed 486 VESA platforms with PCL emulation for native IBM, Xerox and Siemens printer command language. Users will be able to direct PCL Native Spooler print files, from up to three input hosts, to any of four target printers with combined output up to 250 ppm of text data.

Hardware connections to the TMG-4 accept standard HP printer drivers, operating under MPE and HP-UX, LAN-Drivers under Ethernet, or IBM Channel Interface/Drivers for IBM printers. Input interface controllers include HP 3000, HP 9000, HP-IB, SCSI and Ethernet (10Base2 or 10BaseT).

Printer emulation will be the HP 256X line matrix printers.

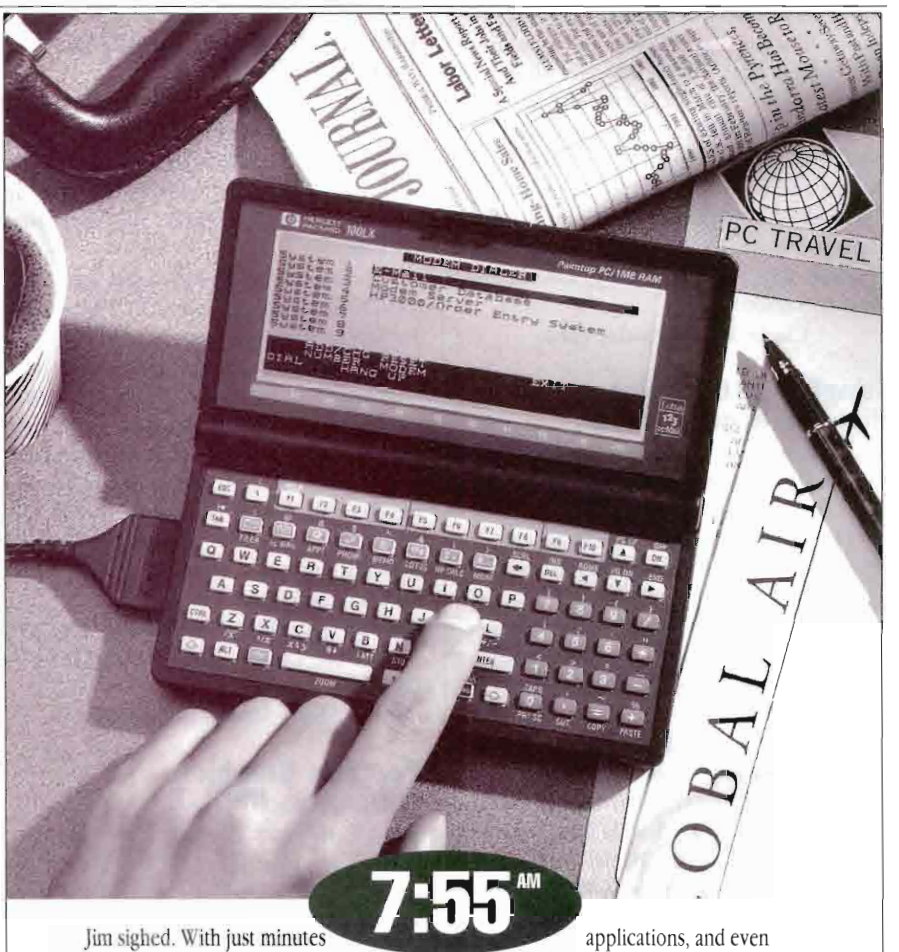
Contact The McLean Group Inc., 801 Brewster Ave., Redwood City, CA 94063; (415) 299-1100.

Circle 393 on reader card

Ross Systems Announces GEMBASE 5.1

Ross Systems Inc. announced the availability of GEMBASE 5.1, a powerful 4GL application development environment.

GEMBASE is designed for midrange open



Jim sighed. With just minutes to catch his flight, the boss wants the memo he wrote yesterday! Good thing he has Reflection-To-Go® on his HP palmtop computer.

Reflection-To-Go is a full-featured Reflection® terminal emulator, complete with modem dialer and command language, on a PCMCIA card. Thanks to Reflection-To-Go, Jim logs on to the HP 3000 right from the airport. Because Reflection-To-Go works with PCMCIA and external modems, as well as direct serial connections. Jim uses HP DeskManager, works on block-mode applications, and even transfers files over the phone. (Like a letter composed in Memo Editor.)

"Now boarding Flight 7 . . ." Jim smiles to himself. The memo is on its way.

The moral? Make a note: if you have an HP 100LX or an HP 95LX, Reflection-To-Go helps you work smarter.

Call 1-800-92NETWORK

WRQ Reflection®

Making PC Connections Count

Walker Richer & Quinn, Inc.
2815 Eastlake Avenue East, Seattle, Washington 98102 / 206.324.0407 / FAX: 206.322.8151
Buitenhof 47, 2513 AH Den Haag, The Netherlands / +31.70.375.11.00 / FAX: +31.70.356.12.44
Reflection and Reflection-To-Go are registered trademarks of Walker Richer & Quinn, Inc. All other trademarks are the property of their respective holders.

CIRCLE 262 ON READER CARD

system solutions and offers developers a database-independent environment, supporting relational database products such as Oracle, Sybase, Ingres and Rdb. GEMBASE applications also can be designed to run on PCs and terminals. In addition to providing a development environment for new client-server solutions, GEMBASE also supports legacy systems, providing and enabling technology that simultaneously supports Windows and character cell interfaces.

Under GEMBASE 5.1 architecture, developers can produce applications with a flexible client-server model where processing is performed on either the client or the server.
Contact Ross Systems Inc., 555 Twin Dolphin Dr., Redwood City, CA 94065; (415) 593-2500.

Circle 392 on reader card

StingRay 210 Produces High I/O Request Rate

MTI announced a high-performance disk array which provides systems managers with a high I/O request rate.

The StingRay 210 uses SCSI drives offering 7200 rpms, an average latency of 4.17 ms and an average access time of 12.17 ms, resulting in performance of 110 I/Os per second per drive. A single drive configuration provides 2.1 GB of capacity in a compact 3 1/2-inch form factor.

Up to four SR210 drives may be installed into a half-rack enclosure for 8.4 GB of storage. Alternatively, seven SR210 drives may be mounted in a full-wide Moray chassis for more than 14.7 GB of physically contiguous storage. As many as 42 drives may be connected to a StingRay Gemini server, balanced across six independent SCSI buses. In addition, the Moray chassis offers the capability for each drive to be hot swapped.

Pricing starts at $6,470.
Contact MTI, 4905 E. La Palma Ave., Anaheim, CA 92807; (714) 970-0300.

Circle 391 on reader card

JMS And Callback/3000 Available For HP-UX

Design/3000 announced the availability of JMS, an HP 3000 Job Scheduling System, and Callback/3000, a "lights out" computer monitoring system, on HP-UX.

These products enable HP-UX data centers to create an operatorless environment that manages jobs and monitors systems for unscheduled events such as system hangs, power failures, job aborts or any other configured external event.
Contact Design/3000 Inc., 1214 Hawthorne Ave. NE, P.O. Box 13086, Salem, OR 97309-1086; (503) 585-0512.

Circle 390 on reader card

EDS Unigraphics Supports Spaceball 2003

Spaceball Technologies announced that EDS Unigraphics has implemented direct support for Spaceball Technologies 3D input device, the Spaceball 2003, within Unigraphics Version 10 CAD/CAM/CAE application package.

In addition to being compatible on all UNIX platforms supported by Unigraphics, including HP 9000 and Sun Microsystems SPARCstations, the Spaceball is now supported on DEC VAX/VMS platforms.

The Spaceball is an advanced input device for providing smooth, dynamic interactive control of 3D models, with simultaneous six-degrees of freedom control. It consists of a tennis ball-sized sphere mounted on a molded platform occupying about 10 inches by four inches in desktop space.
Contact Spaceball Technologies Inc., 600 Suffolk St., Lowell, MA 01854; (508) 970-0330.

Circle 389 on reader card

Portable Graphics Announces NPGL-X

Portable Graphics announced a version of its hardware-independent NPGL library that permits Silicon Graphics applications to be accessed through X terminals. Using Xlib, software developed with the Silicon Graphics' IRIS GL 4.0 library can be used remotely across a network on any color X11 server without special graphics acceleration hardware.

All primitive rendering and GL window management is handled through X11 on the server side, while the client side maintains the GL state and executes the geometry pipeline. Double-buffered operations are supported if the X server supports Xlib multibuffering extensions.

Simple 3D applications meant for widespread use can be developed through IRIS GL's simplified windowing system and powerful GL-widgets. Also, NPGL-X performance is well-suited for 3D applications that use flat-shaded polygons, and 2D or 3D wireframe operations.

NPGL-X is priced at $1,900 for each host, with unlimted X server access.
Contact Portable Graphics Inc., One Technology Center, 2201 Donley Dr., Ste. 365, Austin, TX 78758-4538; (512) 908-4700.

Circle 388 on reader card

Datametrics Adds Features To ViewPoint 3.1

Datametrics shipped v3.1 of ViewPoint, the real-time performance monitor and system tuning tool for A Series systems.

ViewPoint displays real-time "live" data from a running system — on your office or home PC — or "recent past" data for analysis and investigation of problems after the fact. The built-in PC analysis tools automate the detection of critical conditions and dramatically reduce the amount of time needed to diagnose A Series performance problems.

Enhancements include: COMS Transaction/LINC Data, which provides detailed information on each transaction executed including transaction response time; an Expressions feature, which provides Boolean logic capabilities for data analysis; and AutoInvestigate, which automatically searches through your trace file to pinpoint periods of abnormal behavior, allowing you to quickly identify the cause of performance problems.
Contact Datametrics Systems Corp., 12150 E. Monument Dr., Ste. 300, Fairfax, VA 22033; (703) 385-7700.

Circle 387 on reader card

Interface Released For IEF And AutoTester Plus

AutoTester Inc. released an interface between the Texas Instruments (TI) Information Engineering Facility (IEF) and AutoTester Plus, a comprehensive multiplatform PC-based test automation system.

IEF is TI's integrated, model-driven application development software tool. TI has used its IEF software tool to develop and maintain MAXIMIS, a large investment management software system.

The interface extracts application definitions from the IEF model of the MAXIMIS system — composed of about 350 screens — and converts them into AutoTester Plus format. AutoTester Plus can then generate an automated operator in the form

of test scripts that operate the applications and verify that the defined business function is being performed as expected.

The AutoTester interface also offers a long-term answer to the inevitable maintenance issues that arise as applications are enhanced and modified.

Contact AutoTester Inc., 8150 N. Central Expwy., Ste. 1300, Dallas, TX 75206; (214) 368-1196.

Circle 384 on reader card

Wheeltech International Enhances Storage of Disks

Wheeltech International introduced FloppyMaster 150, an inexpensive way to store and retrieve 3 1/2-inch disks, flopticals, and 8mm and 4mm CBUs. This instant access, zero footprint disk carousel holds up to 150 disks, 75 flopticals and 25 8mm or 4mm CBUs.

This product eliminates the need to search through drawers and boxes to find specific disks. The carousel fits between the CPU and the CRT and therefore frees up desk space. A locking version is available at no extra cost.

Also announced was the CD Master 40/20 which provides storage for compact disks and audio cassettes.

Contact Wheeltech International Inc., 455 E. Eisenhower Pkwy., Ste. 108, Ann Arbor, MI 48108; (313) 994-9584.

Circle 385 on reader card

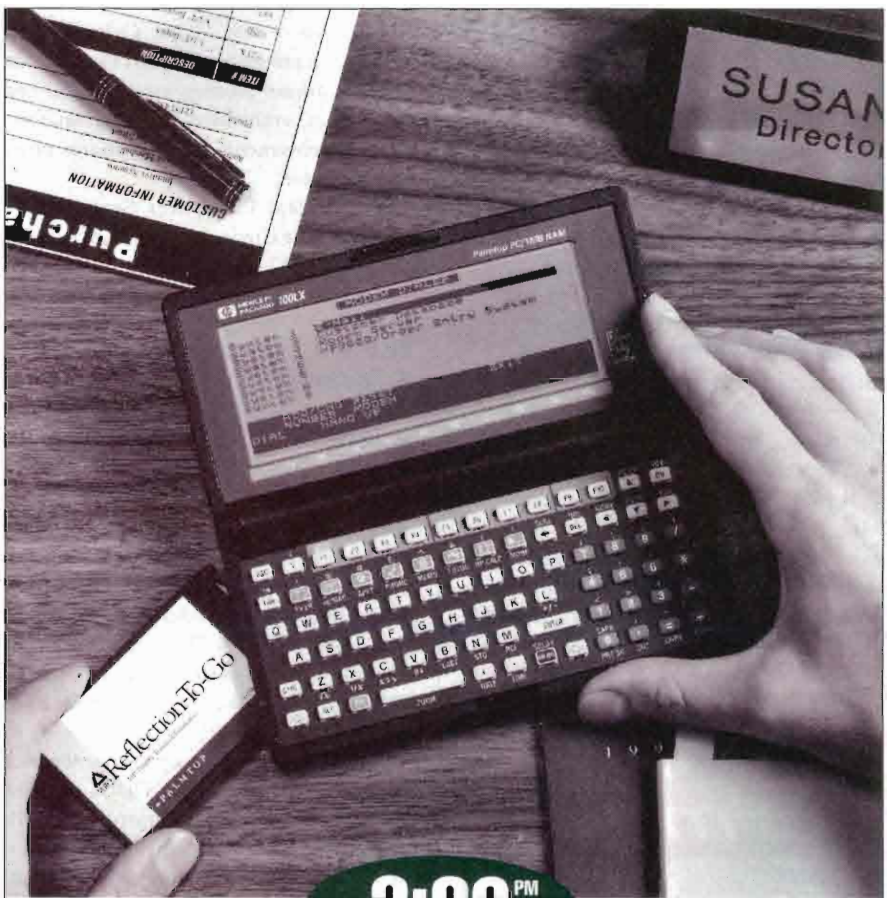
The FloppyMaster 150 frees up valuable desk space.

FlexStor Software Brings Distributed HSM To Sun

Introl Corp. unveiled FlexStor software, the first distributed Hierarchical Storage Management (HSM) software solution for Sun Microsystems environments.

FlexStor automatically and transparently migrates data files to the most cost-effective medium based on user-definable criteria. Migration is supported for all popular SCSI disks to rewritable optical disk libraries from HP, IDE, NKK and all Exabyte 8mm tape libraries.

Once installed, no further administration is required. It automatically monitors all data on the system and migrates files based on the setup criteria.



Jim felt his stomach tense. Two months' work is riding on this sale, and finally he is in the client's office. Then the client asks, "How soon can you deliver?"

Success! Thanks to Reflection-To-Go® on his HP palmtop computer, Jim has the answer—straight from the HP 3000. "The order will ship tomorrow."

Reflection-To-Go lets Jim dial in to the HP 3000 anytime. Even when it's 3:30 p.m. on the West Coast, and the East Coast office is closed. Reflection-To-Go is a complete Reflection® terminal emulator that uses state-of-the-art PCMCIA technology. It fits on a credit-card sized card. Now, Jim works on block-mode applications, checks HP Desk messages, or transfers files from almost any phone—without packing any extra baggage.

The moral? Stay in touch: if you have an HP 100LX or an HP 95LX, Reflection-To-Go helps you work smarter.

Call 1-800-92NETWORK

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Reflection-To-Go works with PCMCIA-based modems, external modems, or over a direct serial connection.

CIRCLE 262 ON READER CARD

In addition to client level file migration, server migration also is supported, with files automatically migrated to and from local client disks through the network hierarchy to the server disk, near-line disk or tape, and finally off-line tape.

Each client-server module operates as part of the overall HSM environment, but they also are run as independent processes.

FlexStor HSM software starts at under $4,000 and varies depending on the type of library storage device and number of migration clients in the network.

Contact Introl Corp., 2817 Anthony Lane S, Minneapolis, MN 55418-3254; (612) 788-9391.

Circle 383 on reader card

Ideal Computer Releases 480D Plus Printer

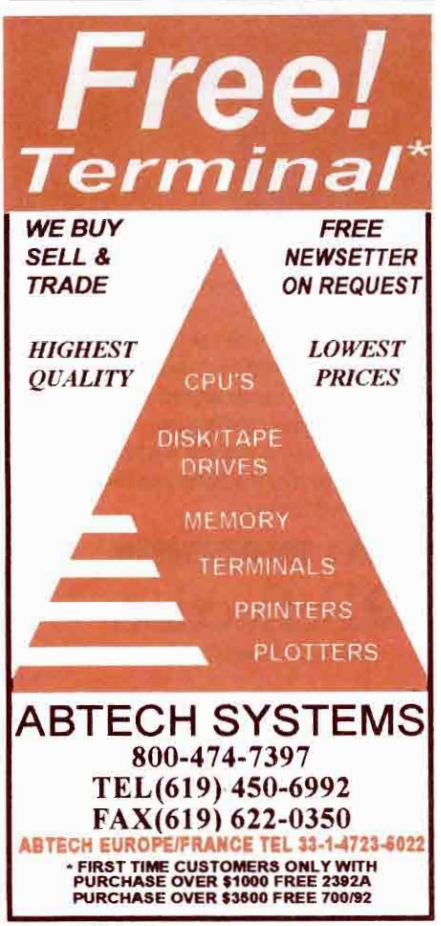
Ideal Computer Services released the 480D Plus printer which is targeted to replace the HP 2934A printer.

The 480D Plus emulates the PCL Level 3 language of the HP 2934A printer along with its bar code capabilities. Remote spooling is fully supported, term type support covers TT19, TT21, TT22, TTPCL19, TTPCL22, TTPCL26 and is fully compatible on Classic or Spectrum series of HP 3000 computers. In addition, the printer supports the HP 1000, A-Series with 'ENQ/ACK' protocol.

The 480D has been ergonomically engineered to assure true push-button operation. Also, five different Demand document operational features ensures the elimination of lost forms. Other features include five printer profiles, hot key switching between printer profiles, expanded bar code capabilities, embedded linefeed, fineform, speed improvements and an optional power printer tractor.

Contact Ideal Computer Services, 113 Rickenbacker Circle, Livermore, CA 94550; (510) 447-4747.

Circle 382 on reader card



CIRCLE 203 ON READER CARD

Phase X Expands X Terminal Line

Phase X Systems Inc. announced a new generation of high-end, high-performance X terminals. The newly designed X terminals feature the LR33020 MIPS RISC processors from LSI Logic, a new X11R5 server software and a line of high resolution monitors.

The models include a high-resolution 19-inch monochrome model PX19ME, a 17-inch color model PX17CE1, a 19-inch color model PX19CE2 and a 20-inch color model PX20CE2. All monitors have a refresh rate of 72 Hz.

The CE models have a performance rating of over 100,000 Xstones. The X terminals include a minimum memory of 4 MB, expandable to 52 MB with 1 MB, 4 MB or 16 MB SIMM increments. Each terminal supports up to 2 MB of PROM and up to 2 MB of FLASH memory ROM as well as 2 KB NVRAM.

They are shipped with Xcellent, a new X11R5 X server software at no additional charge. Xcellent suports HP-UX, Sun OS, Solaris, VMS, Ultrix, AIX, DG-UX and Sequent. The supported GUI standards include Motif, OpenLOOK, SCO Open-Desktop and DEC Windows.

Prices range from $2,495 to $3,995.

Contact Phase X Systems, 19545 NW Von Neumann Dr., Ste. 210, Beaverton, OR 97006; (503) 531-2400.

Circle 381 on reader card

Empress RDBMS Enhances Newspaper Production

Empress Software Inc. announced that its RBDMS and 4GL provide the image file tracking and retrieval capabilities in two new software products designed to increase the speed and efficiency of newspaper production.

SCOOP:OPI and SCOOP:Router, developed by Systems Integrators Inc. (SII) perform a variety of image handling, output device monitoring and output mangement functions to optimize page throughput.

SCOOP products were developed with Empress Version 4.8 for Sun Workstations running under the Solaris 1.1 operating system.

SCOOP:OPI speeds the layout of camera-ready newspaper pages by allowing images such as photographs, maps, charts and display ads to be stored on a production-dedicated Sun Workstation and retrieved on PCs, Macintosh and SII workstations.

SCOOP:Router functions as the monitoring system for all SII pagination and process control products.

Contact Empress Software Inc., 6401 Golden Triangle Dr., Ste. 220, Greenbelt, MD 20770; (301) 220-1919.

Circle 380 on reader card

MathSoft Announces Two Electronic Books

MathSoft Inc. introduced two electronic books: *Electrical Power Systems Engineering* and *Building Thermal Analysis*. Used with MathSoft's technical calculation software Mathcad, these new electronic books are geared toward design and power engineers.

MathSoft's electronic books are online reference tools for instant access to "live" formulas, constants and diagrams from hard-copy reference handbooks. Electronic books can save time and boost productivity because users can calculate answers right in the electronic book or save them for easy reference in a Mathcad worksheet.

Electrical Power Systems Engineering was designed for practicing power engineers and electric power engineering students. Each chapter comes with a background section describing the principles and practices involved. Subsections showing problems are also described, and analysis techniques are presented using Mathcad's graphing capability to provide a complete description of the results.

Building Thermal Analysis covers the field of heat transfer in buildings. It solves common problems in the area of building thermal design.

The books cost $99, require a PC, Mathcad 3.1 or higher, and 2 MB hard disk space.

Contact MathSoft Inc., 201 Broadway, Cambridge, MA 02139-1901; (617) 577-1017.

Circle 379 on reader card

MathWorks Introduces Symbolic Math Toolbox

The MathWorks Inc. introduced the Symbolic Math Toolbox and the Extended Symbolic Math Toolbox, two extensions to MATLAB that integrate powerful symbolic computing with high-performance numeric computation. Both products are based on embedded versions of Maple V, developed by Waterloo Maple Software.

The Symbolic Math Toolbox includes new MATLAB commands for over 40 commonly used symbolic functions in Maple. The toolbox also provides commands for variable precision arithmetic, direct access to the Maple kernel, and Maple's core math library and linear algebra module.

The Extended Toolbox is a superset that includes access to Maple's programming language, the ability to create and execute Maple functions and applications, and the complete set of over 20 Maple software packages for specialized fields such as number theory, power series and geometry.

The Symbolic Math Toolbox costs $495 and the Extended Math Toolbox costs $695. Contact The MathWorks Inc., Cochituate Place, 24 Prime Park Way, Natick, MA 01760; (508) 653-1415.

Circle 378 on reader card

Reflection 1 For Windows Includes HP ANSI Emulation

Walker Richer & Quinn Inc. (WRQ) shipped Reflection 1 for Windows which offers HP ANSI emulation.

In version 4.1, Reflection 1 for Windows will be a complete package for customers who need VT emulation in an HP 3000 environment. The HP ANSI emulation (VT220, VT102, VT52) will enable users to run host applications such as UDMS and Oracle.

Other features include: support for additional HP 700/94 terminal features; graphical interface for keyboard mapping; floating host keyboard; Zmodem support for downloading files from bulletin boards; Reflection FTP for Windows; enhanced printing; and improved connection management.

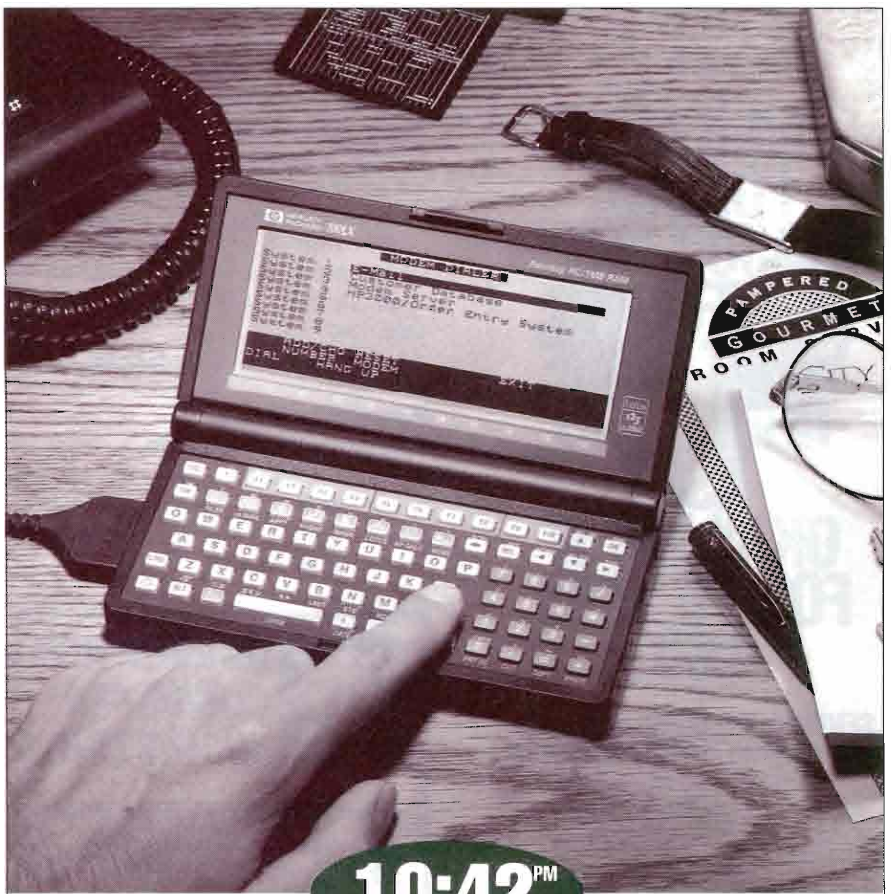
Single copy price is $399.

Contact WRQ, 2815 Eastlake Ave. E., Seattle, WA 98102; (800) 872-2829.

Circle 374 on reader card

AIB Software Introduces Debugging Tool

AIB Software Corp. announced that Version 1.4 of SENTINEL debugging environment for UNIX C, C++ and X-Windows



What a day! A long flight, a big sale, and his hotel bed is waiting—but first, Jim checks HP DeskManager.

Thanks to Reflection-To-Go* on his HP palmtop computer, Jim reads his e-mail from the comfort of his hotel room. Or transfers files, or works on block-mode applications. Reflection-To-Go is a full-featured terminal emulator, completely integrated on a PCMCIA card that just pops into the palmtop—you never need to download from a PC!

So . . . the meeting is set for noon and the office needs a reply by morning. A quick hot-key to the Appointment Book confirms his schedule. No conflicts. He hot-keys back to HP Desk. He'll answer now. After all, he has plans for tomorrow morning—he'll be sound asleep.

The moral? Rest easy: if you have an HP 100LX or an HP 95LX, Reflection-To-Go helps you work smarter.

Call 1-800-92NETWORK

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Reflection-To-Go works with PCMCIA-based modems, external modems, or over a direct serial connection.

CIRCLE 262 ON READER CARD

programmers is available for the HP-UX operating system.

SENTINEL operates on HP-UX 8.0 and 9.0 on the UNIX system-based HP Apollo 9000 Series 700 workstation and HP 9000 Series business servers. Version 1.4 debugs programs faster, detects more types of errors and provides additional reports.

SENTINEL is a library of routines that can be linked into UNIX C and C++ programs to help programmers locate and resolve hidden bugs in the use of dynamic memory. It traps memory errors, traces stack and reports the source file, function name and line number of the offending statements.

Price is between $695 and $995.

Contact AIB Software Corp., 46030 Manekin Plaza, Ste. 160, Dulles, VA 20166; (703) 4300-9247.

Circle 373 on reader card

PowerRite Pro UPS Prolongs Battery Life

Deltec Corp. announced the availability of its PowerRite Pro family of Uninterruptible Power Systems (UPSs) that extend the life of batteries inside the UPS.

Advanced Battery Management (ABM) extends the life of batteries up to 10 years; recharges batteries within three to four hours after a blackout; and alerts the users of battery status, through front panel LEDs and optional monitoring software, up to 60 days prior to depletion providing time to replace the UPS before the next power crisis.

The PowerRite Pro has three charging states — fast, floating and rest — which eliminates the constant trickle charging that starves a battery's electrolytes causing premature failure.

The PowerRite Pro features status indicators, audible alarms, RS/232 communications interface and optional LAN interface software for UNIX, Novell, 3Com and Macintosh systems.

Models are available in 400VA, 600VA, 1000VA, 1440VA, 1920VA and 2200VA capacities. Prices start at $449.

Contact Deltec Electronics Corp., 2727 Kurtz St., San Diego, CA 92110; (800) 854-2658.

Circle 372 on reader card

CenterLine Software Announces TestCenter

CenterLine Software Inc. announced TestCenter, a software testing tool designed to help UNIX C and C++ programmers easily locate and correct program errors while providing them with test coverage information to understand the thoroughness of their error checking and testing.

TestCenter offers a suite of features for automatic run-time error checking and memory leak detection on executables, designed to enhance code quality and optimize program memory use. TestCenter also offers a graphical test coverage to help programmers more fully understand what portions of their applications have and have not been tested for run-time errors, memory leaks or other customer-defined tests.

A single user license costs $1,295 and a floating license costs $2,995.

Contact CenterLine Software Inc., 10 Fawcet St., Cambridge, MA 02138-1110; (617) 498-3000.

Circle 377 on reader card

Proactive Systems Offers FLEXIBASE For IMAGE/SQL

Proactive Systems released FLEXIBASE for IMAGE/SQL and are offering it free to all HP 3000 IMAGE users.

READY TO DEBUG IN MINUTES. PAYS FOR ITSELF IN HOURS. AVAILABLE FOR ALL MAJOR UNIX PLATFORMS. WHAT MORE COULD YOU ASK? OKAY. TRY IT FOR 15 DAYS FREE.

SENTINEL: The Single Choice For Multi-Platform Memory Debugging.

There's only one way to develop quality software for heterogeneous environments. Debug with SENTINEL.

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FLEXIBASE for IMAGE/SQL uses an MS-Windows GUI and client-server architechture to make it easier to configure and maintain IMAGE/SQL.

FLEXIBASE for IMAGE/SQL will be included as a component of FLEXIBASE/IMAGE and FLEXIBASE/SQL.

Contact Proactive Systems, Four Main St., Los Altos, CA 94022; (415) 949-9100.

Circle 376 on reader card

Frame Technology Introduces FrameMaker 4

Frame Technology released FrameMaker 4, a writing and publishing software for UNIX, Windows and Macintosh platforms.

FrameMaker 4's new features fall into six major categories: improved user interface; more powerful page and document formatting tools; advanced color and graphics support; improved information management capabilities; and extensible architecture.

FrameMaker 4 is targeted at professionals who create, manage and distribute documents which typically have a longer lifecycle, are frequently revised and updated, and contain more complex document content and formatting.

Prices vary depending on platform.

Contact Frame Technology Corp., 1010 Rincom Circle, San Jose, CA 95131; (408) 433-3311.

Circle 375 on reader card

EasyReporter Version 7 Runs on UNIX Platform

Speedware Corp. announced the availability of EasyReporter Version 7, an end-user report-writing tool, on the UNIX platform using Oracle, Sybase, Allbase and C-ISAM databases.

EasyReporter is designed to work with the varied PC tools used for monitoring different aspects of a business while requiring only the EasyReporter dictionary. It also used the Dynamic Data Exchange (DDE) to facilitate the distribution of data from the corporate computer to the PC.

In addition to DDE, data exchange file formats have been created for PC products such as SYLK for Excel, WK1 for Lotus 1-2-3 and DBF for dBase.

Contact Speedware Corp., 150 John St., 10th Fl., Toronto, ON M5V 3E3; (416) 408-2880.

Circle 371 on reader card

Tivoli Systems Enhances Management Environment

Tivoli Systems Inc. announced several enhancements to the Tivoli Management Environment systems management software, including new tools for managing printing and E-mail services across distributed computing environments and the availability of the software for IBM RS/6000 systems.

Tivoli/Print, is an application for managing distributed printing services. it provides a common, graphical interface for managing printing services running in HP-UX, Solaris, SunOS and AIX environments. Using a point-and-click interface, system administrators can remotely and easily remove, reprioritize, check the status of or move print jobs among print queues, and reset and disable printers.

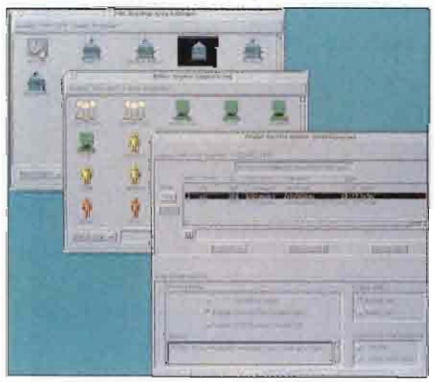
Mail alias management, a new feature of Tivoli/Works, gives customers more control over the process of managing mail aliases. Mail aliases are the complex translations between the addresses in electronic mail messages and actual mail-delivery names and locations.

Tivoli 1.6, Tivoli/Print and the mail alias management capability are available for HP 9000 Series 700 and 800 systems running HP-UX 9.0, and Sun SPARC systems running SunOS V4.1.3. It will also be available for IBM RS/6000 systems running AIX 3.2.4 and Sun SPARC systems running Solaris 2.3.

Price for Tivoli 1.6 is $925 per management station and $625 per managed client.

Contact Tivoli Systems, 6034 W. Courtyard Dr., Ste. 210, Austin, TX 78730; (512) 794-9070.

Circle 370 on reader card



Tivoli/Print manages distributed printing services.

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380 345 320
375 340 310
370

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HP RENTALS

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Bradford Business Enhances SpeedEdit/iX

Bradford Business Systems Inc. released version A.06.030 of SpeedEdit/iX for MPE/iX-based systems.

The enhancements include a complete list of COBOL keyword expansions which allow the user to type the first few letters of a COBOL expression, then SpeedEdit automatically completes this statement. The keyword expansion facility is available for all languages, not just COBOL.

The release also provides stronger keyboard macro support with the inclusion of editable macros and better keyboard remapping support.

Release A.06.030 of SpeedEdit provides strong support for the MPE/iX POSIX subsystem. SpeedEdit now can be run from either the MPE shell or the POSIX shell.

Contact Bradford Business Systems Inc, 23151 Verdugo Dr., Ste. 114, Laguna Hills, CA 92653; (714) 859-4428.

Circle 369 on reader card

MagicGate Gateways Shipped For Magic 5.5

Magic Software Enterprises announced new MagicGate database gateways for Oracle, Sybase and Rdb RDBMSs.

Developers using MagicGate can create applications in version 5.5 of Magic regardless of their structure or location in the computing environment. Multiple data sources also can be accessed from within the same application.

Magic 5.5 and MagicGate database gateways provide a client-server architecture that enables transparent cross-platform portability and interoperability.

MagicGate gateways handle all database activity, according to the requests of the Magic application. MagicGate supports the files of the relevant RDBMS software and also recognizes the storage type and sizes of the RDBMSs. Embedded SQL commands in Magic are executed by MagicGate, which actually prepares and executes the statement onto the RDBMS dynamically.

Prices vary depending on platform.

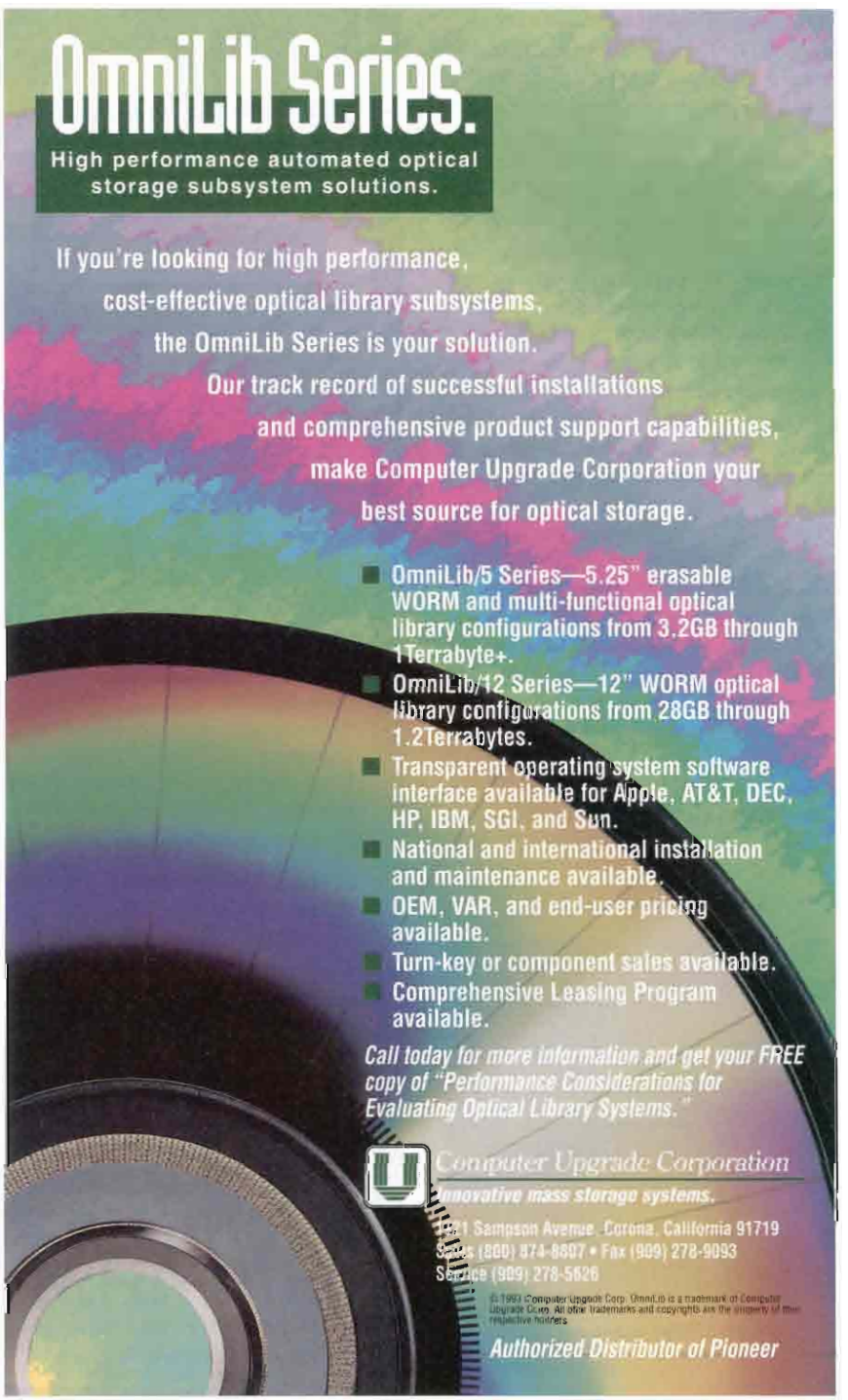
Contact Magic Software Enterprises Inc., 1200 Main St., Irvine, CA 92714; (714) 250-1718.

Circle 368 on reader card

KnowledgeWare Inc. Expands ADW

KnowledgeWare Inc. announced products that expand the Application Development Workbench (ADW) as a scalable, client-sever development environ-ment for building industrial-strength applications. These products include: ADW/Workgroup Coordinator which supports team development through a LAN-based, multiuser encyclopedia with dynamic, real-time information access and update; and ADW/Workgroup Manager to simplify and control the development efforts of multiple workgroups.

Also, KnowledgeWare signed a licensing



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agreement with R&O GmbH for the open, portable ROCHADE client-server repository. ROCHADE will provide control and management at the enterprise level for multiple ADW encyclopedias as well as access to information from other information sources such as third-party application development tools.

ADW/Workgroup Coordinator is priced at $10,000 per server. Price for ADW/Workgroup Manager has not yet been determined. Price for the ROCHADE Repository ranges from $140,000 to $200,000 depending on the number of clients.

Contact KnowledgeWare Inc., 3340 Peachtree Rd. NE, Atlanta, GA 30326; (404) 231-8575.

Circle 367 on reader card

Open Environment Enhances Three-Tiered Toolkits

Open Environment Corp. (OEC) announced the release of its OEC Toolkit Version 1.1, a set of software tools designed to enable developers to rapidly build and deploy distributed three-tiered client-server applications in enterprise-wide environments. Key features include security management tools to monitor access to protected data, and an application management utility which improves system responsiveness by distributing system processing based on available resources.

The toolkits speed up and facilitate the development of distributed client-server software applications by automating many of the repetitious steps involved in code generation and debugging.

The OEC toolkit enables integration of many GUIs such as PowerBuilder, Visual-Basic and Enfin, with several relational databases such as Oracle, Informix, Sybase and DataBase 2.

Contact Open Environment Corp., 219 Vassar St., Cambridge, MA 02139; (617) 499-1-OEC.

Circle 365 on reader card

TransferPro Supplies Interoperability

Digital Instrumentation Technology Inc. (DIT) announced the availability of TransferPro for HP 9000 workstations.

These programs allow users to perform all standard Windows, MS-DOS and Macintosh operations between workstations and PCs, and workstations and Macs. Operations include copying, moving, deleting, renaming, creating and removing files and directories.

TransferPro also can transfer files to SCSI devices such as Bernoulli and SyQuest drives, magneto-optical drives such as those from Pinnacle Micro and Sony, and Data Shuttle removable hard disk drives.

The single user version of TransferPro HP 9000 costs $349 and a single user floating license costs $849.

Contact Digital Instrumentation Technology Inc., 127 Eastgate Dr., Ste. 20500, Los Alamos, NM 87544; (505) 662-1459

Circle 366 on reader card

Ensemble Viewer Provides Interactive Tools For C

Cadre Technologies Inc. announced Ensemble Viewer, an interactive 2D and 3D graphical tool for visualizing C programs.

Ensemble Viewer provides interactive views of key program aspects by displaying program information and test results that are stored in the Ensemble database. The interaction enables a user to better understand the program or see the impact of program changes without having to read through the detailed source code.

Ensemble Viewer is currently available for Sun SPARCstations and will be available for HP 9000 and IBM RS/6000 next month. Prices start at $2,400 and vary depending on configuration.

Contact Cadre Technologies Inc., 222 Richmond St., Providence, RI 02903; (401) 351-5950.

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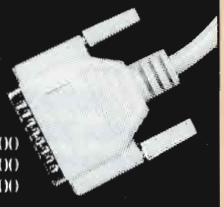

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Gordon McLachlan

Diskless Or Useless???

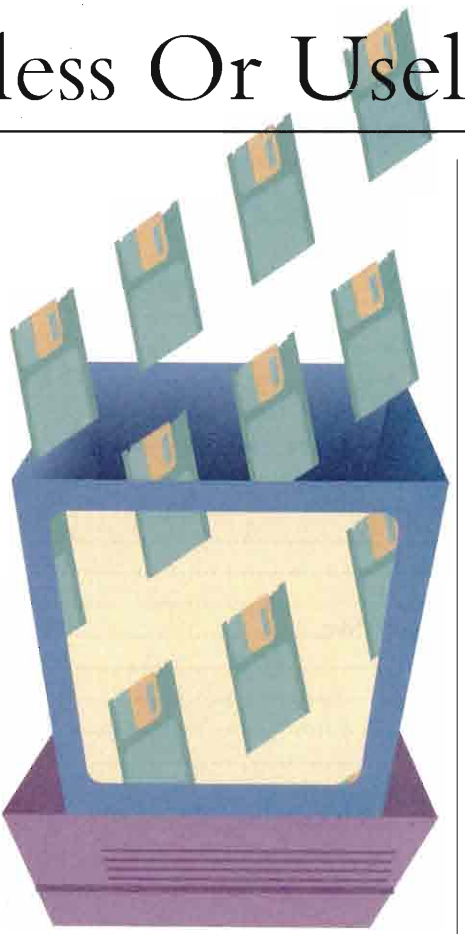
The brain trust at HP's Systems and Servers Group, which normally spends its time developing HP 9000 and HP 3000 servers, recently decided that we need the option of using diskless PCs, instead of dumb terminals, with their iron.

Their HP Windows Client is a diskless 486SX/25 PC clone that comes bundled with Microsoft Windows 3.1, DOS 6.0, Walker Richer & Quinn's (WRQ) Reflection RNS software and an Ethernet adapter. The basic bundle costs $895 without a monitor; systems bundled with monitors run from $1,095 to $1,675. With a multiprotocol boot ROM, the Windows Client can run Windows applications from a Novell file server, and provide multiple terminal sessions through the WRQ software.

Diskless workstations are nothing new. The UNIX box mongers have been doing it for years to make you think you could get a cheap UNIX workstation from them. I have never actually seen anybody buy more than one, and I don't believe the HP Windows Client will be any more useful.

At first glance, diskless PCs might look like a good compromise between dumb terminals and real PCs. They're supposedly cheaper, and maybe security concerns or the ability to centrally administer and control the software installed on them, seem like good justifications for them. But I'd advise you to eyeball this supposed solution carefully.

All you save with the diskless wonder is the price of the disk drive, and that's a false economy. If you don't have disk space on the client, you'll have to



make up the shortfall on the server side, which effectively erases those savings.

And to make matters worse you don't even have the option to upgrade the damn boxes when you finally figure out you screwed up. You can add memory, but that's about it. If I've learned one thing in the course of my career, it's always to leave myself an escape route. What happens if you want to switch networks or add multimedia capability to your PCs later? With diskless PCs, there's no room for Plan B. That's too much of a risk.

Performance is always a concern, and there is absolutely no way you can run Windows decently over a network. It's a nice thought, but Windows spends so much time looking for itself on disk that it's ridiculous to even think about running from a server.

Windows applications are often no better. Installations I've worked with have refused to serve applications like WordPerfect over a network because of the number of disk accesses they perform. What do you think all those megabytes of Windows DLL files are for? Unless you've got bandwidth to burn, I'd take a real careful look at network loading before I thinking about going disk-less.

Perhaps most importantly, supporting diskless PCs is a pain in the rump. Suppose a user's machine doesn't boot. Is the problem the PC, your network or the server? With a real PC, you can step through the problem and isolate problems fairly quickly. A diskless PC without a network and server is nothing more than furniture.

By going diskless, you can keep your users from installing verboten software, or pilfering software and files from your server. That way your users still won't have anything you don't give them: It's just like being a prison camp guard. But if you're a control freak, and like to use a riot baton on your users every once in a while, I guess diskless workstations might still seem like just the thing, even if they don't save you any money.

If security and control are real concerns, I suggest you buy some of those floppy drive chastity belts. At least then, you'll have a floppy drive when you need one. Aside from the support issues, there are many times when users have to exchange information using floppies via SneakerNet.

There may be some niche applications where you can possibly justify a diskless PC, but if I had to think that hard to force-fit a solution into a supposed problem, I'd think again. ■

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