

# HP

APRIL 1995

# Professional

SPECIAL SECTION

OPEN SYSTEMS FOCUS

**HP 3000-to-UNIX  
Integration**

PAGE 38

# Text RETRIEVAL

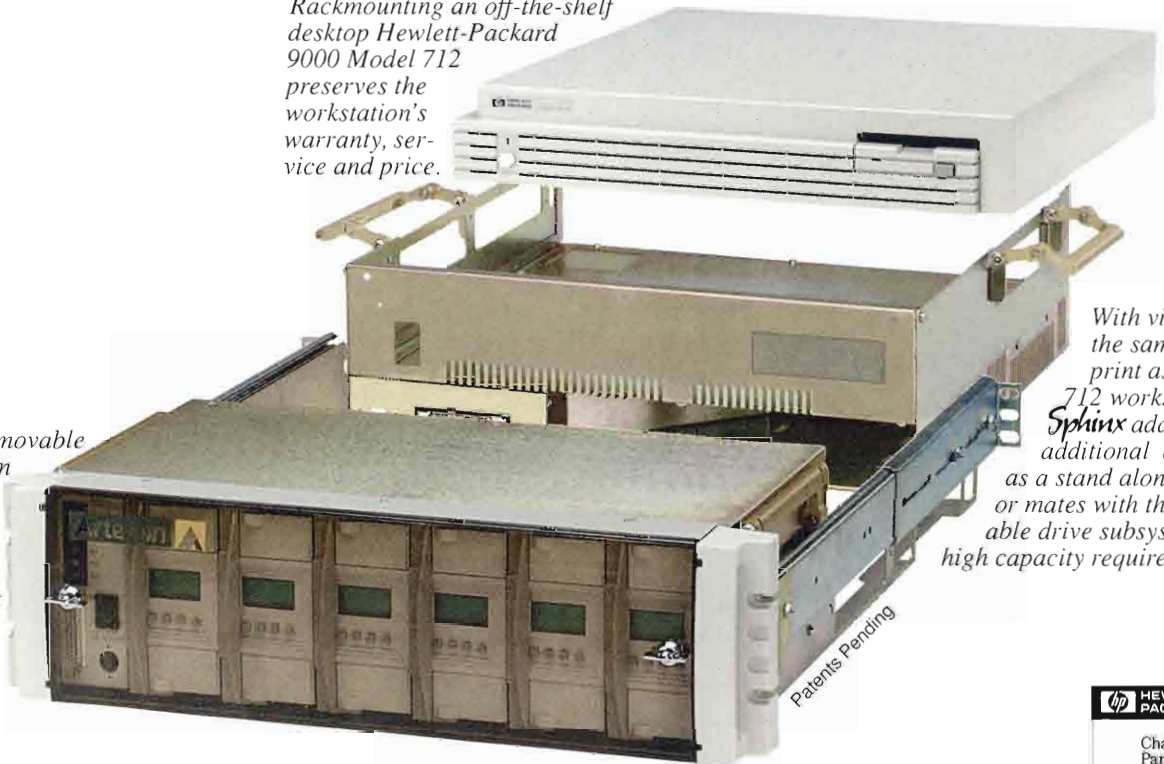


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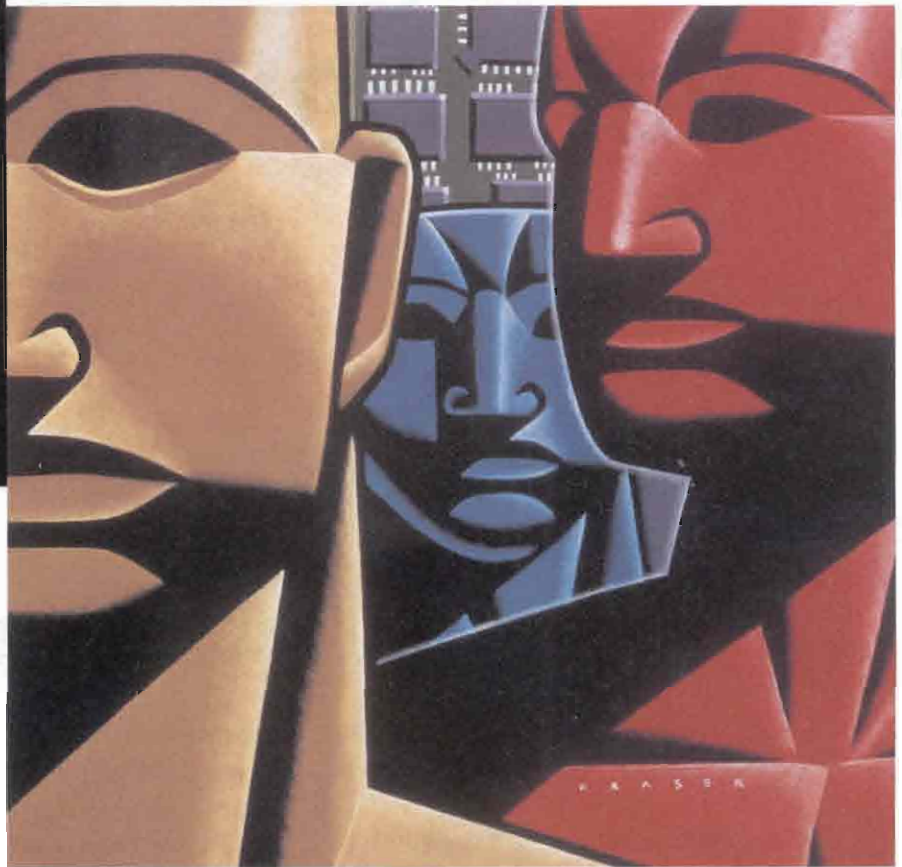
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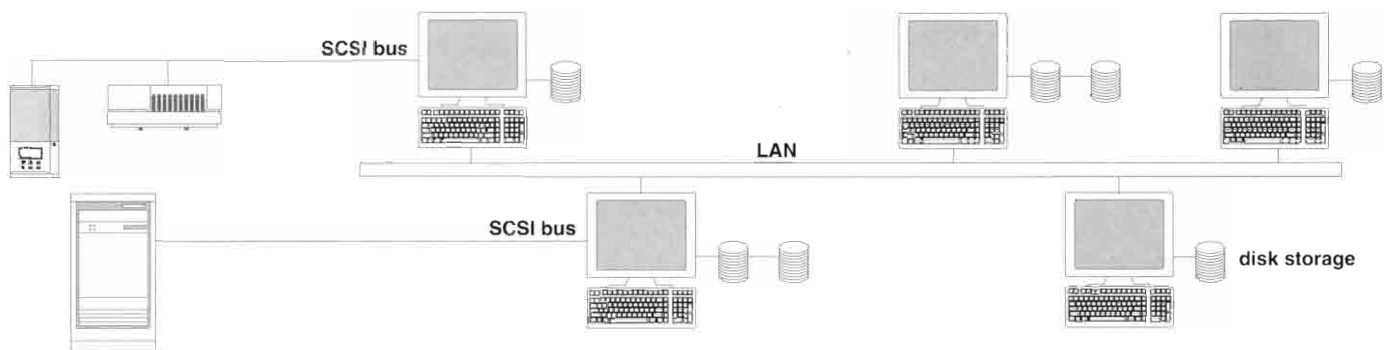
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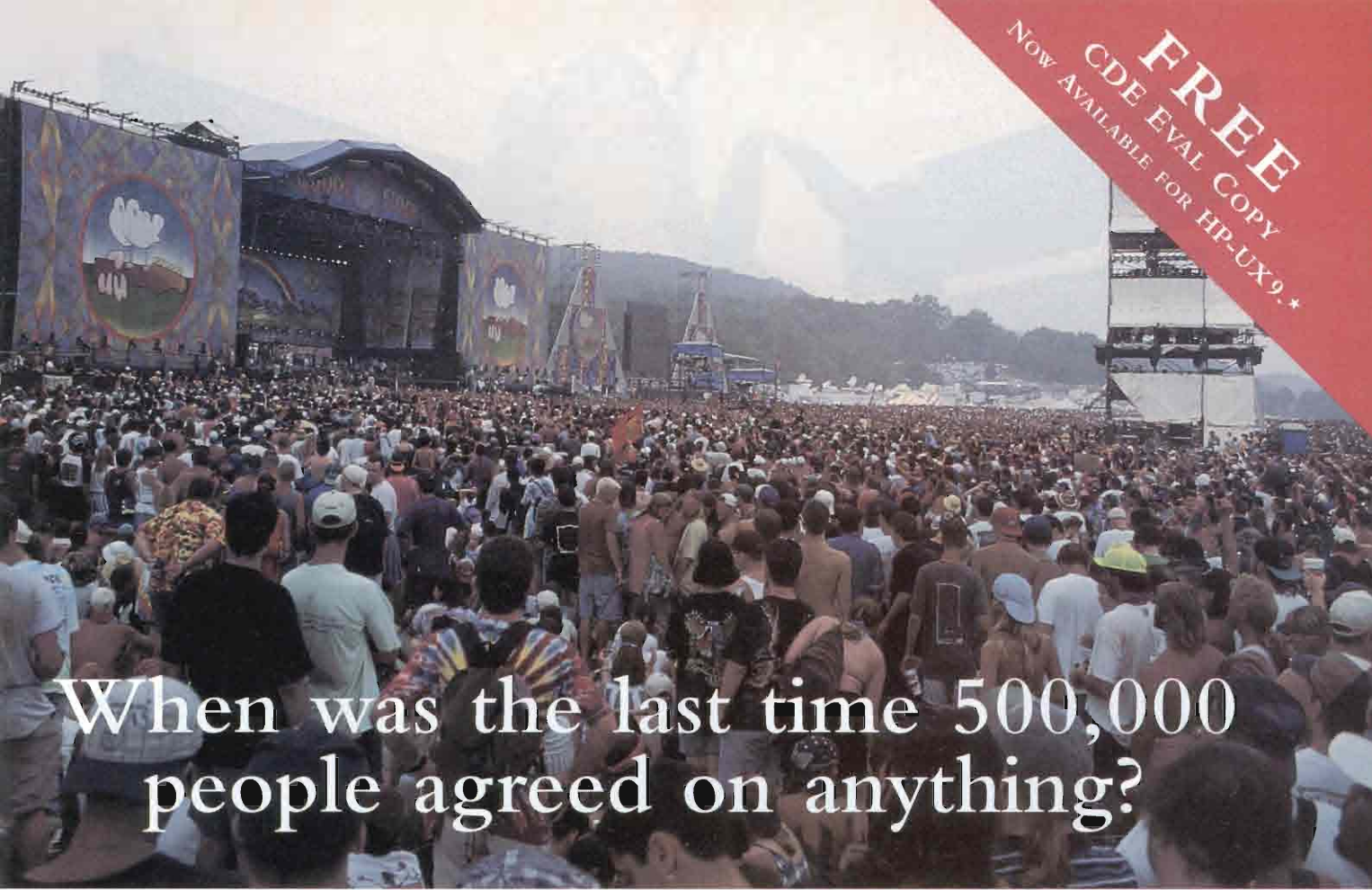
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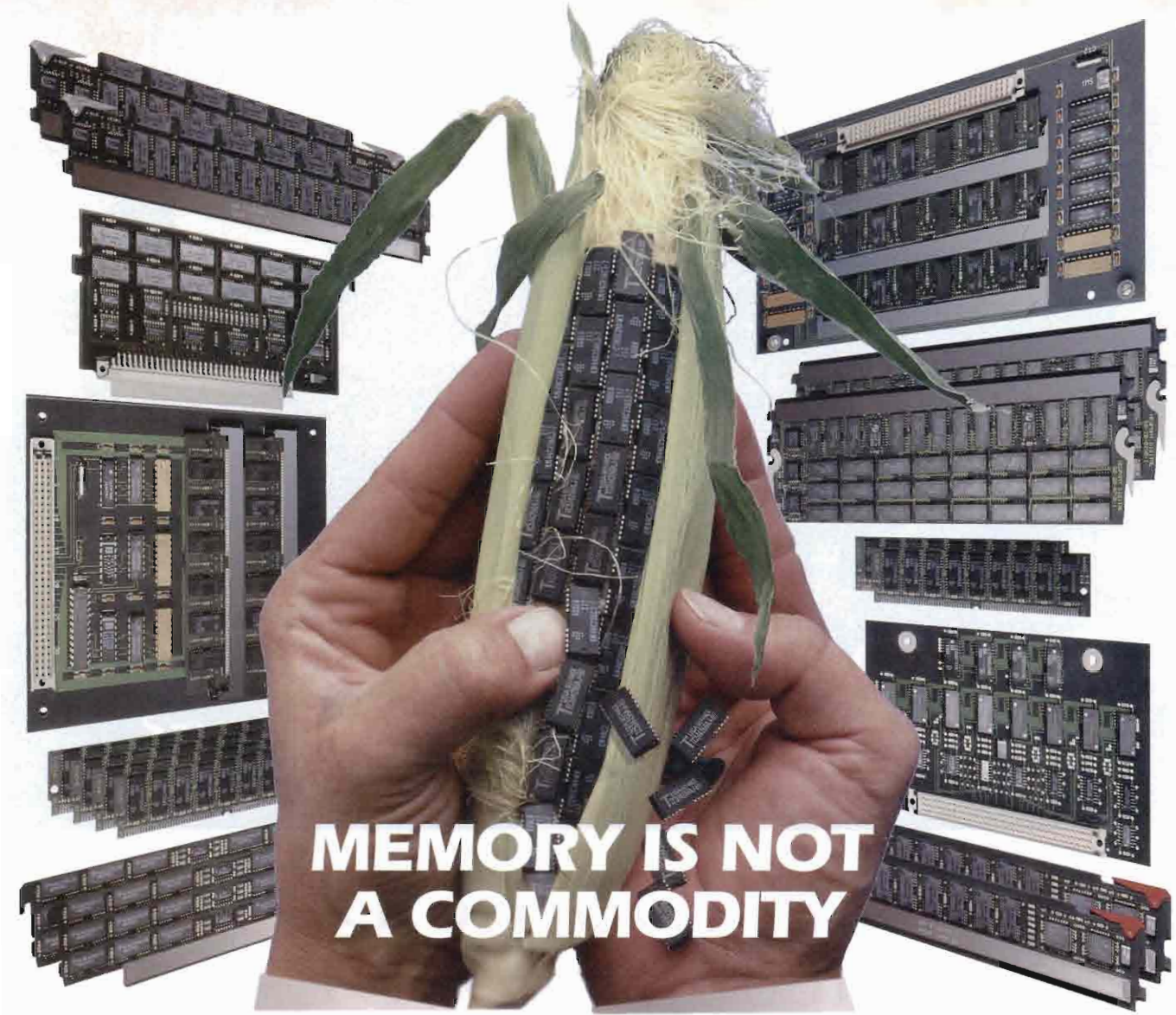


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# Faster, Faster, Sal!

## Are Users At Risk On The Industry Bus?

April 1 — “Responding to the market’s demand for network solutions that meet the customer’s increasing need for performance, Johanna Connor, Inc. unveiled five new RISC-based business computers that virtually double performance, to help companies better compete in the dynamic business climate of the 1990s. ‘Initial order levels in and outside of the United States are at the high end of our expectations,’ states an assistant general manager of marketing.”

Sounds good. You may be asking yourself, “How can I get me one of those hot new boxes?” You can’t, at least not this particular one. Actually this announcement is a combination of press releases from HP, IBM and Digital. Releases that date back from August 1987 to June 1994. Oh yeah, Johanna Connor, Inc. isn’t a real company either.

A colleague of mine recently said that the beauty of our market is that it is constantly changing. Granted they constantly announce and we constantly write about their announcements, but what’s really changing?

If the words are the same, the issues remain the same. Standards for example. “Standards are real. Standards are here to stay. They are bigger than any manufacturer ... the community has to embrace them.” Sound like the cry of today’s users? This was from a 1987 guest editorial in *HP Professional*. This guy was either way ahead of his time or this is as good as it gets.

Are our needs really different or are there just more of the same ones that need to be met faster?

When I was in the fourth grade, I had a bus driver named Sal. Between the city and suburban border line was a one-lane bridge. It was a bridge that neither municipality would take credit for, until it was declared a historic landmark.

Anyway, this bridge had a dip before it, so we all began chanting “faster, fasTER, FASTER!” as we approached the bridge. And Sal, in his infinite wisdom, would go faster and faster until we hit that dip and 40 kids became airborne within the bus. This was a thrill for eight-year olds, but looking back it was also pretty dangerous.

The question today is that in our greed for speed are business’ computing needs being met? Apparently our basic computer requirements have been defined and answered and we’re now crying “faster, faster.” Or, is it we now don’t know what we want; or if we do, can computer manufacturers deliver?

A case in point — Open Systems. That phrase is as old as Sal; however, vendors and users alike still look to it in hopes that it will prove profitable. Vendors hope it will be the product users desire, and users hope it will be the product to release them from the constraints of existing computers.

For despite it’s long and somewhat overlived life, Open Systems refuses to go away and its future remains one of the final frontiers of computing. However, one thing is emerging about the future of Open Systems and that is, Open Systems had better be able to live with its past.

For example, the HP 3000/MPE environment may or may not be the platform of choice for the next big purchase, but they will be the platforms that existing MPE users will hang on to. And they will demand that Open systems accommodate them.

So as manufacturers and speed junky users keep pushing Sal, keep in mind the rest of us in the back, who are little older and wiser, with a few more bumps and bruises; we may not want to take the dip like we used to.

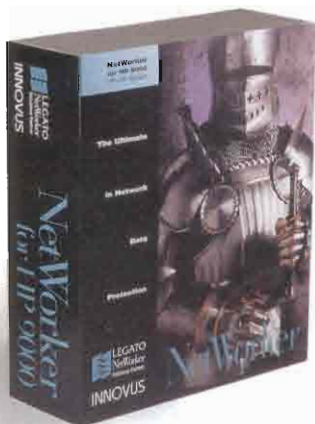


By Charlie Simpson

*Charlie Simpson*

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# INDUSTRY WATCH

George A. Thompson

## PA-8000: 64-BITS, BUT WHAT DO YOU GET FOR TAKING THE RISCS?

Well, when it's HP's newly announced PA-8000 CPU, you get it all—64-bit flat addressing, 64-bit integer and floating point computation, on-chip support for up to 12-way SMP, the ability to decode MPEG-2 video, a 960 MBps processor-memory I/O bus, as well as 32-bit binary compatibility, not to mention increased performance. In the not-so-distant past, however, HP's been criticized for their lack of a full 64-bit implementation in their previous PA-RISC CPUs. "Some people have been good at marketing 64-bitness," says Larry Inman, marketing manager of PA-RISC technology. "But we've actually been putting 64-bitness into PA-RISC all along."

PA-RISC CPUs have always supported virtual 64-bit addressing, according to Inman. It was a cost-effective approach. But bigger isn't always better, he notes. "In fact, the 64-bitness of the PA-8000 isn't what delivers the performance. It's really other elements." Like what Inman conceptually calls "intelligent execution." "It manages the instruction flow to maximize the number of instructions you can throw through this hummer."

Intelligent execution is HP's way of saying that the four-way, superscalar architecture of the PA-8000 is greater than the sum of its parts. For example, the PA-RISC CPU includes two integer ALUs, two shift/merge units, two floating point multiply/accumulate units, two divide/square root units and two load/store units.

This allows a maximum of four instructions per clock cycle. "But those four instructions have to be compatible with each other, like a good marriage," explains Inman. "So with 10 execution units, we can minimize instruction conflicts."

The PA-8000, in its quest for "intelli-

gent execution," also provides aggressive out-of-order execution. The chip can pull in over 50 instructions at a time and swap the order of execution, so instruction dependencies are minimized. "It gives us the ability to optimize the performance of this processor," says Inman. Other unique performance enhancing characteristics of the PA-8000 include:

- dynamic and static branch prediction
- two low-latency, fully pipelined 128-bit off-chip 4 MB caches

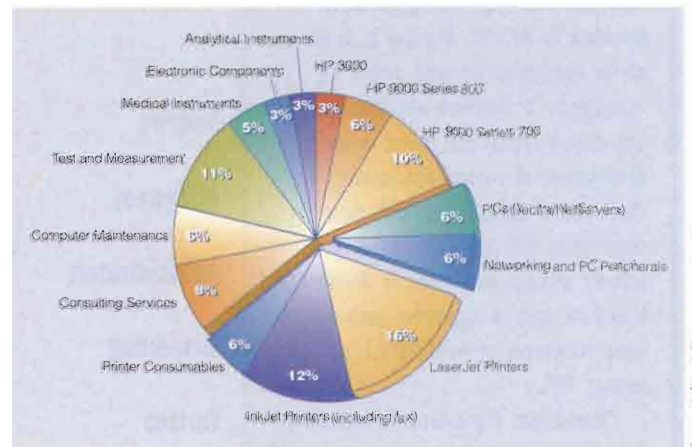
These two chip features help the PA-8000 deal equally well with commercial applications which have long code paths (up to 100,000 instructions) as well as technical applications which often use very large data sets with a large number of floating point instructions (graphics rendering, for example). According to HP estimates, with a 360 SPECint92 and 550 SPECfp 92 rating, the new 64-bit (fabricated using a 0.5 micron 3.3V CMOS process) PA-8000 provides two times the performance of its predecessor, the PA-7200 CPU. And the PA-8000 yields 60 percent higher in transactions per second (tps) than the PowerPC 620 and 100 percent higher in tps than Sun Microsystem's UltraSPARC. Although the CPU's speed has been clocked at 200 MHz, Inman says, "we don't have to go to that high a clock speed to deliver those numbers."

The PA-8000 will ship in HP systems within 12 months, according to Inman. ●

## GOOD BUY HP

Around 1990, some people were saying good bye to HP. If not out loud, many analysts and industry pundits were secretly writing HP epitaphs. HP was a troubled company already mired in the kind of problems that are currently besetting the likes of Digital and IBM. But now after several years of risk taking and good management, the results speak for themselves. And the results are saying that HP is a good buy. HP's stock that is. Following a 24 percent increase in 1993 revenues and a bang up 1994, HP continued to post strong financial results in the first quarter of 1995.

## HP 1994 REVENUES



HP's printer business provided 34 percent of the company's 1994 revenues and grew at a combined rate of 30 percent. However, HP's PCs and networking segment grew the fastest at 67 percent and 75 percent, respectively.

When HP's 1994 fiscal year ended this past September, revenues were just under \$25 billion, a 23 percent increase from 1993's revenue of \$20.3 billion. Although HP's printing business segment (see chart above) makes up HP's single largest revenue stream, a 75 percent growth in PC-networking and a 67 percent growth in PCs provided a healthy boost.

HP's consulting services, which provided 6 percent of HP's 1994 total revenues (an important area of focus for HP in the last two years) exhibited a growth rate of 28 percent. HP's consulting services includes HP's PSO division which

expanded its client-server transition services in February.

HP kept up its blistering pace in the first quarter 1995 with \$7.7 billion worth of orders — a 25 percent increase from a year ago. Keeping with the industry trend

the last several years, both U.S. and international orders increased — 22 and 28 percent, respectively. Likewise U.S. revenue increased 29 percent from last year to \$7.3 billion with an increase of 22 percent in the United States and 34 per-

**NOVELL COULD STILL BE A CONTEN-DAH**

Just like HP before it, the industry cognescenti are busy writing off Novell Corp. But don't write that eulogy just yet. So says, Tom Kurchavy, president of research firm Summit Strategies (Boston, Mass.) and author of the report "Novell, The Perfect Paradox: Can the File Server Leader Become a Client-server

Contender?" Although the odds are clearly against it, Novell does have a fighting chance, according to Kurchavy. But its margin for error is slim, he says.

Kurchavy's advice for Novell and it's new CEO, Bob Frankenberg (formerly president of HP's PC division) is to get out of the application business, speed the convergence of NetWare and UnixWare, aggressively recruit and invest in the development of vertical and custom development channels, establish close cooperation with key OEMs which will actively promote and invest in NetWare and UnixWare, and an aggressive push effort to drive acceptance of NetWare 4.1 and support NDS.

"Novell was ill-prepared for transition from file server to client-server computing," says Kurchavy. "They underestimated the time required to develop new applications to meet the needs of enterprise customers." As a result, "the company gave away much of the enterprise LAN market to Banyan and allowed UNIX, Windows NT and OS/2 to capture the high ground in client-server networking."

Kurchavy does note that while Bob Frankenberg has done a good job defining

a vision around which Novell can mobilize its efforts, he has set technical goals that are too ambitious. Kurchavy's prediction is hopeful but grim: "Novell cannot afforded any more errors in execution. They must now capitalize on every market opportunity and on every Microsoft weakness."

**SYSTEM ADMINISTRATORS: YA GOTTA LOVE 'EM**

When it comes to UNIX, a systems administrator can save your computing skin. Besides helping to keep your UNIX boxes running continuously, they make sure you have smooth access to programs and file systems. Most

importantly, they keep your data protected from evil hackers and naive users. So as UNIX platforms grow in popularity, so does the demand for their system administrators. But in the face of that rising demand for their services and increasing job responsibility, many sys admins are wondering: Is it worth it?

The annual Open Systems Conference Board's 1994 System Administration Salary Survey tries to answer that question. According to the 676 salaried system administrators surveyed, sys admins earn more than telecommunications specialists, LAN managers, network administrators, technical support specialists, technical

support managers and helpdesk managers. However, sys admins (on average) did not earn more than consultants. Reported salaries were \$17,000 higher.

You'll also earn more in you live in California, the mountains of Colorado or New Mexico, and the big cities of the Northeast. And sys admins in the United States can rest assured that their salaries are higher than their counterparts in Europe, Canada or Australia. See the chart for average salaries versus different flavors of UNIX.



Source: SANS Salary Survey 1994

**Salaries of System Administrators Supporting Various Flavors of UNIX**



If you are a system administrator supporting HP's HP-UX OS your salary is higher than average in the 1994 SANS Salary Survey for the popular flavors of UNIX. Notable exception were IBM's AIX and SCO's UNIX.

cent outside the United States "We'll continue to emphasize strong new product programs, rapid time to market and effective expense management," according to Lew Platt, HP's chairman, president and CEO.

As far as John B. Jones of Salomon Brothers is concerned, "the diversification of HP products and balanced business strategy continue to support our 'buy' on HP shares." Jones expects HP stock to reach \$115 to \$120 per share in six to 12 months. And \$130 to \$140 per share in the long term. In March, HP shareholders of record received a 2-for-1 stock split. And this past February, HP's quarterly dividend rose from 30 cents to 40 cents (20 cents, adjusted after the split). "We want to share the rewards of our success with our shareholders, many of whom are employees who make that success possible," says Platt.

According to Salomon's Jones, at its stock analysts meeting in December, HP's CFO predicted that revenue growth would be in the upward teens for 1995. Most importantly, HP management is targeting

interactive multimedia as a revenue opportunity. That's already being accomplished by HP's Video Server Division which has been quietly building a business for its video servers since it was formed in 1992. ●

## WATCH OUT FOR FALLING PC PRICES

You can't mistake HP for Wal-Mart, but maybe HP's Personal Products Group should hang out a sign on their door that says, "Watch Out For Falling PC Prices."

### NOTABLE QUOTABLES

**"Sanity has its place, but an unrealistic belief in the possibility of success... lies behind almost all nifty new products and services."**

— Tom Peters, in his column, *The Peters Principles* in *Forbes* ASAP, February 27, 1995

During the first week in March, HP reduced the prices up to 16 percent on its OmniBook notebook PCs, up to 11 percent on its Vectra PCs and up to 13 percent on its NetServer product lines.

HP also introduced HP Vectra VE and Vectra VL Series 3 Pentium-based desktop PCs. The Vectra VE PC is being offered in several configurations with 75 MHz and 90 MHz clock speeds whereas the Vectra VL models use 75, 90 and 100 MHz Pentium CPUs. All new HP Vectra VE and VL PCs come standard with Desktop Management Interface software, HP User Tool and Borland's Dashboard.

Such aggressive pricing by HP on its PC should go a long way to convince anyone that HP is deadly serious about its PC business. Despite all the industry-wide price cutting, HP has managed to be among the low-cost leader without hurting its profitability. In fact, HP's PC business had its most profitable year in 1994. And according to Salomon Brothers, HP's PC business is one of the most profitable in the industry. ●

# Create CD-ROM Discs on Your Desktop

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CIRCLE 232 ON READER CARD

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decisions that determine the  
future of your company.

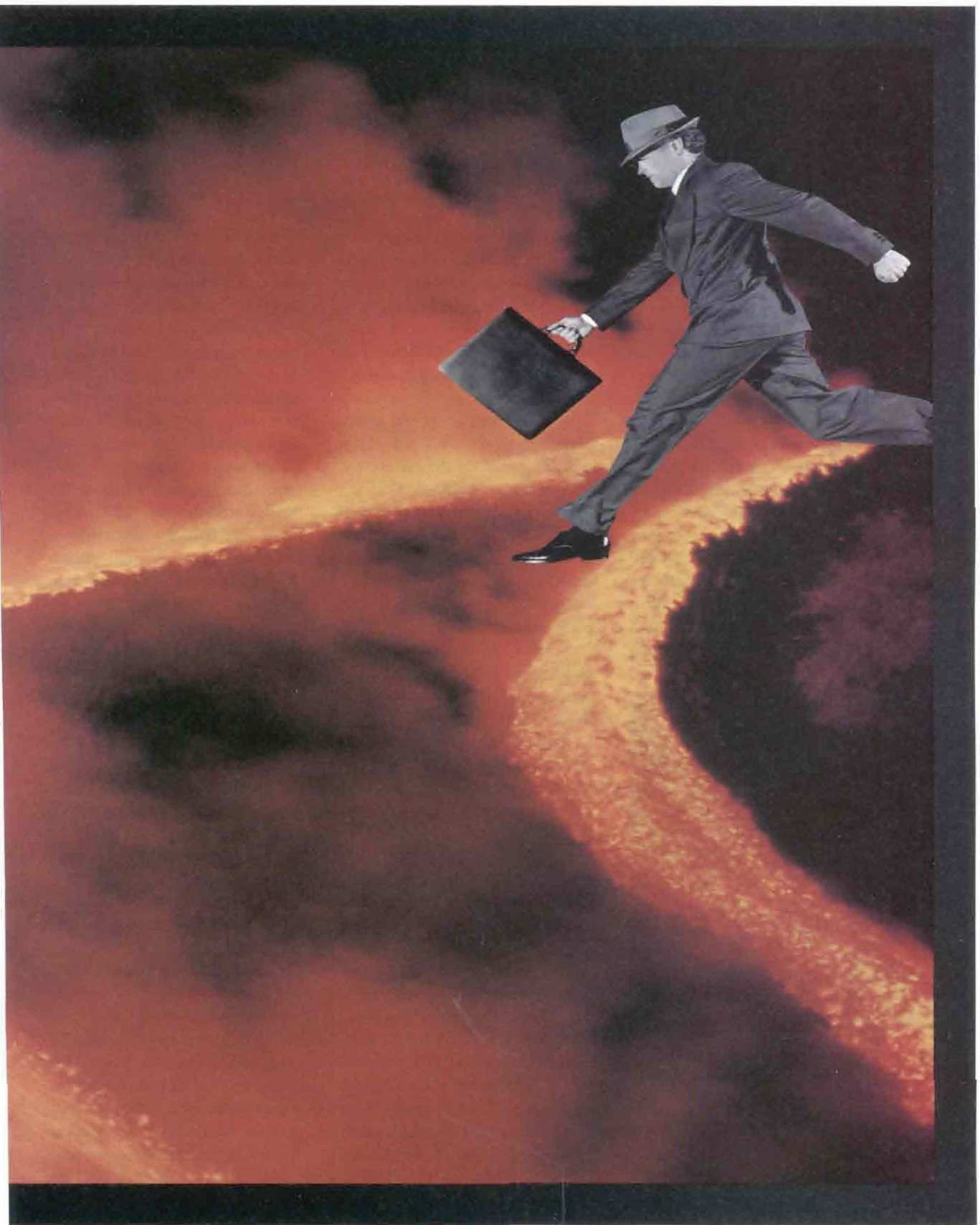
What computer system  
do you have?

---

If the business decisions  
are yours, the computer  
system should be ours.



Computer Systems



# Peripheral Vision Through Artecon

## *Brooktree Looks To Artecon For Better Price-Performance*

Brooktree Corp. (San Diego, Calif.), designer and marketer of specialized semiconductor chips for the communications, graphics and multimedia industry for the past 12 years, has always been a Sun Microsystems shop. However, according to Michael Hurwitz, information architect at Brooktree, the price-performance benefits offered by HP 9000 Series 700 and 800 servers over similar Sun hardware has won them over. In fact, every new workstation now purchased by Brooktree sports an HP logo.



*"HP is now dominating the commercial enterprise world."*

"On the IS side, which does our commercial applications, we have seven 700s, mostly 755s, and a Model 800," Hurwitz says. "On the engineering side we have about half a dozen 735s used as compute servers for the Sun desktop environment." Instead of each engineer doing their

own computations on the desktop on a Sun, the Sun workstations are used as desktop devices and jobs are submitted to the HP machines. "You can actually support a much wider base of desktops with a smaller base of centralized computing machines," says Hurwitz.

Hurwitz buys peripheral equipment, specifically DAT tape drives and disk drives for the HP servers, from Artecon (Carlsbad, Calif.), a supplier of add-on peripherals, enhancements and accessories for UNIX workstations. "HP has a good reputation for high quality in the marketplace," Hurwitz says, "but you do pay [a price] for their product lines. We've discovered that price-performance increases go up significantly using [HP] peripheral devices along with HP hardware."

Artecon was once oriented exclusively toward Sun Microsystems too. Today, Artecon's products include a family of S-bus products, modular tape and disk solutions, optical drives, rack mount computer enclosures, high availability and security products, software packages and accessories such as memory boards and SCSI cabling.

According to Dana Kammersgard, Artecon's vice president of marketing and engineering, "Sun has historically dominated the technical world, but HP is now dominating the commercial enterprise world," says Kammersgard. "That may be because of the legacy of the HP 3000 in a lot of commercial accounts, or because of the performance of the 9000 Series 700 and 800. But market statistics don't lie. HP has come a long way."

Where Artecon is headed with this technology is into the central

offices of the major telecommunications companies, offering telecom customers the opportunity to downsize from the big, dedicated central office switches they have traditionally used. "We offer them the same benefits of open systems, off-the-shelf technology other companies now have," states Kammersgard. "The telecoms have always used these massive, main-frame-like network switches. It's no different than an IBM main-frame with IBM proprietary operating systems and applications. We've created a mechanism whereby they can take advantage of client-server, open system architecture. It's an exact analog to the downsizing-rightsizing that is happening in corporate America."

According to Kammersgard, the workstation vendors haven't penetrated the telecom central office market so far because their products have lacked compliance with these two standards. Currently, he says, the telecom companies represent only about 10 percent of HP's and Sun's customers. But there are a lot of central offices — for example, he estimates over 100 in San Diego County alone.

"It's a whole new marketplace for HP," Kammersgard says, "and the customer will get all the benefits of the original technology from HP: possible price discounts, warranties, upgrade path, applications, etc. It's a commercial off-the-shelf product as opposed to a proprietary solution."

Artecon is located at P.O. Box 9000, Carlsbad, CA 92018; (619) 931-5500.

—Sam Dickey,  
Contributing Author



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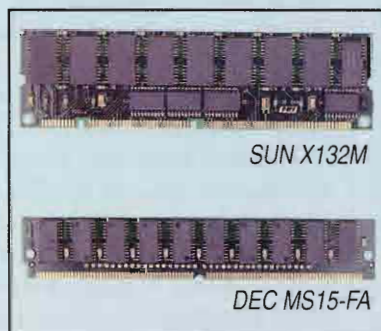
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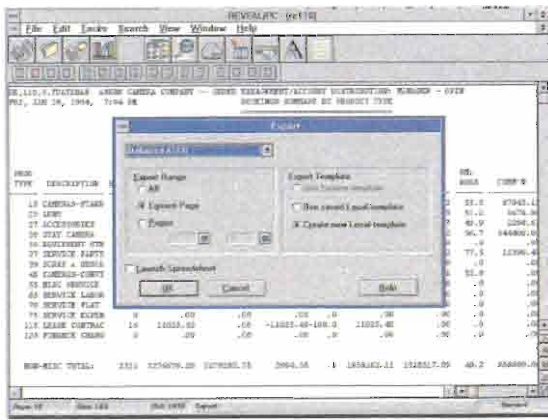
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CIRCLE 176 ON READER CARD

# O'PIN Reveals Their Client-Server Side



## REVEAL PRODUCT LINE

- Client-server, electronic report distribution system for HP 9000s and HP 3000s
- Microsoft Windows-based report viewer supporting lockable headings, multiple windows, report markers and personal bookshelves
- User-based pricing starts with a two-user system at \$995

### O'PIN Systems

International Plaza  
Ste. 635  
7900 International Dr.  
Bloomington, MN 55425  
tel: (612) 854-3360  
fax: (612) 854-3072

CIRCLE 355 ON READER CARD

The REVEAL of 1990 was a terminal/host electronic report distribution system for the HP 3000. Five years later, the basic mission for REVEAL from O'PIN Systems (Bloomington, Minn.), remains the same: to speed the flow of information, reduce paper and printing costs, automate the distribution of current and aged reports, and increase productivity. However, in addition to numerous enhancements, O'PIN Systems has increased the scope of REVEAL, moving it into the client-server, open systems arena.

REVEAL/CS is a POSIX-compliant server for HP-UX systems. REVEAL/CS 3000 is the server for MPE/iX systems and is fully compatible with the original terminal/host version of REVEAL. REVEAL/PC is the PC client for REVEAL/CS and REVEAL/CS 3000.

Administration for REVEAL/CS and REVEAL/CS 3000 is provided by the REVEAL Administration Manager (RAM), a Microsoft Windows-based application that defines users and reports, storing the definitions in a control database on the server. The control tables are downloaded to the PC for maintenance. While the tables are in use, the control database is locked against changes by any other user. The updated tables are uploaded to the server and the control database is unlocked.

Because a user connects to the server but does not necessarily log on to it, RAM handles all security issues for report access. RAM supports three types of security: creator, user class and field. Users can belong to one or more user classes. A user's security privilege equals the sum of their user class privileges.

REVEAL/PC can view local files or connect to any REVEAL server to access reports. The server maintains report data and enforces security, delivering directory information and report pages to the client on request. REVEAL/PC manages the information display, maintaining a cache of server data to provide optimum response time. Features include: "find all" string search; lockable headings; multiple report windows; integration with spreadsheets, word processing documents and E-mail; user-de-

efined, colored tab report markers to mark a line of text and attach a note; and a Bookshelf to provide direct access to up to 16 reports.

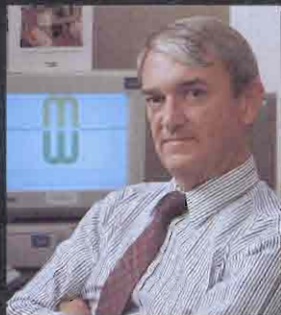
Reports are given descriptive, organizational, security and lifecycle attributes. Each physical instance of a report is considered a generation. Reports can be grouped into categories, with a single report belonging to multiple categories.

The REVEAL/PC client requires an IBM-compatible PC with Windows 3.1 or higher and a WinSock-compliant TCP/IP product for connecting to the server. Additional plans call for an extensive Workflow Management System for reports which will include public and private notes, check boxes, a mini-viewer that can be E-mailed with a portion of a report and report routing based on actions and decision rules.

REVEAL/CS is priced on a multi-simultaneous user (MSU) basis, where an n-MSU license includes n-copies of the REVEAL/PC client. A 2-MSU REVEAL PC Discovery Pack starts at \$995. A standard 48-MSU REVEAL/CS system for HP 9000s costs \$13,400, and a full-featured 48-MSU REVEAL/CS 3000 costs \$14,945. Some options are only available on the HP 3000 version.

—John P. Burke,  
HP 3000 Columnist

**“EDA/SQL MIDDLEWARE  
MEANS BETTER REPORTING  
FOR OUR STAFF  
AND BETTER HEALTHCARE  
FOR OUR PATIENTS.”**



*James Wells, VP and CIO  
Magee-Womens Hospital  
Pittsburgh, PA*

With Informix databases for radiology systems, Gupta databases for labor and delivery systems, C++ databases for laboratory systems, VSAM databases for financial applications, and Shared Medical Systems proprietary databases for hospital information, Magee-Womens Hospital in Pittsburgh boasts one of the most complex information environments anywhere. How does the hospital combine and report from data located in so many heterogeneous file structures and operating systems without hiring a boatload of expensive programmers and application specialists? The answer...EDA/SQL middleware from Information Builders.

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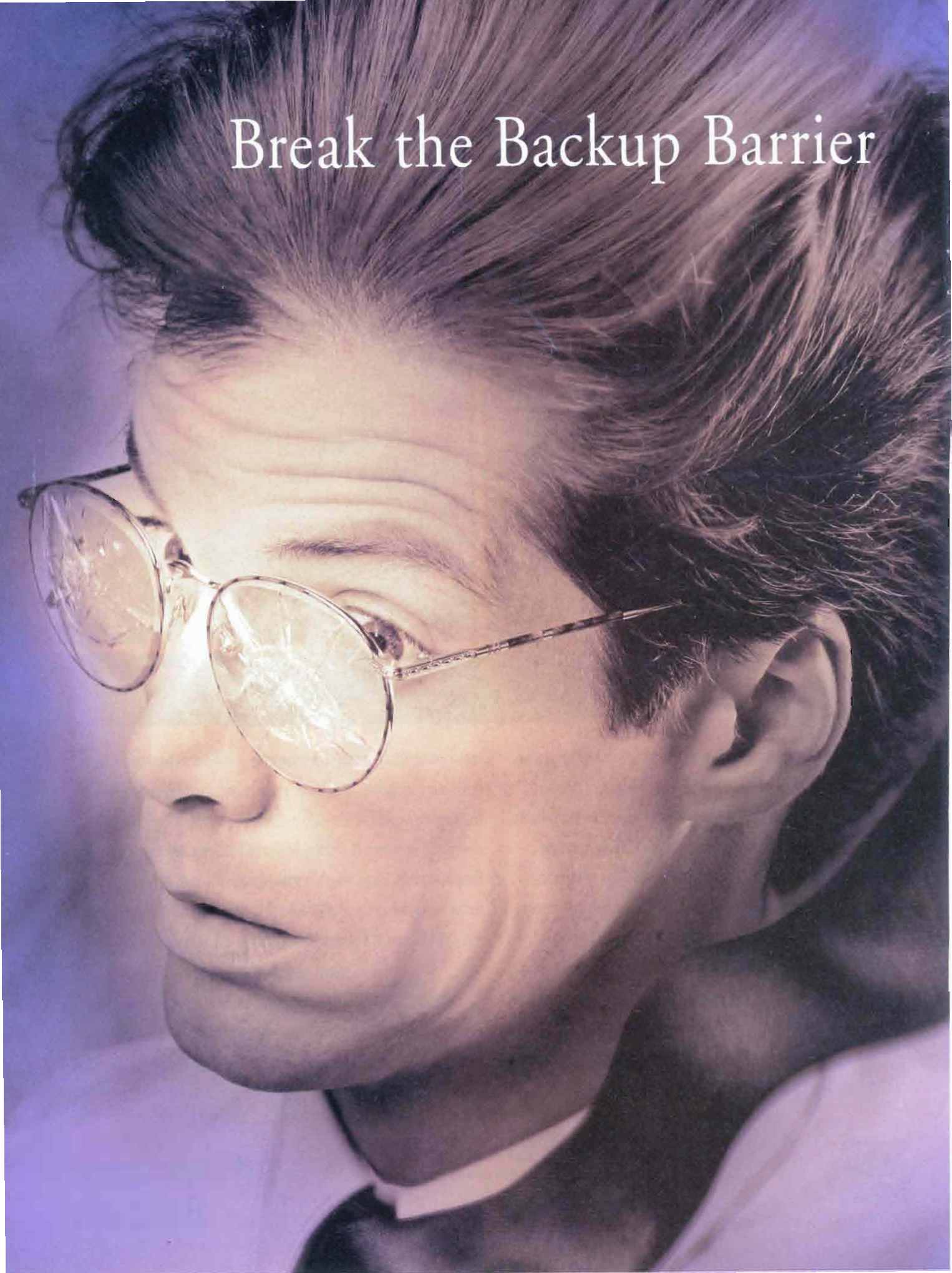
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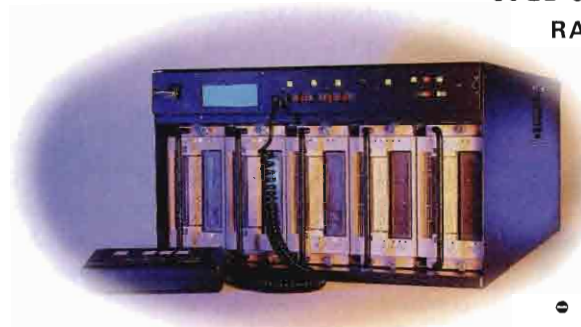
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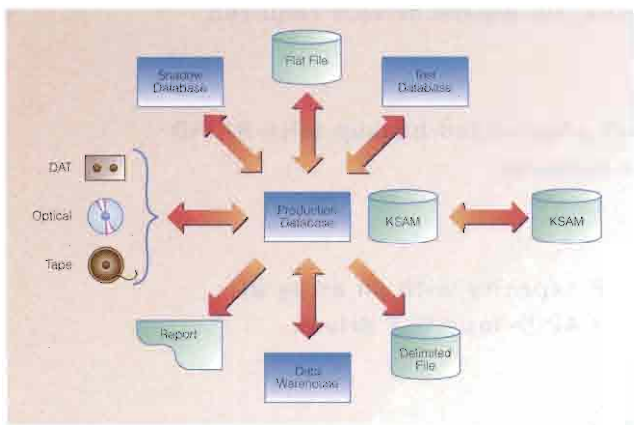
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# Minding The Storage With DB/Access



## DB/ACCESS

- Eliminates programming for offline data archiving and online data warehousing
- Retains history records of all archiving activity
- Price ranges from \$5,000 to \$22,500, depending on platform

### Datastructure

246 First St., Ste. 205  
San Francisco, CA 94105  
tel: (415) 495-7484  
fax: (415) 495-7485

CIRCLE 354 ON READER CARD

**A**ny MIS manager today knows that data will always expand more rapidly than available online storage capacity. So, having a good archiving facility is a necessity as organizations try to cope with all that information. A way to easily retrieve archived data is as essential as the means for archiving it in the first place.

For HP 3000 users, Datastructure (San Francisco, Calif.) offers DB/Access, a comprehensive data repository tool that transfers selected HP 3000 data to online (data warehouse) or offline (archive/restore) destinations.

DB/Access eliminates the need for costly and time-consuming programming to archive data, as well as the reprogramming of existing software necessary to access offline data.

DB/Access uses an intuitive screen interface to select, copy, update, delete, report and restore records in one or several TurboIMAGE databases. Improved performance from production TurboIMAGE databases occurs when non-current data is moved into an online historical data warehouse. Moving old data offline additionally saves valuable disk space.

DB/Access can transfer data between TurboIMAGE, KSAM, flat files, DAT, magnetic tape and optical disk. DB/Access can link TurboIMAGE datasets and KSAM files automatically in any combination. Records can be deleted or retained selectively on a set-by-set basis. DB/Access also has an ad hoc report writer to report directly from offline media.

Alternatively, DB/Access can restore specific subsets of data to either production or shadow databases. This is useful in restoring data for re-billing purposes, or to produce a production report from old records to comply with legal requirements.

A key feature of DB/Access is tape library indexing, which organizes offline media by field values for fast locating. Tape volumes are linked to values of choice such as customer names and account numbers. A console prompt informs the operator which tape to mount.

When CPU or wall time is

critical, DB/Access can log off a job stream before completion while maintaining its position, allowing system backups or other usage to occur. When the job resumes, it starts up at the exact point it logged off.

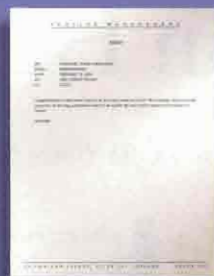
Users of First Data's health care package, The Precision Alternative (TPA), will find DB/Access' TPA interface option particularly helpful. This TPA option provides automatic archiving to an online data warehouse or for automatic archiving and restoring using offline media. Appropriate archive and restore instructions for TPA are pre-defined.

Release 3.2, introduced this month, includes two major new features: a value-added option called DB/Relate will enable the exporting of comma delimited files to PCs for use as import to Lotus, Excel and Paradox. And DB/Access will allow customers with DISC's OMNIDEX to reference OMNIDEX keys in the selection screen, making record retrieval faster.

Prices for DB/Access range from \$5,000 to \$22,500, depending on platform.

—John P. Burke,  
HP 3000 Columnist

IN THE PAST, HEWLETT PACKARD HAS IMPECCABLY



PRINTED YOUR IMPORTANT DOCUMENTS.



NOW, WITH TROY, THEY PRINT THE



MOST IMPORTANT ONE.

While all business documents are important, the check is often the most valuable. And, at Troy, we're keenly aware of the advantages businesses realize when they can print their checks in-house. To make solutions available to the emerging desktop printing market, Hewlett Packard, the world leader in laser printers, sought out Troy, the world leader in check printers. Together we've created MICR-solutions so businesses can print checks in-house with security, convenience and at low-cost on HP LaserJet printers. ■ The Troy solution adds special features, including security, to a standard HP LaserJet that enable you to print checks on blank stock. And security is critical when

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**TROY**

CIRCLE 177 ON READER CARD

# Banyan Heads Into The Enterprise

Banyan Systems Inc.'s ENS Goes Where No Network Operating System Has Gone Before

"Our ENS strategy is focused on the UNIX platform. [Besides the HP-UX platform], ENS also runs on IBM's AIX and Sun's SPARC."

**Bob Ritter**  
HP Strategic Alliance Manager  
Banyan Systems Inc.

## Banyan Systems Inc.

120 Flanders Rd.  
Westboro, MA 01581  
tel: (508) 898-1000  
fax: (508) 898-1755

CIRCLE 356 ON READER CARD

In larger enterprises, with work groups of 50 users or more, who is the leading provider of network operating systems? If you guessed Novell, you're wrong. In that marketplace, Banyan Systems (Westboro, Mass.) claims a 50 percent market share. Banyan is also an HP Premier Solution Provider, offering Banyan's integrated Enterprise Network Services (ENS) software with its HP 9000 Series 800 Business Servers.

ENS, an unbundled version of Banyan's proprietary Vines network operating system and network services, allows customers to combine PC and UNIX environments. With ENS, users can access databases, applications and network resources regardless of their physical location. Administrators also get a means of managing an entire computing infrastructure.

ENS includes Banyan's global naming directory, StreetTalk, StreetTalk directory assistance, security, intelligent messaging and network management, as well as file and print sharing capabilities.

"Our ENS strategy is focused on the UNIX platform," says Bob Ritter, Banyan's HP Strategic Alliance manager. "ENS also

runs on IBM's AIX and Sun's SPARC. If a customer has HP, ENS will sit on that. With ENS, [the customer's] environment will encompass any [of those] platforms."

Because of Banyan's market presence in large networks, the partnership has the potential for increasing HP 9000 Series 800 server sales. For Banyan, according to Ritter, the relationship with HP works well because of HP's presence in the commercial UNIX market. "Obviously, a company the size of HP is in many areas where we are not, and we have customers where HP doesn't have a presence now. So it's a good relationship," he says.

From HP comes cost savings because of the advantageous price/performance of the HP platform, while Banyan's ENS provides enterprise-wide network administration, consistent management capabilities and scalability — servers running ENS work together to permit a single network image.

ENS for HP-UX also is advantageous for third-party software vendors developing enterprise applications that can be shared between PC and UNIX users. For example, Banyan and Oracle have jointly developed products that integrate Oracle7 with ENS for HP-UX, thus making Oracle7 available to PC users in an organization.

Although ENS for HP-UX has been available since February 1994, Banyan's relationship with HP began in 1993, when the two companies announced the integration of Vines with HP products — Banyan's first port to a RISC platform. Technical support alliances agreed upon then ensure that customers using products from both companies will receive technical support from either one. In Europe, HP markets ENS for HP-UX through its direct sales force and selected resellers.

According to Ritter, Banyan's goal is to create open environments in which enterprise network services are available to all users regardless of platform or location. "Of HP's approximately 3,000 channel partners, only about 10 percent receive co-marketing funds from HP. The fact that Banyan is one of them serves as an indication of HP's belief in Banyan's strategic importance," Ritter says.

—Sam Dickey,  
Contributing Author



# REVEAL/CS

## The Report Access and Distribution Solution for POSIX Systems



REVEAL/CS from O'PIN Systems gives you instant, on-line access to your valuable information so you can use it for today's decision. We provide the open systems market with *information presentation* technology for both decision makers and end users.

Using client/server technology, REVEAL/CS delivers maximum flexibility for report access and distribution to empower users in the access and use of corporate information.

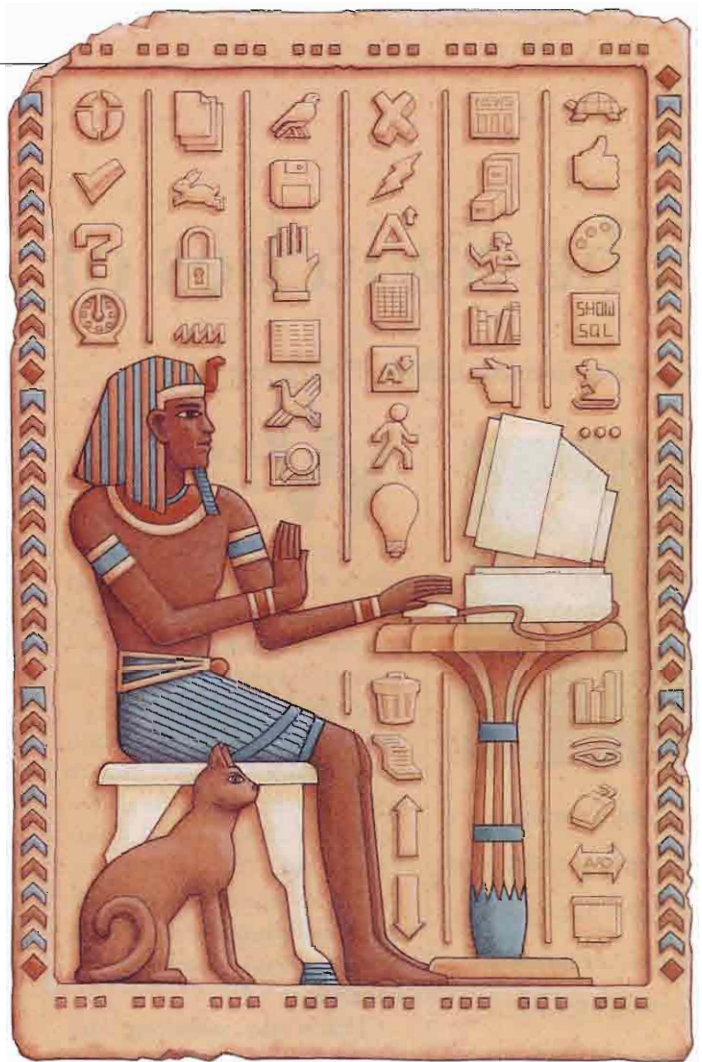


REVEAL/CS gives your users instant on-line access to reports right from their desk. They can locate and display needed information, search report data with "Find All" and build summary files.



Users can selectively print exact information to LAN, attached printers, fax or e-mail. Implement REVEAL/CS

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If you're ready for the future of report access and distribution technology --today, call O'PIN Systems for a FREE DEMONSTRATION of REVEAL/CS.

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# The Switches of 3Com

Sometimes Switching Is Better Than Fighting



"3Com's switching initiative provides every solution that today's mixed environment networks need for improved performance, reliability, security and scalability"

**Bob Finocchio**  
Executive Vice President of  
Network Systems Operations  
3Com Corp.

## 3Com Corp.

5400 Bayfront Plaza  
P.O. Box 58145  
Santa Clara, CA 95052  
tel: (408) 764-5000  
fax: (408) 764-5001

CIRCLE 351 ON READER CARD

**W**hat does it take to accentuate the positive and mitigate the negative when it comes to client-server networks? Adding more computing power simply increases network traffic and congestion. Replacing an existing LAN with higher capacity equipment is expensive. Segmentation increases capacity only if most of your network traffic is local. According to 3Com Corp. (Santa Clara, Calif.), LAN switching is the key to meeting the network speed and throughput demands of a client-server computing environment.

That's why switching hub products are at the core of 3Com's 18-month product rollout plan to help customers build high-performance scalable networks. A hub, or multiport switching matrix, can instantaneously set up multiple concurrent connections between ports, thereby enabling many network stations to communicate simultaneously. On a non-switched, shared-media (Ethernet, Token Ring or FDDI) network, only one station can transmit data at any given time. But by adding switching hubs, you get an immediate boost in performance.

As an integral part of 3Com's High Performance Scalable Networking (HSPN) architecture, LAN switching offers several advantages: simpler, faster and less expensive installation; full

interoperability with the installed base of adapters, hubs and routers; and a cost-effective migration path to high-speed ATM network technologies. 3COM's strategic plan calls for introductions of data center and departmental switching products in the LANplex, LinkSwitch and CELLplex series of Ethernet, Token Ring and high-speed network switches.

"3Com's comprehensive switching initiative provides every solution that today's mixed environment networks need for improved performance, reliability, security and scalability," says Bob Finocchio, executive vice president of Network Systems Operations at 3Com.

"3Com is on the right track," says Charles Robbins, vice president of communications research for the Aberdeen Group. "If you're playing in the enterprise-wide solution area, you have to have an overall plan, and their plan makes a lot of sense. It takes advantage of technology, and it responds to customers who are looking for flexibility."

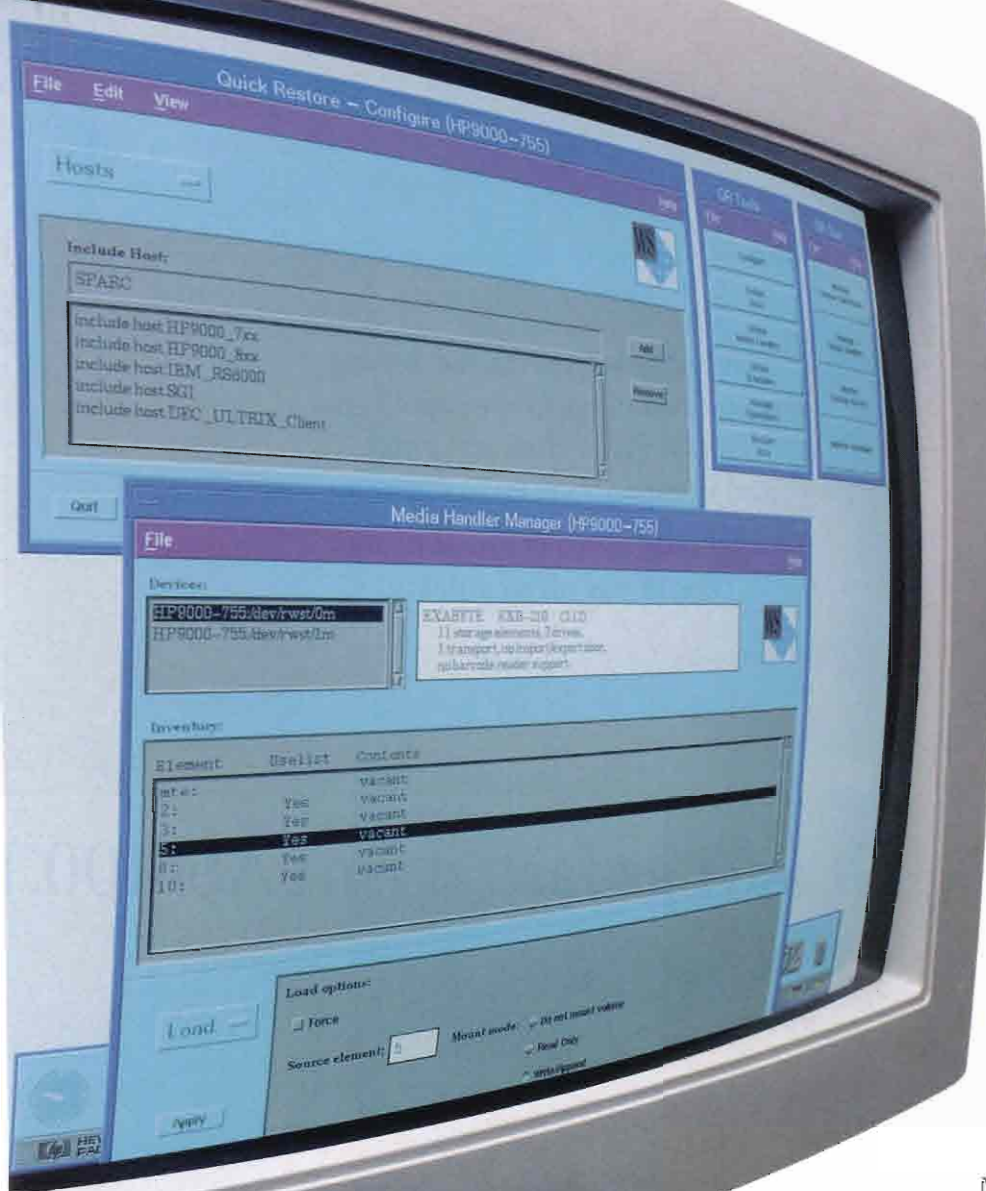
The LANplex family includes: the LANplex 5000 and 6000 data centerswitches now available with Ethernet, FDDI and Token Ring switching; the LANplex 2000 department level switches; and several new 6000 and 2000 product offerings scheduled for release in the last half of 1995. According to Brendon Howe, 3Com's LAN-

plex product manager, scheduled enhancements include: routing capacity, high port density, ATM and fast Ethernet switched connections for the 6000, and additional routing protocols (IP, IPX and AppleTalk) and connections for the 2000. "The point here," Howe emphasizes, "is that both the 6000 and 2000 offer a migration path to customers who are looking at next generation LAN technologies."

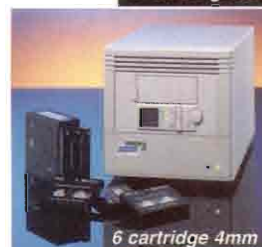
The LinkSwitch line provides flexible and affordable Ethernet switching and FDDI connectivity for entry-level departmental networks. 3Com plans to offer Token Ring, Fast Ethernet and ATM support for LinkSwitch by the end of 1995. CELLplex modular ATM switches, scheduled for introduction during the second quarter of 1995, complement the LANplex and LinkSwitch families and offer a smooth migration path to ATM switched networks.

According to Dataquest's February market review, \$54 million of Ethernet switch sales make 3Com the 1994 revenue leader in the \$331 million worldwide switching product market. "By the end of 1995," says Mary Petrovsky of the Burton Group, "3Com will have one of the broadest lines of switching products available."

—Judith Harper,  
Contributing Author



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O

*Doc u ment (n.) 1. anything printed, written, etc.,  
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— Webster's New World Dictionary

ver the years, the business document — the letter, the memo, the invoice — has been taken for granted, but not anymore. More than just a container of information, documents, or more correctly their electronic counterparts, are driving the business process. However, the growing number of electronic documents makes managing the information they contain quite a challenge.


That's where document management software comes in. Imaging, OCR, workflow, E-mail and groupware have all at one time or another, been broadly labelled "document management." In HP's definition, document management

includes image management software whereas workflow software, is an extension to document and image management allowing successive operations to be performed at various stations on a network as it flows through a particular process. But no matter which technology or technologies you are using, a good document management solution will bring as much of a document's life cycle online as possible, from creation to distribution and tracking to storage and retrieval. Because users have a tendency to demand too much too soon from these tools, MIS departments should learn to recite the mantra: start small, start slow, build on your successes.

## VOLUME ONE: THE BIG PICTURE

IF YOU ARE GOING TO BUILD AN enterprise-wide document management system, you could consider FileNet Corp.'s (Natick, Mass.) WorkFlo Business System which runs on HP 3000 and HP 9000 systems. Excalibur Technologies Corp. (San Diego, Calif.) also provides document image management with its Excalibur EFS product. Wang Laboratories' (Lowell, Mass.) OPEN/image Server for HP-UX also provides distributed image file, document management and optical disk management services running on HP

Jim Esch



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9000 Series 700 and 800 hardware.

VISTA from Quest Software (Newport Beach, Calif.) is an electronic report management product. However, according to Dave Mendoza, programmer for Quest Software, there is a definite difference between electronic report management solutions and document management products.

The difference is that electronic report management will archive and retrieve documents that aren't going to be undergoing revision, while document management will handle documents in various stages of the document life cycle.

"Document management is geared towards PC documents — workgroup applications residing on a server. Users can share them and control versions, workflow, routing, and document history. With report management on the other hand, nobody's changing documents," says Mendoza.

NSD's (Pleasanton, Calif.) NERDD (Networked Electronic Report & Document Distribution System) is a document/image management solution that is being used to reduce paper flow in a pilot program at HP's Colorado Springs Information Technology Center and Financial Group. According to David Block, NSD's executive vice president, one of the strongest features of NERDD is its internal and external search capability.

"We use text and/or index items inside the document to locate specific areas of the document, and we also use a keyword and global index search outside the document to identify where a particular document is located. You can make a combination of different kinds of searches on either name, keyword, standard file description or document code, to isolate the hit list so you know what documents to retrieve," NSD built-in a proprietary search engine to do this.

Text retrieval is a detailed function of document management. It provides the ability to gather loose text from documents. A market leader in text-retrieval is Fulcrum Technologies (Ottawa, Ontario). Fulcrum positions itself to fit better into large-scale corporate information systems better than anyone else. For example, Interleaf (Waltham, Mass.) uses Fulcrum's full-text searching in its own products. Fulcrum prefers to work behind the scenes, infiltrating as many parts of the organization as possible.

At the developer level, they strive to speak the same language that the MIS group already understands — SQL. Steve Judges, a product manager at Fulcrum, notes that "at a certain level, text-retrieval is a commodity now. We're not going to tell you otherwise. There's a whole pile of people who can do it very well. We're trying now to differentiate

ourselves on ease of working with the information architecture and plugging into as many development tools as possible, just trying to be as open as possible."

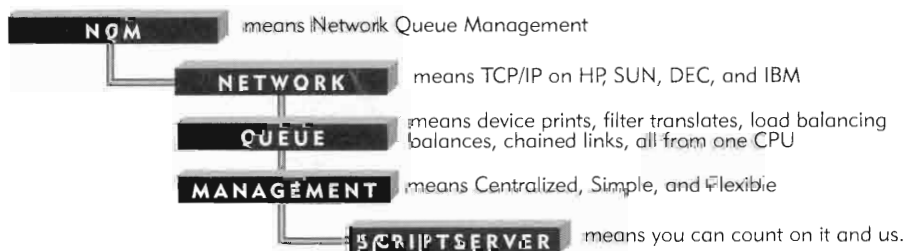
Fulcrum's commitment to open standards in text-retrieval goes beyond SQL. They also comply with Microsoft's ODBC standard, and their director of research is on the SQL multimedia working group, working toward text extensions for SQL.

Fulcrum's Ful/Text is used at Florida Power and Light (FPL), where Tom Lamoureux is manager of information services. Nuclear power demands extensive procedures and documentation, and they are making that information available online. Why did they choose Fulcrum Ful/Text? "We liked the open architecture," says Lamoureux. "We were able to develop our own front-end around their APIs and customize it the way we wanted. It's a powerful engine yet easy to administer and work with." The system was installed in September 1993.

FPL's in-house document management system has over 70 collections available online, and people can customize and select only the collections they're interested in. Outside of the nuclear plant, it's being used for OSHA requirements among other uses. There are two

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implementations — Novell and HP-UX running on a HP 9000 Series 800 Model G30 server.

As for being a piece of a larger document management project, the text-retrieval side proved to have the least surprises for FPL. “They have a new release (Fulcrum Ful/Text, version 6) out that we might be taking advantage of. We’re probably going to be adding what’s called a word wheel. It shows you every word that’s been indexed, so if there’s a word out there that’s been misspelled, it allows you to identify and find out where it is a little easier. And we’ll add some other features like hypertext and hyperlinks.”

At the core of their search engine, Fulcrum uses inverted indexing. On top of that, they built features to allow statistical relevance ranking of documents and similarity searching. At the bottom layer is the boolean search engine, optimized to compress the indexes for minimized overhead and increased retrieval

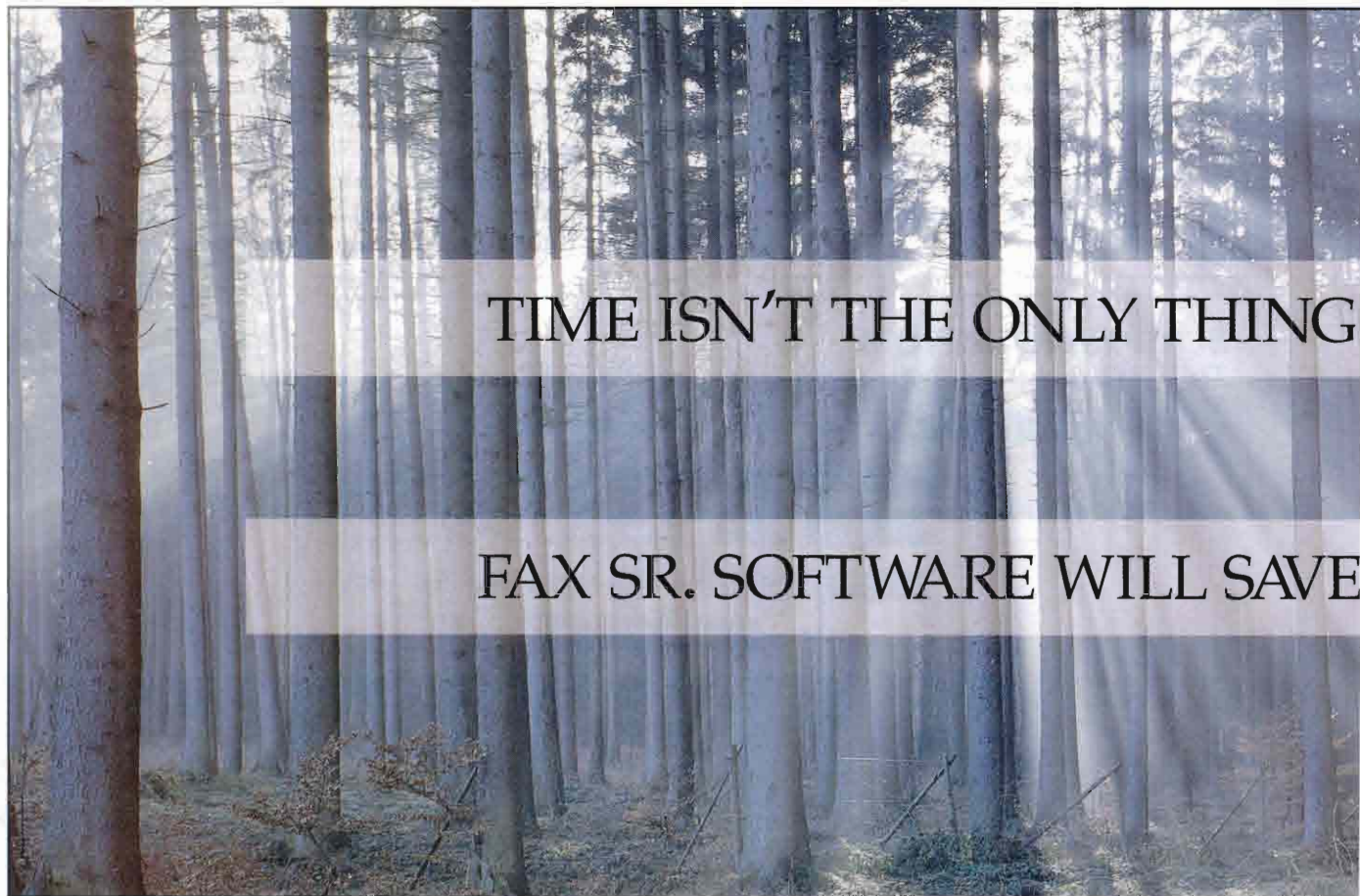
speed. The statistical relevance ranking allowed Fulcrum to build intuitive searching, which according to Judges is really the “thick coke bottle glasses/librarian type of stuff, where the users can just say ‘this document looked interesting, find me more like it.’”

Verity Inc.’s (Mountain View, Calif.) TOPIC uses intelligent agents to analyze documents and compare them to a content profile designed by the user. The agent then can route the sought-for information interactively. Verity TOPIC structures information models by subject domain rather than keywords. It’s a slick way of doing relevance ranking. Standard searching features include boolean, proximity, dictionaries, thesauruses, density, Soundex and zone searching. A Searcher Agent responds to queries by plain text or Verity’s query language. Some of the other advanced features include TOPIC-by-Example, Hypertext connections, an SQL-bridge for interfacing to RDBMSs and TOPIC li-

braries — retrieval object collections.

TOPIC has three parts: structure, weight and logical operators. A TOPIC Tree delineates the relationship between subtopics, words and phrases. Users build these trees, can change the weight of particular nodes and define the rules by which the nodes combine. It supports HP-UX on HP 9000 Series 700/800. A World Wide Web (WWW) server also is available for HP-UX 9.0.3. The software requires 1.5 MB of memory and is compatible with forms-capable WWW clients. Point your web browser to <http://www.verity.com/> if you’d like to demo Verity’s Information Agents.

Like Verity, CP Software Group’s (Folsom, Calif.) Island InTEXT provides a content-based approach to text-retrieval, what they call “heuristics,” seizing on the way we often skim-read to scan for relevant information and trying to emulate that process. InTEXT can perform real-time summarization, where



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the software gives you a synopsis of the document using keywords and key sentences. It sounds like science fiction, but according to Andrea Kauppila, product marketing manager, "people won't buy into things that are too amazing. We don't try to say we're artificial intelligence, because artificial intelligence made an attempt to replace man with machine, and we're trying to help the machine make man work a little smarter."

Island InTEXT has been a stand-alone Windows product, but a UNIX version is scheduled for release this month. Island InTEXT runs on the following platforms (all will support X11 R5 Motif 1.2): Sun Solaris 2.3, SunOS 4.1.x, HP-UX 9.x and IBM AIX 3.2.5. It offers extended features like concurrency control for simultaneous access from multiple users. Native file viewing will not be a part of the initial UNIX release; they're still working on the filters. The Windows product

as it exists right now, offers 100 filters.

The primary emphasis is on routing and summarization. Kauppila notes how the summarization feature can be put to creative use as an authoring tool. "Say you're creating a document in your word processor and you say 'wait a minute, I'd like to see how this translates, how this is emphasizing what's important in my document.' You call up your summarizer and see what it thinks is the most important part of your document (the synopsis it comes up with) and go from there."

In an effort to address the needs for step-wise implementation, Interleaf Inc. offers Intellecte, a package of document management products with a service pack that gets customers a working document management system in a 12-week time frame.

"Sometimes a lot of customers study these things to death, they scope out these huge projects that would take years and years to deliver and cost millions,"

says Pat Byrne, product manager at Interleaf. "Intellecte scopes out a limited project. They've got more than just a prototype; they've got a full running pilot system, and they can just add to it, or they can do another one in another part of the business."

Although a global approach to document management is promising, many organizations need to start with the basic building blocks. After all, a document management system can't be much help if you can't find anything. According to Dave Schubmehl, product manager for Dataware Technologies' (Cambridge, Mass.), "CEOs and CIOs have gotten to the point where they understand that 90 percent of the data that's created within their organizations is not data that will go into any kind of a relational database."

Relational database technologies don't really emphasize quick retrieval of large amounts of data. For example, take someone who needs to find inventory

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## Textbook Solutions

records about a particular drug as well as information on health effects related to cancer and children under the age of five.

But that is the kind of query a good text retrieval engine can turn around in seconds. By contrast, in a relational database, it might take minutes or hours. Full text-retrieval uses sophisticated

search engines to perform structured and unstructured queries on your documents.

## VOLUME TWO: THE DETAILS

ACCORDING TO Jim Tchobanoff at Pillsbury (Minneapolis, Minn.), "Users

## THE HYPERTEXT EXPRESS

There's a demand from customers for more powerful hypertext browsing and routing tools to ease the pain of searching for the proverbial information needle in the data haystack. So, users are pressing vendors for Hypertext Markup Language (HTML) support. HTML is a document type definition (DTD) written using Standard Generalized Markup Language (SGML). In layman's terms, HTML is a set of styles (markup tags) that define the parts of a World Wide Web (WWW) document. For example, you can tag headings, subheadings and paragraphs; you can define your links to text, graphics, sound and other web sites; and you can design interactive forms. All this is simply done with a text editor. If your search engine supports HTML, you can provide searchable information to the WWW (a huge customer/user base), or you can access and search the WWW for your own needs.

Nearly all document management vendors are in the process of rolling out hypertext browsers or tools to ease the creation of HTML web pages. For example, Cyberleaf, a GUI available from Interleaf (Waltham, Mass.) enables users to convert standard text and graphics formats to HTML 2.0 and GIF. It also streamlines the process of setting up hyperlinks. Visit Interleaf's web server at <http://www.interleaf.com/>. The popularity of the web and browsers like Mosaic and Netscape is driving users toward HTML, and by extension, its parent definition language, SGML. To succeed, a text-retrieval engine must first support multiple document file formats — in other words, native file viewing.

For instance, Norma Piatt, an attorney and Manager of Publishing Systems at Continuing Education for the Bar (CEB) in California, the nation's largest continuing education organization. CEB pub-

lishes materials and conducts programs that track legal developments to keep attorneys alerted to the most up-to-date information in the legal field. Their goal is to make information available to the more than 2,000 practicing attorneys who write for them. "I really wish that vendors would look at it from the customer's perspective and recognize that not all of us have the luxury of working in an environment with a single vendor, using all of that vendor's tools," says Piatt. "The reality is that many of us need to use best-of-breed and many of us need to be using off-the-shelf word processing tools. The tools we combine with that ought to take that into account and come with built-in filters."

CEB settled on Open Text (West Waterloo, Ontario) for their text management needs, partly because of the generous vendor support and guidance, but also because of their rigorous standards support. "It seemed to us that SGML was the way to achieve the level of usability that we wanted and to get our information into a vendor-free format so that we didn't have to spend more money reusing our information than we spent in generating it in the first place," says Piatt.

Open Text started as a spinoff product from the University of Waterloo (Ontario, Canada). Their first project was the Oxford English Dictionary. According to Mike Farrell, executive vice president of Open Text, there's a lot of irony to be found in the case of SGML. "SGML is an ISO 8879 ratified standard which was an attempt to establish vendor neutrality — totally non-proprietary. A lot of other text-retrieval systems in the marketplace say 'yes, we support SGML' but what they really mean is that they have a filter that will read SGML and put it into their own internal, proprietary format, which in our opinion goes against the objective of achieving vendor neutrality.

have to think about how they're going to change in writing their documents." Tchobanoff is program leader of the Technical Information Center at Pillsbury. He runs a technical library at Pillsbury R&D that manages text from internal technical reports. Prior to 1987, Pillsbury had been using

That's probably what we believe to be the biggest standard. People can leave their files in their original native format; that's the ultimate in openness and 'glasnost.'"

According to Farrell, the next generation of text retrieval products will allow customers to leave files in their original directories in their original format and literally pass a read-only index process overtop without duplicating those files into a separate format. The latest version, OpenText 5, adds another high-level index and a Parallel Execution Monitor (PEM) that enables administrators to put popular portions of the database on more expensive, high-performance servers and relegate the balance of the data onto cheaper servers that are not quite as fast. On the client side, they've introduced Mac support, plus UNIX Motif and ASCII terminals. They rewrote the user interface as well, adding what they call "Progressive Disclosure," which is a GUI, scalable to your expertise level.

CEB awarded the contract to Open Text in April 1994 and installed the system on their HP 9000 server two weeks later. "We defined a pretty broad system for publishing," notes Piatt. "As these things go we didn't get funding for the whole system. So we chose one small piece — installation of the search tool. In order to use SGML we marked those items in the text that we knew we wanted to track so we wouldn't have extraordinary conversion costs when we moved into the next phase of work, which we're just starting to approach — full-blown information and document analysis for SGML." Open Text has been rolled-out to about 25 people so far, and the users have been fairly pleased with what they've seen on the desktop. —JE

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IBM's Stairs text-retrieval product.

But, IBM stopped the development of Stairs and sold the source code to BRS (McLean, Va.). So, they chose BRS/Search for its extensive system support and out-of-the-box usability. BRS/Search indexes every "important" word in the document — each word is treated as a key into the database.

The definition of what constitutes an important word is up to the user, although there are standard defaults, like leaving out words such as "a, the, and." While most text-retrieval products are simple file indexing products (they take text files, write them out on disk and create an index to them), there's no guarantee that the indexes will be modified to match the source text. "There's no synchronization," says Schubmehl. "[BRS/Search] synchronize[s] the updates so that the keys and the text records get updated simultaneously."

In the fall of 1991, Pillsbury switched

to the HP 9000 Model 817 and began to experiment with the in-house development of an Electronic Project Notebook,

in which they capture the full text of project documents as they are completed by scientists and technicians. The current

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system is based on WordPerfect 5.1. Document types range from experiments, memos, and project and status reports to plant trial reports. Right now, Pillsbury is experimenting with the new BRS client-server interface, version 1.1. They'll be moving to TCP/IP, data capture and transactions will be mediated by file transfer protocols and searching by a client interface through Windows.

The Electronic Project Notebook has been in production for 20 months, and during that time they've had "zero problems" with BRS. According to Tchobanoff, the problems they do have deal with terminal emulation and passing files across the Novell network to the HP. "Network contention, network rights are a continual pain in the butt. The users have never really complained about the search interface itself.

The thing they don't like is they would prefer to see the document as they published it. What we're displaying right now is just the ASCII text. That's the other reason for our desire to move to client-server, because while we're searching on the ASCII text, we can display the original source file through a viewer."

According to Tchobanoff, there are more search engines available like Verity, Fulcrum and Excalibur that would be practical alternatives, but he likes BRS' "industrial-strength software."

Lamoureux from FPL echoes this advice — do a pilot program and get some lessons learned before you go full scale. But he doesn't hold back on his enthusiasm for the possibilities. "I think everybody should be in it. It's still an untapped, underutilized technology right now that's readily available. Everybody needs to be managing documents to one extent or another and I don't think it's really gotten the play or the exposure that some of the other flashy technology has, yet it can be very powerful and lead to tremendous productivity gains." — *Jim Esch is a freelance writer specializing in high technology, based in St. Louis, Missouri. He can be reached at [jmesch@artsci.wustl.edu](mailto:jmesch@artsci.wustl.edu).*

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# A Peaceful COEXISTENCE

**UNIX.** It's not going away (although some might wish it would). It's difficult to ignore (although some have tried). But if you are an HP 3000 customer, you may have to learn how to integrate your HP 3000 and MPE/iX operating systems with UNIX, one of the most common OS environments that many users must learn to live with in the near future. Depending on your particular business needs, you will likely have to face all or some of the following issues when trying to coexist with UNIX in your HP 3000 (MPE/iX) environment:

- Sharing data between applications and databases
- Application development and deployment
- Network interoperability
- System management

Although all four are important, this article will cover two of the most pressing issues for HP 3000 customers: developing applications and sharing data between those applications in a mixed MPE/iX and UNIX environment.

## SHARE AND SHARE ALIKE

BECAUSE MANY organizations already have MPE/iX and UNIX systems, figuring out how to share the data that you

## Teaching Your

## HP 3000 How To

## Behave In A Wild

## (UNIX) World

already have is often the first problem you need to solve. Using database interoperability software, available from HP as well as third-party database, tool and middleware ISVs is usually the easiest and fastest way to access and update remote data.

Why? Because the software is designed to make a remote database behave as if the data resides on a local database.

Dave Wilde

The end-user or developer is freed from needing to handle the complexity of connecting to, sending messages to and disconnecting from remote databases. Second, the software usually uses an SQL-based interface that most software developers are already familiar with. Then, the developer (or better yet, a knowledgeable end user) is not forced to learn multiple SQL dialects or APIs for a variety of RDBMs and is shielded from having to work through the inherent and often complex networking requirements.

Products that allow UNIX-based applications to update HP 3000-based databases, or to read and update UNIX-based databases from HP 3000-based applications include:

- HP's ALLBASE/NET
- Oracle's SQL\*NET
- Sybase's Open Client/Open Server
- Information Builders' EDA/SQL

For an all HP shop, HP's ALLBASE/NET allows you to query or update any IMAGE/SQL or ALLBASE/SQL database anywhere on your network using standard SQL calls. ALLBASE/NET is already bundled with each copy of ALLBASE/SQL sold on HP 3000 and HP 9000 systems, as well as with each copy of IMAGE/SQL sold on an HP 3000. So, it's an easy and inexpensive solution.



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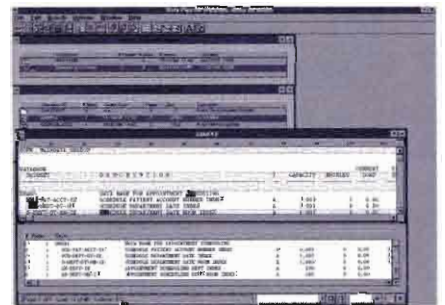
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Good question. The answers, however, have not been that good. In a perfect world, you would simply replace all of your proprietary equipment with new open system computers. Well, we already know — from bitter experience — that we don't live in a perfect world.

We need alternatives when tackling the complexity of replacing a proprietary system with a UNIX-based "open system." We already have data sharing, parallel systems and re-engineering. Yet these alternatives are limited. The best solution involves the replacement of proprietary systems. But another good question to ask is, how are we going to accomplish this goal?

There are basically three alternatives available: migrate existing software code, rewrite existing software code or replace the software code with commercial software packages. At first glance, replacing code with commercial software seems like a good idea. You've probably heard that it's easy and inexpensive, but is it?

The cost of the software must take into account the purchase price as well as the cost of retraining your entire staff. The cost of retraining the staff is almost immeasurable. Training time and expense is only a fraction of the costs when combined with productivity loss for months or years as the staff becomes comfortable and efficient with the new software.

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the IMAGE/SQL database on the HP 3000 from the HP 9000.

If you already have your systems networked using TCP/IP, just use a special tool called SQLUTIL that comes with ALLBASE/NET to create an entry in an alias file on the client machine (the HP 3000 or HP 9000 where your application will run) and another entry in a special file on the server machine called the user file (the HP 3000 or HP 9000 where

your database resides). SQLUTIL provides an easy-to-use interface and takes care of creating the alias and user files, formatting them correctly and putting them in the correct place.

It is useful to note that ALLBASE/NET does not require you to develop applications differently. For example, suppose you have an existing ALLBASE/SQL application running on an HP 3000. At some point, you may decide to move

Your business needs also must be accommodated by the commercial software. Most likely, you will be forced to change your procedure to accommodate the software (comparable to making the foot fit the shoe). And what about the emotional turmoil that such a dramatic change will create. After all, most people resist change.

Once it has become apparent that commercial software is not the proper solution, it's time to analyze the option of rewriting the code. The main benefit afforded by this option is the ability to customize the software to the business. Over the years, legacy software has evolved to accommodate the specific need of the company and this is an appealing benefit.

The downside to this option involves tremendous expense and risk. The expense comes from the allocation of resources; It can tie up an MIS department for several years or cost millions of dollars if you subcontract to an independent firm.

The risk is two-fold: There is a risk that the rewrite simply will not work. Think about all the bugs that must be worked out. The second risk is created by the amount of time required to rewrite the software. When the project is completed in a few years will the underlying business assumptions justifying the rewrite still be valid?

This brings us to the third and most workable option: migrating existing code to a UNIX-based open system. A software migration allows a company to realize its goal of replacing the proprietary system with a UNIX system without the risks or the costs associated with

the other alternatives. Basically, an automated migration will alter the code in order to allow it to operate in native mode UNIX.

The process is fast and efficient. Retraining is minimized because the programs will look and feel just like the old system, albeit much faster. The MIS department does not need to spend their time on the project. They can continue to develop the software in UNIX after the migration. The data will be stored in a powerful relational database, offering greater access to and control over business critical information. In other words, the risks are removed leaving the rewards intact.

Everything changes so rapidly and a successful, competitive corporation must keep up with and take advantage of new technology to ensure it stays competitive. The time has come to address the limitations of proprietary minicomputers: Minicomputers are expensive to purchase/lease and to maintain. And the proprietary hardware is expensive due to lack of competition. As technology improves, the relative performance of these older systems diminishes. The costs associated with maintaining the systems are not limited to the maintenance contracts, but to the opportunity costs generated by foregoing productivity gains offered by newer equipment. There are many alternatives. The challenge is to educate yourself and your company in order to choose the most profitable and successful path for the future. — Steven N. Verona is vice president of DB-NET Inc. (Columbus, Ohio).

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could dump all  
your HP 3000s,  
set up a new  
network, and  
retrain all your  
employees.*



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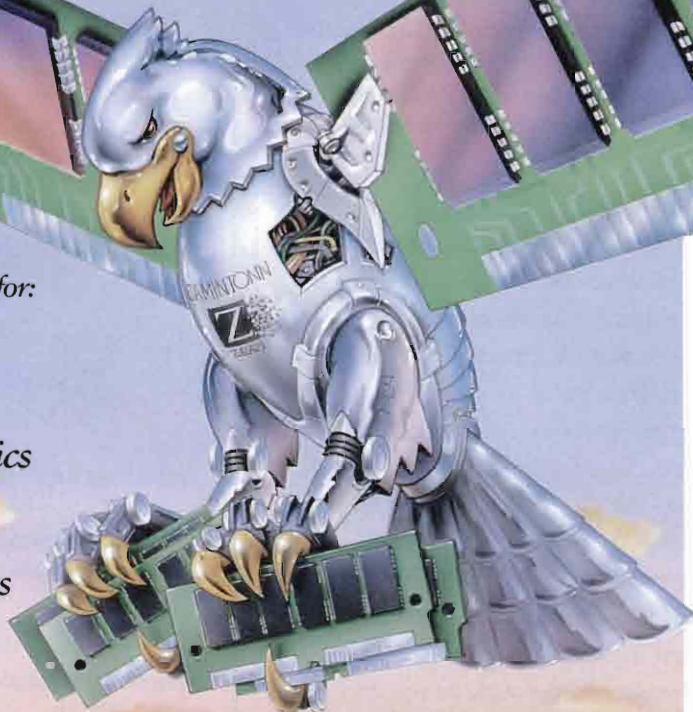
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that database to another HP 3000 or HP 9000 system without moving the application. ALLBASE/NET allows you to do this without modification to the application.

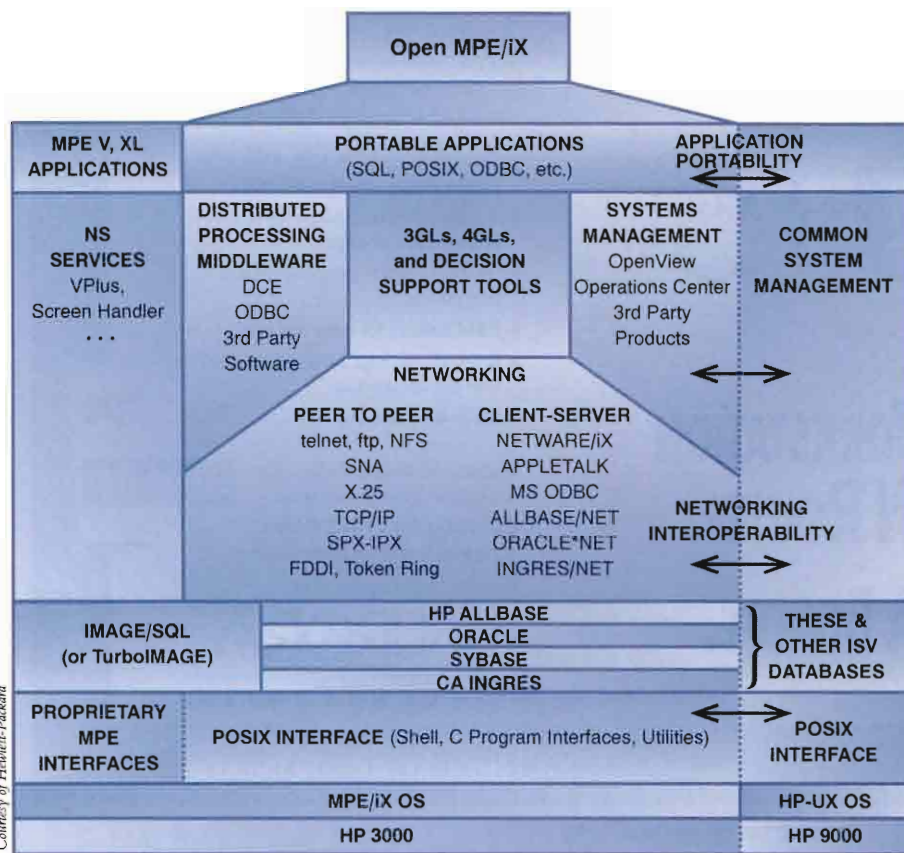
ALLBASE/NET may meet your needs if you have an exclusive HP environment. But what if you're using Oracle's (Redwood Shores, Calif.) RDBMS on your HP 3000? Or if you have other Oracle databases that you need to integrate with your HP 3000? Then you could use Oracle SQL\*NET to access Oracle databases elsewhere on your network from your HP 3000. Similarly, SQL\*NET provides access to Oracle databases on the HP 3000 from other systems on the network.

SQL\*NET is similar to ALLBASE/NET. But instead of making remote ALLBASE/SQL and IMAGE/SQL databases look like another ALLBASE/SQL database, the Oracle SQL\*NET product makes remote Oracle databases appear to be local to your application. Data residing on your HP 3000 can be joined with a variety of other databases on your net-

work using Oracle's distributed database technology.

Last month, Oracle released the Oracle Transparent Gateway for IMAGE/SQL, an SQL-based read/write gateway to IMAGE/SQL. It works in conjunction with Oracle SQL\*NET to provide SQL-based access to IMAGE/SQL on your HP 3000 from remote systems where Oracle is installed. For example, if you have an Oracle DBMS and Oracle SQL\*NET on an HP 3000 or UNIX system, the Oracle Transparent Gateway to IMAGE/SQL allows you to transparently read and write an IMAGE/SQL database on another HP 3000 as if that IMAGE/SQL database was local. The Oracle Transparent Gateway improves on Oracle's previous gateway on the HP 3000 which was read-only and worked only with TurboIMAGE.

Sybase, of course, is another important RDBMS in the relational database market, and no less critical to HP 3000 users. So Sybase (Emeryville, Calif.) is working with an HP Channel Partner, Proactive Systems (Los Altos, Calif.), to



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## Two ways to design applications for portability include using 4GLs on multiplatforms and developing layered applications using modular components.

port the Open Client/Open Server to the HP 3000. Open Client/Open Server will be Sybase's database interoperability solution for the HP 3000.

The Open Client API will allow HP 3000 programmers to read and write remote Sybase data, or any other data accessible through Open Server gateways on the network. Sybase Open Server on the HP 3000 will allow programs on other systems using the Open Client API to read and write ALLBASE/SQL and IMAGE/SQL data on the HP 3000. Sybase's

OmniSQL Server product will work with the Open Server product to allow IMAGE/SQL and ALLBASE/SQL to participate as part of a Sybase distributed database environment. These products enable customers to interoperate between HP 3000 and other environments in their enterprise where Sybase may be present. Availability of Sybase Open Client and Sybase Open Server is planned for mid-1995 and fall 1995, respectively.

Both of the Oracle and Sybase solutions also offer other gateways which fa-

cilitate access to other heterogeneous data from the HP 3000, besides Sybase and Oracle. Another product which focuses on this area is EDA/SQL (Enterprise Data Access) from Information Builders Inc. (IBI; New York, N.Y.). EDA/SQL allows access to many data sources from the HP 3000, including a variety of ISV databases on a number of UNIX systems. Similarly, it allows access to KSAM files, IMAGE/SQL and ALLBASE/SQL from several client systems (again, including most UNIX systems).

All the products described above allow you to write an application on an HP 3000 or a UNIX host to access a database as if it were local, even though the target database is remote (and possibly from a different vendor). They can help you to quickly interoperate between systems at the database level using SQL. Products available from HP, IBI and Oracle can be used to address needs in this area today. Products to address needs

SunOS.....Solaris/Intel.....HP/UX.....

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for Sybase interoperability are planned for availability later this year.

## HAVE APPLICATIONS WILL PORT

NO MATTER what operating systems or RDBMS you are using, nearly all developers agree that porting applications still plays an important role within MIS, especially with today's quickly changing technology directions. Regardless of IT strategy and environment, it is a good idea to develop important business applications for portability. Then you can easily adapt applications as your computing environment changes.

Two ways that you can design applications for portability include:

- Using fourth-generation languages (4GLs) running on multiple platforms
- Developing layered applications using modular components yourself

One approach to developing new applications for use on MPE/iX and UNIX systems is to use a 4GL toolkit. Of course, there are a number of 4GL toolkits available on both UNIX and MPE/iX platforms: Cognos' (Burlington, Mass.) Powerhouse, IBI's Focus, JYACC's (New York, N.Y.) JAM, Oracle's CDE, Speedware's (Toronto, Ontario) 4GL, Uniface's (Alameda, Calif.) 4GL and HP's ALLBASE/4GL are some examples.

Many of these toolkits also provide interoperability software to remotely access HP 3000 databases from UNIX systems and vice versa as an alternative to the database interoperability products discussed above. 4GL toolkits offer several advantages (as well as some disadvantages) in terms of portable application development. Getting started with a 4GL toolkit is relatively painless. And by using 4GLs, applications can be easily ported to new operating environments as long as you use products supported by that vendor.

Disadvantages with the 4GL approach include: the possibility that you will not be able to develop your applications the way you need (what if the 4GL doesn't support a particular set of database features you need?); the possible lack of support for operating systems and software tools on which your business may depend in the future; and the difficulty in designing applications in multiple software layers (this is beginning to change, however, as 4GL vendors add capabilities for distributed and layered applications).

## THE BUILD-IN PORTABILITY ROUTE

ANOTHER APPROACH is to build customized, layered applications. This approach is best if you hope to be able to replace pieces of the application eas-

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## Can We Talk?

If you are deploying your application in a two- or three-tier client-server environment, think about these to use to communicate over the network:

**DCE** — The first release of DCE version 1.0.2 (currently in beta test on MPE/iX) will include: remote procedure calls (RPCs); the cell directory service (CDS); the Kerberos security service; and the distributed timing service (DTS). DCE facilitates the deployment of portable distributed applications where parts might run on an HP 3000 and parts of an application will run on a UNIX system. You can develop and deploy applications for HP 3000s, using DCE as a key building block to ensure that the application is open and portable. Several key parts of this important DCE standard were, in fact, contributed by HP. Look for the first release of DCE for the HP 3000 in mid-1995.

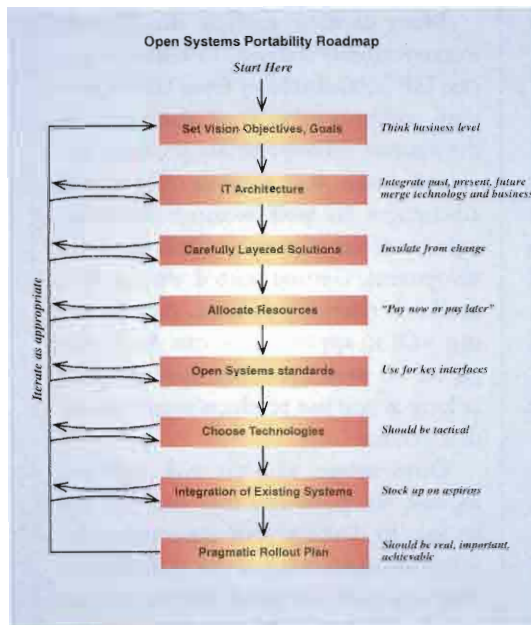
**Sockets** — DCE, as discussed above, is one industry standard which can be used for the development of distributed applications. Another interface to consider is Sockets, an API frequently used for interprocess communication over a network. Sockets is available at no charge with MPE/iX.

— DW

ily, or if you plan to turn the application into a client-server application now or in the future. In other words, your applications should be set up in such a way that one layer (and the accompanying systems software used in that layer), can be replaced without affecting the other layers. However, keep in mind that it also requires a larger up-front financial investment to design an architecture.

So, if you are developing such an application, consider dividing your applications into at least three layers: the user interface, the application logic, and the database access. Then consider some of the common standards:

**COBOL:** During 1994, Micro Focus' (Palo Alto, Calif.) COBOL and AcuCOBOL (San Diego, Calif.) were introduced for the HP 3000. Both products allow for the development of portable COBOL code in MPE/iX and



UNIX environments. Because these compilers run on MPE/iX and on many UNIX systems, you can develop an application on MPE/iX and then recom-

pile and run it on a UNIX system. Of course, if you use only the constructs specified in the COBOL standards (i.e., COBOL 85), you can develop portable COBOL code with HP COBOL II — the COBOL that's native to the HP 3000.

**C:** Some developers who develop applications across heterogeneous systems prefer HP C due to its wide acceptance. C compilers are very consistent across systems. Consequently, the C compilers for MPE and HP-UX support the same syntax and therefore allow for developing highly portable applications. By using these tools, you can really help with portability if the 4GL route is one you decide to pursue. Because there is a lot of interest in a C++ compiler for the HP 3000, HP is exploring how such an offering can be made available for MPE/iX developers.

**SQL:** SQL, as mentioned above, has

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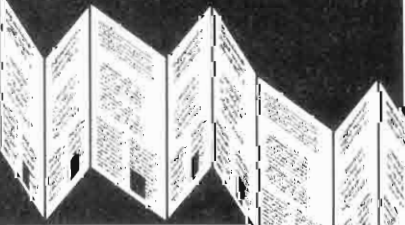
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become a truly industry-wide standard in the RDBMS market. Although SQL started as a declarative, set-oriented language, it has been enhanced with procedural and object-oriented extensions. And it's here to stay for a very long time. There are four DBMS on MPE which support ANSI-standard SQL Version 2 — Level 1: HP ALLBASE/SQL, HP IMAGE/SQL, Oracle Version 7 and CA/Ingres.

**POSIX:** By supporting the key operating system intrinsics, in such areas as file I/O, interprocess communication, process management (fork/exec), use of the POSIX (the iX in MPE/iX) API, allows applications to be ported between MPE/iX and a UNIX platform with roughly the same effort as it takes to port an application from one flavor of UNIX to another. POSIX APIs are an integral part of the MPE/iX 5.0 release.

**A PLUS FOR V-PLUS USERS**

MANY HP 3000 customers have a large installed base of applications which use VPLUS (for screen management/forms) and IMAGE/SQL or KSAM for storage management. For VPLUS users who are considering portable screen/forms management products which are portable across multiple platforms, consider NewFace from M.B. Foster Associates (Chesterville, Ontario) and Wingspan

from Software Research Northwest (SRN; Vashon Island, Wash.).

NewFace, allows you to migrate the user interface of those applications to a UNIX workstation which supports Motif (as one supported desktop device), while keeping your data and the application on the HP 3000. NewFace is a conversion tool to migrate VPLUS applications to a portable, GUI management system called Dialog Manager. SRN's Wingspan allows you to use your existing VPLUS from files on UNIX-based terminals or build a PC-like interface for terminals which is then portable between UNIX or HP 3000 MPE systems.

By now, you should be familiar with some of the products that are, or will soon be, available to help you better integrate MPE/iX and UNIX environments. Still you must first understand your business needs and give careful consideration to the choices for your particular solution. No products can provide a substitute for designing and layering your applications for modular replacement and portability. —*Dave Wilde is the Commercial Systems Division product manager at Hewlett-Packard. He can be reached at davew@cup.hp.com.*

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# BREAKING in the POWERBROKERS

If you like writing lots of interface and logging code and building your own administration support environments, you probably feel that the available UNIX tools are like the frosting on a cake. Well then, go for it. But for the rest of you, here is a review of an administration tool called PowerBroker from Freedman Sharp and Associates Inc. (Calgary, Alberta).

PowerBroker provides: selective access to administrative power, indelible audit trails (logging), virus protection and central administration of root access on HP, Sun, SGI, DEC, IBM and Motorola network platforms. PowerBroker is good for sites that need limited root (or other user) access based on time, day, location, program and host(s). For example, I can decide to allow one user to execute certain programs as root, only from 8 a.m. to 5 p.m., on Wednesday and only from a certain host. It will also kick out idle root sessions, in case someone walks away with root logged in.

PowerBroker also provides logging of all root access requests and program transcripts, with the log files kept on a speci-

fied (non-root) host. The level of logging can be controlled, right up to the time of individual key strokes. This means that the person who has root access to a program cannot edit or remove the log files.

Because the log files can be replayed, command by command, users with root access need not know the root password; they are authenticated against their own account and a configuration supplied password. Then the PowerBroker daemon looks to see if they are allowed access to a root level program. You also can control group accounts in a similar manner.

For sites worried about security, PowerBroker has the ability to force all passwords sent across the network to be encrypted. This will prevent the UNIX rlogin or telnet-like remote logins, which send the password across the network in raw format, from being detected by a network sniffer. There is even a virus checker, of sorts. You can calculate checksums of the programs that are [root] access controlled, and have the PowerBroker daemon re-calculate the checksum on every access to the com-

## POWERBROKER

- Has the ability to force all passwords sent across the network to be encrypted.
- Easy to use, even for those without programming experience.

### RECOMMENDATIONS:

- Good for sites that need limited root access based on time, day, location, program and host(s).

### PRICE:

- Prices start at \$9,000 for a 30 host configuration.

### PLATFORMS:

- HP, Sun, SGI, DEC, IBM, Motorola

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## For sites worried about security, PowerBroker has the ability to force all passwords sent across the network to be encrypted.

mand, it will reject the request to run the program if the checksum has changed.

### PRODUCT COMPONENTS

PowerBroker operates with three major components: the **pbmasterd** master daemon that handles requests for root access to programs, and writes to the log files. **pbmasterd** can be replicated for **pblocald**, the daemon that actually runs the program requested on a host, only

when given the OK from **pbmasterd**. Finally, the **pbrun** command makes a request for executing an access controlled program.

The **pbmasterd** operation is controlled by a configuration file. It can constrain 15 policy aspects for each allowed request. These include user name, group, program and arguments, nice values, umask, submitting and execution host, tty allowed on, validation password,

checksums and time information. The configuration file is written in a program language unique to PowerBroker. But then, it looks a lot like any variety of languages. For example, *Figure 1* lets me run **tar** as root from 8 a.m. to 5 p.m. on the host **puxy**, if invoked as:

```
pbrun tar cf devicefile file_list
```

There are other commands to control logs and that check configuration file syntax.

### PRODUCT EXPERIENCES

The product loaded easily, and it worked the way I expected. The only problem is having to write the configuration file. But the tutorial and documentation (with plenty of examples) made that exercise relatively simple. Even for someone without programming experience, it shouldn't pose a serious handicap.

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### FIGURE 1

```
if (timebetween(800,1700) && user=="frederm" && command=="tar")
{ runhost="puxy";
runuser="root";
accept;
}
```



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# Why CI?

## Before entering the brave new world of the MPE/iX 5.0 POSIX

shell, we need to review some of the under-documented features of the MPE/iX command interpreter (CI).

Why examine the CI? Isn't POSIX the politically correct thing? Good questions. Eventually, the POSIX shell and utilities will become part of the MPE mind set, but not for quite some time. The learning curve is steep. In reality, the time commitment will prevent many people from making significant use of the POSIX shell for awhile.

Because something *can* be done in the CI, does not mean that it *should* be done in the CI. However, in order to make a reasoned judgement, you must know what the CI can do and what the performance ramifications are.

But what exactly does "under-documented" mean? Old-timers will remember when they got all the general documentation, plus the documentation for the optional subsystems when you purchased an HP 3000. Documentation now

can cost thousands of dollars extra and is often incomplete or out of date. The basic documentation that comes with smaller systems is next to useless.

Many new features are first documented in *Communicators and Application Notes* and only much later, if ever, appear in manuals. Because you do not get back issues of these publications with a new system, many features end up under-documented. Good reason to acquire HP LaserROM, even though it is far from ideal. It also is good to monitor HP SupportLine, HP3000-L or comp.sys.hp.mpe.

### EVERYONE INTO THE SPOOL

SPIFF (the Spool File Interface Facility) comes with the "push" release of MPE/iX 5.0. SPIFF owes its existence to the hue and cry raised by users when the NM Spooler was introduced (MPE/XL 2.1) without any utility analogous to SPOOK.

HP maintained at the time that the functionality of SPOOK could be achieved with the new NM Spooler commands, or by combining the new commands with normal file operations, because spool files are now part of the MPE file system. As proof, HP put out HP 3000 Application Note #88 (June 1991) and followed it up with an extensively revised version (HP 3000 Application Note #93, December 1991). Unfortunately, most of

the information in these notes never found its way into the NM Spooler documentation. And, in the case of

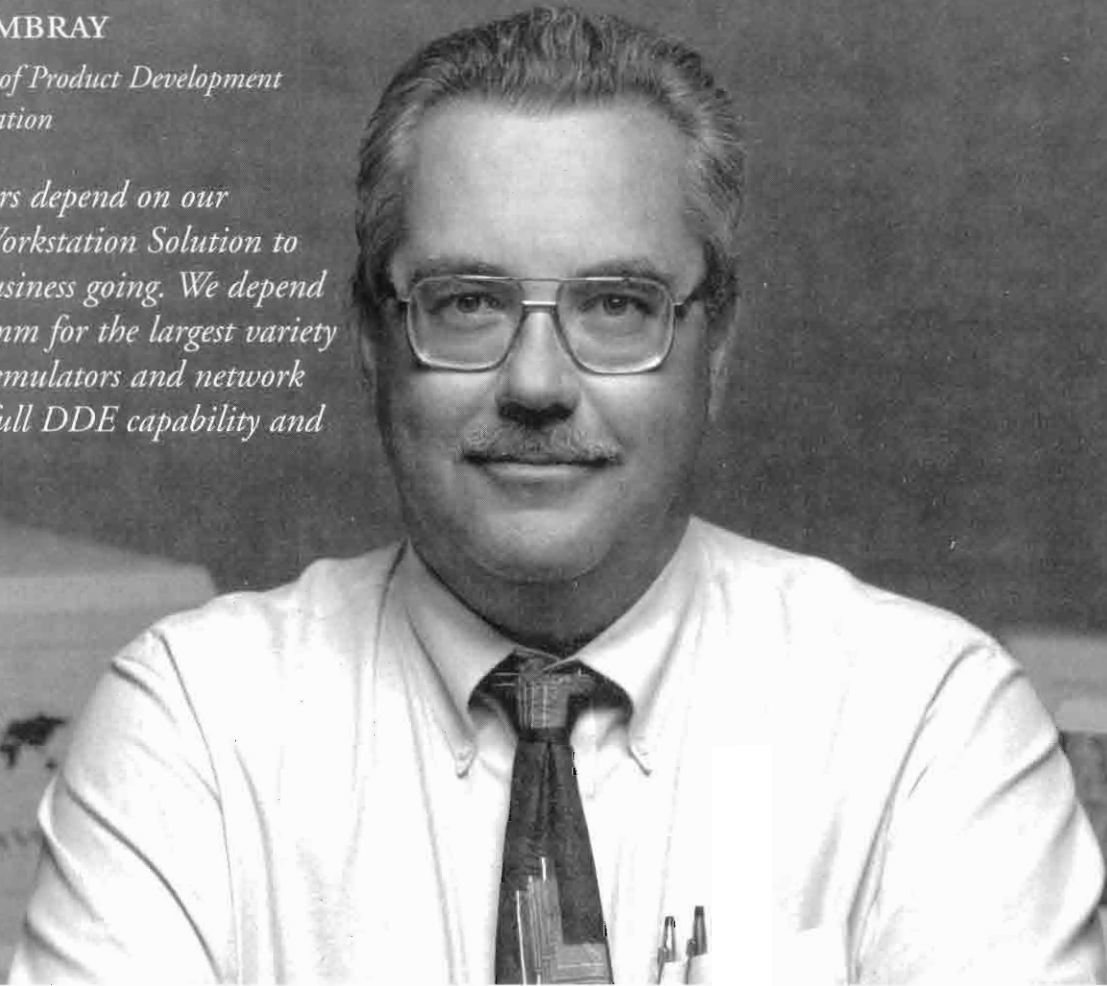
#### FIGURE 1

```
SPFSUBSET SPFNUM, START_REC_NUM
FILE FROM=0!SPFNUM.OUT.HPSPOOL: COPY
FILE TO=MYSPOOL: COPY; CCTL
SETVAR LAST_REC_NUM, (FINFO("0!SPFNUM.OUT.HPSPOOL", "EOF")-1)
FCOPY FROM=*FROM; TO=*TO; NEW; SUBSET=(!START_REC_NUM;!LAST_REC_NUM)
SPOOLF MYSPPOOL: PRINT
```

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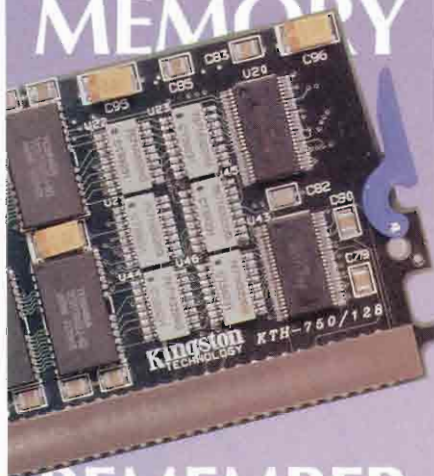
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Application Note #93, it never even found its way onto the HP LaserROM CD-ROMs.

Although SPIFF has APPEND and COPY commands that eliminate the need for many of the techniques of Notes #88 and #93, the following two UDCs (minus some housekeeping commands such as PURGE, RESET and DELETEVAR) serve to illustrate some of the under-documented things you can do with spool files and to introduce some other under-documented features of MPE/iX.

The first UDC creates a new spool file that is a subset of the original, yet retains the same spool file characteristics. This is useful when printing special forms. It gives greater control over printing by allowing a restart exactly at the desired record number (see Figure 1).

**FIGURE 2**

```
COMBINE 01,02
ANYPARM PARM_LIST=[ '* ' ]
FILE FROM1=0101.OUT.HPSPOOL;COPY
FILE FROM2=0102.OUT.HPSPOOL;COPY
SETVAR MYSPPOOL_EOF,(FINFO('0101.OUT.HPSPOOL','EOF') + &
  FINFO('0102.OUT.HPSPOOL','EOF'))
FILE TO=MYSPPOOL;CTL;COPY:DISC=MYSPPOOL_EOF;ACC=APPEND
FILE SCRIPT:TEMP
ECHO FROM=*FROM1;TO=*TO;NEW:CTL > *SCRIPT
ECHO FROM=*FROM2;TO=* >> SCRIPT
ECHO EXIT >> SCRIPT
RUN FCOPY.PUB.SYS SCRIPT > $NULL
SPOOLF MYSPPOOL;PRINT;SHOW;IPARM_LIST
SPOOLF (101,102);DELETE
```

## BURKE'S BITS

■ **Workload Manager/iX is now available** with the general or "push" release of MPE/iX 5.0. Primarily targeted at large sites, it gives a system manager the ability to control processes by assigning them to user-defined workgroups based on logon information, program name or scheduling queue attributes. Minimum and maximum CPU percentages can be established for each workgroup, preventing a process from being locked out of the CPU or, alternatively, from hogging the CPU. Workload Manager/iX helps maintain consistent system response times even during peak processing periods. Workload Manager/iX is an optional feature (\$5,000 to \$10,000).

■ Written by Simson Garfinkel, Daniel Weise and Steven Strassman (IDG Books, ISBN 1-56884-203-1), **The UNIX-HATERS Handbook** is a must read for HP 3000 advocates. Not only is it entertaining, it provides ample ammunition to hurl at anyone hinting at replacing an HP 3000 and MPE/iX with UNIX, the "Un-Operating System: unreliable, unintuitive, unhelpful, unforgiving and underpowered."

■ **Spool File Print Order.** Several months ago, I wrote about a work-around using AIFs which would give you control over spool file print orders. When I mentioned I would first have to learn to write C or Pascal on the HP 3000, I hoped some C or Pascal jockey out there would take pity on me, flex their programming muscle, throw something together in an hour and contribute it for the general well-being of all. But, no one took the hint.

A calling sequence might be:

```
SPFSUBSET 8123,660
```

The second UDC creates one spool file out of two. It solves the interleave problem introduced with the native mode spooler (see Figure 2).

A calling sequence to combine spool files #O8223 and #O8224 into a new spool file with priority 4 and three copies would be:

```
COMBINE 8223,8224,COPIES=3;PRI=4
```

*Note: while inefficient, this technique also can be used to "force" a particular printing order by combining spool files before printing.*

Among the under-documented CI features used in the above UDCs are: FINFO and especially the mnemonics such as "EOF" (which finally appear in the MPE/iX "push" HELP system); ANYPARM, introduced in the MPE/XL 2.1 Communicator but only recently appearing in a manual; command I/O redirection (CIOR); de-referencing; and expressions.

Burke's Internet address:  
[burkej@cardinal.com](mailto:burkej@cardinal.com)

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# Not So Open OpenView

## Time for a pop quiz on HP's network management strategy:

Where have you seen the following words before?

*"When Tornado arrives in mid-1995, users will benefit from a new distributed discovery feature ... Even more valuable will be support for a distributed user interface ... Tornado will also support SNMPv2—providing improved security and even greater bulk data retrieval efficiencies."*

If you said my column in the December 1994 issue of *HP Professional*, you're absolutely correct. You've been paying attention. But now — courtesy of HP — let me eat those words.

### THE FIRST COURSE

HP has delayed Tornado, the next major release of the HP OpenView Network Node Manager (NNM) system, until mid-1996. That's right, a full year later than first announced.

HP underestimated the complexity involved in developing Tornado. This is not unusual in our industry — vendors often promise to deliver quantum-leap technology products within unrealistic time frames. However, had HP purchased the technology it needed, it could have brought Tornado to market faster. Instead, HP chose to make, instead of buy. And as a result, customers must wait.

The reaction to this delay from the HP OpenView User's Forum and the network management community at large, has been one of surprise, anger and frustration. Most of these customers, particularly those with large networks, invested in OpenView NNM assuming that multiuser capabilities would be soon in coming. Right now, a single copy of NNM can't effectively manage more than a few hundred nodes in a busy, complex network.

Using X displays to share event and network topology data between multiple NNMs can easily create enough traffic to bring a stressed out network to its knees. Aren't network management systems supposed to keep the network up and running? Clearly, HP underestimated how much OpenView customers wanted this new release.

So HP OpenView customers are now left with two questions: why isn't the Tornado release a priority? And if HP is willing to leave at least 5,000 OpenView customers in the lurch for a year, what will they do for an encore?

Answering these questions, requires a closer look at the products comprising HP's entire network and systems management solution. First, at the low-end, there is HP OpenView for Windows, designed to manage a handful of LAN segments. Priced at several thousand dollars, the product is not highly profitable. It is now sold through the same reseller channels as HP printers and PCs — not a traditional distribution channel for network management software.

Second, although UNIX-based OpenView NNM's sticker price is three



## Had HP purchased the technology it needed, it could have brought Tornado to market faster.

times higher than OpenView for Windows, profit margins are still slim. OpenView NNM is sold directly by HP or through VARs, often in conjunction with sales of HP routers and bridges, but not exclusively.

Finally, HP's OperationsCenter, its new systems management software (problem management), AdminDesk for user administration and PerfView for performance analysis is targeted for distributed UNIX environments. OperationsCenter modules are typically sold direct, usually with large orders for HP-UX workstations. With price tags ranging from \$30,000 to \$100,000 each for a complete package, they are much more profitable for HP and therefore much more strategic. But not so coincidentally, OperationsCenter applications also are much more proprietary — the software agents that collect the management data use proprietary HP software, communicating via RPCs — *they are not SNMP-based.*

### THE END OF THE OPENVIEW WORLD AS WE KNOW IT

I'm not alone in predicting that HP will gradually attempt to transition its OpenView NNM customers to OperationsCenter. But that assumes an eventual convergence of network and systems management operations within the organization. Obviously, merging network and systems management can bring several benefits to the customer, including more opportunities for automating fault and problem management, as well as consolidation of network and systems management operational expenditures, including staff reductions.

In many organizations, network management operations are mostly, if not completely, separated from systems management. And those companies want to keep it that way. However, the problem here is not whether one approach is better than the other, but that HP is apparently forcing its customers into a particular management architecture. This comes

after HP promised an open, plug-and-play management solution.

So, HP's OpenView NNM as we know it will eventually be subsumed under the OperationsCenter/AdminDesk/Perf-

View management solution. Customers who are not ready to re-align their network and systems management operations to HP's specifications should be aware of this product direction. And prepare for the future.

Huntington-Lee's Internet address:  
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# Run, HP-UX 10, Run

One of the first things you might check out upon sitting down to an HP

box running HP-UX 10.0 are the startup files. Being a UNIX weenie, you might enter `more /etc/rc`. If you did, the result would be `/etc/rc not found`. Huh?!

Well then, let's take a look at the new startup file (rc) organization, which looks a lot like that of SRV4 and the OSF/1 model. If you happen to be familiar with those models, there are only a few minor changes; if not, it's all brand new. Older versions of UNIX used one or more `/etc/*rc*` files to configure the system at boot. When the init process ran, at some defined run level, the "first" shell script of the `*rc*` files was invoked and executed, then called in some other `*rc*` files. The problem was that edits or additions were very difficult to keep track of.

How many of you have placed an edit in a file only to find that it started a process in the wrong order? I've had some problems with editing startup files supplied by vendors. When a new version comes out, I have to manually edit the files because the install scripts were not smart enough. And some processes were not being properly terminated when changing run levels down to a lower level. The new model solves many of these problems and provides much more flexibility in configurations. It is now easier for vendor software

to "do the right thing," and is similar to other vendors' current startup models.

The model is based on having a single script (`/sbin/rc`) executed on every run level (0 to 6) transition. This script then looks for needed configuration information in the config files, and executes all scripts needed for a specific run level. If you are going up in run levels, the new higher level startup scripts are executed. If you are going down a level, there are now kill scripts located at every level to stop those processes that should not be running at that run level. Note well the separation of configuration data from the scripts: You no longer need to edit shell scripts, just config files (which consist of variable) definitions, because they are sourced in the `/sbin/rc` script.

## LET ME COUNT THE WAYS

Run levels are defined as modes of operation in which certain processes are allowed to run. The common ones are S or 1 for single user (system administration). In the past, we had run level 6 for halt; and 3 or 4 for running HP VUE on HP 9000 Series 700s. Under the new model, there are much better defined levels, with 2 still being multiuser, 3 for filesystem export and 4 for GUI.

On HP 9000 Series 800 servers, the default will be 3. On Series 700 workstations it will be 4. The real improvement here is in having startup and kill scripts for moving between levels. For example, if you issued `/sbin/init 2` (please note the new location of the init program) when the system was in run level 4, it would run all the kill scripts for level 4, then level 3,

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to get to run level 2. This allows for much better control. The kill scripts for run level 3 are in the run level 2 directory, as they are run when you go to run level 2, from run level 3.

Some of these run levels are defined in `/etc/inittab`, but the files are located in the `/sbin/rcX.d` directories, where X is the run level. In each of these directories, there are scripts, for kill and startup of that run level. For example, in the `/sbin/rc2.d` directory, you would find (among others) the following files: `S204clean_tmps`, `S370named` and `K900nfs.server`.

When booting, upon reaching this run level, all the scripts that start with "S" would be executed, in numerical order, thus the three-digit code in the name. S is for startup, and K is for kill. If you went from run level 3 to run level 2, all the K scripts would be executed, so the NFS server would be properly killed (`K900nfs.server`), as run level 2 is multiuser, but doesn't have a filesystem export.

This organization makes it easy for you

to add in startup and kill files. These scripts *should never be edited*. New ones are simply added or removed when an application is installed or removed. The three-digit numbering allows for the new files to be added with filenames so they will run in the right sequence.

### SIMPLE CONFIGURATIONS

OK, now that I've just said these `/sbin/rcX.d` files should never be edited, how do you configure things? It's quite simple. Another set of files contain nothing but variables that are read by the `/sbin/rc` script. This script uses all the files in the `/etc/rc.config.d` directory, which gets all the variables defined that will be used by the `/sbin/rcX.d` files. Some of the configuration files in the `/etc/rc.config.d` directory include: `LANG`, `audio`, `cron`, `ncs`, `nfs`, `lp` and `netconf`.

All the files in `/sbin` are considered static — they do not change configuration files that might vary all live in `/etc` (dynamic files). Other static directories include `/usr`

and application binaries under `/opt`. Here are a few lines from the `/etc/rc.config.d/netconf` file:

```
HOSTNAME="swift.fame.com"
OPERATING_SYSTEM=HP_UX
IP_ADDRESS[0]="179.102.3.2"
ROUTE_GATEWAY[0]="179.102.3.5"
```

And so on. So all configurations are done with variables pulled from files in `/etc/rc.config.d` files, and supplied to the `/sbin/rcX.d` files by `/sbin/rc` and `/sbin/rc.utils` scripts.

The new startup model is necessary for supporting the new NFS-based diskless model that HP-UX 10 uses. Each script leaves messages as it boots, so you get better granularity of progress than in HP-UX 9.x. Unfortunately, a shutdown takes substantially longer than it did in the past.

Mallett's Internet address:

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CIRCLE 216 ON READER CARD

(Advertisement)

### 270MB UNIT IS AVAILABLE FOR HP9153 REPLACEMENT

ISA announced the addition of a new 270 MB unit to its family of HP9153 replacement Hard Drives with Floppy. ISA has been supplying 46MB and 118 MB units in the market for more than 10 years, and this release would give more choice to the users. Price is \$2,220.00. Contact Floppy Disk Family Dept. 713/493-9925.

Circle 403 On Reader Card

### NEW TOTOKU HIGH RESOLUTION, FULL FEATURED COLOR MONITORS

If you are looking for a high quality 17" or 21" color monitor, check out the new Totoku line of enticingly priced monitors from Texas ISA. Totoku has been an OEM for Sony and other vendors, and now introduces their very own models, the CV172U (17" priced at \$1,190) and CV211U (21" priced at \$2,125), Texas



ISA can be contacted at 713-493-9925.

Circle 404 On Reader Card



### INTRODUCTORY PRICING FOR HP712 MEMORY BOARDS

ISA's introduces their newly released memory cards for the HP712 with a special introductory pricing. CALL for their 32 MB and 64 MB guaranteed best prices, with lifetime warranty. Call 713/493-9925

Circle 401 On Reader Card



### MULTIFUNCTION 4MM SUB-SYSTEM

Texas ISA, Inc. introduced a new 32GB Multifunction 4MM Sub-System at Interex '94 in Denver, Colorado. Two models are available: 5032S-Dual for DDS-I and 5034S-Dual for DDS-II. The unit features: off-line tape-to-tape copy, verify, mirroring, cascading, and alternating drives. Supports HP, SUN, IBM and DEC. Contact John Larmie; 713/493-5746.

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CIRCLE 245 ON READER CARD

# The PCI Bus Has Bits To Burn

If performance is important to your PC network (and when isn't it?), check out

the new-generation of file servers with Peripheral Component Interconnect (PCI) slots. For example, match a PCI-based server with a high-speed ATM, FDDI or Fast Ethernet network card, and you've got a potential "screamer." With a 132 MBps data throughput rate, the PCI bus architecture far outstrips the current generation of personal computer buses — Extended Industry Standard Architecture (EISA) and Micro Channel Architecture (MCA) which provide only 20 MBps of throughput.

By contrast, the original ISA and the Macintosh NuBus provide a respective 10 and 35 MBps throughput. Keep in mind that the PCI rate is *sustained throughput* and not a burst mode rate as for all the others. Also important is PCI's ability to support a hierarchical bus structure and its ease of installation and configuration.

If that's not enough, PCI cards can offer multifunction capabilities at prices comparable to today's single-function adapters. Yes, PCI-based servers should be a hit, and it's no surprise many PC vendors, including HP and IBM, regard PCI as a key part of their server marketing strategies.

Consider the effects that bus rates have when connecting a server to a network:

At 10 Mbps, an Ethernet adapter delivers about 125 KBps, well within the capacities of ISA, EISA, MCA and NuBus. But what happens when you move the server to a high-speed technology such as ATM, where PC adapters can deliver two "speeds," 155 Mbps and 25 Mbps? The answer is simple: You need a bigger "pipe" going in and out of the server.

At 155 Mbps, ATM delivers about 20 MBps, more than twice that of an ISA bus and enough to saturate an EISA or MCA bus. And as a full-duplex technology, an ATM connection can carry two of those 20 MBps data streams simultaneously. That's great if you are thinking about real-time networked video teleconferencing.

In fact, with PCI's current 33 MHz speed and 32-bit wide architecture, it's possible to run four 155 Mbps ATM connections through one PCI slot, says Tim Mostad, technical marketing manager (and Intel employee) for the PCI Special Interest Group, an industry consortium promoting the bus. When the 66 MHz, 64-bit version of the PCI spec (version 2.0) is ratified, probably later this year, PCI's throughput will jump to 528 MBps.

## CONFLICT RESOLUTIONS

PCI also offers an architecture that permits segmenting the peripheral bus, with a bus master level and local buses "under" the master. This segmentation restricts data traffic to individual segments, eliminating contention for the bus that occurs in the EISA, ISA, MCA and NuBus environments, where the adapters all vie

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CIRCLE 155 ON READER CARD

## When the 66 MHz, 64-bit version of the PCI spec (version 2.0) is ratified, PCI's throughput will jump to 528 MBps.

for the same bandwidth. Because of contention, cards in servers with these buses eventually end up waiting for access to the bus, impeding the server's ability to move data on or off the network, or in or out of a disk subsystem. No such contention occurs with PCI.

A "typical" PCI-based server will have two primary buses, says Mostad. Each "peer bridge" segment could contain four slots, and each of the eight slots could contain multifunction cards providing, for example, several SCSI-to-disk controllers matched with multiple network interfaces. In addition, PCI cards are generally less expensive to build than an EISA or MCA card. First, PCI cards "are simple to lay out and they're small physically, with only a half-dozen to a dozen chips," says Mostad.

PCI components also use ASICs (Application-Specific Integrated Circuits). While an ASIC's initial development costs are high, they quickly bring down the cost. "A four-function PCI card would not be significantly more expensive (to build) than a single-function EISA card," maintains Mostad.

Additional PCI card advantages include: automatic configuration of interrupts, I/O addresses and DMA channels, so they are easy to configure. And PCI cards also are easier to install because they are jumperless.

### HP's NETSERVER I/O BUS

HP considers PCI "the primary I/O bus for our servers for the future," according to Spencer Frink, an architectural engineer with HP's network server division (Santa Clara, Calif.). HP now markets two servers, with PCI slots: the NetServer LC and NetServer LF.

"EISA and ISA buses will be maintained for legacy systems compatibility," he says, "but all of the high bandwidth

devices, such as 100 Mbps LAN cards and SCSI, will migrate to PCI." Compaq, with perhaps the largest base of installed network servers, now sells one server with PCI slots, the ProSignia 500, with three EISA slots and individual ISA, shared ISA/PCI and PCI-only slots. A Compaq company spokesperson indicated that Compaq's machines will become PCI compatible soon.

IBM plans "to be one of the leaders in introducing" PC servers combining the PCI, EISA and MCA buses, says Michael Coleman, general manager of IBM's PC server division. IBM currently ships one PCI-based server, the PC Server 300, which combines PCI with EISA, and will release a PC Server 500 with PCI and MCA buses later this year, he says.

Several other vendors, including Dell, AST and DEC also market servers with PCI buses. And although it's not specifically focusing on the server market, the PowerMacintosh series will migrate from NuBus to PCI. Apple is "behind PCI in a big way," says Bill Brown, general manager of Apple's Business Systems division, responsible for servers, NICs and remote access software. Theoretically, PCI-based PowerMacs will be able to use PCI cards developed for PC systems with Intel's 486/Pentium CPUs, contends Brown.

Apple's move to the PCI bus bodes well for its staunch supporters, especially those in IS departments who've had to deal with the Mac's image as a non-standard computer. With PowerMacs able to use the same peripherals as PCs, Mac users gain access to a potentially huge range of hardware options previously unavailable to them.

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# *new* Products

## SOFTWARE

### TowerEiffel Supports World Wide Web

Tower Technology Corp. announced a new TowerEiffel version which allows software class specifications to be generated in HTML format.

By combining this capability with the automatic documentation feature of the Eiffel language, software developers can use their World Wide Web browser to surf an enterprise-wide repository for information about reusable software components.

With this release, TowerEiffel supports HP-UX and Linux. Tower also introduced a Professional version of their product for individuals wanting to learn and explore TowerEiffel under a non-commercial development license.

The Professional version costs \$249 and the Commercial version costs \$1,295.

Contact Tower Technology Corp., 1501 W. Koenig Lane, Austin, TX 78756; (512) 452-9455.

*Circle 400 on reader card*

### MH & Co.'s FMS II Integrates Systems

Mitchell Humphrey & Co. announced FMS II, a system of decision support tools. This software was designed with a layered architecture and is portable across the HP 3000 and HP 9000 platforms. This version of FMS II provides a choice of user interface, such as a Microsoft Windows GUI for PC users.

FMS II systems include General Ledger, Accounts Payable, Accounts Receivable, Fixed Assets, Project Accounting, Fund Accounting, Consolidations, Purchasing, Inventory, Budgeting and Financial Planning.

These systems can be purchased individually or as an integrated member of other FMS II systems installed at your organization. The flexible and integrated reporting capabilities allow for an organization's productivity to increase.

Contact Mitchell Humphrey & Co., 11720 Borman Dr., Ste. 310, St. Louis, MO 63146; (314) 991-2440.

*Circle 397 on reader card*

### MAN-FACT II Combines CAD Drawings and Video

DataWorks Corp. introduced an advanced imaging capability that makes it easy to integrate CAD drawings, documents, photographs and video into MAN-FACT II manufacturing software.

MAN-FACT II provides the manufacturing software user with numerous capabilities such as linking CAD drawings to parts or assemblies. A user can review text certification associated with a shipment, or integrate their system with a full-motion video using Media Player.

Contact DataWorks, 7441 Lincoln Way, Ste. 200, Garden Grove, CA 92641; (714) 891-6336.

*Circle 399 on reader card*

### i2 Technologies Upgrades New Release

i2 Technologies announced Release 2.7 of Rhythm, a planning and scheduling software. Key enhancements include: real-time order promising; flexible lot-sizing, which allows users to manufacture multiple demand orders in the same manufacturing batches; and expanding modeling capabilities for more effective representations of operators in the detailed schedule.

Other features include more interactive control over scarce material/resource allocations through graphical interface and the ability to schedule manufacturing cycles of only specified products.

Rhythm provides enhanced integration for interfaces to MRP II systems from a variety of vendors, including Avalon, Datalogix, Oracle, qad and SAP. Rhythm runs on Sun, IBM and HP among other UNIX-based workstations.

Contact i2 Technologies, 1603 LBJ Fwy., Ste.

780, Dallas, TX 75234; (214) 620-0026.

*Circle 396 on reader card*

### V-Systems Introduces VSI\*FAX For Windows

V-Systems Inc. announced VSI\*FAX for Windows, a client interface that makes the faxing of personal messages and business documents effortless and instantaneous for Windows users networked to UNIX fax servers.

Key benefits are: an intuitive GUI for fast and easy sending, receiving, viewing, printing and archiving of fax files; it installs like a print driver so users can be up and faxing within minutes; it allows for faxing directly from any Windows application; and it makes every fax machine in the world a remote printer for the local user.

Although constructed as a client interface to server software running on a UNIX host, VSI\*FAX for Windows does not require that users know UNIX or use UNIX commands, and does not require a dedicated fax server.

VSI\*FAX server software runs on every major UNIX platform. Prices start at \$995. VSI\*FAX for Windows is priced from \$80 per seat.

Contact V-Systems, 32232 Paseo Adelanto, San Juan Capistrano, CA 92675; (714) 489-8778.

*Circle 395 on reader card*

### Segue Inc. Markets CADverter

Segue Inc. attained the U.S. and Canadian marketing rights for CADverter, a series of direct translators from Theorem Solutions Consultancy Ltd.

CADverter reads and writes native 3D data, including Computervision CADDs, IBM Catia, EDS Unigraphics, Spatial Technology ACIS and EDS Parasolid.

All types of 3D entities are supported by CADverter including trimmed surfaces and solids such as CSG, faceted, exact and boundary representations.

The main benefit of this software is that it overcomes CAD system to CAD system incompatibilities when transferring data. CADverter can be run on Sun, HP and IBM systems.

Prices for CADverter begin at \$6,375. Contact Segue Inc., 423 Pinebluff Dr., Loveland, OH 45140; (513) 831-8009.

*Circle 393 on reader card*

## Apertus Introduces TN3270 EXPRESS

Apertus Technologies Inc. announced EXPRESS TN3270, communications software that links UNIX systems with IBM hosts over TCP/IP.

The product is available on most UNIX platform, including SunOS and Solaris, HP 9000, SCO, RS/6000, UnixWare and AT&T GIS (NCR).

EXPRESS TN3270 provides emulation and programmatic access to legacy applications. The complete set of features include a full 3270 emulation, macro/scripting capability, support for thousands of sessions and hundreds of users and full support for the latest TN3270 extensions.

In conjunction with EXPRESS TN3270, Apertus has developed a HLLAPI-compatible library, based on the DOS and OS/2 specifications for the UNIX marketplace.

Prices begin at \$595, depending on the number of users. EXPRESS HLLAPI costs \$1,000.

Contact Apertus Technologies Inc., 7275 Flying Cloud Dr., Eden Prairie, MN 55344; (800) 876-7671.

*Circle 390 on reader card*

## Cykc Software Debuts New Server Software

Cykc Software announced Hype-It 1000, a software package that simplifies the creation and management of a hypertext information server on the Internet.

Running on a DOS-based PC, this software creates a public information center, including hyperlinked home pages, interactive order forms, E-mail capabilities, embedded search keys and automated databases.

The Hype-It 1000 server supports up to 30 simultaneous users and can be accessed by anyone with a direct, full Internet connection.

Hype-It 1000 is designed to be used on the World Wide Web.

Hype-It 1000 costs \$549 per copy. Contact Cykc Software, 3944 Third Ave., San Diego, CA 92103; (619) 297-0182.

*Circle 388 on reader card*

## HARDWARE

### Central Data Offers scsiTerminal Servers

Central Data Corp. introduced three new scsiTerminal Servers. By connecting to the SCSI bus, Central Data's scsiTerminal Servers offer unique advantages not found on common multiport serial boards and Ethernet terminal servers.

Each new scsiTerminal Server adds high-speed (115 Kbaud), intelligent serial ports via the SCSI port, without using any of the workstation's internal expansion slots. The ST-1400 provides four high-speed serial ports, the ST-1800 offers eight high-speed serial ports and the ST-1800+ features eight high-speed serial ports and a parallel port for printer connections. They're compatible with all leading UNIX workstations and servers, including: Sun, HP, IBM, DEC (Ultrix and OSF) and Silicon Graphics. PCs running NeXTStep also are supported.

Their intelligent design significantly offloads the host CPU for improved system performance. In addition, they provide full modem control and flow control for the efficient handling of modems, terminals and all other serial devices. Transient voltage suppression is supported on all ports for protection against power spikes.

The scsiTerminal Servers are stackable, making it easy to daisy-chain multiple units off the same SCSI bus. The ST-1400, ST-1800 and ST-1800+ are compatible with all other Central Data scsiTerminal Server models, so users can mix old and new units on the same SCSI bus.

Price is \$795 for the ST-1400, \$895 for the ST-1800 and \$995 for the ST-1800+. Contact Central Data, 1602 Newton Dr., Champaign, IL 61821; (217) 359-8010.

*Circle 387 on reader card*

### Young Minds Inc. Provides CD Studio For UNIX

Young Mind's Inc. (YMi) announced a new version of CD Recording system for UNIX, CD Studio. This system supports writing at 2x, 4x and 6x speeds. To provide higher recording speeds, CD Studio has additional throughput needed for new recorders, such as the Yamaha CDR 100 and the Kodak PCD 600 CD Recorder. The Kodak Disc Transporter can perform attendant-free CD replication.

CD Studio also features a communications port that provides recording information to the user. CD Studio sends the information back to the workstation. The information displayed includes the type of recorder, when

recording started and ended, and how many discs in the Disc Transporter were left recording.

Contact Young Minds Inc., 1910 Orange Tree Lane, Ste. 300, Redlands, CA 92374; (800) 964-4964.

*Circle 384 on reader card*

### Elo TouchSystems Offers Resistive Touchscreen

Elo TouchSystems Inc. introduced AccuTouch HL Series, a five-wire resistive technology with a 36 percent brighter screen, that can be used in rugged environments, such as hospitals, restaurants and factories.

AccuTouch HL has a "high light" transmission touchscreen for liquid crystal and other flat panel displays. These screens have one layer of an advanced light transmission, scratch-resistant plastic that is laminated to one layer of optics-grade glass.

AccuTouch HL is available in serial, AT-Bus, Micro-Channel and chip-based controller options. Standard sizes are available to cover liquid crystal and flat panel displays. Contact Elo TouchSystems Inc., 41752 Christy St., Fremont, CA 94538; (510) 651-2340.

*Circle 383 on reader card*

### Plaintree Adds 100VG-AnyLAN Interface to Ethernet

Plaintree Systems Inc. announced the Fast Ethernet interface for the IEEE 802.12 100VG-AnyLAN standard. Now Plaintree's WaveSwitch 100 family offers connectivity to all 100 Mbps standards. The new module complements existing FDDI and WaveBus fast Ethernet interface modules.

The WaveSwitch 100 provides users with two option slots, either of which can be accepted as an FDDI, 100Base-TX, WaveBus fast Ethernet interface module and 100VG-AnyLAN.

The modules are field installable which allows for flexibility when switching to a new backbone technology.

The 100VG-AnyLAN module is priced at \$2,995.

Contact Plaintree Systems, Prospect Place, Nine Hillside Ave., Waltham, MA 02154; (617) 290-5800.

*Circle 382 on reader card*

### Adaptec Introduces 10 ATM NICs

Adaptec announced 10 ATM NICs that enable desktop computers and departmental servers to connect to corporate computing resources and the enterprise network backbone with the scalability and perfor-

# Reader Information

This month's issue contains many advertisements for hardware and software products available for your HP systems. Your investment in these products today could mean a more lucrative future for your company. Use the information below to learn more about the advertisers' offerings, then use the reader information card to initiate your direct link to valuable information about these advertisers' products.

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Aurora Technologies introduces Node-Resident Networking, a cost-effective, high-performance alternative to standalone routers and terminal servers. Aurora data-communications solutions make it easy to add and share modems, printers, terminals and other peripherals for entire workgroups. Aurora's WAN and remote access products connect LANs across the globe. Call (617) 290-4800 FAX (617) 290-4844.

## **CONCORDE TECHNOLOGIES CIRCLE 232**

Concorde Technologies Inc., "The Hewlett Packard Experts," offer a wide array of computer products and services specifically designed to satisfy the needs of the HP Apollo computer users. Concorde's line of products includes a full line of workstations, memory products, compatible peripherals, mass storage subsystems, application software and related accessories. Your single source for all your HP computers and enhancements, Concorde Technologies offer the best prices, availability, warranty and support. Call (800) 359-0281 for complete information and pricing.

## **IEM CO. CIRCLE 122**

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## **INFORMATION BUILDERS INC. CIRCLE 247**

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## **KINGSTON TECHNOLOGY CORP. CIRCLE 281**

Kingston Technology designs and manufactures memory upgrades for PCs, laptops, workstations and laser printers. The Kingston product line also features mass storage subsystems and processor upgrades. Call (800) 835-2545, FAX (714) 435-2699.

## **MINISOFT INC. CIRCLE 472**

Minisoft 92 for DOS and Windows providing HP terminal emulation and LAN connectivity for just \$129. Call (800) 682-0200.

## **NEWPORT DIGITAL CORP. CIRCLE 246**

Accelerator cards for HP 9000 Series 200 plus HP 310 and HP 320. Ten-fold performance improvement. Call (714) 730-3644.

## **OMTOOL CIRCLE 130**

Omtool's Fax Sr. is the versatile network fax software based on client-server architecture. Clients are available for Windows, DOS, Macintosh, Windows NT and Motif with server options including Windows NT and HP-UX. Call (603) 898-8900.

## **O'PIN SYSTEMS CIRCLE 258**

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## **PUZZLE SYSTEMS CIRCLE 158**

SoftNet Utilities is a NetWare server emulator for UNIX platforms providing IPX-based services without inhibiting existing TCP/IP or other capabilities, DOS terminal emulation and bi-directional UNIX/Novell printer sharing. SoftNet NFS brings file service capabilities to PC-based Novell servers. NFS

enables the Novell server to be mounted and accessed as a standard file server on any Novell network. Call 408-779-9909.

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A2516A, 128 Mb for 9X7	<b>\$7,500</b>
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A2232A, 32 Mb for 9X7	<b>\$1,800</b>
A2231A, 16 Mb for 9X7	<b>\$1,150</b>
A1152A, 64 Mb for 980	<b>\$17,000</b>
A1104A, 16 Mb for 950/60/80	<b>\$995</b>
A1623A, 32 Mb for 925/35/49	<b>\$3,200</b>
A1037A, 16 Mb for 925/35/49	<b>\$850</b>
A1437A, 32 Mb for 922/32/48	<b>\$2,900</b>
A1436A, 16 Mb for 922/32/48	<b>\$1,600</b>
A1404A, 8 Mb for 922/32/48	<b>\$895</b>
A2513A, 64 Mb for 720/35/50	<b>\$3,700</b>
A2512A, 32 Mb for 720/35/50	<b>\$1,600</b>

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## DISC DRIVES

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mance advantages of ATM. This system was designed to relieve networking bottlenecks for desktop computers and network users.

The NIOBE ATM NICs will be available in three product lines: the Server/High Performance line, designed for enterprise network servers and corporate computing resources; the PowerDesktop line, for departmental servers and workstations; and the DeskTop25, which satisfies the demand of the decision-support systems.

For the PCI platform, the NICs will initially provide ATM software for the Windows NT operating system environment, to be followed by NetWare, OS/2, AIX, OSF and UNIX driver support. The SBus NICs will initially provide ATM software for Solaris 2.3 and 2.4. The Micro Channel card will ship with OS/2 driver support.

Prices range from \$349 to \$995. Contact Adaptec, 691 South Milpitas Blvd., Milpitas, CA 95035; (408) 945-8600.

*Circle 381 on reader card*

**MiniStor Announces Three Products**

MiniStor announced the DockIt Socket, the MoreMB Drive and the 1.8 inch PCMCIA disk drive, which are used with desktops, tower PCs and notebooks.

The DockIt Socket, a PCMCIA card adapter that fits into any open bay in a PC/AT compatible computer. This adapter also works with most PCMCIA Type I, II, III or IV peripherals. The DockIt Socket allows for an interchange of data files between notebook, desktop and tower computers.

The 1.8-inch PCMCIA disk drives are offered with an Integrated Device Electronics (IDE) or PCMCIA interface for OEM applications. This drive is fully compatible with PCMCIA Release 2.01. The drive works as a removable storage device or a built-in drive for primary storage in portable computers.

The 260 MB MoreMB Drive is a credit card-size drive in 340 MB capacity for compatibility with notebooks with PCMCIA Type III. The hot swap feature allows instant drive swapping and data transfer. Contact MiniStor Peripherals Corp., 2801 Orchard Pkwy., San Jose, CA 95134; (408) 943-0165.

*Circle 380 on reader card*

**Rockwell's NIC Supports PCI Local Bus**

Rockwell Network Systems announced a NIC which supports the PCI Local Bus and Fast Ethernet standards. Rockwell also

announced an FDDI adapter card for PCI Local Bus machines.

FASTRACC is an ASIC design that provides all system interface, data movement, management and control functions using an optimized, embedded ASIC. Virtual Driver Architecture (VDA) is a common core software that can be ported across different NICs, operating systems and network protocol environments.

PCI is a local bus architecture that provides high-speed connections through a direct path from the peripheral device to the CPU and main memory. Contact Rockwell Network Systems, 7402 Hollister Ave., Santa Barbara, CA 93117; (805) 968-4262.

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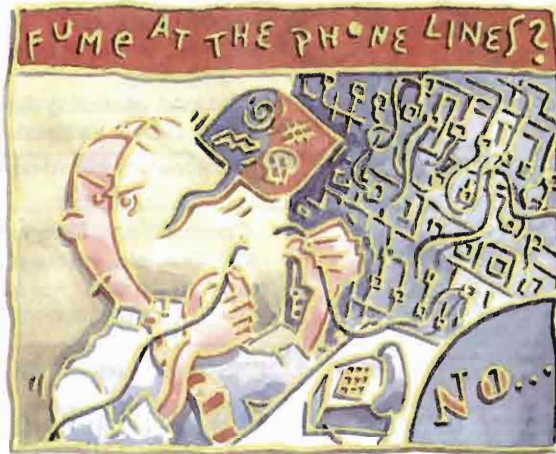
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# Attitude Adjustment

A New Generation Of Computer And Technology Services Will Only Come About Through Corporate Partnerships And Alliances



Benjamin  
Shneiderman

For 50 years, the bold, young pioneers of the software industry have courageously explored the raging rapids of new technology. These hardy adventurers risked it all while launching an industry admired around the world. However, their infatuation with taking yet another ego trip through the white water of beyond-the-edge technology no longer serves us well.

Why? Because the river of users has widened; piloting barges and ferry boats for many passengers is not as thrilling as kayaking alone on white water. The transition from risky adventures to reliable, and even comfortable, computing services will require a new attitude if the computing industry is to meet the needs of large-scale commerce and the growing electronic communities of the 21st century. Easily comprehensible, predictable and controllable user interfaces are the key.

Librarians, information intermediaries, technical writers, training directors, user ombudspersons and helpdesk workers are beginning to step forward and take a more active role in improving software interface designs. However, corporate executives struggle as they shift from thinking about technology partnerships to service partnerships. Currently, relationships with other technology companies like IBM/Apple/Motorola or Silicon Graphics/Scientific Atlanta are limited. But they could be developed, if corporate executives and government decision makers step forward with a bold vision.

Imagine:

*If Apple partnered with the American Medical Association.* They might begin the process toward universal access to standard medical records. It's almost immoral that we are a half century into the computer age without standard medical records available by network. By comparison, airline reservations are available in seconds, even crossing systems of competing companies and hostile nations.

*If IBM, had an alliance with the American Association for Retired Persons.* With an effective user-interface design (large fonts, high contrast, comfortable pointing devices, meaningful navigational paths), the growing population of senior citizens could communicate by electronic mail, obtain health, financial and social

services, and access varied entertainment.

*If AT&T allied with the League of Women Voters or Common Cause.* Civil-oriented systems providing access to information and communication with elected officials at the city, state and national levels could be developed. Wouldn't we all benefit from online voter registration, pothole reporting, motor vehicle licensing or access to police investigators to give anonymous crime-related evidence?

*If Microsoft had an alliance with the National Education Association.* Textbook publishers could provide networked access to instructional software and information resources. These services would support education for our children, skills training for job-seekers and lifelong adult learning for productivity and pleasure.

Resistance to these innovations will likely come from many directions. Can we get technologists to shift their focus from faster chips to more responsive service? Can corporate planners be convinced to create a broad market over several years, instead of responding to the demands of the technological elite?

The technical hurdles are great. Incompatible hardware standards, error-prone software, lost or corrupted data, unnecessarily complex interfaces and chaotic screen designs will no longer be acceptable. Providing responsive services to everyone will require corporate alliances that put users ahead of the pursuit of new technologies.

The computing industry and the research community are moving ahead rapidly with a new generation of systems. If we can set new goals that are more closely related to the services users really want and need, the industry will continue to grow rapidly. If we can design systems with effective visual displays, direct manipulation interfaces and dynamic queries, users will be able to responsibly take on even more ambitious tasks.

Edited from the keynote address for the INFOTECH'94 Conference of the Dept. of Energy's Office of Scientific and Technical Information held in Oak Ridge, Tenn. on October 25-26, 1994. —Ben Shneiderman is a professor in the Department of Computer Science, head of the Human-Computer Interaction Laboratory and a member of the Institute for Systems Research at the University of Maryland at College Park.

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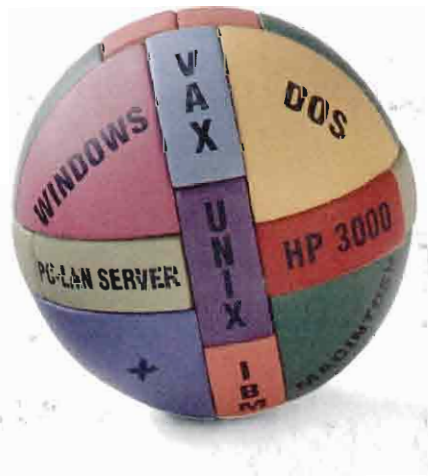
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