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HP Professional

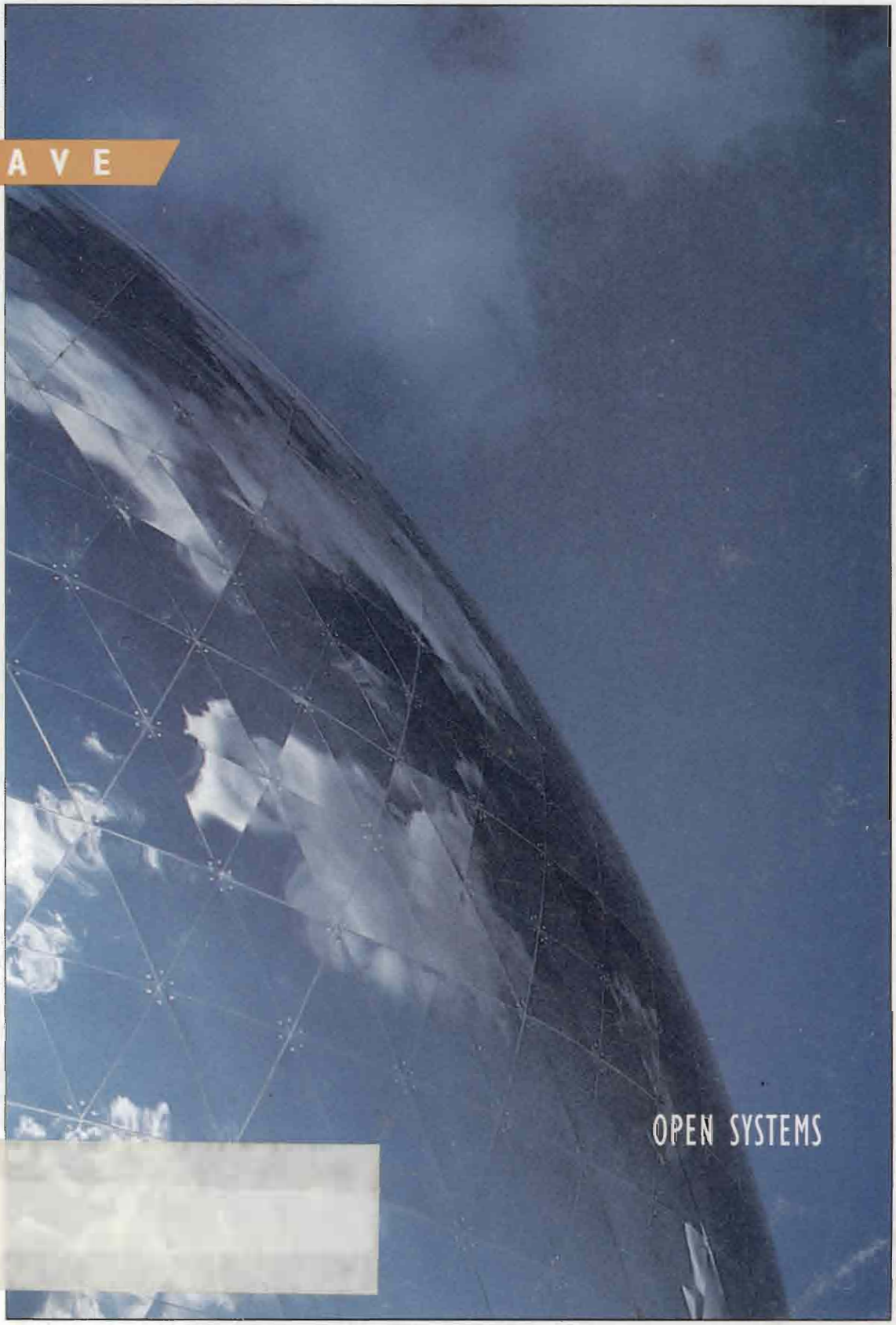
THE INDEPENDENT MAGAZINE FOR NEWWAVE COMPUTING ▲ VOL.5 NO.6

JUNE 1991 ▲

NEW WAVE

RISC-Based Servers

- Standard Benchmarks—Modern Measures For Business Servers
- OSF's DCE: A Natural Selection For Your Network Environment?
- POSIX Compliance For MPE XL Pays Off In Portability
- Europe At RISC—Commercial Users Choose Between HP-UX And MPE XL



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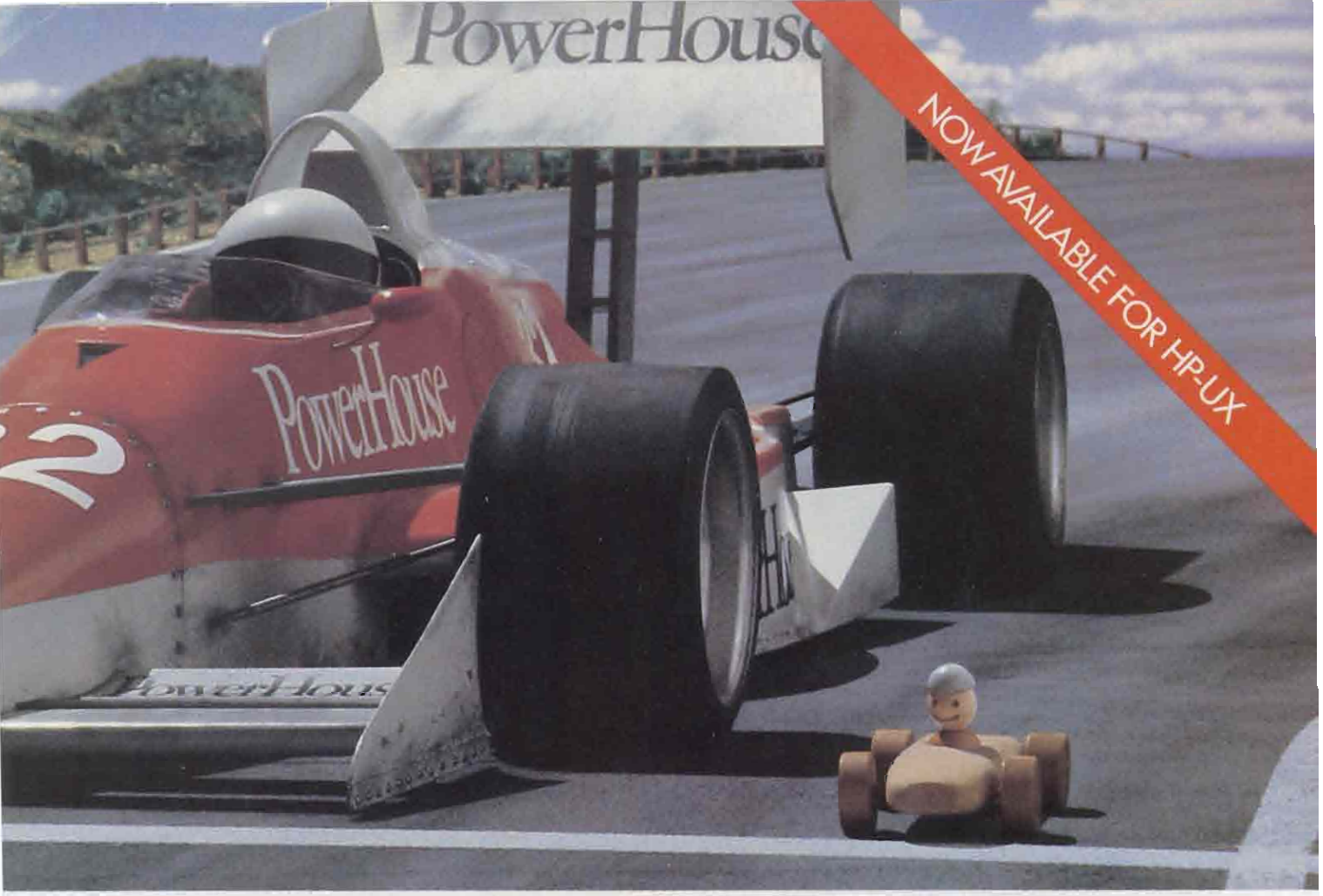

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HP Professional

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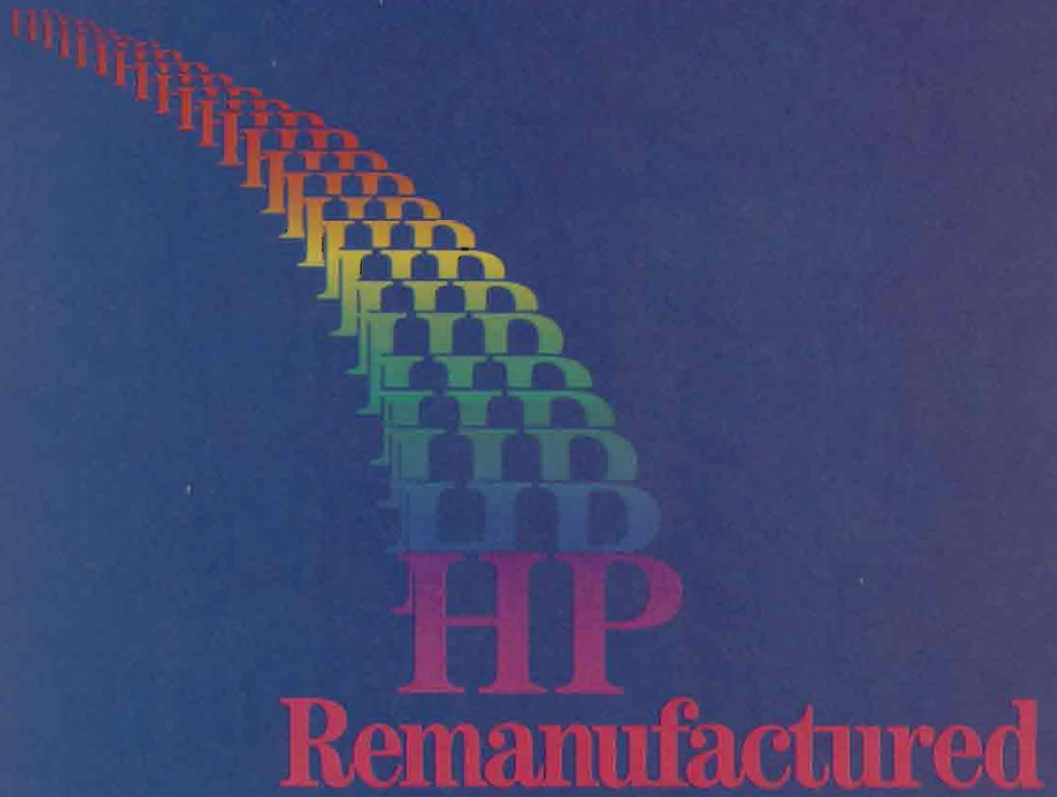

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The Future Is Past

By Don Marks

It's time to recognize that "open systems" is no longer something new. In fact, you could say that standards, connectivity and interoperability are now basic concepts of computing—fundamentals in the same way that bits and bytes, data flow diagrams and structured code have been for decades. With this lesson under our belts, it's time to take a hard look at our newly opened world and see what the push for standards has wrought.

As we peer into the present, two obvious trends stand out. First, hardware matters less than it once did. According to HP's Jon Davis (see page 36), by year's end, POSIX-compliance for MPE XL will maximize interoperability and application portability between the HP 3000 and 9000 lines. Indeed, it will open the HP 3000 to all other POSIX-compliant systems, including the 57 varieties of UNIX and, in the near future, DEC's VMS and IBM's OS/400.

Widespread POSIX-compliance means that application availability is going to be less of a factor in determining your hardware purchases. From the buyer's standpoint, it won't much matter anymore what hardware platform you choose, because in all likelihood it will run all the applications you'll ever need. What's more, with workstations pushing into performance levels traditionally the province of minicomputers, the price—and even the size—of that hardware should continue to go down.

Architecture licensing agreements are making way for Japanese and other Asian Pacific companies to squeak in and lowball the big vendors. HP alone has cut major deals with Mitsubishi, Hitachi and Samsung. One thing is certain: U.S. manufacturers won't be hitting hardware grandslams anymore with these low-cost imports nibbling away at the outside corner. MIS managers will just hop in the minivan and head down to Sears "Brand Central" to pick up another Sony OpenMan for the network.

On the other hand, HP isn't exactly losing marketshare to international competition. Its PA-RISC systems, along with a Motorola box or two and the occasional LaserJet printer, are sailing out the door as fast as they can slap the logos on. Even the HP 3000 line roared right through the recession-ridden first quarter of 1991 with double-digit growth. By anybody's standards, the company's overall performance is spectacular. No other major vendor could boast anything remotely resembling a 25 percent increase in first quarter profits.

As with most electronic technology, however, the cost o manufacturing computers goes down even as performance im proves. People aren't going to pay for a water-cooled mair frame if they can shove a milk-crate under their desk that do the same thing. HP's successes notwithstanding, smaller syste ultimately lead to smaller profits.

The New Differentiators

This brings me to the second obvious aftermath of the open systems craze: Software matters more than ever. Software, systems integration and consulting services are where the major vendors, HP included, have the opportunity to distinguish themselves—from one another, that is. HP, for its part, has the resources to be a systems integration company *par excellence*. The work it has done with the OSF, the licensing of HP software technology—like OpenView, SoftBench and NewWave—by other big vendors, and the company's reputation for high-quality, comparatively impartial network support, have positioned it well for this market.

Still, HP by itself has never been much of a software company. The history of third-party support for the HP 3000 market is ample evidence that HP works best in symbiotic relationships with ISVs. Diplomacy and willingness to negotiate with third-party developers are the hallmarks of openness, and HP appears to be coming around to this. For one thing, it seems to have stepped up its overtures to third-parties, especially in Europe, where there always seems to be a new day (of one sort or another) dawning.

Only the vendors that can provide information resources in a coherent package are going to survive in the open systems wilderness. And survival is the key. The days of dominance by means of proprietary systems, locked markets and strong-arming the competition are forever gone. Already these tactics don't play in Palermo or Perth or gay Paris. By tomorrow morning they won't play in Peoria, either. There will be companies that hang tough and companies that don't. Right now, HP looks like a survivor.

Whether you call it NewWave Computing or just plain old open systems, integrated information networks are no longer visions of the future. Thinking about tomorrow is old hat—the present is where it's at.

Don Marks

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INDUSTRY WATCH

Bill Sharp

HP Workstations Connect With The Old SPARC In More Ways Than One

HP's Place In The Sun

Let's consider another burning question. Can HP connect with Sun? Not too surprisingly, the answer is a gracious and refined, "Yep, sure can." In fact, not only does HP connect with Sun, but it does so in several ways.

Network Connectivity

Linking HP and Sun systems together can be easier than doing the same with either DEC or IBM. The reason for this is that Sun's systems all are UNIX-based and use industry standard networking. This is particularly true if the HP product runs HP-UX. Because the links are standard, we won't go into painful levels of detail here.

Ethernet LAN, also referred to as IEEE 802.3, represents the physical level of networking. Wide Area Network (WAN), also referred to as X.25, is the other common base link. Both define communications protocol at the base level. Both HP and Sun use these.

TCP/IP protocols with ARPA services are the de facto industry standard for networking and the starting point for lots of systems and solutions. Typically, these capabilities include Telnet terminal emulation, file transfer protocol (FTP) for the obvious function, Berkeley sockets for interprocess communications and simple mail transfer protocol (SMTP) for simple mail transfer.

Gradually sharing the networking limelight are the Open Systems Interconnection (OSI) protocols from the International Organization for Standardization (ISO). OSI will replace TCP/IP over the next decade or so. Common OSI services include X.400 mail handling service that carries text, voice and images rather than the text only of SMTP. X.500 directory services allow systems on the network to know where other systems are on that network, for more efficient communication. OSI FTAM is a fancy file transfer method.

Advanced network services that add even more bells and whistles to networking functionality include remote procedure call (RPC), network file system (NFS) and LAN manager. NFS is in fact a Sun development that became a de facto standard.

Glenn Matsuda, HP product line manager for HP/Sun connectivity in Cupertino, CA, says OSI is taking hold much faster in Europe than elsewhere, though use of it in the U.S. is growing as well. So the selection of products available for linking HP and Sun is likely to grow.

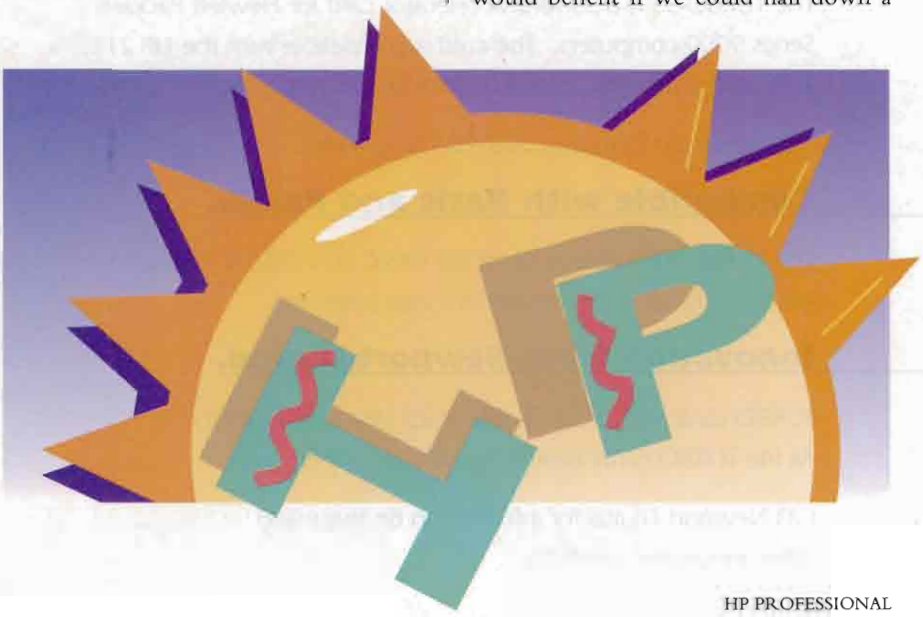
Handshake Connectivity

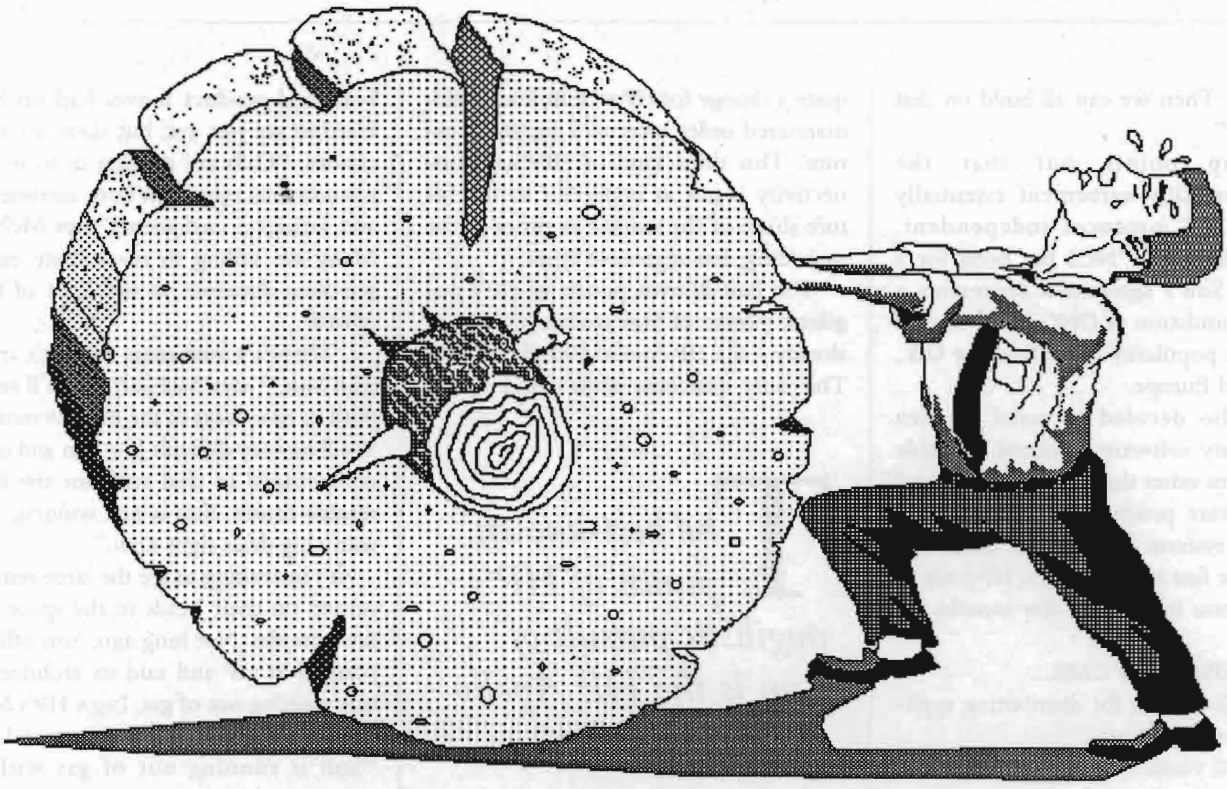
But hey, why settle for mere networking when you can climb into one another's packaging and connect on a whole different level? HP and Sun, battling tooth and claw in the hotly contested workstation market, paused long enough at winter's end to gently clasp those selfsame claws in the name of mutually profitable fellowship.

The two pledged to work together in formulating a common software environment broadly available to others through licensing. Toward this end, the two firms:

- Submitted a jointly developed object management specification to the Object Management Group (OMG) as a proposed industry standard. It is the only submission to OMG that supports more than one networking service—both ONC and NCS.
- Agreed to work through standards bodies to promote interoperability of HP's NCS and Sun's ONC at the network protocol level.
- Agreed to develop a common distributed application environment for UNIX and other operating systems including DOS.

"The nature of the industry is such that you don't hesitate to make love to the company you compete with if it accomplishes your goals," asserts Mike Gallup, manager of HP's Americas Marketing Center, (Chelmsford, MA). "In the case of OMG, the entire industry would benefit if we could nail down a





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standard. Then we can all build on that standard."

Gallup points out that the interoperability agreement essentially makes ONC protocol independent, which, he adds, "NCS has been for a while." Sun's agreement represents a quiet capitulation of ONC in the face of the wide popularity of NCS in the U.S., Japan and Europe.

HP also decided to make its own proprietary software solutions available for systems other than HP's own. Several HP software products are available for non-HP systems for the first time, and Sun is the first vendor target. HP ports to Sun systems in the past few months include:

- HP SoftBench for CASE.
- HP Task Broker for distributing applications on a network.
- HP VUE visual user interface for Motif and Open Look.
- OpenView network management software.
- Software development tools for the HP 64000 family of microprocessor development products.

"Biff" Connectivity

So tell me, can HP connect with Sun? You betcha. First HP connected with a roundhouse right to the high-end delivered with the Series 700; then a left to the low-end with the introduction of the Model 425e. Then there was that burst of flutterpunches in the form of HP software ported over to Sun workstations just to tempt Sun's installed base.

Then HP came back at 'em again with six major deals from large commercial users totaling more than 20,000 systems. Then the service and support enhancements, and finally, the offer to accept trade-ins of other workstations in deals for new HP 700 series RISC workstations. Sort of an uppercut to the jaw followed by a left cross to the nose and a cauliflower ear.

That's a lot of tough punches to take in less than six months, even for Sun, a leader in the workstation market. It's also quite a change for HP to shift from mild-mannered order taker to a fighting posture. This third kind of HP/Sun connectivity is just as important to the future shape of the market as either of the preceding, less aggressive types.

The best-known punch of HP's pugilistic pursuit of Sun you've read about already—the HP Apollo 9000 Series 700. The only concerns with this product seem to be how fast HP can get thousands of software products available on the platform and how effective HP's marketing will be over the long haul. HP clearly outperforms its RISC workstation rivals but needs a media knockout punch to outsell Sun.

The best-known punch of HP's pugilistic pursuit of Sun is the HP Apollo 9000 Series 700.

A second hefty poke worth more than a mention is the HP Apollo 9000 Model 425e, the latest and most aggressive of the highly successful Series 400 merged HP and Apollo workstations, based on Motorola's 68030/40 processor. Just as the 700 offers the best price performance in high-end RISC workstations, so the 425e offers the best price performance in low-end workstations. This new model isn't RISC-based, but it's no slouch, either.

HP's aim here is moving into commercial sales in a big way. Jeff McNair, HP's Series 400 product marketing manager (Fort Collins, CO), says sales of the Series 400 topped $1 billion in the first 10 months since introduction of the line last June. This was during a time when the critically needed 68040 chip was terribly scarce. Some 10,000 to 15,000 of those 20,000 commercial units sold in big deals, by the way, were 425es presold before official introduction.

So what effect have all these biffs, boffs and product moves had on Sun? Hard to say just yet, but there are indications. "Calls are coming in to us at a phenomenal rate from both commercial and technical customers," says McNair. Many are calling to re-evaluate earlier purchase decisions in the light of HP's efforts.

"There's a real sense of 'Let's try to take Sun,'" says McNair. "You'll see us push in new ways in the next 24 months. We'll be very difficult [for Sun and other competitors] to deal with for the foreseeable future. Sun is not winning very many big deals right now."

It's interesting to see the same remarks turned on their heads in the space of a few months. Not long ago, Sun officials pointed at HP and said its architecture was running out of gas. Now HP's Mike Gallup points right back at them and says, "Sun is running out of gas with its SPARC architecture.

"We believe they are vulnerable on the performance front. This business has been shaped by price/performance leadership and by being the company that appears the best at adhering to standards. Now Sun is failing on price/performance and getting a reputation for supporting only the standards it invented. You see companies that won't do business with Sun because of their position on Motif [Sun does not support it]."

These are pretty strong words from the company that used to have an unwritten rule about never slamming the competition—but it all fits. My suspicions are confirmed. Throwing my best squinty-eyed skeptical sneer at Gallup through the phone, I ask, "Is HP orchestrating a company-wide effort to go after Sun in every way it can?"

Gallup stops short of admitting to all-out war and says it's "coincidental" that so many different efforts detrimental to Sun have piled up in one short period. He pauses, and you can hear his smile and feel his thoughts. Whatever he says, it's clear there will be no holds barred, no punches pulled—no quarter. "If it appears that we're going right after Sun," he says, "it's only because it's true." ■

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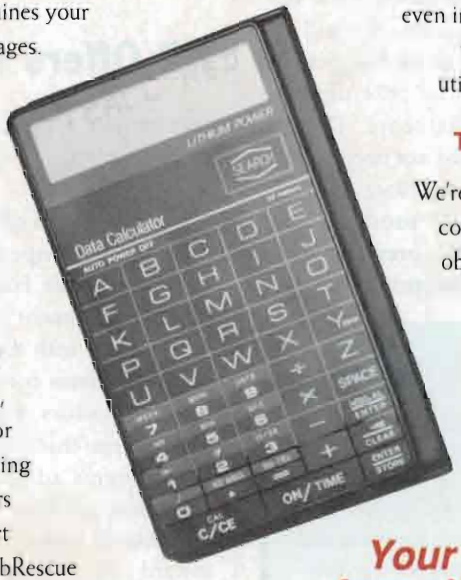

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HP Moves Into Commercial Sales

HP Apollo 9000 Model 425e Offers Best Price Performance In Low-End Workstations

The HP Apollo 9000 Model 425e is the latest and most aggressive of the Series 400 merged HP and Apollo workstations, based on 68030/40. Just as the 700 offers the best price performance in high-end RISC workstations, so the 425e offers the best price performance in low-end workstations. The new model is CISC based but rivals the performance of many RISC competitors.

Offering 22 mips for under $5,500, the 425e positions HP very well at the low end of the market, undercutting the competition on a dollars-per-mip basis. The 425e sells for $250/mip, compared to the Sun SLC at $400/mip, the DECstation 3100 at $308/mip and the NCR 3445 at $1,380/mip. And while two competitors can respond with SPECmarks that show the 425e at a slight disadvantage, HP still comes out on top in application testing, according to HP's numbers.

X11 performance for the 425e is 20 percent better than that of the DECstation 3100, and twice that of the Sun SLC. Because HP moved the GRX and CRX graphics tops from the 700 line down to the 425e, graphics performance here also improved. HP boasts the best X11 performance in the industry throughout its workstation line.

Configurations of the 425e with gray scale, 16- and 19-inch color all are based on the same 1280 by 1024 top used with the 700 series. The system is aimed not only at competing with other low-end workstation products, and PCs. HP has prepared slides showing comparative system costs and price performance for large purchases compared with that for competitors.

HP's aim here is moving into commercial sales in a big way. Jeff McNair, HP's Series 400 product marketing manager, (Fort Collins, CO) says sales of the Series 400 topped $1 billion in the first 10 months since introduction last June — a time when the critically needed 68040 chip was terribly scarce. Some 10,000 to 15,000 of those 20,000 commercial units has recently sold in big deals, were 425es presold before official introduction. —*Bill Sharp, Technical Editor*

The HP Apollo 9000 Model 425e offers 22 mips for under $5,500.

HP Wins $8 Million Contract

HP announced it has been awarded an $8 million contract to supply GE Information Services with HP workstations, servers, software-development tools, system software and peripherals.

GE Information Services will use the HP Apollo 9000 Series 400 workstations and servers and associated hardware and software — as part of a worldwide information-services business that provides value-added networking, electronic-data interchange, business communications messaging and custom application development.

HP Offers OSF Seminars

Technical Issues Help Professionals Toward Open Systems

HP announced three seminars developed by the Open Software Foundation to further acquaint computer professionals with the benefits of open systems computing.

The seminars cover technical issues that MIS directors, systems administrators and programmers need to understand as they move an toward open systems strategy.

In open systems computing, common software standards are adopted and supported by computer manufacturers and software developers to enable the free flow and use of information across a network of multi-vendor computers. The three seminars are:

- "Introduction to Programming With OSF/Motif Widgets and the X Toolkit."
- "OSF/1 Technical Overview."
- "OSF/Distributed Computing Environment."

Call 1-800-HPCLASS for more information.

EXPRESS Puts Batch Jobs Right On Schedule!

In batch job scheduling, timing is critical. That's why thousands of users worldwide — whether they manage large production schedules or ad hoc user-streamed jobs — rely on EXPRESS to keep their shops on schedule. EXPRESS provides high performance batch scheduling by dynamically optimizing the job mix and eliminating costly errors that waste processing time.

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EXPRESS runs your data center 24 hours per day, controlling complex production schedules automatically and launching jobs in exactly the right sequence.

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EXPRESS tracks and controls processing across an entire network of linked systems. Its central master console allows operators to monitor and control production for the entire network.

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Tape and Resource Management

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Data Center Experts

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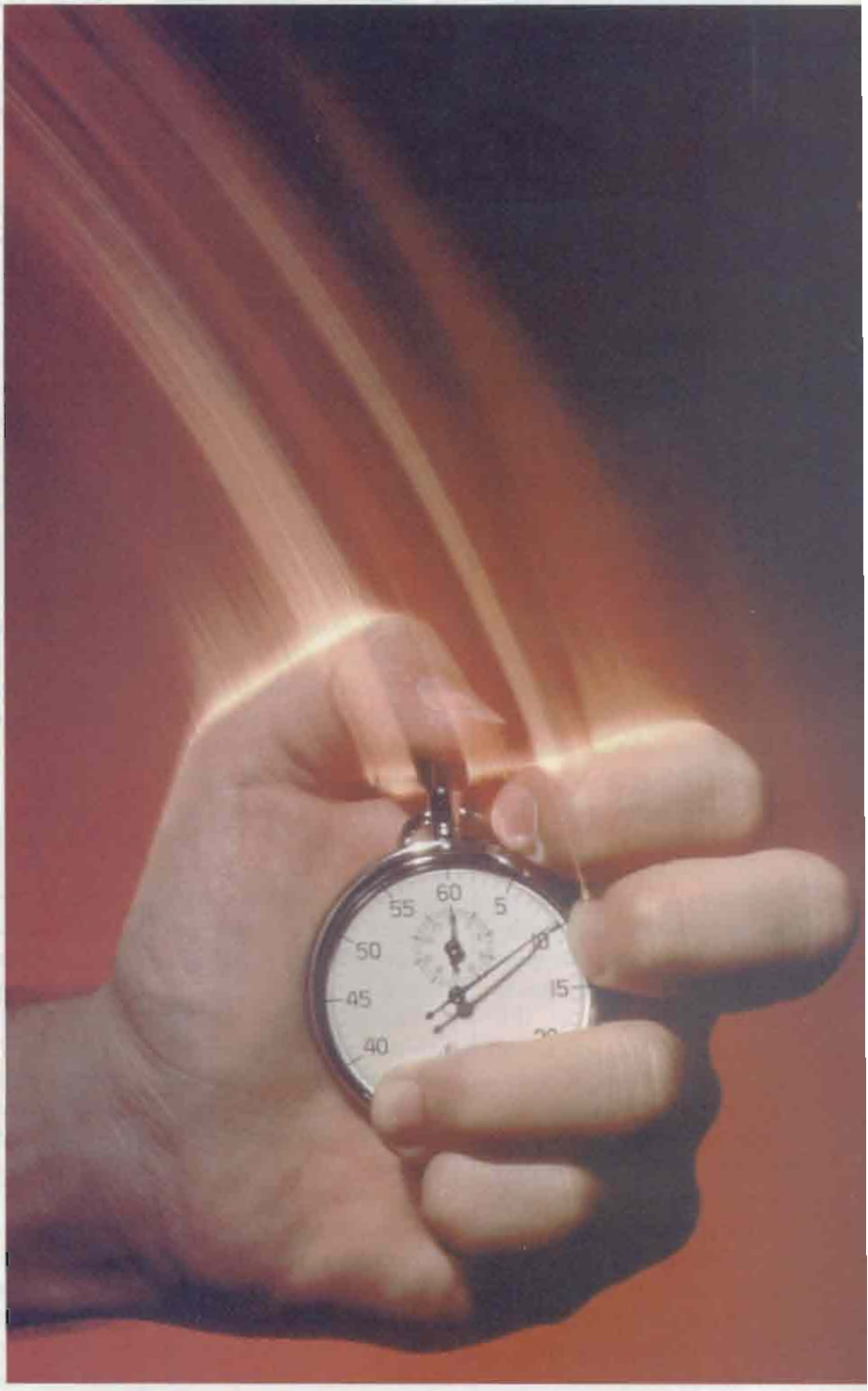

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CIRCLE 162 ON READER CARD

HP's 95LX palmtop combines HP calculator technology, DOS compatibility and the Lotus 1-2-3 spreadsheet.

HP, Lotus Introduce Palmtop PC

Joint Venture Puts DOS Compatibility And Lotus 1-2-3 In The Palm Of Your Hand

Hewlett-Packard, as part of a joint venture with Lotus Development Corp., announced its first "palmtop" personal computer. The new HP 95LX palmtop combines HP calculator technology, DOS compatibility and the Lotus 1-2-3 spreadsheet to make a PC the size of a checkbook.

HP disclosed details on the palmtop announcement to *HP Professional* at a mid-February press briefing in New York. HP's Dan Terpack, general manager of the Corvallis Division and Lotus' Leon Navickas, general manger of the Consumer Products Division were on hand to discuss a joint manufacturing and marketing effort between HP and Lotus for the development of a calculator-sized computer that combines PC power with full Lotus 1-2-3 Release 2.2 capability.

The 11 oz. palmtop system enables users to extend their PCs to any location. It includes an advanced HP financial calculator, a suite of Lotus-developed personal organizer tools and support for third-party applications. MS-DOS 3.2, Lotus 1-2-3, as well the text editing and personal organizer tools, are stored in the system ROM. Third-party applications will be available on RAM cards. The palmtop also features extensive communications capabilities, including HP's patented infrared data port, for connectivity and file sharing.

The 95LX gives users the ability to take Lotus 1-2-3 files and macros anywhere for data analysis, financial modeling and decision support. With one-key access to applications, users also can track appointments and assignments, edit letters and reports, handle complex calculations, access electronic information services and organize phone numbers and addresses. The optional HP F1001A connectivity pack allows the 95LX to share Lotus 1-2-3 and other data files with other IBM-compatible PCs.

Telephone Action

HP's Applied Computerized Telephony Available On Public Telephone Network

Originally provided for users of Northern Telecom's Meridian private-branch exchange (PBX) systems, HP's Applied Computerized Telephony (ACT) is now available for use on the public telephone network.

ACT automates call handling by linking voice communications with host computer applications. ACT allows users to receive voice calls and simultaneously retrieve associated data from HP computer systems. ACT can use either the dialed phone number or the originating number to retrieve information from a stored database.

With Automatic Number Identification (ANI), ACT can be used to retrieve a customer's file before an agent answers the incoming call. Dialed Number Identification Service (DNIS) can be used to determine which telephone number was called, and to route the call and data to an appropriate agent.

ACT automates outgoing calls, providing online information to telemarketers and others who are placing calls to customers. ACT also can be used to dial and monitor outgoing calls, turning them over to an agent only after the call goes through and someone answers.

The ACT system may be used on public telephone networks having NT's DMS-100 or SuperNode central office switches and NT's CompuCALL software. If they aren't using NT switches, COs may install Meridian Automatic Call Distribution (ACD) servers to front-end other types of switches, and provide equivalent service.

At the user site, ACT consists of a modified HP 9000 HP-UX ACT call-processing server, which is connected to networked HP 3000 or HP 9000 host systems. Special application programming interfaces (APIs) are used to allow the host computers to access and interact with the call-processing server.

According to Bob Alley, marketing manager for HP's ACT products, 12 software companies are currently working on ACT products, but about 50 percent of HP's ACT customers are developing their own applications.

HP and NT consider large-scale service providers — to be prime candidates for ACT. However, Bill Kirby, director of market development for Northern Telecomm, feels that "if you have a phone and a terminal, you are a candidate for this service".

CompuCALL service will be tariffed by the local telephone company, and costs will vary. On the user side, the HP ACT call-processing server bundle is priced at $30,000. The bundle is preconfigured for "plug-and-play" installation. The ACT API software ranges in price from $495 to $21,980. —*Gordon McLachlan, Contributing Editor*

Rewritable Optical Drives for Hewlett-Packard Computers with HP-IB Interface

Set Your Sights on Optical – 650MB in One Small Cartridge

Model 7600 Rewritable Magneto-Optical Disk Drive

- Huge 650MB capacity per compact cartridge
- Quick, random access to large amounts of data
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- Perfect for high security – take it with you or lock it up
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- Available for HP 9000, 3000, and 1000 computers

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CIRCLE 106 ON READER CARD

HP Announces Enhanced DTC

Upgraded Product Line Offers Multivendor Connectivity And Telnet Support At A Reduced Price

HP announced major enhancements to its Data Communications and Terminal Controller (DTC) products. The new DTC is a LAN-based terminal server that provides asynchronous connections for terminals printers, modems, PCs, hosts and other devices, as well as, Packet Assembler/Disassembler (PAD) support for local and remote terminals. The DTC release coincides with the announcements of HP OpenView DTC Manager 10.5 and Telnet/XL for the HP 3000 900 Series.

The DTC historically has been HP's terminal server for the HP 3000 and 9000 systems. Two separate product lines (the DTC/3000 and DTC/9000) were offered to support terminal service on the respective systems. With the new release, the two DTC lines have been merged into one open systems communications server that supports both Telnet and HP's proprietary AFCP protocols.

With the release of the HP OpenView DTC Manager 10.5, the new DTC supports direct access to all HP systems (3000, 9000 and 1000) and many non-HP host systems via standard Telnet. Release 10.5 supports remote Telnet access over IP routers and wide-area access over a packet-switched (X.25) network. For example, users connected to a Telnet host or terminal server can access VPLUS and character-mode applications running on HP 3000 MPE/XL hosts.

HP's version of Telnet for the HP 3000, Telnet/XL, is designed to be implemented in the DTC. The DTC itself converts the Telnet protocol to AFCP to avoid performance degradation on the HP 3000. According to HP's Jean-Luc Meyer, marketing manager for networked systems, "Allowing the DTC to perform protocol handling, leaves valuable CPU resources available for other uses."

The DTC is available in modular and scalable models: the DTC 16 (supports up to 16 ports and one X.25 card) and DTC48 (up to 48 ports, up to three X.25 cards or one Telnet protocol conversion card). In an effort to make the products competitive in the open systems market, HP has reduced DTC pricing. The new DTC48, with 48 RS232 ports for direct connect or 36 RS232 ports for modem connect sells for $14,830. The DTC16, with 16 RS232 ports for direct connect or 12 RS232 ports for modem connect sells for $5,350.

A Telnet Access card for the DTC48 is priced at $6,840 and provides a maximum of 40 concurrent Telnet sessions. The same card bundled with HP ARPA FTP software sells for $7040 to $9670, depending on the system for which it's purchased. Telnet Express, a dedicated Telnet server for network environments, is also available. Selling for $18,000, Telnet Express permits up to 80 concurrent Telnet sessions.

HP's Enterprise-Computing Solution For Mainframe Users

Since 1990, when HP announced the HP 3000 Series 980/100 and HP 9000 Model 870/100 enterprise computing solutions based on PA-RISC technology, customers have been able to take advantage of an environment that offers interoperability among different systems and smooth deployment to HP systems through several easy-to-use products and maintenance services. These systems extended HP's midrange computing products into the mainframe market.

HP's enterprise-computing solutions offer an opportunity to downsize mainframe applications, as well as directly replace the entire mainframe. While mainframes will continue to be used for large scale applications, companies are choosing to use RISC-based enterprise systems because they offer cost savings, increased flexibility and improved functionality with the corporate- or enterprise-computing environment. In most large companies, an enterprise-computing environment consists of a centralized data center, a regional data center and departmental and workgroup computing hubs.

Through its enterprise-computing solutions, HP is able to offload or replace older IBM systems, such as IBM 4381, 3090 and 3083 computers, which comprise the industry's largest installed mainframe base. These solutions provide distributed, corporate-wide, client-server computing based on the HP 3000 and 9000 business systems and servers.

HP Announces Release 3.0 For MPE XL

Extends Enterprise-Computing Capabilities

HP announced MPE XL Release 3.0, which extends the enterprise computing capabilities of the HP 3000/900 Series systems. Release 3.0 adds functionality for enterprise computing systems in three areas: systems management, database management and client-server services.

Systems management capabilities include HP SPU Switchover/XL, the Rewritable Optical Disk Technology Library System, HP OpenView, enhanced system scheduling and system resource management, extended configurability, performance tool and security extensions.

Database management capabilities include the integration of HP ALLBASE/SQL, which now supports online backup and referential integrity, with leading multivendor application development tools, including Cognos, Ingres, Infocentre and Information Builders. HP TurboIMAGE now offers automatic recovery and Change DB Plus an administration tool.

Client-server capabilities include HP VPLUS/Windows, which allows existing VPLUS applications to run without changes under MS-Windows on a PC and HP LAN Manager/XL Named Pipes. HP NetWare/XL, the HP 3000 version of Novell's Portable Netware, HP ARPA/XL enhancements, HP Architected Interface enhancements, HP 3000 support of the X Window System and OSF/Motif and HP Software Integration Sockets/XL are among the other major additions to MPE.

THE ONLY TAPE DRIVE THAT PUTS 25GB ON A SINGLE 8MM TAPE.

Do you wish you could find a backup system with enough capacity, speed, and sophistication to backup unattended?

Could you recreate a document from scratch in the time it takes you to restore it?

FAST BACKUP, FAST RESTORE.

Introducing the CY-8500, the 8mm tape drive that gives you up to 25 GB on a single tape. And with transfer rates of up to 90 MB per minute, backup takes less time, frees resources, and makes frequent backup simple and convenient.

And that's not all. The CY-8500 offers fast file search capability. So you get the advantages of high capacity and fast transfer rates plus the ability to locate and restore your files quickly – about 75 times faster than normal speed.

CONFIGURATION FLEXIBILITY.

The state-of-the-art liquid crystal display gives you complete drive status information. Command under execution, transfer rate, tape remaining, and ECC are presented in a clear easy-to-read format. By offering such features as data compression – for five times the storage capacity per tape – and data encryption – giving you data access control – the CY-8500 adapts to your company's growing needs. We'll adapt to your site requirements too, with rack mounting options and cable lengths of up to 80 feet.

TRUE "PLUG-AND-PLAY" COMPATIBILITY WITH:

Alliant	DEC Unibus	PC 386/ix
Alpha Micro	Gould	PC MS-DOS
Altos	HP	PC Xenix/Unix
Apollo	IBM AS/400	Perlec
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Concurrent	IBM S/38	Sequent
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Best of all, the CY-8500 offers peace of mind. 8mm helical scan technology, designed for data recording, gives you demonstrated performance and reliability. Not an adaptation of an audio recording format.

The CY-8500 is part of a complete family of tape backup products that range in capacity from the 150 MB ¼" cartridge streamer to the 2 TB cartridge handling system. All backed up by our in-house technical support group and 12-month warranty. For more information on how you can enjoy the best value in tape backup, call today at 804/873-0900.

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CIRCLE 112 ON READER CARD

SBPC Adds 17 New Members

Merges With ADAPSO, Forms Three New Task Forces

Seventeen new companies, including Andersen Consulting, ASK Computer, Dun & Bradstreet Software, Oracle and Sterling Software, joined the Software Business Practices Committee (SBPC) of ADAPSO, expanding the organization to 34 member companies.

The SBPC also officially merged with ADAPSO, the computer software and services association, retaining its own identity as a group within the association. As part of the merger, the SBPC formed three new task forces within ADAPSO to administer its key concerns: competitive practices, financial practices and membership.

SBPC membership is open and available to any individual or corporation that participates in the software industry as a vendor, provider, manufacturer, licensor or licensee, user, importer or exporter of software goods or services. It also is open to any other individual or corporation sufficiently connected with the software industry.

As the trade association for the computer software and services industry, ADAPSO represents firms that market micro, midrange and mainframe software products, professional services, information systems integration services, network-based information services, processing services and vertical applications and remarketer services.

The other new SBPC members are Applied Information Systems, Comshare Inc., Corum Group Ltd., Easel Corp., Genelco Inc., Magna Software Corporation, North Ridge Software, SAP America Inc., S/Cubed Inc., Stone & Wilson, The SOMA Group Inc., and Unimont Research Inc.

Hewlett-Packard is one of the founding member companies of SBPC.

Contact the Software Businesses Practices Council, 67 S. Bedford St., Burlington, MA 01803; (617) 229-6600.

Circle 374 on reader card

International Insights

InterFace Computer Founds U.S. Subsidiary

To Offer IF/Prolog For UNIX, VMS And DOS

German software company InterFace Computer founded a U.S. subsidiary in Austin, TX.

InterFace will offer IF/Prolog and related software products, establish a series of technology training and conduct consulting services.

The company's flagship product, IF/Prolog, is available on all UNIX systems, VMS, MS-DOS and mainframes. Using its Prolog and UNIX expertise as a springboard, InterFace has engineered a number of embedded expert systems. Prominent examples include solutions for online equipment control (for the oil and gas industry) and system configuration in the telecommunications industry.

American InterFace Computer Inc. is a member of the international network of InterFace Computer companies. Its headquarters are based in Munich and its subsidiaries are established in Tokyo; Dresden, Germany; and now in Austin TX.

Contact American InterFace Computer Inc., 1705 Capital of Texas Hwy., S., Ste. 200, Austin, TX 78746.

Circle 370 on reader card

Infosoft, IISI Move Application Solutions To HP 3000/9000

Reduces Operating Costs Up To 50 Percent

Innovative Information Systems Inc. (IISI) and Infosoft Gmbh, agreed to offer a downsizing conversion solution that allows mainframe users to reduce operating costs by as much as 50 percent.

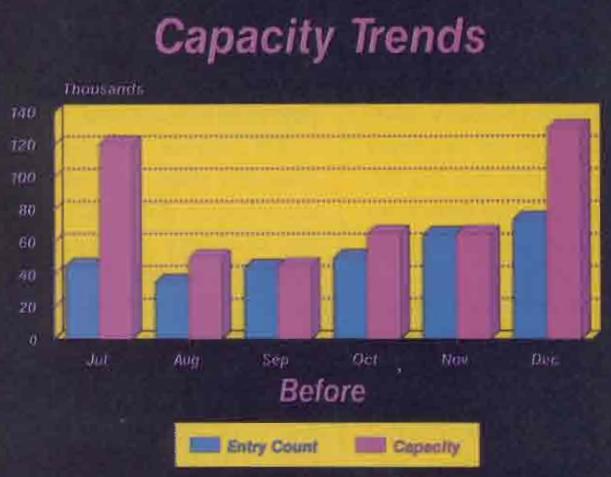
Using Infosoft's Conveyor software, IISI will convert mainframe applications to run on HP 3000 and HP 9000 series systems. IISI works with mainframe users to identify the cost/benefits of mainframe to mini migration. Then, IISI and the end user design a migration plan, defining resources, time line and tasks.

The Conveyor toolset will convert systems from either the VSE or MVS operating systems on the IBM and IBM-compatible platforms. The toolset converts COBOL, CICS, VSAM and other system software components directly into native mode HP-COBOL, View and Turbo-Image on the HP 3000 as well as MICROFOCUS COBOL, C-ISAM files, Informix database and CURSES screen forms on the HP 9000.

Contact Innovative Information Systems Inc., 63 Nahatan St., Norwood, MA 02062; (800) 766-7880.

Circle 369 on reader card

Are your capacities out of control?



Get them under control with the CTA.

If you are like most people, you are constantly checking your capacities, making sure you have sufficient free space. You are frequently increasing and decreasing capacities to stay on top. You either have too much free space or not enough and it is almost impossible to anticipate your next move. Suddenly, without warning, you realize that your capacities are out of control.

Bradmark is introducing a new feature to *DBGENERAL* to help get your capacities under control - the Capacity Trend Analyzer (**CTA**). The **CTA** automatically tracks dataset capacities, entry counts and capacity changes, allowing you to more accurately determine dataset capacity requirements, help forecast periods of rapid growth or decline in capacity requirements, and pinpoint datasets with specific space allocation concerns. This not only saves time and increases productivity, but more importantly, facilitates the proper utilization of disc space.

Determining a sufficient capacity until the next capacity change no longer needs to be a headache. Just indicate the number of days or weeks between capacity changes, and the **CTA** will determine how much capacity is required until the next scheduled capacity change based on previous capacity trend analyses. This helps reduce the need to constantly make capacity changes during periods of increased volume and allows you to more accurately schedule your capacity changes.

The **CTA** makes it easy to determine your dataset's capacity and fullness trends. Simply indicate which datasets you'd like to track when you set up your automatic capacity change parameters. The **CTA** will track the entry count of flagged datasets, record every capacity change, and generate reports and graphs on capacity change and entry count history. The graphs provide a great way to gain immediate insight into your specific dataset capacity needs. And by downloading the trend history to a PC, you can enhance your graphs using your favorite presentation software.

The Capacity Trend Analysis feature is part of the Introductory Package of *DBGENERAL*,version 6.1, scheduled for release this summer. *DBGENERAL* users with our Annual Maintenance Agreement will automatically receive the **CTA** feature as an enhancement.

DBGENERAL's Capacity Trend Analyzer is the solution in determining dataset capacity requirements. It provides you with insight into specific dataset capacity needs, indicates periods of increasing or decreasing growth, helps anticipate additional disk requirements and allows you to increase productivity. For more information on the Capacity Trend Analyzer and a **FREE** trial copy of *DBGENERAL*, or any of our other innovative software products, please contact a Bradmark representative at 800-275-2723. Let the Capacity Trend Analyzer set the trend for your capacity management needs today.

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CIRCLE 108 ON READER CARD

A Payroll System That Pays

Collier-Jackson's World Class Series Payroll System Offers Increased Flexibility And A New User Interface

In an increasingly competitive and contentious economy, today's employers need more flexibility than ever from their accounting software, especially from their payroll systems. Recent tax law changes and new government regulations have made new demands on payroll applications, requiring many company's to purchase new software or write new code for in-house systems. Collier-Jackson has responded to businesses' changing needs with the latest release of its modular World Class Series Payroll System.

The World Class Payroll System offers not only a cost-effective means of handling frequent changes to payroll accounting procedures, but also an enhanced graphical interface with windowing capabilities designed to make the package easy to use.

Flexible payroll cycles are one of the keys to the Payroll System's enhanced flexibility. New functionality allows users to process payroll cycles according to company, division, pay type or employee category. Users also can define formula-based deductions and accrual calculations for different cycles.

Other features include: shared personnel information, an interface to Collier-Jackson's general ledger product, labor distribution, payroll distribution, and check reconciliation. A tax module, which can be purchased separately, allows users to react to tax law changes with equal flexibility. The table-driven design of the Payroll System ensures tight control over federal and state tax deductions, as well as country, local and reciprocity taxes.

The product's new windowing interface is designed to provide a PC look and feel. Pop-up menus, Collier-Jackson's own "express navigation" and "borderless integration" (features that will be familiar to Collier-Jackson users), and an enhanced clipboard are all included in the Payroll System package.

According to Gary Vigneau, vice president of sales and marketing at Collier-Jackson, the purpose of the new release is to give users the maximum ability to tailor the system to their needs. "There were big changes made this year, affecting the way businesses pay their employees and take their deductions," says Vigneau. This is especially true, he says, of union environments where new contracts can alter employee payments retroactively.

Of course, companies must also adapt their systems according to the demands of the economy and current legislation, as well. "The basic problem is," Vigneau notes, "employers don't always know what the requirements are going to be a few years down the road." Collier-Jackson's efforts to increase the Payroll Systems flexibility, he says, have focused precisely on this issue.

According to Vigneau and others at Collier-Jackson, this flexibility extends beyond a company's bookkeeping to its chosen computing environment. Collier-Jackson has been aggressively marketing its entry into the open systems world and its strong endorsement of the client-server architecture.

"Our entire stable of products will be available on the client-server environment," claims Vigneau, "We're going to have our complete general ledger package available in mid-1992, but we'll be moving some pieces of our applications to client-server this year." According to Vigneau, this promise extends to the World Class Series Payroll System as well. —*Don Marks, Managing Editor*

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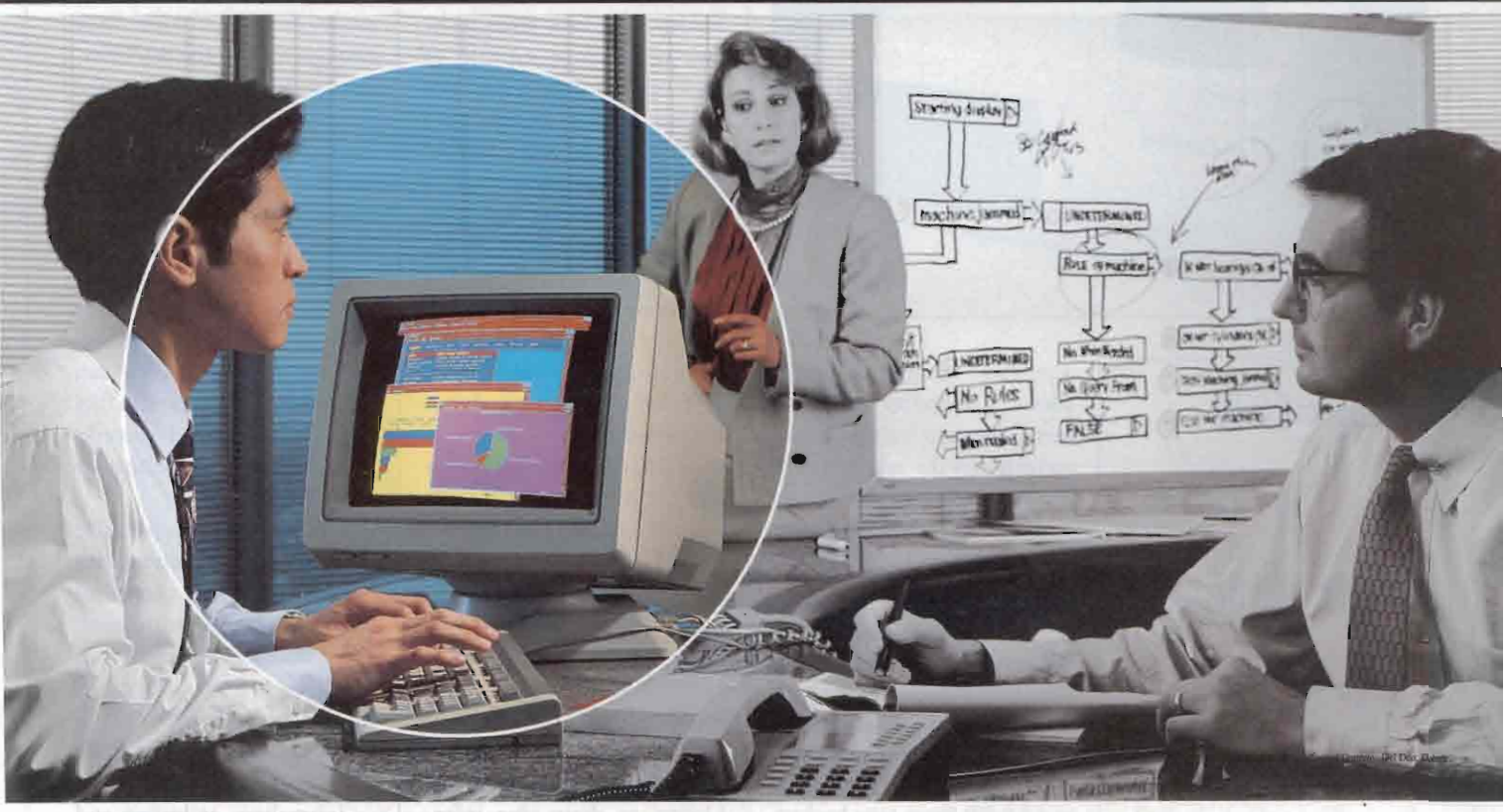
CIRCLE 357 ON READER CARD

If you need more productivity in application development...



It's time to re-Focus.

If application maintenance is strangling new application development and the backlog is hurting your company's bottom line, it's time to re-FOCUS.

FOCUS, the world's leading 4GL, provides the most comprehensive toolkit for developing complete information systems for multi-vendor and multi-data environments. That's why more than 800,000 people worldwide use FOCUS.

COMPREHENSIVE TOOLKIT WITH FOCUS

FOCUS provides an integrated development environment that delivers all the tools you need to quickly create complete applications. The powerful FOCUS 4GL allows quick application prototyping, cuts coding time, speeds maintenance, and enables you to test applications on one platform and deploy them on another.

With FOCUS, you get consistent operation, regardless of environment or data type. So, your investment in training programmers and end users is protected throughout your systems' growth.

BUILD INTEGRATED INFORMATION SYSTEMS WITH FOCUS

FOCUS tools and applications are portable to over 30 hardware platforms plus 40 database and file types, including Allbase/SQL, Turbo IMAGE, KSAM, and sequential files. Support for all major communications standards allows you to build client/server applications that can transparently access data across a wide range of multi-vendor systems.

Over 4,000 companies using FOCUS average one new application a month. If your current application development environment is not matching this proven track record of productivity, call us toll free at 800-969-INFO.

Or write Information Builders, Inc., 1250 Broadway, New York, NY 10001.

Information Builders, Inc. is a recognized Hewlett-Packard Premier Solutions Provider.

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IT'S TIME TO RE-FOCUS

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A Perfect ECHO

Bering's ECHO Series Tape Drives Provide A Mirror-Image Of Your Company's Data

You have enough to worry about. Computer environments are too vulnerable to security breaks not to have disaster recovery plans in place with policies and standards drafted and enforced. As an MIS manager, you must ensure that your company's data is protected by reliable backup devices.

Bering Industries, a division of OCEAN Microsystems, offers the ECHO 4950/55 XL — a 5.0 GB 8mm tape backup system for users of high-capacity systems. ECHO 4950/55 XL is compatible with HP 7974, HP 7978 and HP 7980 protocols and supports HP 3000, 9000 and 1000 systems, including the newer 800 and 900 Series.

Bering's ECHO series also can emulate CS80 tape protocols, which allows the ECHO Series of tape drives (including the 4920 and 4925 2.5GB versions) to utilize the various backup/restore features in HP operating systems such as HP-UX, RTE, MPE V and MPE XL.

Similar to the earlier versions of Bering's 8mm product, the ECHO 4950/55 XL is a single 8mm tape cartridge drive capable of storing up to 5.0 GB of data and uses the latest in helical scan recording technology. The new 8mm technology is more capable of packing high-density data than 9-track and 1/2-inch tape cartridges. The ECHO 4950/XL has an areal density of 74 Mbits/inch^2. It uses high-level error correction codes (ECC), and has an error rate of less than one error in 10^{13} bits read. The maximum sustained transfer rate is 500 KB/second.

Echo Series tape drives function either on-line or off-line. On-line, it emulates a CS/80 disk and tape device; off-line it produces a "mirror-image" of your hard disk.

You select the operation mode for "off-line" backup using the 4950's menu-driven operations. Choices include: Configuration, to choose or set the address and to set the automatic timed backup; Utility, to show tape information and to position tape, perform tests and verify procedures; Backup, to perform the actual backup operation and; Restore, to restore data.

ECHO's ability to emulate HP tape drives allows it to use the backup utilities available on HP operating systems; however, it doesn't require these utilities or other software to back up and restore data. To assist "off-line" operation, there are front panel push buttons to read menu choices, confirm operating status, time, and procedures; format system; monitor error codes, drive address and operation status. The ECHO 4955 XL is a simpler version of the 4950 that does not include the front panel control features.

A convenient feature for managers faced with "not enough time in the day" syndrome, is the 4950's internal real-time clock and auto-timed backup program (with or without CPU) that creates a mirror-image of any CS/80 or SS/80 hard disk. The tape drive automatically "disconnects" and returns to the system when the operation is complete. Online ECHO drives can function as a backup with files retrieved and read directly from the tape for directory or data verification.

The ECHO's compact size is suited for integration into commercial and technical workstation environments, and it fits on a desktop or into a standard 19-inch rackmount.

The ECHO 4950/XL is priced at $9,890 and the ECHO 4955/XL is $9,590.

Journaling, archiving and data backup for high-capacity systems have considerable priority in any computing environment. Bering's unattended, reliable storage media are designed to give MIS managers the peace of mind they need to move on to other concerns. —*Andrea Zavod, Assistant Editor*

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Benchmarking Councils Have Devised Stringent, Real-World Performance Measures For Workstations And Business Servers

modern

BY RON LEVINE

Everyone is aware of HP's reputation for providing quality, reliable, high-performance computer systems. I've heard many a business executive refer to HP systems as "the Cadillac of computers." So, when Hewlett-Packard says its HP 9000 Series 800 UNIX-based business servers offer greater performance than proprietary systems and are more capable than other "open" systems, many of us are inclined to believe it. Likewise, when HP claims that its PA-RISC architecture generates more performance at less cost, is highly reliable, and provides reduced cost of ownership, many previous buyers of HP systems, based on past experiences, have no doubts.

The allegiances of HP users notwithstanding, other vendors of UNIX-based servers also make impressive price/performance claims. IBM, DEC, Sun, and others (as well as HP) point to numerous test results, statistics, and consultant findings to accredit their performance and cost data analysis and to back up their

yardsticks

sales pitches. How, then, does a potential buyer determine which UNIX server is best for their needs and judge the true cost of ownership?

A Measure Of UNIX

PRIOR TO 1980, UNIX systems were mostly used in technical and engineering environments. And the UNIX operating system has long been a favorite of the academic world. Because of this operating atmosphere, benchmarking (i.e., performance testing) of UNIX systems centered around intensive cpu performance (such as computational speed) and unsophisticated file reads and writes. Yet, even here there were really no tightly enforced industry-wide standards to judge one vendor's benchmark against another's.

While cpu speed-oriented benchmarks are fine for comparing technical workstation performance, they don't reflect the way most businesses use their systems. For instance, they don't take into account many of the computer system components that are vital for accomplishing standard commercial On-Line Transaction Processing (OLTP). These components include modules like disk I/O, terminal I/O, or a particular UNIX implementation's ability to support multiple users.

As businesses' demand for commercially-oriented UNIX systems (especially servers) increased, better methods of comparing competing UNIX-based systems were required. Businesses need to know about system response times and transaction throughput levels as well as cpu and floating point speeds. The basic performance information that most vendors provide (based on the "old" standard mips, dhrystones and megaflops benchmarks — which concentrate on the cpu) simply aren't enough for the commercial customer. Attempting to evaluate the true performance level of OLTP UNIX servers, using these bench-

marks, can produce very misleading performance data and associated conclusions.

To fulfill businesses' need for commercial environment performance comparisons between multiuser UNIX systems, the weaknesses of the above-mentioned cpu-based benchmarks had to be addressed. Third parties, like AIM Technology and Neal Nelson came up with benchmarks that perform tests on several various system components used in business applications. Unfortunately, both are still heavily oriented towards mathematical operations and simple file reads and writes, which aren't the most significant factors in determining commercial system performance. Neither of these benchmark suites produce results that are truly indicative of the total system performance that can be achieved within a real commercial application. For example, neither benchmark is based on a real application, stresses terminal I/O or uses a database or indexed file system as a real-world business application would.

Throughput Counts

TO COMMERCIAL BUSINESSES, the throughput rating is more important than a dollar-per-mip cost rating. According to Gary Lemke, an HP 9000, Series 800 product marketing manager, "A PC can equal a mini in number of mips, but the throughput will not be the same." To produce a meaningful rating system for transaction processing applications, database and system vendors formed the Transaction Processing Performance Council (TPC). The group came up with two benchmarks for commercial use, called TPC-A and TPC-B. All members agreed to follow the rules associated with the stated testing procedures and parameters in order to make valid comparisons between competing servers.

For technical and engineering users, it was equally important to replace the questionable (sometimes meaningless) performance results obtained with benchmarks measuring mips and megaflops with credible data. A consortium of workstation vendors and *EE Times* got together to create a new suite of tests for performance measurements. Now, 23 members strong and known as SPEC, this benchmark suite provides the industry with more objective, reliable and verifiable speed ratings.

According to Lemke, "TPC-A is an expensive, soup-to-nuts benchmark, covering front to end response times. It models real-life situations in the business community and therefore more accurately reflects true throughput levels obtainable in a "real" commercial environment." Unlike other benchmarks that measure individual system components, TPC-A is based on a real application, stresses terminal input/output, and employs a database management system, like most commercial locales; this results in a more accurate, overall functional (throughput) measurement of total system performance.

TPC-A defines a rigorous standard for the calculation of price/performance. All system hardware, software, and five years of maintenance are included in the total system cost/performance rating. The benchmark measures performance in an update-intensive database atmosphere, one where terminals are used to access a database over a local- or wide-area network to conduct transactions. This type of environment is typical in

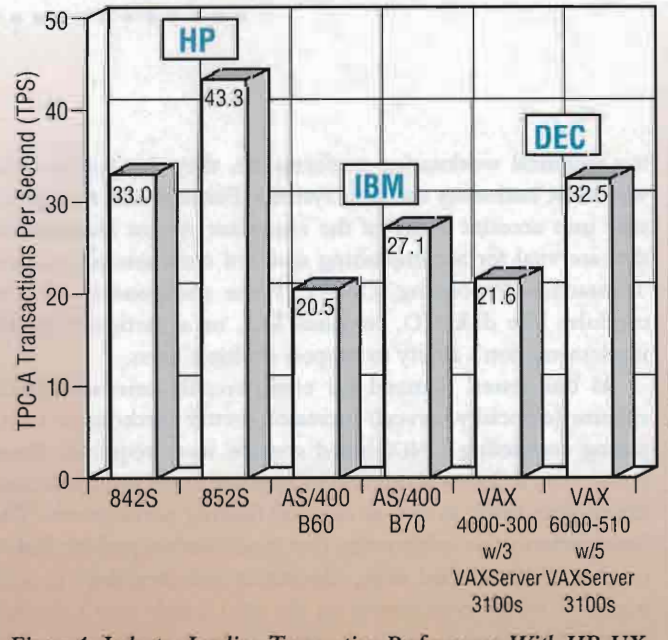

Figure 1: Industry Leading Transaction Performance With HP-UX.

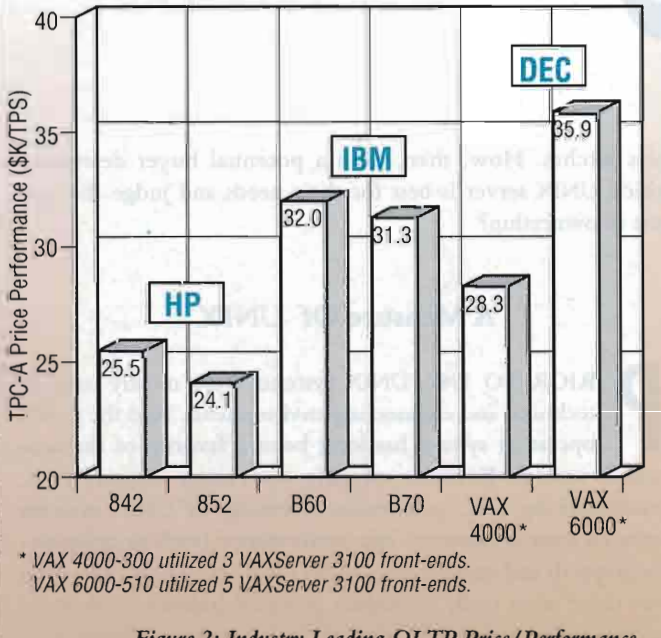

Figure 2: Industry Leading OLTP Price/Performance.

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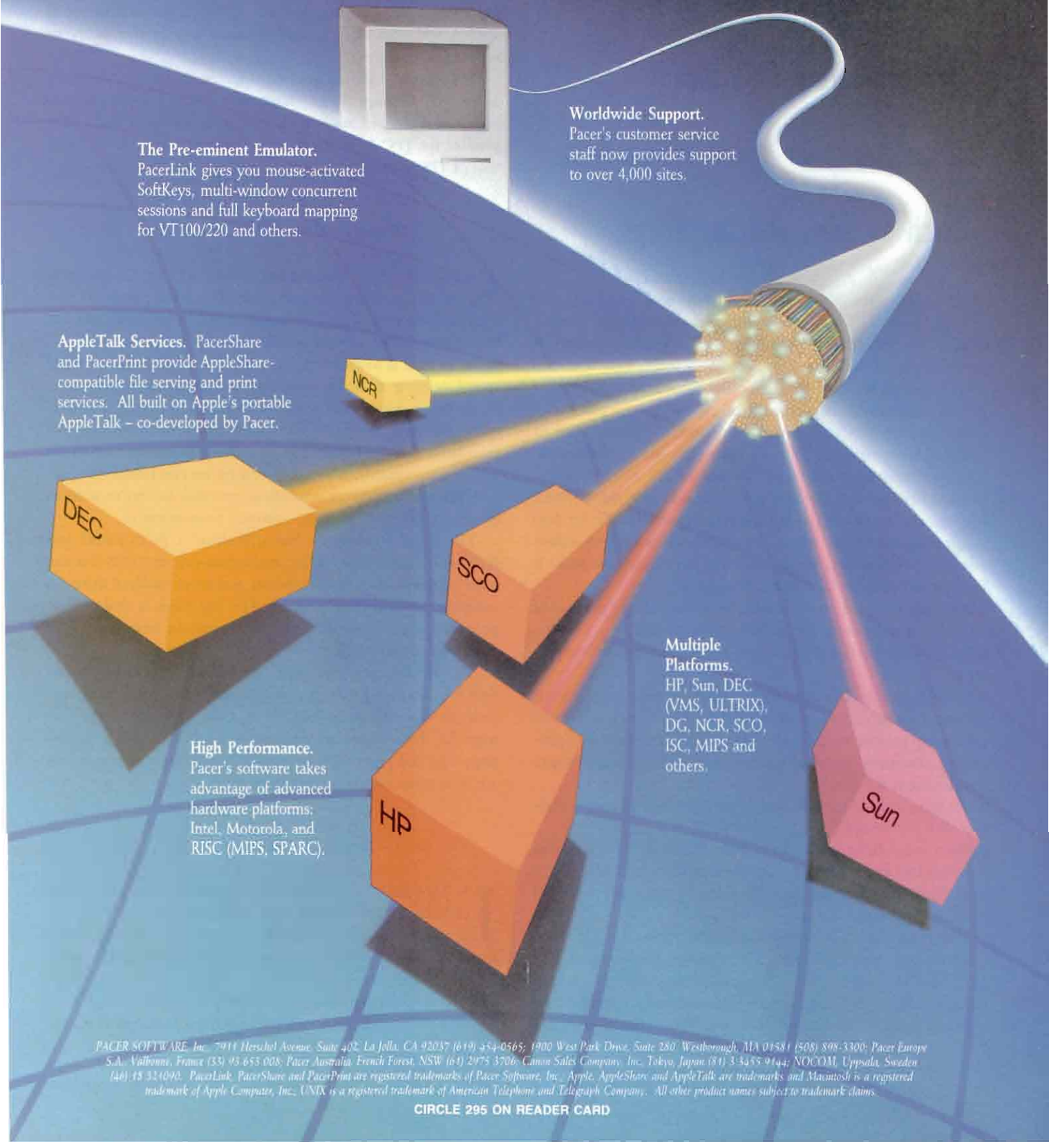

The SPEC benchmark suites provide a more level playing field for comparing CPU speeds than the older speed rating tests, such as mips and megaflops.

OLTP applications. The TPC-A measures how many transactions per second (TPS) a system can perform and how much a system costs, including maintenance over a 60 month period. It provides full disclosure on TPS cost.

When considering benchmark test results, keep in mind that TPC-A is a full system-level benchmark, based on a real application, and exercises all system components typically used in commercial applications. It isn't a raw cpu speed benchmark. The now industry-standard TPC-A benchmark is tightly specified and believed to overcome the shortcomings of other UNIX benchmarks. More than 30 leading system and database vendors reached agreement on the use of this auditable and reproducible OLTP benchmark. Some features of the TPC-A that make it the best indicator of OLTP performance are:

- Rigorous terminal response time requirements (90 percent of transactions must complete in under two seconds).
- Real-world simulation of online transaction processing patterns.
- Accurate price estimates, including all system components necessary to produce reported results. (The five-year cost of ownership pricing used for the TPC-A includes front-end processors, terminals, terminal connect hardware, and application development software.)
- Database size scaled with system performance to ensure realistic disk I/O results.
- Many users enter transactions from terminals to ensure that terminal I/O and meaningful numbers of users are tested.
- Audited, full-disclosure reports to ensure accurate results and credible reporting.

Although TPC-A is believed to be the best available benchmark for comparing multiuser OLTP system performance, like all testing programs, it does have limitations. When making comparisons it's prudent *not* to do so based solely on the two reported results, TPS and $/TPS, but to also evaluate the comparability of the reported results to your unique environment requirements.

TPC-B is a *less* stringent measurement of server performance. It serves more as an indicator of how a particular database performs on a specific hardware platform: Database performance measurement on brand X vs. brand Y. The TPC-B benchmark is not a full system-level measure of OLTP; it is not as balanced as TPC-A and does not measure terminal I/O or the ability to support many users.

TPC-B results should not be compared against TPC-A results as the "B" findings do not measure a system's ability to support the overhead associated with multiple users. It is very possible for TPC-B reported transactions per second to be twice that of TPC-A results.

Workstation SPECifications

SYSTEMS PERFORMANCE EVALUATION Cooperative (SPEC) is an organization formed to create, maintain and endorse a set of standardized relevant benchmarks that can be applied to the newest generation of engineering workstations. Its goal is to establish more objective and verifiable CPU speed testing data for engineering and technical users.

By producing a valid group of applications-oriented benchmarks that provide data on true system performance, prospective customers will be better able to make comparisons based on actual requirements, rather than relying on raw hardware characteristics. Also, server manufacturers will be better able to communicate benefits using common measurements.

The SPEC Benchmark Suite, Release 1 (SPECmark) and Release 1.1 (SPECthruput) are application-oriented tests that can serve as common reference points and be considered during a competitive evaluation process. The test bank is designed to provide speed comparisons that are consistent among different computers doing equal tasks.

The SPEC benchmark suites, provide a more level playing field for comparing CPU speeds than the older speed rating tests (such as mips and megaflops). SPEC benchmarks are a replacement for these earlier benchmarks whose results, due to misinterpreting and past misuse by vendor marketing and sales forces, are now often viewed cynically by users.

And The Winner Is...

IN JANUARY, HEWLETT-PACKARD announced the industry's first audited TPC-A benchmark numbers for computers based on a UNIX operating system. The online transaction-processing (OLTP) performance benchmark results for the HP 9000 model 842S is 33 transactions per seconds (TPS). The HP 9000 Model 852S finished with 43.3 TPS *(see Figure 1)*. These two models achieved leading-edge price/performance

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ratios: the model 842S with $25,500/TPS and the model 852S with $24,100/TPS (see *Figure 2*).

The TPC-A benchmark numbers for these HP 9000 Series 800 servers indicate performance and cost of ownership benefits vs. proprietary systems from other vendors. For example, the numbers for the IBM AS/400 Model B70 were 27.1 TPS at a cost of $31,300/TPS. This works out to a 60 percent TPS performance advantage and 23 percent cost advantage for the HP Series 852S. The DEC VAX/VMS Model 6000/510 with five VAXServer front-ends (3100s) performs at 32.5 TPS at a cost of $35,900/TPS according to test results. In this case, the 852S holds a 33 percent TPS advantage and a 33 percent cost advantage.

Hewlett-Packard's auditor for the TPC-A benchmark was Tom Sawyer of Codd & Date, an international firm well-known for benchmark auditing. For the test set, both HP servers used the Informix On-Line relational database, release 4.0. When evaluating ratings, special attention should be paid to the system configuration used in the benchmark.

HP also has released TPC-B results. To date, only Sun Microsystems and IBM also have published TPC-B numbers. HP again used the Informix database for this benchmark set. These test results, too, showed that the Series 842S and 852S lead the field in performance; they performed at 63.2 TPS and 90.1 TPS, respectively. The Sun SPARCServer 490, using a Sybase database came in at 57.2 TPS, and IBM with an Informix database running on an RS/6000 Model 540 and RS/6000 Model 550 performed at 44.3 TPS and 58.2 TPS, respectively.

TPC-B price/performance results are a little clouded. HP clearly led Sun in this category with a 6.2 $K/TPS for the model 842S and a 5.3 $K/TPS for the model 852S vs. the Sun SPARCServer 490 rating of 7.8 $K/TPS. But IBM's statistics for their RS/6000 model 540 (4.7 $K/TPS) and model 550 (4.8 $K/TPS) do not directly relate to HP's cost of ownership because IBM implemented the TPC-B benchmark differently than HP. IBM used a less expensive cartridge tape to store the TPC-B log data while HP used disk instead of DAT tape. At this writing IBM is said to be withdrawing their TPC-B results and redoing the benchmark using disk.

As stated earlier, a TPC-B benchmark is not a comprehensive system level benchmark, like the TPC-A is. It measures database performance on a particular hardware platform. It does not measure terminal I/O or the operating system's ability to support large numbers of users. But it is an industry-standard benchmark with:

- Scaled database usage resulting in realistic disk I/O numbers.
- Strict data integrity tests (including mirroring, checkpoints, and rollback).
- Stringent disclosure and audit rules.
- Tight pricing rules.

Test Name*	SPEC Ratio
gcc	13.8
espresso	13.4
spice 2g6	13.1
doduc	8.1
nasa7	12.1
li	15.5
eqntott	9.8
matrix300	11.5
fpppp	13/4
tomcatv	9.1

SPECint (combined 4-CPU suite rating) = 12.8
SPECfp (combined 6-floating point suite rating) = 11.0
SPECmark (overall system performance rating) = 11.8

When comparing workstation performance, ask other vendors for their SPECmark performance ratings.

Table 1: SPEC performance ratios for HP Apollo 9000 Model 425s.

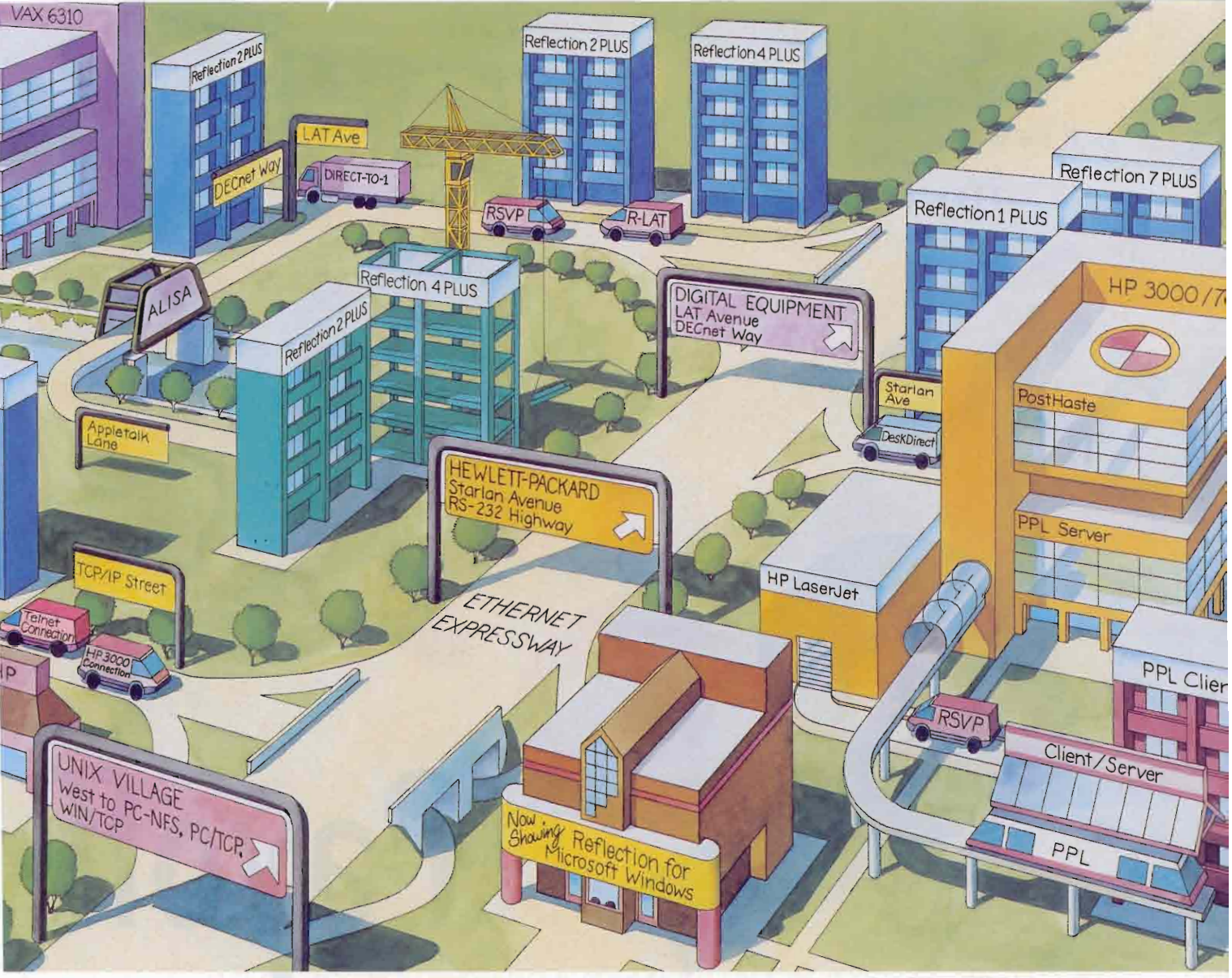
Workstations Weigh In

THE SPEC RELEASE 1.0 TEST suite consists of 10 complex engineering and scientific application benchmarks: Four are cpu, integer arithmetic intensive; the remaining six measure floating point performance. The time a target system requires to run each individual test is compared against the time it takes a 1-mips reference machine (a DEC VAX 11/780) to do the same task. This results in a rating called a SPECratio for each test.

A SPECint Mark is used to denote the target system's performance within the set of four-CPU tests; the SPECfp Mark measures how the system performed within the set of six-floating point tests.

A single overall performance rating, for machine comparisons, is generated by taking the geometric mean of the ten-test ratios (obtained by dividing the reference time by the time used by the system under test). This is the SPECmark. This geometric mean measurement was chosen because it is insensitive to the reference machine and tends to be a conservative estimate. The HP Apollo 9000, Model 425s workstation, running HP-UX showed the results in *Table 1*.

Whether you plan to purchase a high-end business server or low-end workstation, benchmark results can help you make your decision. At the very least, the TPC results with their emphasis on $K/TPS make the vendors more cautious about pricing. Likewise, the SPEC rating ensures that workstations are tuned for real application performance rather than mere mips.



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CIRCLE 146 ON READER CARD

The POSIX Payoff

HP's Adoption Of POSIX Standards Expands MPE XL's Benefit Portfolio—And Pays Dividends To Users Of Open Systems

BY JON DAVIS

Protecting customer investments always has been a strength of the HP 3000 product line. Application software written for HP 3000s more than 15 years ago runs without modification or recompilation on the high performance HP 3000 systems of today. While software compatibility has been maintained, today's HP 3000 systems feature a high performance RISC architecture optimized for commercial processing—an industry first. With their modern architecture and operating system, HP 3000 systems presently provide the best OLTP price/performance in the industry as corroborated by industry-standard benchmarks.

Hewlett-Packard has embraced open systems as a strategic direction for the HP 3000. HP sees this strategy as a way of combining the strength of HP 3000 commercial processing with the benefits of open systems. This plan allows HP 3000 customers to reap the benefits of open systems without considering a costly and painful conversion to UNIX.

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TABLE I

1003.1	System Interface
1003.2	Shell and Utilities
1003.3	POSIX Validation Tests
1003.4	Real Time and Extensions
1003.5	Ada Bindings
1003.6	Security
1003.7	System Administration
1003.8	Transparent File Access
1003.9	Fortran Bindings
1003.10	Supercomputing
1003.11	Transaction Processing

POSIX Standards.

standards, HP 3000s are able to offer new levels of investment protection and dramatically increase the number of application solutions available to HP 3000 customers—all without altering the compatibility provided by HP 3000 systems today. Application development, maintenance, and user training costs are slashed because the same applications can run on the HP 3000 and on other open systems, thus eliminating the need for multiple versions of application software. Current users of HP 3000s will increasingly enjoy the benefits of open systems and yet will find that their HP 3000s function as before with no modification of applications or operating procedures required.

Although the HP 3000 historically has supported several standards, both official and de facto, up to now there hasn't existed a standard operating system interface definition that could be adopted. This situation is changing with the emergence of POSIX, a standard portable operating system interface that can be implemented on any system. HP is currently implementing POSIX for MPE XL on the HP 3000.

Among the standards supported by the HP 3000 today are standard languages, networking protocols, and database access interfaces. Soon the HP 3000 will support standard user interfaces such as OSF Motif and X Windows. The HP 3000's support of standards, along with the software compatibility between Classic and Spectrum HP 3000 systems, has provided an unparalleled level of investment protection to HP 3000 customers.

For the past several years, the Institute of Electrical and Electronic Engineers (IEEE), working from the starting point of AT&T and Berkeley UNIX, has been developing standards for the definition of a standard operating system environment. This family of standards has been given the name POSIX, an acronym that stands for Portable Operating System Interface.

POSIX provides an industry-standard operating system interface that can be implemented on any operating system, UNIX or non-UNIX. This family of standards has been given the of-

ficial umbrella name of IEEE Standard 1003. Underneath the 1003 umbrella there are 11 substandards numbered 1003.1 through 1003.11. *Table 1* lists the different POSIX standards.

Most of these standards are under development and still in draft format. However, two of the most important standards, IEEE 1003.1 and IEEE 1003.2, have reached sufficient maturity to be implemented as open systems standards. IEEE 1003.1 and IEEE 1003.2 often are referred to as POSIX.1 and POSIX.2. POSIX.1 defines the calls that are available to the application program and also defines the directory structure and file-naming rules. POSIX.2 defines the command structure that the interactive user sees. Both of these standards are currently being implemented for the HP 3000. As additional POSIX standards become finalized and mature, they will become candidates for implementation on the HP 3000.

POSIX interfaces borrow much from the UNIX interfaces, but POSIX is not a version of either AT&T UNIX (commonly referred to as SVID UNIX) or Berkeley (BSD) UNIX, the two most widely-used versions. POSIX combines what are considered to be many of the best attributes of both versions, as well as some elements not found in either. Although POSIX borrows from UNIX, the standard doesn't require that POSIX-compliant systems be UNIX systems. On the other hand, most UNIX systems are POSIX-compliant, and POSIX applications developed on UNIX systems can be easily ported to other POSIX-compliant systems, including MPE XL for the HP 3000. Because of the portability of POSIX applications, the addition of POSIX to the HP 3000 means that a wealth of new applications will become available to the HP 3000 customer.

POSIX is particularly attractive as a standard operating system interface because its requirements don't specify the internal implementation of the underlying system, thus allowing a system with superior performance and commercial functionality to implement POSIX interfaces without sacrificing the benefits provided by that underlying operating system. It is this characteristic of POSIX that allows the MPE XL interfaces to be extended with the POSIX interfaces without affecting the internal high performance OLTP architecture of the HP 3000 or other existing HP 3000 applications.

Strong, Organized Support

CUSTOMERS OR APPLICATION developers who invest in porting applications from UNIX platforms to POSIX on the HP 3000 needn't worry about the security of their investments. POSIX has substantial backing from the most important standards bodies and industry consortia. Three organizations, X/Open, the Open Software Foundation (OSF) and Unix International, with funding and participation from all

major industry players, both in the U.S. and in Europe, have adopted POSIX as the foundation for new distributed computing technologies.

The new software technologies invented or adopted by these standards organizations will be built on top of POSIX interfaces. This means that POSIX applications on the HP 3000 will continually benefit from new technologies. Also, open systems users can know that, in addition to the performance and commercial functionality the HP 3000 provides, they also will have access to new software standards and technologies as they become available.

The support of POSIX on the HP 3000 provides significant extensions to the already rich MPE XL environment. UNIX users will find that they have access to a familiar environment that has the performance, reliability, and functionality offered with the HP 3000. Also, HP 3000 customers will find that they can leverage POSIX-compliant software by porting to other POSIX-compliant systems, including HP-UX. Some of the most noteworthy benefits that will accrue to HP 3000 customers from the addition of POSIX are:

- Ability to leverage application development across multiple platforms.
- Access to UNIX applications and UNIX application development utilities.
- Elimination of the need to buy additional systems to run UNIX-based applications.
- Access to new software technologies such as UNIX pipes.
- Access to the pool of software developers with UNIX experience and training.

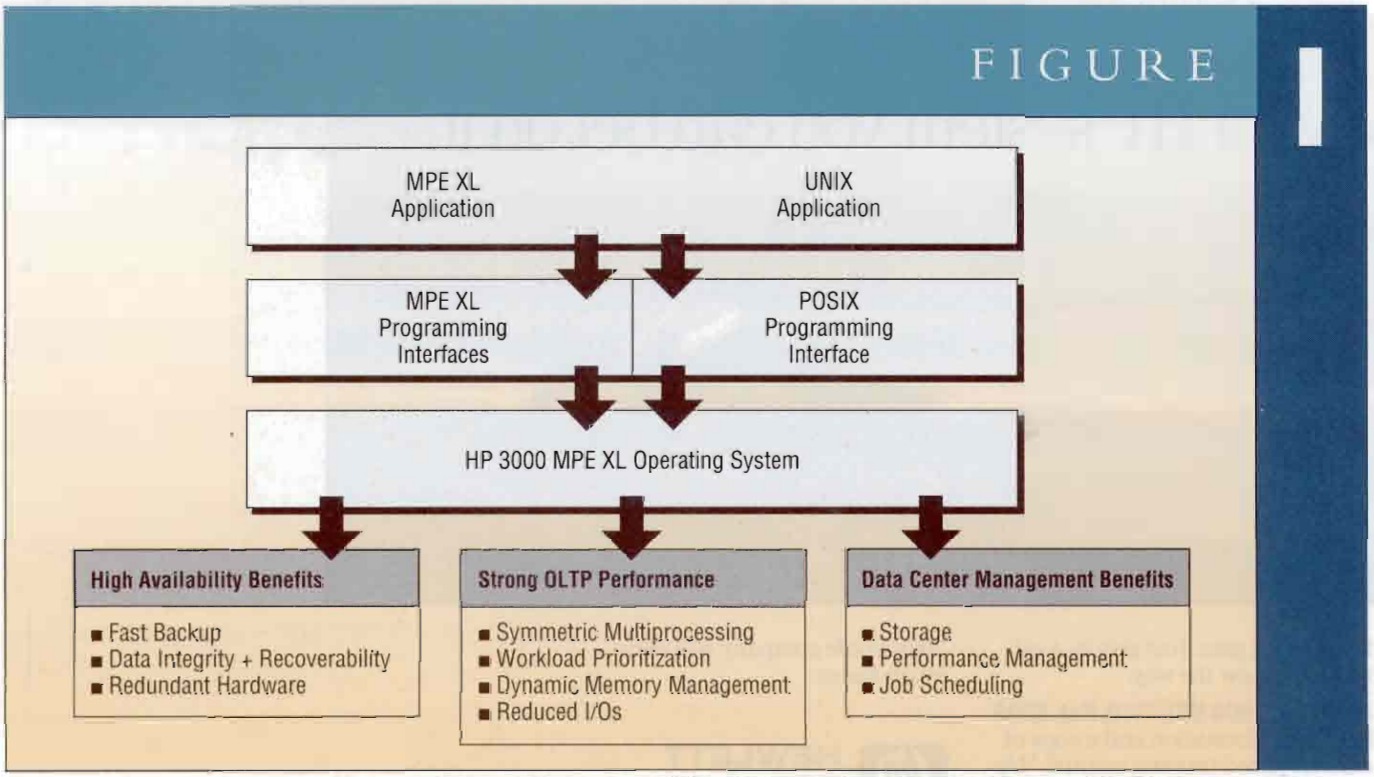
One of the biggest challenges in MIS today is maximizing the investment return from application development. The availability of POSIX on the HP 3000 will increase return on investment because POSIX will allow portability of POSIX-compliant applications developed on the HP 3000 to other POSIX-compliant systems. It no longer will be necessary to have separate application development teams for different platforms because the same application software can run on different systems.

POSIX.1 And POSIX.2

ONE OF THE PRINCIPLE ways in which applications portability will be achieved is with the support of the POSIX.1 interface—a UNIX programmatic environment—on the HP 3000. Although the MPE XL and POSIX.1 programmatic interfaces offer the same kinds of capabilities, the differences in the way in which application programmers code for MPE XL or POSIX mean that, today, major modifications are necessary in order to move code from a POSIX or UNIX environment to the MPE XL environment or vice versa. POSIX.1 support on the HP 3000 provides a programmatic interface that will be consistent between MPE XL and UNIX.

Figure 1 shows how the POSIX programmatic interface (POSIX.1) and the MPE XL programmatic interface will sit side

FIGURE 1



POSIX.1 and the MPE XL programmatic interface will sit side by side, both on top of the base MPE XL operating system.

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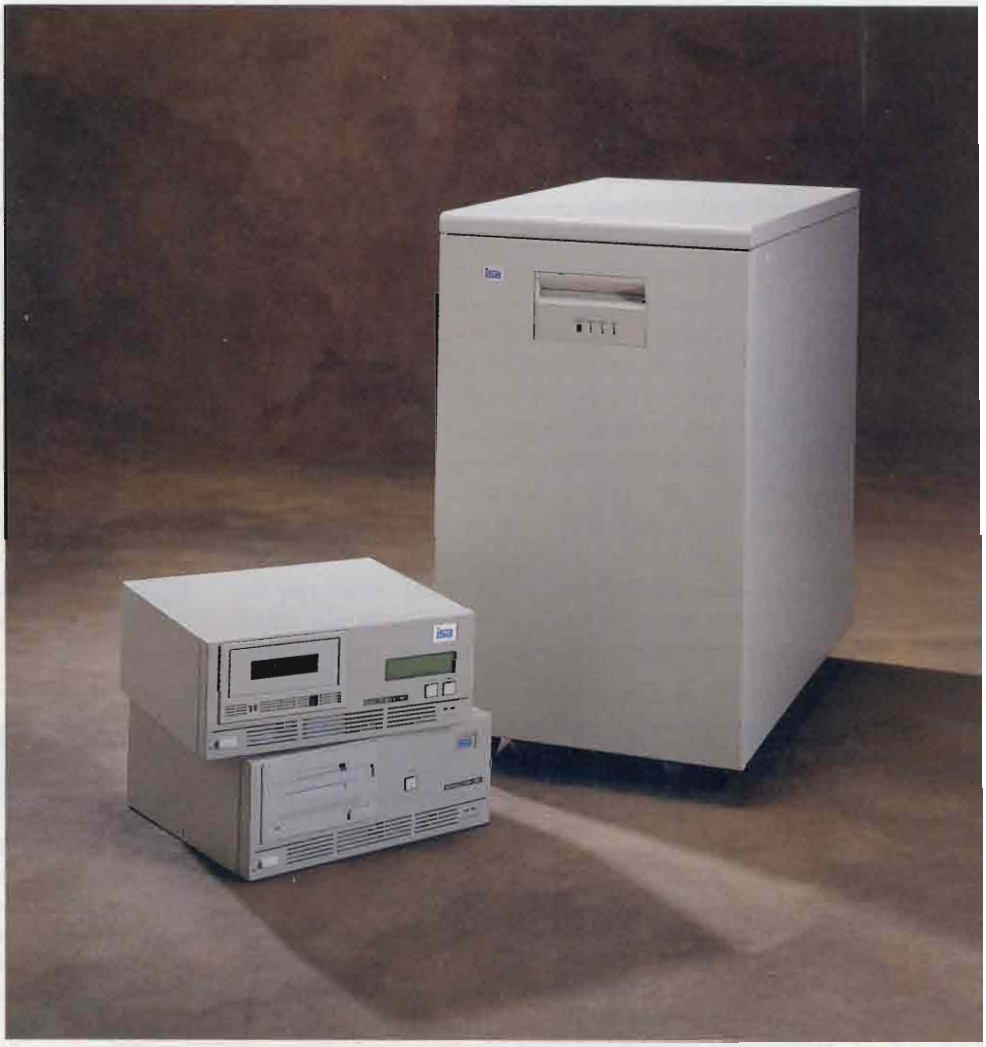

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by side, both on top of the base MPE XL operating system. In this way, POSIX on the HP 3000 will benefit from the performance, scalability, and commercial functionality of the underlying MPE XL operating system, but still provide for ease of portability to and from UNIX-based platforms. Although the diagram shows how the MPE XL interfaces and POSIX interfaces sit side-by-side, in reality the POSIX interfaces can be viewed as extensions to MPE XL with application programs able to use a combination of both interfaces if desired.

As more commercially-oriented systems offer POSIX-compliant interfaces, the availability of commercial applications based on the POSIX interfaces should increase. More UNIX-based commercial applications are coming to market, and the support of the POSIX interfaces for MPE XL will make porting these new applications to the HP 3000 much easier. In addition, portability of UNIX and POSIX-compliant code won't be limited to application software. It also will be possible to port UNIX utility programs to MPE XL, which will add considerably to the approximately 2,000 applications and software tools currently available for the HP 3000.

The level of portability that POSIX affords eliminates the need for users to buy a UNIX system in order to run UNIX applications. With the addition of POSIX to the HP 3000, POSIX-compliant HP 9000 applications will be object-code compatible with the HP 3000, thus allowing portability of applications from the HP 9000 to the HP 3000. The best portability will be achieved with commercial applications that don't require advanced technical application capabilities such as real time processing or advanced graphical capabilities. The elimination of the need for multiple systems reduces the complexity of the operational environment with fewer different types of systems to manage, reduced needs for load balancing and one system management interface for operators to be trained on.

MPE XL was designed to allow the addition of alternative user interfaces. For this reason, it's relatively easy to add POSIX.2, the POSIX user interface, to the HP 3000. The addition of POSIX.2 will add a UNIX personality to the HP 3000 by providing the common UNIX commands and utilities.

The UNIX user will be able to use an HP 3000 with POSIX almost exactly as he would use a UNIX system. With the addition of POSIX.1 and POSIX.2, UNIX application developers will find that it's possible to develop POSIX applications on the HP 3000 in the same way in which applications are developed on UNIX systems. Popular UNIX functionality such as "pipes," whereby the output of one program can serve as the input to another program, will be available. With POSIX.1 and POSIX.2

[What Posix-Compliance Means To Unix]

POSIX will bring new levels of investment protection and benefits to HP 3000 customers, but making the HP 3000 POSIX-compliant also provides HP-UX users with access to all of the benefits that HP 3000 customers enjoy. Users that choose to run their UNIX applications on the HP 3000 will benefit from the performance, scalability, reliability, availability and data integrity of the HP 3000 environment.

Data integrity is one of the highest priorities of most commercial data processing operations. Especially important is the avoidance of long delays when data recovery must be performed. The HP 3000 achieves data integrity by means of an integrated transaction manager that provides fast and automatic recovery with no necessary operator intervention. The integrated transaction manager, a standard HP 3000 feature, transparently ensures the integrity of both your data and crucial system files.

The MPE XL file system is designed to deliver extremely high performance for commercial applications that involve large databases and files. One performance enhancing technique the file system employs is the extensive caching of files and data bases in main memory. Known as Mapped Files, this technique brings databases and files into main memory where they can be accessed by applications as though they were on disk. Because access time for memory is much shorter than it is for disk, application performance is dramatically improved.

Mapped Files also drastically reduces the number of physical I/Os required, virtually eliminating I/O bottlenecks, and allows the HP 3000 to provide excellent batch performance. With the intelligent prefetching techniques that are built into the MPE XL file system, batch jobs that access files sequentially rarely wait for physical disk I/O to be performed and can almost fully utilize the available CPU resources to dramatically reduce the elapsed time required to execute.

In addition high data integrity and optimized file system access, HP 3000 systems provide high-end scalability and mainframe was performance levels . MPE XL was designed with the implementation of symmetric multiprocessing in mind, and the first multiprocessing HP 3000, a Series 980/200, was successfully shipped at the end of 1990. Future HP 3000 systems will feature hardware optimized for symmetric multiprocessing and will take further advantage of MPE XL multiprocessing capabilities.

Other illustrations of the advanced commercial functionality available to users of UNIX applications running on the newly POSIX-compliant HP 3000 include:

- Powerful data backup capabilities from the TurboSTORE/XL products, which can operate up to eight backup devices in parallel.
- An extensive MPE XL command set that enables system managers and operators to manage the execution of interactive and batch tasks.
- An integrated print spooler that provides commercial grade spooling and printing capabilities without requiring users to learn a special command language.

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support it will be possible for application developers with UNIX experience and training to be immediately productive on an HP 3000.

In addition, POSIX on the HP 3000 will overcome some limitations frequently encountered on UNIX systems. For example, the limitation on the number of open files will disappear and the application programmer will no longer need to worry about exceeding the number of open files allowed.

UNIX Directory Support

ONE OF THE MORE notable extensions that POSIX support will bring to MPE XL is hierarchical directory support. The MPE XL directory with its account, group and file structure was designed for the large databases and files that are characteristic of commercial processing. This directory structure has served the needs of commercial applications very well for nearly 20 years and continues to do so. The MPE XL directory is integrated with the accounting subsystem and allows the control of disk space, the highly granular control of file security, and chargebacks according to disk space consumed, CPU seconds used, or connect time.

The UNIX directory, on the other hand, was designed to allow complicated file structures involving many relatively small files. In UNIX, files are contained within directories similar to the way MPE XL files are contained within groups. However, UNIX directories can contain not only files but also other directories. UNIX directories can be nested to almost unlimited levels (the number of levels is limited only by the number of characters in the fully qualified file name).

This characteristic of the UNIX directory is known as hierarchical directory support because it supports multiple levels. The hierarchical directory capabilities of UNIX have been used extensively by UNIX software developers and users. Because of this, ease of applications portability from UNIX to the HP 3000 benefits greatly from the addition of hierarchical directory support to the HP 3000. With the addition of the hierarchical directory capabilities of POSIX.1, the HP 3000 will continue to provide the commercial functionality of its current directory structure while providing a completely compatible directory structure for UNIX and POSIX applications. The need to modify file naming conventions and accounting structures when porting to the HP 3000 from a POSIX or UNIX environment will be eliminated.

HP 3000 POSIX will be tightly integrated with MPE XL and can be considered an extension of MPE XL rather than a completely separate environment. The strategy of tight integration between POSIX and MPE XL allows POSIX files and directories to exist in the same directory with the MPE XL directory structure. MPE XL files can be placed in POSIX directories alongside POSIX files and POSIX files and directories can be placed in MPE XL groups. In addition, a POSIX interface is added to the MPE XL file system, thus allowing MPE XL files to be accessed by POSIX applications.

The addition of hierarchical directory support will do much to improve to portability of UNIX applications to the HP 3000, yet MPE XL application programs will continue to function as before. No modification of directories or accounts will be necessary for the addition of hierarchical directory support. Also, it will be possible for existing MPE XL applications to access POSIX files either by using POSIX file naming conventions in file system calls or by using file equations.

Consistent with the integrated approach, MPE XL commands and intrinsics will be enhanced for POSIX compatibility. For example, the MPE XL LISTFILE command is used to list files in MPE XL groups. The syntax of the LISTFILE command will be extended with POSIX so that it's possible to list POSIX files in MPE XL groups and to list the contents of POSIX directories. The MPE XL STORE and RESTORE commands will be extended to allow the storing and restoring of POSIX directories and files along with MPE XL files.

The Purpose Of POSIX

ALTHOUGH POSIX IS A key element of the HP 3000 open systems strategy, HP recognizes that many other components are required for a true open system environment. In addition to standard operating system interfaces, the HP 3000 Open Systems Program also includes standard languages and software tools, industry standard relational databases, industry standard networking, and industry standard user interfaces.

By supporting key standards in each of these areas, the HP 3000 provides much greater applications portability than would be achieved simply by the support of standard operating system interfaces. The HP 3000 Open Systems Program includes many standards in each of these areas. Not all standards used in the program are official standards, reflecting the understanding that relevant commercial standards come not only from standards organizations but also from technologies endorsed by the marketplace as de facto standards.

POSIX will provide significant extensions to the already rich MPE XL environment and will make it possible for UNIX applications to benefit from the performance and reliability of HP 3000 systems. In so doing, POSIX-compliance will increase the application solutions available to HP 3000 users. The HP 3000 Open Systems Program and the implementation of the POSIX standard provide yet another level of investment protection as well as a wide range of new computing options for HP 3000 customers.—*Jon Davis is a product manager for HP's Commercial Systems Division, Cupertino, CA.*

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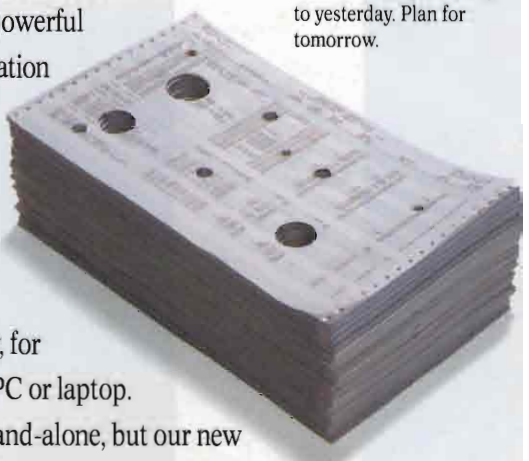

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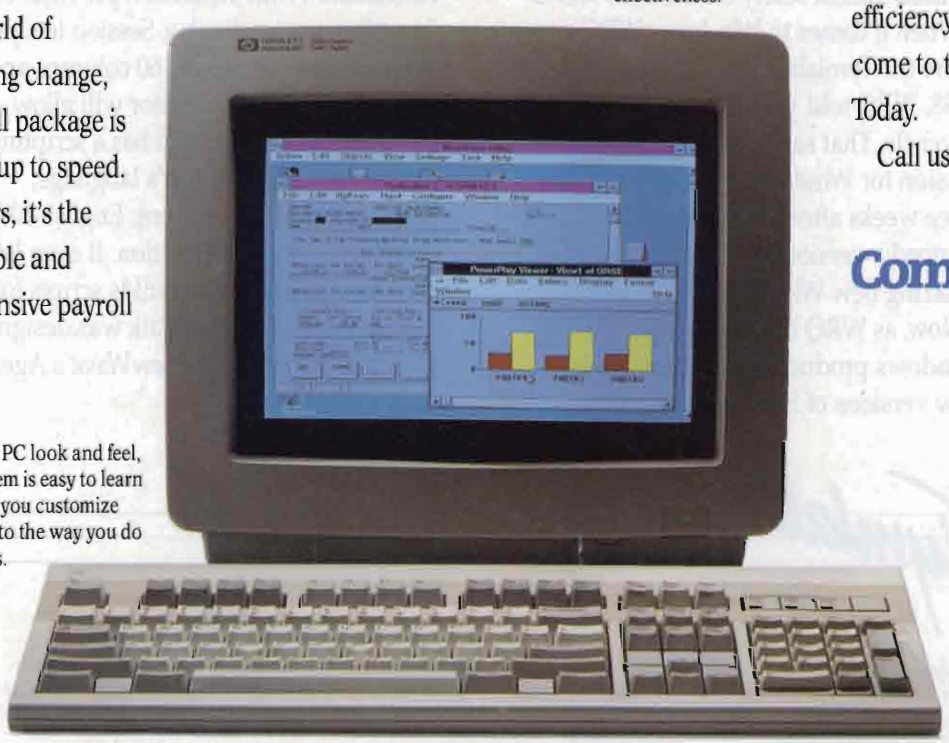

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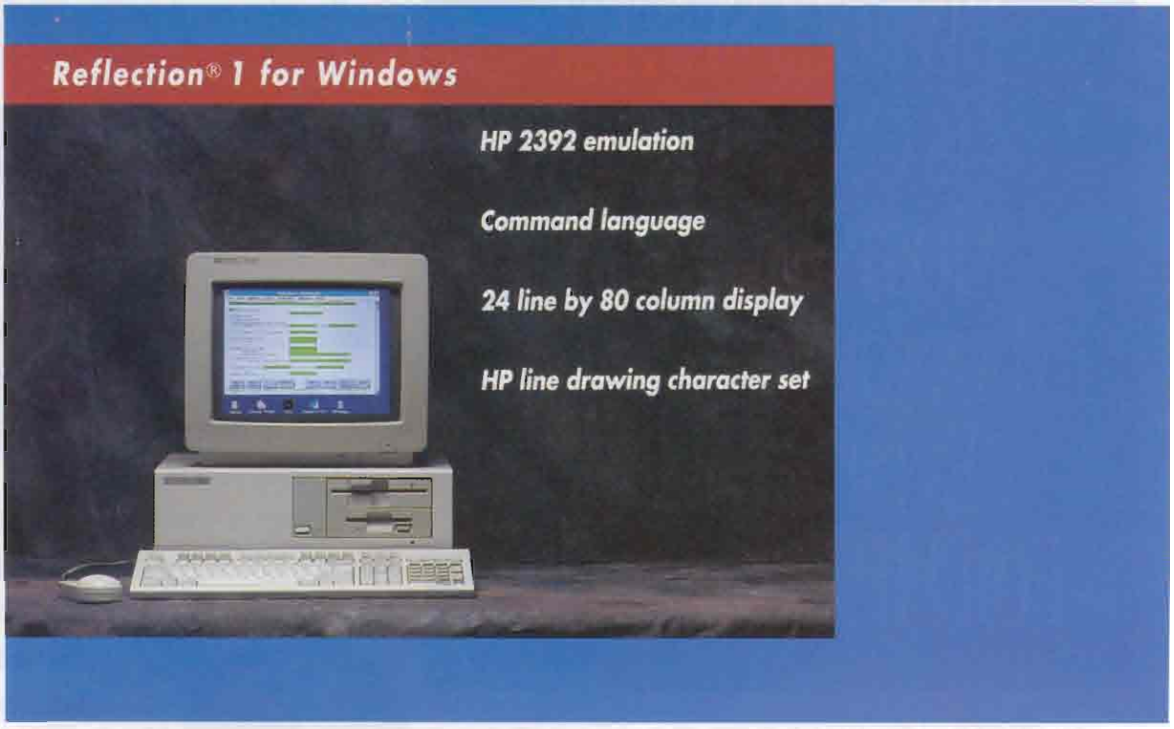
Reluctant Release.



Since 1984, we at Tymlabs have been developing and shipping products based on the belief that graphical user interfaces were the wave of the future. The folks at Walker Richer & Quinn, on the other hand, have focused almost solely on the DOS world.

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If you plan to adopt HP's NewWave Computing as your integration strategy, then you should know that Session supports HP NewWave today . . . Reflection doesn't. With Session for New Wave, your users can transfer files or run scripts with a simple drag and drop. Or better yet, they can let their Agents do the work.

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NEW WAVE NETWORKS

Environmental Awareness

OSF's DCE: An Open Systems Habitat For HP, IBM And DEC Or Just Another Network Standard For The Landfill?

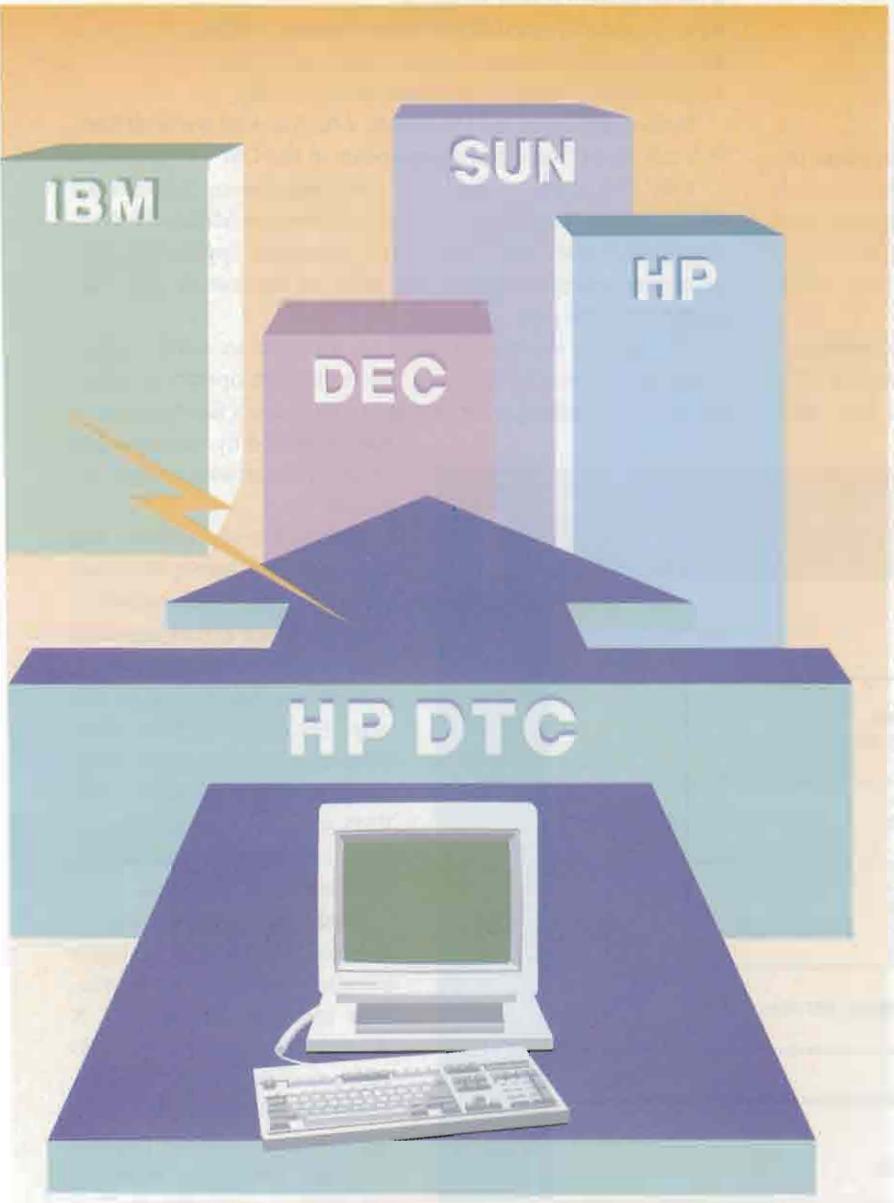
If I've learned anything in all my years as a computer jockey, it is to deeply fear the words "environment" and "architecture," especially when they are used in the same sales spiel. Imagine my terror when confronted by the Open Software Foundation's Distributed Computing Environment (DCE) architecture.

By definition, an environment is something that surrounds something else. That's pretty ambiguous. An environment can be really small, like the environment in my fish tank, or pretty big—take *the* environment, for example. As a matter of fact, an environment doesn't need to have any boundaries at all.

Worse yet, an environment can have its own environment. An infinite number of environments. What a concept. No wonder the computer companies want to sell us these things. In the simple math favored by salespersons, an infinite number of environments—with an infinite number of products for each

BY GORDON MCLACHLAN

HP Consummates Merger With SUN, DEC & IBM.



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(Memory expansion kit required for some DTC48 models. HP OpenView DTC Manager, Ver. 10.5 required)

one—should lead to infinite profits. That's the kind of thinking that's made America great.

Architectures are only what the vendors use to define their environments. Heaven forbid we should try to build our all-encompassing environment without an architecture. Architectures also are needed to prepare loyal customers to ditch all of the mundane stuff they already have, but which doesn't fit the New World Order.

Understandably, the bigger the environment, the more complicated the architecture. From a vendor's point of view, an architecture is better than a product because you don't need to code it, or test it, or anything. All you need to do to nail down an architecture is release some glossy propaganda and let loose a flock of flacks.

OSF To The Rescue

ORIGINALLY, THE OSF was formed to combat the nefarious duo of AT&T and Sun Microsystems, which had teamed up as UNIX International in what was perceived as a grab at the UNIX market. UI caused HP, IBM, DEC and others to head for the bunkers to devise their own UNIX strategy, and the OSF was born.

Internecine rivalries nearly doomed the effort to devise an alternative UNIX standard. On the verge of floundering, OSF neatly sidestepped the issue of just what in the hell they were doing by starting to emphasize environments and architectures rather than mere operating systems.

The result is the OSF's OSF/1 "operating environment." We proletarians habitually call it the OSF/1 operating system, but this is actually a misnomer. OSF/1-compliant UNIX is only part of what OSF/1 is all about. Screwing Sun and AT&T into the ground requires more than just another flavor of UNIX.

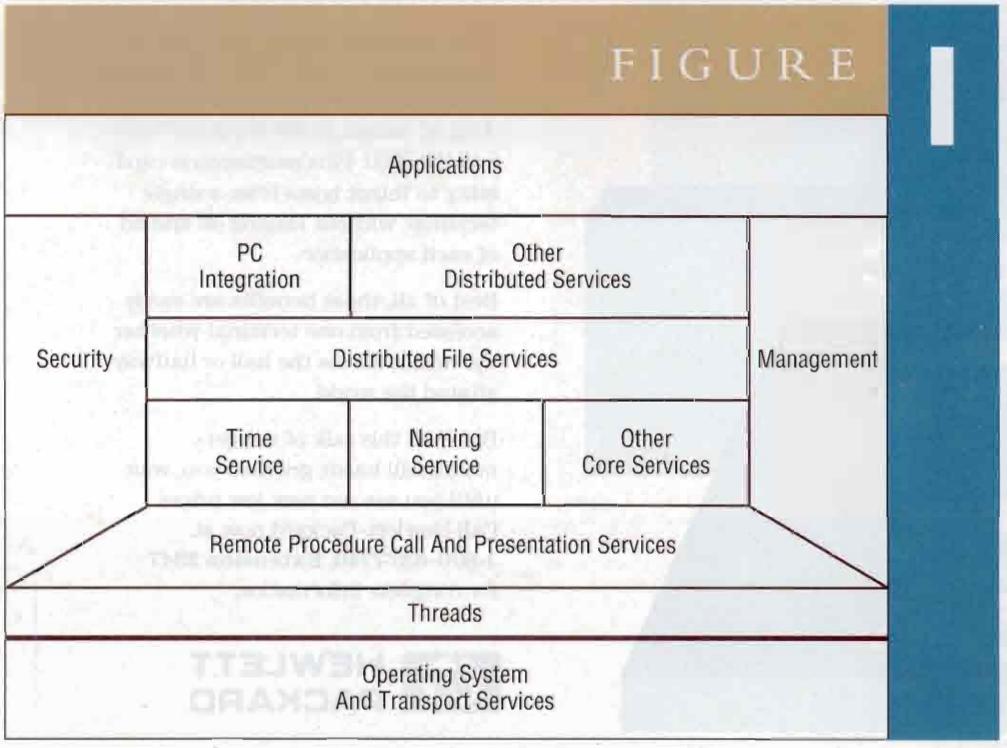
The OSF/1 operating environment is the mother of all environments, consisting of a bunch of other environments, each of which is carefully architected and comprised of the obligatory mess o' software. This includes—but is certainly not limited to—the following:

- Operating System Component (OSC/1).
- Motif graphical user interface.
- Application Neutral Distribution Format (ANDF).
- Distributed Management Environment (DME).
- Distributed Computing Environment (DCE).

Before getting to the OSF/DCE, which is why we're all here, let's talk about the other components in the OSF environment.

OSC/1 is a UNIX-derivative operating system that uses the Mach "micro-kernel" developed by Carnegie-Mellon University. OSC/1 provides IEEE POSIX-compliant application programming interfaces (APIs) and takes its commands and utilities from IBM's AIX.

The Mach micro-kernel is an attempt to cure UNIX's bloating problem by stripping down the core operating system to its basics, making it simple again. This core's functionality is then bolstered by wrapping lots of layers of software around the kernel.

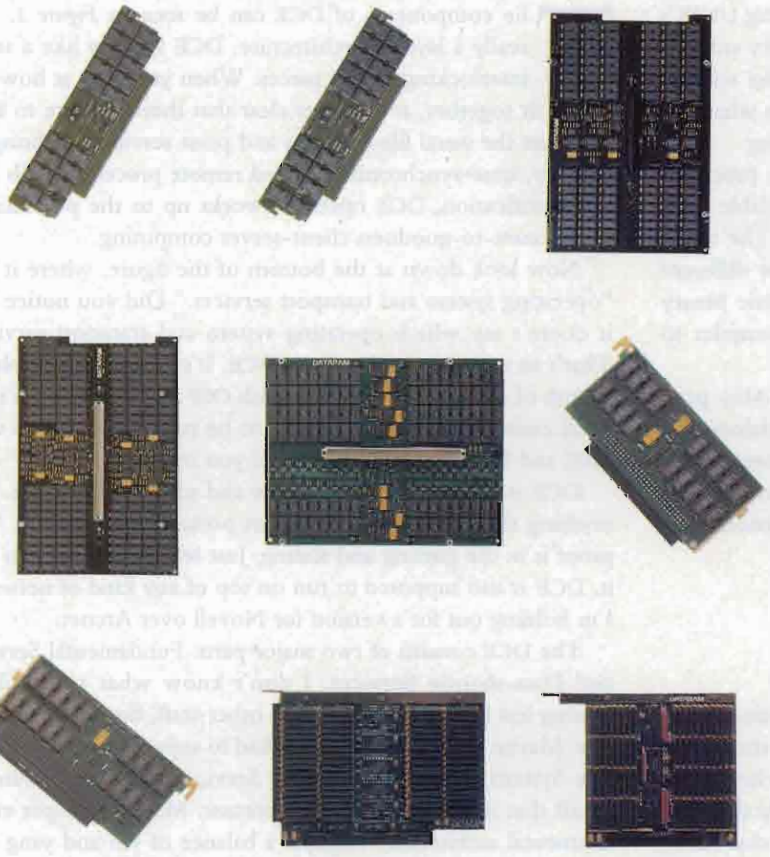


OSF/DCE Architecture.

Architecturally elegant, this approach also leaves the door wide open for OSF vendors to bury the Mach kernel into their proprietary operating systems, as well as within UNIX. In this way, HP can keep MPE alive, DEC can stop its users from abandoning that lucrative VAX/VMS installed-base and everybody can have interoperability without standardization.

Motif is the OSF's specification for what a graphical user interface ought to be. A window manager for the MIT X Window System, Motif looks and acts a lot like IBM's Presentation Manager (which is supposed to become popular any day now). It certainly doesn't look or act like the Sun Open Look windowing system.

If our memory can't beat HP's on price, performance & support,



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As a new product—without much of an installed-base—OSF/Motif has yet to have a lot of impact. This should change when an OSF-compliant UNIX operating system and application software begin shipping in earnest this year.

The Application Neutral Distribution Format (ANDF) is an attempt to create a standard for "shrink-wrapped" software. Realizing what a lousy software distribution channel the UNIX market has—and that DOS PCs are going to keep eating UNIX's lunch as long as you can't run down to the local party store to get software—OSF wants to come up with a flawless scheme for distributing common code. It remains to be seen what this little exercise will produce, but it should be interesting.

The DOS world has the (dis)advantage of a single processor architecture and binary compatibility. UNIX is available on a variety of platforms, so binary compatibility is out. The traditional solution has been to distribute source code or different versions of binary code. ANDF may lead to a generic binary code that can be postprocessed with a binary recompiler to generate the correct object code for your system.

The Distributed Management Environment (DME) provides a common framework for management of standalone and distributed systems. This framework provides consistent tools and techniques for managing different types of systems and allows vendors to build system management applications that work on a variety of platforms.

DCE At Your Service

THAT LEAVES THE DISTRIBUTED Computing Environment. Simply put, the OSF/DCE is an attempt to make all of this OSF stuff work in a networked environment. With that responsibility, the DCE is arguably the most important piece of the OSF pie. It's kind of like the sticky stuff that keeps the environment from coming unglued or the cornerstone that keeps the architecture from caving in.

With only 15 to 20 percent of the market, UNIX operating systems aren't exactly a sure-fire way to get a front-and-center position at the corporate feeding trough. Networks are—especially network "environments."

Of course, DCE competes (what else) with the Sun Open Network Computing environment (ONC). It also adds some of its own standards baggage. With all of the network standards that already exist, another set of them hardly seems like a high priority. Never fear. Even though DCE does break some new ground, it mostly tries to tie together the mass of different and incompatible standards that already exist, and make them actually work together.

The politics of standards-setting is such that standards are often cast too narrowly. In the process, outfits like the International Standards Organization (ISO) didn't really consider client-server LANs or network management until it was too late. Security is also something of a non-entity in the LAN world.

As a result, we've got standards but no way to implement them. At least not in a manner that works, is secure, and is manageable all at the same time. That's what DCE is supposed to pull together.

But Can You Recycle It?

The components of DCE can be seen in *Figure 1*. Not really a layered architecture, DCE is more like a set of interlocking puzzle pieces. When you look at how the pieces fit together, it becomes clear that there is more to DCE than just the usual file-transfers and print serving. By bringing security, time-synchronization and remote procedure calls into the specification, DCE opens networks up to the potential of real, honest-to-goodness client-server computing.

Now look down at the bottom of the figure, where it says "operating system and transport services." Did you notice that it doesn't say which operating system and transport services? That's an important point about DCE. It's designed to be placed on top of any operating system with OSF API hooks. This is no small consolation if you're going to be running HP 3000s with MPE and Novell over Arcnet until you retire.

DCE is supposed to be portable and scalable. We'll see. Everything that is written in C is not portable and scalable. The proof is in the porting and scaling. Just tell me when I can buy it. DCE is also supposed to run on top of any kind of network. I'm holding out for a version for Novell over Arcnet.

The DCE consists of two major parts: Fundamental Services and Data-sharing Services. I don't know what makes data-sharing less fundamental than the other stuff, but that's the way it is. Maybe it's because the OSF had to support Sun's Network File System in the Data-sharing Services, but didn't want to admit that it was particularly important. Maybe a proper environmental architecture requires a balance of yin and yang that you can't manage without two sets of services. Regardless, here's what they are:

- Fundamental Services
  - Remote Procedure Call (RPC) software.
  - Naming and Directory Services.
  - Security Services.
  - Time Services.
  - Threads for support of parallel programming.
- Data-sharing Services
  - Distributed File Services.
  - Diskless Operations.
  - MS-DOS File and Printer Support.

Remote Procedure Calls: Remote procedure calls are the key to application serving and distributed computing. By allowing a system to fire off a process on a remote processor, RPCs provide the capability for true cooperative processing. A good set of RPC tools can make machine/network boundaries nearly invisible. A user need never know where his program is running. For that matter, the programmer doesn't even have to

know where the remote procedures are located. Once the remote procedure is defined, it is simply called like any local procedure.

The RPCs used by DCE come from the HP Apollo Network Computing System (NCS), with some polishing by DEC. The Netwise RPCTool system used by Sun was evaluated but it was decided that it didn't "meet the needs ... of OSF/DCE satisfactorily."

Naming and Directory Services: If you have networked resources, it's a nice touch if you can actually find the things. That's where the naming and directory services come in. A naming and directory service allows the use of symbolic names for network resources. These symbolic names are resolved into network addresses by a name and directory server. Use of symbolic names instead of hard-coded network addresses hides the locations of resources in the network. This not only conceals the complexity of the network from the user (and programmer), it also allows resources to be added, moved and changed without a lot of administrative busy work.

Typically, LANs and E-mail systems have some sort of built-in name server. Unfortunately, these are also typically restricted to use on a single network or application. What do you do when you need to span networks with your naming service?

DCE supports the use of the international X.500 directory services standard, but it adds DEC's Domain Name Service (DECdns) to extend X.500. The standard X.500 code is Siemens-Nixdorf's DIR-X X.500 service. DEC apparently didn't have one of those.

Environmental Protection

SECURITY IS A CONCERN on any network. We are used to log-on security mechanisms that control user access to our computers and network resources, but the new breed of network applications puts new demands on security systems.

Network security is more complicated than the standalone variety because you have to share security information across the network and control machine access to the network as well as user access. Just dividing up security responsibilities between different network administrators is more of a headache.

Networks also present a whole new class of security problems. The mere fact that your data is being transmitted all over the place—and can be intercepted by any other computer on the network—means it is inherently unsecure. Encryption, which is usually unnecessary on standalone systems, will become standard operating procedure on networks. You also need a way to find out if network traffic is coming from where it's sup-

posed to. A network security system has to have ways of catching forged network messages, especially administrative messages, E-mail and application system transactions.

DCE uses the Kerberos authentication service, developed by MIT as part of project Athena and enhanced by HP. Interestingly, Kerberos security is critical to DCE, but it's pretty obscure in the real world. That makes it a real spoiler in the OSF horse races. Just about everything else within DCE has to plug into Kerberos in one way or another. That narrows down the field of standards contenders quite a bit.

Time Service: Time services are another peculiar requirement of networked environments. On a single system, it's easy to keep track of the time. You set the system clock and forget about it. There's usually no problem, even if the clock gets out of whack.

Synchronizing the time across a network of systems is more complicated. Every machine has some degree of clock inaccuracy, and networked machines may be in different time zones. If transactions need to be time-sequenced, or if processes—like backups or data downloads—need to be run at specific times, we have to find a way to synchronize the time of all our systems to a network master clock, or time server.

The DEC Distributed Time Synchronization Service (DECdts) was chosen by the OFS as the official timekeeper for the network Olympics.

Threads: Threads, which support parallel programming, give a system "fire-and-forget" capability. Threads allow systems to start up multiple processes and to forget about them until they are completed. This is especially important for network servers, which may have to handle requests from many clients at the same time. If a server has to wait until one process is complete before starting another, its performance suffers. As a matter of fact, this is exactly the problem with DOS-based servers now. They are "single-threaded" and can only handle one task at a time.

Once again, DEC brought home the bacon with its Concert Multithread Architecture.

Data-sharing Services: Although the DCE Fundamental services are, well, fundamental, its Data-sharing Services are where the rubber meets the road. At the core of any LAN operating system is the ability to share network disk drives and printers.

Distributed File System: In the UNIX world, file-sharing is usually accomplished using Sun's Network File System (NFS). Unfortunately, Sun is The Enemy, so this is really irritating for the OSF folks, because they have to contend with an enormous installed base of (reasonably) happy NFS users.

The Andrews File System, which was chosen over NFS, takes care of this problem by providing support for NFS version 2. Sun didn't have version 3 ready, and AFS had enough other bells and whistles that it won handily. What a surprise.

Diskless Operations: Some people insist on running workstations without disk drives. DCE gives them the option, with some nameless code from HP.

MS-DOS File and Printer Support: The NFS installed-base pales in comparison to all those DOS clients out there. Needless to say, PC integration is a big part of OSF. This might gall some hard-core UNIX-wienies, but they won't go away.

The winner here is Microsoft's LAN Manager/X, which is a client and server implementation of Microsoft's Server Message Block file and print services. PC-NFS—a client-only implementation of Sun's NFS—also is supported by servers with the Andrews File System onboard.

Natural Selection

YOU MIGHT HAVE NOTICED that almost all of the DCE code comes from OSF member companies. This is no surprise, given the OSF's origins, but apparently the Feds have taken notice. The Federal Trade Commission is apparently checking out the OSF for anticompetitive actions. It won't comment on "private" investigations, but they probably have something to do with the seemingly incestuous relationships between member companies. Some of the OSF/DCE technology might be a little too cross-pollinated.

It's more than a coincidence, no doubt, that Sun's technology is ignored—outside of grudging support for NFS—but OSF argues credibly that it evaluated Sun's offerings and found them lacking. The FTC probably isn't too stirred up about that. Sun is, but that's its problem.

There also have been complaints about OSF's Request for Technology (RFT) process. The primary gripe is the low royalties paid by OSF members for use of selected technology. That isn't so much of a problem for the large hardware vendors, because they can afford to use loss-leader software to sell their boxes. Software-only companies, however, feel like they're raising chickens for the collective farm.

OSF also disagrees with this characterization, but it's clear that outside of the Andrew File System—provided by Transarc—the proprietary goodies that have been incorporated into OSF/1 have come from hardware companies, universities and standards organizations which don't have to make a living off the software.

In the last analysis, it doesn't really matter where OSF comes from, as long as it works and people buy it. Recent demonstrations of DCE by HP, DEC, IBM, Groupe Bull and Siemens-Nixdorf at the CeBIT '91 trade show in Hanover, Germany, showed that it is starting to work. Real OSF/1 products are due to hit the streets this year. Will they sell? Probably. The companies that make up the OSF control about 80 percent of the non-DOS computer market, so they have a big captive market to draw on. DCE is definitely a contender in the standards horserace. *—Gordon McLachlan is a consultant with National Tech Team in Dearborn, MI.*

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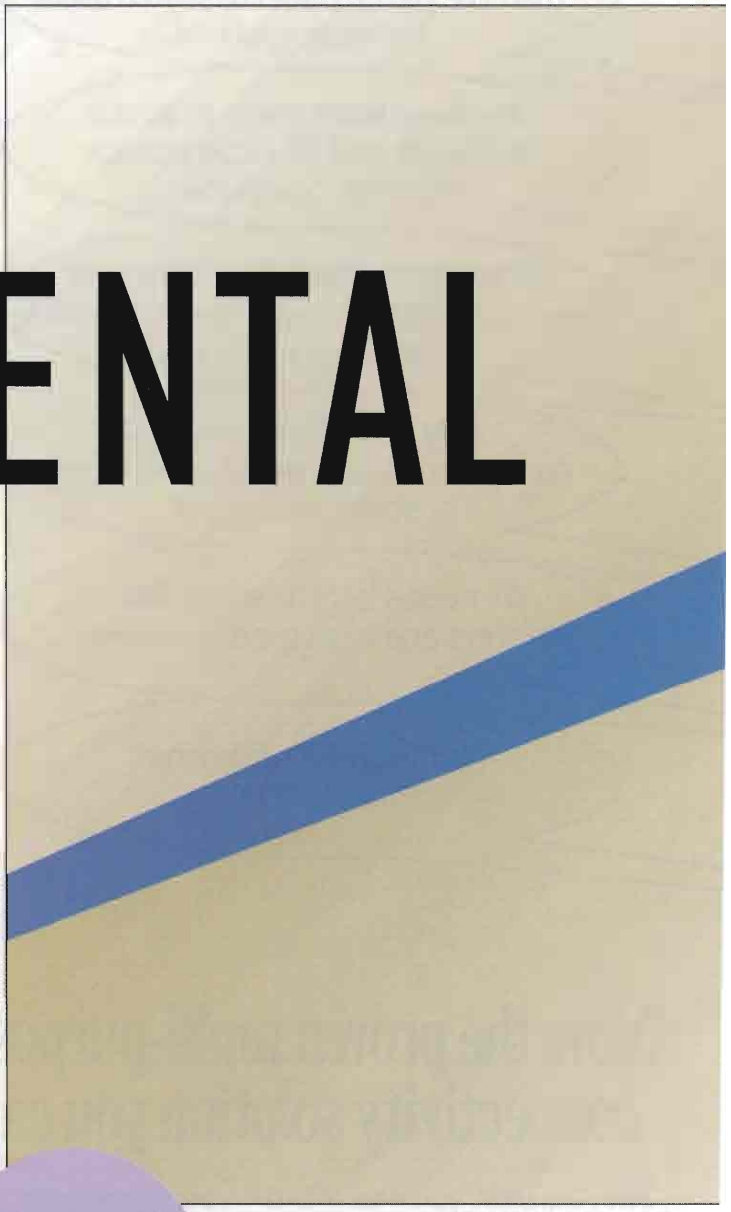
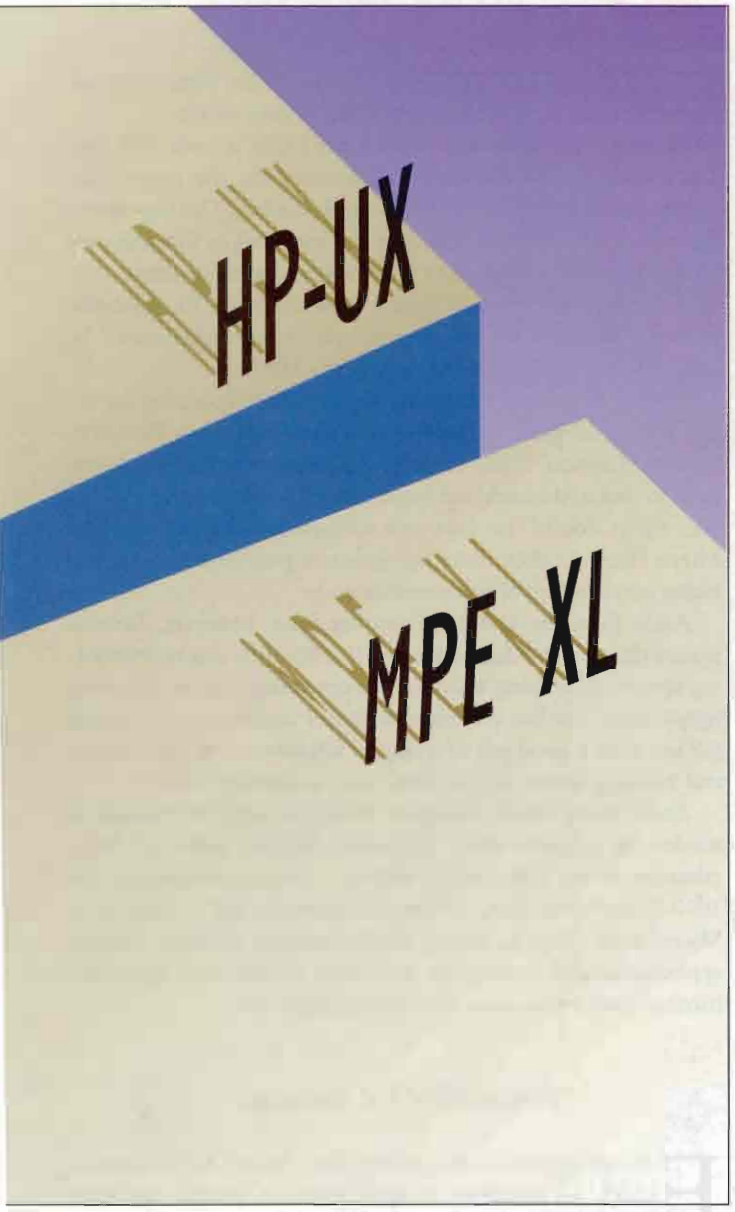
BY MARSHA JOHNSTON

As HP's Business Expands In Europe, Commercial Users Are Faced With A Tough Choice — HP-UX Or MPE XL



While the debate as to whether UNIX is a misfit in commercial computing environments simmers on in Europe, the HP 9000 seems to be settling in comfortably with business users. Although the major European governments are still its leading markets for UNIX systems, HP says a minimum of 90 percent of new, multiuser HP 9000s are shipped into commercial sites. Of the low-end UNIX systems (HP Apollo 700 and 400 series systems), however, only 10 percent are sold as servers into business environments; the majority go as workstations into technical environments.

Regardless of model, the HP 9000 is considered an excellent UNIX line even by the skeptics. Critics question not the quality of the 9000, but rather its ability to penetrate commercial markets vis-a-vis IBM and DEC. They point out that the high end of the 9000 line lags behind the MPE-based HP 3000 in



functionality important to the business market, such as Online Transaction Processing (OLTP), executable COBOL code and richness of security features.

Mass Movement Or Migration Path?

HP'S SUCCESS IN SELLING UNIX to European commercial users hinges on more than the merits of the machines themselves. Users here are determined, as they seem to be everywhere, to liberate their technology acquisition process by acquiring a standardized, "open" system. Because the fruits of the Open Software Foundation's (OSF) work are just beginning to appear, UNIX is the substitute grail.

The British actuarial consultancy of Bacon & Woodrow is a prime example of a commercial site that chose the HP 9000 after having decided that UNIX was its easiest route into the open systems world. Bacon & Woodrow has a total of six HP 9000 Series 800 computers, some of which it has been using for almost two years. Three are used for the development and running of pension fund administration, which involves somewhere around 100 subapplications. For its pensions valuation system, it is using two Model 835s, one for development and one for testing. A fourth system runs portfolio management and other financial services applications.

Three years ago "our [pension fund administration] software was coming to the end of its useful life," says Brian Guest, head of computing for Bacon & Woodrow. "We needed to invest a lot in rewriting the system, and we felt it was the right time to remove our dependence on proprietary operating systems. UNIX was chosen to future-proof the project; because it took so long to develop, we didn't want to be locked into a proprietary operating system. All future in-house developed systems will be UNIX-based, unless it's a packaged non-UNIX system capable of interfacing [with UNIX]."

UNIX systems are certainly the choice for commercial users targeting an open systems environment, but HP independent software vendor (ISV) Perwill Systems (Alton, Hampshire, U.K.), is finding that commercial users often don't choose HP. In the U.K., Germany and Scandinavia, says Managing Director Bill Pugsley, "We see a desperate need to move to [IBM's] AIX or [DEC's] Ultrix because we're finding them in more commercial organizations than HP 9000s."

Users of HP 3000s who adopt the HP 9000 often do so as part of a plan to migrate away from the HP 3000. Pugsley, who has been marketing EDI software into the HP 9000 market for the last 18 months, says, "The biggest use of HP 9000s is in certain financial organizations, but more recently as planned replacements for HP 3000s. One or two large companies are saying, 'We're going open, and we will replace our 3000s with 9000s.'"

Although HP says several large corporations, which weren't buying proprietary systems like the HP 3000, definitely are buying HP 9000 multiuser systems, it denies the existence of the trend to which Pugsley alludes. "We don't see many companies replacing 3000s with 9000s, and can't say there's a general movement in this direction," says HP's Rudi Schmickl, Europe marketing manager for multiuser products. "There are a few cases, but up until now we've been able to keep the HP 3000 base and win new customers to it."

Nevertheless, it seems that the passion for open systems is casting a shadow on the HP 3000. This is somewhat ironic given the 3000's exceptional functionality for commercial applications and the fact that the Gartner Group, in a recent report on proprietary systems, stated that the HP 3000, along with the DEC VAX, "have the highest potential to implement an open systems environment."

Besides having an open systems capability in its own right, the HP 3000 has a higher online transaction processing capacity

than does the HP 9000. To be fair, however, the HP 9000 Models 842S and 852S bested the IBM AS/400 Model B70 and DEC VAX/VMS Model 6000/510 proprietary systems in audited benchmark tests released by the Transaction Processing Council (TPC) in January.

For that benchmark, says Roger Lawson, managing director, Proactive Systems Ltd. (Orpington, U.K.), an HP 3000 ISV, the 9000 should have been compared to the 3000 instead of to DEC and IBM, "because the performance the 9000 was getting was from Precision Architecture, not from UNIX."

Rather than transaction processing, the HP 9000's biggest strengths are in X.400 network mail and communications, says Perwill Systems' Pugsley. "As a transaction processor for commercial applications, it isn't used as frequently as we thought."

"The 3000 has a highly tuned operating system for the OLTP environment and, on a dollar-per-transaction rating, [although] there are obviously other things to consider, such as the openness of UNIX, the 3000 does come out a bit ahead [of the 9000]," HP's Schmickl concedes. He adds that the TPC comparison is based on the Informix On-Line relational database, and if the 3000 were tested using TurboIMAGE, "the result would be even better because you would get a higher throughput."

An acceptable transaction rate, like everything else, is relative. Three years ago, Bacon & Woodrow benchmarked systems from all of the major UNIX suppliers in the marketplace for transaction rate and number crunching. "Our need isn't for a very heavy transaction rate system," says Guest, "therefore we didn't thrash the [9000] system to death on the transaction test, we just tried to ensure that the rates were comparable [to competitive UNIX systems and the HP 3000]."

Schmickl says there are ways to optimize HP-UX further for transaction processing, but adds that they beg the question of how to keep the system standardized. "What do you have to give up for that [optimization]? It's a tradeoff," he says. "If you look at the purchase decision, hardware performance is becoming less and less expensive so you can always throw hardware performance at it [HP-UX] to achieve throughput."

Keeping a performance advantage for the 3000 also suits HP from a strategic point of view, Schmickl stresses. "That just means we will keep investing in it [the 3000], not that we will slow up the 9000," he adds.

A Commercial Language Barrier

HP MAY SPEAK THE European languages well enough to compete internationally, but it is surprisingly lacking when it comes the most popular programming language for commercial systems. HP's inability to deliver ANSI 85-compatible, executable COBOL is one deficiency the HP 9000 needs to overcome. Says Pugsley of Perwill, "We've ported to many platforms, and yet HP-UX is the only one where we can't deliver executable COBOL code to the user. The user has to have a runtime COBOL license, because the compiler from Micro Focus that HP sells is not ANSI 85 compatible.

"Commercial users want executable COBOL code, but they don't want to buy the [runtime] license. On the bigger machines, the license costs 10,000 pounds sterling," he continues. As a result, Perwill says, his company can't sell its EDI software for the HP 9000 to someone who doesn't have a runtime COBOL license, which may pose a restriction on his potential market. "We have no such restrictions on other machines," he adds. Those other machines include the HP 3000.

Having to go to a third party for a COBOL compiler for the HP 9000 is in itself something of a drawback, says Proactive Systems' Lawson. "You can't get all software from HP, so you have to mix and match and hope they all work together, which they often don't," he says, not to mention the fact that the Micro Focus COBOL does not generate pure object code, but rather massive files of intermediate code.

Aside from the COBOL compiler issue, however, Lawson praises the tools HP has added to HP-UX, such as a new spooling system, as helping to make the operating system "an easier proposition" for the commercial user. Pugsley concurs, saying HP has done a good job of trying to introduce new applications and building blocks for the 9000, such as Oracle's 4GL.

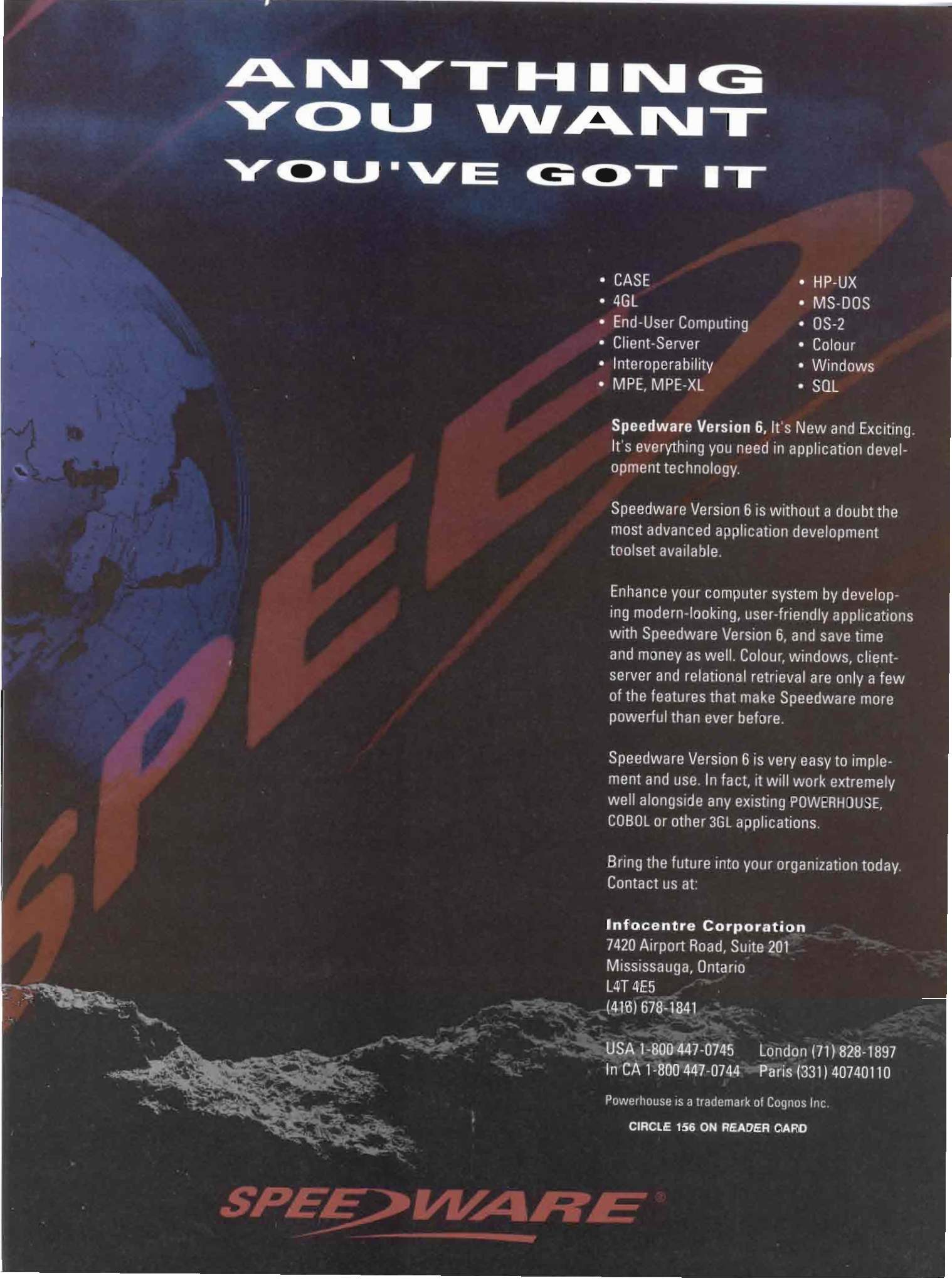
As for the COBOL compiler, Schmickl says, HP intends to render the problem moot by adding its own native COBOL compiler to the 9000, which will be "close to the one on the 3000." Nevertheless, Schmickl defends HP's choice of MicroFocus COBOL, saying that its market share of existing applications and portability outweigh its less than optimum runtime performance on COBOL applications.

Portability Vs. Security

FOR COMMERCIAL USERS like Bacon & Woodrow, which has rewritten its applications in Oracle, Informix 4GL and C, a lack of executable COBOL code isn't a major issue. Operating system security, however, is a universal concern, and HP-UX, like most implementations of UNIX, still lacks the features for securing information found in proprietary commercial operating systems like MPE V and MPE XL. "HP-UX, to the rest of the world, is a very sophisticated implementation of UNIX, but it's difficult to compare to MPE XL, because it's good for different areas," says Uwe Hinrichs, CEO of Hicomp Hinrichs Gmbh.

"MPE XL is strictly commercially oriented, with protections, and security aspects covered better than the current [HP] UNIX implementation, both on the [HP 9000] 800 and 300 series. [For instance] MPE, or any commercial OS, has a much more efficient power fail/restart system than the UNIX systems so far."

Today, HP's Schmickl admits, "The 3000 has probably a richer security offering [than the 9000] in terms of online backup and handling of larger configurations, but I would ex-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pect it to be temporary." In fact, he adds, HP plans to boost HP-UX's average C2-level security to B1, which should give the 9000 the same security implementation as the 3000.

Aside from its performance on number crunching applications like Bacon & Woodrow's, it's in the open systems column that the HP 9000 often gains an edge over the HP 3000. All HP 9000 models have the X/Open brand, which certifies that they comply with X/Open Co. Ltd.'s XPG/3 portability guide.

Such compliance is crucial for selling into Europe's major government markets and, increasingly, into the commercial market, says Michael Spring, X/Open spokesman. "We already see Texaco, the Union Bank of Switzerland, Shell, all using XPG/3 systems; if not for all systems, at least for some."

For the commercial user, says HP's Schmickl, the major decision criteria for the HP 9000 is this level of standardization and openness. "It's not so much a question of functionality, of which is better in this area or that area," he says. "The 9000 will offer a higher degree of standardization, and so will stay the most open system over time. In the minds of a lot of customers, the term open systems means UNIX."

Guest says Bacon & Woodrow is realizing the benefit of the HP 9000's UNIX portability as it evaluates the specialized number crunching boxes that it may need to use with its pensions valuation system. That system, he says, will require more number crunching than the standard HP box can provide. "This is where the [UNIX] benefit comes in, because we can look around at all the number crunching boxes and add any of them, whereas if [the system] was developed with MPE or any other proprietary system we would have been cornered," Guest says.

The portability also helped effect a "fairly painless" port of Bacon & Woodrow's pension fund administration application from the HP 9000 to the DEC VMS system of a client that had purchased a customized version of the application. Conversely, porting Perwill's EDI application to the HP 9000 was not trivial, says Pugsley. "We have ported to IBM mainframes and that was easier," he adds.

Despite his criticisms, Pugsley says, the HP 9000 machines are excellent. "The 9000 runs fast enough, and has good performance in relation to other machines, except an IBM mainframe. It's a good use and a faithful implementation of UNIX," he says. Rudy Husman, director of HP 3000 software ISV Cheops Technology, concurs: "I think it's [the HP 9000] the best machine on the UNIX market, and a lot of people know it."

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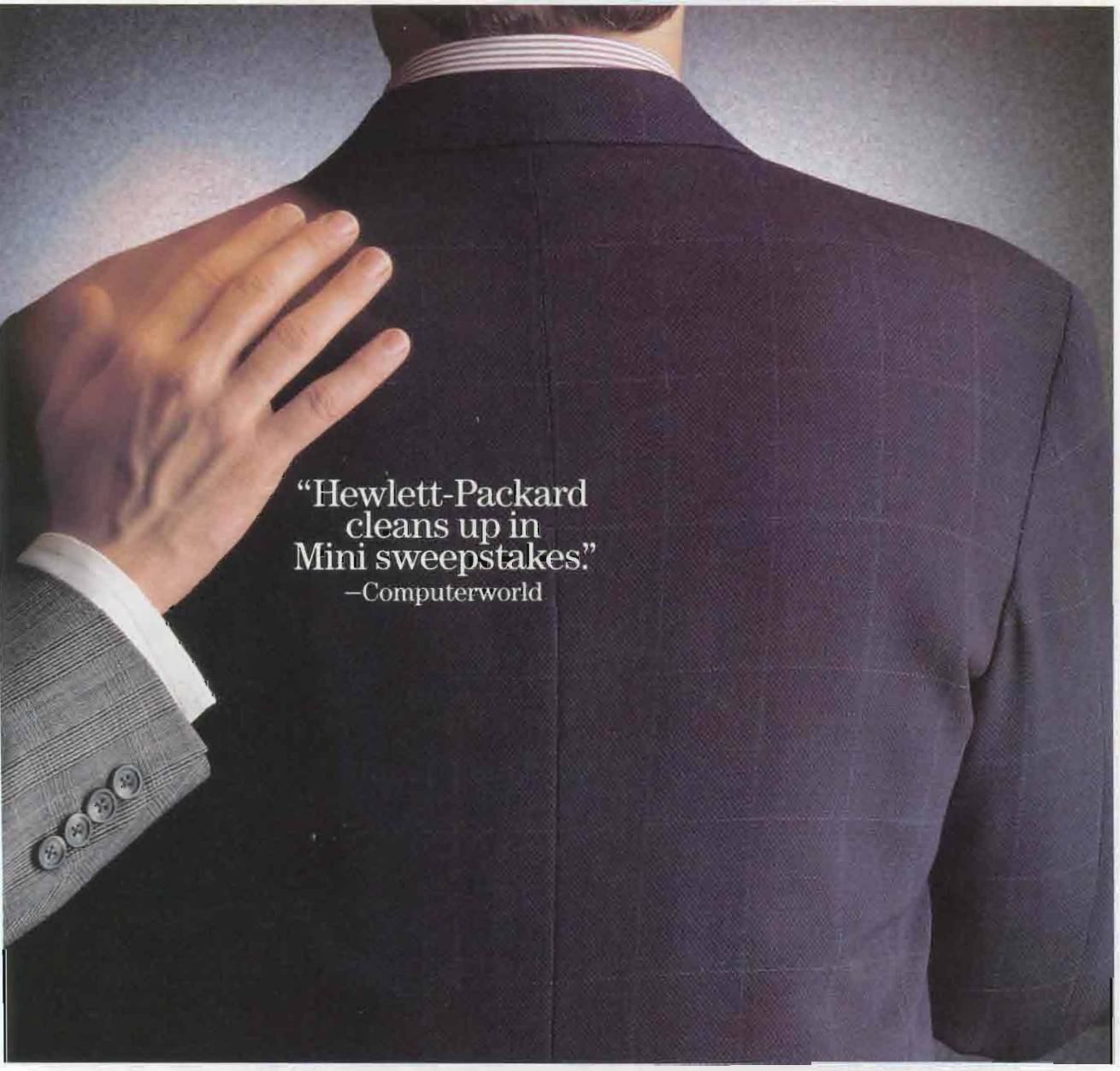

Another pat on the back for HP 3000 owners.

You made an excellent choice! Computerworld's Buyers' Scorecard showed the clear winner is Hewlett-Packard. According to the survey: "The (HP 3000) system captured the highest rating in 13 of 15 categories..."[1]

It went on to say: "While HP garnered its highest ratings in the categories of availability, future growth and compatibility, users also gave it very high marks in programming capability and interfacing with other vendors' systems... The system also topped the category of availability of third-party applications."

So you deserve a pat on the back for choosing an industry leading platform. But there's more. A study by the Sierra Group demonstrates that the HP 3000 has the lowest Cost of Ownership among the leading minicomputer companies.[2] And in the latest Datapro User Survey, the HP 3000 achieved the best overall record among industry leaders for customer support satisfaction. For the eighth straight year.

For copies of these survey results and other reports, call **1-800-637-7740, Ext. 2210.** More proof that you made the best choice.

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[1]Computerworld, 9/24/90. [2]The Sierra Group, 1990.

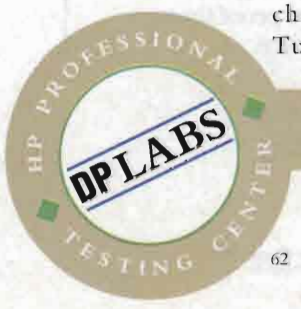
Stay Flexible

Proactive Systems' FLEXIBASE Gives You The Tools To Transform Your IMAGE

Perhaps the most important software tool in an HP 3000 system manager's toolkit is the software used to modify the structure of TurboIMAGE databases. Hewlett-Packard has largely left this market to the third-party suppliers, and several have filled the void with fine offerings. One of the more complete products in this niche is FLEXIBASE, from Proactive Systems (Los Altos, CA).

Billing itself as "The IMAGE Transformer," FLEXIBASE performs structural changes and some data changes to TurboIMAGE or IMAGE databases. Structural changes are limited only by TurboIMAGE constraints and include all "standard" functions — dataset capacity changing; adding, changing or deleting of datasets and data items; unloading, erasure and loading of datasets, etc.

FLEXIBASE also provides facilities to rename a database, repair and repack detail datasets, create a schema of an existing database, review a database for structural problems or performance inhibitors and analyze TurboIMAGE log files. The data change facilities provide commands to modify key and search



By Joel Martin

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item values, transfer data from one database to another and create test or subset databases.

Installation

FLEXIBASE installs on your HP 3000 in the same manner as nearly all third-party tools. You restore a jobstream file to PUB.SYS from the installation tape and then stream the file that creates the necessary group and account (HQ). The jobstream then restores the files.

I ran through all of FLEXIBASE's functions on our Micro 3000 XE running MPE V. (FLEXIBASE runs in Native Mode under MPE XL, as well.)

If you're a regular user of TurboIMAGE, you'll be able perform the simpler FLEXIBASE functions, such as copying a database, almost without conscious effort.

Substantial Features

To make structural changes to a database, FLEXIBASE requires that you make available a database schema that represents the desired database structure. The TRANSMUTE function then reads the desired structure as represented in this schema file and checks it for syntactical or structural errors just as the IMAGE utility DBSCHEMA does. The safest approach is to create the schema using the DECOMPILE function rather than relying on an old text schema. This also ensures that you don't inadvertently change dataset capacities.

I used a standard text editor to modify a pre-existing schema. Among the changes I made were the deletion of data sets, the deletion of data items and changes in data set capacities. Data set capacities are more easily and quickly changed with the CAP-CHANGE function, but capacity changes are possible with TRANSMUTE, as well.

To be sure that TRANSMUTE would catch a schema error, I added a field to a data set that had not been previously defined as an item. When my schema modifications were completed I kept the new schema file, ran FLEXIBASE and selected the TRANSMUTE function. TRANSMUTE read the schema and trapped the error as expected. The processed schema file with error messages was saved for my review as a file of the name XPRQLIST.

XPRQLIST isn't actually the schema for the database selected, but a copy of that schema with a different root file name and with data set capacities set to one. This file is created for the purpose of performing syntactical and logical checks on the schema modified earlier.

An unintended error ("block too large") also was trapped because of changes I made to a set that increased the size of the file block. I used the editor to correct the first (intentional) error and to blank out the capacity of the data set with the too large block. (Blanking out the capacity instructs TRANSMUTE to leave the capacity unchanged but allows it to reblock the set.) TRANSMUTE then found no errors in my modified schema and processed the changes.

You'll notice that TRANSMUTE asks whether item names and set names have remained the same. You can change the names of both items and sets using FLEXIBASE, but if you change names, the transformation will require that items and/or sets do not change their relative positions. Changes to both the names and relative positions are possible if you perform two transformations.

Prior to using FLEXIBASE, I had not worked with an IMAGE transformation product that did transformations based on a modified schema. This approach does seem to have some advantages. First, you can plan a large number of changes on paper in advance of making the actual modifications. This gives you a visual representation of what the database looks like after the changes have been made and may prevent you from making a time-consuming error. This approach also lends itself to advance peer review of the changes, a significant benefit that further reduces the probability of an erroneous change.

TRANSPOSEd IMAGE

The TRANSPOSE facility of FLEXIBASE will be a welcome relief to anyone who has had to write special purpose programs to change the value of an IMAGE key or search item. TRANSPOSE allows you to globally change the value of a data item throughout an IMAGE database, regardless of whether the item is a search or sort item.

After specifying the database name, you specify the name of the item to be changed. TRANSPOSE prompts for the old contents of the data item, then for the new contents. A small progress report is produced while it goes about its work and then TRANSPOSE finishes with an "All amendments completed" message. A special "merge" option lets you specify the new contents of a search item to be the same value as an existing item, merging two groups of detail set records under a single master set entry.

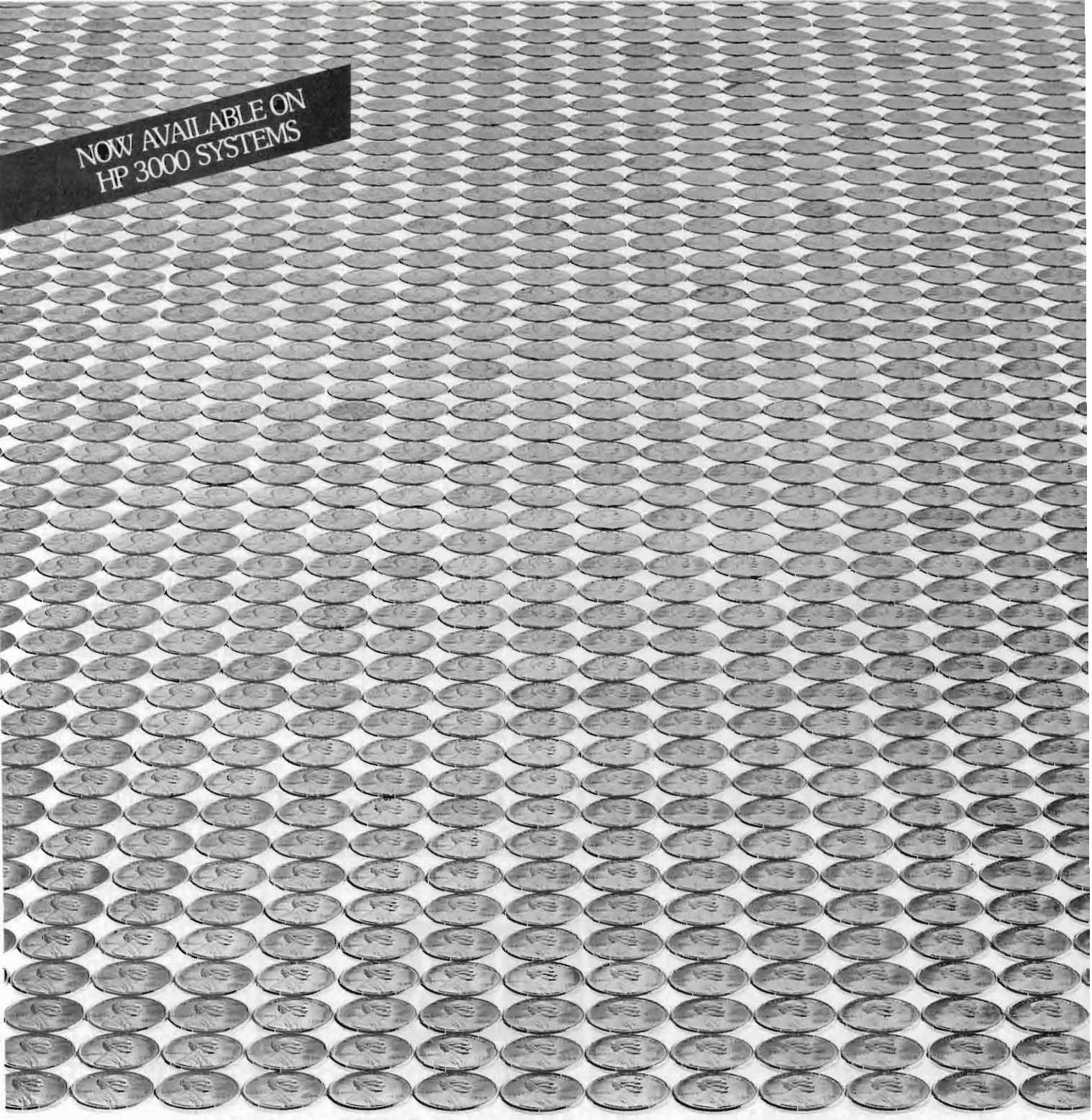
Specific data sets can be excluded from the requested change by listing only the datasets to be modified. This is helpful if a data item name is used for different purposes within two or more data sets. This exclusion also could be performed by TRANSMUTEing the database to change the item names within those sets to be excluded, performing the TRANSPOSE, and then TRANSMUTEing the item names back to their originals. TRANSPOSE worked quickly and without a hitch in my testing. This function alone might make FLEXIBASE worth the purchase price for some shops.

Manageable Maintenance

Probably the most common usage of any IMAGE database transformation tool is the maintenance of dataset capacities. There are two facilities for changing set capacities, CAP-CHANGE and AUTOMATIC.

CAP-CHANGE is very simple. After identifying the database name and data set, you enter the new capacity or a percentage change in capacity, e.g., +10%. FLEXIBASE then changes the capacity, unless the group within which the database resides has a disk space ceiling.

Automatic capacity management is just as straightforward. You can identify all data sets, all master sets, all automatic master sets or all detail data sets rather



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than just a single set. After the set identification, you give FLEXIBASE three numbers to work with, the increase capacity trigger, the target and a decrease capacity trigger.

If the data set is among those specified, and it has more entries than the increase capacity trigger, then the capacity will be increased so that it's only as full as the target. Similarly, if the data set has fewer entries than the decrease capacity trigger, then the capacity will be decreased so that it is only as full as the target.

FLEXIBASE also has facilities to repair broken detail chains (REPAIR) and to repack detail data sets (REPACK). Test or sample databases can be created with the CREATE function. CREATE allows you to select data from the source database based on the value of data items, for a range of values of a data item or to select at random from the source database. The TRANSFER function is similar to TRANSMUTE except that the data is copied from the source database into a target database at the time of the change.

Two other functions can be helpful in extracting the maximum performance from your IMAGE applications. DIAGNOSE assembles statistics on a database (or data set) and even recommends changes to improve the performance of that IMAGE structure. Though there are a limited number of suggestions that DIAGNOSE can make, this feature can still be of great benefit if you are having performance problems.

The ANALYZE function reads IMAGE log files and can produce reports at three levels of detail. At the greatest level of detail (Logfile Enquiry), all of the items in each log record are displayed. (You can restrict which log records are selected by data set name, user name, program name, logical device number and start or end date and time.) At the next level (Audit Trail), a more concise report is displayed that provides a "trace" of a user's activity. At the third level (Statistics), a spreadsheet-like listing of the number of each type of IMAGE transaction by program is created. Summarized log file history information also can be kept automatically. ■

FLEXIBASE

SYSTEM REQUIREMENTS: HP 3000 running MPE V or MPE XL.

PRICE: Ranges from 2,300 to $12,000.

PROACTIVE SYSTEMS

HEADQUARTERS: Proactive Systems Ltd.
Central Court
Knoll Rise Orpington
Kent BR6 0JA, England
Phone: 0689-77933

U.S. HEADQUARTERS: (415) 949-9100

FOUNDED: 1983

BRANCH OFFICES: Michigan, California

PRODUCT LINE: BACKCHAT, BACKBONE, FLEXIBASE, FANTASIA, Q-GEN, DB-LITE

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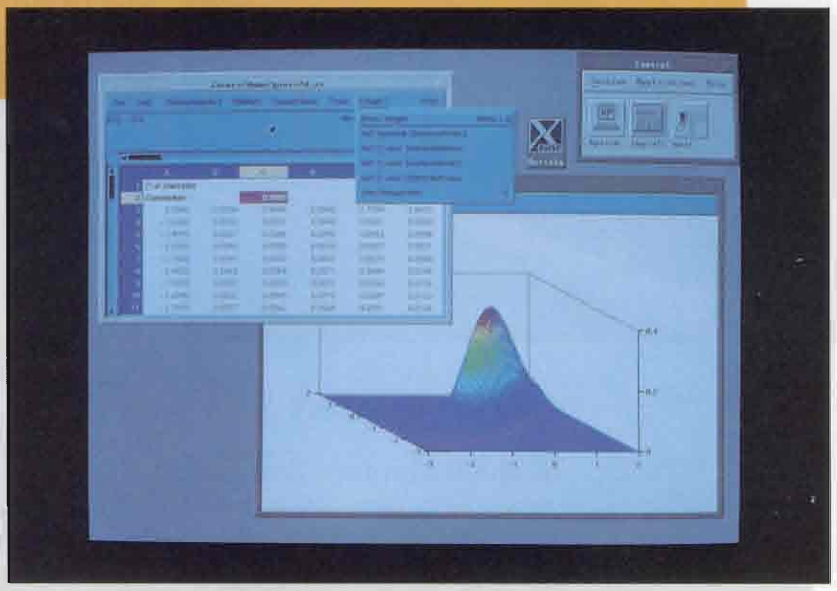
XESS ENERGY

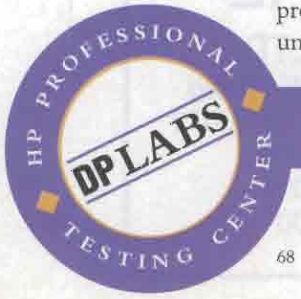


The X Windows Engineering And Scientific Spreadsheet From Applied Information Systems Handles Complex Calculations

We all know what a spreadsheet is—a standard run-by-column financial template for calculating budgets, costs and expenses. Though beneficial for some job functions, ordinary spreadsheets are limited in features and functions. They usually have a limited capacity to handle complicated formulas and data manipulation. Typically, they can capture only a single snapshot of data in time. If you're in an engineering or scientific environment, using a spreadsheet for data analysis probably has been out of the question—until now.

XESS, from Applied Information Systems Inc. (Chapel Hill, NC), is an X Windows-compatible spreadsheet that runs under X11 Release 3 or 4 and is designed in accordance with the Open Software Foundation (OSF) style guidelines for OSF/Motif applications. XESS stands for X Windows Engineering and Scientific Spreadsheet, and it's specifically designed for the scientific and engineering communities.

The XESS spreadsheet provides a flexible visual environment that lets you handle complex calculations and data



By George T. Frueh

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Corruption issues are handled in the same manner that any good conductor handles changes in tempo, with ease and anticipation. From the most common problems, such as broken chains and defective keys, to some uncommon ones, like label damage, missing chain heads and a variety of other database inconsistencies, *DB-GENERAL* isolates the problems and gives you the tools to correct them. And in most instances, corrections are made on the fly, reducing costly system downtime to a minimum.

From novice to seasoned database analyst, anyone can utilize the power of *DB-GENERAL* thanks to its easy-to-use master menu, which displays all the options, and its special self-help feature. If you ever have a question regarding a particular function or are unsure of the appropriate response, just enter a "?", *DB-GENERAL* does the rest. Response choices, database particulars, contextual procedures and other pertinent information is readily available, on screen. You are provided with immediate and direct assistance, as well as 24 hour a day technical support.

If you are not in complete harmony with your vendor's views on IMAGE database performance, call 1-800-275-2723 today for a free demonstration copy of *DB-GENERAL*. Once you see what *DB-GENERAL* can do for your IMAGE performance, you will make the move to both a product and vendor that truly perform.

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For more information on *DB-GENERAL* or other quality Bradmark software, call 1-800-ASK-BRAD, or write: Bradmark Technologies, Inc., 4265 San Felipe Suite 800, Houston, Texas 77027, Attn: Marketing Department

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Facer Into	61-2-484-3979	JF Infosys GMBH	49-41-012-5037	Sages	32-5641-8399	Teamco Nordata	46-9-103-9480
CANADA		**FRANCE**		**DENMARK**		**ISRAEL**	
Gilles Schipper & Assoc.	416-889-9526	ARES	33-16-9-866-4008	Unique Partners	45-86-173-666	Softkol	972-3-348938
ENGLAND		**ARGENTINA**		**SAUDI ARABIA**		**NETHERLANDS**	
Bradmark U.K. Ltd.	0905-795444	Software Plus S.A.	54-1-826-2322	Alsufiani Computers Est.	966-26-611176	Quant Systems	31-250-340334
TAIPEI, TAIWAN, R.O.C.		**SWITZERLAND**		**WEST MALAYSIA**		**MEXICO**	
Hewlong Into. Corp.	886-2-322-2100	SWS Software Sys., Ltd.	41-3-134-0666	Solsis	60-3-256-1911	Infosistemas Financieros	525-254-3479

manipulation. It provides a complete range of mathematical, statistical, matrix and string functions.

XESS also is dynamic—it's capable of sending and receiving data from X Windows programs running on other computing platforms across a network. XESS automatically recalculates every referenced work area as it goes. This allows XESS to monitor and display data from multiple sources as it's calculated and to pass this information to other programs in a real-time environment.

The Keys To XESS

We installed Xess Version 1.0 on our HP 9000/345 workstation using the 1/4-inch cartridge tape provided. XESS requires approximately 10 MB of free disk space.

Once all XESS files were extracted, we moved the executable files to **/usr/local/bin**. We then copied the file **/xess/help/xess-help.txt** to **/usr/local/lib/xess/** and were ready to run XESS. Once installed, we ran XESS by issuing the command **>xess**.

When XESS is started, a blank spreadsheet appears. XESS stores spreadsheets in ASCII format, with the file extension .xs. You can bring up an existing spreadsheet, view it, change it, recalculate it, save it or quit without affecting the original version.

The XESS display window that appears on the screen looks like a standard spreadsheet and is divided into three areas—the menu bar, the control and status window, and the spreadsheet view area.

The menu bar stretches across the top of the display area, and selections include: File, Edit, Characteristics, Utilities, Connections, Tools and Graph. Manipulation of the menu items under these selections is fully explained within the first several chapters of the XESS user's manual.

XESSive Numbers

XESS supports the same arithmetic, boolean, and logical operators found in the C programming language. It also supports a host of statistical functions and incorporates embedded tools.

Calculating statistical functions, such as means, minimums and averages are provided in XESS. Also provided are more sophisticated statistical functions. These include performing the F-test, the paired T-test, and the single population T-test.

The embedded tools are a powerful feature in XESS. The embedded tools have the ability to return data in neighboring cells, not just the resident cell. This function makes nonscalar operations such as matrix multiplication as easy to use as an ordinary spreadsheet function.

For example, the @FFT(R) function generates the Discrete Fourier Transform of the range R using a Fast Fourier Transform algorithm. The @MMUL-(M1,M2) function generates the product of the multiplication of matrix M2 by matrix M1. Embedded tools look like normal functions, and can be copied, moved and formatted just like any other formula in the spreadsheet.

XESS formulas look identical to algebraic formulas. They contain values and operators that define the relationships between values. XESS formulas can calculate with numbers, text, logical values, cell references and other formulas.

Formulas can express complex interdependencies among cells. They can define constraints on the calculation, such as limits on acceptable values, or specific conditions under which a calculation should take place.

XESS

PLATFORMS: Under X Windows and OSF/Motif on UNIX and VAX/VMS workstations.

PRICE: $595

APPLIED INFORMATION SYSTEMS

HEADQUARTERS:
Applied Information Systems Inc.
500 Eastowne Dr., Suite 207
Chapel Hill, NC 27514
(919) 942-7801

FOUNDED: 1972

PRODUCT LINE: The XESS scientific and engineering spreadsheet and communications gateway software for the UNISYS marketplace.

OWNERSHIP: Private

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Functions And Graphs

XESS built-in functions are a shortcut approach to accomplishing the work of long, complex formulas. These functions are predefined formulas supplied with the program.

The categories of XESS built-in functions include mathematical, statistical, conditional statistical, string, logical, digital logical, financial, date and time, and miscellaneous functions. Each category has a variety of functions, and each function is explained in the user manual.

A dynamic feature of XESS is its graphing capability. Once your data is placed in a spreadsheet, you can create a line graph, histogram, bar chart, pie chart, or a surface plot. The graph menu includes selections through which you define the type of graph you want to create, the data to be included and appearance characteristics.

Through the graph dialog boxes you can set up general graph characteristics that include setting the graph type (line, pie, histogram or surface), shading, recalculation options, legend, title and title font. You can also setup the X-axis, Y-axis- and Z-axis characteristics, in addition to line characteristics.

The Benefits Of XESS

XESS comes with several sample demonstration files located in the directory xess/xess_examples. XESS files can be saved in ASCII format, and you can import and export files in the WKS or WK1 format. XESS creates print files in ASCII, LaTeX or PostScript formats for printing or incorporating into other documents.

You can create applications that establish realtime data links with XESS spreadsheets for dynamic data exchange using C and FORTRAN programming libraries.

If you work in an engineering or scientific environment and could benefit from the functionality of a true number-crunching spreadsheet, XESS could be a plus for your staff. ■

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NETWORKING

Tim Cahoon

Classic Opener

Some people believe it's easier to network a collection of kitchen blenders than a collection of Classic HP 3000 systems. Granted, Classic systems aren't perfect, but there are some solutions that may change your attitude about them. They sure changed mine.

Let's first review the connectivity options Classic systems provide. They can be hooked together in a multitude of ways: point to point, Ethernet LANS, X.25 networks, async, bisync RJE and SNA SDLC. Each of these connection methods has its strengths and weaknesses. All of them are fairly straightforward to set up and work quite well.

The bad news is that running on top of the non-IBM network interfaces are proprietary protocol and services called NS/3000. NS/3000 was developed and is still being used by HP. It uses a modified TCP/IP scheme with unique Telnet (NS Virtual Terminal) and FTP (DSCOPY) file transfer programs. NS/3000 is functional, but unless you install it on a DEC or an IBM PC, forget about talking to the rest of the world. NS/3000 never has been ported to any other machine except those mentioned.

A Classic Case

A large company I once worked for made the switch from a centralized IBM system to a distributed HP 3000 environment. In the beginning, data was still needed by applications on the IBM mainframe, so it was passed to the IBM using the SNA network already in place. The SNA network also was used to pass data between HP 3000s. Data would leave one HP 3000, arrive at the IBM processor and then get routed back to another HP 3000. This worked all right, but limitations soon were discovered. As applications were moved off the IBM mainframe, a task force was created to define a long-term networking strategy for the company.

After several meetings, the task force determined that to equip the HP 3000 with the ability to communicate with other systems was either too expensive

or impossible. The task force then asked whether it made sense to stay with the HP systems if they couldn't meet the corporation's long-term networking needs. Could the cost of networking these machines, not only together but with other systems, be justified? Wouldn't it be better to switch to a different computer system that could provide the necessary communications services?

Fortunately, in this story, the company decided to keep the HP 3000s. Let's look at some of the reasons. First, X.25 was picked as the wide area network (WAN) solution. During the next eight months, NS/X.25 was installed on 10 HP 3000 Classic systems with very little trouble. Engineering sites using HP Apollo workstations were added to the network at the same time with little effort. The following year a new engineering project using Sun workstations also was added to the network. The local Sun TCP/IP Ethernet LANS were joined across the WAN using the Sun X.25 workstation gateway product.

The installation of the X.25 WAN was the start of my change in attitude about the Classic 3000. I finally got a chance to see other vendors networking products in action, which taught me important lessons. First—and this may be obvious—with the Ethernet support HP added to NS/LAN, the Classic 3000 can share the same wire as the rest of your network.

Second, NS/X.25 offers In-Bound PAD Support. This allows a user dialing in through a Public X.25 network, such as BT Tymnet (now British Telecom North America), using special X.25 software on a remote host, or using an actual X.25 PAD, such as an HP2334A, to come into the HP 3000 looking like a dumb terminal. This feature is defined by the X.25 protocol, not NS/3000.

This was the first chink I found in the 3000's proprietary armor. Because both the Sun and the Apollo X.25 software supported the "out-bound" PAD service (i.e., they could emulate a terminal connect to a PAD), I could connect from either system to the HP 3000.

The third thing I learned was how simple it is to network an HP 3000. The WAN had Sun workstations, probably the most common system on the Internet, the very model of network connectivity, and my HP 3000s could go toe to toe with them. The HP systems had the ability to communicate with a variety of

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methods and did it with equal or better services. True, the HP machines could only talk to other Classic HP 3000s, but they are easy to connect to each other over either WANs or LANs. Again, HP's latest DTC announcement promises to improve connectivity to other systems.

Last, I discovered that UNIX machines were more similar to the HP 3000 than different. You can dial into them via a modem, log on remotely via Telnet, or use In-Bound PAD service with X.25. It was possible to think of these UNIX workstations as small HP 3000s.

Putting PCs In The Picture

Things were really coming together at this point. UNIX was no longer a dirty word, and the network, although not yet perfect, was doing the job. Then along came the PC network. Don't get me wrong, PCs are great, but networking these beasties across a WAN? That's a whole different story.

PC LANs work fine when they're *just* local area networks. There are many fine proprietary and standards-based LAN products out there on the market that get the job done well. But today's PC users aren't satisfied with accessing data on local LANs; they also want access to data on remote LANs. Comparing the connectivity of a PC LAN to that of the HP 3000 was an eye opener.

The PC LAN we selected was Novell Netware 386. Novell uses a protocol called IPX/SPX, which works fine for LANs. One problem, we were told, is that it's also a very chatty protocol. The servers constantly are passing status requests across the network to whoever will listen. Different sources also told us about a problem with packet acknowledgments. IPX packets are supposedly sent one at a time, and the next packet waits until the acknowledgment of the first one is received before being sent. Like many other protocols, there are timers associated with this process. Having these timers expire too soon can occur when data moves from a high speed LAN to a slower speed WAN.

Things that are meant to run over Ethernet at 10 MBps may not run well on a leased line at 9,600 baud. PC applications also use a lot of graphical displays. Transmission of a single screen requires a larger bandwidth just to move all the graphics data in a reasonable time. Some people have told me you need a T1 leased line to do this effectively. Others have said IPX timing problems will show up on anything slower than a 56KBps leased line.

These PC problems may be understated or over simplified, but they are part of the confusion facing people planning a PC network. Dial-in access, which most of us take for granted, seems to be a hard thing to accomplish with a PC LAN. There are several products available, each providing different levels of performance and services. Some products require one dedicated PC per user dialing in. Other products multitask several dial-in users on a single server.

Today's reality is that connecting PC LANs together over a WAN is difficult.

Telnet and FTP services are generally provided by a product that runs at an individual workstation or server rather than an integrated part of the network software. These products help the user only to connect to a remote host; they don't assist in connecting several PC LANs together. Novell has just released a TCP/IP product as part of its network operating system. I understand that this will help in connecting their PC LANs and provide some measure of workstation to host connectivity.

X.25 support does exist through third-party boards and software. EICON appears to be the leader in the PC X.25 market place. There are many vendors who have written software to take advantage of the EICON hardware.

My attitudes changed once more during this whole PC LAN experience. The HP 3000s and the UNIX machines were simple to network by comparison to the PC LAN. The whole PC LAN issue brought back memories of those task force meetings about HP 3000 connectivity. Why try to connect machines (PC LANs) that can't talk to other machines (PC LANs)? The bottom line is that PCs are here to stay. Yet their networking ability, despite what many people think, is not up to the level we expect and need. That is rapidly changing, but not fast enough for many people.

Today's reality is that connecting PC LANs together over a WAN is difficult. There are ways to do it, but depending on the application requirements, the cost can be prohibitive to many users. All of this seems strange because of the great flexibility people typically associate with the PC environment.

Attitudes can change. Mine did and I now see that our Classic HP 3000 is a very networkable system. Like UNIX systems, it can connect over many different environments, and it's far superior to PC networks for remote access and networking. The Classic's limitations in connecting to other machines are not as bad as they might seem, and they are likely to get better.

Let me suggest to you some ways around existing limitations, using both HP and third-party software.

On Guard

I mentioned the first hole in the HP armor—the in-bound PAD support on NS X.25. The trouble here is getting block mode to work non-HP terminals/terminal emulations, and I haven't heard of a way to make block mode work on a VT100 or ANSI terminal as yet. The next chink in the armor comes from products, such as WRQ's Network Connection Series. This product provides communications drivers for the Reflections Software series. The Network Connection Series allows a Reflections user to connect to hosts over a variety of networks.

The Network Connection Series will share concurrently the same card and drivers in the PC that you may be using

to connect to another host using products such as Sun's PC-NFS. NDIS drivers are required for the product to function, so only Ethernet connections are currently allowed. This is an even more workable solution now because NS/LAN now allows HP systems to reside on and communicate across an Ethernet network. Token ring users will have to wait, hopefully not long, for a solution. The Network Connection Series is available from WRQ or from value-added resellers such as M.B. Foster & Associates.

Another networking package for the Classic HP 3000 comes from HERMES SoftLab and is distributed in the United States by the Solution Centers International. HERMES' PADEMU gives you X.25 out-bound PAD support like you would find on most UNIX machines. The software uses NS/X.25 and lets you emulate a dumb terminal connected to a PAD. You can then connect to other hosts or services like CompuServe.

Wollongong's TCP/IP product also deserves to be mentioned here. Wollongong created TCP/IP services for Classic HP 3000s several years ago. However, when I last looked at the product, it cost over $10,000 for a Series 70 implementation. At that price, you don't just install it for a few users. But if you need this type of connectivity, Wollongong is the only game in town.

Async connections are available using the Network Engine by Telamon. You become a dumb terminal dialing out via modem to other hosts.

If you have an MPE XL machine, Portable Netware is the greatest thing to come along since PA-RISC. This is the first product I've seen that truly makes an HP 3000 part of a larger, multivendor network. If you're really into PC LANs, Portable Netware could be a great reason to upgrade from Classic to Spectrum.

—Tim Cahoon provides wide area network and HP technical support for the manufacturing operations of a Fortune 500 company in Detroit, MI.

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HP-UX

Andy Feibus

Menu Motif-ation

Configuring menus and buttons in Motif is accomplished by adding information to your **.Xdefaults** file and by creating a resource description file. This file is usually named **.mwmrc** and resides in your home directory. However, if you don't have one, Motif uses the resource **file /usr/lib/X11/system.mwmrc**.

The resource description file contains information to describe what actions are taken by **mwm** (the Motif window manager) when a keyboard key or a mouse button is pressed. This file also describes the menus displayed for both client windows (when the window menu button is selected) and the root window.

First, the general format for a menu description:

```
Menu MenuName
{
   label  mnemonic  accelerator  function
   .
   .
   .
}
```

In this syntax, MenuName is the name of the menu, label is a personalized string to describe the menu item, mnemonic is an optional way of executing the menu item by pressing a keyboard key, accelerator is an optional single key sequence that can be pressed (e.g., function key 10) to execute this function, and function is the window manager operation to perform for this menu item. A menu can contain any number of menu items.

Here's an example menu (with no keyboard accelerators), named **RootMenu**:

```
Menu RootMenu
{
   "Root Menu"      f.title
   "Local Xterm"    f.exec "xterm -geometry
                    80x24 +sf &"
   "Local HPterm"   f.exec "hpterm -geometry
                    80x24 &"
   "Other Systems"  f.menu SystemsMenu
   "Start Xload"    f "xload -geometry
                    150x90-130+1 &"
   "Shuffle Up"     f.circle_up
   "Shuffle Down"   f.circle_down
   no-label         f.separator
   "Refresh X11"    f.refresh
   "Restart Mwm"    f.restart
}
```

To best understand this menu, you need to understand the possible *functions* that can be performed by a menu item. A few of these functions are described in *Table 1*.

When deciding how to use these window manager functions, you must remember that certain functions apply only in certain contexts. **Mwm** provides three menu contexts: the root window, client windows and client icons. Functions requested from within the wrong

TABLE 1

Function	Action
f.circle_down	Causes the window or icon that is on top of the window stack to be placed on the stack's bottom (and it no longer obscures any other window or icon).
f.circle_up	Causes the window or icon that is on the bottom of the window stack to be placed on the stack's top (and no other window or icon obscures it).
f.exec (or **!**)	Causes **mwm** to execute the specified command. The command is interpreted by the program specified by the **SHELL** environment variable (e.g., **/bin/sh**).
f.kill	Deletes (closes) the specified client window. Usually also terminates the client program.
f.maximize	Causes the window to be displayed at its maximum size. For most clients, this size is also the size of your screen.
f.menu	Associates a pull-right menu with the current menu item. In the above example, the menu item for Other Systems is an entry point to the menu named **SystemsMenu**, which must also be defined in your **.mwmrc** file.
f.minimize	Causes the window to be displayed in its icon form.
f.move	Allows a client window to be interactively moved.
f.normalize	Causes a client to be displayed at its normal size.
f.quit_mwm	Terminates the Motif window manager (but not the X Windows server).
f.refresh	Causes all windows to be redrawn. The function **f.refresh_win** redraws a single client window.
f.resize	Allows a client window to be interactively resized.
f.restart	Causes **mwm** to restart. This function is useful when reconfiguring **.mwmrc**.
f.separator	Places a menu separator into the menu. The label for this menu item is ignored.
f.title	Provides a title for the menu.

Some functions performed by a menu item.

menu context are quietly ignored by the window manager.

The above-listed functions are available only in the menu contexts listed in *Table 2*.

The **RootMenu** was an example of a menu that would be associated with the root window menu context. A possible client/icon window menu description follows:

```
Menu NormalWindowMenu
{
   "Restore"     f.normalize
   "Iconify"     f.minimize
   "Full Size"   f.maximize
   "Refresh"     f.refresh_win
   no-label      f.separator
   "Goodbye"     f.kill
}
```

Associating a window/icon menu with a particular client is defined by the **windowMenu** resource specified for any client (or for all clients). For example, to associate the above menu with the client program **xtock**, add the following line to your **.Xdefaults** file:

```
Mwm*xtock*windowMenu:  NormalWindowMenu
```

Binding Buttons

Because the root window is not an X client, associating **RootMenu** with the root window is a little more complicated. This association is described using either a keyboard key or a mouse button binding. Keyboard and button bindings are also specified in the **.mwmrc** file.

The following button binding describes how to trigger **RootMenu** when mouse button 1 is pressed within the root window:

```
Buttons NormalButtonBindings
{
     <Btn1Down>  root  f.menu RootMenu
}
```

Button bindings have this syntax:

```
Buttons BindingName
{
   button  context  function
   .
   .
   .
}
```

BindingName is the name of the button binding; button describes the button event to trigger the window manager function while in the specified context. The syntax for button is:

```
modifier<button_event>
```

where modifier is optional and one of:

```
Modifier    Description
Ctrl        Control Key
Shift       Shift key
Alt         ALT/Extend/Meta Key
Meta        ALT/Extend/Meta Key
Lock        Shift-Lock key
```

and button_event is one of (# is the button number):

```
Button_event   Description
Btn#Down       Button # Press
Btn#Up         Button # Release
Btn#Click      Button # Press and Release
Btn#Click2     Button # Double Click
```

Possible button binding contexts are:

```
Context  Which is
root     The root window
icon     A client icon
window   A client window
title    A client window's title bar area
frame    A client window's border or title
         bar area
border   A client window's border area
app      A client window's application area
         (excluding frame)
```

Functions that can be performed from within the client window context may also be performed from within the title, frame, border and app contexts.

You can specify multiple contexts for a button binding by placing a vertical bar (|) between the context names.

For example, to normalize a client window when you press the CTRL key and button 1 at the same time, you could create the button binding:

```
Buttons NormalButtonBindings
{
   Ctrl<Btn1Down> icon|window f.normalize
}
```

One final note: To tell **mwm** about a particular set of button bindings, add the following resource line to your **.Xdefaults**:

```
Mwm*buttonBindings: BindingName
```

where BindingName is the name of the button binding description. —*Andy Feibus is a interplatform system consultant, based in Atlanta, GA, and author of* UNIX Quick *from Professional Press Books.*

TABLE 2

Function	Contexts
f.circle_down	root, icon, window
f.circle_up	root, icon, window
f.exec	root, icon, window
f.kill	icon, window
f.maximize	icon, window (normal)
f.menu	root, icon, window
f.minimize	window
f.move	icon, window
f.normalize	icon, window (maximized)
f.quit_mwm	root
f.refresh	root, icon, window
f.refresh_win	window
f.resize	window
f.restart	root
f.separator	root, icon, window
f.title	root, icon, window

Menu contexts.

APOLLO

Fred Mallett

User Group Meetings Offer Cost-Effective Technological Know How

ADUS Aids You

ADUS (formerly the Apollo Domain Users Society, now just ADUS) by-laws state the organization's purpose as: "to promote the effective utilization of Hewlett-Packard workstations." Because of this broad agenda, ADUS retains the flexibility, which it has shown repeatedly over the years, to cope with the ever-changing needs of the workstation user community.

ADUS's inception has been somewhat hidden in the murk of time, so I ask those who know the real events leading to its origin to forgive me for the following synopsis. The first users meeting that I'm aware of took place in 1981, at Brown University, one of the first sites to be shipped an Apollo node. This first meeting was rather informal, and officially forming a user's group was not a top priority.

It was at the next meeting, in the fall of 1982 at Bell Labs in Princeton, NJ, that efforts began to organize the ADUS group and an executive committee was appointed. In the years to follow, an effective, though at times strained, communication link between Apollo and the ADUS users group was established. The original ADUS group of 70 grew to 3,000 in 1987 and a now maintains a current membership of approximately 7,000.

ADUS is currently the largest and probably the most unique workstation user group in existence. Its membership has diverse interests, as you might expect from workstation users who have access to many different types of applications for the hardware platforms they use.

Paradoxically, this diversity has enhanced the closeness of the group, and we have recognized the necessity of intergroup communication. Through E-mail, the internet, faxes and phone calls, as well as the yearly conference and many local user group chapter meetings, we keep in touch to share problems, fixes and programs.

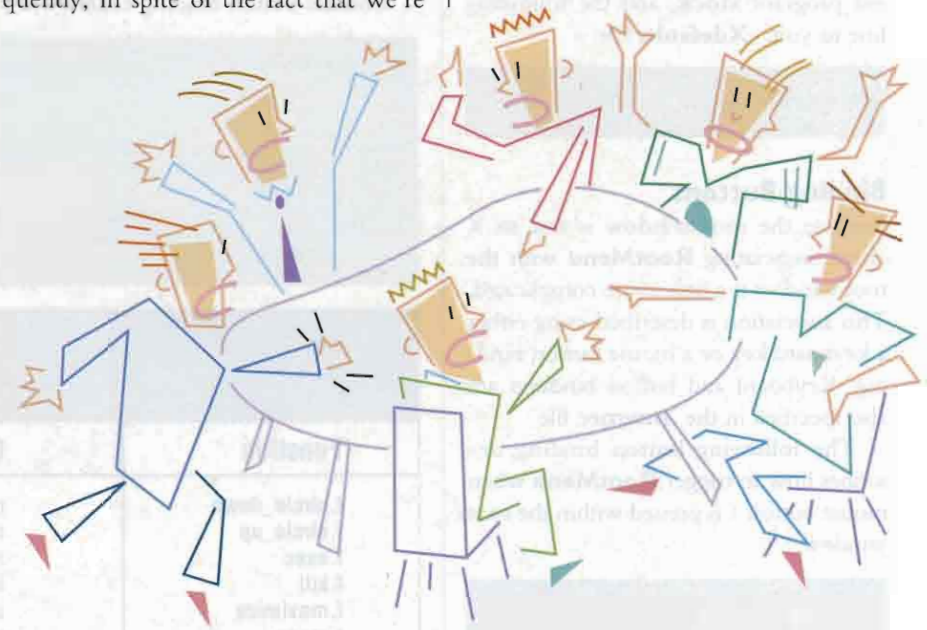
Another means of communication is the newsletter, *The ADUS RING*. Established in 1984, it is now a quarterly publication for ADUS members.

An Active Role

ADUS resembles the computer networks that bring us together in the sense that we all communicate freely and frequently, in spite of the fact that we're located in different cities and countries around the world. Most of us feel that the Apollo networking environment we were introduced to in the beginning of our workstation careers is the best networking solution in the industry for interworkstation communications. There's an almost religious following for Apollo token ring and Domain/OS within the group. Yet we look to our future with HP; and more important, we try to mold the future.

Instead of attending meetings just to see what we'll be offered in the next release of hardware or software, we dissect what we are told, critique it, and as a group, express our thoughts back to HP to ensure that our needs are well met. This group has perhaps the most successful track record of any user group for changing the strategies proposed by the company we patronize.

The next ADUS annual meeting will be held in conjunction with the August Interex show in San Diego. The joint conference will allow HP-UX workstation users to meet former Apollo, now HP Apollo, workstation users. We hope the meeting will be mutually beneficial.



Go Ahead, It's Good For You

Attending your local users group meetings, as well as the yearly conferences is a cost-effective way to gather good,

useful information. I can't believe it when I hear managers say they can't afford to send a user, programmer, or system administrator to a conference. The truth is, as an Apollo user, you can't afford not to go. There are few training sessions that can compete with the educational value of a three or four day conference. To prove my point, let me offer a few technical tips I picked up at recent user conferences.

There are few training sessions that can compete with the educational value of an ADUS conference.

Out of the FRAUG's (Front Range Apollo/HP Users' Group) January meeting held in Colorado comes yet another undocumented Display Manager command (brings back memories of the **ww** command). The command is **trcv**, and it was brought out by an unknown techie. It brings up a Display Manager read window with a vertical left side pane that contains line numbers. Talk about a time saver for many users, this is one of those conveniences that once you have it, you wonder how you ever lived without it.

There is also a **trce** command to bring up an edit window with line numbers. Don't ask what the "tr" stands for—I haven't the slightest idea; "ce" and "cv" are of course create edit and create view, respectively.

At the same meeting, a representative from Interleaf gave a presentation about that company's next release. This talk included demonstrations and discussions of features that surely will save a great deal of time when the users attending install the new release and are already aware of it's features. This is just one example of how time spent at a user group meeting or technical conference is easily recouped.

Prior to attending the FRAUG's meeting, I had thought that if you had a token ring board installed on your Series 400, it would be the primary network board. I've now learned that there is an off-line (MD) command called **pnet** that you can use to set the primary network. The drawback, because of a slight microcode problem, is that you have to boot in service mode to make it stick. But this is still better than not being able to use the Ethernet as primary network at all.

A real timesaver for system administrators is the reboot option to **/etc/shutdown**. As a system administrator, it's common to copy a tree to a node then shutdown and reboot. There really are more cost-effective things for administrators to do than watch a copy happen so that you can reboot. The **/etc/shutdown** command accepts both time to shut and reboot options so you can set the reboot to happen 10 minutes in the future and go on to fix other problems. If you leave the node logged in, you've got a security hole. With **/etc/shutdown**, you can put the copy in the background, set the reboot time, log-out and leave for other fires.

To sum it up, there's an incredible wealth of knowledge that can be tapped at these meetings, from timesavers, to security issues, to hearing that someone already wrote the program you were about to dedicate 200 manhours to writing, that make attending a sound business practice.

As for the future, ADUS will be here to support the users of HP workstations, whatever operating system they run, and whatever processor they run it on. We hope to continue to shape the future as the future needs shaping. With all the decisions HP needs to make regarding OSF, Domain/OS, HP-UX and the new hardware platforms, we figure they'll welcome our guidance.

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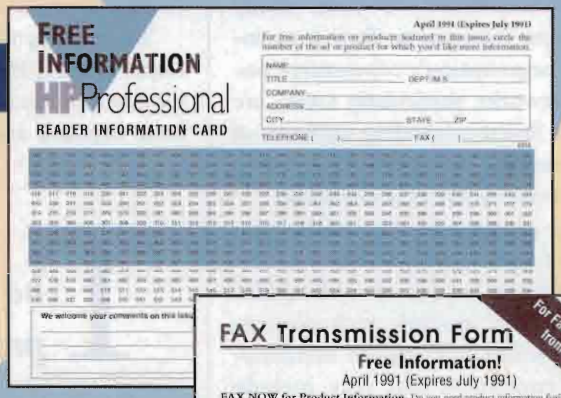
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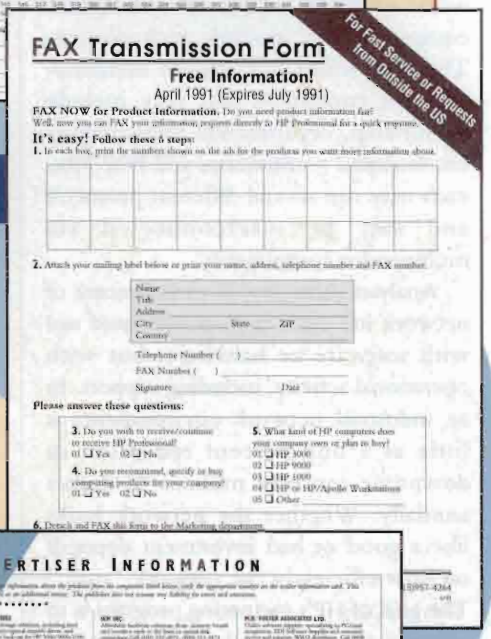
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FIELD SERVICE

Ron Levine

HP's Affiliate Support Program Protects Multivendor Networks

Perfect Partners

The increase in computer networks reflects a basic reality that efficient information flow is essential to an organization's competitive position. Networks, particularly LANs, are one of the fastest-expanding segments of today's computer industry and supporting these networks poses new challenges.

A large proportion of corporate networks, whether LANs or wide area networks (WANs), consist of multivendor equipment and multiple technologies. These networks link diverse combinations of computers that may include mainframes, departmental minicomputers, technical workstations and PCs. Plus, each may run several different protocols and may be interconnected via multivendor components.

Analyses show that 40 to 60 percent of network life cycle cost, is associated not with software or hardware, but with operational activity, including support. In an industrial network environment, as little as a one percent reduction in downtime can save millions of dollars annually. Whether the network looks like a good or bad investment depends on how efficiently the network "runs." The goal of HP's partnering program is to provide the best method of customer support possible to ensure that the user's network *is* a good investment.

Partners In Service

It's often difficult for a computing and communications system user to determine exactly which vendor's equipment has caused a network fault and, therefore, which vendor to call to correct it. With the HP Network Support Affiliate Program, which includes support services from HP and several cooperating service vendors whose components are often attached to HP networks, that quandary is removed. One call to HP or its affiliate (cooperating vendor) is all it takes.

To provide the most effective customer service, HP and its affiliates work together to locate any trouble spot in your network and resolve the problem quickly. When you want support services from these "partnering" vendors, all you need to do is call any member vendor and together they'll follow the problem from diagnosis to resolution.

The affiliate program recognizes that one vendor no longer can support all customer needs by itself.

One Program, Many Vendors

HP's approach differs from other major manufacturers in that the customer maintains independent service contracts with HP and the affiliate vendors; it is not one "master" agreement with one provider who controls all site service. The user is free to call either HP or the affiliate when a network problem occurs. However, if a customer prefers one consolidated contract with HP, this also can be provided, according to Roger Costa, general manager of Hewlett-Packard's Product Support Division.

The affiliate program is the next step up from multivendor support for customer problem solving. Multivendor support generally handles hardware problems; network support handles software and carriers; the affiliate support program handles it all. The affiliate program recognizes that one vendor no longer can support all customer needs by itself; this is the reality of today's data processing environments. And, HP understands this.

The customer holds support contracts with HP and the affiliate vendor(s); the vendors' relationships are proactive, with a standard set of operational procedures determined in advance. Typical services provided include:

Technical Assistance: The exchange of information via telephone or by reference to technical manuals is a basic service. It is intended to provide the affiliates and HP with timely access to information about each others' products and services, product configurations and operation. Technical assistance can help in configuration checkout, fault isolation, and even solving identified problems for customer networks that contain both affiliate and HP products and services.

Coordinated Problem Resolution: This is a fancy way of saying that affiliates and HP will notify each other directly when either suspects a fault with the other's equipment or service. The vendors will mutually confirm the diagnosis and cooperate to resolve the customer's problem. Remedial action is taken by the party whose portion of the network is faulty. The coordinated problem resolution standard procedures (which were decided when the working relationship between the vendors was agreed upon) are drawn on when needed for fault isolation, identifying action responsibility and follow up on a mutual customer's network problem.

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Escalation: The vendors' upper management needs to know when problem solving requires more resources. When a customer problem is more serious than usual or needs additional attention, the escalation phase insures that both service parties have a comparable perception of the critical nature of the problem. The escalation procedures offer a structured way for affiliates and HP to coordinate their own escalations with each other.

"If things work as designed, the customer never sees any of this. It just happens," says Costa. "In the mid-1980s," he notes, "HP realized that standards-based, open systems meant commitment not only to products, but also to support services." According to Costa, HP was one of the first major vendors to realize the field service implications of multivendor computing environments. "HP introduced its affiliate servicing concept in 1987 and has continually and aggressively expanded it to bring in additional vendors," Costa adds.

Satisfied Customers

As networks grow larger and become more widespread, connecting regions and even continents, they play an increasingly strategic role for businesses. Yet the network, if it performs its job well, is invisible. The network affiliate program, like the network itself, is designed to be transparent. When it's working, the customer doesn't notice it, and his network problems get fixed quickly.

In practice, total support for a whole complex network requires the cooperation of all vendors involved. The network affiliate program recognizes this fact. The objective is to protect the network user from "finger-pointing" by the various vendors and to solve their mutual customers' network problems as quickly as possible, without further customer involvement.

Their are specific service performance benefits derived from the cooperation of the affiliate vendors. Service is improved because:

- The aid relationship between vendors is reciprocal.
- There is one focal point of interface within each company.
- Stocking of "foreign" parts is not required by any member vendor.
- Repair of either party's equipment by the other is not required.
- Little training is needed for preliminary troubleshooting.
- There is coordination for fault isolation and problem resolution for on-site repair.
- Better customer support is received from all involved.

HP And Affiliate Relationships

HP selects affiliate vendors carefully, by using a multistep ranking system. After identifying all potential partners in the various segments of the network industry, the vendors are ranked according to specific criteria. The more criteria on which a vendor ranks favorably, the higher its overall ranking. For example:

- Vendor/HP Service Synergy — Would a relationship with the vendor allow HP to offer more value to its customers? Is its support philosophy complementary with HP's? For instance, a vendor with widespread onsite capability and a centralized technical assistance and dispatch facility would be ranked much higher than a vendor with no field force and a "return to factory" support philosophy.
- Customer/Field Demand — Vendors with whom customers are requesting that HP cooperate are ranked highly. Not only is the value of such a vendor relationship to customers assured but it demonstrates HP's responsiveness to customer needs.
- Installed Base Overlap — Vendors with network products already in use by HP customers rank higher than vendors with little presence in HP's installed base. Not only is it easy to demonstrate the value of the relationship to customers when selling HP Network Support, but the presence of identified mutual customers makes the vendor much more willing to cooperate.
- Vendor Reputation — Vendors who are well known, have large market share, good customer support perception, or have a reputation for leading-edge tech-

nology, rank high because association with them improves the customer's perception of HP as a major force in the network support market.

After HP examines these criteria, a vendor affiliate development cycle begins that includes these four steps: investigation, development, implementation and management.

The primary objective in the investigation step is to identify areas for cooperation between the vendor and HP. The vendor's business is profiled and summarized and a determination is made to pursue a relationship with the vendor. The vendor's management commits to developing the relationship.

In development, the goal is to formulate the operations process that HP and the vendor will follow when working together, specify the terms and conditions of the working relationship, and identify the activities for implementation.

Implementation occurs when the working relationship is introduced to customers and the field organizations. This step consists of developing an implementation plan, training the Response Center and other field entities to work with the vendor (and them with HP), completing an operations process alpha test, and internally and externally publicizing the relationship.

The management step monitors the relationship and develops new activities that further enhance the value of the relationship to HP and its customers.

"These relationships take a lot of work and an ongoing effort to provide real value to our customers," states Costa. The Network Support Affiliate Program boasts a number of successful ongoing vendor relationships, including industry leaders such as AT&T Paradyne, Dynatech Communications, Equinox Systems, Gandalf Technologies, Micom Communications, Network Equipment Technologies, Northern Telecom, Chipcom, Siecor Electro Optic Products, and Vitalink Communications, to name a few.

The transfer of technologies between affiliates and HP technical support organizations provides the technical understanding of each other's products necessary to quickly diagnose a problem.

Comprehensive maintenance records aid in the detection of future problems. The alert and monitoring system used between vendors provides visibility of network problems to HP and affiliate management, ensuring cooperation among field people. The goal of all this, of course, is that your next network problem will be handled immediately and corrected in a timely manner — no matter which vendor you call.

Would you like to continue to see articles on this topic?
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NP

NEW PRODUCTS

Keyword Ships KEYpak HP MPE/HP-UX

Keyword Office Technologies Ltd., announced the shipment of KEYpak HP MPE/HP-UX. This document interchange software allows PC, terminal, Mac and workstation users with different document editors to exchange documents in editable form. KEYpak is integrated with electronic mail making revisable document interchange transparent and intuitive. KEYpak keeps track of user profiles ensuring that the documents are delivered to their destinations in the appropriate formats.

KEYpak HP MPE/HP-UX is available on all HP business computer systems. PC users connected to MPE or HP-UX hosts can share documents without the need to standardize on a common word processing package.

KEYpak is also available for IBM VM and LAN environments.

Contact Keyword Office Technologies Ltd., 2816 Eleventh St., N.E., Calgary, Alberta T2E 7S7 Canada; (403) 250-1770.

Circle 400 on reader card

Micro Focus COBOL/2 V1.2 Available For UNIX

Micro Focus announced Version 1.2 of the Micro Focus COBOL/2 compiler for UNIX. This version includes the Micro Focus COBOL/2 native code generating compiler and programmer productivity tools, including the Micro Focus ANIMATOR visual debugger, in a bundled system for the production and maintenance of powerful COBOL applications.

Micro Focus COBOL/2 V1.2 is available directly from Micro Focus for AT&T UNIX System V.4 and SCO UNIX operating systems on 80386 workstations. It also will be available for other platforms from computer manufacturers who resell Micro Focus COBOL/2 products.

Version 1.2 features ISAM File Data Compression, ISAM File Key compression color support, CONTROL phase of ACCEPT/DISPLAY, support for wide terminals, support for attached printers, COBDATA environment variable support and more.

Contact Micro Focus, 2465 E. Bayshore Rd., Suite 400, Palo Alto, CA 94303; (415) 856-4161.

Circle 397 on reader card

Oak Grove Systems Introduces LZR-16

Oak Grove Systems, a supplier of compatible printer systems for the HP 3000 and 9000 systems, announced the LZR-16.

The LZR-16 is an HP-compatible laser printer, and its compatible PCL-IV command set enables all HP LaserJet applications to print at 16 ppm. LZR-16 also supports line printer mode (256X emulation) with vertical forms control as well as applications such as those utilizing Label Card, Suspend/Resume Spool, Spook and Native Spooler.

Interfaces available are the HP-IB system interface for 256X emulation in either long or short line options; ADCC (serial) remote spooled application for HP 2934 emulation; Ethernet, thick and thin wire, supporting Novell and Microsoft LAN manager.

Price is $6,995.

Contact Oak Grove Systems, 885 Oak Grove Ave., Menlo Park, CA 94025; (415) 325-1500.

Circle 399 on reader card

Software Store Distributes UNIX Software

Highland Software Inc. announced a marketing program called Software Store — CD-ROMs containing collections of UNIX application software packages and text and graphics exhibits from multiple independent software vendors.

The CDs are distributed to users of workstations based on UNIX, computer company sales offices and computer distributors for shopping, evaluation and the purchase of software.

Highland produces the Software Store as three independent CD-ROM families: the Software Store for HP for HP workstations; the Software Store for ULTRIX for DEC workstations; and the Software Store for Sun for Sun Microsystems workstations and compatibles.

Contact Highland Software Inc., 1001 Ewell Ct., Palo Alto, CA 94303; (415) 493-8567.

Circle 382 on reader card

HP, DEC and Sun users now can test drive and purchase software through Highland Software Store CDs.

DAT's Better

With BackPack you can put twice as much data on a DAT and enjoy high-speed restore on MPE/V and MPE/XL.

With its 1.3-gigabyte capacity, many HP 3000 shops will find that a full system backup fits on a single DAT tape. But for backups exceeding 1.3-gigabytes, *lights out* backup won't be possible. Without BackPack.™

Proven at over 4,000 sites worldwide, BackPack now supports DAT.
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CIRCLE 140 ON READER CARD

TAPES PLUS Automates Tape Library Functions

Unison Software announced TAPES PLUS, a software system for the HP 3000 Classic and Spectrum computers that automates each tape library function, including cataloging, selecting, labeling, scratching and reporting.

HP is modifying MPE to provide hooks for labeled tape processing. Using these hooks, TAPES PLUS provides enhanced support for labeled tape operations by automatically informing MPE of the specific tape reels to mount when reading or writing a tape set, automatically checking each tape against a "scratch list" before writing on it and cataloging each tape used for output in the tape library database.

HP's enhancements to labeled tape operations enables TAPES PLUS' mainframe-like tape management features to be integrated with MPE.

Contact Unison Software, 675 Almanor Ave., Sunnyvale, CA 94086; (408) 245-3000.

Circle 396 on reader card

CPL Systems Announces SOS/3000 Performance Tool

CPL Systems announced the SOS/3000 performance tool for the HP 3000.

SOS/3000 features plain English recommendations; is fully featured, not a "cut-down" version; and offers excellent graphics facilities including download of historical data to Lotus 1-2-3.

Prices range from $1,595 to $2,595.

Contact CPL Systems, 26 Knowle Ln., Sheffield S11 9SH, United Kingdom; +44 742 620242.

Circle 395 on reader card

LL'SPIRIT Automates PowerHouse Applications

Singapore Technologies launched LL'SPIRIT 6.0, an intelligent tool that completely automates your PowerHouse applications development from prototyping to development and maintenance, providing online impact analysis and extensive documentation. It also allows you to create ad hoc reports.

LL'SPIRIT developer generates an entity-relationship map to verify design correctness. It also generates QUICK and QUIZ prototype PowerHouse programs or a single program based on the file definition in the data dictionary and checks the quality of QUICK programs.

LL'SPIRIT Re-engineer helps document your PowerHouse programs using wildcard access or used file by last accessed date. It generates customized manuals and highlights programs and files affected by design changes.

LL'SPIRIT Scout is a reporting tool that allows any user to generate simple detailed reports. A user friendly descriptive interface makes it easy for you to select and create new items for reporting. In addition, LL'SPIRIT implements security features that protect the integrity of the data.

Contact Singapore Technologies, 260 East Grand Ave., Suite 18, S., San Francisco, CA 94080; (415) 875-6636.

Circle 398 on reader card

ORBiT Introduces BACK UP+/XL

ORBiT Software announced BACKUP+/XL, a high-speed online system backup utility for HP 3000 computers running MPE XL.

Features include selectable 2:1 or 4:1 data compression; data encryption; unattended backup through deferred or disk-to-disk store; support of DAT, 8mm and optical disk drives (single device or multiple devices in parallel); network backup; and DBSTORE-compatible backup of multiple databases. Backups may be performed online while users continue working, allowing uninterrupted read and write access during the backup.

Contact ORBiT Software, 319 Diablo Rd., Danville, CA 94526; (800) 666-5463; (415) 837-4143.

Circle 394 on reader card

Asterix Now Available On Three Platforms

Applix Inc. released Version 1.1 of Asterix, an open suite of desktop productivity tools for UNIX workstations and X-terminals.

Asterix is available on three platforms: HP 9000 Series 300 workstations, Sun-3 and MIPS R3000 RISComputer systems. Asterix is already available on SPARC-based and DECstation/DECsystem RISC workstations and X-terminals.

Asterix includes advanced word processing, integrated graphics, a set of macro tools, and an optional graphical spreadsheet. Asterix architecture incorporates compound document technology with live links among Asterix applications and an extension language facility (ELF).

Version 1.1 expands Asterix's compound document capabilities to include audio for voice annotation, color pixel editing, and live links to third-party applications. It also provides fax support via macros and adds interprocess communications capabilities to the Asterix ELF.

Contact Applix Inc., 112 Turnpike Rd., Westboro, MA 01581; (508) 870-0300.

Circle 393 on reader card

Reflection Network Series Merges Hosts, LANs

WRQ's Reflection Network Series is designed to integrate all the disparate parts of an information system into a smoothly functioning whole.

The four products in the series — The LAT Connection, the Telnet Connection, the TCP Connection and the 3000 Connection — connect PCs to a variety of host computers while providing concurrent access to Novell and NDIS-compliant LANs.

The 3000 Connection ($299) gives a single PC with one hardware connection the ability to communicate simultaneously with an HP host, a VAX host, a UNIX host, a Novell server and a NDIS-compliant server.

The TCP Connection ($199) supplies a TCP/IP stack, a Telnet layer for running Reflection's emulator to a variety of hosts, and a LAT portion for communicating with VAX/VMS hosts. It gives the user access to high-speed FTP file transfer from within the terminal session.

The LAT Connection ($99) provides a basic terminal connection over Ethernet to one or more VAXs.

The Telnet Connection ($99) works with networking protocol stacks from all the major TCP/IP manufacturers to provide access to a variety of hosts, including systems from HP and Apollo. The Telnet Connection makes FTP file transfers available from within the host session.

Contact WRQ Inc., 2815 Eastlake Ave. East, Seattle, WA 98102; (206) 324-0350.

Circle 391 on reader card

Robelle Offers Native-Mode Suprtool

Robelle Consulting announced Suprtool, which uses the technology of multirecord access (NOBUF/MR) to achieve large reductions in CPU overhead, 1/8th that of serial Dbget in many cases.

On MPE XL systems, Suprtool can make serial reads up to eight times faster. It enables users to perform time-consuming DP

functions with a few simple commands. Users can restructure and print fields, edit databases interactively and access multiple datasets with Suprlink.

New commands include Listredo, Redo and Do. Price is $4,000.

Contact Robelle Consulting Ltd., Unit 201, 15399-102A Ave., Surrey, B.C. Canada V3R 7K1; (614) 582-1700.

Circle 390 on reader card

Pinnacle Provides Mass Storage For HP 9000/300s

Pinnacle Data Systems Inc. announced availability of the HPX Series mass storage subsystems for HP 9000 300 series workstations and fileservers.

The Pinnacle HPX Series subsystems are based on genuine HP SCSI disk assemblies. They have a rated MTBF of 150,000 hours.

These 16.5 ms average access drives include detailed installation instructions for the HP 9000 300 series and full installation technical support. Systems are available in 660-MB and 1.3-GB (formatted) configurations in both shoebox enclosures and cabinets suitable for placement HP system towers. Optical, DAT and 8mm drives are also available.

Single-quantity pricing for the 660-MB shoebox unit is $2,495. The 660-MB tower mount unit is priced at $2,895. The 1.3-GB units are priced at $3,295 for both tower mount and shoebox styles.

Contact Pinnacle Data Systems Inc., 1350 W. Fifth Ave., Columbus, OH 43212; (614) 487-1150.

Circle 387 on reader card

Proactive Systems Enhances FANTASIA

Proactive Systems announced several enhancements to the FANTASIA laser printing software package for HP 3000 users.

Enhancements include a new Q-GEN report writer interface so the user can produce typeset, laser-printed reports from a menu-based user interface; availability of the forms required by the ASK MANMAN system in FANTASIA format; an upgrade path for 2680 users to the new HP high-throughput laser printers; improved documentation and menus; and an improved version of FANTASIA PC Forms Designer that contains new facilities such as the ability to import ASCII files, the ability to "fill in" the forms on-screen, configurable paper size and many other extensions to the power and flexibility of the software.

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

Circle 385 on reader card

Software A&E Introduces SNAP Application Template

Software Architecture & Engineering Inc. (Software A&E) introduced the Strategic Networked Application Platform (SNAP) template.

SNAP is a CASE tool that speeds the development of distributed applications. The SNAP template accelerates the development process by providing users with ready-made software components — including an object-oriented data model — that comprise up to 85 percent of an application. An application is completed by "filling in" the template.

The components in SNAP are an object-oriented data model, a graphical user interface, links to networks and links to relational databases such as Oracle's RDBMS.

The SNAP template operates on workstations from HP, IBM, DEC, Sun, Sequent and DG Aviion.

Contact Software A&E, 1600 Wilson Blvd., Ste. 500, Arlington, VA 22209-2403; (703) 276-7910.

Circle 381 on reader card

LANSprint Increases LAN Printing Speeds

Digital Products announced LANSprint, an add-in board for Novell's Netware 2.15 that increases the printing speed of graphic print files over a LAN by up to 100 times.

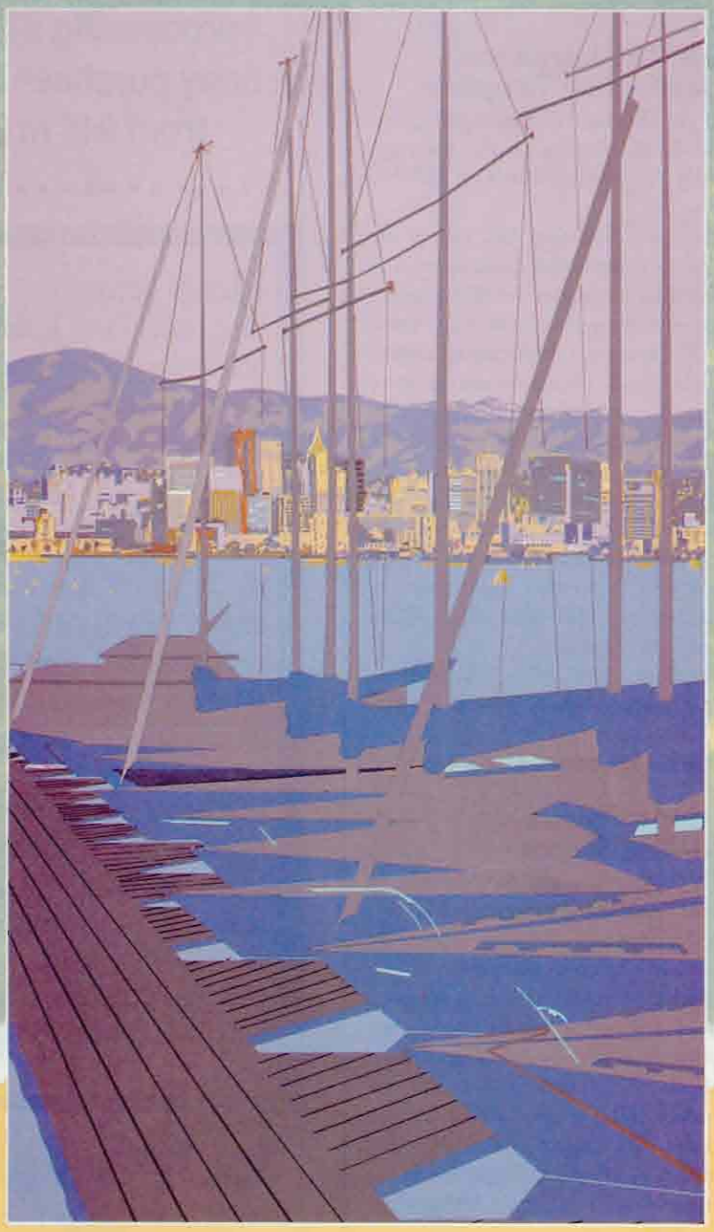
LANSprint increases the maximum speed at which a file server or remote workstation can print graphics data and download fonts from about 1,000 to 5,000 cps to approximately 100,000 cps. LANSprint also improves the CPU power of the file server or workstation by offloading 90 percent of the processing load a file server or workstation requires to print.

LANSprint is compatible with all network wiring topologies including Ethernet, thin wire Ethernet, Token Ring and ArcNet.

Pricing for a single-port version of LANSprint is $495; $695 for a dual-port version.

Contact Digital Products Inc., 108 Water St., Watertown, MA 02172; (617) 924-1680; (800) 243-2333.

Circle 375 on reader card



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CIRCLE 150 ON READER CARD

Cognos Brings PowerCASE To OS/2

Cognos announced a new version of its CASE software, PowerCASE, designed specifically for the OS/2 platform.

The OS/2 version of PowerCASE aids analysis and design and automates code generation, documentation and maintenance of large business applications for midrange computers from HP, IBM, DEC and Data General, both proprietary and UNIX-based.

PowerCASE supports several proprietary file structures including HP's IMAGE and TurboIMAGE and DEC's RMS.

PowerCASE for OS/2 is priced at $15,000 for the initial license.

Contact Cognos Inc., 67 S. Bedford St., Burlington, MA 01803-5164; (617) 229-6600.

Circle 376 on reader card

ZIM 4.0 Features New Windows, Action Bars

Sterling Software announced the release of ZIM 4.0, the latest version of ZIM software, a fully-open advanced 4GL/RDBMS application development environment.

ZIM 4.0 features new windows, action bars and pulldown and pop-up menus. It also features extended forms capabilities, custom help and error messages, cursor highlighting and extended action keys. A display screen painter, extended data dictionary, easy-to-use toolbox and foreign directories provide users with the flexibility required to create customized applications.

Contact Sterling Software, 36 Antares Dr., Ste. 500, Ottawa, Ontario K2E 7W5; (613) 727-1397.

Circle 379 on reader card

Development System Designed For HP Workstation

Ariel Corp. introduced the DTK-300, a complete development system for Motorola's 24-bit DSP56001 digital signal processing chip that is designed for the HP 9000 Series 200/300 engineering workstations.

The DTK-300 occupies a single slot in the computer, and features versatile digital inputs and outputs, and comprehensive DSP development software. It allows HP 9000 users to address applications such as array processing, music synthesis and recording, speech recognition, test and measurement, industrial automation, mixed I/O and signal processing algorithm development.

The DTK-300 is priced at $4,995.

Contact Ariel Corp., 433 River Rd., Highland, Park, NJ 08904; (908) 249-2900.

Circle 377 on reader card

Logicraft Releases Software For 386Ware DOS Server

Logicraft announced the software version 3.71 for its 386Ware DOS server product line. Added features include support for the HP 9000/400 series, Intel Model 302 and 402 workstations, DECwindows, OSF/Motif, VT 420 terminals, MACX support and the HIMEM.SYS extended memory manager. Additionally memory capability has been expanded to a maximum of 64 MB per server.

The HP 9000/400 series workstation is the newest member on the list of UNIX platforms supported by Logicraft. Adding 386Ware to the 400 series provides users with the benefit of a simultaneous MS-DOS and HP-UX environment and provides access to Novell networks.

Logicraft's 386Ware DOS servers now support 16 MB of RAM per 386/486 processor card. Each server supports up to four processor cards totaling 64 MB of RAM. Current customers can add the 386/486 processor cards to existing DOS servers.

Contact Logicraft Inc., 22 Colton Rd., Nashua, NH 03063; (603) 880-0300.

Circle 368 on reader card

Quest Offers Spoolfile Transfer Support

Quest Software announced that its NBSpool product is now available for HP-UX environments. NBSpool and NBSpool/UX support high-speed, bidirectional transfer of spoolfiles for MPE V, MPE XL, HP 9000 Series 800 and 300 computers.

Additional features include automatic spoolfile transfer, dynamic failure recovery and automatic spoolfile format conversions. Quest also completed a Novell NetWare interface for NBSpool. This allows customers running HP's NetWare/XL product to output to any printer on a NetWare PC network. NBSpool is a comprehensive spooling product that offers report distribution, online viewing of reports, direct remote spoolfile creation and full input and output spoolfile management features.

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

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ADVERTISERS INDEX

[CALENDAR]

[JUNE]

6/27-29: The Independent Computer Consultants Association is holding its 14th annual national conference at the Westin Hotel, Seattle, WA. Call (800) GET ICCA.

[JULY]

7-10: HPCUA the UK's Hewlett-Packard users group is sponsoring its summer exhibition and conference at the Scottish Exhibition and Conference Centre in Glasgow. Call 44 81 423 3313.

9-14: I.C.E. Information Computer Enterprise is sponsoring PC World Forum/Moscow the 2nd annual international computer fair and conference in the USSR, at the VDHN Exhibition Park, Moscow, USSR. Call (800) 225-4698.

[SEPTEMBER]

8-11: The Development Center Institute is sponsoring a conference, "Managing The Move To Workstation-Based Development at the Pan Pacific Hotel in San Diego, CA. Call (317) 846-2753.

27-28: The Oregon Regional Users Group (ORERUG) fall conference is scheduled to be held at the Hotel Newport in Newport, OR. Conference theme is "Back to the Beach, Back to the Basics." Call (503) 221-7123.

[OCTOBER]

4-7: CENIT Asia' 91, Hong Kong's Information Technology Fair is being held at the Hong Kong Convention and Exhibition Center, Hong Kong. Call Hannover Fairs USA, (609) 987-1202.

13-15: NTRUG, GHRUG, STRUG, BRUG and CENTEXRUG are holding their 2nd annual All-Texas Conference at the Radisson Hotel, Austin, TX. Call Terry Floyd, (512) 345-3963.

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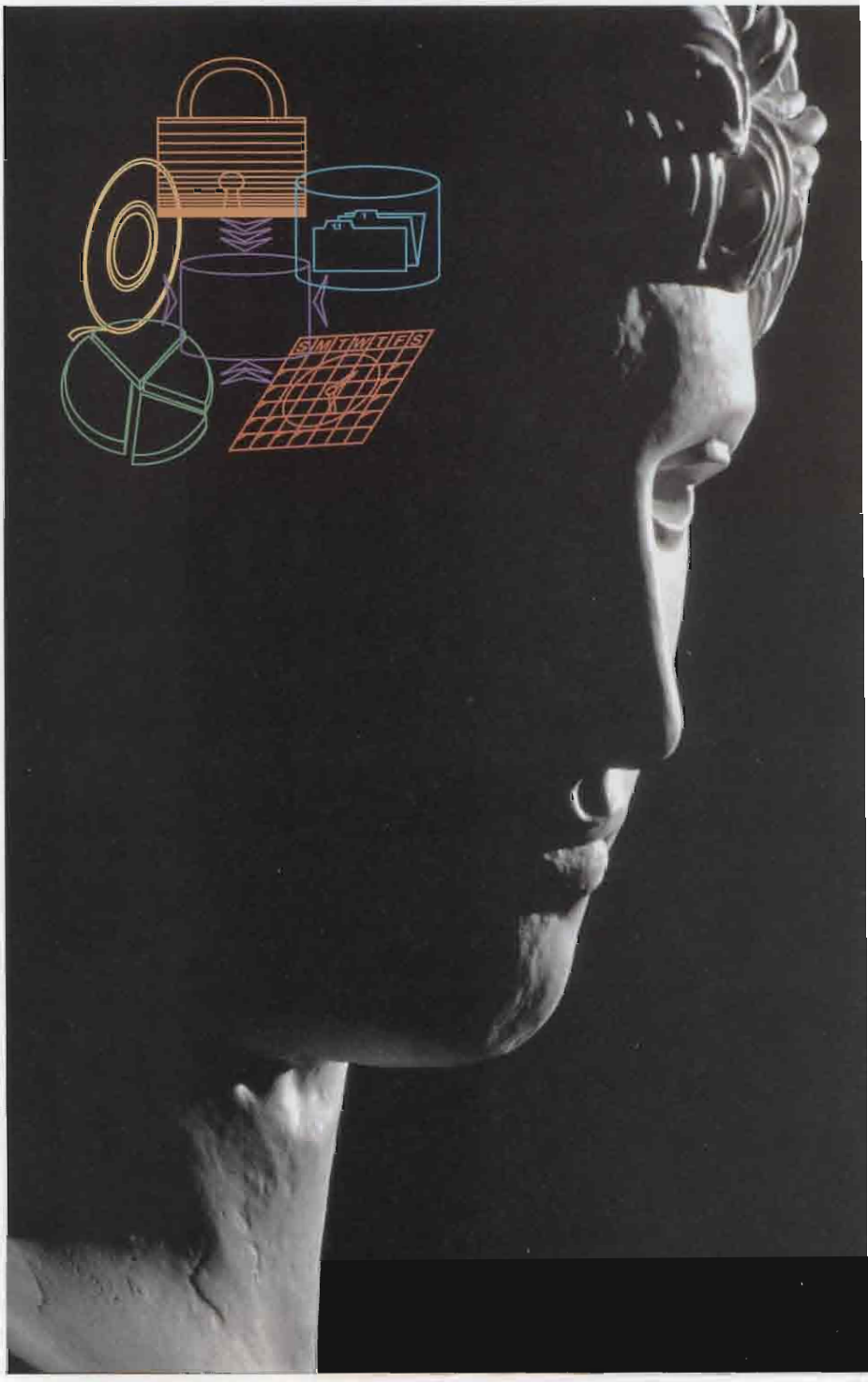

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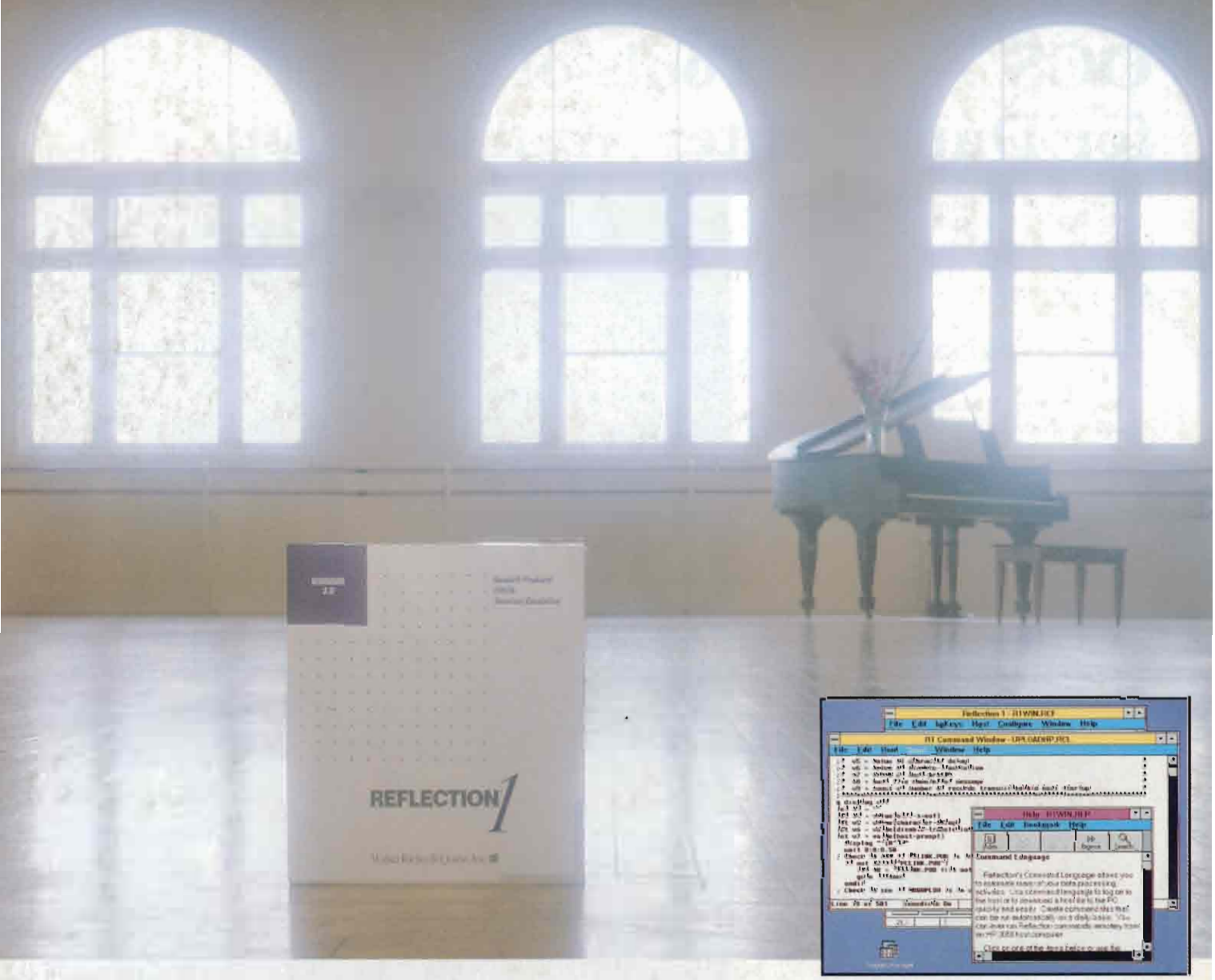

Introducing Reflection® 1 for Windows 3.0
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