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HP Professional

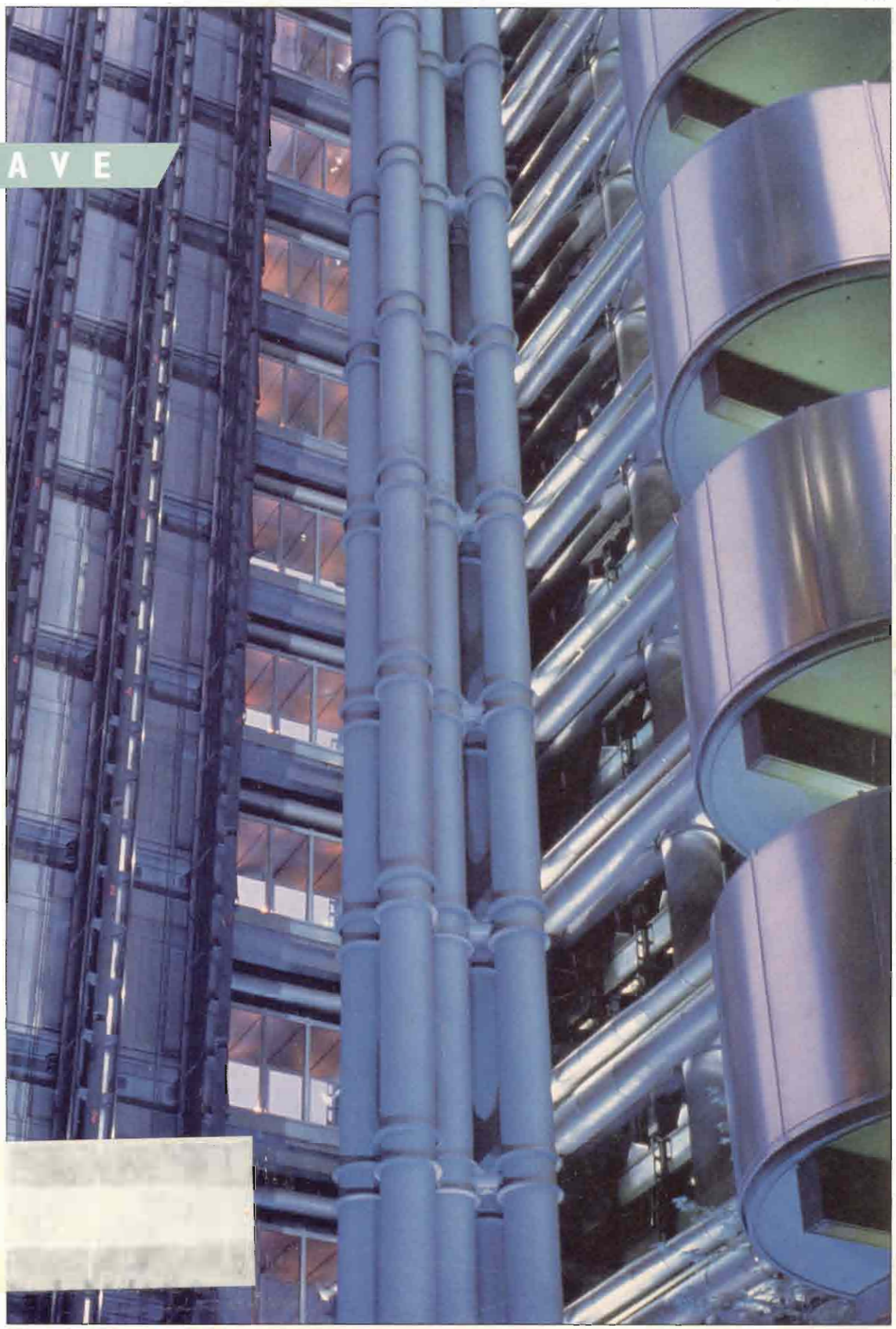
THE INDEPENDENT MAGAZINE FOR NEWWAVE COMPUTING ▲ VOL.6 NO.1

▲ JANUARY 1992 ▲

NEW WAVE

UNIX And OSF/1

- Office Environments Open Their Doors To UNIX Systems
- UNIX Forges A Better Reputation For Security
- HP Takes Wraps Off New Low-End 700 Series Workstation
- In The News: MPE Opens With POSIX Integration



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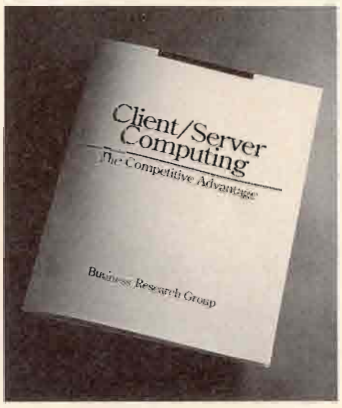

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CONTENTS

JANUARY 1992 VOL.6, NO.1

26 ▶ **Who's Hiring UNIX For The Office?**
By Paula Jacobs
As UNIX servers and X Windows terminals are added to office configurations, a wide variety of commercial and technical users are opening their eyes to the powerful capabilities UNIX brings to the desktop. No longer the exclusive domain of academics and engineers, UNIX is gaining prominence in office environments.

36 ▶ **UNIX Security Comes Of Age**
By Wayne Caccamo
Market forces are paving the road toward a more secure UNIX — without sacrificing any of its well-known talents for portability, interoperability, performance and ease of use. Since its days as an obscure development environment, UNIX has shed its once-dubious reputation for security.

44 ▶ **Resetting The Hurdles**
By Bill Sharp
There are those who claim that HP is a full product generation ahead of its rivals in the highly competitive workstation market. The new low-end addition to the company's popular 700 Series does much to underscore this point — setting a new price/performance mark before the old one has even been approached.

FROM THE LAB

HP's PC Palmistry
By David B. Miller
Executives Can Accurately Predict Their Futures With HP's 95LX Palmtop PC.....60

The Next Step
By David B. Miller
Still Waiting For Easy To Use, Open Computing Systems? IXI's X.desktop Takes A Step In The Right Direction..... 66

HP Professional

COLUMNS

Managing Your HP 3000: Pondering Your Options
By John P. Burke
MIS Faces Many Variables When Considering A Move To HP-PA And MPE XL 70

HP-UX: Korn Shell Gems
By Andy Feibus
Aliasing And Command History Editing Simplify Command Execution 76

Objectively Speaking: Managing Complexity
By Richard Riehle
The Role Of Abstractions In Software Design 82

DEPARTMENTS

Editorial 8
Industry Watch 10
News & Trends 14
Product Watch 22
Advertiser Information 80
New Products 84
Product Showcase 90
Career Opportunities 93
Software Directory 93
Advertisers Index/Calendar 94

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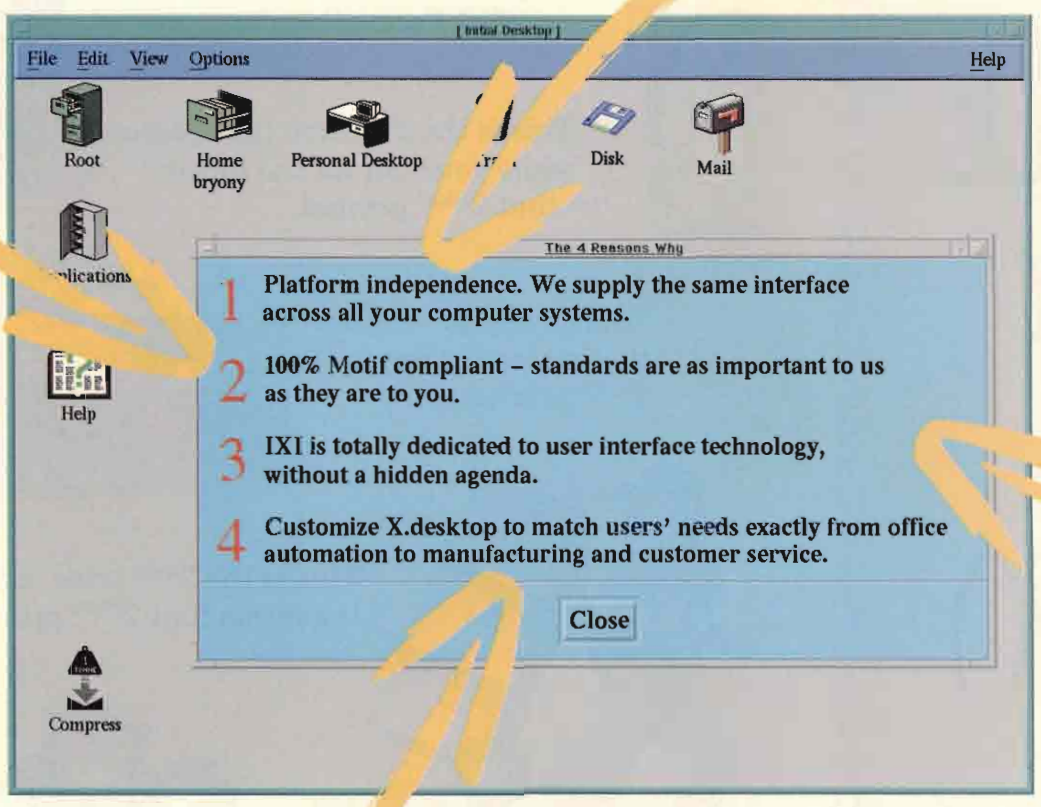

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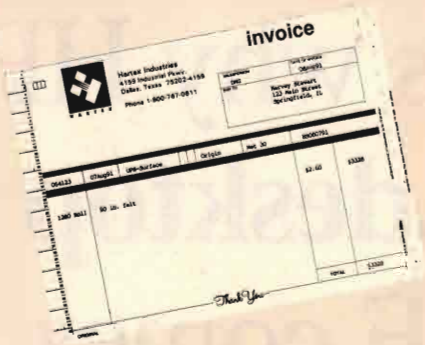

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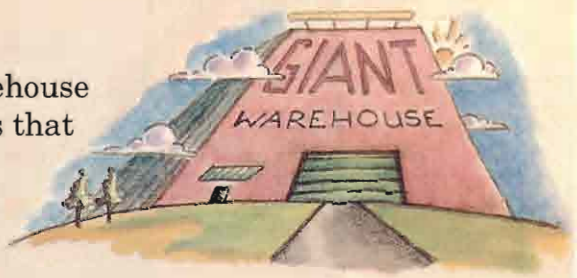
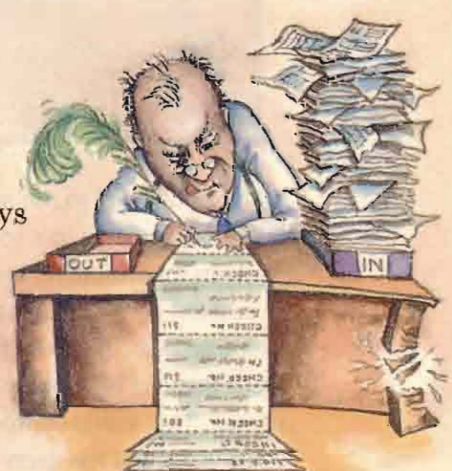
This is the 2long time that passes while you wait for the forms that 2HIGH printed.



This is your 2big warehouse that stores the forms that 2HIGH printed.

This is the 2many trips lugging around the forms that 2HIGH printed.



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CIRCLE 265 ON READER CARD

An Open Evolution

By Grant Evans

A long-accepted fact of life in this industry is that most hardware platforms and their accompanying operating systems have limited life expectancies. Architectures are only designed to go so far — usually until their technology becomes dated and a better system is introduced. And with all the technological leapfrogging going on these days, the average system life cycle is getting shorter.

The HP 3000 line is one remarkable exception to this law of computer nature. The HP 3000 already was considered a mature (if not downright *old*) platform some ten years ago. Now a spry 20-year-old, the line has again been given new life — this time with the integration of POSIX with the MPE operating system and the addition of new symmetrical multiprocessing models.

While some industry pundits have cited HP's POSIX integration as a simple case of following a lead, the fact is that HP intentionally left headroom within the RISC-based HP 3000 architecture to accommodate applications written for UNIX-based systems. The addition of POSIX compatibility fills this shell. Whether this was another example of HP foresight or sheer luck remains to be seen. Regardless, it was planned.

In the mid-'80s, HP recognized the potential value of reduced instruction set computing (RISC), and took the initiative to implement the technology on a minicomputer (the HP 3000). In those days, the only RISC systems were technical workstations, and there weren't a lot of them around. It was a considerable gamble for HP — most industry watchers were highly skeptical, saying that HP was foolishly betting the company's future on an unproven emerging technology.

In retrospect, that gamble doesn't seem so crazy — in fact, it's paid off quite nicely and put HP a few years ahead of DEC and IBM in RISC technology.

As HP cultivated the new operating system for RISC, MPE XL, they described the architecture as being a function-rich kernel surrounded by shells. One of the shells was for an MPE V compatibility mode. Then there was the MPE XL shell containing the new set of programming interfaces. On top of these were empty shells — represented in diagrams by dotted lines. One of these was designated as a possible UNIX shell.

So, long before UNIX emerged from the lab as a viable option in commercial environments, and long before the term *open systems* was even coined, HP recognized it's potential value and left room for it within a proprietary environment.

Now, with integrated POSIX, HP has brought MPE out into the open. This move not only protects users' investments in HP 3000 technology by broadening the base applications available to them, it also introduces the benefits of UNIX in a way that allows users to make a move if and when they choose — at their own pace.

In completing the open evolution of the HP 3000, HP has renewed interest in a recurring question regarding traditional perceptions of open and proprietary architectures.

What Is Open?

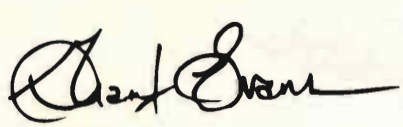
Amid all the talk about the advantages of RISC technology, open systems and UNIX, the distinction between a truly open system and a box with great price/performance has been somewhat obscured. Some equate RISC with open systems — and this is understandable to the extent that great price/performance comes from RISC technology and most "open" systems (running some flavor of UNIX) use RISC. But not all of them.

Also, while UNIX-based operating systems are generally lumped under the category of open systems and proprietary environments are labeled "closed," there are such things as a closed UNIX system and an open proprietary system. It all comes down to having the right industry-standard programming interfaces. (More on this in future issues.)

If such interfaces are wrapped around the operating system kernel, you can achieve multivendor interoperability and application portability — the top two requirements of an open system as told to HP's General Systems Division by users. The HP 3000 and MPE XL — make that MPE/iX — now fulfill both of these requirements as well as or better than any system in the market.

In short, HP has taken a popular, function-rich proprietary platform and successfully redefined it as one of the most open systems on the market. At the same time time, the company has stated its commitment to maintain and support the classic HP 3000 and MPE V for a long time to come.

All things considered, those of us who invested in these systems years ago must feel pretty good about the direction in which HP is leading us.



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INDUSTRY WATCH

Bill Sharp

Opening Gender Locks

A recent study showed that approximately three percent of the top executives in large U.S. companies are women. Companies whip out many lame excuses for failing to better represent women at the top, but those pleadings don't mean much in the face of such numbers — failure is failure.

As with most other companies surveyed, HP's talented female community is poorly represented in the boardroom. Within HP, above the level of division general manager, including group managers, vice presidents and executive vice presidents, there are *no* women (zero, nada, zip, etc.).

Women account for 39 percent of HP's 91,300 employees. According to my HP 11C, that means HP employs about 35,490 persons of the female persuasion. That's a bunch of folks, and that *seems* like good news. However, in the professional ranks at HP, women account for a somewhat smaller portion at 30 percent. Among managers, HP women account for just 26 percent. And finally, HP lists women as making up some 11 percent of its functional managers and executives. This doesn't sound so bad when compared to three percent—or is it?

When HP says women constitute 11 percent of its top managers, it is lumping together everything at the functional manager level and above. A functional manager is a marketing or production manager or similar person within a division reporting to a division general manager. These are important and influential folks within HP, and arguably are at about the highest level where real work gets done, as opposed to managing the management of *managers*.

What this really means is that most of the "top women" at HP are functional managers who are doing important things, but aren't at executive levels. If we climb one step higher to division general manager, the number of women in the ranks drops to a very low number, less than five (HP doesn't confirm this). And, at the level of vice president and above, there are no women — just guys, guys.

So who cares? That's a good question. A lot of people at HP do care, it's just that they aren't caring with quite as much fervor and effectiveness as they might. We are talking about the advancement of capable women by top men at HP, the fellows who run the corporation. They alone can take the gender locks off the boardroom doors.

The Roots Of Bias

HP's decades old tendency to hire white, male engineers here takes a bow, and gets us into this scrape in the first place. Hiring engineers was just the natural thing to do in an electronics company so steeped in the techie tradition. And, even with the beginnings of specific efforts to hire professional women as long as a decade ago, the tendency to hire more males remained. Because until recently women were but a small minority of engineering graduates, a bias toward men was an inadvertent offspring of HP's engineering past.

Make no mistake. HP has improved its record on employing women in management. In 1962, just 30 years ago, a mere two percent of the company's workforce was female. In 1977, women accounted for 10 percent of the HP workforce. By 1985, women accounted for 26 percent of the HP workforce, and that percentage has not changed since then. These are all HP figures.

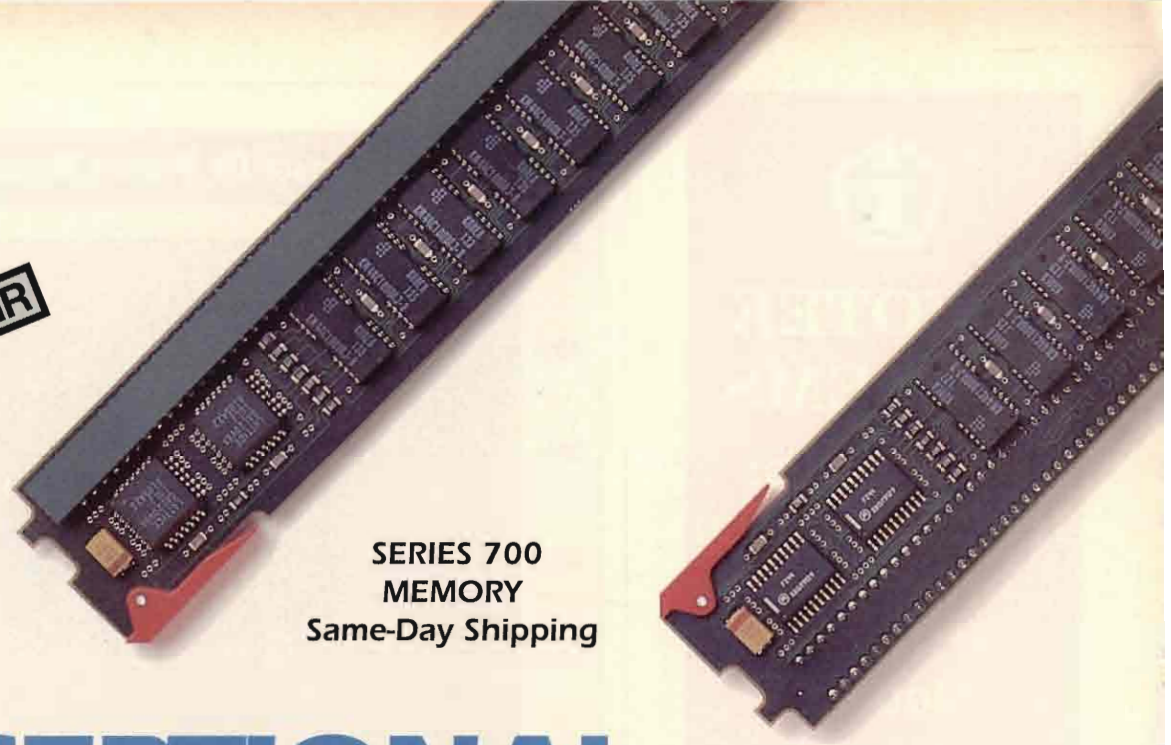
Technical Women's Conference

An interesting sign of change is the rapid growth of the HP Technical Women's Conference, founded in 1988 to highlight the achievements of HP women and help promote them into leadership and management positions.

A co-chair for the conference is Gail Lowell, technology consulting services manager for HP's Professional Services Division, Mountain View, CA.

Conference progress includes:

- HP management has funded the conference, to its credit.
- Four hundred HP women attended the 1988 conference, while the 1991 edition drew 850 from as far away as Malaysia,



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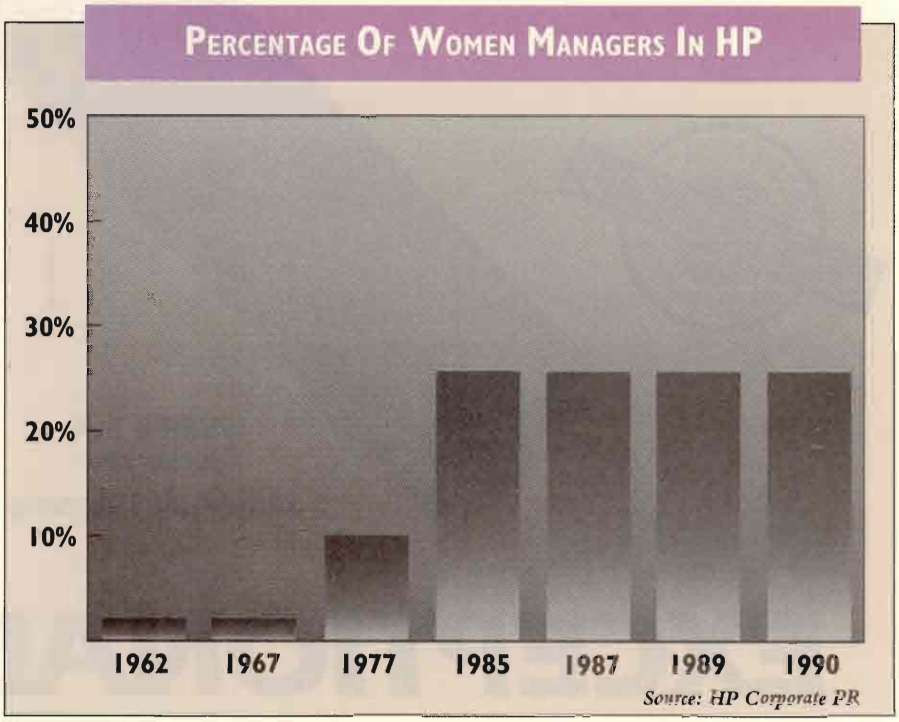

Puerto Rico and Mexico, as well as from all over the U.S.

- Regional conferences are starting up.
- A female Apple vice president was impressed enough with the HP women's effort to start up a similar group at Apple.
- At last report, HP's programs for improving the lot of its professional women was in the running for an award.

New Mentoring Program

"What's different, for me, is that management now realizes that the numbers don't look good," says Lowell. "I am happy to see that. That is the first step." Next comes the long-term effort to change the mindset of the men in HP.

"There is a required course on diversity now for managers. I've seen managers with a new awareness of diversity as a result of that class," she says.

Lowell says HP must help women understand how to form stronger mentoring relationships. Where are the role models and mentors, she asks? Lowell says HP must formulate more formal programs to promote women into management positions. And once women gain top positions, male managers must listen to them. "If you have women on the team but reject their ideas, then having them on the team does no good."

Lowell says one of the most important things HP did for her was support her in going to Korea for a project where she managed an all-male Korean team. "HP could have said 'no' to me and stuck with a different role model, but they promoted and supported me."

Another woman who became a manager for HP far from home is Christine B. Arnold, manufacturing and marketing manager for HP's Finance and Remarketing Division. She spent three years managing in Europe.

"Several years ago you sensed that you had to prove yourself much more than now," says Arnold. "It was a white, male-dominated workplace. But as more women enter into higher ranges of the corporation, some of the older managers are getting more used to dealing with women.

"I would like to see more of a focused effort to seek out the people who have talent and help them not get lost in the system," she says. "If we want to retain our good people, we need to make sure they don't get lost as we change."

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NEWS & TRENDS

HP Stokes 3000 Appeal With Multiprocessing

980/300, 980/400 Systems Bolster Mainframe Alternative Drive

Move over DEC and IBM, HP made an aggressive move into the symmetric multiprocessing business with new three- and four-processor additions to the HP 3000/980 family. HP also has a new high-end uniprocessor model for the middle of the 3000 line, the 977. Together, the three new midrange systems add momentum to HP's quest to replace aging 4381 mainframes and other high-end systems from IBM.

Selling alternatives to mainframe computers has been a big part of HP's success in both the HP 3000 and HP 9000 minicomputer lines. HP quotes industry analysts who project the mainframe alternative business will climb to $2.4 billion in 1992, and is clearly after as much of this business as it can get. Price/performance advantages for HP's RISC-based minis have made both of its minicomputer lines very successful.

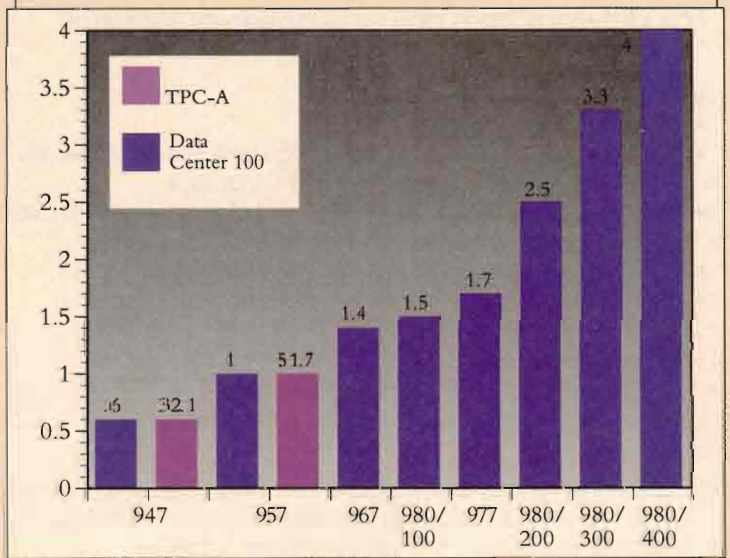
HP's latest alternatives to mainframes, the 980/300 and 980/400, add one and two processor boards, respectively, to the 980 system, providing up to 3.6 times the performance of the 980/100 uniprocessor system. And, the increased processing bandwidth means more users can access more applications simultaneously.

Users with 980 systems in place can upgrade to higher-performance 980 systems by adding another PA-RISC processor board to the current configuration — no need to scrap the old system.

HP also created more headroom for users of HP 3000/9X7 systems. The new top end of the family is the 977, with 30 percent more processing power than the 967. Any 9X7 system can be upgraded to a 977 by replacing the processor board with a Series 977 board.

HP claims the 977 provides two times the performance of the IBM RS/6000 Model 550H, 1.5 times the performance of DEC's fastest VAX 4000, is 30 to 50 percent faster than the high end of IBM's AS/400 line at less than half the price, and roughly equals the performance of the VAX 9000 Model 410.

HP's Jim Christensen helped place the new 980/300 and 980/400 systems in perspective. HP 3000 980/200 performance equals the IBM ES/9000 Model 480. It beats the VAX 9000 Model 410. HP 3000 980/300 performance exceeds the DEC VAX 6000 Model 630. It also bests the VAX 9000 Model 420. HP 3000 980/400 performance is greater than the IBM ES/9000 Model 580. It also beats the VAX 9000 Model 440.



HP 3000 Performance Data Center Benchmark Results.

The Series 977 system starts at $260,000. The 980/300 is priced from $785,000, and the the four-way 980/400 will cost $945,000. The 980/300 began shipping in December. The other two systems are scheduled to ship in the first quarter of this year.

In conjunction with multiprocessing announcements, HP introduced a series of four high-availability disk array products for its PA-RISC multiuser systems. The disk arrays are designed for users who require high availability, data protection, floorspace savings or who are considering a mainframe alternative.

The HP fiber optic link (HP-FL) disk array products come with two to five 1.36-GB SCSI-2 disk drives per array. The use of multiple drives in compact cabinetry allows up to 27.2 GB of data-protected storage in one 19-inch by 1.6 meter cabinet. The four models are designed for HP 3000 Series 900 and HP 9000 Series 800 systems, including the new 980/300. The units range from $28,675 to $53,690. —*Bill Sharp, Technical Editor*

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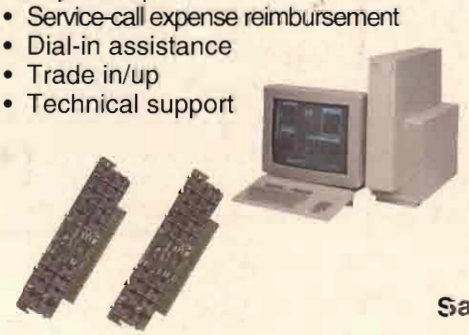

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POSIX Comes To MPE

HP Recasts Operating System To Reflect Dedication To Open Systems

Loyal HP 3000 customers received a Thanksgiving Eve treat when HP announced POSIX compatibility for its MPE XL operating system. The move allows developers to port applications written for UNIX-based platforms to the HP 3000, and effectively extends the life of the only non-UNIX operating system to run on a RISC-based platform.

To reflect the POSIX compatibility and the benefits of MPE and UNIX, HP has changed the name of the HP 3000 operating system from MPE XL to MPE/iX. The company characterizes the move as the latest step in a five-year campaign to redefine the HP 3000 line as an open system.

"The bottom line is this: We're declaring victory," says Richard Sevcik, general manager of HP's Commercial Systems Division. "And to send a message to the marketplace, we're changing the name [of the system] to the Open HP 3000 and changing the name of the operating system."

Sevcik tells *HP Professional* that with the addition of POSIX compliancy, "HP is building on the commercially-robust MPE operating system to allow current customers to proceed toward a truly open environment at their own pace." According to Sevcik, POSIX compatibility is the latest development in an open systems initiative started in 1986, when HP redesigned the HP 3000 operating system around its PA-RISC technology.

"What's clear to us is that customers want open systems," says Sevcik. "They want multivendor interoperability, they want application portability and they want a greater degree of vendor independence."

POSIX is the IEEE operating system interface standard endorsed by both X/Open and the Open Software Foundation (OSF). Because POSIX does not specify an underlying operating system, both UNIX and non-UNIX operating systems can be POSIX-compliant.

For the first stage of the POSIX rollout, HP announced general availability of its MPE/iX Developer Kit, a tool kit enabling software developers to port their UNIX-based applications to the HP 3000. The kit uses the HP 3000 and an HP 9000 Series 700 workstation for client-server development. It includes POSIX release 1003.1, documentation, Network File System software and support services. The Developer Kit is tier priced from $10,000 to $50,000.

The end-user release of POSIX for the HP 3000 is scheduled for June availability, and allows customers to integrate POSIX applications into their environments.

HP is currently working with third-party software vendors to port a healthy stable of mainframe-class commercial UNIX applications to MPE/iX. So far, HP has inked deals with Dun & Bradstreet Software (Framingham, MA), Lawson Associates (Minneapolis, MN) and Uniface (Alameda, CA).

"We have all the strengths of the traditional 3000 — rich commercial functionality, very strong service and support, and exceptional product quality" says Sevick. We're taking all those standard things that the HP 3000 always has been, and adding the openness that the industry is looking for in the 1990s. We position it as the the best of both worlds — the best of the commercial operating system environment coupled with the best of the open environment." —*Grant Evans, Managing Editor*

New Models Broaden 800 Series

HP Adds High-End Models And Servers To Its UNIX-Based Commercial RISC Systems

HP's November-December flurry of products brought two new business servers to the HP 9000 Series 8x7 line. The debut of Models 867S and 877S was accompanied by the introduction of expanded memory capabilities, new DAT and CD-ROM capabilities and a low-priced ASCII terminal.

The HP 9000 Model 867S is rated at 74.9 TPS and $15,400/TPS. The 877S is rated at $74.9/TPS and $15,800/TPS. The 867S and 877S begin at $112,500 and $140,000, respectively. These base prices include processor, operating system, memory, networking and standard peripherals such as a 2-GB DAT drive. Both models are available immediately.

In addition, HP introduced two high-end symmetric multiprocessing systems to the HP 9000 line. HP claims that the new models, 870S/300 and 870S/400 are the industry's fastest UNIX-based business computers — matching the performance of IBM 3090 mainframes at one-fourth the cost.

Models 870S/300 and 870S/400 start at $440,000 and $530,000, respectively. Model 870S/400 is rated at 173 TPS and $14,800/TPS. Both systems are available immediately.

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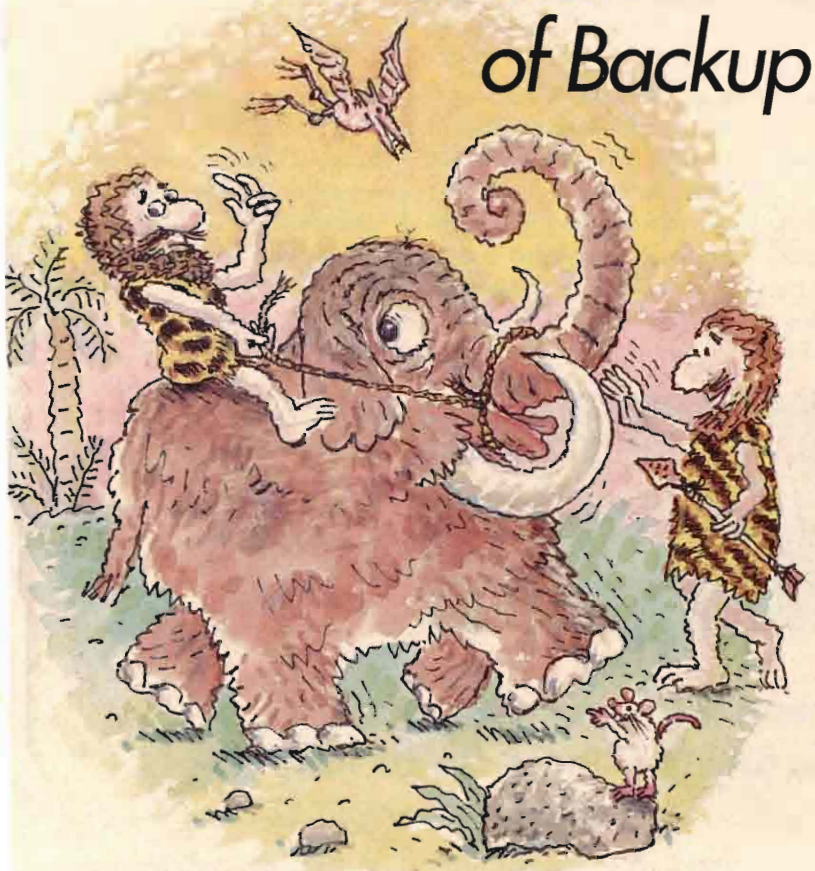

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Uniface Brings Open Development To HP 3000

4GL To Be Ported To MPE/iX

In a technology alliance announced in conjunction with HP's POSIX rollout, Uniface (Alameda, CA) will integrate its application development environment with the HP MPE/iX operating system. The Uniface product is presently available for all platforms running HP-UX.

The move enables developers to build applications that simultaneously access data in HP Allbase/SQL and HP TurboIMAGE databases as well as other third-party relational database management systems (RDBMS). Developers will have the tools to create applications that run MPE/iX as well as MS-DOS, OS/2, VMS and a number of UNIX-based operating systems.

On the RDBMS level, customized database drivers will developed to integrate the Uniface product with HP databases. This will include transparent access to HP TurboIMAGE on MPE/iX and HP Allbase/SQL on both HP-UX and MPE/iX. In addition, the Uniface data dictionary will be directly integrated with the HP Allbase/SQL RDBMS.

Representatives of both companies describe the pact as key to future strategies. "This is a great alliance," says Uniface Vice President Anu Shukla. "There's a really viable market, and our companies have unique qualities and strengths that complement each other." Shukla tells *HP Professional* that the agreement is a major advance in the company's strategy to provide simultaneous access across all major RDBMSs and operating systems.

"We regard Uniface as an important element in our open systems strategy," says Richard Sevcik, general manager of HP's Commercial Systems Division. Sevcik notes that the Uniface support of MPE/iX will enhance the HP 3000 user's ability to develop mission-critical applications that can be deployed in heterogeneous enterprise-wide environments.

Applications developed with Uniface are independent of RDBMS, computer platform, CASE tool, network, operating system, graphical user interface and third-generation languages like C and PASCAL. It provides simultaneous access to a such databases as Sybase, Oracle, Ingres, Informix, RDB, DBASE II and RMS.

Uniface for MPE/iX and ALLBASE/SQL and HP TurboIMAGE DBMSs will be available in the second quarter of this year.

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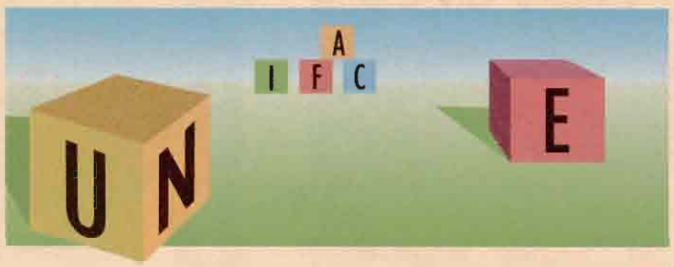

Oracle Manufacturing Debuts On HP-UX

First Production Release Follows More Than A Year Of Live Betas

Oracle Corp. (Redwood Shores, CA) announced general availability of Oracle Manufacturing Version 3.2, the first production release of the company's suite of eight integrated applications for engineering, planning, materials management and shop floor control.

Oracle has chosen HP-UX as a primary operating environment for its manufacturing offerings, which it describes as the first of a new generation of manufacturing systems.

Oracle Manufacturing is built on the company's popular Oracle relational database management system (RDBMS), using Oracle CASE technology. The introduction of the Bills of Material, Engineering, Master Scheduling, MRP, Capacity and Work in Progress modules rounds out the suite of 19 financial, human resources and manufacturing applications Oracle has introduced since 1988. Oracle manufacturing is available now on HP-UX, Pyramid OSX and Sequent Dynix platforms.

According to a Gartner Group forecast, existing manufacturing applications such as Material Requirements Planning (MRP) and Material Resource Planning (MRP II) will be replaced by Enterprise Resource Planning (ERP) systems based on RDBMS, 4GL, CASE and GUI technology. ERP applications will be portable among a wide variety of hardware platforms and operating systems, including UNIX.

Oracle's ERP is touted as an enterprise-wide business solution which is portable to multiple hardware and operating system environments

"Most manufacturing organizations need to retool their their information technology from time to time to stay competitive," says Don Klaiss, Oracle vice president of Manufacturing Products, "and MRP II systems won't allow them to move on."

"No one has more relational application design experience than Oracle," says Klaiss. "We're the first major manufacturer to bring a new generation of manufacturing solutions to market." —*Grant Evans, Managing Editor*

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International Insights

HP In The Running With Bull?

DEC And IBM Are Also Talking With Beleaguered French Firm

Is HP planning to take a financial stake in fiscally beleaguered Groupe Bull?

Corriere della Serra, one of Italy's most respected newspapers, ran an article in October saying Bull CEO Francis Lorentz was looking for partners and pursuing negotiations with both HP and DEC.

Because the French government agreed to allow financial participation in Bull, said the paper, Bull has been actively looking for an American partner for financial support and to help counter Japanese competition in the European market.

At press time, a company spokesman admitted Bull was talking with DEC, HP and IBM, but added that the company was "talking to a lot of people about a lot of different things." He did not rule out the possibility of one of those parties taking an equity position in Bull.

According to the Bull source in Paris, all potential suitors are members of the OSF, but no agreement was scheduled to be reached before the end of the year.

An HP spokesman in Geneva said, "HP never talks about any negotiations, or possible negotiations, while they're in progress — which is not to say that they are in progress."

Whatever the case, some circumstantial evidence points to HP as a prime candidate to partner with Bull.

Any such partnership would need to be based on an exchange of technology, such as the NEC-Bull arrangement whereby NEC holds 4.7 percent of Bull and supplies components for Bull's largest computers.

One strong potential area of technological cooperation between HP and Bull would be telecommunication. Bull is not particularly well-known for expertise in telecommunications; it is only in the last year that it has begun to tout itself as an organization with all of the tools necessary to link its computers with everyone else's. HP, on the other hand, has a sophisticated network management technology, and recently opened its worldwide Telecom Network Organization in Grenoble, France.

Both companies are in the process of moving from proprietary computing technology to an open systems platform, which includes a heavy dose of OSF technology. Alain Couder, vice president of Bull's new Distributed Computing Organization, served eight years with HP, four of which he spent in Grenoble overseeing HP's networking efforts in Europe. He joined Bull in late 1990.

In an interview, Couder said, "In terms of technical innovation, there's a lot of commonality between Bull and HP. In fact, we're often talking and working with HP on areas like OSF and object-oriented technology."

On one level, an HP-Bull partnership seems more likely than one between DEC and Bull. DEC already has acquired Mannesmann-Kienzale in Germany and Philips' information systems division. HP has yet to add any European-owned organizations to its side, a move which would further strengthen its position in Europe and provide a passport to EC research programs and projects. Some say that DEC is a more likely candidate because, like Bull, it uses mips microprocessors in its systems. —*Marsha Johnston, International Editor*

For Your Information

■ The Boston Software Works will develop a version of its InterOFFICE electronic mail gateway for HP OpenMail. (617) 367-6846.

■ HP and Oki Electric Industry Co. announced an alliance to integrate HP's Applied Computerized Telephony (ACT) technology with Oki's ComAPI and private branch exchange (PBX) products.

■ Unison Software closed out 1991 with another product acquisition. This time, they picked up KLA/Express and KLA/Command from KLA Assoc. (408) 245-3000.

■ Verity and HP announced a joint development agreement under which Verity will develop its TOPIC intelligent document management products to be part of HP NewWave Office solutions running on HP 9000 Series 800 business servers. (415) 960-7600.

■ SunSoft and HP initiated a program to implement and license an object-oriented application framework designed to accelerate the growth of distributed computing. HP and SunSoft announced a joint development pact in February 1991. (415) 336-0493.

■ Lawson Associates, a player in the IBM midrange and mainframe markets, has been designated a Premier Solution Provider (PSP) by HP. Lawson and HP jointly market Lawson's Financial, Human Resources and Distribution Management applications that run under HP-UX. (612) 379-2633.

■ Exabyte closed out 1991 with a flurry of new contracts (303) 442-4333.

■ Automated Technology Associates (ATA) and Intercim Corp. announced an agreement under which Intercim will integrate ATA's line of manufacturing software into its line of factory automation solutions. ATA's RQM and QTS products run under HP-UX. ATA: (317) 573-9000; Intercim: (612) 894-9010.

■ Comprehensive Software Solutions (CSS) a Chicago-based consulting firm, has been named a preferred SpeedWare consultant by Infocentre Corp. Infocentre: (416) 678-1841.

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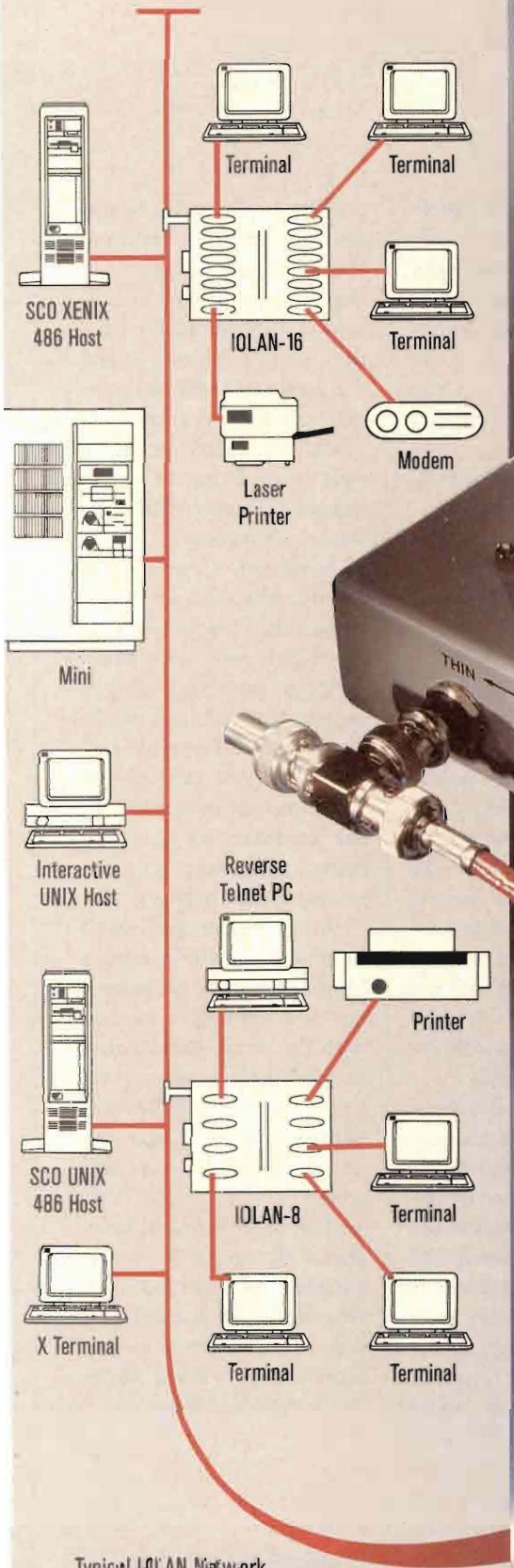

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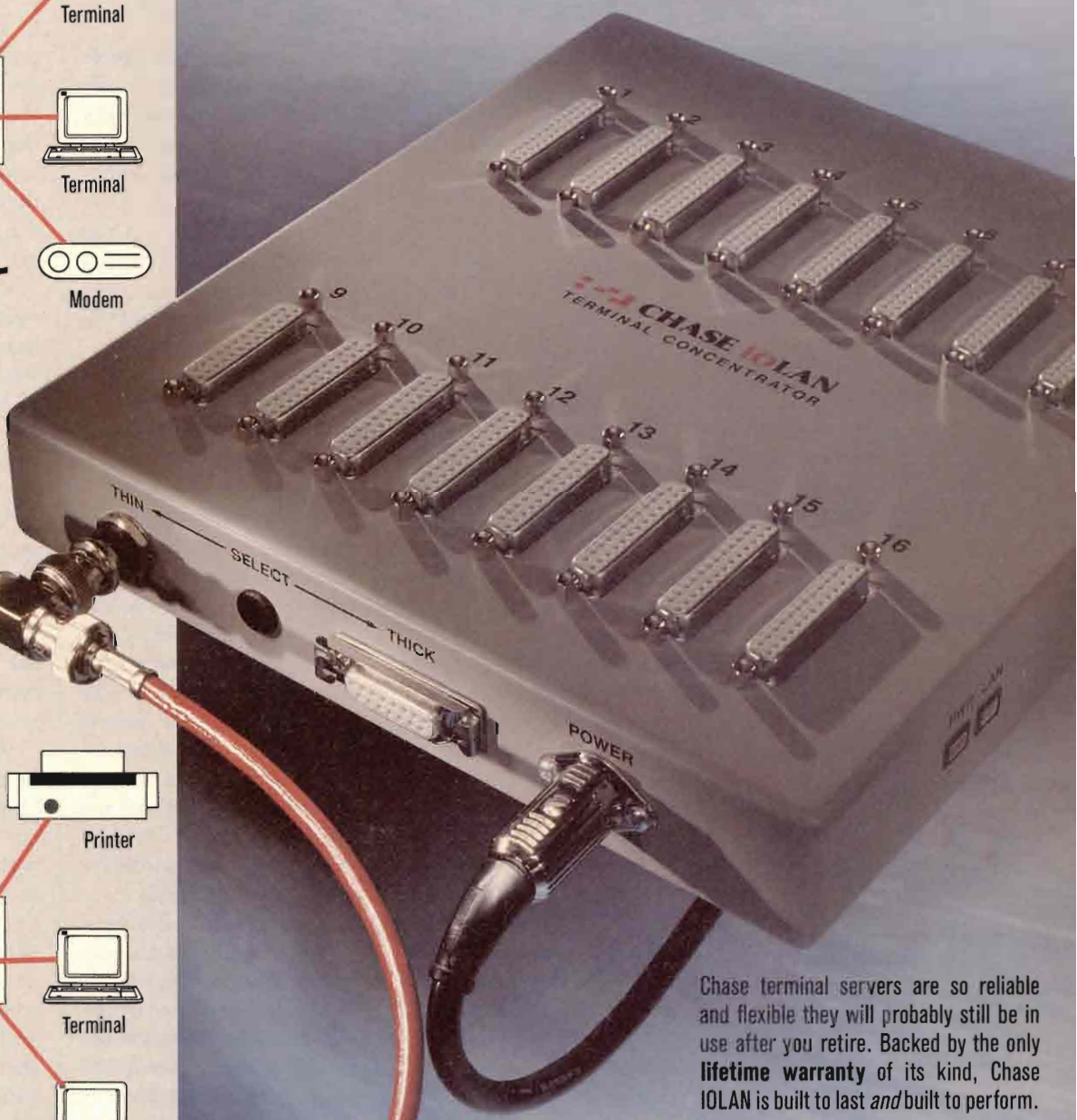

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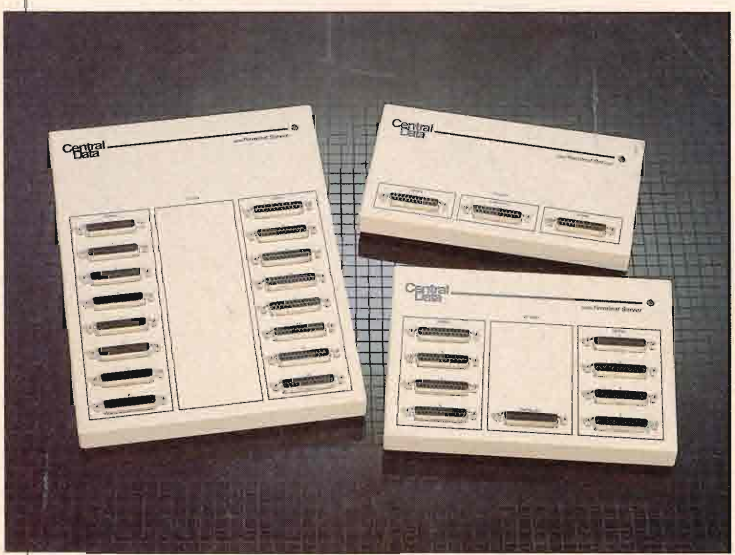
Simple SCSI Servers



Central Data's Expansion Boxes Provide Device Expandability With SCSI Simplicity

How many devices can you put on a single SCSI bus of your HP Apollo Series 700 workstation? If you said "seven plus the controller," most people would consider you correct. However, if Central Data (Champaign, IL), has anything to say about it, you could answer "112 devices plus the controller" and still be correct.

Daisy-chained to your other SCSI devices, Central Data's scsiTerminal Servers provide a convenient way of adding serial and parallel devices, such as modems and printers, to your system.

Units are available to provide 2, 8 or 16 serial ports with full modem control. The 2- and 8-port units also sport a parallel port.

The scsiTerminal Servers provide several advantages. First, they enable you to save precious expansion slots. The guts of today's workstations often are crowded. HP Apollo Series 700 workstations, for example, only have one EISA slot available. However, because SCSI Terminal Servers are daisy-chained to your other SCSI devices on the bus, an internal slot doesn't need to be sacrificed.

Second, adding more devices simply requires daisy-chaining an additional unit to the SCSI bus. So, seven 16-port scsiTerminal servers provide the 112 devices mentioned above.

Third, configuration and maintenance are easy because you don't have to open up your cpu box to access the scsiTerminal Server. Configuration is achieved as with any other SCSI device — by simply choosing a unique SCSI bus ID. Because standard SCSI commands are used in the drivers provided with the units, there is no need to worry about extraordinary configuration concerns.

Fourth, scsiTerminal Servers deliver high performance. The 4MB/sec. and 10MB/sec. bandwidths supported by the SCSI and SCSI-2 specifications are approximately four and 10 times as wide as Ethernet. scsiTerminal Servers efficiently packetize data to reduce bandwidth requirements. Central Data asserts that each 16-line server, while handling peak loads, would only consume five percent of the available SCSI bandwidth, leaving plenty of room to accommodate disks and tapes.

Fifth, scsiTerminal Servers provide an alternative to traditional Ethernet terminal servers. You might conclude that a scsiTerminal server simply provides direct connections to a central cpu and that traditional terminal servers sitting on the network would be required in a multiple host setting or where terminals are located far away from your systems.

However, Central Data would like you to think about this. How about buying a low cost workstation (perhaps diskless), putting it on your network and attaching several scsiTerminal Servers? Now you can use the communication services of the workstation's operating system to connect to other nodes on your network.

As a manager, you won't be burdened with learning a "terminal server language," nor will you have to deal with the setup, maintenance and configuration issues of yet another type of device. What's more, you get a real, live workstation on your network.

The SCSI Terminal Servers for HP Apollo 700 workstations range from $695 for a two serial/one parallel port unit to $1,495 for a 16-port serial unit. — *David Miller, Senior Technical Editor*

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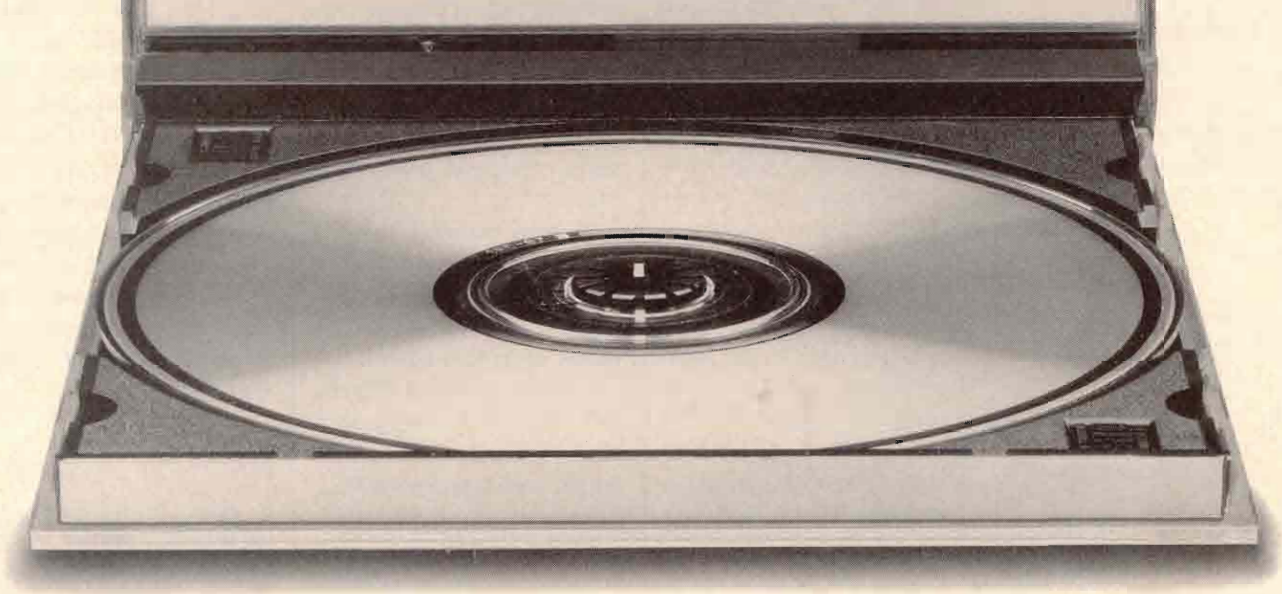

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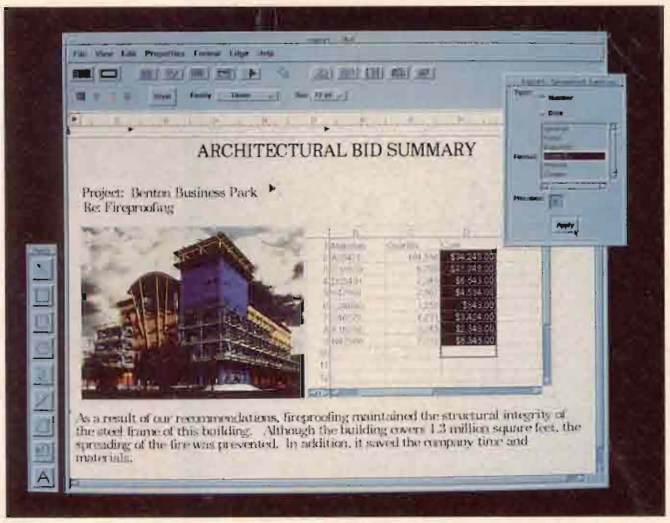
UNIX Moves To New Horizons



Rapport Adjusts The Vertical Hold Gripping Your Workstations

Despite the snowballing popularity and projected growth for UNIX-based workstations, many workstations could be locked in vertical hold of sorts — preventing users from taking full advantage of their potential.

Unfortunately, many users are hopping between keyboards, doing their research and CAD/CAM/CAE/CASE work on a task-specific or "vertical" machine like the workstation. However, they complete production work such as word processing and spreadsheets on a more general or "horizontal" device such as a PC.

Clarity Software's Rapport closes the hardware gap between research and production by opening up the software that runs on your workstation with a set of tools for UNIX-based workstations. The Mac-like tools, including a word processor, spreadsheet, presentation graphics and electronic mail, provide you with the convenience and cost effectiveness of a single device.

The word processor and compound document editor let you prepare, present and mail mixed media documents that incorporate text, graphics, images, fax, audio and spreadsheets.

Rapport's spreadsheet delivers typical calculation functions. You can include additional data objects such as images and voice annotation within spreadsheet cells.

Graphic abilities include a graphic editor that creates and manipulates vector and bitmapped graphics. The supported media includes audio annotation, raster images, fax, drawings, WYSIWYG text, color printing and Postscript output.

This output allows you to create line and piecharts, either by hand or from spreadsheet data. You also can generate graphics ranging from basic black and white overheads to full color 35-mm slides, while still incorporating text.

A mail manager is integrated with the document editor to expedite the sending and editing of documents, even onto other hardware platforms using different software. The mail manager's services include viewing, deleting, replying, forwarding, printing and filing messages.

Rapport provides data conversion to various platforms for all its functions. Using an X.500 directory, Rapport lets you create individual profiles specifying applications in order to transparently convert to alternate platforms. These platforms include PC, Macintosh and UNIX systems and support many profiles such as ASCII, WordPerfect, Microsoft Word, MacWrite, Cliq Word, Island Write, Lotus 1-2-3, WingZ and FrameMaker. You can even swap out Clarity components in order to use the software packages you prefer. The converted documents arrive in the recipient's format and fonts, simplifying modifications.

Rapport, written in C and C++, will run under the OPEN LOOK and Motif graphical user interfaces on any UNIX workstation supporting 12 to 16 MB RAM and 300 MB of disk space, including HP, DEC, Silicon Graphics, IBM workstations and X-terminals.

Price is $895 with conversion packages available at an introductory rate of $195 each. Rapport delivers a strong complement that allows a seamless communication with other hardware platforms letting your existing applications move on to new horizons. — *Charlie Simpson, Technical Editor*

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WHO'S HIRING UNIX FOR THE OFFICE?

No Longer The Exclusive Domain Of Academics And Engineers, UNIX Is Gaining Prominence In Office Environments

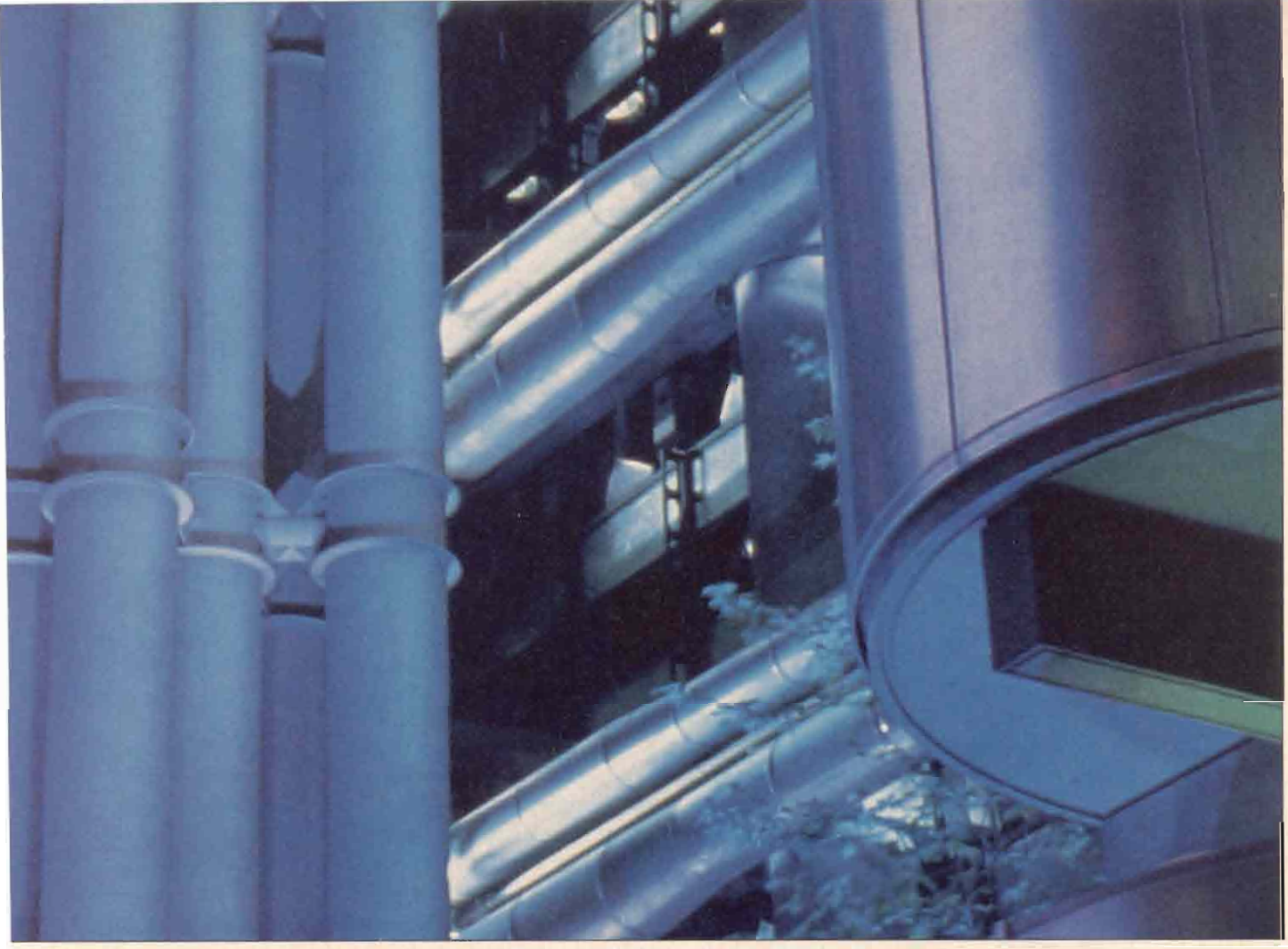
BY PAULA JACOBS

UNIX is heating up in the office. Although PC users are not about to throw out their existing DOS-based systems, UNIX is no longer the exclusive domain of technical applications, such as CAD and CASE. A wide variety of commercial and technical users are beginning to open their eyes to the powerful capabilities UNIX brings to the desktop.

Although the actual number of UNIX office users is still relatively small, subtle changes are occurring. Increasingly, we see traditional PC users adding X Windows terminals and UNIX servers to their office configurations. And long-time UNIX technical devotees are beginning to use office applications on existing workstations.

According to Summit Strategies Inc. (a Boston-based market research firm), an estimated 70,000 of the approximately 365,000 UNIX workstations shipped in 1990 are being used for commercial applications by end users rather than by software developers. This market is expected to grow at five times the rate of the overall industry and at more than twice the pace of the information technology market by 1995.

"The commercial arena represents the fastest growing part of our business and we predict that it will out-perform other sectors, where there is growth action in the workstation market," says Mark Tolliver, marketing manager, Hewlett-Packard Workstations Business Unit. "We are quite optimistic, and are



pleased that we continue to gain key customer wins. We see that the forward-looking organizations, particularly those with mission-critical applications, such as customer service and financial trading, are on the forefront of purchasing UNIX."

Who Are The UNIX Office Users?

GENERALLY, USERS OF UNIX in the office fall into two categories. The largest group consists of technical workstation users who want to increase the productivity of their existing UNIX systems. Popular DOS-based software packages, ranging from word processing and electronic publishing to spreadsheets and decision support tools, are now widely available on UNIX platforms, including HP-UX. These offerings have attracted long-time UNIX technical users, who understand the benefits, such as enhanced graphics and multitasking capabilities, achievable by running these applications directly on workstations rather than on PCs.

The second group, significantly smaller but growing rapidly, consists of new UNIX customers who recognize the power that the UNIX platform can bring to office computing. This group includes both those downsizing from midrange and mainframe platforms, as well as those migrating from PCs.

In the past year, new Hewlett-Packard customers have included the Stock Exchange of Singapore, Boatmen's Bancshares and GTE Telephone Operations. HP is providing 1,600 HP Apollo 9000 Series 400 workstations in client-server configurations for trading activities of the Stock Exchange of Singapore. Boatmen's Bancshares Inc. chose to automate its entire investment and sales operations, using 68 HP Apollo 9000 Series 400 workstations, 62 HP 700/X terminals, and two HP 9000 Model 645 database servers running InTrader portfolio management software from Digital Solutions Inc., an HP VAR. GTE Telephone Operations (Telops) is installing a network of more than 3,500 HP Apollo 9000 Model 425e workstations and Model 433s servers to enable customerservice representatives to quickly access multiple databases containing customer information records and online documentation.

There are three primary types of applications that users are requesting, according to Peter Vescuso, group market segment manager, productivity tools for the HP Workstation Business Unit. "First, they want the traditional desktop applications which they have used on PCs; these include WordPerfect, Lotus 1-2-3, CorelDraw and Informix Wingz. Second, users are asking for applications that can improve group productivity, particularly in network environments. For example, technical support people are now using workstations for multitasking

capabilities. And third, people who are downsizing want more responsive, better performance, multitasking capabilities. White collar workers, for example, need to switch tasks frequently, and by just clicking on the button, it is now possible to switch instantaneously between applications."

Integrated Office Systems

INTEGRATED OFFICE SYSTEMS represent one way to take advantage of networking environments, while increasing group productivity. And industry research indicates that user demand is growing steadily. According to a 1991 International Data Corp. (IDC) study, 1990 worldwide revenues related to UNIX-integrated office systems totaled $108 million, eclipsing the previous year's figure of $63 million.

As Judith Hurwitz, vice president, Office Computing and editor, *UNIX in the Office* for The Seybold Computing Group, explains, "Demands for the integrated office tend to be in vertical markets, such as government. What we saw in the '80s as the concept of an integrated office never really happened, as most people used simply the electronic mail functionality. In order to be successful, the concept of the office required an integrated infrastructure, which was never the reality. What we need to make UNIX a reality in the office is maturation of the industry and true interoperability."

Indeed, today's UNIX integrated office systems are a far cry from those of the '80s, created as an idealistic vision of the office of the future. Instead, the latest repertoire of integrated office software solutions reflects a more realistic response to actual user demands and requirements in a variety of markets, including the U.S. government, traditional commercial sectors, manufacturing, health services, and telecommunications.

"People buying workstations and X Windows terminals, typically in a graphics environment, are interested in creating high-quality text and graphics, but want products that are easy to use, very powerful, and with a consistent user interface," says Jit Saxena, president, CEO and founder of Applix Inc.

Flexibility and coexistence with other platforms are also key customer requirements. As Saxena explains, "People want the flexibility to integrate everything into a document — spreadsheets, audio and video images, and up-to-date data from databases, engineering, CAD drawing, stock market reports — and then mail or fax documents as the centerpiece of everything in business."

These considerations were taken into account in the development of Applix' Asterix software product which runs on HP Apollo 9000 300, 400 and 700 Series and HP 9000 Series 800 workstations, as well as other UNIX-based platforms. Asterix (Version 2.0) is X Window System office integration software which includes advanced word processing, integrated graphics, a set of easy-to-use macro tools, plus optional spreadsheets, mail and filter packs.

Asterix features compound document technology with live links among Asterix applications and an extension language — or scripting — facility (ELF) for extending Asterix and integrating or live-linking Asterix with third-party products. With live links to third-party applications, users can write macros to link files from other software packages on their desktops, such as Lotus 1-2-3. Asterix also incorporates audio and FAX support, so users can include audio for voice annotation or fax documents directly from within Asterix.

Desktop Publishing

THE ISLAND GRAPHICS Island Productivity Series is a set of office productivity tools for designing compound documents that include graphics, high-quality color images and text. The product, which provides both word processing and desktop capabilities, is designed to meet the needs of UNIX workstation users who do not require specialized, high-end desktop publishing functionality.

The Island Productivity Series — IslandWrite, IslandDraw, and IslandPaint — combines WYSIWYG word processing, advanced page layout and graphics, all in full color. This trio of tightly integrated publishing tools is available in Open Look and OSF/Motif versions for UNIX workstations, including the HP 9000 Series and the HP Apollo 2500, 3000, 400, and 4500 series. According to Paul Remer, executive vice president, Island Graphics, "Typically, we see that people are producing a lot of shorter documentation, under 30 pages, such as faxes, memos, letters, proposals. We have targeted technical users who are running their primary applications all day. They like the capability to use icons and cut and paste what they are working on. Also, people want more and better filters to their existing word processing software, such as WordPerfect and Microsoft Word."

To address customer requests to insert equations and tables, Island Graphics will include these features in its newest product release codenamed "Island Presents." This release will also include an outline-driven graphics program that includes pixel editing and charting and run under OpenWindows and Motif.

UNIX Goes To Work

BATTERYMARCH, A BOSTON-based portfolio management firm, has used HP-UX workstations for 3 1/2 years to develop in-house a suite of portfolio manage ment software. "There's no question that we originally chose UNIX as the best platform for software development," explains Bill Boyer, project manager for the Battery UNIX Portfolio Management System.

In the past year, however, the company's portfolio managers also began using HP-UX workstations, including the HP 400s, 400t, 360 and 370 series. According to Boyer, "We wanted to

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[TOWARD UNIX-DOS HARMONY]

With the all-UNIX office still a rarity, the biggest question for most organizations is how to make DOS and UNIX systems work together. The fundamental consideration is data interchange. If users can share their word processing documents, spreadsheets and databases, other compatibility concerns are secondary.

With so many data formats to choose from, establishing standards isn't easy. Here's a short list of commonly used formats that have become de facto standards:

Common text formats:
IBM Revisable Form Text (DCA/RFT)
Microsoft Rich Text Format (RTF)
ASCII 7- and 8-bit text

Graphics formats:
TIFF
PCX
Computer Graphics Metafile (CGM)
HPGL
PostScript
AutoCAD

Spreadsheet and database formats:
Lotus WK*
Multiplan SYLK
Data Interchange Format (DIF)
dBase
Comma-separated value (CSV) text

Although standard data formats are useful, they don't tend to be as rich as other proprietary formats. Documents and spreadsheets may lose font and formatting information when they are converted. Graphics may have to be converted from object- or vector-based images to bitmaps. Even a proprietary format can cause problems for different releases of the software.

One way to simplify data exchange is to insist that everyone use the same software packages for both DOS and UNIX. Office applications that run under both DOS and UNIX include:

- Borland Quattro
- Informix Wingz
- Lotus 1-2-3
- Microsoft Multiplan
- XyQuest XyWrite
- WordPerfect
- Microsoft Word
- dBASE
- DataEase
- CorelDraw

The trouble with this approach is the limited selection of software that's available for any given UNIX platform. WordPerfect 4.2, for example, is available on a large number of UNIX systems, but each succeeding version has been ported to fewer platforms. Version 5.0 has only been moved to 15 or so flavors of UNIX, and version 5.1 supports even fewer than that.

A particular problem is finding presentation graphics programs and Windows applications that run on both platforms. It is one of the great ironies that UNIX — which runs on some of the hottest graphics workstations in existence — is so short on office graphics applications, and makes such minimal use of graphical user interfaces.

The X Window System has opened the door for better graphics under UNIX, and soon the GUI war between Open Look and OSF/Motif will end, but graphics is still a very limiting factor.

X, oddly enough, may cause as many problems as it solves. Any UNIX package supporting X has to assume that some of its users will be using X terminals. High-performance graphics applications can't use X over a network because it is glacially slow. Updating a 256-color, 1024 by 768 bitmap over an Ethernet network can take seconds, which is totally unacceptable for scrolling graphics or animation, which require instantaneous screen updates.

A Match Made In...

None of these problems are show-stoppers, but they have slowed DOS software vendors' entry into the UNIX market. With all the technical hassles, the puny (by DOS standards) market is attractive to only a handful of the biggest.

To circumvent the lack of software availability (and to avoid paying the higher sticker prices of UNIX software) many are choosing to give up on UNIX office applications entirely, and run DOS applications under a software emulator — such as SoftPC from Insignia Solutions — or the DOS merge capabilities of Intel-based UNIX variants like SCO.

DOS emulation adds cost and complexity to the system, runs slowly and occasionally blows up. What could make more sense than spending $700 to make a $10,000 workstation behave like a $600 PC? It takes a workstation in the class of a 76 mips HP 700 to run DOS emulation as fast as an i486. That's no bargain.

The long term viability of DOS emulation may also be questionable. Most emulators can only cope with real-mode DOS software which stays inside its 640 KB bounds. 32-bit protected-mode (80386 and up) code and strange memory usage will blow DOS emulators clean out of the water. Most users can live without Windows in enhanced mode, but OS/2 and 32-bit Windows NT are not going to be so easy to deal with.

Integrating DOS and UNIX in the office still isn't easy, but take heart. At least it can be done. Almost. —*Gordon McLachlan, Contributing Editor*

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populate our workstations with more applications, similar to the types we had been running on our Macintosh, to provide our users with increased productivity and expand the functionality of our workstations."

The first two applications the company added were Island Graphics and Informix Wingz. "We wanted to provide our users with word processing, drawing and spreadsheet capabilities. We use Island Graphics, a nice graphical Motif-compliant productivity application, primarily for memo writing. We've also produced block diagrams, with output to our Postscript printers. Some of us had also been Wingz users previously and were excited to find out it's available on HP," says Boyer.

Some companies require that high-performance workstations provide the ability to run commercial applications such as Lotus 1-2-3, which is now available on HP Apollo 9000 Series 400 and 300 and will support HP's new Series 700 workstations and Series 800 business systems.

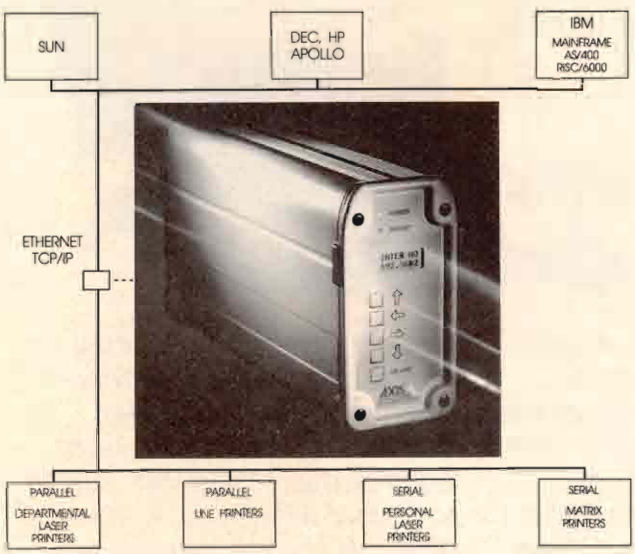
Another development shop that has added a commercial application to its UNIX environment is Digital Solutions Inc. (Bloomington, MN), an HP VAR and beta test site for Lotus 1-2-3 on HP-UX. As developer of InTrader portfolio and management trading software package, Digital Solutions has a growing customer base, servicing both banks and regional money

THESE DAYS, COMPANIES REQUIRE THEIR HIGH-PERFORMANCE WORKSTATIONS TO RUN COMMERCIAL APPLICATIONS, SUCH AS LOTUS 1-2-3.

centers. The company has been using Lotus 1-2-3 to track software problems and the software fixes performed during the debugging process.

As Dan Whipp, quality assurance/client services manager explains, "My job is to test the system before software is released to users, and to track both problems and fixes. We are an exclusive UNIX shop, and currently run HP-UX Revision 8.05 on the 300 Series. I am pleased to be able to use Lotus 1-2-3 on my workstation, as it provides the capabilities I was familiar with when I used Lotus on a PC, and I got exactly what I wanted."

GTE (Irvine, TX) is using an HP 9000 Model 852 with



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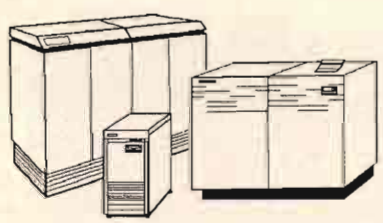

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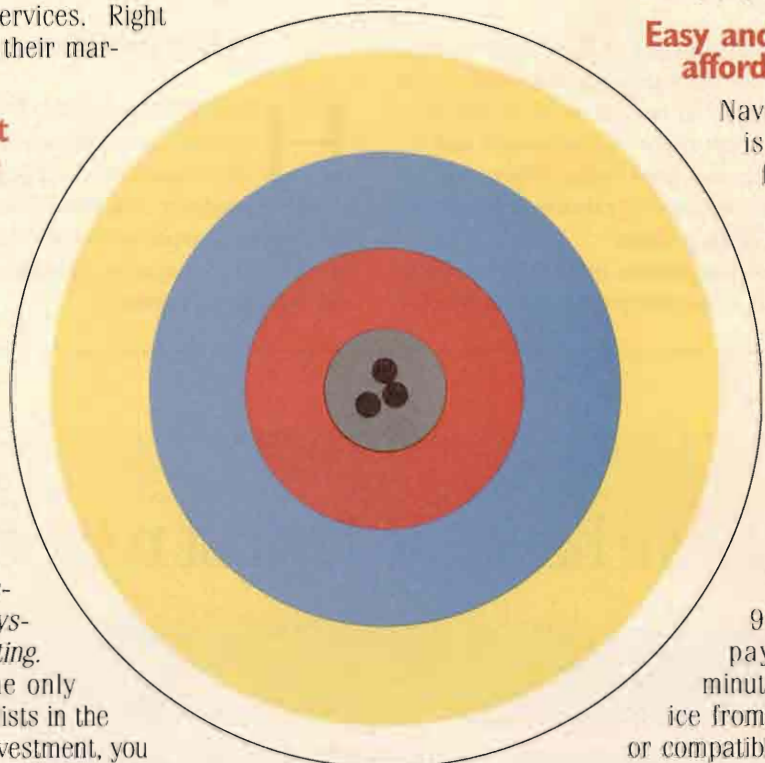

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Verity's Topic text retrieval software to automate its customer service department. As part of its operations, GTE is required to submit complex regulatory filings to the FCC as well as 41 state public utility commissions. The company files both regulatory filings and rate information in internal "Tariff" binders, which need to be updated in order to provide customers with up-to-date information. Filings are composed of multiple documents that have been created and stored in a variety of formats, including Microsoft Word 5.0 and WordPerfect 5.1. GTE, which is merging with Contel, needed a way to centralize this "Tariff" information into one standardized repository. Users from four GTE sites, connected over a 3Com network, must be able to dial in in order to retrieve and edit the most up-to-date information.

According to Tom Woltoff, manager of Tariff communications at GTE, "We needed to avoid hard copy distribution, and ensure that files are accurate and up-to-date at all of our sites. This system has helped automate more of this process and increase productivity. Now users can more easily retrieve past filings, cut and paste new documents, edit existing information, and more easily manage the filing process."

The Washington Post is also a relative newcomer to using UNIX for office applications. The newspaper, with a Sunday circulation of approximately one million readers, required an efficient way to track advertising circulation inserts. For both the Sunday and daily editions, the paper receives preprinted advertising pieces which need to be stored and retrieved for scheduled advertising packages. These packages then must be stored for pickup by the newspaper distributors.

Approximately a year ago, the company installed HP 9000 825/835 workstations running Informix 4GL, ESQL, and On-Line database software tools. As Bill Frazier, systems manager, explains, "We have used these UNIX tools as a platform to automate our warehouse inventory system. We are also running a small Ethernet."

HP Client-Server Applications

HEWLETT-PACKARD OFFERS a solid foundation for client-server applications, both with its workstation/server family and support for a variety of clients, networking products, and NewWave Office. On the server side, HP supports applications including decision support tools, integrated office systems, spreadsheets, text retrieval and executive information systems.

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Many HP 3000 owners already have this sure thing installed on their systems. And it's easy to get out of

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Many of these products, such as Cognos' PowerPlay a reporting and analysis package, are available on both the client and the server. When used in client-server mode, PowerPlay can run with different hosts to distribute information automatically to managers throughout the organization. For example, PowerPlay can complement PC tools such as Microsoft Excel and Lotus 1-2-3 by tying into corporate databases, focusing managers on critical information that can be exported to spreadsheets for further computational analysis.

According to Robin McNeill, PowerPlay product manager, "From the end-user reporting side, people are setting up low-cost UNIX servers that enable you to move and extract quite a bit of data from a database." PowerPlay automatically presents managers with information from virtually any database, spreadsheet or other data source in graphical form, such as colorful pie charts and bar graphs.

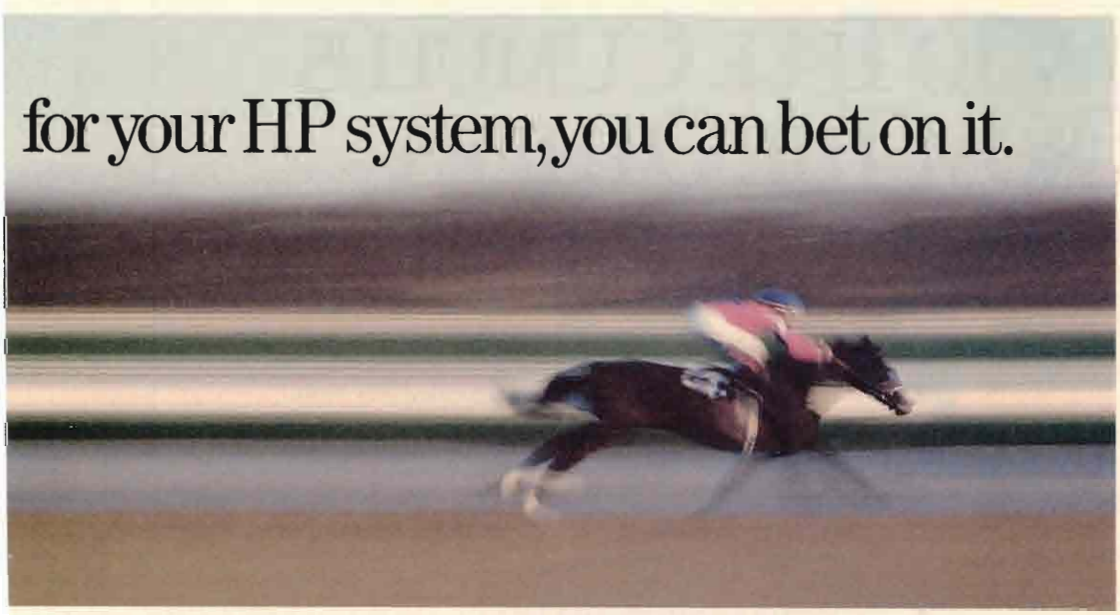
Some other applications that support HP-UX under the NewWave Developers Program include Jetform, a forms generation package; Keyword KEYPack, which converts and retains formatting features of 45 word processing systems; Channel Computing's Forest & Trees, which provides EIS functionality; PacerPost, Macintosh to HP OpenMail connectivity; Voice 1 from Decision Management Associates, voice annotation at the desktop; Dexotek Calendar/Schedule system; Verity's Topic, which provides content-based text retrieval; and Saros' Mezannine, a networked file/object management system.

Coexisting With Other Office Workers

IN THE UNIX OFFICE environment, interoperability is more than a buzzword. For the near future, at least, a variety of PCs, workstations and multivendor equipment will continue to coexist. UNIX software vendors understand that users need to protect their existing software investments. As a result, we see that UNIX office software products, such as Verity's Topic and Applix' Asterix were designed to allow coexistence with existing software applications and support for numerous word existing application packages.

Products such as Island Graphics Productivity Series often include special filters that allow a high degree of import/export capability. And today, more than ever, vendors are realistic about designing modular software products so that users can purchase only the components that meet their needs.

As more UNIX-based workstations are sold into commercial markets, the need for office applications that integrate with



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primary business applications will grow. Although currently there is only a 0.2 percent penetration rate of workstations within the commercial sector, this rate is steadily growing.

Workstation technology allows access to up-to-date real time data. This capability explains why financial services often have selected workstations over PCs and why it is anticipated that other service organizations will soon follow suit. Such organizations are attracted by UNIX office software features, including the use of live links, providing the customizability, extensibility, and the flexibility that customers are demanding.

Or as Applix' Saxena points out, "There's a class of applications, of which Asterix is one example, that feature customizability and integration not available with PCs. Now that these applications are available, they will drive the workstation market within the commercial environment." — *Paula Jacobs is a marketing consultant and writer based in Framingham, MA. She specializes in the implementation of new technologies.*

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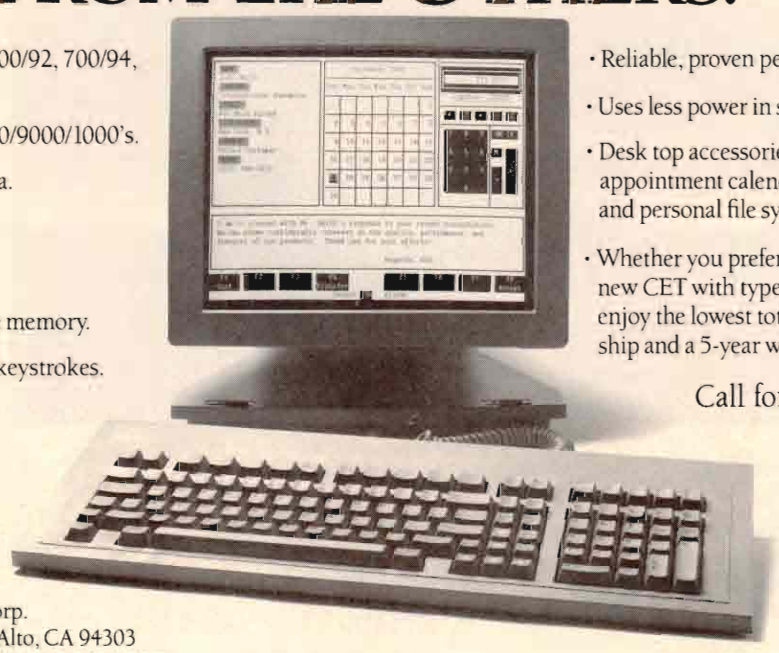

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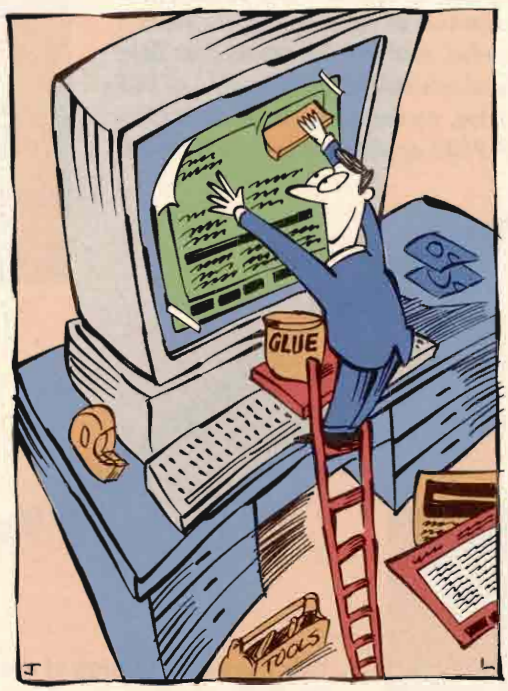

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Hosts and PC's have

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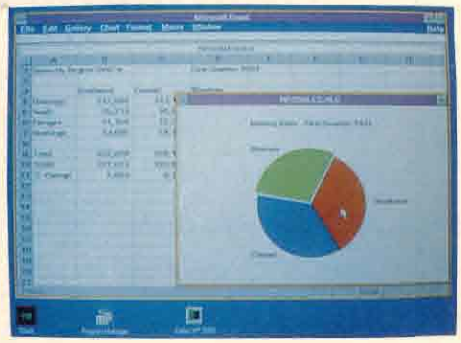

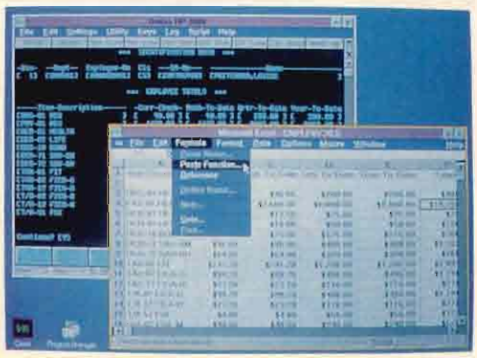

Your financial department needs an easy way to extract data from the HP host and manipulate the data in a spreadsheet for analysis. Session and Excel, working together, can do this automatically every morning, providing up-to-the-minute data for crucial financial decisions.

Are you tired of listening to users complain about how difficult and time-consuming it is to get host computer information into their PCs?

Session for Windows makes it easy.

Using Business Session for Windows, scripts can be created that automatically retrieve host data and pass it to Windows applications. Because Session supports Microsoft's Dynamic Data Exchange (DDE), Session can talk to programs like Microsoft Excel™ and Word™ for Windows, with no involvement on the part of the user. This puts information where it's needed, when it's needed, and allows easy analysis using your PC applications.

Automate repetitive tasks.

Session's scripting capabilities can be used to automate many repetitive tasks, such as log-ons, printing files, and creating and deleting files. And Business Session for NewWave takes task automation even further, allowing users to transfer files or run scripts with a simple drag and drop. Better yet, they can let their Agents do the work.

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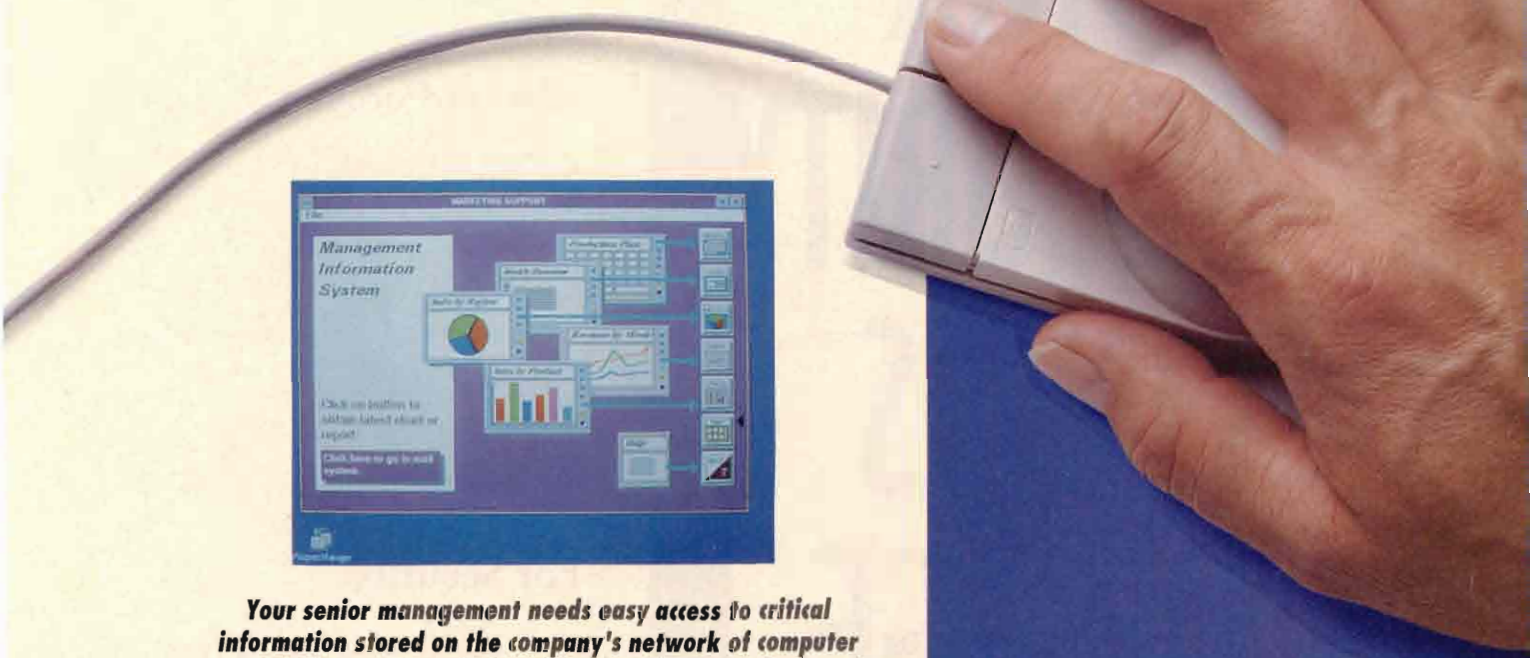

Your senior management needs easy access to critical information stored on the company's network of computer systems. Using other Windows-based products like Asymetrix Toolbox™, a custom interface can be created that allows host data to be accessed by simply clicking on an area of the screen. Windows applications extract data from the network with Session, making it available for analysis with Excel and report distribution through electronic mail.

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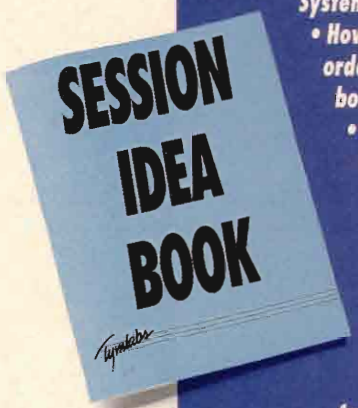

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UNIX SECURITY COMES OF AGE

Market Forces Are Reversing UNIX's Once-Dubious Reputation For Security

BY WAYNE CACCAMO

The future of UNIX system security is bright, but it wasn't always that way. UNIX was born a development environment, it grew up, went to school and became very popular within the academic community. There UNIX acquired some radical values, didn't always practice "safe sex" — hence the viruses — and obtained a dubious reputation for security. Nevertheless, UNIX graduated and entered the business world.

At first, the young UNIX didn't have the management and administration tools necessary to make it with Fortune 500 companies. Now UNIX has gone back for its M.B.A. concentrating on commercial security — an important credential in large corporations.

From rags to riches, this is the story of how UNIX acquired a shabby reputation for security and why that reputation is changing. Indeed, market forces are shaping the future for a more secure UNIX, without sacrificing any of its well-known talents for portability, interoperability and emerging leadership in performance and usability.

UNIX'S rather weak reputation for security is rooted in its original orientation as an development environment rather than a business system. Engineers typically ensure that they have access to any file or resource and, therefore, disable any security

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features that might interfere with their ability to get work done quickly.

Subsequently, these "wide-open" systems often would be delivered to customers unmodified. Today, reputable UNIX vendors deliver systems in more restrictive configurations and include instructions on how to install systems securely.

UNIX Goes To School

AS NEWS OF THIS SIMPLE and elegant development environment spread throughout the academic community, the beginning of openness and information sharing was fostered. Universities began to acquire the UNIX source code and books were published providing source code to the UNIX kernel — the very blueprint of the security mechanism.

With the keys to UNIX systems widely distributed, systems were highly vulnerable to security breaches.

The UNIX kernel has changed so much since these documents were published in the 1970s, they no longer represent a significant threat. And although information on UNIX source code is still publicly available, the source code is now legally protected.

Nevertheless, the policy of openness and information sharing among the technical and academic communities persisted, contributing to the explosive growth and popularity of UNIX systems and, consequently, networks, hackers and even crackers. As a result, both the virtues of this environment and its flaws, especially with respect to security, have come to light.

Most experts agree that UNIX isn't necessarily any less secure than those proprietary operating systems it might be cohabitating with or replacing. There are just as many problems with other operating systems, but vendors and users of those proprietary systems usually prefer not to discuss such flaws. For instance, it is cheaper for a bank to absorb a $1 million loss resulting from an MVS mainframe break-in than to bear the cost of negative publicity.

More recently, well-publicized virus or worm attacks on UNIX systems have exploited some combination of well-known bugs, poorly written superuser programs, careless system administration, or the introduction of free software from public bulletin boards or user special interest groups.

For example, the estimated $89 million loss resulting from the Internet break-in of 1988 has done much to refuel concerns with UNIX security. Unfortunately, most people assume that all such incidents are a direct result of security vulnerabilities intrinsic to UNIX. But responsibility for most intrusions should not be attributed to the nature of UNIX, but to the nature of an open access network that happens to involve UNIX systems.

In general, putting a computer on a network automatically makes it less secure, regardless of whether the nodes on the network are running UNIX or some proprietary operating system. Ultimately, the only way to protect the flow of data over the network from electronic eavesdroppers or network "spoofers" is to physically secure and isolate it from the rest of the world. Nevertheless, somehow UNIX has been pronounced guilty by association with such electronic misadventures.

UNIX Enters The Business World

DESPITE SOME BAD PUBLICITY, the sphere of UNIX's acceptance grew out of the academic and government sectors and into the commercial marketplace. Initially, however, UNIX lacked the required pre-packaged security facilities — the academic and government users had grown accustomed to developing these features in-house.

It comes as no surprise then that more than 90 percent of all UNIX security problems are caused by mistakes made by users and system administrators, not by viruses and crackers.

Perhaps more than any other operating system, UNIX security can be either made or broken by the system administrator. A seasoned UNIX administrator can employ a host of tools which, in the appropriate combinations, can accomplish almost any job. However, unlike proprietary systems, these tools traditionally are not pre-arranged for the administrator.

Rather, they must either be developed in-house or be purchased from a third party. And, because UNIX's orientation in the past was that of a development rather than production environment, few such tools have been available.

UNIX Goes Back For Its MBA

UNIX'S SUCCESS IN THE marketplace has attracted a host of developers of sophisticated system administration packages providing security audits, password management and monitoring facilities.

Vendors of UNIX systems have enhanced their offerings with user-friendly interfaces for administering system and network security. In addition, HP provides an emerging industry standard interface for managing networks of UNIX and non-UNIX systems called HP OpenView.

In an attempt to meet the needs of ever-expanding target markets, security enhancements and functionality are being built into the UNIX operating environment. Most vendors are bolstering UNIX security in the areas of password administration, access control, and auditing for increased user accountability. Thus, in many areas including security, UNIX functionality has evolved to the point that it is on a par with or better than proprietary environments.

Clearly, the need for enhanced UNIX security is being addressed. Ultimately, however, no level of operating system security is a substitute for establishing a security policy document that considers the particular needs of an installation. The pri-

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mary responsibility for complying with and enforcing policy falls on the user and administrator community and not with the operating system — UNIX or otherwise.

UNIX's Career Outlook

THERE ARE TWO market forces driving continuous improvement to UNIX system security. First, affinity for UNIX in the defense-related market is pushing vendors to provide the highest levels of security to meet that market's rigorous requisites.

Second, both the Open Software Foundation (OSF) and UNIX International (UI) are trumpeting enhanced security as a predominant design and strategic theme.

The defense-related marketplace, including the U.S. Department of Defense (DOD) and its suppliers, represent the leading-edge of security needs, at least with respect to data confidentiality. The DOD, already the largest UNIX user in the world, has taken a strategic turn toward UNIX in the past few years.

Vendors are scrambling to satisfy the more stringent DOD security requirements defined by the National Computer Security Center's (NCSC) Trusted Computer System Evaluation or "Orange Book" criteria. The NCSC evaluates operating systems and assigns various ratings or levels of security including: C1, C2, B1, B2, B3 and A1.

Currently, DOD purchasers are requesting systems that provide a B1 level of security or higher. HP now offers B1 level security for HP-UX. Called HP-UX BLS, this operating system addresses the more complex multilevel security needs typical in the defense-related community. The security enhancements to HP-UX found in HP-UX BLS outpace the requirements of commercial customers. Some of the security features provided by the B-level product most likely will be required by commercial customers in the future.

The second important driving force is the competitive environment. Both OSF and UI are focusing on improved security as a central design theme. Both plan to offer B-level security. Moreover, OSF is planning to address even higher levels of security (i.e., B3, A1) by implementing a more modular Mach-based kernel design. Such a redesign and implementation of the kernel is considered necessary to address the system architecture criterion specified by the highest levels of security.

Another important OSF security initiative addresses the special threats in the area of network authentication and access

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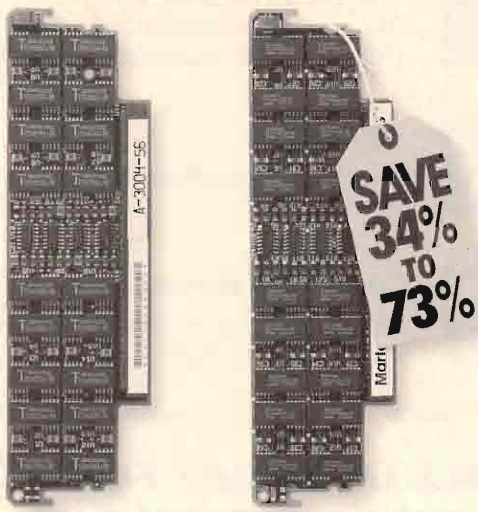

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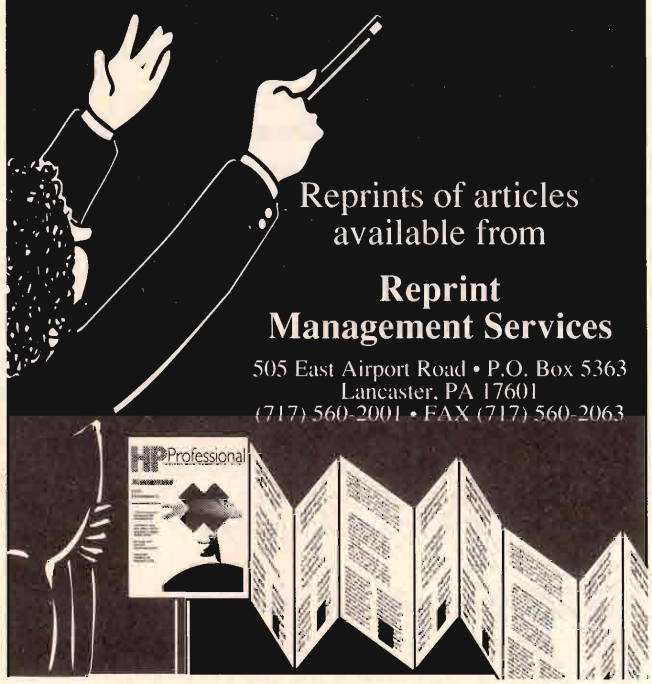

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CIRCLE 104 ON READER CARD

control associated with the client-server paradigm of computing. OSF's Distributed Computing Environment (DCE), which will be implemented on both HP-UX and OSF versions of UNIX from HP, will provide network authentication services, an area not covered in the Orange Book.

Because OSF is building in core functionality, such as security from the ground up rather than retrofitting the operating system, users will not have to sacrifice system usability, performance or compatibility in order to take advantage of new security features.

UNIX has matured in many areas important to commercial users, and as a result has a promising future in business environments. Look for industry-leading versions of the operating system, such as HP-UX, to distance UNIX from proprietary alternatives in providing secure, open computing. —*Wayne Caccamo is an HP product manager, HP-UX Security, based in Cupertino, CA.*

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[OSF Plans To Expand Environment In 1992]

The Open Software Foundation, of which Hewlett-Packard is a founding member, spent much of 1991 gathering technology for the three fundamental components of its operating environment.

While observers maintain that the eagerness of network managers to move to OSF/1 and the OSF/Motif graphical user-interface environment have been astonishing, the expected lag in development time of distributed computing and management environments is expected to slow that momentum. The real test will be the availability of compliant applications.

Here is the current status of the OSF technologies:

- OSF/1, the OSF operating system kernel, has actually been shipping from several leading platform vendors, including HP, for much of the year. Although the operating system is perceived as just another UNIX derivative, HP and the rest of the OSF members stress that the real goal of the program is interoperability and multivendor portability.
- OSF/DCE, the Distributed Computing Environment, has been completely specified. DCE code is available to members and non-members, so real-world DCE systems should start hitting the streets in the middle of the year.

The elements of the DCE will include the functionality of network layers 4 through 7. The adopted technologies will include RPCs from HP Apollo (with some extensions from IBM and Digital); Digital's Domain Name Service; Siemens-Nixdorf's X.500 service; MIT's Kerberos authentication/security service; Transarc Corp.'s Andrew File System, which is an extension of Sun's NFS; Microsoft's LAN Manager/X, and others.

- Technology submissions for the OSF/DME, the Distributed Management Environment, are still being evaluated, but enough progress has been made that a clear direction for this component can be discerned. A blueprint for the DME was was announced last month.

The DME, which is more involved in the physical and internetworking layers, will also include: Distributed print spooling; distributed backup; performance management; load balancing; network software license management; and software distribution and installation.

The OSI Common Management Service is also expected to play a leading role within the DME, but a battle is also being waged in OSF committee's between elements of HP's OpenView and Digital's Enterprise Management Architecture. With its IBM license, OpenView is expected to have a slight political edge.

This year, with the projects for OSF/1, OSF/DCE and OSF/DME at full steam, the OSF will turn its attention to the development of an Architecture-Neutral Distribution Format (ANDF), a spec that purports to provide a means to distribute applications to multiple platforms without regard for the underlying operating system.

According to the OSF's Vice President of Operations Charles Reilly, this program will include the development of a standard that allows applications to run shrink-wrapped (ANDF-compliant) on different platforms, with more functionality than the industry's current application binary interfaces.

OSF/1 Shipping

HP's current version of HP-UX is, for all intents and purposes, an OSF/1-compliant kernel. For HP's Intel-based systems, the company is expected to rely on the OSF/1 version of SCO UNIX that has already begun shipping from the Santa Cruz Operation.

HP intends to move the company overall to the technology in a phased approach. Of course, the fundamental difference between the two is that OSF/1 is based on Carnegie-Mellon's Mach kernel and HP-UX is System V-based.

Most open systems analysts agree that the differences between OSF/1 and System V UNIX will eventually be negligible. For instance, the two environments have a high degree of base compatibility provided by adherence to network software standards. Both will support the IEEE POSIX operating system interface, ANSI C, the X/Open Portability Guide Issue 3, and the X Window System, and both provide extensions for System V Release 3, BSD 4.3 and SCO Xenix.

Although System V Release 4 has a long commercial headstart, the functional advantages and the strong vendor backing of the OSF consortium could propel its popularity. Already the OSF's Motif graphical user interface development environment is receiving more support among software developers. That popularity is expected to trickle down to the OSF/1 kernel. —*Evan Birkhead, Contributing Editor*

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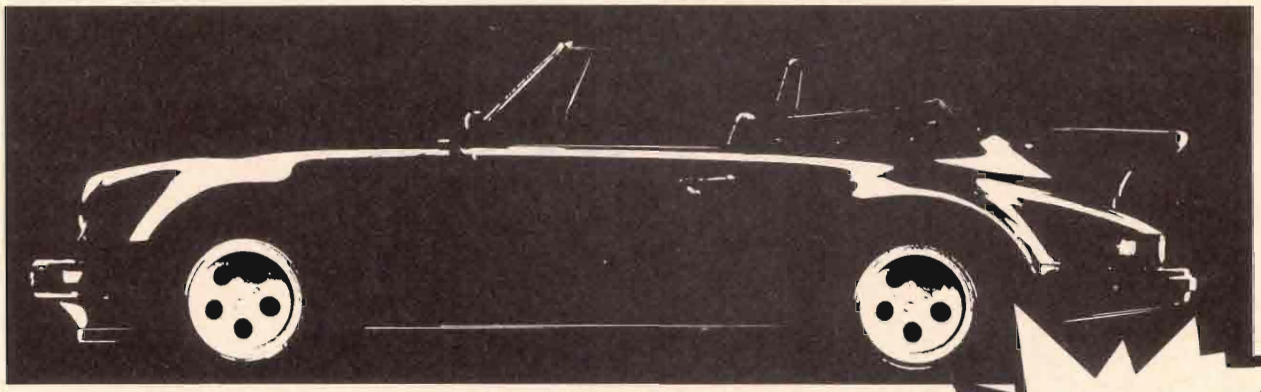

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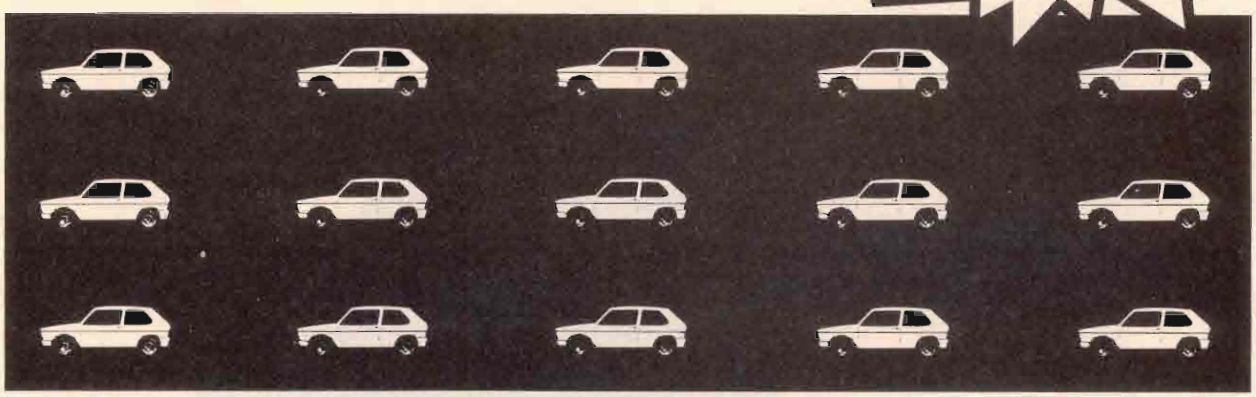

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CIRCLE 283 ON READER CARD

RESETTING THE HURDLES

BY BILL SHARP

The 710 comes with three monitor choices.

HP Again Sets A New Price/Performance Mark — This Time With Low-End Additions To Its 700 Series Workstation Line

The new guy on the block, Gary Eichorn, general manager of HP's Workstation Business Unit, recently summed up his adopted company's newest workstation simply: "This is an 'In-your-face' product."

The HP Apollo gang strikes again in the workstation market! Less than a year after bringing the Series 700 workstations to market (see April 1991, *HP Professional*), HP makes itself more attractive yet with:

- Model 710, a stripped-down Series 700 workstation with 49.7 SPECmarks at a base price of $7,490, making it by far the best price/performance on the market, although not the lowest-priced RISC.
- CRX-24 and CRX-24Z graphics systems to fire up graphics capabilities in the middle of its line.
- More than 800 VABs signed up to date to supply Series

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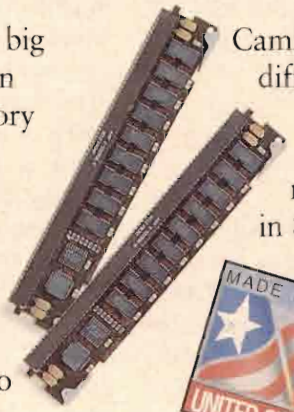

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CIRCLE 294 ON READER CARD

THE 710 TAKES HP'S RISC-BASED WORKSTATIONS TO A NEW HIGH IN PERFORMANCE AND A NEW LOW IN PRICE OF $7,490.

700 software, taking the total to more than 2,000 applications available for the RISC workstation family.

- A reseller program for Series 700 workstations that promises to make these products much easier to buy during 1992.
- Plenty of competition on price, but not much on performance — yet.

Enter The 710

HP'S MODEL 710 IS a fine repackaging job that simultaneously takes HP's RISC-based workstations to a new high in performance and a new low in price of $7,490.

Series 700's newest member is a sleek pizza box enclosure that you may recognize — it is the same case used for the 425E and 700 X-station models. The package is three inches high, 16 inches wide and 14 inches deep. Inside the pizza box is something that puts pepperoni to shame — the same 50-MHz PA-RISC processor that drives the Model 720, with cache lopped off so the system costs less.

Cache for the Model 710 is one-fourth of that used in the 720. Some of the expandability of the 720 is given up in the tradeoff as well. The base configuration comes with 16 MB of RAM and no hard disk, as is standard for base models in the industry.

Graphics come in three flavors with the 710. A 19-inch grayscale monitor with eight graphics planes and 1280 by 1024 resolution is standard. Next up the line is a 16-inch color monitor with eight planes and 1024 by 768 resolution at a base price of $11,490. Top of the 710 line is 19-inch color with eight planes and 1280 by 1024 resolution for $13,990.

Graphics performance is where you would expect it to be with HP's CRX graphics — 950,000 2-D/3-D vectors per second (peak), and 500,000 X11 vectors per second (sustained).

This computer is quiet — which makes the 710 a bit unlike most other workstations. Listening to it run next to a Sun IPC made me want to switch off the Sun after just a few minutes. HP gave the model an automatic variable-speed fan, so when the room is cool, the computer stays quiet. If the room gets hotter, the fan will run faster to keep your chips cool.

Traditional workstation users and commercial customers are those who will be most pleased with the 710. It's well suited to both electronic and mechanical computer-aided design (CAD), computer-aided software engineering (CASE), desktop publishing and some of the complex new client-server applications used in financial markets and customer service. Graphics capabilities extend up through 2-D and into 3-D for wireframe color and grayscale. By using HP's new PowerShade 3-D surfaces software, users can also get entry-level surface rendering out of the system.

Floating Point Problems Drifting Away

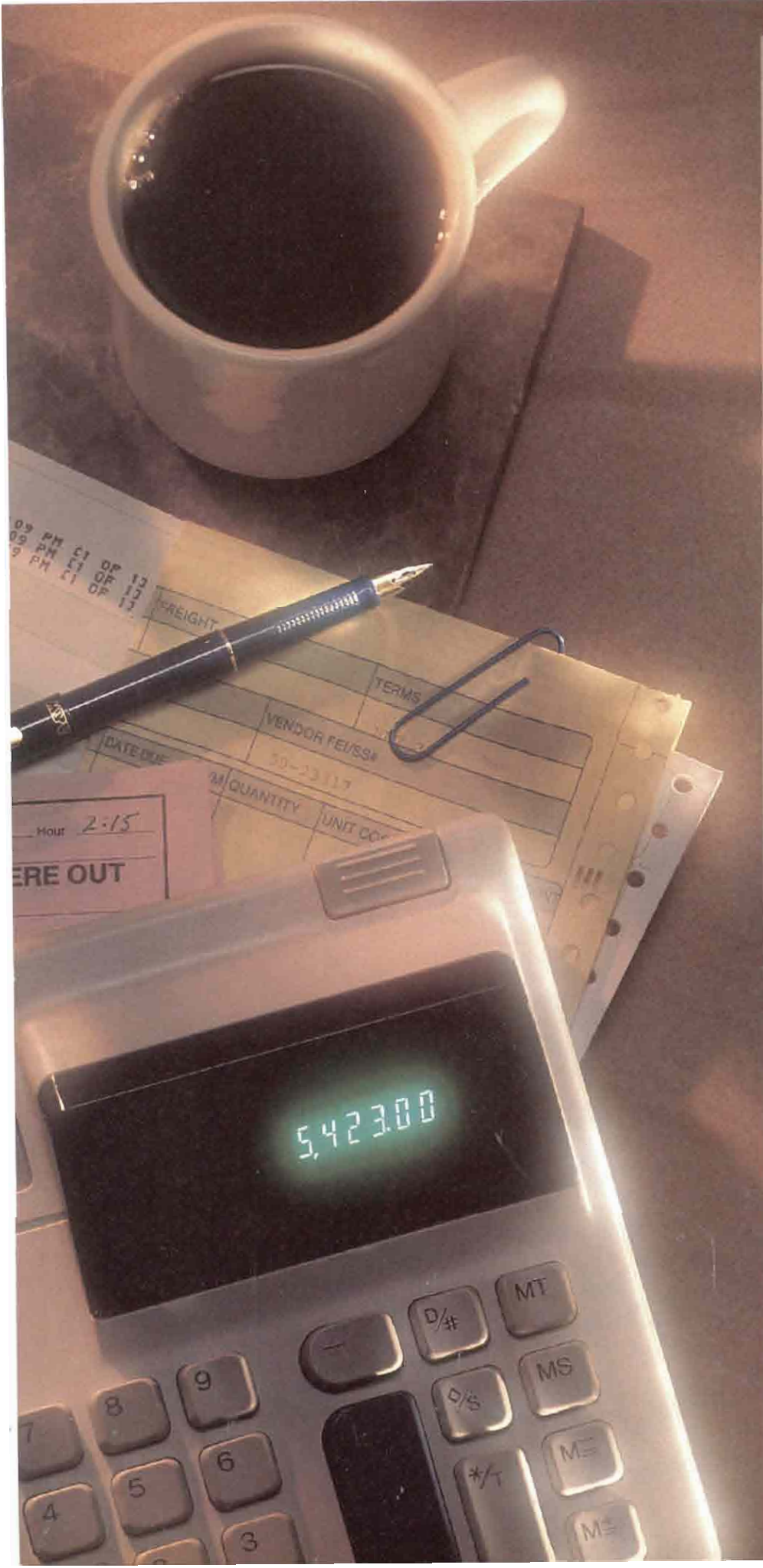
SHORTAGES OF FLOATING point chips that delayed shipments of Series 700 workstations at introduction are much less of a problem now. The custom chips had been designed and supplied by Texas Instruments for the 700 products, but lagging deliveries of the chips dragged down HP's deliveries on the workstations, at times forcing delivery out to 12 weeks or more after order.

HP is mum about what solution has been applied, but is quoting three to four weeks delivery on new Model 720 systems, although 730 and 750 systems still had long delays in November. HP expects no significant delays in shipments of Model 710 because of the problem. Manufacturing for the product at HP's Exeter, NH facility was ramping up during November.

How do analysts feel? Model 710 "will cause some real pain for Sun and DEC," says Michael Goulde, vice president of Open Systems Advisors (Boston, MA). Goulde notes that while HP's entry price for RISC is quite a bit higher than some from competitors, so are HP's performance numbers. "HP's core technology makes them look a lot cheaper. HP won't do well in the most price sensitive situations, but they will do well in price/performance. Folks looking for dirt cheap probably won't buy it."

Dataquest Senior Industry Analyst Laura Segervall agrees with Goulde that, "For applications where performance is not crucial, lower price points could win [over HP]." However, she finds the price/performance of the new system impressive. "I didn't expect them to push that much performance for that price." Segervall cites HP's newfound aggressiveness as perhaps as important as the products themselves. The new style "has opened doors to new prospects and customers." HP is still ramping up in the workstation business, she says.

How does HP feel? Working on product marketing for Series 700 products "is like being a kid in a candy store," for Pierre Bouchard, manager of Entry-level Systems Marketing in the Workstation Business Unit. "You don't have to try for every



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performance scrap you can get. It frees you up to think about marketing, spending time with the customer to develop your strategy."

John Thompson, manager of Performance Workstations in the Workstations Business Unit, feels certain that introducing the Model 710 sets another price/performance milestone that will be in place for some time to come. "We set an industry hurdle with the 720 that was in the 4.9 [SPECmarks per $1,000] range prior to our configuration changes. Now we have set a new hurdle of about 6.6 [SPECmarks per $1,000], and no one has even touched the first one."

Eichorn is not about to mince words, either. "I think we are a full [product] generation ahead," he says.

What's Different With The 710?

THOMPSON TICKED OFF SEVERAL differences between the 710 and the 720, the previous low end of the line.

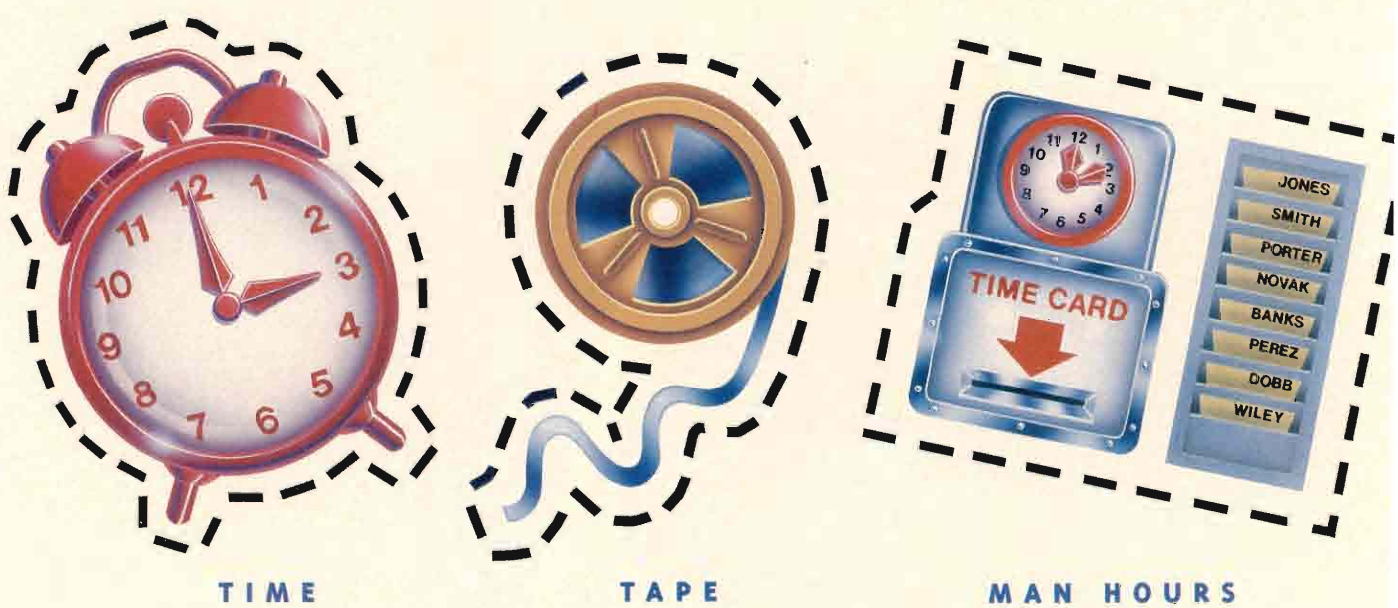
■ Performance is not as big a distinction as you might expect. Model 710 zips along at 49.7 SPECmarks compared to 59.5 for the 720. This is primarily due to the difference in cache size for the two systems. The 720 ships with 128 KB instruction cache and 256 KB data cache, versus 32 KB and 64 KB, respectively, for the 710. Another reason for the general performance difference is the level of chip integration in the design of the mother board — the 720 does this better.

■ Floating point performance is better on the 720, at 17.2 Mflops versus 12.2 Mflops for the 710. Again, cache is the big reason for the difference.

■ RAM expansion differs by a factor of two. Model 720 can be upgraded to 128 MB of RAM, versus a limit of 64 MB for the 710.

■ Bus expansion capability is also more limited on the 710. The new system provides built-in LAN connections for both AUI (ThickNET) and ThinMAU (ThinNET) connections, external SCSI-2, bi-directional Centronics interface, two RS-232 serial ports and HP-HIL. The 710 does not provide EISA — not even as an option. Thompson explains that with the other connections allowing for a large number of devices, HP did not feel EISA was necessary at the low end of the family. But the economics of sales may also play a role in this. By eliminating EISA and the ability to link in low-cost PC peripherals, HP forces customers to buy more of its own higher-cost devices — naughty but profitable!

LOOK WHAT YOU CAN



■ Graphics is significantly different on the 710. Part of the design strategy for building a low-cost Series 700 product was to confine all graphics processing to the stripped-down mother board. The graphics processing provided is high-quality eight-plane stuff, and that is where it ends. There is no upgrade board for higher graphics performance. However, PowerShade is available for the 710 as it is for the rest of the line, because it is a software product. Even straight out of the box, there is a 20 to 25 percent performance advantage with the 720 on, for instance, the X11 benchmark.

Observant folks may notice that the base prices for Models 720, 730 and 750 are higher than they were at introduction last March. Typically, computer prices drop over time, so let's ask the obvious question: "Hey, what gives here?"

For starters, says Thompson, only the Model 710 now has a base price that excludes a disk drive. Excluding the disk drive is a clever ploy all workstation makers use to make their lowest-priced models seem like a real steal. Then, after you get interested, they add on a disk drive for a zillion dollars, as well as other costly little additions.

The sly guy in me figures HP is in effect making price increases on all three upper models, but is giving you more at the same time to sweeten the deal. Net effect:

Model 720 was $11,990. Now $14,990, with 420 MB disk drive thrown into a system that used to have a diskless list price.

Model 730 was $19,990. Now $20,990, with 420 MB disk drive thrown into a system that used to list with a 220 MB drive.

Model 750 was $43,190. Now $48,190, with 32 MB of RAM and 1.3 GB of mass storage on the base system that used to have 16 MB of RAM and 660 MB of mass storage.

Aggressive Graphics

THOSE WHO HAVE FALLEN in love with the price/performance of the Model 710 will want to skip this section — you can't have any of HP's new graphics capabilities because the 710 won't accept the required add-in board.

For Models 720, 730 and 750, HP has revamped the high end of the graphics line with two products called CRX-24 and CRX-24Z. These are both modular add-in boards for 24-plane or "true-color" graphics with 19-inch color monitor. CRX-24Z adds a daughter card to the board for solids modeling and rendering performance.

CRX-24 on the Model 720 cranks out 1.15 million 2-D/3-D

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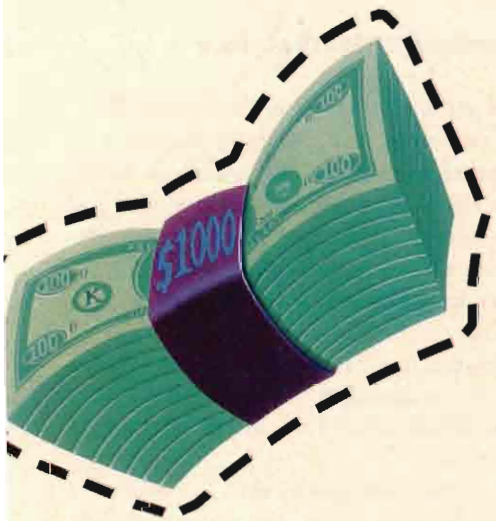

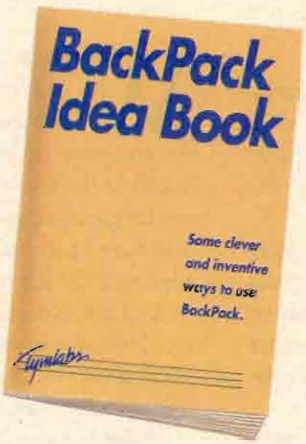

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vectors per second, nearly twice the rate of the nearest competing product with a similar configuration, according to HP. Base full system price with Model 720 is $28,490.

CRX-24Z on the Model 720 produces double the performance of the closest competing system in a similar configuration using the GPC cylinder head benchmark, says HP, with a score of 35.3. Base full system price with Model 720 is $36,490.

Both CRX-24 and CRX-24Z performance jump about 30 percent for more demanding applications with models 730 or 750, says HP.

Planning a new airport control tower for the office parking lot? If you want to see several monitors humming along at once, all linked to your HP workstation, you can get it, now. Dual CRX for $17,000 provides an interface board and two 19-inch monitors. With the Model 750 you can get four displays if you really must have them.

Your Serve

HP WOULD LIKE YOU to consider the Series 700 as a low-cost server. Even the 710 is worth a look with its performance, says HP. For configurations of two to six seats it offers more than twice the performance of similar Sun configurations at a lower cost per seat. Because of identical packaging, user interface and system response between Model 710 and 700/RX X-stations, these pair up well with a per-seat cost of less than $9,000.

Thanks to increased storage capacity, new disk array products, DAT, more RAM and FDDI, HP has increased ability to provide larger servers based on other Series 700 models as well.

Channel Cats

HP IS HEADED FOR the deep waters of commercial computing channels by making it easier and faster to buy its workstations. When you need your next workstation, why not call Intelligent Electronics, Exton, PA, or MicroAge Computer Centers, Tempe, AZ?

These are the folks who, among others, will be extending HP's reach into the marketplace by providing an alternative sales channel into your hearts and pocketbooks. Series 700 workstations have been so successful that HP needs to develop more ways to sell them to keep up with demand. So the sales process is now well on the way to becoming specialized.

HP will continue to use its direct sales force to work with large target accounts where client-server systems with lots of complexity need the full expertise that HP's own sales engineers can provide, and where sales profits are the greatest. Where single market expertise and existing relationships make it important, HP will continue to use value added resellers

HP IS HEADED FOR THE DEEP WATERS OF COMMERCIAL COMPUTING CHANNELS BY MAKING IT EASIER AND FASTER TO BUY ITS WORKSTATIONS.

(VARs) to package HP hardware with their own products for the marketplace. Examples of these are existing relationships with Mentor Graphics, McDonnell Douglas, Accugraph and Autotrol.

Beyond these specific areas, HP will be using a new class of sales partners, dubbed Certified Workstation Resellers (CWRs), established in part through HP's relationships with Intelligent Electronics and MicroAge. This will include some 100 locations around the U.S. where dealers have met HP's requirements for working carefully with customers, and making the significant investment HP feels is necessary.

Alan Arnette, Channel marketing manager, and Mike Noble, product line manager for Value Added Channels, state that there will be only about 50 sales areas in the U.S. when the program first takes affect this month. *HP Professional* will keep you posted as this develops.

1992 Computer Marketplace

WHILE THE VIEW FROM within HP-oriented shops may look rather rosy, make no mistake about it — the computer market overall is a mess. Name the company of your choice, and chances are they have had layoffs in the past few months. In the case of Stardent, the entire corporation got pink slips — no favoritism there. DEC and IBM have both endured large numbers of layoffs, DEC doing it wholesale for the first time.

And HP, although it likes to say it has never had layoffs, can avoid the stigma only on a technicality. During the last quarter of calendar 1991, HP bade farewell to 3,300 employees who accepted early retirement offers.

Thanks to the U.S. economy exhibiting the vigor of the average dead duck, most of us are not in the market for large numbers of computers, so only the vendors with the hot boxes are doing well. HP just happens to be the luckiest duck in the pond right now, selling well with everything from the 425E to the HP 3000 high end, but only because well-designed prod-

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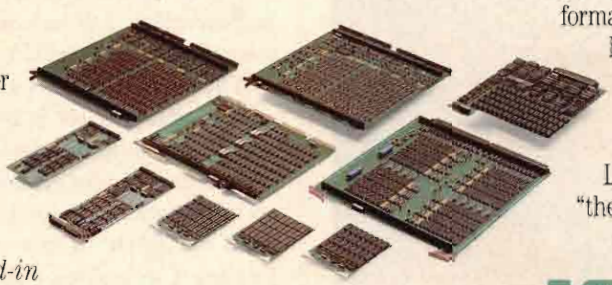

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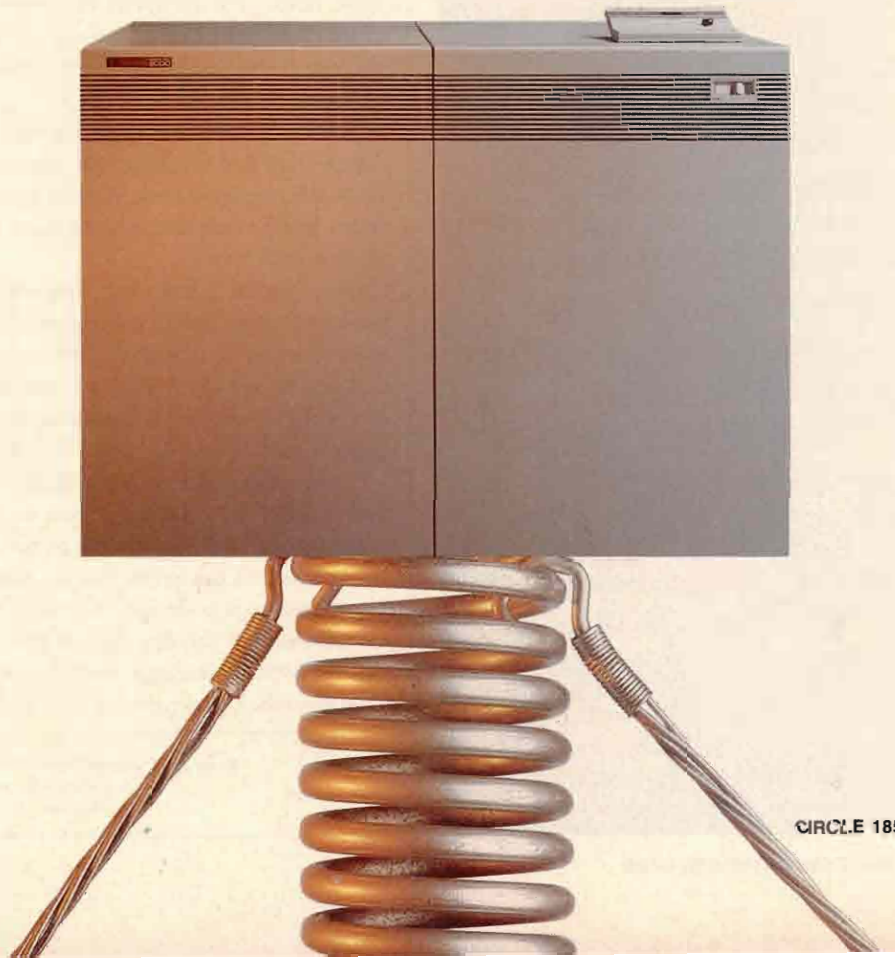
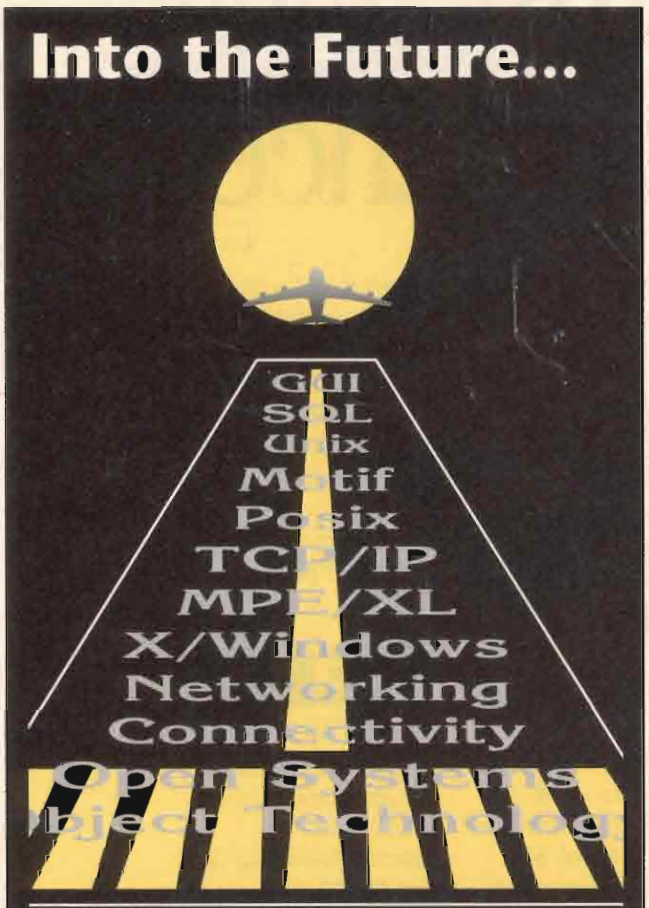


CIRCLE 185 ON READER CARD



The 1992 SCRUG conference: a 60-plus session technical program, the largest regional HP3000 vendor show in North America, a full-day pre-conference tutorial full of information vital to new HP3000 users, and William J. Murphy, Director of Global Marketing for Hewlett-Packard Computer Systems as keynote speaker. Plan *now* for SCRUG 1992. Get the information you need to be successful — today and in the future.

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ucts are offering customers both superior performance and price/performance ratios.

Workstation Competition

WHAT COMPETITION? When this article first appeared as gray letters on the medium-blue background of my PC screen just before Turkey Day in November, HP had little competition in performance or price/performance for the workstation market.

There are some, including HP's Eichorn, who will tell you with a smile that HP is a full product generation ahead of all competitors in this business. I would like to temper that viewpoint with words of caution such as, "Competitors could come up with a whomper product any day now, stomping the daylights out of HP in the workstation market." However, like Eichorn, I see no sign of that happening soon.

What I see instead is Sun and DEC concentrating on selling low priced products that scoot under HP's low end to offer rock bottom workstation base prices. Then those prices zoom up as soon as you try to piece together a workable system, and the resultant systems offer precious little in performance or price/performance when compared to the Series 700.

Look for a new workstation from IBM sometime early this year once its problems with chip supplies iron out, but don't look for the IBM box to outperform HP's — it won't. DEC just announced lower priced workstation models based on mips RISC chips. The company announced low-priced systems because it cannot get high enough performance out of the mips chips to compete on a performance basis. Again, there's no sign of this changing.

DEC might be able to announce a workstation based on its Alpha chips late this year, but it is unclear if the company will make this attempt or not. Its large installed base is on VAX minis, and it badly needs the product there, so workstations may have to wait until later.

Sun's intent is less clear. Sun will introduce a multiprocessor-based workstation at some point; but without the operating system to support it and software written specifically to use that operating system, such an announcement would be pointless. And HP will not be standing still waiting for the next competitive shot.

Thompson reiterates HP's claim to be multiplying its RISC performance by a factor of two each year, then smiles enigmatically and won't comment further. Add this to the fact that HP announced the Series 700 last March 26, and it is clear that his comment is code for: "We will have another workstation introduction in the first half of 1992 with performance in the 140-150 SPECmark range for the Series 700."

Remember, you heard it here first.

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CIRCLE 485 ON READER CARD

HP's PC Palmistry

Executives Can Accurately Predict Their Futures With HP's 95LX Palmtop PC

Desperate persons desiring to know what the future holds may resort to horoscopes, mediums, crystal balls, tarot cards and palmreading. If HP has its way, thousands of executives soon will be consulting their palms before making critical business decisions — as long as those palms are equipped with HP's 95LX Palmtop PC.

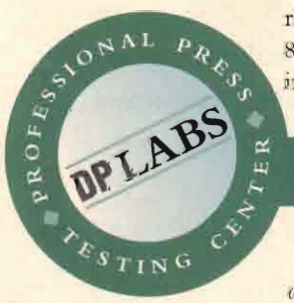
Good Things Come In ...

While measuring 6.3 by 3.4 by 1 inches (closed) and weighing a mere 11 oz., the 95LX packs in a host of hardware and software features that probably occupy most of your desktop and bookshelves right now. The NEC V20H cpu is Intel 8088 compatible. MS-DOS V3.22 resides in ROM along with Phoenix BIOS.

The 95LX sports a readable 40-character by 16-line LCD display. A serial port accommodates a printer or modem. An infrared port enables the use of future infrared peripherals and file transfer between two Palmtops. The keyboard has 10 function keys, a numeric keypad, and a sticky shift key, which relieves you from having to hold the shift key down when typing a shifted character.

Our 95LX had 512 KB of memory, which could be split between system use and a RAM disk. A plug-in card slot is included to accommodate RAM cards of up to 2 MB that conform to PCMCIA 1.0 and JEIDA 4.0 standards.

A set of blue keys is provided to kick off the built-in applications residing in the 1-MB ROM. These include a Filer,



By David B. Miller

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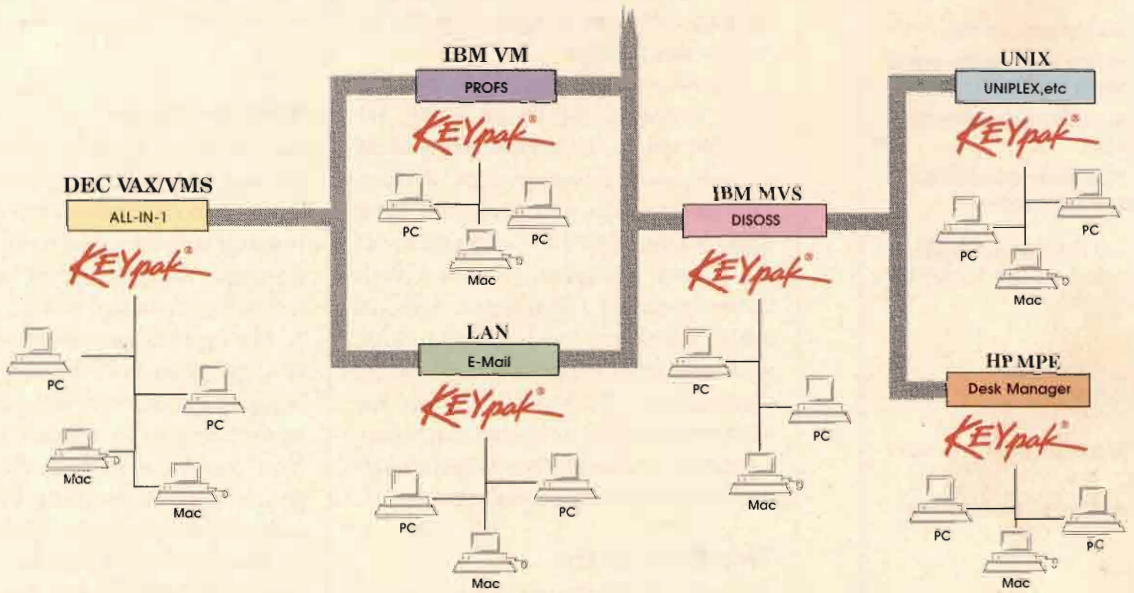

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CIRCLE 230 ON READER CARD

DataComm, Appointment Book, Phone Directory, Memo Pad, an HP Calculator and a full-blown copy of Lotus 1-2-3. Files created with the applications can be stored on the RAM disk (Drive C:) or on a plug-in RAM card (Drive A:).

Handy Setup Utility

To get started, install the vanity nameplate (get it engraved first, of course) and the batteries. Two AA batteries provide the main juice. A 3V coin-cell backup battery keeps the contents of memory alive should the mains go down. An optional adapter is available to run off of house current.

The first time you power on the 95LX, you'll be prompted to enter the current date and time as well as your name, job title and company name. After this, you can use the built-in setup utility to change these settings as well as a host of others including RAM card formatting. Each built-in application also has its own setup menu.

Printer setup is easy. For now, the 95LX supports the Epson FX80, HP LaserJet and the IBM Proprinter. Many printers emulate one or more of these. Pick an emulation, a baud rate and a port name (COM1, COM2 or infrared). I tried the printer functionality with a Facit B3100 emulating a Proprinter. A special cable, which can be purchased either separately from HP or as part of the PC Connectivity Pack, will provide the 95LX port to 9-pin or 25-pin connection. I printed Lotus spreadsheets and dumping screens in less than five minutes.

Two Thumbs Up

We who are all thumbs when it comes to typing will realize sweet revenge over our 40-words-per-minute colleagues. I found the "thumbs up" method works best when using the 95LX.

User-defined actions can be assigned to the ten function keys when pressed in conjunction with the special Char key. The keyboard's Compose key allows you to enter international characters as well as other keys that don't appear on the keyboard.

Each built-in application resides in ROM, thereby not consuming your precious RAM.

Some applications, such as the Filer and Phone book, work fine with the 40-character display. Others, such as a terminal emulation window or exiting to MS-DOS, can only be displayed 40 columns at a time. There is a way to scroll the Palmtop's display to see all the characters.

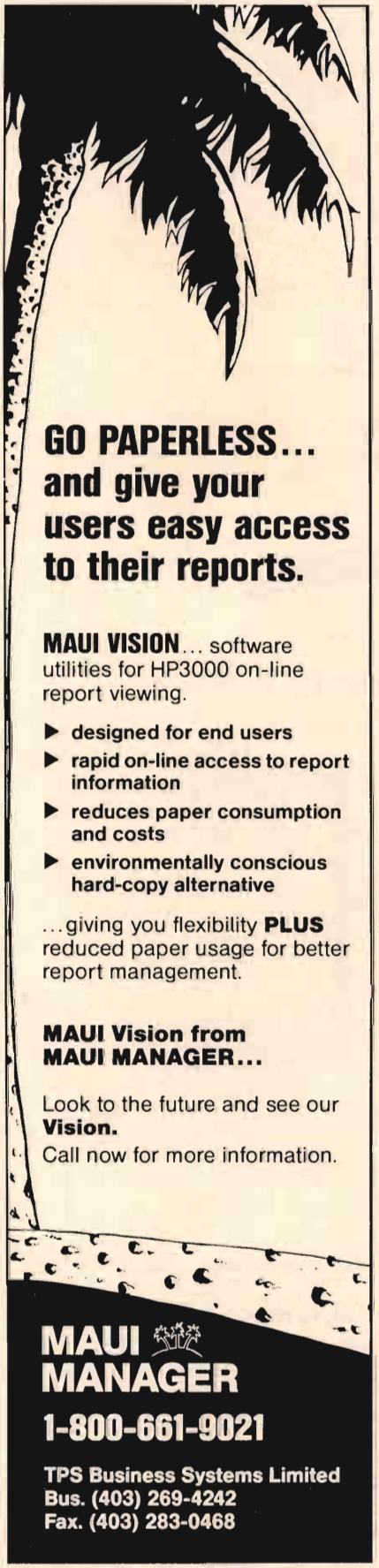
Built-In Power

Each built-in application resides in ROM, thereby not consuming your precious RAM. You can have several applications running simultaneously and can jump from one to the other by pressing the special key dedicated to each program.

Most applications, with the exception of DataComm and Filer, feature a Clipboard to cut text and paste it elsewhere in the same or in another application. You could cut names, addresses and phone numbers from the Phone Book and paste them into the Memo Pad.

Filer lets you do all the things you need to do with files and directories. Because the 95LX is a PC, all the PC syntax and notation is familiar. Filer lets you transfer files between 95LXs using the infrared port or to and from larger PCs with the optional Connectivity Pack.

With the 95LX, you have a personal tiny VT100 or ANSI terminal. The DataComm menus let you specify the desired emulation, the communications settings for the serial port, a host phone number to which you want to connect,



CIRCLE 477 ON READER CARD

and a line type (pulse or tone). Multiple configurations can be saved. Script files can be generated to send a logon sequence to the remote host.

Several phone books can be created, and it automatically alphabetizes entries. Searches can be done on an entry's name or on any string (maximum 39 characters) appearing in the name, number or address fields. The Clipboard can be used to cut information from the current phone book to dump into a file created in the Memo Pad or your appointment calendar. The contents of a phone book can be written to an ASCII file or printed.

Although not a full-blown word processor, the Memo Pad, nevertheless, does a lot more than allow you to dump text into the 95LX. You can cut and paste marked sections of text as well as perform forward and backward searches for character strings. ASCII text can be generated from a Memo Pad document, and ASCII documents from other systems can be inserted into a memo.

Like A Day Without Sunshine

What would the Palmtop be without a full-blown HP Calculator? Not just a basic calculator, it provides for time value of money computations, interest rate conversions, currency conversion, equation evaluation and function plotting.

The 95LX runs Lotus 2.2 with these deletions and modifications, most of which result from either memory or screen-size constraints of the 95LX:

- The PrintGraph utility isn't included. You can generate graphs and .PIC files, but need to export them to a PC that can print them.
- The Translate utility isn't supported.
- The Allways add-in isn't included.
- Tutorial files and the Macro Library Manager aren't included.
- The Help system isn't as extensive.
- Add-in programs must fit in the 95LX's RAM.
- Write-protected cells are indicated with a "PR" indicator in the control panel instead of being highlighted.
- Macros and operations that involve

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CIRCLE 484 ON READER CARD

The size and power of the Palmtop will be irresistible for many. ■

screen movement can be affected by the smaller screen.

■ The default status of the Undo feature is off.

Some enhancements take advantage of the 95LX's capabilities. You can use the HP Calculator to backsolve 1-2-3 values. The Clipboard is available to copy and move worksheet sections to another worksheet location or into another application. Graphs can be enlarged and reduced. Because 1-2-3 already uses the ten function keys that the 95LX uses for such items as Cut and Paste in other applications, you access the 95LX features by pressing CRTL-function key. Pressing CTRL displays the values of the function keys along the bottom of the worksheet.

Extending the power of the Palmtop is the optional Connectivity Pack. A serial cable and software connects the Palmtop to another PC.

One important function of the Connectivity Pack is to transfer files. You could transfer a Lotus 1-2-3 worksheet from a desktop PC to the Palmtop to take home, then transfer it back to the PC the next day. Because this version of 1-2-3 doesn't support PrintGraph, having the ability to transfer files is important if you want to print Lotus .PIC files.

The Connectivity Pack allows you to use the Palmtop as a PC file server. The RAM disk and the optional plug-in RAM card appear as two more drives on the PC. PC applications access the Palmtop's drives as if they were on the PC.

We successfully copied 1-2-3 worksheets from our Palmtop to our PC and worked on 1-2-3 worksheets residing on the Palmtop without copying them to the PC.

So, you won't believe that the 95LX is a PC until you see an A> or a C> prompt? Never fear, accessing the System menu brings up a familiar looking MS-DOS banner. If it makes you feel any better, reboot the Palmtop with the traditional CTRL-Alt-Del key sequence. That has to be the test of a true PC!

With the HP 95LX Palmtop PC, HP has taken the concept of downsizing to a new level. Some might be hesitant at first to give the Palmtop a serious look, thinking that a laptop or notebook computer will give them the power they need and a full-size keyboard and screen.

Admittedly, you're not likely to use the Palmtop for heavy document processing and office applications. But think what you'd have to spend to buy a notebook computer and Lotus and a data communications package and a desktop manager and an HP calculator... Well, you get the point. Try to stuff all that into a briefcase, let alone your suit jacket pocket. The size and power of the Palmtop will be irresistible for many.

So, before you consult a fortune teller, determine your business' future by reading your own palm. Just grab an HP95LX Palmtop PC first. ■

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95LX Palmtop PC

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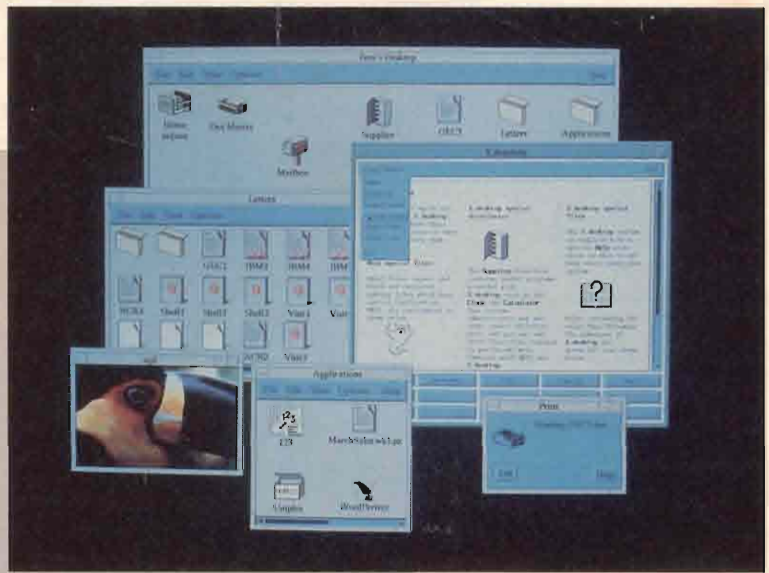
The Next Step



Still Waiting For Easy To Use, Open Computing Systems? IXI's X.desktop Takes A Step In The Right Direction

Most of us remember the days when computing was done solitaire — each user sat before a single terminal, ran a single process and used a single machine to do it. We struggled with whatever command language and syntax we needed at the time, never straying too far from a manual.

Now, all that's changed. With the advent of windowing user interfaces one user still sits before a single terminal or workstation, but now he's able to connect to multiple machines, run multiple processes simultaneously and allegedly complete more work.

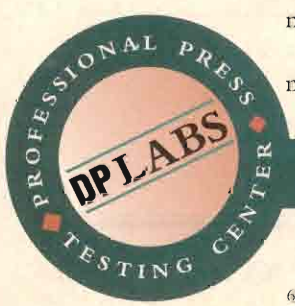
However, as many of us discovered, just having more terminal windows open didn't mean we got that much more work done. We still had to struggle with our operating system's command syntax, only now we could remain befuddled in multiple windows instead of just one.

Several software packages, desktop managers, have emerged to provide the extra level of abstraction that many of us need to be able to focus on our applications and not on struggling with whatever operating system happens to lie underneath.

We examined one such package, X.desktop Version 3.0, from IXI Limited (Cambridge, England). We ran X.desktop on our HP Apollo 9000 Model 425t running HP-UX Version 7.0 and Motif.

Desktop Startup

After copying the distribution to disk, you simply run ./INSTALL and X.desktop's script cares for the rest. After answering a few questions involving what language you want to use and where you want the files finally located, you type **xdt3 &** from any Motif xterm or hpterm window and you're off and running. There's even an uninstall utility if you need it, although I suspect X.desktop will be on my system for some time to come.



By David B. Miller

Why not the best?

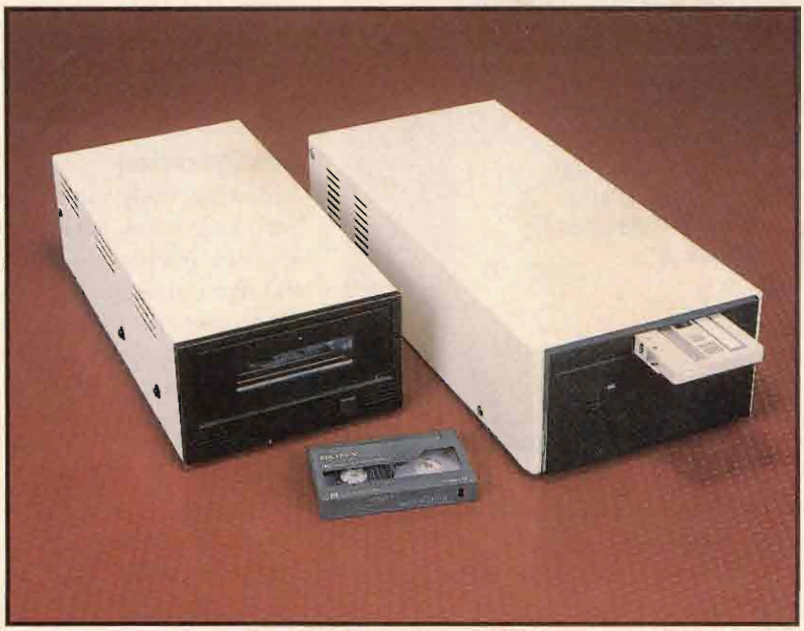


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FIGURE 1

```
icon_rules
{
  *.host /F
  {
   picture=/usr/include/X11/
   bitmaps
   /xdt_daves_bitmaps/
   hosts.px;
   title=%E0;
   trigger_action : s1;
   {
                          host='(unextended
                          $static_arg);
                          host='(basename $host);
                          parms='{more $static_arg};
                          $parms(4) -fg $parms(5)
                          -bg $parms(6) -T $parms(7)
                          -e telnet $host &;
                        }
                      }
                      }
```

Figure 1: A sample .xdtdirinfo script using keywords and X.Deskshell commands to establish connections to other hosts on our network.

Depending on your license, you may need to enable X.desktop for other users on your system. The package provides three default user levels: Administrative, Power and General. Each user type has more power and capabilities than the next one mentioned. We'll look at some of the differences later. However, IXI provides an addnewuser script that automates the process of setting up your users and granting them power levels as you see fit.

Desktop Madness

Once X.desktop was installed and running, I set about familiarizing myself with the user environment. Installing myself as an Administrative User gave me the ability to look at each of the capabilities of users in the Power and General classes.

Your environment is controlled by a desktop configuration file that is copied to your $HOME directory when you are set up. Desktop files determine such items as what icons are initially available to you, what options you're allowed to execute, etc.

Each icon represents a particular type of object. For example, directories are represented by file cabinet icons. Text files are denoted by pieces of paper. Collections of tools (or "toolsheds" as X.desktop refers to them) are represented by a cabinet icon. Clicking on these icons produces an action. For example, double clicking on a file cabinet icon opens that directory for listing. The Man icon gives you standard UNIX help, the vi_Editor icon starts up vi, etc.

Toolsheds containing various numbers of tools are available for the General, Power and Administrative users.

Everyday applications needed by all classes of users are found in the Supplies toolshed. For instance, to print a file, you drag the icon representing the file to be printed and drop it on the printer icon. Clicking on the Mail icon invokes elm. Access to devices on your system is attained via the disk and tape icons.

Despite using windowing environments for quite some time now, taking advantage of the extra level of abstraction provided by X.desktop took some getting use to. I'm so accustomed to using standard operating system commands, that it took some time to get into the object-oriented approach.

For example, getting a directory listing simply meant a double-click on the directory icon that I wanted to list. Copying a file from one directory to another simply involved dragging the icon that represented the file to copy and dropping it on top of the icon that represented the target directory.

At first, some operations, particularly directory lookups, seem to take longer than if I had opened a new window and did an ls myself. However, X.desktop caches these lookups and subsequent operations take far less time. I also started to rely on the icons to tell me what type of files were in my directories, so I became dependant on the object-oriented nature of X.desktop rather quickly.

Learning X.desktop is fairly intuitive and easy. After you have the basics down, the real fun begins.

Configuration

X.desktop easily can be configured to meet your needs. It's like starting a new job; after you get used to your office, you can start rearranging the furniture.

An easy way to configure your environment is to copy icons that invoke frequently used applications to your desktop. For example, you can copy the mailbox Mail icon from the Supplies toolshed to your initial desktop window. That eliminates the need to open the Supplies toolshed first. Saving this configuration before exiting X.desktop will ensure that subsequent sessions will start you off with the new configuration.

You can create entirely new desktops, each with a different configuration. So, if you have distinct projects that require separate sets of tools and files, you can configure a custom desktop for each of those projects. It's like having a separate workbench for every facet of your job.

An extensive user Preferences utility allows you to customize the characteristics of your mouse, the icon types that are displayed, the behavior of your desktop windows, color, backdrops and fonts.

If you don't care for the icons that are displayed, or you'd like to create your own, X.desktop provides an Icon Editor (available to the Power User and the Administrative User) to satisfy your creative instincts.

However, in my opinion, the real fun begins when you start to tap the power of X.desktop's scripting language.

The behavior of your environment is governed via X.desktop rule files. Rule files are text files that resemble UNIX shell scripts, so, if you've written some of those, writing rule files will come easy.

The location and name of a rule file determines the scope of its affect on your environment. Rules affecting everyone on your system are governed by the file xdtsysinfo, tucked away in a safe directory created at installation. The file

.xdtuserinfo, located in a user's $HOME directory, sets up an individual's environment. Desktop rules (you get at least one of these when you are set up) govern the behavior of an individual desktop and are automatically updated when you close a desktop to reflect any changes you make to your environment.

One type of rule file I've begun to use extensively governs the behavior of files in specific directories. You need to create the file .xdtdirinfo in the directory that will be affected by the rules contained in it.

A discussion of X.desktop's script language would take more than a few pages, but some of its capabilities can be demonstrated with the simple example shown in *Figure 1*.

This .xdtdirinfo file is located in my $HOME/hosts directory. Also in this directory are files for each of the hosts I want to connect to on our network. Contained in each file are parameters for setting up an xterm or hpterm session. For example, $HOME/hosts/labant.host contains the line:

```
xterm blue white LABANT
```

to determine the type of terminal window to open, the foreground and background colors and the window title.

My goal was to be able to open the $HOME/hosts directory, click on a host icon and fire up a session to the target machine.

Here's how the rule file works:

The icon_rules clause is one of X.desktop's keywords. It determines the purpose of what is enclosed in brackets to follow.

* .host /F tells the script that the rules that follow in the next block should apply to files that end in .host and that are regular files (/F). Normal wildcard pattern matching characters are supported. The /F determines the class of file(s) that the icon_rules will apply to. Another example is /D that will apply icon rules to directories. Other classes and filters can be set up to key on file permissions and ownership. Omitting a class qualifier will cause rules to apply to any file that matches the pattern.

The icon used to represent the file(s) matching the specified pattern and class is found in the picture clause. I created my own directory of icons by copying some of those shipped with the product and modifying them with the Icon Editor, but that's not necessary. Also, you can avoid having to specify the absolute icon file path name by including the directory path in the XDesktop3 resource file, found in your $HOME directory.

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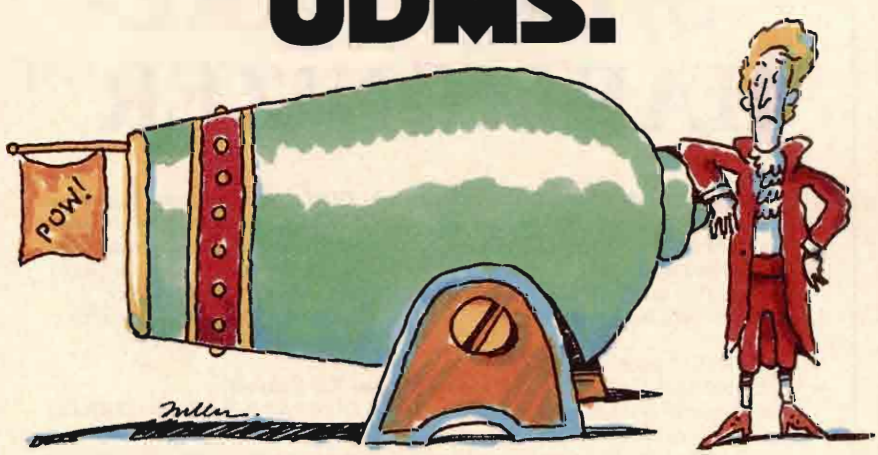

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ing any of a number of substitute strings to trim it down. For example, the title=%E0 clause yields the basename of the file and strips the extension so that $HOME/hosts/labant.host becomes labant — a little easier to display.

Mouse action is controlled by the trigger_action clause. Whatever statements are found in the next statement block are performed when MB1 is double clicked on the defined icon. All types of mouse behavior (what button, what type of click, drag action, hold action, etc.) can be customized within the script.

The next block of statements forms a small script written with X.Deskshell statements. X.Deskshell is a programming environment complete with all the control, decision, file and text manipulation commands needed to create custom scripts for your applications.

The two statements that begin with "host" strip off the directory and file extension from the file that will become the host name. The "parms" statement captures the output of the UNIX more command and places the contents of the file (terminal type, colors and window title), into the variable parms as a list of items, separated by white space, whose parts can be referenced by using subscripts.

The final line will produce and execute the command:

```
xterm -fg blue -bg white -T LABANT -e
telnet labant &
```

after all variable substitution is performed.

Again, this is really a simple minded script, but it does display some of the many things you can do with X.desktop's scripting language and rule files.

I often think that one of the biggest roadblocks to truly "user-friendly" open systems are the folks sitting in front of the tubes having to deal with the archaic, confusing operating system command set and all the terminal emulations you need to connect to different systems. Things, are, as they say, "a changin'." As we press ever onward toward open systems nirvana, packages like X.desktop will be a necessity, not an option. ■

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MANAGING YOUR HP 3000

John P. Burke

Pondering The Options

It is only January and already my brow is furrowed and I am frowning. Actually, it's January 1992 PD. That's Publication Date. Thus, it's *really* only late fall as I write this column, not mid-winter. So, now I'm in a funk mostly because, like so many IS projects, the long anticipated arrival of the HP 3000/9xx for Professional Press' DP Labs has been delayed. But that's OK. I still have some business to take care of before I start crawling all over the new XL machine.

Most of us are feeling cost containment pressures from the walletheads who all too frequently are in charge of American business. So, what's a poor (literally and figuratively) MIS director, system manager, etc. to do when faced with the decision of if and when to migrate to HP-PA and MPE XL?

Endless Possibilities

You always can do nothing. Sometimes doing nothing is the only, or even the right, thing to do. If performance is satisfactory and operating costs are tolerable, then why change? You say you're just trying to be proactive? Good answer! Constantly re-evaluate conditions. Once you decide to do something, it easily can take up to six months from initial decision to final execution of plans.

If you have a classic system below a HP 3000/70, a remanufactured Series 70 can be bought for a song — a used Series 70 for a verse. They are very reliable machines, represent a significant power boost over even a Series 58, and HP has committed to supporting the Classic HP 3000 and MPE V well into the future.

On the downside, software and especially hardware maintenance costs will go up (and will likely rise significantly as the machine ages and the installed base decreases) and the environmental requirements (foot print, power and air conditioning) will be greater. However, if you have the space, the power and adequate air conditioning and don't need any of the new software features available only on the MPE XL systems, then this could be a very attractive alternative for a year or two because your capital costs will be very low.

The HP 3000 will remain as viable and open as any system on the market.

Remanufactured equipment is available from HP, complete with warranties. Used equipment is available from a variety of sources. Some have been in the market for years; others seem to pop up daily. Be wary. Check everything out ahead of time and make sure all equipment qualifies for maintenance. And, also, keep HP apprised of what you're doing so you can obtain any needed help. Remember, you're saving a bundle on the equipment, so spend a few bucks to make sure the installation goes OK.

Another possibility is to off-load development or a standalone application to a second machine. If a Series 70 can be had for a song, then a 48 or 58 can be had for a few notes. For example, we bought a Series 48 to 58 upgrade in 1991 for less than the cost of a midrange PC.

A Micro/3000 is also an attractive possibility because it comes in a small package and requires less power and cooling than a Series 48 or 58. However, it also will be a little more expensive because it's more current — having been removed from HP's corporate price list only in mid-1991.

If your applications can be logically separated, you easily could operate two or more machines provided you could switch users between machines when necessary. You also could link two or more classic systems with NS/3000 and, again, provided applications can be separated logically, NS/3000 takes care of the switching and you would have to do minimal if any reprogramming.

The downside of multiple machines is that operating costs (hardware and software maintenance, software license fees, power, cooling, etc.) almost certainly will be higher than the costs for a single machine of comparable computing power. Also, operating procedures will be much more complex.

Finally, you can migrate to HP-PA and MPE XL. It will probably never be cheaper. The HP 3000 Nova systems (917LX, 927LX, 937LX, 937, 947LX, 947, 957LX, 957, 967LX and 967) are a tremendous price/performance value (at least until you start looking at software costs) and, you still may be able to get a few trinkets and junk jewelry for your Classic systems. MPE XL has been around long enough that the really stupid bugs have been fixed and key subsystems now are running in Native Mode (NM). Besides, you already know all there's to know about MPE V and TurboIMAGE, right? Time to check out mapped files, CI programming and SQL. At my company, we are planning to move our offices, so the fact that the Nova systems

require significantly less space, less cooling and less power is an important consideration.

Caveat Emptor

By the way, if or when you do decide to move off the Classic HP 3000 platform (you *are* going to move to MPE XL aren't you?), don't let the UNIX or PC LAN hucksters get to you or your management. Snake oil. That's what they are selling. There are only two reasons for switching platforms: money and functionality. Anyone who really believes there are significant dollars to be saved (look at total costs not just hardware) by moving from the HP 3000 to a UNIX platform or PC LAN network has been out in the sun way too long. And, as far as functionality is concerned, the HP 3000 and MPE XL are as *open* and as robust as any system available. The HP 3000 already communicates and interoperates with any system worth connecting to. POSIX compliance is now reality and, provided there are sufficient sales to justify continued R&D dollars, the HP 3000 will remain as viable and open as any system on the market.

Before Stepping Off That Curb

Even if you think there's barely a snowball's chance in hell of migrating to MPE XL in the next year, order the Migration Toolkit (product number HP32428), an absolute steal at $100. Do it *now*! In fact, order it before continuing to read about it, because while you may be quoted a six week delivery it will likely take longer to get the complete package (it took close to ten weeks from time of order for us). And, despite the innocent sounding description of the software, it probably will require a system update to install, and almost certainly a SYSDUMP/COLDLOAD to use.

The Migration Toolkit includes the Migration Process Guide that gives a fairly exhaustive treatment of the whole migration process and three programs/subsystems (the Migration Toolset) which run on your MPE V/E system and help identify potential problem areas. The Run Time Monitor (RTM) is a data capture facility used at run time to identify potential problems with calls to MPE V/E intrinsics and programmatically executed commands. The Object Code Analyzer (OCA) can scan program and SL files to locate potential incompatibilities. The Migration Planning Tool (MPT) is a suite of programs that reports on incompatibilities found in job stream files and UDC files and projects MPE XL disk space requirements.

You must be asking, why do I need this? I only use TurboIMAGE, VPLUS and COBOL II. And besides, HP says all you have to do is RESTORE your programs and data files and everything will run in Compatibility Mode (CM) and we can convert to Native Mode at your convenience.

Perhaps. Probably. However, *do not* forget Murphy's Law and its various corollaries! For example, what about those COBOL68 programs written ten years ago that are still used but haven't been looked at in years? What about those routines or programs from the CSL that are a critical part of some process? How about that purchased software? Does the vendor have a Native Mode version? Is it necessary? Does the vendor even still exist? What about that routine your predecessor wrote 10 years ago in SPL?

An Ounce Of Prevention

My company has decided (the office move was the final determinant) that our best long-term strategy is to migrate to HP-PA and MPE XL *provided* the migration can be done smoothly. We are small and don't have the resources for a large conversion effort. We are using the Migration Toolkit to help determine the probability of a smooth migration. In future columns, I will let you know how successful we have been and point out the potential "gotchas" we discover along the way. *—John P. Burke is the system manager for Construction Computer Center, Philadelphia, PA.*

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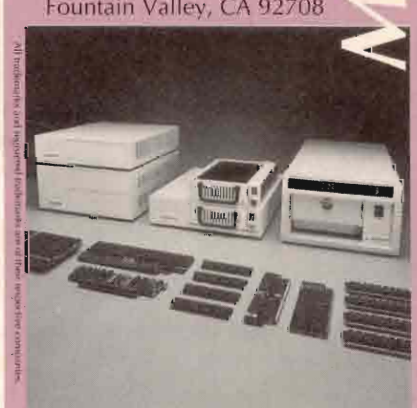

CIRCLE 281 ON READER CARD

HP-UX

Korn Shell Gems

Andy Feibus

Two important Korn shell features are aliasing and command history editing. Aliasing is the ability to create synonyms for commands you commonly use. Command history editing provides a convenient way for you to change and re-execute commands that have already been executed — without retyping the entire command.

Aliasing

Defining an alias in the Korn shell is similar to the way you define an alias within the C shell. For example, to define the alias **ls** to execute the command **/bin/ls -FC**, you enter:

```
$ alias ls="/bin/ls -FCa"
```

Once the alias is defined, you can execute it as though it were a command. For example:

```
$ ls $HOME
./   ../  .profile* .kshrc* .sh_history
```

In this example, executing **ls $HOME** actually executed the command **/bin/ls-FCa $HOME**. The general form for an alias definition is:

```
alias name=value
```

where *name* is the name for the alias and *value* is the definition that replaces name when name is used in a shell command. To view the list of aliases currently defined, use the command:

```
$ alias
```

Several aliases are predefined for your shell. These include:

```
$ alias
false=let 0
functions=typeset -f
history=fc -l
integer=typeset -i
r=fc -e -
suspend=kill -STOP $$
true=:
type=whence -v
```

Refer to the entry for **ksh**(1) in your HP-UX Reference Manual for the meanings of these alias definitions. To remove an alias definition, use the **unalias** command:

```
unalias name
```

Aliases only are maintained and used as part of the current shell. If you execute another Korn shell from your present shell, aliases you defined aren't copied into the new shell's environment. For

TABLE 1

w	Move cursor forward one alphanumeric word.	**Fc**	Find the preceding character c in the current line.
W	Move cursor forward to the beginning of the next blank-terminated word.	**;**	Repeat last **f** or **F** command.
e	Move cursor to the end of a word.	**,**	Repeats the last **f** or **F** search command in the opposite direction.
E	Move cursor to end of current blank-terminated word.	**0**	Move cursor to first character in the line.
b	Move cursor back one word.	**$**	Move cursor to the last character in the line.
B	Move cursor back to beginning of preceding blank-terminated word.	**^**	Move cursor to first non-blank character in the line.
fc	Find the next character c in the current line.		

Commands used to move through the history stack.

TABLE 2

/string	Search backward through the history stack for the first command containing string. When you enter this search command, you must terminate string with the RETURN key to execute the search.		command containing string. Same as **?string**, except in the forward direction.
		n	Repeat the last / or ? command.
?string	Search forward through the history stack for the first	**N**	Repeat the last / or ? command in the opposite direction.

Search commands used to locate a specific line for editing.

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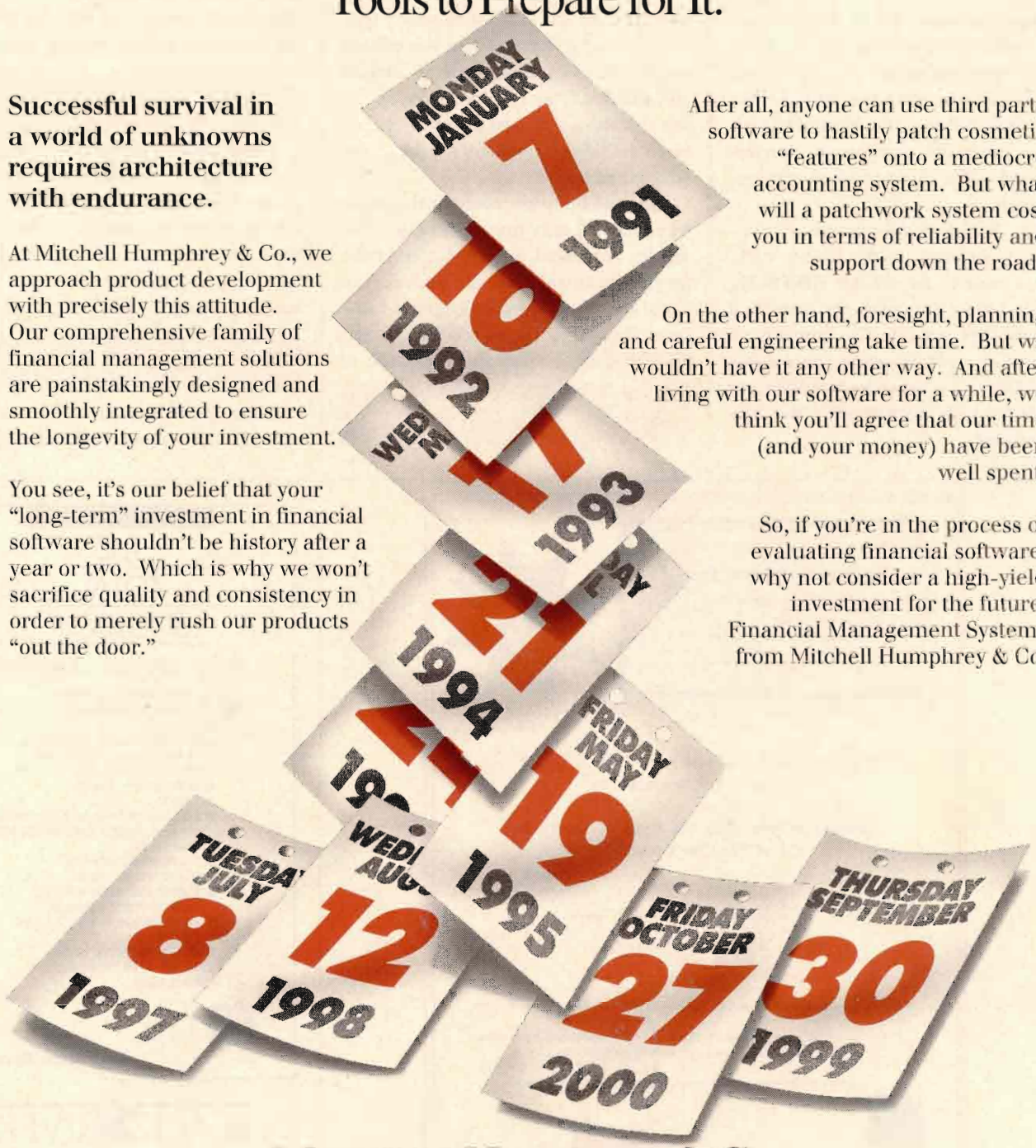

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this reason, you should define all of your aliases in your shell environment file (i.e., the file referenced by the shell environment variable **ENV**).

Command History Editing

Like the C shell, the Korn shell provides a way to maintain a list of all previously executed commands (the history stack) and permits you to edit and re-execute these commands when you want. Unlike the C shell, however, the Korn shell provides a less cryptic way for you to reference and edit a command from the history stack.

First, to define the number of commands to maintain in the history stack, assign a value to the variable **HISTSIZE**. If a number isn't assigned, the Korn shell assumes a value of 128. The history stack is stored in a file named by the variable **HISTFILE**; if a value isn't assigned to **HISTFILE**, the file **$HOME/.sh _history** is used.

Editing the command history stack is similar to editing a file, but it's dissimilar because you only can view and edit a single command at a time. Once you are done editing or viewing a command, you can execute it by pressing Return.

To set up command history editing, you must tell the Korn shell which type of editor you want to use for editing commands. The choices are **vi**, **emacs** and **gmacs**. You won't actually be using this editor to edit commands, but you'll be using commands similar to the selected editor.

Because I'm particularly partial to the **vi** editor, I'll only discuss using **vi** editing for command history. Refer to the ksh(1) documentation for information about **emacs** and **gmacs** command history editing. To use vi editing of command history, execute the command:

```
$ set -o vi
```

Place this command into your Korn shell environment file so that it's executed for each Korn shell you start.

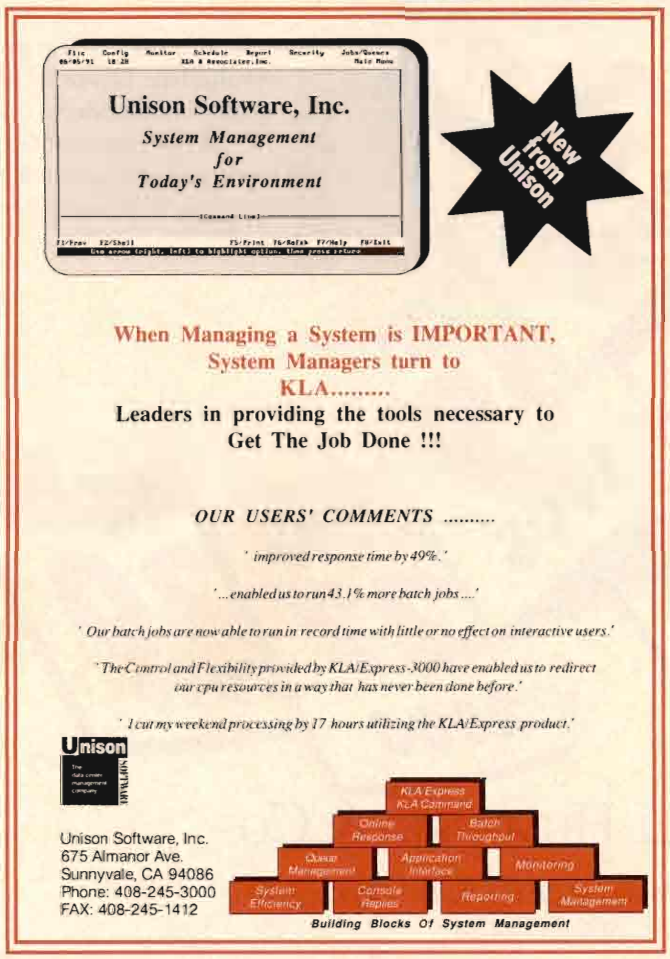
Once the **vi** editing option is set and the history stack size has been defined, you are automatically placed into insert mode for the current command. I know this sounds strange, but type the following command *without* pressing Return:

```
$ ls -l /usr/bin
```

Once you've typed this command, press the ESC key. Now, use the H key to move the cursor to the left and the L key to move the cursor to the right. Move to the first **/** (the beginning of **/usr/bin**). Enter **4x** and the **/usr** is removed, leaving the following command:

```
$ ls -l /bin
```

Now, press Return to execute the command. To move back through the



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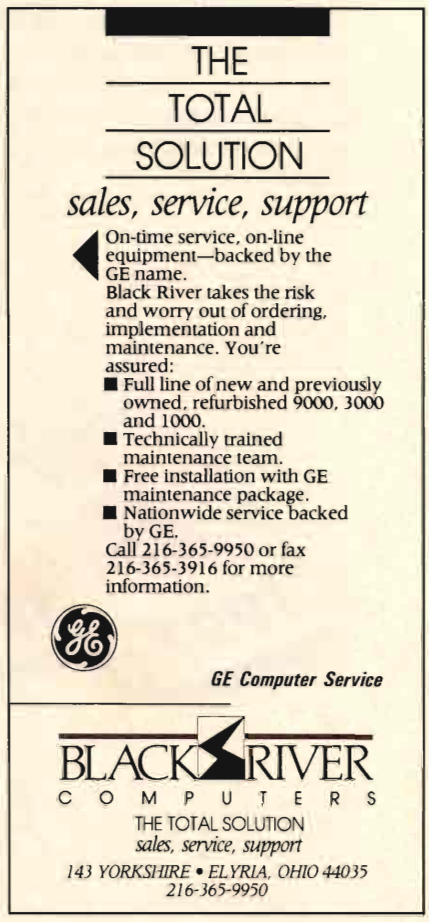

CIRCLE 171 ON READER CARD

TABLE 3

a	Append; enter insert mode and enter text after thecurrent character. To return to command mode, press ESC.
A	Append to the end of the current line. Same as **$a**.
cmotion	Change characters; delete the text between the current character and the character that motion would move the cursor to and enter insert mode. For example, **cW** deletes the text between the current cursor and the end of the current blank-terminated word and then places you in insert mode.
C	Change characters to the end of the current line Same as **c$**.
dmotion	Delete all characters between the current character and the destination specified by the motion command motion. For example, **d$** deletes all characters in the current line between the current character and the end of the line.
D	Delete all characters between the current character and the end of the line. Same as **d$**.
i	Enter insert mode and insert text before the current character.
I	Move to the beginning of the current line and enter insert mode. Same as **0i**.
x, X	Delete the current (**x**) or preceding (**X**) character.
rc	Replace the current character with the character c.
R	Enter insert mode and replace characters in the current line with characters you type. Press ESC to end the replacement.
p, P	Place the previous text modification before (**P**) or after (**p**) the cursor.
.	Repeat the last text modification command.
~	Invert the case of the current character. Uppercase characters are converted to lowercase and vice-versa.
****	Filename completion; replaces the current word with the longest common prefix of all filenames matching the current word with an * appended to it. If the match is unique (i.e., only one filename matches the word), either **a /** is appended if the file is a directory, or a space is appended if the file isn't a directory.
*****	An * is appended to the current word and filename generation is attempted. If a match is found, the current word is replaced by the matching filename and insert mode is entered.

Commands used to edit lines in the history stack.

TABLE 4

ymotion	Yank from the current character to the destination specified by the motion command motion. To insert these characters into the current command, use the **p** or **P** commands. A count can precede this command to represent multiple motions.
Y	Same as **y$**.
u	Undo the last text modifying command.
U	Undo all text modifications made to the current line.
=	List all files that match the current word if an* is appended to it and filename generation is performed.

Special commands for use in vi editing mode.

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CIRCLE 101 ON READER CARD

commands in the history stack, use the K key; to move forward through the commands in the history stack, use the J key. Other commands you can use to move through the history stack are listed in *Table 1*.

The commands **w**, **W**, **e**, **E**, **b**, **B**, **h**, **j**, **k**, **l**, **F**, **f**, **;** and **,** can be preceded by a count to execute the specified command that many times (e.g., **4w** moves the cursor four words to the right).

You also can use search commands listed in *Table 2* to locate the line you want to edit.

Once you've located the line you want to edit, move the cursor to the places you want to change and use the commands in *Table 3* to make these changes.

Like the motion commands, certain editing commands may be preceded by a count to specify the number of times to execute the command. The edit commands that may be preceded by a count include **c**, **d**, **P**, **p**, **r**, **x**, **X**, **.** and **~**. For example, **4dw** deletes four words from the current character position.

Finally, special commands listed in *Table 4* are also available for you to use in **vi** editing mode.

And remember: changes you make to a line are not performed until you press Return.

Enough! Jump in and start practicing.—*Andy Feibus is an interplatform system consultant, based in Atlanta, GA, and author of* UNIX Quick *from Professional Press Books.*

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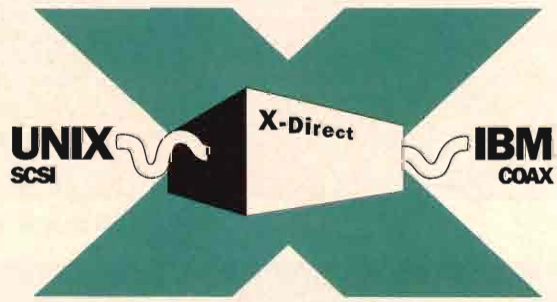

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OBJECTIVELY SPEAKING

Richard Riehle

Managing Complexity

It's rather commonplace these days to hear software gurus assert that software design is the process of managing complexity. In fact, most of us have adopted personal behavior to manage complexity in the software development process. The purpose of object-oriented methods is the management of the complexity associated with designing large software systems.

One fundamental technique we have for managing complexity in our daily lives is "abstraction." We use abstraction so naturally that we are oblivious to how we use it. Similarly, we have become accustomed to abstraction in our software languages, and it is this abstraction that helps us manage the complexity of the software development process. Without the ability to create abstractions, we would never be able to design and implement large systems.

Software abstraction often is defined as revealing the essential properties of an entity while ignoring the nonessential. Identifying the essential properties varies with the problem at hand. It is, necessarily, a selective process. Every abstraction is an incomplete statement of the full properties of the entity. Moreover, we must recognize the importance of levels of abstraction.

The notion of abstraction is a key building block in understanding object-oriented methods, but it is not exclusive to those methods. Paragraph names in COBOL programs, variable names in any language, flow charts, and documentation manuals all represent some form of abstraction. The challenge is creating appropriate ones.

Creating Abstractions

To create a set of good software abstractions is not easy. It requires an ability to discern what is important for a particular level of understanding. It usually means determining where to set the limits or boundaries of an application domain so we can present a model for design. Many software people believe that the essence of software engineering is the design of good abstractions.

It is important for a software abstraction to avoid extraneous details that divert the focus of software team members from the main theme of the abstract model. The more details a programming team member must remember, the more likely he or she is to forget some details. Most people, including programmers, can only deal with a small amount of information at one time. Consequently, we are constantly summarizing, classifying and organizing information into groupings we can understand. In its best form, this process becomes a path for getting useful work done. In its worst form, it can foment bigotry.

Abstraction is a fundamental idea in our quest for the design of good software objects.

Abstraction is a fundamental idea in our quest for the design of good software objects. In fact, abstraction is widely regarded as a software engineering principle. In object-oriented design, abstraction is even more important than inheritance, polymorphism or dynamic binding. These latter concepts are supporting mechanisms to make abstractions more usable. Inheritance is simply a method for implementing the principle of abstraction. If you cannot design through levels of abstraction, inheritance will be of no benefit at all.

All languages are built on the notion of abstractions. In English, for example, bird is an abstraction for some flying animals with feathers. In a programming language, the OPEN verb is an abstraction that hides the information about a huge amount of detail. Implementing the OPEN verb requires assembler code that determines whether: a disk drive exists and is operating, the named file is on that drive, the file is already open, is a shared file locked by another user, etc. It may take five pages of assembler code, with housekeeping, to implement a simple OPEN verb. OPEN is an abstraction.

In object-oriented design, we create abstractions from which objects are derived. "Class" is an abstraction from which we develop further abstractions: objects and new classes. An object is an instance of a class, and every software object is a model of some real-world entity. Under the object-oriented paradigm, abstractions are designed as software classes that become software objects. The

object is a solution space model of the real-world problem space.

An Object/Class Analogy

One way to think of a software object is as a "black box." In the common view of black boxes, we have an object that contains some information, behavior, and external connections to the outside world. For example, a 12-volt battery is a black box. There are posts for connecting cables, and capped wells into which we can pour distilled water. To connect the battery to the automobile electrical system we have no need to understand how the battery works, how it is designed, or what materials were used to bring it into existence. From our point of view it is an object, it exists, it contains all the information it needs to do its work. It has a known set of behaviors, and the interfaces required to communicate with the outside environment are well defined.

As with any well designed object, the 12-volt battery is loosely coupled. That is, we can use that battery in a variety of applications without modifying the battery — it is an encapsulated object. We could say that this battery represents the perfect object, and is a metaphor for our software objects.

We can define a class of objects called batteries. In this case, "a battery" is an abstraction. Every actual battery in that class is an object. This is one way to visualize the difference between a class and its objects. In object-oriented design, an object belongs to some class. A particular instance of a class is called an object. Here is an example of the difference:

A battery = a class abstraction

This battery = an object

Every object in the class includes the characteristics defined for that class.

Not all objects are loosely-coupled. Continuing with the example of an automobile, a fuel injection unit could be thought of as an object, but it is tightly-coupled to its host, the engine. We cannot take the fuel injection unit from my Maserati (wishful thinking) and put on your Rolls Royce (your wishful thinking). Even though each fuel injection unit may have the same functionality and characteristics. They may be part of a class called fuel injection units, but they fall short of our ideal design because they are not reusable on multiple platforms and designs.

Well-designed abstractions represent classes that can be "reused" in other applications. The most important characteristic of reuse is this: The abstraction can be incorporated into our design without modification. If you have to modify the code for a software class before it can be included in your design, you are not implementing software reuse.

We often want to use our low-level abstractions to design larger entities. This leads us toward the idea of inheritance. With inheritance we can use lower-level abstractions to create higher level abstractions. *—Richard Riehle is a software engineer with AdaWorks in Palo Alto, CA.*

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NEW PRODUCTS

Eagle Universal Driver Controls Shop Floor Network

Eagle Consulting and Development announced the latest release of its online HP 3000 universal driver that controls and commands the Symbol Technologies Model 701 Shop Floor Collection Network.

The Symbol 701 Shop Floor Data Collection System consists of a master workstation and a network of satellite workstations. The master workstation communicates online, real-time to your HP 3000 business application via Eagle's Universal Driver. Eagle's Universal Driver provides online, real-time HP 3000 integration of RF terminals, bar code label printers, digital scales and industrial ink jet sprayers.

Contact Eagle Consulting and Development, 170 Kinnelon, Ste. 3, Kinnelon, NJ 07405; (201) 838-5006.

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JMS/3000 Features Offered Individually

Design/3000 announced the JMS Interceptor automation tool designed to schedule and control batch jobs.

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Additional JMS/3000 features can be added as the user's needs grow along with increasing data center demands.

Contact Design/3000, 1214 Hawthorne Ave. NE, Salem, OR 97301; (503) 585-0512.

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Solution Series Available On UNIX Platforms

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ISA Offers 16 MB Memory Board For HP 9000/700

ISA Co. announced the EX-2816 16 MB add-on memory board for the HP 9000/700 Series workstations.

The EX-2816 is functionally compatible with A1979A add on memory products supplied by HP. Each EX-2816 memory product is made up of two identical memory boards. Data bus of a single memory board is 64 bit (8 bytes) plus 8 bits for ECC (Error Checking and Correction). Every access reads or writes 128 bits (16 bytes) with 16 ECC bits from any selected paired boards.

Contact ISA Co. Ltd., 14825 St. Mary's Lane, Ste. 208, Houston, TX 77079; (713) 493-9925.

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HP Announces New CAD And Data Management Options

HP announced a standalone version of the HP Data Management System and HP ME10P, a new generation of its 2-D design software.

Previously, users could access HP Data Management System only in combination with HP ME10 or HPME30, HP's MCAD software, running on an engineering workstation. The standalone version can be used from PCs, text-based or X Window System terminals, and is supported on UNIX-based workstations, HP Allbase/SQL and Oracle RDBMS.

The HP Data Management System helps users locate and retrieve design information stored in a relational database management system, and permits multiple users to review information simultaneously.

The new HP ME10P software is based on new parametric-design technology, allowing engineers to begin designing before all part specifications are known. Engineers can modify and update new or existing drawings by changing design parameters rather than by modifying single graphic elements interactively. Drawings from other systems can be read into HP ME10P, allowing engineers to combine new and existing parameters and to use conventional and parametric-design methods, depending on design specifications.

HP ME10P is available on HP Apollo 9000 Series 400 and Series 700 workstations at $10,500 for a single-user license.

Quest Software Makes HP 3000 Network Connections

Quest Software announced the Novell NetWare Printer Gateway and the NFS/XL network service.

The Printer Gateway system converts TCP/IP to IPX for connecting to NetWare servers print queues and allows any HP 3000 system to output to any printer on a Novell network, including the HP Laserjet IIISi network printer.

The NFS/XL is an implementation of the NFS (Network File Access) for MPE XL and provides transparent access to remote file systems. An API library allows UNIX programs to directly access IMAGE databases. NFS Print services allows any NFS Client the ability to access MPE XL printers.

Contact Quest Software, 610 Newport Center Drive, Ste. 890, Newport Beach, CA 92660; (714) 720-1434.

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Infotek Provides Apollo Workstation Memory Boards

Infotek Systems released a new line of memory boards compatible with Apollo workstation models DN3500, DN3550, DN4000, DN4500 and DN5500.

Designated the DM Series, the new boards are Parity-Error Checking and are based

around high-density, 1- and 4-megabit SOJ DRAM chips. Available in 4-, 8- and 16-megabit densities, the DM Series memory boards are designed to fit into established Apollo workstations.

Price for the DM500+4, 4-MB board is $865. The DM500+8 8-MB board is priced at $1,325. The 16-MB DM5500+16 costs $2,795.

Contact Infotek Systems, 1475 Pine Grove Rd., Ste. 205, Steamboat Springs, CO 80487; (303) 879-1184.

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HP Presents CorelDRAW On HP Apollo Workstations

HP announced CorelDRAW on the HP Apollo 9000 Series 700 PA-RISC-based workstations and the HP Apollo 9000 Series 400 workstations.

CorelDRAW is a presentation-graphics software package used for creating color presentations, reports, newsletters, technical drawings and other presentation materials. Users can create graphics from scratch or with clip art, and CorelDRAW also has the capability to trace scanned images and import text or graphics. CorelDRAW can be customized for individual users. Its features include precision-object moves, industry-standard PANTONE color matching, paragraph and multicolumn text, autotracing bitmaps and masking. CorelDRAW on HP-UX provides support for the X Window System and runs OSF/Motif under the HP Visual Operating Environment (HP VUE).

A CorelDRAW license is $895.

Exabyte Improves Exatape 8mm Data Cartridge

Exabyte Corp. enhanced the Exatape 8mm Data Cartridge to offer greater shelf life and tape stability.

The upgraded Exatape utilize design characteristics engineered for data storage applications including a newly developed "powder" that protects the metal particles and extends shelf life to exceed 30 years when stored under recommended environmental conditions, improved media formulation consisting of new binders and lubricants which house the metal particles and improve durability, and a newly developed backcoating that prevents frictional changes associated with repeated usage.

The cartridge design is also enhanced by the use of heat-resistant resin designed to avoid physical deformation during long-term storage or exposure to elevated temperatures. The tape lid is made of antistatic material, reducing the attraction of dust and other foreign objects.

Contact Exabyte Corp., 1685 38th St., Boulder, CO 80301; (303) 442-4333.

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Eventide Offers 8 MB Memory Board For HP 200/300s

Eventide Inc. announced an 8 MB memory board for use in HP Series 200, 310 and 320 machines.

Previously, 8 MB of memory could only be obtained by installing two 4 MB boards in separate slots. Eventide's new 8 MB board installs in only one DIO slot.

Price is $2,995 in unit quantity.

Contact Eventide Inc., One Alsan Way, Little Ferry, NJ 07643; (201) 641-1200.

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Digital Tools Devises AutoPLAN For Motif

Digital Tools announced AutoPLAN graphical project management software for HP 9000 workstations running under HP-UX Motif.

AutoPLAN's Work Breakdown Structure (WBS) allows major projects to be subdivided into smaller components that can be run on individual workstations. AutoPLAN supports PERT, CPM and Precedence Network methods of planning and produces PERT charts, bar charts, histograms and user selectable tabular reports generated by WYSIWYG and Report Writer.

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9000/300 and 400 family of workstations, including the new HP 700 Series, running HP-UX with the Motif operating environment. AutoPLAN also runs on Sun-3 and Sun-4/SPARC and DECstation series, and IBM RS/6000 UNIX workstations. AutoPLAN also supports Postscript printers and plotters.

AutoPLAN is priced at $2,995 per license for the floating user version and $1,495 for the node-lock version.

Contact Digital Tools Inc., 18900 Stevens Creek Blvd., Cupertino, CA 95014; (408) 366-6920.

Circle 393 on reader card

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The Spool Control System from CT&S is an ideal operational tool for the brains in your computer. It checks error conditions and provides all information for examining the success or failure of jobstreams.

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IRI Upgrades HP-UX Sort/Merge Software

Information Resources Inc. announced COSORT Version 2.5 for HP-UX and other UNIX-based platforms. Version 2.5 features increased speed over Version 2.4 and offers recognition of all major COBOL data types.

COSORT is a general-purpose sort/merge facility for high volume data processing installations. The software includes standalone interactive and batch modes. COSORT's application development modules can be called into C, COBOL, FORTRAN, ADA and PASCAL programs. Information Resources has added 8-bit clean character handling and the recognition of 34 MicroFocus and Ryan McFarland COBOL data types, including packed decimals. COSORT compatible platforms include Domain/OS, HP-UX, SCO UNIX and SunOS.

Contact Information Resources Inc., 70 Bourndale South, P.O. Box W, Manhasset, NY 11030; (518) 851-2815.

Circle 392 on reader card

Concept Modeller Available On HP 9000/700

HP announced the Concept Modeller knowledge-based, computer-aided engineering system for use on HP Apollo 9000 Series 700 workstations.

The Concept Modeller software enables designers and engineers to create a conceptual model of their development processes. The model captures and enforces design rules based on existing engineering knowledge, including geometric and non-geometric factors of product design, and can be reused on successive design projects.

Camintonn Introduces Memory For HP Apollo 9000/425e

Camintonn Corp. announced the CMH-9425e module available for the HP Apollo 9000 Workstation Model 425e.

Use of the new Camintonn modules can upgrade HP Apollo 9000/425e performance to 48 MB maximum.

Camintonn CMH-9425e modules are fully compatible with HP memory controller hardware, diagnostics and operating systems and are available in 4, 6 or 8 MB ECC memory upgrade kits. Each kit consists of a pair of SIMMs that can be installed into the HP 9000/425e system processor unit. The 4 MB kit uses 1 megabit SOJ DRAM. The 8

and 16 MB versions use 4 megabit SOJ DRAM for maximum density and minimum power consumption. All modules support single-bit error correction and double-bit error detection.

List price for CMH-9425e modules is $800 for 4 MB, $1,600 for 8 MB and $3,200 for 16 MB versions.

Contact Camintonn Corp., 22 Morgan, Irvine, CA 92718; (714) 454-6500.

Circle 390 on reader card

DSP Enhances DADiSP Productivity Software

DSP Development introduced DADiSP Version 3.0 graphical, general purpose productivity software.

DADiSP (Data Analysis and Display) can be applied to research and development, test and manufacturing, engineering, electronic, mechanical and chemical applications. DADiSP allows users to manipulate and analyze large amounts of data in graphical or tabular format. DADiSP includes data reduction, mathematical, statistical, Fourier transform, peak analysis and graphical tools. Users also can define new functions and automate DADiSP sessions. Version 3.90 includes an enhanced user interface, a set of matrix math and statistical functions, 3-D and 4-D plotting capabilities and presentation-quality output.

DADiSP operates under X Windows on workstations available from HP, Sun, DEC, IBM and Concurrent as well as IBM PC AT and PS/2 and compatible PCs.

Prices start at $895.

Contact DSP Development Corp., One Kendall Square, Cambridge, MA 02139; (617) 577-1133.

Circle 389 on reader card

PRINT.UNET Provides UNIX Printer Access

System Center's UNITECH Software Division announced the PRINT.UNET network print spooler for heterogeneous UNIX environments.

PRINT.UNETs distributed architecture allows users and administrators to manage any printer or queue on the network from any participating UNIX system. A user logged in on one host can send a job to a queue located on a remote host for execution on a printer attached to a third host.

PRINT.UNET provides users and administrators with a consistent graphical user interface (GUI) and a command line interface that looks the same for each UNIX operating system and type of printer on the network. The OSF/Motif GUI allows users to submit or modify print jobs and check on the status of those jobs. A single display allows users to view the overall status of a queue, the priority and status of each job within the queue, and whether a specific printer is busy or idle.

PRINT.UNET allows system administrators to use Access Control Lists (ACLs) to specify which users have access to each print queue. Access can be granted or restricted based on user ID, Group ID and/or host.

PRINT.UNET is available on several UNIX platforms including HP, Sun, DEC, IBM and Silicon Graphics.

Contact Systems Center Inc., 1800 Alexander Bell Dr., Reston, VA 22091; (703) 264-8000.

Circle 387 on reader card

DeskPlotter Transforms InkJet Printer Into Color Plotter

Insight Development announced the DeskPlotter version of PrintAPlot designed to enable HP's DeskJet 500C color inkjet printer to be used as a color plotter.

The DeskJet 500C is a 300 dpi plain paper color inkjet printer. It can use standard or legal size paper and features a carriage slot that accepts either a black pen for standard monochrome printing or a cyan-magenta-yellow (CMY) ink pen for color printing.

DeskPlotter is PC resident software translation product that allows the DeskJet 500C to emulate conventional pen plotters. DeskPlotter allows software applications utilizing the HP Graphics Language (HP-GL) to work directly with the DeskJet 500C printer. DeskPlotter is compatible with any MS-DOS-based system.

DeskPlotter is priced at $99.

Contact Insight Development Corp., 2200 Powell St., Ste. 500, Emeryville, CA 94608; (415) 652-4115.

Circle 388 on reader card

TPS Upgrades MAUI Vision For HP 3000

TPS Business Systems released version 2.0 of the MAUI Vision and MAUI Vision Plus online report viewing utility for the HP 3000.

Version 2.0 now includes indexing, allowing users to index specific user-defined report information by row/column or multiple sets of rows/columns for specified

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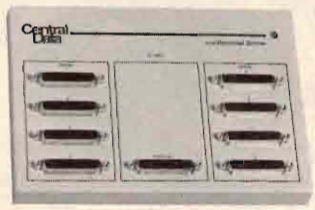

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character lengths, inclusion of MAUI Schedule with MAUI Vision Plus to aid in the execution of processes that manage online report files, data compression, and the ability to use environment files for HP printers.

Contact TPS Business Systems, 240, 1167 Kensington Crescent N.W., Calgary, Alberta, Canada; (403) 269-4242.

Circle 385 on reader card

CCS Provides CCS/C 1000 Debug Support

Corporate Computer Systems (CCS) released version 3.2 of the CCS/C 1000 ANSI-compatible C language compiler for HP 1000s running the VC+ option of RTE-A.

Version 3.2 of CCS/C 1000 provides complete support for HP's Symbolic Debug/1000 multilanguage source level debugger, including source level debugging of mixed language programs using a single debugger, display of variables located in EMA as well as pointers to EMA, and debugging CDS as well as non-CDS programs.

Because Symbolic Debug must be purchased separately from HP, the CCS/C 1000 package continues to include the CVIEW source level debugger that allows the source level debugging of CDS C programs. Also included in the CCS/C 1000 compiler package is an ANSI-compatible run time library with extensions to facilitate RTE-A program development as well as utilities similar to the UNIX utilities MAKE and GREP.

Contact Corporate Computer Systems Inc., 33 West Main St., Holmdel, NJ 07733; (908) 946-3800.

Circle 384 on reader card

IIS Designs FASTCIIM Client-Server Application

Interactive Information Systems introduced the FASTCIIM vertical, client-server manufacturing software applications. Designed for automotive, electronics and other repetitive manufacturing environments, FASTCIIM is available on the ORACLE relational database for all major UNIX platforms.

FASTCIIM features AIAG compliant functionality with EDI interfaces to support rapid customer and supplier releasing in shop order-less environments. FASTCIIM delivers 4GL/relational database technology, multiplatform support, integration and client-server capabilities.

FASTCIIM features interface support for ANSI X.12 communications protocols, enabling customers and manufacturers to send and receive transaction sets directly into FASTCIIM tables such as Order Entry, Material Release, Shipping Schedules, and Advance Shipping Notice. FASTCIIM's EDI support also enables customers to send and receive information feeds from Master Scheduling and other information visible at Master Schedule Level 1.

FASTCIIM prices range from $50,000 to $800,000 depending on configuration, number of users and modules.

Contact Interactive Information Systems, 3716 E. Columbia, Tucson, AZ 85714; (602) 790-4214.

Circle 383 on reader card

Spectragraphics Connects MS Windows

Spectragraphics introduced PC-Xview for windows, its PC-to-networked X Window Systems solution.

PC-Xview for Windows applies the technology of Spectragraphics PC-Xview to Microsoft Windows 3.0. It allows Microsoft Windows users to display multiple X Window System applications alongside local Windows applications and switch between them. PC-Xview for Windows is fully integrated with Microsoft Windows, allowing users to cut and paste between the two environments. To Control X clients, users can select MS Windows or a host-based window manager such as OSF/Motif or Open Look. Standard features include X11 release 4.0, support for all Windows display drivers, X fonts, file transfers between X hosts and the PC, and local printer support.

PC-Xview provides a graphical interface to multiple hosts simultaneously, including UNIX, AIX, and VMS via PC network products such as Novell's LAN Workplace for DOS, Sun's PC-NFS, and FTP's PC/TCP.

PC-Xview is priced at $445.

Contact Spectragraphics Corp., 9590 S.W. Gemini Dr., P.O. Box 4900, Beaverton, OR 97005; (503) 641-2200.

Circle 381 on reader card

Oak Grove Offers TCP/IP Printer Spooling

Oak Grove Systems introduced direct TCP/IP connectivity for the OGS printer product line, enabling HP workstation and UNIX platform users to access Oak Grove printers anywhere across their Ethernet Networks.

Direct Network Spooling allows any

workstation user to spool directly to the printer. With the OGS supplied filter on every workstation using the printer and the printer appears as if it's a personal Ethernet-based printer.

Contact Oak Grove Systems, 1550 El Camino Real, Ste. 270, Menlo Park, CA 94025; (415) 325-1500.

Circle 382 on reader card

Arens Offers Graphics Package To PC Users

Arens Applied Electromagnetics releases the PC version of Presentation Graphics, a business graphics package for HP 3000 and PC users.

The Presentation Graphics (PG) offers all forms of bar, line, pie and word charts. PG reads external data files, spool output and plot multiple charts on a page. The product also offers statistical capabilities.

The PC version gives current PG users on the HP 3000 the ability to distribute their processing needs. You can off-load the small cpu-load of printing or plotting the charts. Or, you can share output devices on the 3000 and use the PC to design/store/ preview charts.

Presentation Graphics for the PC is $495. Contact Arens Applied Electromagnetics, P.O. Box 329, Gaithersburg, MD 20884; (800) 882-4428, (301) 258-0970.

Circle 377 on reader card

Fastrack 3000 Provides FAX/3000 Interface

Los Altos Software announced a release of Fastrack 3000, featuring an automatic interface to FAX/3000.

Fastrack utilizes FAX/3000's programmatic and interactive interfaces and supports fax output from its online individual-contact letter and the batch facility, which supports sending personalized letters many people.

Fastrack 3000 supports field-sales and/or telemarketing operations, providing feedback to sales and marketing management on demographics, media source evaluation, forecasting and sales-force productivity.

Contact Los Altos Software, P.O. Box 639, Los Altos, CA 94023; (415) 941-6030.

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ADVERTISERS INDEX

Reader Service Number		Page
104	Adager	45
163	Aldon Computer Group	70
250	AXIS Communications	32
105	Bering Industries	17
171	Black River Computers	76
294	Camintonn Corporation	51
153	Cardinal Data Corp.	47
467	Central Data	88
490	Chase Research	21
261	Cognos Corporation	1
111	Collier-Jackson	53
101	CompuTech Systems Corp.	77
167	Computer Solutions, Inc.	32
300	CT&S	86
112	Contemporary Cybernetics Group	19
242	Cumulus Technology Corp.	36
461	DAAI	13
476	Datability, Inc.	33
240	Dataram Corporation	15
484	Datasys	64
113	Dynamic Information Systems Corp.	37
115	Equinox Systems, Inc.	31
119	Herstal Automation Ltd.	67
	Hewlett Packard/Network Systems Group	34-35
288	Hewlett Packard/Workstations Group	48-49
120	Hi-Comp America, Inc.	4
486	Hillary Software	85
487	Hillary Software	87
149	I/O Concepts Inc.	78
122	IEM, Inc.	2
181	Infotek Systems	I.F.Cover
196	Infotek Systems	12
214	Interactive Software Systems	69
150	Interex	65
470	IXI, Inc.	5
185	Kelly Computer Systems	57
230	Keyword Office Technologies	61
466	Ki Research, Inc.	96, I.B.Cover
281	Kingston Technology	73
452	Logicraft, Inc.	23
220	Martech	44
168	M.B. Foster Associates	83
493	MESA Technology Corp.	71
465	MICOM Communications Corp.	25
154	Mitchell Humphrey & Co.	75
246	Newport Digital Corporation	9
488	Newport Digital Corporation	11
489	Oregon Digital Computer Products, Inc.	4
485	Proactive Systems	59
179	R Squared	63
284	SCRUG	58
245	Texas ISA, Inc.	29
477	TPS Business Systems Limited	62
137	TSA	89
265	Tymlabs Corp.	6-7
141	Tymlabs Corp.	38-39
140	Tymlabs Corp.	54-55
139	Tymlabs Corp.	79
473	Unison Software, Inc.	76
143	VitalSoft	43
144	VitalSoft	43
145	Walker Richer & Quinn, Inc.	41
222	Walker Richer & Quinn, Inc.	89
127	Walker Richer & Quinn, Inc.	B.Cover
469	Zentec/Datamaxx	28

[CALENDAR]

[FEBRUARY]

12-14: The Royal Dutch Fairs is organizing the 4th European SuperComputing Exhibition and Conference at the CNIT Exhibition Centre "La Defence", Paris, France. Call Mrs. Marjolein Jacobs 31.30.955.622

[MARCH]

9-12: NCGA is sponsoring CAD & Engineering Workstations '92 and Business Graphics '92 at the Anaheim Convention Center, Anaheim, CA. Call NCGA (703) 698-9600.

16-17: Wind River Systems in conjuction with Digital Consulting will sponsor the first real-time developers forum in the United States, WINDAYS USA, at the San Jose Fairmont Hotel, San Jose, CA. Call (800) 767-2336.

23-25: The annual Interex Computing Management Symposium (ICMS) will be held at the Marriot Marquis in Atlanta, GA. Call (408) 738-4848.

23-26: The National Database Exposition and Conference, DB/EXPO will be held at the Moscone Convention Center in San Francisco CA. Call NDN Enterprises, (800) 2DBEXPO.

[APRIL]

14-17: Jobscope Corp. is holding its annual Jobscope User's Conference at the Clarion Hotel in New Orleans, LA. Call Kathryn Heckelmann, (803) 234-4847.

The Association of Contingency Planners, N. California Chapter will hold monthly meetings the last thursday of every month in San Ramon, CA. ACP focuses on disaster and business recovery planning and issues. Call Stacey Jonasen (415) 765-2270 or Belinda Tovar (510) 460-1623.

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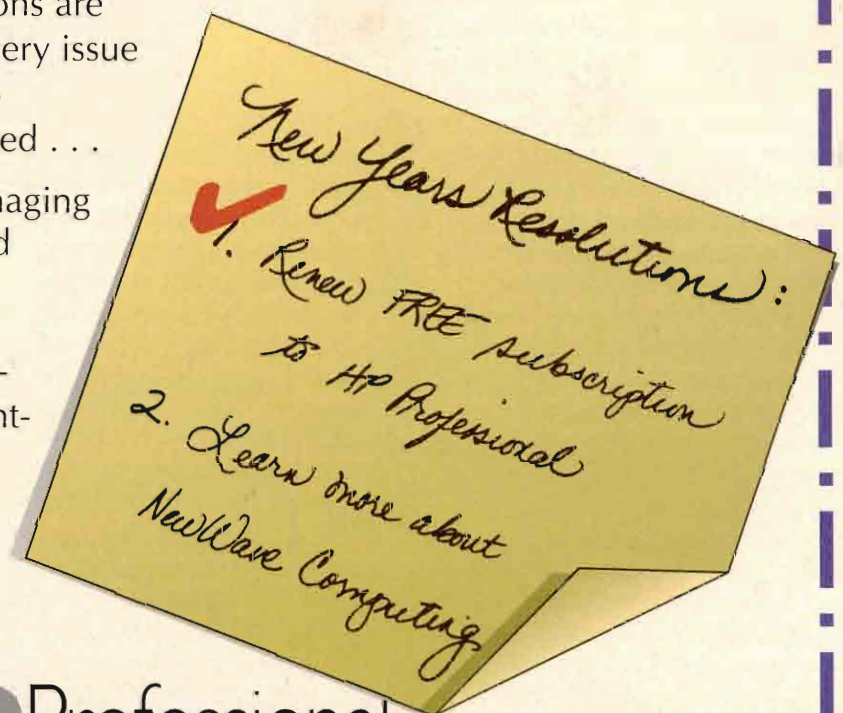

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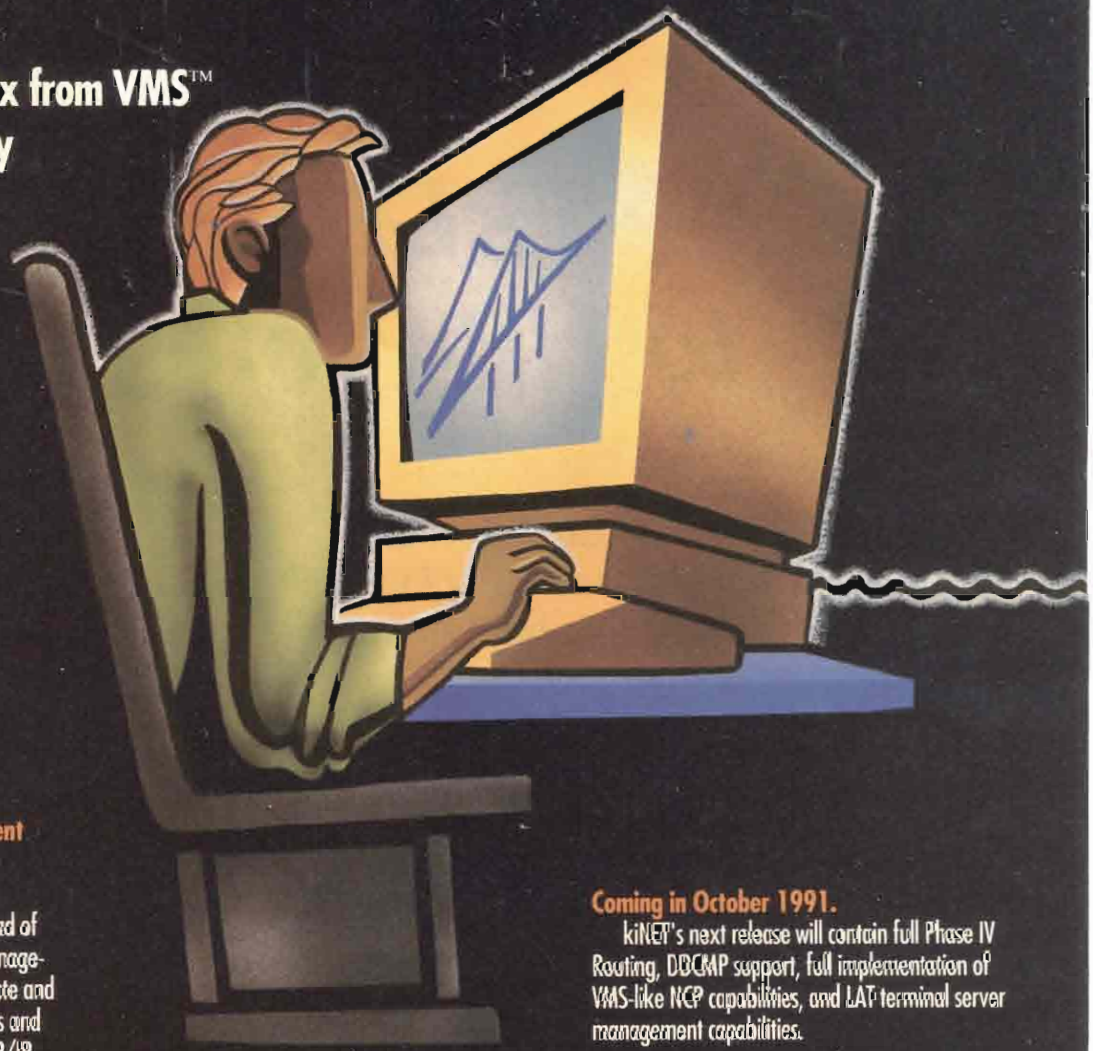

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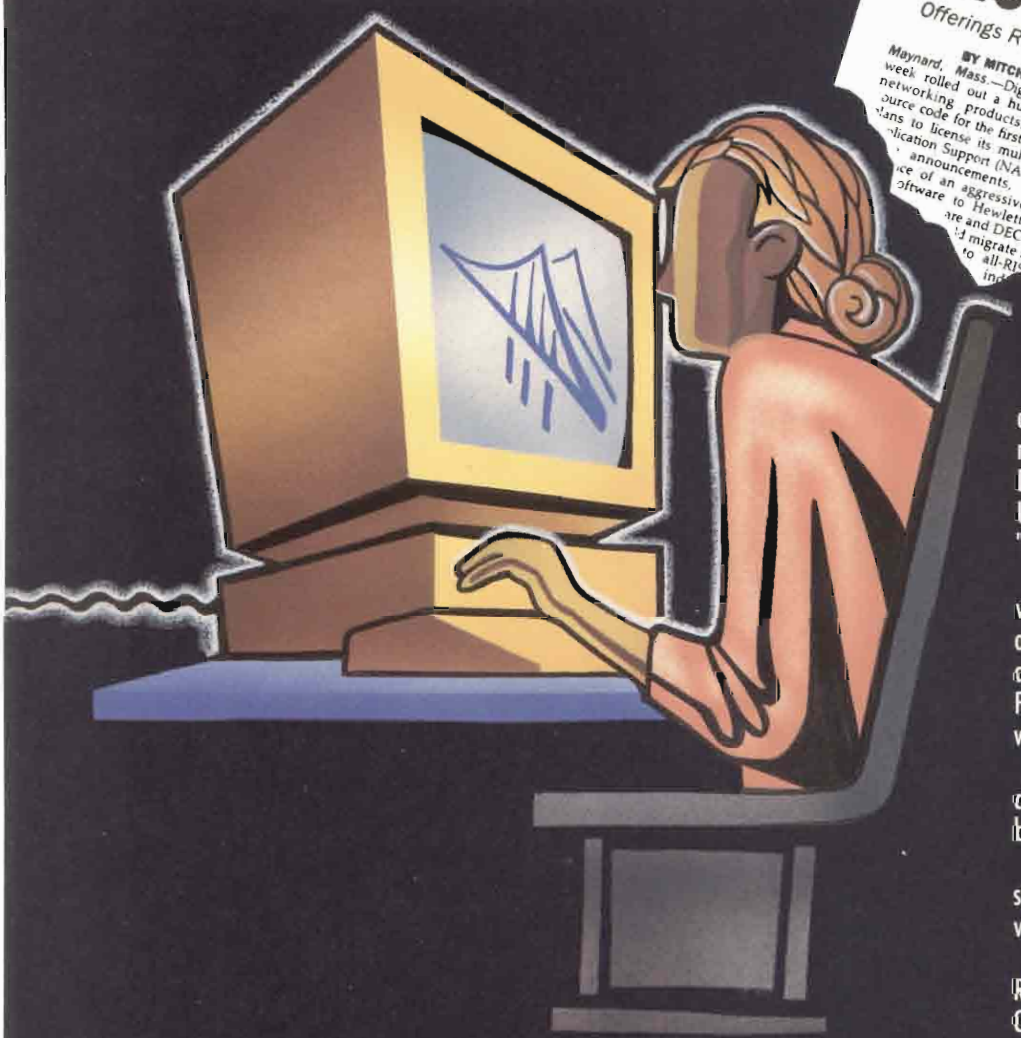

UNIX Today!

DEC's New Strategy

Offerings Reflect Deeper Commitment To Open Systems

BY MITCH WAGNER

Maynard, Mass.—Digital Equipment last week rolled out a huge number of new networking products, offered DECnet source code for the first time and revealed plans to license its multivendor Network Application Support (NAS) technology. ... announcements, combined with ... of an aggressive effort to port software to Hewlett-Packard, IBM ... are and DEC's recent state- ... migrate its VAX archi- ... to all-RIS ...

sages: Last week's news shows that DEC is pushing its traditionally proprietary pr... ucts into the open systems are... hard as it is pushing itself to ... business practices and inco... standards into its prod... "I think it's great," ... managed Salomon Bros ... til May 31. "It ... of optio... into a ... Lic...

The undersigned Vendors and End Users acknowledge and are encouraged by DEC's most recent announcements in regard to providing DECnet as a defacto/non-standard protocol across UNIX platforms by making their Ultrix DECnet "End-Node" code available.

We think ki Research has already accomplished what DEC states it intends to do and much more. In our minds, ki Research's kiNET is the defacto DEC connectivity standard providing not only "Full-Function" DECnet but LAT and MOP capabilities as well.

We have selected kiNET as the defacto DEC connectivity standard for our UNIX systems because:

- kiNET's VMS-like command line interface and simplified program interface are identical across 28 vendors and 60 plus hardware platforms.
- The kiNET product is fully supported by ki Research, a company specializing in DEC Connectivity for UNIX platforms.
- ki Research offers and delivers 24 hour support service 7 days a week world-wide.
- The kiNET product is continually enhanced and improved. The latest enhancements will include DECnet Phase IV Routing, LAT Application Services, a complete NCP implementation and LAT Terminal Server Management.
- kiNET's two year old LAT Host Services is the most mature LAT Host Service Product for UNIX Systems on the market today.

We, the undersigned, are proud to offer and use kiNET as the defacto DEC Connectivity Product supporting "Full-Function" DECnet, LAT and MOP capabilities.

**** All signatures are on file.***

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- Shari Cohen, MODCOMP
- Neil Kleeman, Solution Systems, Inc.
- Paul Smith, Pyramid Equipment
- Max Trist, Managing Dir., Haltek
- Orville Aldridge, Net Admin., Sask Oil
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