

# HP Professional

THE INDEPENDENT MAGAZINE FOR NEW WAVE COMPUTING ▲ VOL.6 NO.3

MARCH 1992 ▲

NEW WAVE

## Open Systems

- ▶ HP OpenMail:  
An Open Systems  
Success Story
- ▶ An Interview With  
HP's Bernard Guidon  
On Commercial UNIX

### SPECIAL REPORT:

## Downsizing

- ▶ HP Redefines  
The Buzzword  
Of The '90s
- ▶ The Right Tools  
Help Complete  
The Tasks At Hand



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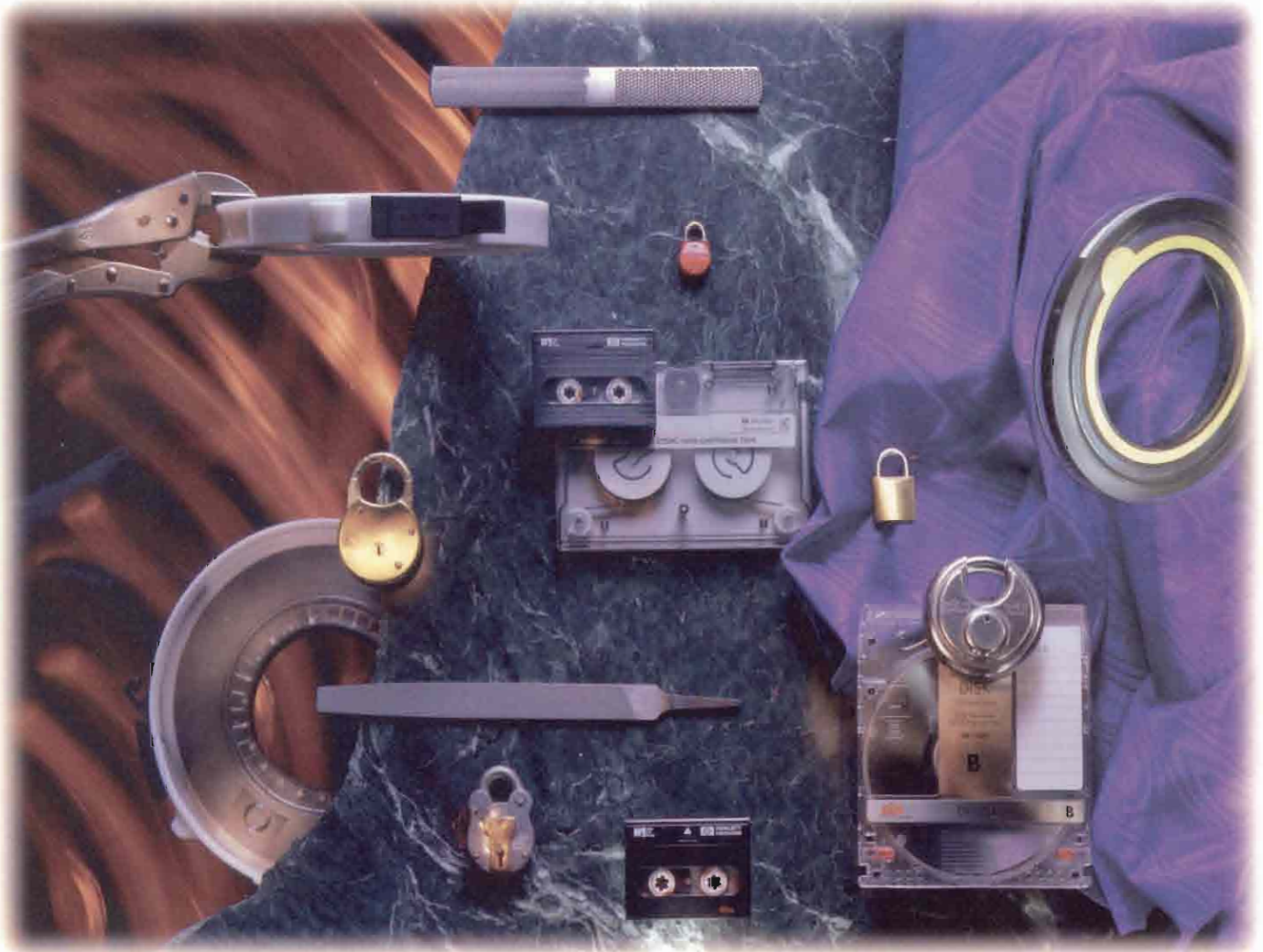
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MARCH 1992

VOL. 6, NO. 3

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*By Paula Jacobs*

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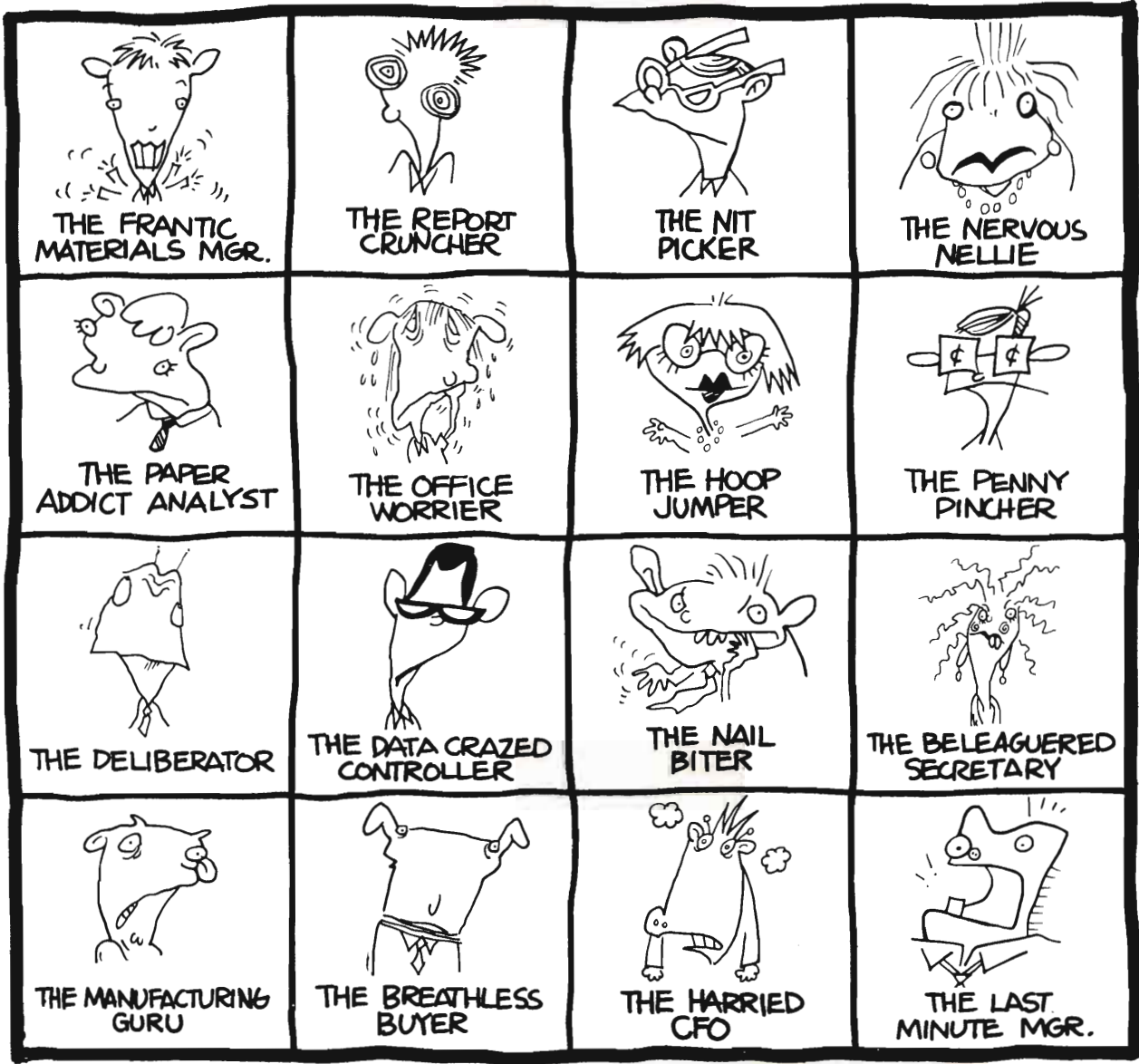
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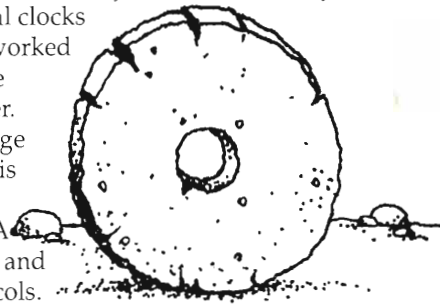
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# Coming To A CPU Near You...



By Grant Evans

I originally planned to use this space to talk about two topics that are garnering a great deal of coverage these days — open systems and downsizing. But the past week (late February as I write) has been pretty exciting for those of us covering the HP market. And as we prepare to put this issue to bed, I can't help but reflect on some of the interesting news that has crossed our desks in recent days.

HP's announcement of an impressive 49 percent surge in first quarter earnings caught most of us — including the omnipotent Wall Street gurus — completely off-guard. The result was a nice little 12-point jump in HP's common stock which no doubt left the company's stockholders (not to mention Mr. Packard) smiling through the weekend. (For more on this, see this issue's *News & Trends*.)

But more interesting from an industry-wide perspective was HP's early announcement of the next generation of PA-RISC chips — which we are told will begin showing up in HP 3000 and 9000 systems before the end of the year.

According to HP, the new microprocessor will boost system performance by an impressive 50 percent and is expected to produce PA-RISC boxes running in the 120-SPECmark range. If this is true, then this chip (which HP claims to have designed and produced in a mere 13 months) will not only eclipse any current RISC offerings on the market today, but could pose a serious challenge to DEC's highly-anticipated Alpha products.

However, because mere mortals like you and I have yet to see such products in action, it's hard to tell how much of the pre-introduction hype offered by HP, DEC and even Sun is just that — hype. By the time these things get to market, they may be considerably slower.

Still, the battles of silicon one-upmanship waged at the recent International Solid State Circuits Conference in San Francisco were entertaining to say the least. Before the conference began, DEC was expected to firmly establish itself as the leader in the new chip race by announcing specifications of its forthcoming microprocessor. In the weeks prior to the announcement, we had heard that none other than Cray Research had signed up as an Alpha licensee.

Not to be outdone, HP announced its own new RISC chip — earlier than expected — and labeled DEC's Alpha performance numbers "unachievable." While its 100-MHz chip may

not look as fast as DEC's 200-MHz Alpha chip on paper, HP maintains that the PA-RISC 7100 will match or exceed Alpha performance in actual use.

Sun, meanwhile, announced its own entrant in the derby, and also made a claim that its new chip will outperform the Alpha products in real-world applications. Sun's 50 MHz SuperSPARC chip, produced under license by Texas Instruments, is said to run at a peak speed of 150 MIPS — about four times as fast as the company's current offerings. After the Alpha session in San Francisco, Sun characterized DEC's project as a desperate move by a hurting company.

(From what I hear about the scalability of Sun's SPARC architecture, *they* could be the ones announcing products out of desperation in the near future.)

Suddenly, DEC and its Alpha began to assume a remarkable resemblance to Democratic presidential hopeful Paul Tsongas in the weeks preceding the New Hampshire primary — with all the other contenders taking aim at the perceived front runner from Massachusetts.

Flying fur aside, the RISC wars are shaping up as the spectator sport to fill the time between the Albertville and Barcelona Olympiads. But, as we've seen in the past, it's not always the fastest and most advanced machine that wins over the most users. Software, price/performance and numerous other intangibles play important roles as well. Let's wait until we see the hardware with these things inside.

In light of all the recent noise being made about America's lack of competitiveness in the global market and the debates over the perceived "loss" of the country's technological edge, it's certainly reassuring to see the world's top three workstation vendors — all American — duking it out with new technologies. I can't wait to see what products come around as a result.

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**Marsha W. Johnston**

# Workstation Workouts

Because of their inability to support super high-speed networking, HP Apollo DN10000 workstations have been eliminated from an experiment to determine the feasibility of networking workstations to provide an integrated computing service comparable to traditional mainframe services.

A team at CERN (the European Center for Particle Physics Research) in Geneva initiated the Scalable Heterogeneous Integrated Facility (SHIFT) project last year. The goals of the project are:

- To exploit new workstation technologies without losing the quality of service provided by traditional mainframes. This includes the provision of a batch job scheduler, portable UNIX magnetic tape support, and tools for the management of large file bases, including automatic staging of data between disk and tape.
- To develop a processing model that enables systems to be constructed, and that can be smoothly scaled up to provide large integrated facilities or scaled down to provide a system suitable for a small physics department.
- To create a system that can be installed and operated either within a conventional computer center or within a university physics department or other user-operated environment.
- To create an environment that supports any flavor of UNIX and to develop software that is completely portable.

## Project HOPE

The team already had been using three 4-cpu DN10000s in an HP-funded CERN project called HOPE, or HP OPAL (Omni-Purpose Apparatus for Large Electron Positron, or LEL) Physics Environment. The goal of the HOPE

project was to demonstrate that a workstation environment can provide reliable batch services. CERN technicians ported a batch software product called NQS, which had been developed for NASA, to the DN10000s and went into production in May 1990.

Erik Jagel, a CERN scientific associate who worked on the project, says that the DN10000s performed well, and by the summer the team felt confident that it could provide batch services for jobs that "didn't require a lot of I/O and that ran in a non-heterogeneous environment."

Once complete, the project group decided to expand the experiment by adding faster networking and other vendors' equipment. Thus, the HOPE project became the SHIFT project, which was entirely funded by CERN.

## Bandwidth-Hungry

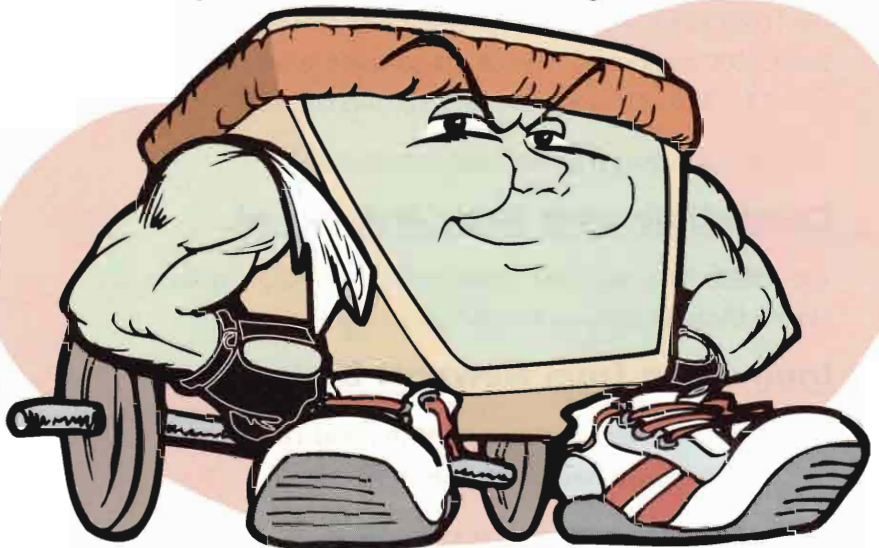
CERN's original motivation behind developing the SHIFT project, says Jagel, was to have the Cray supercomputer on the network generating images and to be able to display them in real-time on the workstations. "The bandwidth needed is in the tens of megabits, and that was not

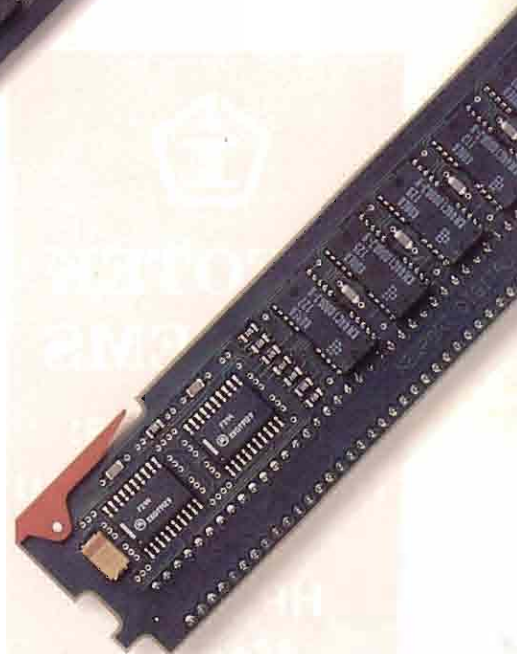
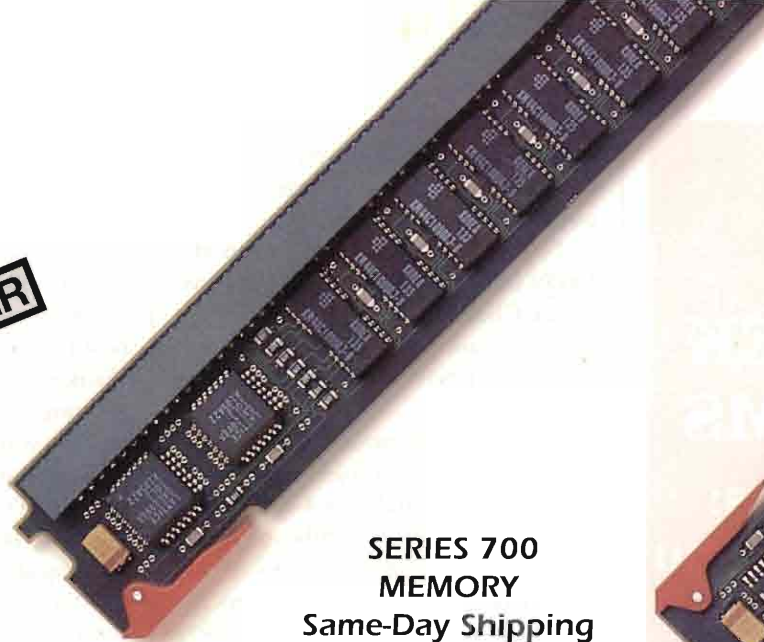
possible three years ago," says Jagel. "But with time, the need for networking has grown. Places like CERN need this kind of networking to feed hungry cpus."

To do that, CERN decided to put the workstations on a gigabit network called Ultranet, which comes from a private company in Silicon Valley. Jagel says HP's Apollo division in Chelmsford, MA was responsible for porting Ultranet to the DN10000s, which required minor modifications to the VME board.

"They did a nice job on the throughput, at 4 MB per second, but the software always would crash the 10000 or force you to reboot the driver. We couldn't use it in a production environment," he says. Although Chelmsford agreed to fix the port, he adds, they wanted "tens of thousands more dollars. Plus, the guy who had done the original port had left, so they said they would have had to retrain someone...."

In the meantime, an upgrade that had been scheduled for last May to double the power of the 10000's cpu was cancelled at the last minute. As a result, the 10000s were becoming less and less interesting and less worth the money





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because other machines were coming on the market, having the same or more power per cpu, Jagel says.

"Ultimately, we had to drop the 10000s from the SHIFT project," he says. HP in Chelmsford admits that the upgrade was cancelled and that the Ultranet port to the DN10000s experienced some problems.

As a result, the workstations participating in the SHIFT project now consist of two Sun 330s and four 4-cpu Silicon Graphics 4D/340Ss. The Silicon Graphics workstations currently access 100 GB disks, which are to be upgraded to 200 or 300 GB by the end of the year. CERN also is "definitely interested" in Sun's new multiprocessor machines, says Jagel. Two DECsystem 5000s also have been taken off the Ultranet because of a delay in the port, which is being written by Ultranet itself.

"The number of vendors who are supporting high-speed networking are few," says Jagel. "You've got Silicon Graphics and Sun, and IBM is working very hard to get the RS/6000 going."

The 10000s are still used as a service to CERN physicists, where they handle only the simulation of particle experiments, which don't have a high I/O requirement. "The 10Ks support Ethernet with no bugs, but it's a relatively slow network," says Jagel. "The 10K is so powerful, it chews through the data coming over Ethernet and just waits. That's why we wanted to introduce them onto Ultranet, which is about 40 times faster (than Ethernet).

"Simulation is an important aspect of the HOPE project, but it's limited because of the I/O problem. If [Ultranet] had been a reliable interface, we could have expanded the types of jobs done on the 10K," Jagel continues. "We could have done data analysis, which is a scientist's bread and butter, but expensive for the data manipulation required."

### **700 Series Steps Up**

From all indications, HP has chosen the HP 9000 Series 700 as the platform from which it will provide high-speed networking. Its new FDDI board, which HP

confirmed at press time would be available worldwide in January 1992, is for the Series 700. The Chelmsford spokesman also says that Ultranet is porting its gigabit network to that platform as well.

CERN already has tested out the FDDI board on its HP 9000 Series 720s, aka the "Snakes." Jagel says the test proved interesting, and that they now await the product with bated breath.

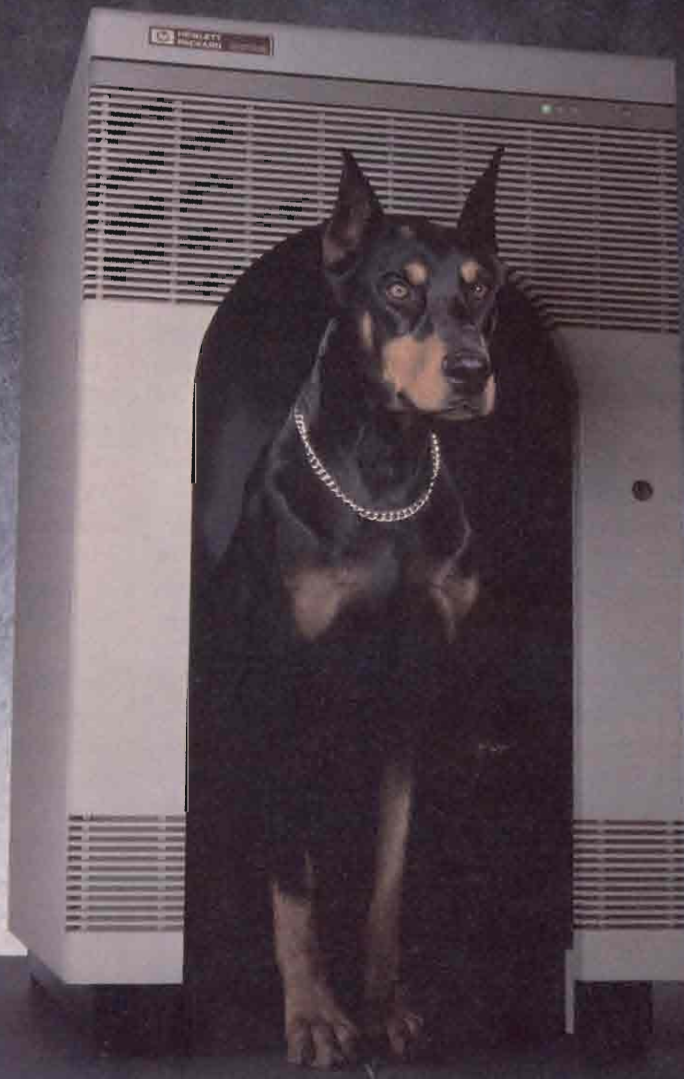
Even though FDDI provides a bandwidth that's only between Ethernet and Ultranet, Jagel says the SHIFT team is thinking about putting an FDDI network into the project. It also would like to expand the Snake's bandwidth by using FDDI on the 16 Snakes it has linked together in another project called the Central Simulation Facility (CSF). The aims of the CSF project bear more resemblance to those of the HOPE project than to SHIFT; its I/O requirements are lower. Nevertheless, "getting FDDI for the Snake would change the work we could do; we could get some types of data analysis," he says. Jagel notes that even FDDI could prove inadequate for certain types of data analysis that are I/O bound.

A DN10000 supporting FDDI or another high-speed networking protocol would be interesting for the SHIFT project because a 4-cpu DN10000 has considerable more power than a single Model 720, says Jagel. Still, HP may have done well in choosing the Snake series instead, as the DN10000s are quite expensive to maintain. "By the end of '92, they (DN10000s) are likely to be phased out (at CERN) as a cost-effective way to get cpu power," says Jagel.

Although the DN10000 appears to be outside HP's product strategy, HP says it will incorporate features of the Apollo Domain/OS operating system, including some of the Apollo Display Manager, into HP-UX sometime in 1992. The DN10000's cpu-driven graphics and multiprocessing eventually will be found on the Series 700, the company says.

No wonder, says Jagel. "Even today, Apollo had done things that no company has yet done." ■

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## Through The Fog, Light

*HP Remains Cautious Despite Earnings Increase And Stock Market Reaction*

**W**ith the U.S. economy in general remaining stagnant and the computer industry lumbering through its worst slump in ages, HP last month posted an impressive 49 percent increase in earnings for the first quarter of fiscal 1992. Yet despite bucking the industry trend, the company sounded a cautious note in its outlook for the remainder of the year.

Wall Street was more jubilant — by the time HP's offices on the West Coast opened for business, the company's common stock was trading more than five dollars a share higher than the previous day's close. By the end of the day, the stock soared \$9.125 to close at \$73.50 a share in frantic trading on the New York Stock Exchange. By contrast, HP stock closed the week of Dec. 20, 1991 at \$49 a share. In mid-February of '91, it traded in the \$39 to \$47 range.

The news took Wall Street analysts by surprise also. Earlier estimates for HP's first fiscal quarter were much lower than the figures posted. HP President and CEO John Young attributed the results to strong acceptance of some of the company's newer products, including the 700

Series workstation, as well as the phenomenal success of the LaserJet and DeskJet printer lines. Young also cited HP's ongoing efforts to curb the growth of expenses.

Under Young's tenure, HP has successfully streamlined its management, reorganized its sales organization, and reduced its work force. In the past year, HP reduced its ranks by some 3,300 employees through voluntary severance. According to HP, the addition of 1,800 employees through the acquisition of Avantek only increased overall employment for the quarter by 700 people to 89,700.

For the quarter ending Jan. 31, HP reported a robust 49 percent increase in net earnings, a 56 percent increase in earnings from operations and a 13 percent increase in net revenues. Orders for the quarter grew by 13 percent over the first quarter of fiscal 1991.

Net earnings for the quarter totaled \$306 million, or \$1.21 per share on approximately 253 million shares outstanding. Analysts had earlier projected HP earnings at about 85 cents per share. For the first quarter last year, the company posted net earnings of \$205 million, or 83 cents

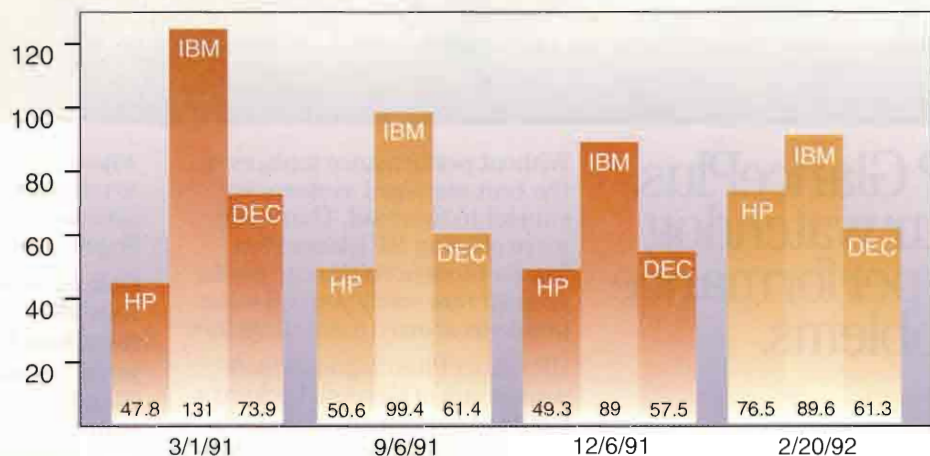
per share. Net revenues totaled \$3.9 billion, compared with \$3.4 billion for the first quarter last year.

Orders for the quarter were \$4.2 billion, up from \$3.7 billion for the comparable quarter last year. U.S. orders totaled \$1.8 billion, up 15 percent, while orders from outside the U.S. grew 12 percent to \$2.4 billion.

Despite the stellar fiscal results, HP officials remained cautious about future quarters because of the uncertain economic climate and slower growth in some key markets outside the U.S. — *Grant Evans, Managing Editor*

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# PA-RISC's Next Generation Arrives

*New Chip Said To Increase System Performance By More Than 50 Percent*

Let it be known: For HP's Precision Architecture-RISC (PA-RISC) technology, the future is now. And it's a lot faster, too.

HP recently announced the latest version of its RISC microprocessor, PA-RISC 7100, and said that the new chips will begin shipping in computer systems before the end of this year. The new PA-RISC chip is expected to boost system performance by more than 50 percent, and offer system speeds up to five times faster than existing systems from competitors.

Based on a single-chip design which integrates the cpu and floating-point unit on a single chip, the PA-RISC 7100 runs at frequencies up to 100 MHz. By combining the two functions on single chip, HP will save board space and be able to lower the cost of future PA-RISC-based products. The chip is fully compatible with previous PA-RISC implementations, and will be made available as an upgrade in many current PA-RISC systems.

According to HP, working prototypes of PA-RISC 7100 are currently in HP development sites. By year's end, the new chip is slated to be incorporated into a variety of systems including the HP 3000 Series 900, HP 9000 Series 800 and HP Apollo 9000 Series 700 workstations. In systems, the 7100 is expected to achieve a SPEC rating of more than 120 SPECmarks. If so, it would rival the highly

anticipated Alpha-based products to be released by DEC later this year.

The PA-RISC 7100 owes its high degree of integration to a new 0.8 micron CMOS technology — a 20 percent improvement over the previously used 1.0 micron CMOS.

According to Willem Roelands, HP designed and produced the new chip in just 13 months.

Since its inception in 1986, PA-RISC evolved through seven processor implementations and three integrated circuit process technologies.

The PA-RISC architecture is currently licensed by Hitachi, Mitsubishi Electric, Oki Electric and Samsung Electronics. The new processor technology will be made available to all licensees. — *Grant Evans, Managing Editor*

## Network Management Simplified

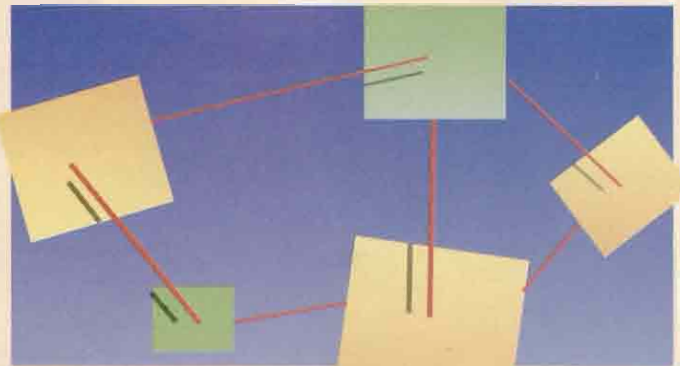
*HP Extends The Reach Of Network Managers With Extensible SNMP Agent*

HP recently introduced a software product that enables network administrators to add new capabilities to existing Simple Network Management Protocol (SNMP)-based applications and maintain centralized control of network resources.

Dubbed the HP OpenView Extensible SNMP Agent, the software provides customers with an integrated way to manage such diverse network resources as computer systems, printers, servers, databases, and end-user applications. According to HP, the new agent software is the first SNMP-based product requiring no additional programming to achieve such a high level of integration.

With the growing popularity of open systems and client-server architectures, the management of multivendor networks has become more complex. The Extensible SNMP Agent facilitates network administration by providing centralized control of network resources.

The agent adds to the ca-



capabilities of SNMP-based management applications, such as HP OpenView Network Node Manager. Because the agent requires no "C" programming, HP claims that network management can be customized by non-programming personnel.

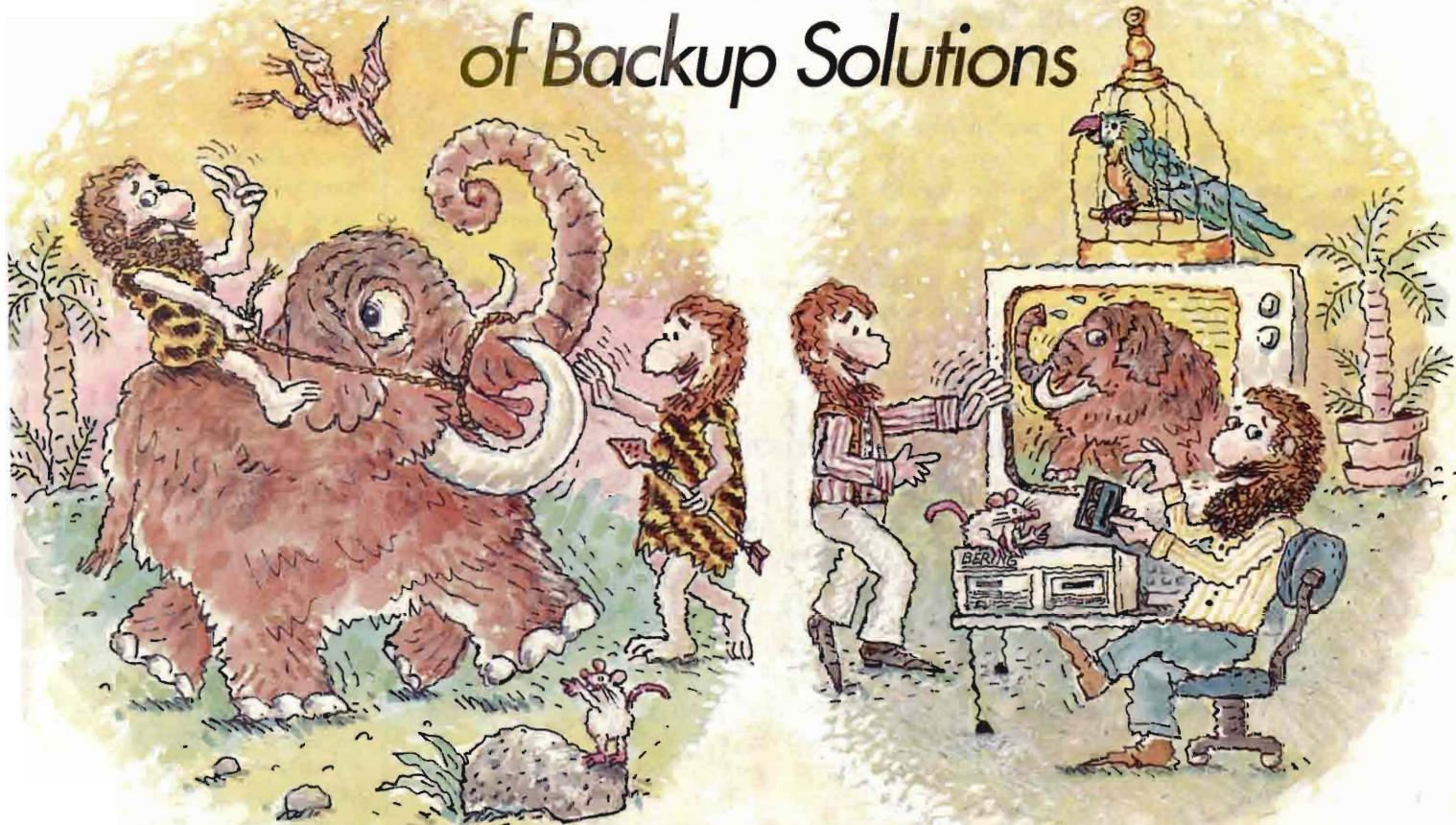
Because the Extensible SNMP Agent employs standards such as Internet Protocol (IP) and User Datagram Protocol (UDP) in addition to SNMP, it can be implemented in a variety of network management environments.

The Extensible SNMP Agent is available for the HP 9000 Series 300/400, 700/800 and Sun SPARC systems. Prices range from \$1,000 for

a single-system license to \$300,000 for a license for up to 1,000 systems.

In another recent SNMP-related development, HP announced that it is preinstalling and configuring HP OpenView Network Node Manager 2.0 with HP 9000 workstations. The preconfigured systems include the campus-management station, based on the HP 9000 Model 425e, and the enterprise-management station, based on the Model 720 workstation. The campus-management station can manage up to 500 system nodes, and the enterprise management station can handle up to 2,000 nodes.

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# HP Taps Prime As Reseller

*Multiyear Pact Includes PA-RISC Workstations And Business Servers*

**H**P and Prime Computer (Framingham, MA) announced an alliance through which Prime will resell HP PA-RISC workstations and business servers worldwide. Prime also will port its CAD/CAM software to HP workstations and its Prime Information application development and database management software to PA-RISC business servers.

Under terms of the deal, Prime's Computer Systems Business Unit (CSBU) and its Computervision (CV) subsidiary will resell HP PA-RISC systems. As a result of reselling the systems and porting its software, Prime hopes to bolster its position as a supplier of both open system CAD/CAM software and hardware and software for business environments.

In a letter of intent, Prime agreed to purchase \$400 million worth of HP 9000 Series 800 servers and HP Apollo Series 700 workstations over the next three and a half years. Prime's CSBU will resell the Series 800 systems to new and existing customers as part of the division's strategy to provide customers of the proprietary Prime 50 Series midrange system with an opportunity to migrate to open systems. According to Willem Roelandts, GM of HP's Networked Systems Group, the Series 800 line is ideally suited for Prime 50 customers migrating to open systems.

According to Prime CEO and President John Shields, the alliance produces impor-

tant business benefits for both companies and will send a positive message to the marketplace concerning Prime's strength and direction.

The Computervision software porting agreement was characterized as a logical extension of Computervision's

existing relationship with HP. Computervision's Calma design package already runs on HP's Motorola-based systems. The software now will be ported to the Series 700 workstation line, and later this year CV's CADD5 integrated CAD/CAM software

will be ported to the 700 Series. In addition to the agreement with HP, CV recently inked a deal with DEC to provide CADD5 on their platforms as well. CV software products also run on Sun hardware.

## For Your Information

■ Systems Center joined the ranks of Open Software Foundation (OSF) members. The company plans to include the OSF's DCE and DME technologies in future products. (703) 264-8000.

■ HP and Dun & Bradstreet Software joined forces to develop and co-market mainframe-class software for client-server environments using HP 9000/800 servers.

■ HP last month became the first vendor to pass all conformance tests required by the U.S. GOSIP testing program for Open Systems Interconnect (OSI) Services. GOSIP compliance is required in order to sell OSI products to the government.

■ HP is holding a series of one-day seminars entitled "Open Systems Concepts and Capabilities," designed to offer technology managers a high-level overview of open systems advantages and implementation. Call (800) 472-5277 for information.

■ Cognos is now shipping PowerHouse/Windows, a client-server version of its popular 4GL, running on HP 3000 systems under MPE/iX. (617) 229-6600.

■ ISICAD a developer of graphics-based, physical network management systems established a new services group. The group provides consulting implementation and customization services to corporations who are evaluating the cost and control benefits of managing their network resources with ISICAD's decision support software, COMMAND. (714) 533-8910.

■ Ingres, an ASK Company and the Santa Cruz Operation Inc. (SCO) announced a worldwide marketing agreement for the INGRES relational database management system and SCO Open Desktop. This is in response to end user and OEM requests for more flexibility in building relationships with database vendors. (408) 425-7222.

■ Exabyte Corp. announced a three-year renewal and expansion of an agreement with Kubota Corp./Nippon Systemhouse Co., Ltd. of Japan. Kubota/Nippon Systemhouse will continue to act as a second source supplier of 8mm subsystems for Exabyte. They also will manufacture the EXB-8200 and EXB-8500 ex-

clusively for Exabyte for sales in the U.S., Canada, Europe and the Far East. (303) 447-7434.

■ NCR Corp. and The Wollongong Group announced an alliance for the joint development and marketing of TCP/IP workgroup support products. NCR will co-label the market Wollongong's PathWay Access Products, the first of which will be PathWay Access for DOS/Windows. (619) 693-5311.

■ Acucobol Inc. signed as a member of the Informix OpenCase Program. As a portable COBOL compiler vendor, Acucobol will support the Informix OpenCase/ToolBus environment which enables developers to select CASE methods, tools and lifecycle products that run on UNIX-based platforms. (415) 926-6316.

■ VisionWare Ltd., a developer and supplier of PC/host integration software, signed an agreement with Network Computing Devices Inc. to support NCD's XRemote asynchronous communications protocol within VisionWare's X server, X Vision. (0532) 788858.

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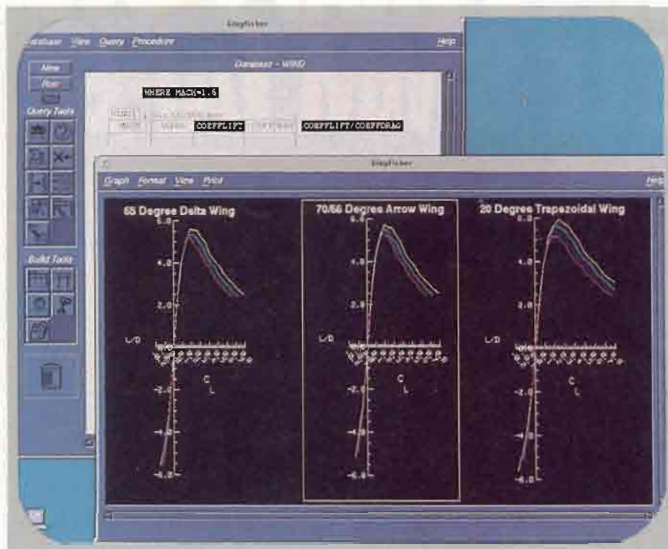
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Basic-4	IBM RT	Prime
Concurrent	IBM S/38	Pyramid
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It goes without saying that scientists, engineers and other users of technical applications have different data management requirements than business-oriented users. Scientists and engineers need to turn vast amounts of technical data into useful information, and even the best commercial databases are ill-equipped to handle the capture, management, analysis and visualization of such data sets.

TekBase, from Leading Technologies Inc., provides a set of integrated data management, analysis and visualization tools which enable technical users to handle a range of data management tasks with one software tool — as opposed to using a separate tool for each stage of testing and analysis.

The core of TekBase is a high-speed relational database which stores data and serves it to fully integrated analysis and graphics tools, as well as to external files and systems. Whereas most commercial

databases catalog a single data point as one record or storage unit, the TekBase system uses large data arrays. The TekBase array-handling system can read lengthy or continuous data streams from tests and processes, and then store the numeric sets as single variables.

TekBase allows for a variety of data import/export and data entry options as well. Users can retrieve data written in both custom and standard (FORTRAN, C, PASCAL, BASIC) formats directly from flat files or from on-site test equipment.

The data management tools are easily integrated into any testing and analysis environment. TekBase connectivity features enable users to connect directly to data sources, applications, test equipment and hardware platforms (including RS-232 and HP-IB devices). TekBase employs a client-server architecture for distributed data management and allows for transparent access to remote databases.

TekBase's advanced graphics capabilities will appeal to users who prefer a visual representation. Data can be visualized in a variety of formats at any stage of testing and analysis — from data capture to report generation. Continuous graphic representation of incoming data can be displayed during a testing procedure. Graph types range from 2-D bar and pie charts to 3-D line charts, wafer maps and polar plots with output to window,

printer or plotter files in HPGL, PCL, Postscript or CGM.

Data can be viewed instantly using a simple TQL command. TQL is the TekBase product's English-like Technical Query Language. TQL contains a large, easy-to-use set of data management and computational commands. TQL is fully extendable, allowing users to customize commands for project-specific data manipulation.

TekBase features Report Writer and Document Processor subprograms which quickly transform raw data into concise documentation.

Release 3.0 of TekBase, introduced late last year, includes an X11-based graphical front end called Kingfisher, which integrates the data management, analysis and visualization functions with a point-and-click/drag-and-drop interface. Also included is TSL, a 4GL tool for creating Motif- or Open Look-based applications.

TekBase 3.0 is supported on HP 9000/300, 400, 700 and 800 systems, as well as on IBM RS/6000, DEC Ultrix, Silicon Graphics and SunOS platforms. DEC VMS support is scheduled for this year. Pricing starts at \$4,875 per seat for a four-user system. — *Grant Evans, Managing Editor*

#### Leading Technologies Inc.

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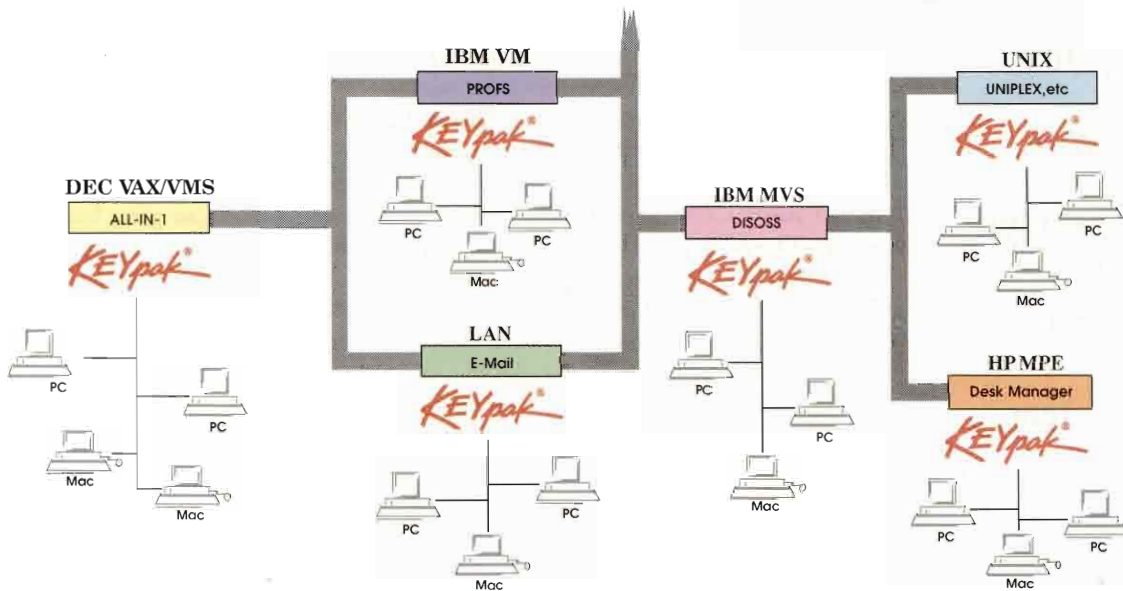
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If the combination of network and wiring troubles makes you feel as if you have a twisted pair noose around your neck, consider the lifesaving combination of ISICAD Inc.'s COMMAND and HP's OpenView.

COMMAND (Communications Management and Design) is a graphics and database package that allows you to assume control over all of your company's communications equipment, whether it be telephones, wiring, modems, multiplexors, bridges, workstations — whatever.

To care for the "physical" side of network and communications management, COMMAND's database is used to enter information about your communications equipment. This data can include such information as product descriptions, serial numbers, location, port numbers and cable type.

One common problem in network management is simply being able to locate a piece

of equipment. With a two-way link to the database engine, COMMAND's graphics feature allows you to use the data in the database to create wiring diagrams, schematics, building layouts and other useful displays. Changes made to your database are automatically reflected in any graphics generated from the communications data.

Use COMMAND to design your communications layout before installing anything. You can change the database and generate diagrams at will — making it easier to spot potential trouble areas. COMMAND includes rules to warn you of anomalies and inconsistencies in equipment compatibility, cable load and design.

Change management is also simplified. In addition to a change in the database (such as moving a host computer) being automatically reflected in the drawings generated from the changed data, ISICAD COMMAND automatically generates reports, schedules, work orders, audit histories and bills of material for you and tracks the progress of a project every step of the way.

Little needs to be said about HP's widely-acclaimed OpenView network management system. But a lot can be said for combining OpenView and COMMAND.

OpenView's management capabilities work on a "logical" level. While offering much insight on network problems and performance, OpenView doesn't supply

the detailed physical information supplied by COMMAND. Combining the two via ISICAD's COMMAND + HP OpenView link, however, can provide all the information you need to track down problems and make performance improvements.

Suppose you're experiencing problems with a bridge. OpenView is used to detect and report the problem on the network. With the link to COMMAND, you can get detailed information about the bridge such as the equipment manufacturer, the serial number, model number, building location, etc. Because COMMAND also can store data about "dumb" devices such as patch panels and punchdown blocks, you can get a better overall picture of what you're facing when tackling problems.

After you've identified the problem with OpenView and know where the problem is located by using COMMAND, you can use COMMAND to generate any work orders and schedules you need to fix the problem.

COMMAND and the OpenView + COMMAND link runs on HP 9000 workstations under HP-UX. COMMAND + HP OpenView link is priced at \$2,500. — David Miller, Senior Technical Editor

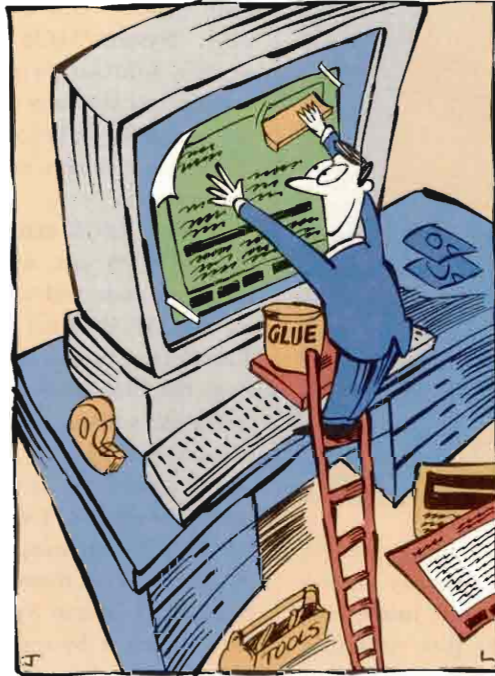
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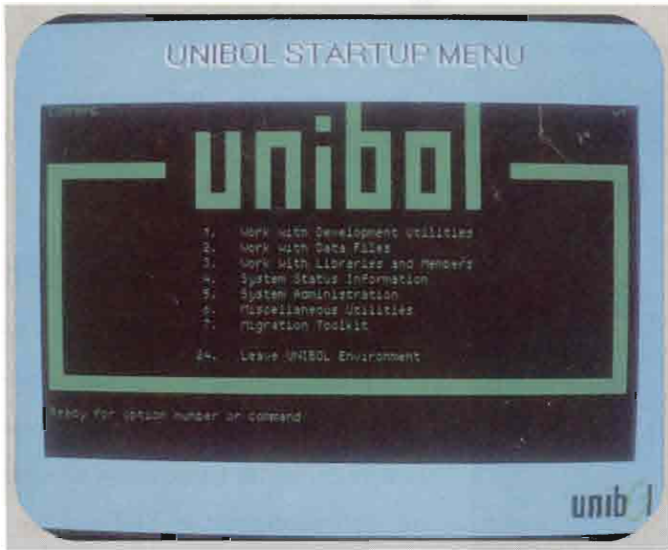
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# Mechanistic Metamorphosis



Unibol/RPGII  
Transforms System  
Saturation Into  
System Migration

Monday morning, java in hand, you groggily enter a cold, white MIS room, only to discover that your IBM System/34 transmuted into a new computer, not just another blue beast, but an entirely foreign animal — a UNIX-based HP 9000. When you look at the screen, the essence is System/34; but the anatomy is definitely strange. Is it a Kafkaesque nightmare? Or a migration dream?

Many System/34/36 computers have reached saturation and it's time to make a decision. Although a UNIX platform provides a hardware solution, you can't afford to throw away the training, experience and software invested in a System/34/36.

However, from the land of green comes an alternative to the blues. Software Ireland Ltd. (New-tonabbey, Northern Ireland), hopes to entice 34/36 users to the HP 9000 with its Unibol/RPGII migration software.

According to Kay Carter

of Prosoft Consulting (Software Ireland's U.S. subsidiary), "System/34/36 users need a solution without turning their company upside down, and they'll be looking at the latest buzzword — open systems."

Unibol/RPGII maintains the 34/36 screens, menus, messages, code and utilities on the HP 9000 machine. Therefore, you can migrate from the IBM environment to the HP without recoding or retraining users.

The Unibol/RPGII, which supports release 5 of the RPGII programming language, consists of three components: Runtime System, Development System and Migration Toolkit.

The Runtime System, a subset of the Development System, lets you execute applications created in the development cycle. The Runtime System includes, RPGII runtime processor, OCL interpreter, DFU, Help, SSP utilities, print spooling, job queue, full screen and System/36 file support, UNIX interface to Unibol/RPGII utilities, and OCL interface to UNIX shell. This ensures applications appear as they did on the 34/36.

The Development System comprises the entire Unibol/RPGII product, including all runtime components plus, RPGII language compiler, SDA, general editor, DFU and interactive debugger. This lets you code new applications or change existing programs on the 9000 using the language of the 34/36.

The Migration Toolkit consists of two parts, one on the 34/36, the other on the 9000. Its purpose is to fully automate transferring files and programs from the System/34/36 to the 9000 running the Unibol package.

Through menus and help screens you collect the files and libraries of the 34/36 application being transferred. On the 9000 side, you rebuild the application by restoring data files, reconstructing index files, recreating any alternative indexes, reconstituting the library and members, recompiling all appropriate members, and producing a log of the process.

If an incorrect library member exists on the 34/36, the Toolkit determines the correct type and recompiles the member. The Toolkit also scans OCL and RPG programs for features not supported by Unibol/RPGII, and suggests alternative code.

Unibol Runtime protects System/36 code integrity by interpreting, not converting 36 commands at a low level "C" function.

Pricing for Unibol RPG/II varies according to the number of users you licence. If your System 34/36 isn't feeling like itself, maybe it's time for a transformation. — *Charlie Simpson, Technical Editor*

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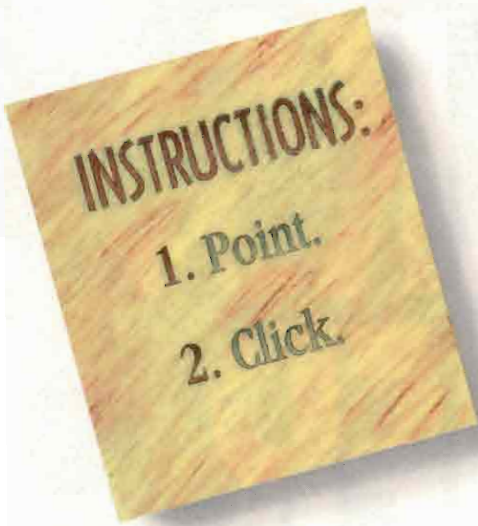
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You may have used other PC-to-host alternatives. And they may have worked just fine – as long as you had just DOS-based PCs. Take a closer look at Session, however, and you'll quickly discover that it's designed to work in today's graphical, point-and-click PC world.

Moreover, every Session package provides superior HP terminal emulation, plus DEC VT100® and HP ANSI terminal support for access to almost any host computer.

**Session's point-and-click interface gives you easy, familiar access to host information.**

Session adheres to the interface standards for MS Windows, HP NewWave, and the Macintosh, offering a common interface to all three platforms. Using Session on one is as easy as using it on another.

And because Session offers an easy-to-use, graphical front end to your host applications and data, it's your company's first, hassle-free step toward client/server computing.

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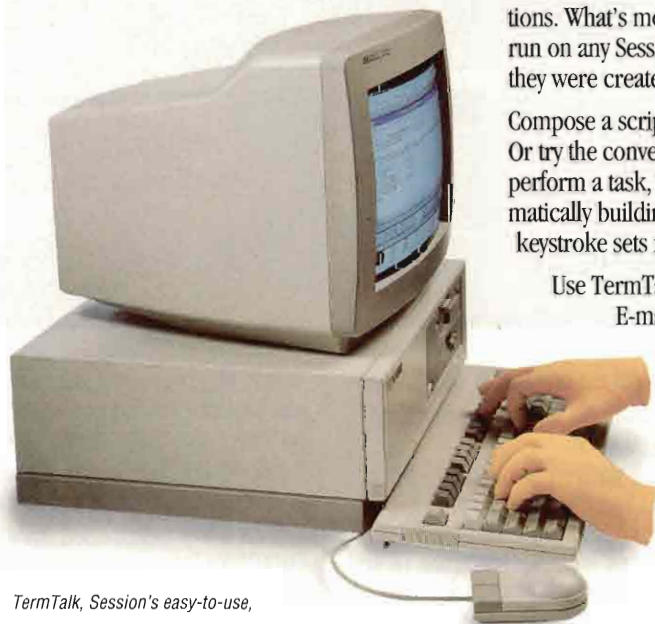
Session includes TermTalk, a unique scripting language that streamlines your routine operations – or your most sophisticated PC-to-host interactions. English-based, block-structured, and friendly enough for non-programmers,

TermTalk provides extensive control over Session's communications with hosts and other PC applications. What's more, compiled TermTalk scripts run on any Session platform, no matter where they were created.

Compose a script using TermTalk's built-in editor. Or try the convenient script recorder. As you perform a task, TermTalk follows along, automatically building the script. Next time, a simple keystroke sets it in motion.

Use TermTalk to automatically log on, send

E-mail, retrieve host data and add it directly to your spreadsheet, print PC files on host printers, and much more. We even give you the tools to convert existing AdvanceLink® or Reflection® command files to TermTalk scripts.



*TermTalk, Session's easy-to-use, compatible scripting language, is just like having your own personal assistant. Use it to handle all your PC-to-host tasks.*

# and Desktops Meet.

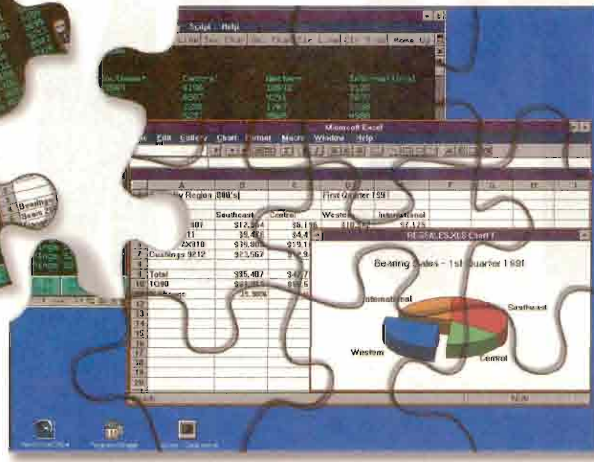
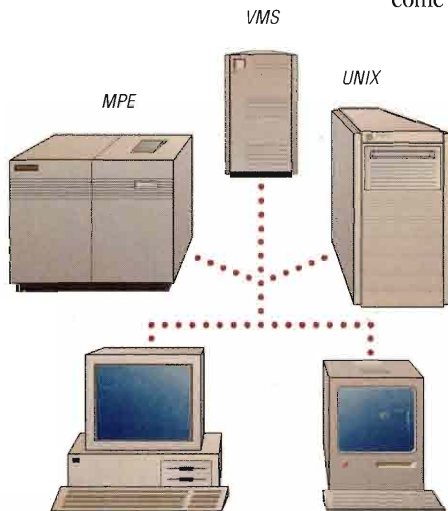
## Access and integrate the information you need, when you need it.

Working on a report? Need monthly sales and expense figures? Need data from several sources? No problem. Session delivers the data-sharing capabilities you've been waiting for.

For example, you can use cut-and-paste for a simple one-time exchange of data. Or use Session and Microsoft's Dynamic Data Exchange (DDE) to build real-time links between your host and your other Windows applications. And, Session for HP NewWave lets you bring host data within reach of NewWave's advanced object management capabilities.

## Weary of access limitations? Forget what PC-to-host connections used to be.

When it comes to connecting to HP, DEC VAX, and UNIX hosts – all from the same package – some products are plagued with limitations. Not Session. In fact, Session allows multiple – *even simultaneous* – connections with different host applications *and* different hosts, including your HP 3000, HP 9000, HP 1000, DEC VAX, and any UNIX host.



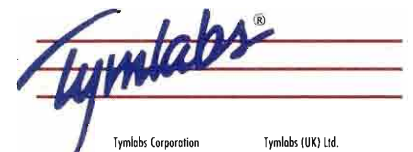
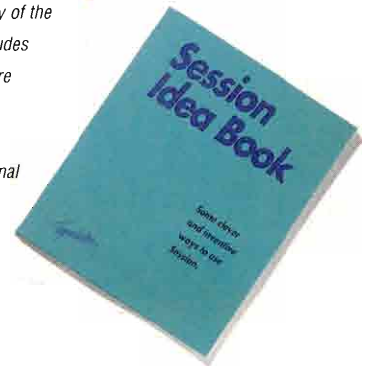
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Session offers Microsoft's Dynamic Data Exchange (DDE) and support for HP NewWave to help you retrieve, view, and integrate information from a variety of sources.



Session lets you access data over all the popular networks.

# IT'S IN THE



Faint, illegible text and a grid pattern, likely a technical drawing or architectural plan, visible in the bottom left corner of the page.

# MAIL

## **As UNIX Takes Its Place In The Office, HP OpenMail Stands Well-Positioned To Become An Industry Standard**

BY PAULA JACOBS

Increasingly, electronic mail is considered a crucial component of the integrated office environment. Businesses today recognize that streamlined communications are essential to accurate and timely decision making. As the trend continues to store data in electronic form, electronic mail will assume a greater role in helping businesses to respond quickly and maintain their competitive edge.

A recent Dataquest study shows that the e-mail market is anticipated to grow from approximately 10 million users in 1990 to 17 million in 1995. The number of messages sent via E-mail is expected to increase from 12 to 25 million during the same time period. This phenomenon can be attributed to fast payback, the need to connect islands of computing, mail-enabled applications, and new ways of thinking about computing and communications.

Introduced in 1989 as the first E-mail product for UNIX, HP OpenMail is considered the industry-leading open standards-based mail server for UNIX; HP-UX, UNIX/386 and other vendors' UNIX systems. In fact, HP was the first major systems vendor to provide E-mail integration among multiple operating systems, including HP MPE, MS-DOS, UNIX and the Apple System. HP developed HP OpenMail using X/Open standards to facilitate porting to other vendors' versions of UNIX. Upon introduction, HP indicated plans to license the electronic-mail software to other systems vendors in an effort to establish HP OpenMail as an industry standard.

This cross-platform solution provides PC, terminal and workstation users with internal and external information distribution services across multiple platforms through electronic mail. HP

**W**ith the advent of workgroup computing, users are demanding freedom of choice on the desktop.

OpenMail transmits many media types, including HP NewWave objects, text, graphics, and binary, and supports multipart, multimedia documents, APIs and mail enabled applications.

HP has held to its promise of providing portability for other vendors' systems. Today, HP OpenMail now runs on the following platforms: IBM AIX for PS/2, SCO UNIX/386, IBM AIX for RS/6000, DEC Ultrix for DECstation and Sequent Symmetry. As part of its strategy to provide an open mail solution for open systems platforms, HP also has indicated intentions to port OpenMail to NCR, Sun, Pyramid, MIPS, DEC Ultrix for VAXstation, AT&T, and Unisys during 1992.

HP OpenMail is currently installed in the HP worldwide network of 92,000 users, averaging approximately one million messages per day. HP and its customers already have demonstrated connections to users of systems running DEC VMS Mail and ALL-IN-1, IBM RS/6000, Atlas, Bull, CDC and other systems.

"The most powerful aspect of HP's OpenMail strategy is porting to different platforms and selling to OA suppliers as the core engine," says Barbara Babcock, vice president of Information Systems for The Gartner Group (Stamford, CT).

"HP has been very effective as an OEM supplier and OpenMail fits in well with this strategy. If HP can obtain a handful of incremental partners, the main benefit for the customer is a common messaging system. Today, the problem is the difficulty of bridging together dissimilar products because even with X.400 directory services, additional work, such as integration services, is required... This kind of attempt on HP's part is important for industry development, and may result in a real win-win situation for both the industry and HP."

As E-mail has gained popularity over the past few years, many desktop department users have invested in PC-LAN E-mail as one solution. With the advent of workgroup computing, users are demanding freedom of choice on the desktop. Therefore, it isn't uncommon to find that different departments within the same organization have implemented a variety of word processing packages and PC-LAN E-mail gateway solutions. As a result, information technology (IT) departments responsible for corporate networks now must manage a complex infrastructure, often requiring administration at every remote site.

This situation presents difficulties both for desktop users and IT managers, who often bring different perspectives. Users con-

sider E-mail an easy-to-use desktop application, and are asking their IT departments for immediate connectivity, together with directory synchronization for enterprise-wide computing. IT managers, on the other hand, can't afford to invest in short-term tactical solutions, but must consider the long-term implications of an E-mail investment, including hardware, software and maintenance issues.

Often, because of their background with traditional mainframe and minicomputer E-mail systems, IT associates E-mail with high cost of ownership and purchase.

### HP's Electronic Mail Strategy

"**W**E HAD BEEN LOOKING at what's happening with the introduction of PC LAN mail, and noticed a clear split between the end user and the IT departments as to ownership of E-mail," says Andy Watts, product marketing manager for OpenMail. "For example, end users are installing PC LAN systems but then are going to IT to connect them. The PC-LAN systems aren't industrial strength so there is a high hidden cost of ownership. IT hasn't delivered to users an easy-to-use solution. That's why HP has said we have a different solution to the problem."

Citing a recent Gartner Group study, Watts claims that PC LAN E-mail engines have high cost of ownership hidden by low initial purchase price. According to this study, the typical cost of ownership for a PC-LAN E-mail system over a five-year period is \$1,550 per user in one year. The highest portion of this cost (\$950) is classified as system integrity issues, which include system downtime, recovery and lost messages. On the other hand, HP estimates that the typical cost of ownership for HP OpenMail is \$519 per user in one year.

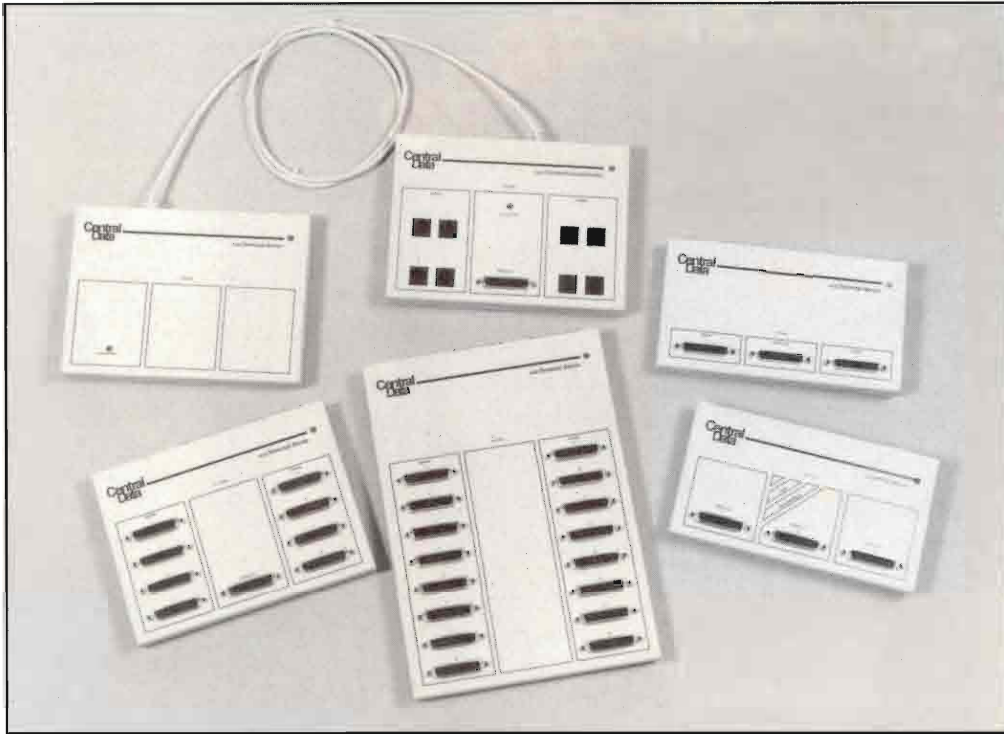
HP addresses this need with the HP OpenMail messaging backbone, which features a reliable, scalable mail engine, with a desktop user interface of choice. The HP OpenMail messaging backbone is based on the Open Systems Interconnect (OSI) X.400 standard method for exchanging messages between mail systems. To date, HP is the only vendor registered with the National Institute of Standards and Technology (NIST) to deliver U.S. Government Open Systems Interconnection Profile (GOSIP) compliant X.400 messaging, mandated in the U.S. and the U.K. HP OpenMail is fully integrated with HP's X.400/9000 Message Transfer Agent (MTA), enabling information exchange users in a multivendor environment, including proprietary X.400-based E-mail systems such as IBM's PROFS and DEC's ALL-IN-1. Because HP OpenMail offers a choice between OSI and TCP/IP transports, X.400 can be added as needed without upgrading HP OpenMail.

To further strengthen its backbone offering, HP recently announced commercial availability of the company's X.500 Distributed Dictionary, which supports X.500 as defined by the International Standards Organization (ISO). HP X.500 enables

*Continued on page 33.*



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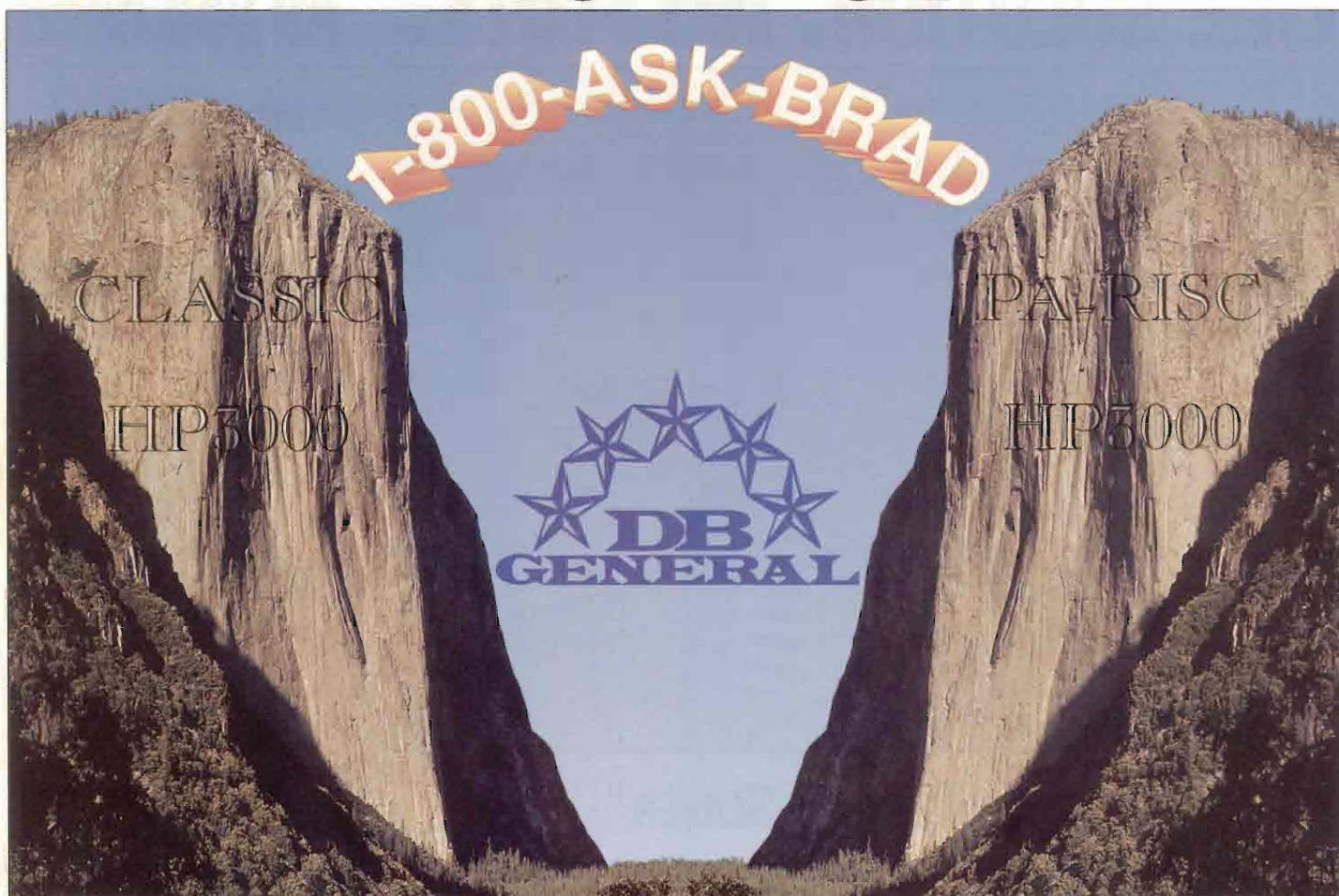


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Continued from page 30.

users to lower maintenance costs by providing a common enterprise wide directory for E-mail addresses, phone numbers and other information that can be accessed by a variety of applications, including E-mail. HP X.500 software provides users with standards-based access to directories of names, objects, and data that reside anywhere on a network. HP X.500 also will be integrated with HP OpenMail for quick and easy user access to the X.500 enterprise wide directory.

## OpenMail Enhancements

**F**OR 1992, HP'S OPENMAIL product enhancement strategy is focused on "cost-of-ownership" enhancements. Features that are expected to be introduced this year include: audit and stats; request server; access control lists; X.400 88 (MTA and Object IDs) for improved document support; deferred mailing; auto actions; directory enhancements; and user agents Application Programming Interfaces (APIs) such as to DOS, Windows, UNIX and X.500 links. These management tools are designed to provide a scalable, corporate-wide network free from administration overload, facilitating installation and configuration. The HP X.400 routing scheme also provides flexibility of network design and layout, ensures high performance, and eliminates message bottlenecks.

An E-mail system typically consists of four architectural components: User Agents or Applications, Accessories, Support Services, and Engine (OpenMail). HP is concentrating its efforts on the Engine area (OpenMail), while third-party suppliers are providing a variety of User Agents and Accessories.

Presently, there are several applications/user agents that support OpenMail. These include: HP's DOS Windows/NewWave, DOS AdvanceMail, and Terminal AdvanceMail; JetForm's Forms Integration; the Dexotek Calendar/Scheduler; and the Uniplex (XWindows/MSWindows). The breadth of these offerings and applications helps strengthen the attractiveness of OpenMail, supporting a wide range of desktops and desktop user requirements in today's integrated office environment. For example, HP AdvanceMail, client software that runs in the DOS environment, provides full integration with HP OpenMail or HP DeskManager. JetForm's Form Integration Capabilities provide forms fill in and integration capabilities, while the Dexotek Calendar/Scheduler provides workgroups with an integrated scheduling, agenda and diary system.

## Accessories

**A**CESSORY PRODUCTS EXTEND the capability of HP OpenMail and address the versatile computing requirements of today's multivendor environments with a variety of desktops and LAN configurations. This product category includes minicomputer gateways (The Boston Software

Works), PC LAN gateways (Touch Communications Inc.), mail-enabled document interchange (Keyword Office Technologies), and network management tools such as the Retix X.400/SCO gateway.

One such product is Keyword Office Technologies' KEYPack Document Converter software, that enables users to retain the word processor of choice. This mail-enabled software application, which integrates with OpenMail, provides document interchange for over 45 word processing formats.

The Boston Software Works, a software development firm specializing in high-quality office automation integration and coexistence products, has announced plans to introduce a version of its InterOFFICE E-mail gateway to HP OpenMail. Initially, the Boston-based company will release the InterOFFICE E-mail gateway for the HP-UX and SCO UNIX platforms.

"HP OpenMail is one of the most important offerings in the UNIX electronic mail market today," says Ross Gale, president of the Boston-based company. "InterOFFICE will provide seamless integration between HP OpenMail systems on a variety of UNIX platforms and several popular integrated office systems, including IBM OfficeVision for the AS/400, DEC ALL-IN-1, Wang OFFICE, and HP DeskManager."

InterOFFICE is a software-only solution patterned after the OSI X.400 messaging and X.500 directory standards. It transparently automates directory synchronization, message exchange, document conversion, and multinational character set translation. Integrated office systems from different vendors can exchange a wide variety of office message types, including simple text messages, word processing documents, meeting invitations, and binary files such as spreadsheets.

Gale views multivendor connectivity as a key requirement for the growing number of UNIX Integrated Office Systems (IOS) users. "That's why we feel that InterOFFICE provides an important value-add for users who require multivendor connectivity yet cannot move to pure standards-based messaging."

Touch Communications, a California-based firm, has entered into a development agreement with HP for PC-LAN E-mail gateways to HP's X.400 messaging backbone. Touch is porting its Worldtalk PC E-mail Gateway Software to the HP 9000 platform for integration with HP X.400 software. The HP and Touch collaboration is expected to yield a scalable messaging server that will provide LAN E-mail connectivity directly into the HP messaging backbone. By consolidating software on a single scalable server, implementation costs will be greatly reduced.

The first two Touch gateways will connect users of the leading PC LAN E-mail products, Microsoft Mail for the Macintosh, cc:Mail, and HP OpenMail via HP's X.400 offering. The company also plans to deliver gateways to MHS, QuickMail, and Lotus Notes to further extend HP's X.400 backbone in the PC/LAN E-mail environment. HP plans to expand its relationship with Touch to deliver PC LAN directory access to the HP

X.500 distributed directory services, allowing PC LAN E-mail users to access enterprise-wide directory information.

## Uniplex And HP OpenMail

**A**S THE RESULT OF A joint strategic marketing and technology-sharing relationship between Uniplex and HP, Uniplex is porting OpenMail to popular hardware platforms and is incorporating OpenMail into Uniplex Business Software as an alternative to Uniplex mail. To date, Uniplex has ported to the IBM RS/6000 and DEC's 5100 workstations, making OpenMail a de facto standard for open systems. OpenMail already is available on multiple platforms, making it the most widely available X.400-based E-mail product. Networks consisting of systems from hardware manufacturers such as IBM, DEC or HP can all share the same X.400-based E-mail system -- OpenMail. An additional 18 ports also are scheduled for release this year, including Sequent, NCR, Sun, Pyramid, MIPS, AT&T and Unisys. This year, Uniplex also will incorporate OpenMail into the Uniplex engine for E-mail capabilities.

According to this agreement, HP's sales force can make

Uniplex Business Software available to its customers. In addition, other vendors can make OpenMail available to their customers through an agreement with Uniplex.

"Two years ago we evaluated our future requirements," says Larry Warnock, director of marketing at Uniplex, "We saw that

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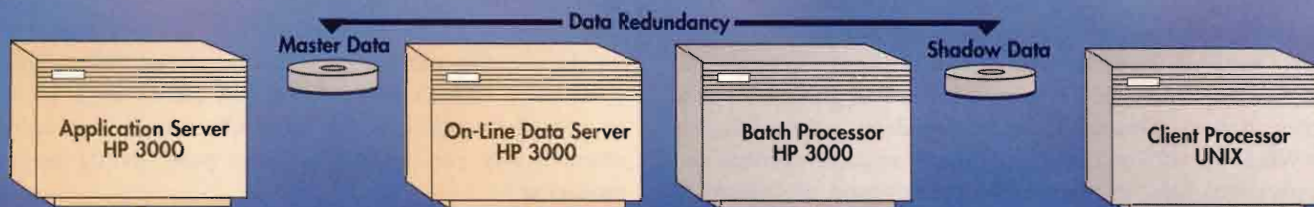
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- ◆ Uses low overhead transport algorithms
- ◆ User exits (API's) increase functionality and flexibility
- ◆ Support for NFS clients

E-mail is becoming significantly more important, with the need for more sophisticated capabilities such as compound documents and support for emerging standards, specifically X.400. We decided to find an existing product, and found that OpenMail was the only product to meet these requirements. The fact that it's built around X.400 rather than a gateway is critical. HP was looking for a company with cross-industry experience to port OpenMail, and Uniplex met that need since we currently run our product on 80 UNIX derivatives."

Warnock feels that the strongest Integrated Office Systems will be more open and more adaptable to multiple solutions. "The real future for the Integrated Office Systems is to get the disparate packages to work together," says Warnock.

### Bridging The Gap

**A**S USERS CONTINUE TO purchase UNIX for the office, freedom of choice will continue to be a key requirement. Integrating different desktop solutions will remain a real challenge because typical office environments often have disparate desktops — a mixture of DOS, UNIX, proprietary operating systems — within the same environment.

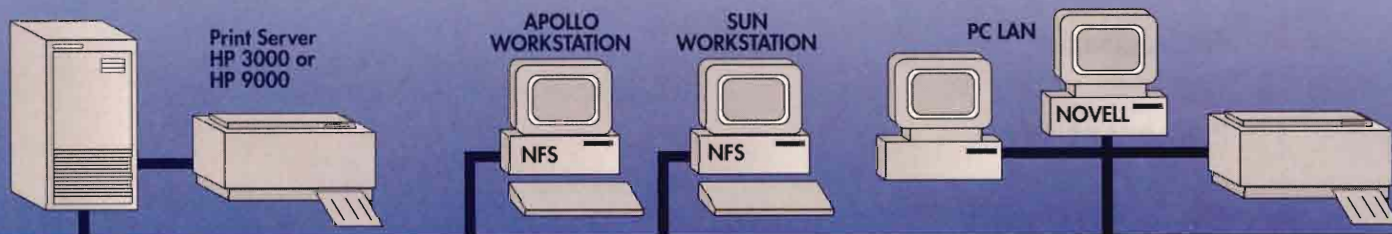
Electronic mail will play a leading role in connecting these various solutions. In fact, E-mail can be viewed as a technology enabler, bridging the gap between computing and the desktop.

As UNIX takes a firmer hold in the office, HP will be well-positioned with its E-mail solution — the OpenMail engine will run on a wide variety of vendor platforms. Today's sophisticated users want solutions that address long-term strategic objectives in a multivendor environment.

OpenMail may well become the preferred mail engine because of the advantages it offers: text editor independence, portability, conformance to standards and an industrial-strength engine. The availability of applications and accessory products, including a variety of gateway connectivity products, only strengthens user requirements for flexible solutions. The fundamental question is how quickly will it take for solutions such as HP OpenMail to drive market demand for UNIX Integrated Office Solutions. — *Paula Jacobs is a marketing consultant and writer based in Framingham, Massachusetts. She specializes in the implementation of new technologies.*

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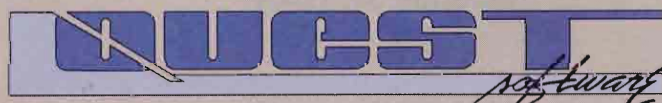


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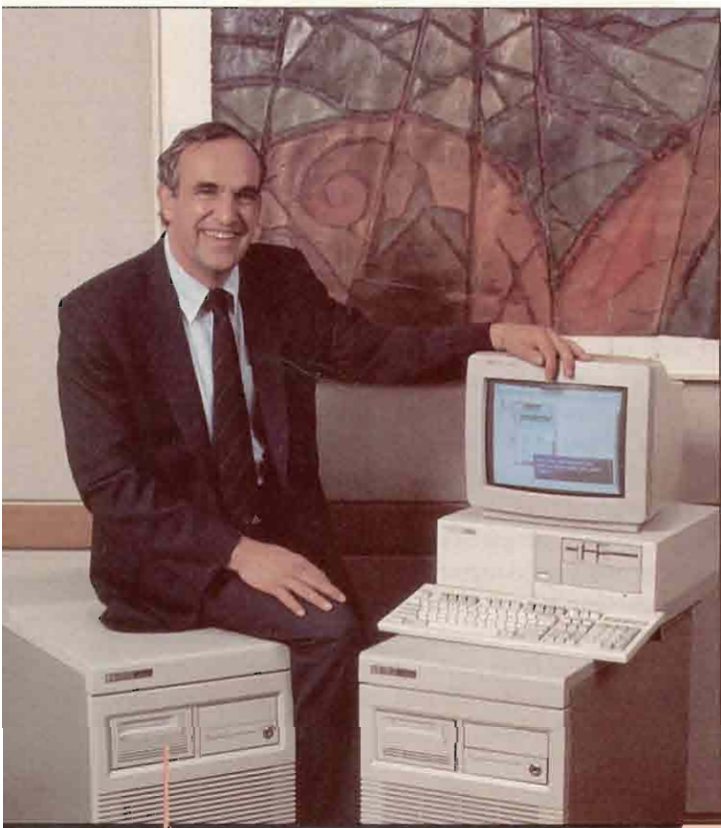
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**HP's Bernard Guidon,  
Arguably The Most  
Enthusiastic  
Proponent Of  
Commercial UNIX,  
Discusses HP's  
Winning Strategy**

BY ANDY FEIBUS

# What Is Commercial UNIX

## Anyway?

**Editor's Note:** To discover what "Commercial UNIX" really entails, *HP Professional* UNIX Editor Andy Feibus interviewed Bernard Guidon, General Manager of Hewlett-Packard's General Systems Division. The following are excerpts from that interview.

**FEIBUS:** What is commercial UNIX?

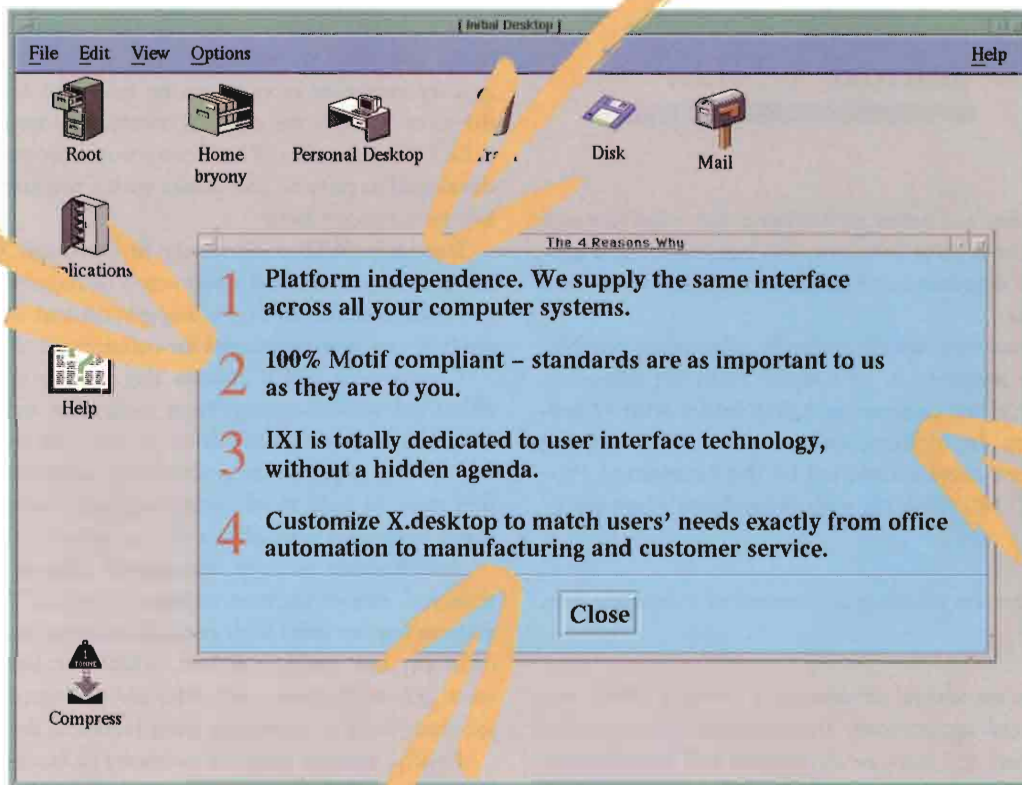
**GUIDON:** "Commercial UNIX" refers to using UNIX technology, historically used in technical environments, for solving mainstream, business-critical needs. Businesses are no longer just using UNIX systems to design products, but to manage their daily business operations as well. Consequently, general office workers in addition to engineers are now using UNIX systems.

**FEIBUS:** Who are the target customers, and what is HP's overall strategy?

**GUIDON:** Most businesses can benefit from the advantages of UNIX. However, HP is currently focusing on several market segments of the commercial world, including telecommunications, manufacturing, lodging, retail, finance and health care.

Our strategy has been to position HP as the No. 1 commercial UNIX vendor in the industry by providing products with

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“**G**enerally, UNIX for commercial applications needs to be more robust than ‘normal’ UNIX.”

the best functionality and price/performance, the broadest range of leading-edge third-party solutions, the best service and support, and flexible distribution channels to meet the needs of a diverse marketplace.

A number of industry reports currently substantiate our No. 1 position in the industry. A 1991 report from the Aberdeen Group shows HP as the commercial UNIX leader with 47 percent market share. In addition, online transaction processing (OLTP) benchmark numbers audited by the Transaction Processing Council (TPC) show HP with the industry's best price/performance.

**FEIBUS:** What are the advantages commercial customers gain through UNIX?

**GUIDON:** There are several advantages to using a UNIX system for commercial applications. Because UNIX is rooted in standards, customers and software developers find that they can port applications between systems from different vendors. A common language between different UNIX systems enables users to move applications easily from one platform to another with minimal cost, and without getting locked in to one vendor.

Networking always has been a strong component of UNIX. Technically, UNIX was developed as an open system, so data interchange and interoperability between systems — even those of different vendors — is simpler compared to proprietary systems. Interoperability protects users with existing UNIX systems because it enables them to easily upgrade them or integrate new systems.

More important, most customers' computing environments have UNIX. The key is to provide commercial systems that they can quickly and easily integrate into their existing environment, giving them the power to make timely business decisions.

**FEIBUS:** How is “commercial” UNIX technically different from “normal” UNIX?

**GUIDON:** Generally, UNIX for commercial applications needs to be more robust than “normal” UNIX. When an engineer's workstation goes down, it becomes an annoyance for that engineer. When a company's main system goes down, it can halt critical business operations leading to significant financial loss. Robust commercial UNIX systems ensure that a system doesn't crash because of lower quality hardware or major bugs in an operating system. High availability features such as disk mirroring and processor switchover give companies that extra assurance that their systems won't go down unexpectedly.

Commercial UNIX users have different performance needs. MIPS and SPECmarks — which measure system speed — don't mean anything to someone who is concerned about how quickly customer records can be tallied at day's end. One of the most effective measures of commercial system performance is OLTP benchmarks. The Transaction Processing Council was developed to provide companies with a standard measure of this key performance factor.

But high OLTP performance isn't enough. Companies also need leading OLTP and information management solutions tailored for specific needs. PC integration and office automation are two major requirements for commercial UNIX systems.

Commercial UNIX systems also require a complete set of enhanced system management tools. For example, standard UNIX backup commands don't provide the speed and cataloging features required by systems with large databases. Companies must be able to efficiently manage remote systems, since many businesses have offices that are geographically dispersed.

And because users of commercial systems tend not to be technical, ease-of-use is an important element. Traditional UNIX systems require users with enough technical knowledge to perform any task on their system, which can be intimidating for most general business users who are interested in getting their job done without having to learn technical details of a system.

Finally, security tools are necessary to ensure that critical information and programs are protected from unauthorized access and modification. Companies must be able to protect such information as payroll data and financial records.

**FEIBUS:** What has been added to HP-UX for the commercial market?

**GUIDON:** HP-UX is the most robust commercial UNIX operating system on the market today. I believe that no other UNIX offering provides as solid, as powerful and as complete an environment for meeting business needs.

Our HP 9000 business systems and servers have the highest mean-time-between-failure (MTBF) rating in the industry and our software quality is continually monitored and tested.

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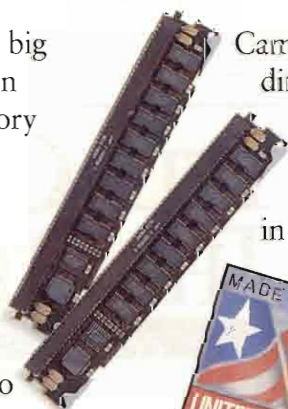
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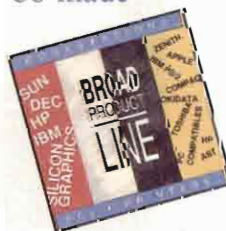
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HP is the only vendor that can provide object-code compatible systems for desktop to data center uses. This enables companies, especially those with enterprise-wide computing environments, to easily upgrade to higher performing systems as their needs change.

We also continue to establish leading performance with relationships established with the top [Relational Database Management System (RDBMS)] UNIX suppliers such as Informix, Oracle, Sybase and Ingres. Our ongoing relationship with the key database suppliers allow us to continually tune our systems for increased performance.

PC integration is another strong point for HP's commercial UNIX environment. LanManager/X, Novell and Pacer (for Apple PCs) allow the HP 9000 to act as a file server for networked PCs. And our HP NewWave Office products provide a comprehensive environment for client-server applications between PCs and HP 9000 servers.

We've also made the system manager's life easier with the HP 9000. HP-UX has a complete set of system management tools that provide much more capability than available ever before. For system backup, speed is very important when you are dealing with large databases. HP's OmniBack/Turbo is the fastest

backup product for UNIX systems today. OmniBack/Turbo can perform backups at a speed of 5 GB per hour and unattended backups for up to 40 GB.

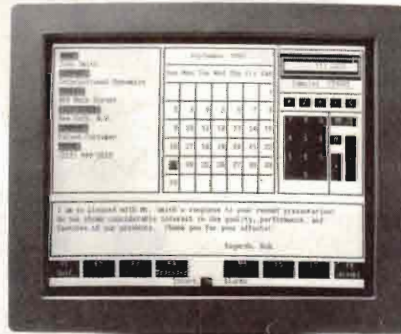
HP offers a commercial spooler on HP-UX called OpenSpool and a range of performance management tools. You'll soon see even more system management solutions as we bring on board applications from top solution vendors. HP-UX [has been chosen as the] first UNIX platform for Computer Associates.

We're also making the general user's life easier as well. For example, in HP-UX there are a number of utilities that let you easily execute complex system commands through softkeys. There is also a windowing capability for ASCII terminals that lets you toggle between many different UNIX sessions or applications, and cut-and-paste data between sessions.

System security is also assured with HP-UX. We provide for full file and application protection, as well as a protected password database. There is a full auditing capability that tracks unsuccessful login attempts that may indicate break-in attempts. In addition, we're meeting special security requirements, such as those required by government- and defense-related industries, with enhanced security products such as our B1-level security version of HP-UX.

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CIRCLE 242 ON READER CARD

# How Kelly unleashes HP performance.

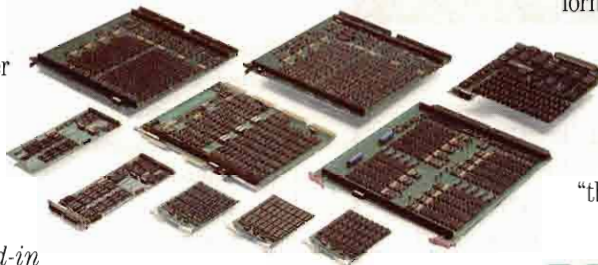
It's a Kelly tradition. Taking HP system performance to the maximum. Cutting through the restrictions. Overcoming the limitations — whether posed by CPU, memory or I/O.

We've worked at it. Putting together solid HP system expertise — hardware, software and applications. Developing the tools. Delivering on promises. Establishing ourselves as "the HP performance people."

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*memory upgrades*. The fastest available. With more board configurations than you'll find anywhere — from 1 to 16 MB. There's



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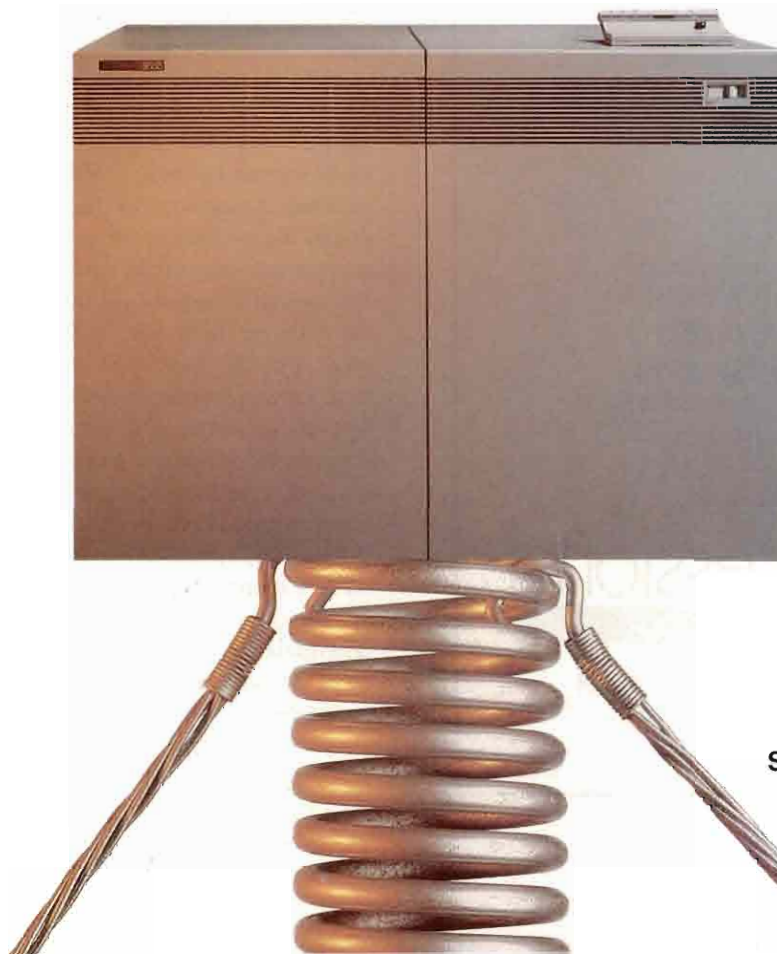
A final point. When a Kelly product is ready, it's ready. Count on delivery. Performance. And reliability — attested by MTBFs exceeding 60 years, 20,000 units in the field and our Lifetime Memory Warranty.

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3003V-(M/Y)

**FEIBUS:** What features will HP add to OSF/1 for the commercial market?

**GUIDON:** OSF/1 provides the core technology; it's up to the commercial vendors to beef it up for the commercial marketplace. There are several key features and facilities that we feel must be added to OSF/1 before our commercial customers can use it. These features are available today in HP-UX.

For example, OSF/1 does not provide [certain important] functions, such as networking. We need to provide the same full set of standards-based networking environment with OSF/1 that is available today with HP-UX. Other HP-UX features such as PowerFail, high availability, system administration capabilities, increased ease-of-use, and on-line diagnostics are important to commercial users.

In addition, high OLTP performance needs must be met, regardless of the underlying technology. Subsequently, we will continue to work closely with top RDBMS vendors to ensure that the Series 800 continues to be the UNIX OLTP performance leader even while we move to OSF/1.

**FEIBUS:** Okay, the hardware handles power failures, disk and cpu faults, and such. What happens if these backup systems fail? What can a commercial UNIX customer expect from HP?

**GUIDON:** HP has [established] the Worldwide Customer Support Operations (WCSO), that delivers support services, from designing a network to disaster-recovery services, to maintaining a multivendor data processing operation. All HP's support services are delivered to customer sites by HP support engineers.

HP's Response Center network also falls within WCSO. There are 27 HP Response Center hubs located in 24 countries, offering a full range of remote hardware, software and network support options. This flexibility meets customer needs by enabling a customer to choose the amount of support they would like to receive on a single system or on a collection of systems that they might have networked together. A customer can choose to balance HP support services with its own internal resources, to be fully backed by HP's on-line response center support that is available 24 hours a day, seven days a week, or to receive support at some level in-between.

One support service that is available to Series 800 customers is called HP Predictive Support, which can prevent problems by reading and analyzing error logs related to various system components. When a potential problem [is detected], the software on the system automatically calls the HP Response Center so a support engineer can proactively call the customer and resolve the problem. As a result, the customer can schedule downtime for preventive maintenance at times that are convenient for end users.

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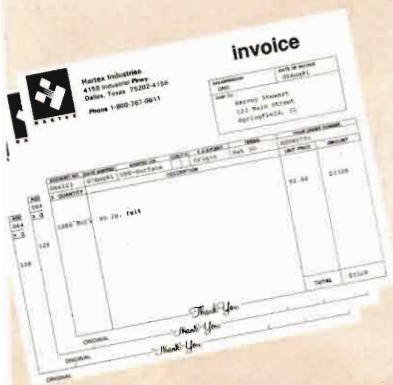


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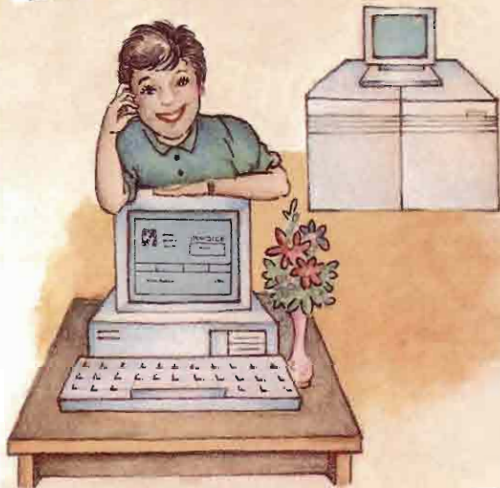
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# DOWN SIZING

HP's Mainframe  
Alternative  
Program  
Takes Off

PAGE 48

Choosing The  
Right Path  
Requires A Look  
At Your Whole  
Operation

PAGE 52

DOWNIZING

# M

# ainframe

# Alternative

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BY TIM CAHOON



With An Aggressive

New Program,

HP Has Redefined

The Buzzword

Of The '90s

AS THE EXCESSIVE '80S GAVE WAY to the frugal '90s, downsizing quickly earned buzzword status and soon afterward began spreading fear and anxiety among MIS managers throughout the land. Cost-conscious corporate executives suddenly were quite curious as to why their organizations' computer systems cost so much to run.

The concept spurred new questions among corporate managers. Is it possible, as "experts" say, to move from minicomputers to PC LANs, or from mainframes to minis? Would the savings *really* be that great? Could the same amount of work be accomplished on the new platforms? Aside from the big questions raised in the boardroom, there arose many tangential issues. Meanwhile, the folks responsible for implementing and maintaining systems had an entirely different set of questions.

MIS managers wrestled with the problems associated with such a major transition. Was this downsizing really a strategic consideration, or was management being sold a bill of goods? Could the new systems handle the company's data processing requirements? Were the appropriate applications, databases and operating systems available? And then there were the costs associated with retraining staff and migrating the existing applications. Clearly, the questions outnumbered the answers.

Although the term Mainframe Alternative grew out of a specific campaign geared toward IBM mainframe shops, it now applies to any data processing environment. To better understand the reasons why users are both diversifying and/or moving out of their centralized mainframe environments, it helps to look at a typical IBM mainframe shop. IBM mainframes, after all, are the predominant big iron in the market.

At the center of such a shop is a large cpu, usually a water-cooled model, which may not have much more horsepower than a venerable

ing for those who need it, while enabling users to retrieve and update data on demand — virtually unheard of in most IBM mainframe shops.

## Need Identified

HP RECOGNIZED AND UNDERSTOOD these and other problems faced by the IBM user community, and realized that its popular and robust line of PA-RISC systems represented a viable option. And so the Mainframe Alternative program was christened on January 1, 1991. The program was at first directed specifically at Fortune 1000 IBM mainframe shops. Special teams were formed to focus on the project, with initial target sites including users of the aging IBM 43XX processors.

Increasingly, these 43XX shops are reaching the end of the processor family and simply need more horsepower. Others are faced with rising operating costs or simply are hungry for the advantages promised with the newer IBM systems. IBM's new direction for these shops centers on its ES/9000 systems and the SAA architecture. In either case there are no easy solutions — in either case there are easy options — a massive migration effort faces all those who leave the 43XX family. Now is the perfect time for those users to consider other vendors, such as HP, to help them move away from aging, proprietary architectures and into an open, lower-cost alternative.

Because HP users initially targeted were facing such considerable application migrations, they established partnerships with VABs to bring the necessary migration tools and skills to the marketplace. Systems integrator Innovative Information Systems Inc. (IISI) was one of the first members in the new organization. When HP announced their first sales under the new program, IISI was ready with a product called Conveyor licensed from Infrosoft. This mainframe application migration tool was instrumental in adding to the initial success of the project. Similarly, VISystems' VIS/TP conversion tool, a COBOL compiler and CICS translator, facilitated the migration.

The Mainframe Alternative's kickoff year was particularly successful, with HP "stealing" over 50 IBM mainframe sites. But it wasn't the HP teams alone who accounted for this success — other factors contributed to the program's initial success.

PA-RISC has proven to be a stable and highly expandable architecture, allowing the HP 3000, for example, to expand at a compound annual growth rate (CAGR) of 75 percent. In November 1990, prior to the IBM ES/9000 introduction, the HP 3000 Series 980/200 was more powerful than 75 percent of installed IBM mainframes. And even though HP only promised a 50 percent annual growth rate, it has delivered more, and should continue to do so for the foreseeable future. At this point, the HP systems offer comparable performance at lower costs, and the promise of future performance increases and more powerful models will only bolster this appeal.

The ES/9000 Model 440 is comparable in performance to the HP 3000 series 980/200. Although this particular model is

HP 3000 Series 70. While the system may be accessed by several hundred terminals, most data is entered into intermediate files, and used to update databases in batch. Some online functions may exist, but they're usually strictly for inquiry. Most applications are standalone with very little direct linkage between them. If you need to correlate data from several applications (from sales and financials, for example), the process is most often done via a batch reporting system. If you watch an IBM mainframe user closely, much of his time may be spent inside an editor, modifying and submitting batch jobs. The bulk of the remaining time is spent waiting for the output.

Even when migrating between platforms *within* the IBM world, it's very common to perform massive conversions. And although there's compatibility within some families of processors, there also is a lot of incompatibility. This concept is foreign to HP 3000 market. Even today, software written for the oldest HP 3000 will run under MPE/iX. Similarly, the HP 9000 Series 800 family of UNIX-based business servers provides top-to-bottom compatibility, with all models using the same PA-RISC architecture and HP-UX operating system.

Every MIS manager today understands that management requires quick access to corporate data. Therefore, there exists a need for true online applications that are directly linked, enabling one user to interactively update or make inquiries of several databases simultaneously. Information must be accessed directly on the terminal without having to wait for a batch job to finish. Conversely, HP environments provide batch process-

# Downsizing

air-cooled, it's still priced at \$2,402,000, as opposed to the modest \$1,050,000 price tag of the HP system.

The ES/9000 Model 340 is a water-cooled system that is comparable with the HP 3000 series 980/100. The price tag of this beauty is \$2,127,000 making the HP system a veritable steal at \$675,000. The ES/9000 water-cooled processor complex also requires 10 times the footprint and power consumption as the HP 3000. Maintenance costs are estimated at nearly three times that of the HP 3000.

Likewise, HP 9000 Series 800 business servers offer greater performance than IBM's 3090-280J and ES/9000 Model 500. HP 9000 business servers also offer the added appeal of PA-RISC coupled with rich commercial HP-UX functionality.

The initial sites which converted from IBM to HP reported large cost savings. One site estimated their annual savings at \$30,000, while a larger organization projected \$1 million in savings as a result of moving to the HP platform.

## More Than Mainframes

YET, WITH SO MUCH ACTION (and potential) at the high end, HP hasn't forgotten about the smaller IBM midrange sys-

tems. At the low end of the spectrum, IBM's loyal System/36 users face the choice of either staying with their current discontinued systems or migrating to the newer, more powerful AS/400 line. Going with an AS/400 system isn't a perfect solution — and IBM has encountered considerable resistance to this migration by System/36 shops. The choices boil down to running the AS/400 in System/36 emulation mode — sacrificing performance — or performing a complete (and costly) application conversion to native AS/400 mode.

Today, several vendors supply software to create a System/36 environment or migrate the Systems/36 applications seamlessly to the HP 9000 Series 800. Even when running these emulation products the performance of these UNIX systems give the System/36 user a tremendous performance boost. By moving to the UNIX-based environment, users gain the benefits of portability, scalability and open systems — no longer locked into the proprietary Big Blue world. Another factor is the lower cost of UNIX platforms as compared to the AS/400. Maybe this is why thousands of the System/36 users are looking to the UNIX world rather than the AS/400. It isn't because the AS/400 is a bad machine; it's far from that (it's IBM's most successful product). But it's proprietary and expensive.

## Migration Considerations

The majority of mainframe alternative considerations are obvious. They include migration project planning, tools, methods and services, target system architecture, software, standards, procedures and training. Some of the less evident, but no less important, considerations include:

**Physical Security** — Mainframe systems routinely are kept in the traditional "glass house" for security. Smaller systems, especially those in remote locations, may be more prone to environmental damage, theft, vandalism or accidents. Access control and isolation may often be required to maintain necessary security levels.

Some vendors provide "hardening" of processors for use in potentially unfriendly environments, and such measures can add significantly to equipment costs. Many times, an office or closet can be enhanced to provide necessary environmental and access control for midrange systems.

**Soft Security** — Elaborate software security systems and procedures, beyond simple password protection, have evolved for mainframe systems. Systems and data are often proprietary assets providing an organization with its competitive advantage. Consider the level of available soft security required and available for applications and data ported to these more accessible systems.

**Disaster Recovery** — The above issues are preventative in nature. But what if you need a cure? How will the regular system backup procedure change? Where will the backup media be stored? Does the hot-site provider have the equipment necessary to restore the servers? Is the company's strategic corporate plan stored on a single PC's hard drive?

The need for periodic backups will never diminish, and off-site

storage is still most desirable. Good results have been achieved by using a LAN to backup PCs onto a server as opposed to using diskettes on a "sneaker net." If a mainframe host remains in place, the host network may be used to upload data from the servers and then employ the existing host backup procedure.

**Audit/Control** — Remember the folks from headquarters who love to help. It was difficult to account for everything when it was centralized on the mainframe, but the task of providing auditable applications with management controls is compounded when the applications are dispersed.

**Secondary Storage** — Beware of squeezing large applications or large databases onto small systems. In LAN environments, consider a UNIX-based server. The case for porting applications to midrange systems with a mainframe-class DBMS server is a strong one. Multiple systems managing partitioned data complicates the issue.

**Existing Peripherals** — "Don't throw out that good stuff," says the office Pack Rat. It's true — Protocol converters, emulators, bridges, gateways and adapters may be unsupported, but different communications protocols can usually be overcome.

Decentralizing you horsepower doesn't necessarily entail decentralizing the management responsibility for your systems. Information remains a key asset requiring prudent management. Although end users are becoming increasingly capable of supporting their own information processing needs on a local level, sophistication in software engineering and management skills are still vital concerns.

— Philip Seufert, senior account executive, Wesson, Taylor, Wells & Associates Software Consulting Services (Valley Forge, PA).

## Spreading The Word

DURING THE SUMMER, HP sponsored an audio teleconference for IBM sites interested in the program. This conference featured John Logan, an analyst from the Aberdeen Group Inc. (Boston, MA), Peter Burrows, director of corporate information services from Foxboro, and Wim Roelandts, vice president of the Network Systems Group for HP. Sites participated via speaker phones from their own locations. After each presentation, each site was given the chance to ask questions. As the names of the companies participating were read aloud, it sounded like a who's-who in America. Cities, government agencies (state and federal) and a broad spectrum of corporations, both large and small, participated. Each one left with a better understanding of the strategic impact the Mainframe Alternative program could have on their respective bottom lines.

HP went even further last fall by announcing their new consulting service dubbed the Open Software Environment (OSE). This service, currently aimed at the Fortune 500, helps users create a non-vendor specific "road map" for implementing an open systems approach to data processing. The solution is tailored to users' unique needs and provides a two- to five-year plan to accomplish your open systems goals. The solution isn't

limited to HP, or HP VAR products. The team will recommend the best products available regardless of manufacturer.

HP believes that while the open systems picture is far from complete, it is possible to migrate to an open systems environment existing products in the marketplace. No longer do you need to rely on one vendor's proprietary product, such as DEC's Pathworks software, to supply the solution. While developing an active, working open systems environment may not be easy, it will certainly give you a future advantage.

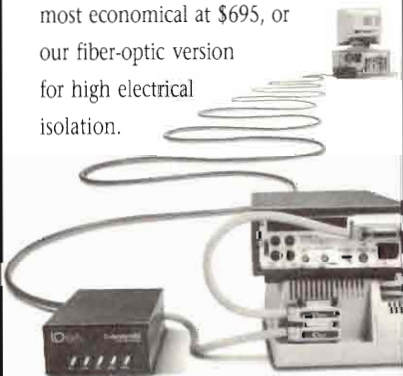
From the IBM experience HP has had this year, you can see that the term downsizing has taken a whole new turn. Even though to many people it still just means dumping what you have for a smaller platform, to the initiated it means applying the most relevant solutions to your business needs and still saving money. That, in a nutshell, is what mainframe alternatives are all about. It also would be nice to think that the success HP has had against IBM this year was the reason for their latest reorganization. Meeting customers needs is what it takes to stay in business today. That certainly appears to be HP's goal.

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# Downsizing

# The Tasks At Hand

BY GORDON MCLACHLAN

Adding A Server To

Complement Your

Mainframe? Doing A

Full-Blown Migration?

Choosing The Right Path

Will Underscore The

Bottom Line

DOWNSIZING IS A PRETTY IMPRECISE TERM. To some organizations, it's as easy as trading in some dinosaur mainframe or mini for a smaller, cheaper, faster box in the same product line. For others, it's a full-blown conversion from a mainframe to a mini or a network of workstations. A few brave souls feel compelled to undertake a complete re-engineering of their systems, and yet others won't even touch their existing stuff, being content to downsize only their new applications.

Whatever the scale of the effort, the goal of downsizing is clear: Saving money. The more money you can save, the better you have downsized. To get the maximum benefit from downsizing, you have to look at your whole operation and make some real hard decisions. It's not too tough to follow the hardware price-performance curve, but software and personnel expenses seem to eat up all those savings. A comprehensive plan has to shave application development, support and operations costs. Cheap silicon alone won't do the job.

The first order of business is assessing the strength of your application suite. Do your systems deserve to live through a downsizing? Like any other system upgrade or conversion, downsizing should be driven by your application requirements, which should in turn be driven by your organization's business requirements.

The last ten years have seen an unrestrained orgy of personal computing, networking and applications development that have left American businesses to foot a huge bill with minimal productivity gains. Managers are truly hard-pressed to come up with solid productivity gains directly attributable to computer systems. Part of the problem is bad techniques or inadequate metrics for productivity measurement, but much of the blame lies with badly implemented systems and systems that automate bad business practices.

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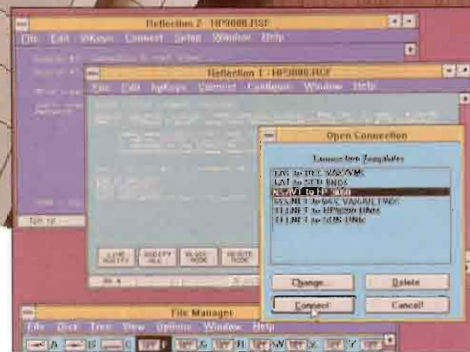
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# Downsizing

Systems developed or customized in-house are a good place to start looking. In many industries, repeated restructuring — and downsizing — has left behind a business that looks little like the one that the old systems were supposed to model. If your old applications no longer fit the organization, re-engineering may be in order, and will provide the real impetus and payback for your downsizing effort. Only after evaluating the state of your current systems can you decide if a simple box swap is enough, or whether it's time to make some major changes.

## The Conversion Question

IF YOU'RE LUCKY, your applications will be just wonderful, and you'll find that merely replacing your obsolete hardware will net some significant savings. Decreased reliability, the risk of extended downtime, and comparatively higher maintenance and upgrade costs on older equipment can make a trade worthwhile, even if you don't do anything to convert or restructure your systems.

Some systems, like IBM's 30xx mainframes, are traditionally and notoriously manpower-hungry. Every operating system upgrade is an adventure for a team of assembler hacks, and even changing network configurations is overly exciting. In such an environment, downsizing should take dead-aim at those operating costs. Not to mention the plumbing and water bills. It might even be worth a conversion.

That's the philosophy that HP and others are trying to sell when they approach IBM midrange customers who are faced with a climb into the mainframe arena, or who want to free themselves of the mainframe support burden or upgrade costs. Under its Mainframe Alternative program, HP and allied third-party ISVs and systems integrators are providing conversion tools and application software to facilitate the move from IBM 43xx and 30xx systems to the HP 9000 Model 800 PA-RISC Business Servers.

Mainframe Alternative partners Infsoft and VISystems provide conversion programs which convert COBOL/CICS code to HP COBOL or C, respectively, and run-time modules that imitate the IBM mainframe environment. 4GL vendor Information Builders' Focus is available on a variety of platforms, as is the multiplatform Oracle database.

If a conversion effort will be large enough, or if applications require major changes, it may be necessary to replace them, or rewrite them entirely.

Replacing home-grown systems with packaged software should be less labor intensive, but only if you can refrain from modifying the packages excessively. This sounds logical, but it's amazing how logic flies out the window when it comes to using canned software.

Invariably, every organization has some policies, procedures and precedents that get in the way of using any software package that wasn't custom coded. If there aren't, some high-level

user will decide that there are. There's always a nugget of truth buried in the reasons for why the system has to be changed, but a large part of the problem is users' unwillingness to be told how to run their outfits by some computer jockey.

Custom development can also be a nightmare. Wholesale system replacement can get so drawn out that you wind up with two systems and a completely blown development budget. Unless you've got the planning and development staff to handle it, and look at downsizing as a long-term proposition, it's probably best to back off from this alternative.

In either case — packaged or custom software — acquisition and development should be preceded by a serious study of the business processes that have to be computerized. If goofy practices are leading you toward goofy systems, you absolutely have to get top management support for changing the way you do business. It goes without saying that user organizations should be given every opportunity to help select or design the software they'll be using so it doesn't become an implementation problem. A delayed downsizing is effectively an upsizing, and that won't be appreciated.

## Standard Programming Tools

IF CODING AND MAINTENANCE are going to be your own responsibility, it's important to choose programming tools that are up to the task. It's also important to get tools that your MIS department is capable of using effectively.

Popular mythology holds that UNIX-based systems have to be coded in C so that you can get at all those nifty APIs, code-generators and programming toolkits. If you go off on a nut and decide that all your new development has to be object-oriented, you might even be tempted to wade into C++.

It's a noble goal, but the retraining and programmer downtime that switching from old standby tools entail will probably outweigh the benefits. The much-maligned and reputedly dead COBOL may still be your best bet. For most business applications, working in COBOL will be more productive for your developers, and much friendlier to your maintenance staff. COBOL is weak in object-orientation, but until object-oriented concepts are more widely understood, and system object management issues are worked out by the standards bodies and vendors, OOP may be more trouble than it's worth. Until programming productivity metrics are available that truly demonstrate its advantages, object-orientation may sound like a better deal than it is.

## Scalable Hardware Platforms

SCALABILITY OF THE target system is also critical factor for your future success. How much headroom will you have left in the product line? If your requirements will keep you pressed against the performance ceiling, you have legitimate cause for concern. Many HP 3000 "classic" shops butted their heads



against disk configuration and memory limits for years before getting real relief in the form of PA-RISC, and the conversion to that processor family was not always clean.

One major advantage of using widely scalable hardware is that you can limit the number of different platforms that you have to support. Hence, you get instant de facto standards. Instead of converting to a different vendor or product line when your performance requirements change, you can just move up or down within a single product line.

## Open Systems

IF SCALABILITY IS A POTENTIAL problem for you, open systems are in your future. One of the goals of open systems, whether of the UNIX persuasion, or the newly fashionable POSIX-compliant "open proprietary" systems like MPE/iX, is to provide good application portability across a wide range of systems. Here's where we can make an important distinction between standards and standardization.

Even though there is no clear operating systems standard, the standardization of application programming interfaces is proceeding at a rapid rate. Compliance with the POSIX specifications for system calls and language functions, the OSF Distributed Computing Environment (DCE) and Distributed

Management Environment (DME), and other emerging standards for object-orientation and SQL database access, are allowing vendors to build proprietary operating systems that are supersets of the mythical UNIX standard.

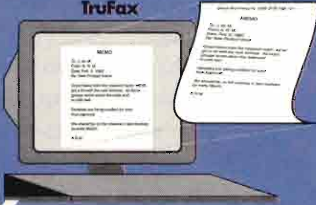
Portability can be considered an extension of scalability. It's an escape hatch for when you run out of headroom and have to convert your code. It's also the less preferable option. It's always easier to move within a product line than between them, no matter how open everybody claims to be. It may be worth the pain and expense to go through the mother of all conversions one time, but it doesn't make much sense to go through that rigmarole more than once. POSIX compliance is a good starting point for your system evaluation.

## Standard Networks

EVEN THOUGH DOWNSIZING presents a golden opportunity to switch over to standards-based networks and open systems, it still might not be safe to take a definite stand on the issue.

When converting within the multiuser system paradigm, networks play a different role than they do in workstation-based client-server schemes. This is especially true if you are using new, downsized systems to offload work from an existing mini or mainframe without replacing the old system entirely. In this

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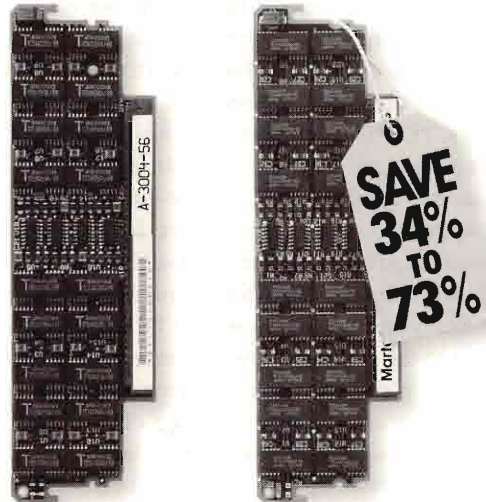
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# Downsizing

scenario, the need to accommodate the pre-existing systems may outweigh your desire to go with standard networks.

Offloading an IBM mainframe almost certainly means accommodating SNA, and may require you to use IBM's Systems Application Architecture (SAA) as your blueprint. This is especially true if you want to slap some chrome on the user interfaces or engage in some cooperative processing shenanigans. HP provides a set of emulations, programming interfaces and gateways for IBM 3270 communications, LU6.2 Advanced Program-to-Program Communications (APPC), PROFS and DISOSS.

It doesn't help that SAA is half-dead. It's still dangerous, even flopping around on the bottom of the boat. IBM's new-found open systems religion notwithstanding, SNA has to be accommodated, if not embraced with open arms.

Outside the IBM world, you've got a cleaner shot at using the official standards, but even here there are problems because of the need to integrate PCs into your overall architecture, and the lack of solid standards for how to do that.

Unfortunately, proprietary mid- and high-range systems have not scaled well all the way to the low end of the market. That's territory that's owned by the DOS PC clones. Conversely, PC systems have not scaled up to the level of performance needed for transaction processing systems, nor have they adopted many of the same standards.

With a whole different crop of network options at the low-end than we see at the high-end, picking a single network solution is a real pain in the neck. Due to market forces and product positioning, it seems we are forced to make a definite choice between working from the bottom-up or from the top-down.

ISO/OSI has effectively taken itself out of the picture, because it is so large and unwieldy that it is unimplementable on memory-crippled DOS machines. With tens of millions of those puppies out there, this is more than an intellectual problem.

Even TCP/IP — a popular choice in workstation and midrange markets — hasn't been able to penetrate the glass floor because the capabilities of TCP/IP-based servers are weak in comparison to many proprietary low-end solutions like Microsoft's LAN Manager and Novell NetWare. TCP/IP-based solutions are more notable for interoperability than capability.

Logically enough, the glass floor for larger systems looks like a ceiling to the purveyors low-end networks. The need to break that barrier is clear, and they're trying to move upscale by putting their proprietary services on top of standard TCP/IP communications stacks, providing higher-level service gateways to NFS, ARPA service or SNA hosts, and by porting their software to new platforms.

LAN Manager for UNIX Systems and Portable NetWare are the most notable attempts to move PC networks upscale, but these implementations have their critics, particularly in the area of performance. If coded generically enough to be portable between operating systems and I/O subsystems, they lose the performance edge they enjoyed by being so tightly coupled to a specific operating system, as they could be on a PC platform.

Novell has answered this criticism by developing "native" NetWare versions for DEC VAXen, and announcing an agreement to do the same for HP minis. These custom ports will allow Novell to tailor the code to specific systems, and eliminate some of the performance gap.

Complicating matters are emerging remote procedure call (RPC) and transaction-processing standards. These are definitely being driven from the top-down. The preponderance of PC workstations makes their integration necessary, but even the Open Software Foundation, that bastion of interoperability, has a problem with the PC vision thing, and hasn't laid out a good game plan beyond basic print- and file-serving.

## The Final Analysis

DOWNSIZING CAN BE a daunting experience. Faced with so many architectural and design issues, and the need to commit to many standards before they are totally clear, it's difficult to devise a foolproof strategy.

Once you move away from a simple box-swap or a straight conversion into the realm of distributed, client-server systems, even the best laid plans can run into unexpected difficulties. Keeping solutions simple will make them more easily implementable. Extreme experiments in distributed databases and the use of nifty new standards and technologies are probably not a good idea unless you can justify the inevitable delays they will cause.

In the end, there are two approaches to picking standards for your systems development. One is to type up a list of standards, give it to a five-year-old with a crayon, and let her choose. The other is to carefully architect your system, study all the standards options and make a careful selection based on properly prioritized criteria. I'm still not sure which approach works better, but the five-year-old will get the job done much more quickly. If that doesn't seem like a very professional approach, make your decision based on what your primary vendor tells you to do. It's almost as effective.

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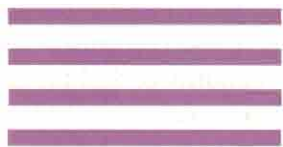
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**Help Of MapInfo**

Where would we be today if not for a certain Italian navigator's interest in maps? Certainly, mapping is one of man's oldest, most useful ways to visualize information. Very few of us would venture out on vacation without a map. Millions of people, from deliverymen to space shuttle pilots, stake their careers, and sometimes their lives, on being able to use accurate maps.

Applying computing power to mapping systems suddenly turns a static map into a dynamic Geographic Information System (GIS). A GIS allows you to organize and visualize your data, creating a whole new view of your world. For example, obtaining a listing of sales territories and customers is one thing, but seeing the same information on a map instantly tells you where you should be concentrating your efforts.

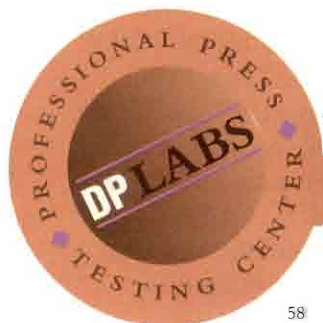
A typical GIS's memory and cpu requirements could easily suck the life out of a mainframe or a minicomputer. Early systems were often difficult to use. With the phenomenal increase in desktop computing power, however, GISs are now found running on PCs and workstations. GISs such as MapInfo place the power and convenience of mapping into the hands of the user.

### **Description**

MapInfo, from Mapping Information Systems Corp., is a GIS that runs on a variety of platforms, including the HP 9000 series. Our test version was installed on our HP 9000 Model 360 workstation running HP-UX 7.0 and Motif.

The product is comprised of three main components. The Browser provides a view of your database in a spreadsheet

**By David B. Miller**





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# I was up and running — doing useful things — with MapInfo in about three minutes.



format. Like the Browse function in dBase, it allows you to move through your data, performing queries and editing. The Mapper is what MapInfo's all about. It displays the data in your database on maps which you can purchase from MapInfo or which you can make yourself. Finally, the Grapher allows you to represent your data in a variety of formats such as pie and bar charts, a la Lotus and other spreadsheet packages.

Installation is straightforward. MapInfo's files are extracted using tar and placed in a directory of your choice. A few environment variables are required to insure MapInfo will find some necessary configuration files.

After the software is installed, you must obtain a license key from Mapping Information Systems and start a license daemon on your workstation.

## Venturing Forth

I'm not a GIS expert, but I was up and running — doing useful things — with MapInfo in about three minutes. MapInfo is menu- and dialog-box driven, so it's easy to use.

The supplied tutorial files provided an excellent means of exploring the product's capabilities. There's too much to talk about within the constraints of this review to discuss all of MapInfo's capabilities, so I'll touch on some of the things you're able to do with it.

I started by selecting a workspace. Workspaces are collections of related tables containing geographical and textual information. For example, one workspace I used contained tables containing selected information on the entire world, U.S. states, major U.S. cities and the streets, zip codes and restaurants in San Francisco.

Starting with the European map, I was able to scroll westward to the west coast of the U.S. For a closer view, I selected a Zoom In tool from the tool palette and dropped down to a screen showing a view of San Francisco from about 10 miles up.

Because a table of San Francisco streets is part of this workspace, I could search the map for an address. Typing in a correct address caused MapInfo to place a marker symbol on the map.

San Francisco restaurants contained in another table in this workspace were marked on the map as well. Grabbing the Information tool from the tool palette and clicking on one of the markers produced detailed information about the restaurant. Using the same tool, I could click on any street in the map to produce the street's name.

A powerful MapInfo feature is that of thematically shading maps. For example, I was able to tell MapInfo through a dialog box that I wanted to distinguish the restaurants on the map by type of cuisine (another field in the restaurants table). MapInfo created a legend of restaurants by cuisine and marked them appropriately on the map.

Having my fill of San Francisco restaurants, I moved on. Loading a workspace representing the states in the U.S., it was easy to use MapInfo to determine distances between cities. MapInfo's Analyze function allowed me to hunt for cities in particular states. Then, I could use the mouse to determine the distance between any two cities. By continuing in this fashion, MapInfo produced a cumulative total of straight-line distances between all the cities encountered on the tour. To make this exercise more useful, you can pur-

chase a map of highways from MapInfo. Performing this same exercise would then yield driving distances between cities, which could be more useful to you.

A core function of MapInfo is to relate geographic data residing in tables to points on a map. This function is referred to as geocoding.

I opened another workspace of San Francisco data. To show additional MapInfo features, I opened a table of bank customer data that was in dBase format, not MapInfo format. MapInfo can handle a variety of file formats including delimited ASCII, Lotus 1-2-3, dBase and Microsoft Excel.

I selected the column containing the street information from our dBase table. Selecting automatic geocoding from a dialog box sent MapInfo on its way, relating rows in the customer table to points on the San Francisco map. MapInfo generates a report telling you how many records could be geocoded. Those that can't be done automatically can be put in later manually.

After the dBase table was geocoded, I added this "layer" of data to the map. You can think of a layer of data as an overlay. MapInfo lets you start with the basic map layer and allows you to place other transparent layers on top. I did this with the geocoded dBase records to see where the concentrations of bank customers existed.

In this example, I was interested in finding the areas with the highest concentrations of customers to best locate a bank ATM. Using the tool palette radius search tool, I could get MapInfo to report the number of customers living within a circle of specified radius. Additionally, MapInfo created a Browser table of these records. I did several radius searches, creating several subsets of data to see where best to place the teller machine.

Creating graphs and charts is easy. Spreadsheet users will be instantly familiar with this if they've created graphs in a package such as Lotus. The usual graphs are available: line, area, x-y, bar and pie. The dialog-box driven interface is intuiti-

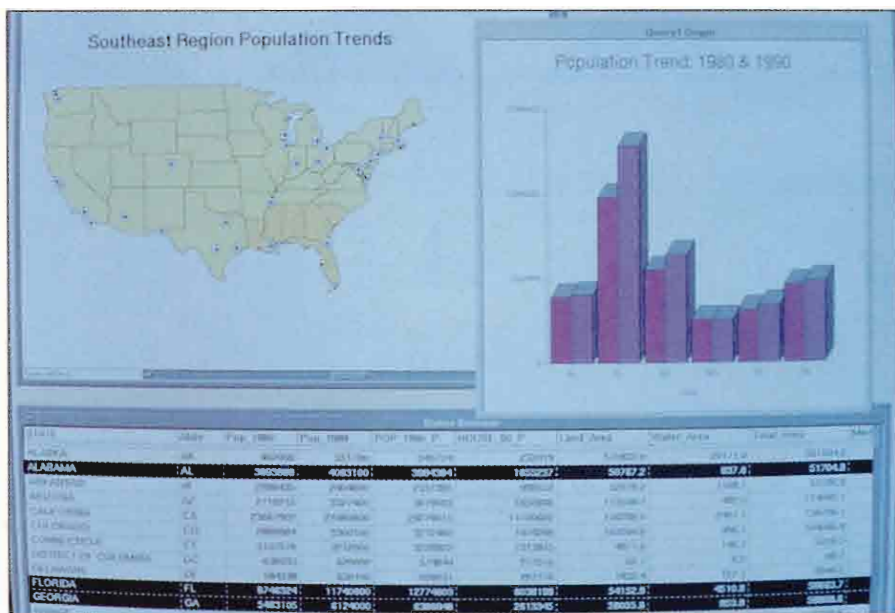


Figure 1: Standard charts can bring life to your information. They can be displayed simultaneously with a map and with the table containing the graphed data.

tive and straightforward. A sample graph is displayed in Figure 1.

The tutorial provides a nice overview of MapInfo's capabilities, but it only gives you an introduction. There's much more that an experienced user can do with the package.

### Worthy Of Note

Here are some additional features and observations, in brief, not covered in the above discussion.

I wish I had a faster workstation (then again, who *doesn't*) to run MapInfo. I enjoyed using MapInfo, but it was a little overwhelming for my 360. There were times that I thought the machine crashed or hung when, in reality, it just needed to do a lot of thinking.

If you're a database and/or a spreadsheet user, two out of three MapInfo components (the Browser and the Grapher) will already look familiar to you. Browsing a table is very much like using a spreadsheet or the dBase Browse command. If you've used a spreadsheet graph feature, you'll quickly adapt to MapInfo's Grapher.

Other operations on table data will be familiar to you if you're a relational database user. For example, you can define

and modify a table's structure, create indexes, add and delete records, pack a table and query for information by creating your own search expressions.

In addition to accepting a variety of file formats for importing table data, MapInfo also can import graphics files in DXF format, such as those produced by AutoCAD. MapInfo's Interchange Format (MIF) provides a means of attaching descriptive information to data of various kinds — this facilitates porting MapInfo data to different systems.

MapInfo's components are all linked together. Called Hot Views, any changes you make or selections you make in one view will be reflected in other views on your workstation.

Any Postscript printer is supported by MapInfo. You can print just about any component you can see on your screen, whether it be the Browser's tables or the map itself. I printed table data and maps on a QMS PS2000 with excellent results.

Although the tutorial concentrated on geographic applications and the concept of "mapping" may indicate a certain emphasis in geographic applications, MapInfo can be used in other ways. For example, you could import an AutoCAD engineering drawing and use MapInfo to

add a wealth of information concerning the location and characteristics of parts. Another sample application sent with the package displays the booth locations of a trade show floor.

We've hardly scratched the surface with this brief introduction. After you've finished the tutorial, you'll want to start working with your own data. MapInfo can also provide you with a variety of maps depending on your application. For example, you can purchase maps that include detailed street and highway information, airports, railroads, retail activity, census information and much more.

Standard maps included with the package are a world map, state outlines and U.S. ZIP codes.

### Documentation

MapInfo's documentation was excellent for beginners and experienced users alike. The tutorial has you up and running quickly. Appropriate explanations are given about what you're doing in the tutorial, but you don't get bogged down in details.

Before diving into the product, it might be useful to read the excellent introductory booklet. It provides explanations of all the concepts and definitions of mapping buzzwords.

Reading data is one thing. Seeing it come alive is another. If your business relies at all on geographic data, you owe it to yourself to check out MapInfo. Amerigo would be very pleased! ■

### MapInfo

**PLATFORMS:** HP 9000 Series

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# A s E a s y A s

## Lotus 1-2-3 Version 1.1

### For HP-UX

### Workstations Turns

### Calculations

### Into Child's Play

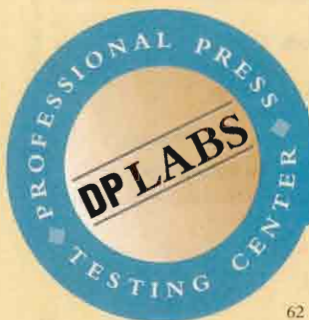
What can I say? It's been around for a long time, everyone knows at least a little bit about it, and it works. It really works well. What are we talking about? Lotus 1-2-3, of course. It's a name that in recent years has become almost synonymous with spreadsheets.

More than that, we're talking about Lotus 1-2-3 for Hewlett-Packard UNIX workstations. The version we worked with in our lab is a flavor of 1-2-3 Release 3 which has been specifically designed to run under a UNIX-based operating system in an X-window environment. All of the features which made 1-

2-3 the most popular spreadsheet package for PCs are available in this UNIX version.

The accountants and managers among you will feel right at home; menus, functions, formulas, and most function keys in 1-2-3 for UNIX are identical to those of the DOS version. Also, moving around a spreadsheet; tasks such as copying and deleting; and more esoteric features such as macros and graphics are all carried out as they always have been under 1-2-3. Be reassured, UNIX novices, you'll have no trouble adjusting to this version of your favorite spreadsheet application.

By Michele Petrovsky







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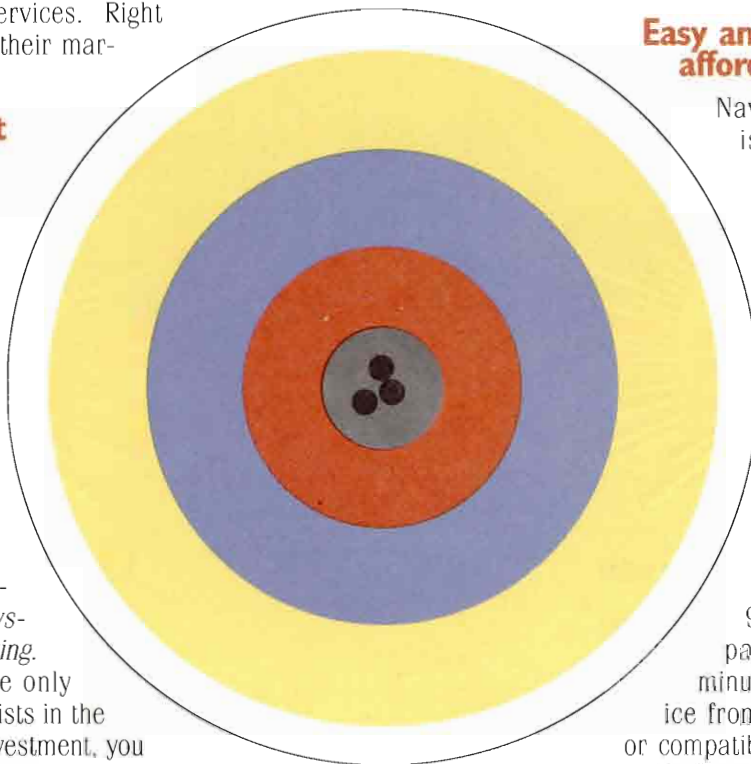
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Just as importantly, 1-2-3 for HP-UX provides file compatibility with other versions of 1-2-3. This means that worksheets, databases, and graphs that were created on IBM mainframes, IBM and IBM-compatible PCs, UNIX PCs, and DEC VAXs all can be manipulated on an HP workstation like the Apollo on which we carried out our tests.

At this point, you may be wondering if another variation of the 1-2-3 theme is no more than a case of "six of one, half a dozen of another." That's hardly true. Coupled with the memory and processing power of UNIX, 1-2-3 can open as many as 256 spreadsheets simultaneously, in a single file or in multiple files. In addition, as many as 26 worksheets can be viewed at one time in what's called "perspective mode."

When the windowing capabilities of

X on your workstation are brought into play, the possibilities for multiple sessions and for exchange of data between them expand even further. What's more, the combination of 1-2-3 with the virtual memory capabilities of UNIX allows the package to handle outsized spreadsheets and even databases with ease. Also, the HP-UX version of 1-2-3, and all UNIX versions of the package, can work with nearly every keyboard defined in /etc/termcap or /etc/terminfo. As might be expected, these versions of the application offer high-resolution bit-mapped graphics, but can still handle spreadsheets created on non-graphical terminals.

One other significant difference, this time a constraining one, exists between 1-2-3 on a single-user system like a DOS PC, and 1-2-3 in a multiuser, multitasking environment like UNIX. Because in the

## FIGURE

```
clear
cd /
while :
do
echo "      WELCOME TO THE 1-2-3 PROFIT MODEL
MENU. PLEASE SELECT A SPREADSHEET
FROM THOSE LISTED BELOW.

      1 - COSTS BY DEPARTMENT
      2 - COSTS BY EXPENSE CATEGORY
      3 - ORGANIZATION-WIDE COSTS
      4 - GROSS PROFITS BY DEPARTMENT
      5 - GROSS PROFITS ORGANIZATION-WIDE
      6 - NET PROFITS BY DEPARTMENT
      7 - NET PROFITS ORGANIZATION-WIDE
      8 - LEAVE PROFIT MODEL MENU

      PLEASE ENTER A DIGIT FROM 1 TO 8 ==> \c"
read digit
case $digit in
1)cd /extra/products/lotus/123.V11;
123 -w testsht.wk3;
continue;;
.
.
.
8)clear;
exit;;
*)clear;
echo "PLEASE RE-ENTER.";
clear;
continue;;
esac
done
```

A partial text of the menu shell script.

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Memory Enhancements

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latter, print queues take the place of direct user communication with a printer, 1-2-3 commands such as /PRINT CANCEL, /PRINT RESUME, and /PRINT WAIT just don't work. In a UNIX environment, /PRINT GO and QUIT are the whole bag of printer tricks. Also, the user must be careful to avoid print options (fonts, type sizes, and so on) which are specific to certain printers.

### Installment And Configuration

Lotus 1-2-3 for Hewlett-Packard workstations requires an HP Apollo Series 300 or Series 400 workstation with a minimum of 8 MB of internal memory, a minimum HP-UX release of 7.0, and at least 9 MB free disk (17 if you'd like to run DataLens and the Add-In Toolkit). Installing 1-2-3 on our Apollo was very similar to, and as easy as, loading the application to a PC. All needed files were simply copied from the QIC tape which was the distribution medium. Then, the installation script, which had been

dumped into the /tmp directory, was run in order to perform such tasks as deciding whether to load add-ons, checking available disk space, selecting the destination directory for 1-2-3 files (for us, /extra/lotus/products/lotus/123.V11), and specifying login, system and company names. Then the utility setup123 was run in order to supply the application with such information as the type of keyboard, printer and monitor we intended to use. The setup123 utility automatically creates a configuration file called .1123set, which is stored in the lotus file subsystem.

Once these steps were taken we were ready to begin working with Lotus 1-2-3 on our Apollo.

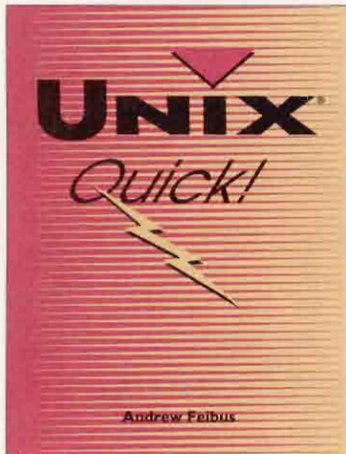
### Tests

We conducted more than 24 tests of various aspects of 1-2-3 from our workstation. Beginning simply, we tried more than one way of starting the application. After opening a shell window, we en-

tered 123 and were immediately presented with an empty worksheet ready to be manipulated. As another alternative we tried 123 & and, as expected, were informed that the package was running in background.

When working in foreground, we used several command line options at runtime, testing 1-2-3's ability to override its own configuration settings. 123 -n started the application in foreground but non-interactively; no worksheet appeared in our active window. 123 -p 3 allowed the display of no more than three worksheets in perspective mode. And 123 -w /tmp/lotustmp/testst.wk3 brought to the Apollo's screen a spreadsheet far removed in the filesystem from the lotus tree.

As we said early on, "testing" 1-2-3 is a bit like gilding a lily. There was never any doubt that the HP-UX version of the package would work as well as any other version. Nevertheless, test is what we did, for the sake of thoroughness if noth-



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ing else. Every item on the Worksheet menu bar was put through its paces, and each one functioned just as smoothly as if we were working at the little PC/xt on which we'd learned the package. For example, we reset column widths by means of `/WORKSHEET/COLUMN/SET-WIDTH` and via `/WORKSHEET/GLOBAL/COL-WIDTH`. We copied and moved individual cells and ranges of cells. We changed display formats for the entire worksheet and for sections of it. We created our own formulas. In one, we summed a row with `+A13+B13+C13+D13`. A number of 1-2-3's built-in functions were used too, and performed as expected. Among these were ABS (absolute value), SUM, COUNT (which returns the number of non-blank cells), SIN (sine), COS (cosine), and EXACT (which returned an exit value of 1 for two strings which were exactly alike).

Other, more workstation-related tricks were tried. By using the command `/WORKSHEET/WINDOW/HORIZONTAL`, 1-2-3's display was split horizontally, beginning at the location of the cell pointer. `/WORKSHEET/WINDOW/CLEAR` returned the display to its original condition. In another windows-oriented test, we moved, sized, and maximized each of the three windows containing a 1-2-3 session. More impressively, we copied data from an active worksheet in one window to vi running in another window, edited the data, and copied the modified information into the worksheet from which it had come.

### Bells And Whistles

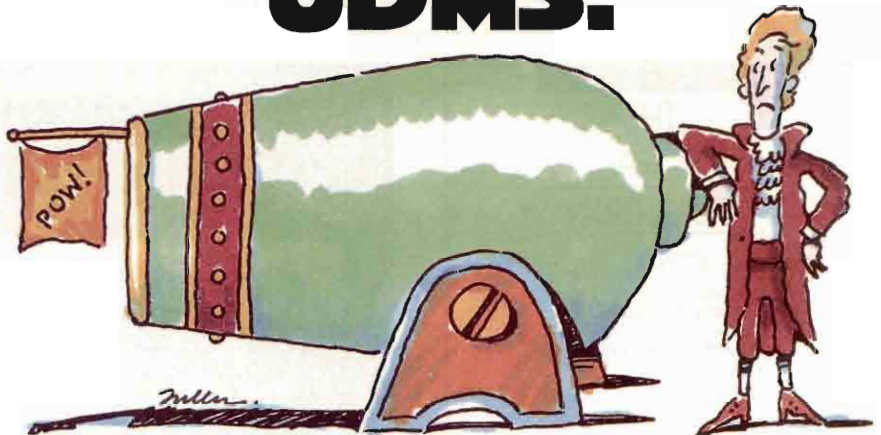
Having satisfied ourselves that even a UNIX neophyte would feel immediately comfortable with 1-2-3 for HP-UX, we decided to indulge in a bit of play with some of the bells and whistles which UNIX provides the application.

In an effort to simulate a real-world situation, we set out to create a user interface to 1-2-3 which would allow easy access to specific worksheets. Using vi, we created a simple menu, saving it to the file `menufil` in the `usr/bin` file system, rather than to the lotus subsystem. With `chmod`, we "755ed" the menu file,

so that all users could look at or execute it, but only root, the owner, could modify it in any way. Then we placed the script file in all users' operating paths by using the commands `PATH=$PATH:/usr/bin` and `export PATH`. Figure 1 contains a partial text of the menu shellsript.

Unfortunately, the HP Apollo on which we'd loaded 1-2-3 and on which we'd planned to run this shellsript was down for service by the time we were able to start the test. Carrying on, we copied the script to another HP-UX machine on our in-lab network, and ran it there. Upon entering "menufil" at the

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command line while in the / directory, we received the error message "/extra/products/lotus/123.V11/testsh.t.wk3: bad directory". But this message was itself reassuring; UNIX had run our menu script, and only the unavailability of the lotus file subsystem on the machine to which we'd moved prevented 1-2-3 from starting with the indicated worksheet in the active window. Error message notwithstanding, a user-friendly HP-UX interface to 1-2-3 had been created.

**Summing Up**

Lotus Corp. provides a comprehensive set of documentation with Version 1.1 of 1-2-3 for UNIX. This collection includes a Platform Guide which gives detailed information on working with spreadsheets and graphs in an X-window environment; a User's Guide which not only reiterates windowing techniques but also provides a thorough hands-on introduction to 1-2-3 itself; a Reference Guide which we found to be particularly help-

ful on macro questions; and an Installation and Configuration Guide which makes clear the seemingly subtle distinctions which can make or break a successful load of 1-2-3. Even users who are unfamiliar with spreadsheet applications could, by relying on this documentation group, make their way through the application, with few problems.

1-2-3 for UNIX has capacities beyond

and even more impressive than those already discussed. Particularly relevant in an open systems environment are its desktop integration and workgroup computing capabilities. Desktop integration can be accomplished by something as simple as using a file manager's icons to start 1-2-3, or by the more elaborate process of including 1-2-3's worksheets and graphs in a document produced by a desktop publisher. Workgroup computing with 1-2-3 draws on features like file reservation (precluding multiple access to worksheets stored in a shared directory) and add-in compatibility (by means of which user-written C language tweaks to 1-2-3 can be developed on any machine in the group, and run on any other, assuming a common C library).

Lotus 1-2-3 obviously is a proven product. 1-2-3 Version 1.1 for UNIX has made the transition to the HP-UX environment effortlessly. It may be the ideal "business partner" for your workstation.

**Lotus 1-2-3 For HP-UX**

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## OBJECTIVELY SPEAKING

Richard Riehle

All software abstractions should be considered independently of object-oriented methods. Similarly, this idea can be extended to the definition of software classes and objects.

Software object is not another expression for program module. However, many software professionals have difficulty discerning the difference between simple modularity and designing with software objects. Think of a software object as an abstraction that specifies behavior, attributes and possible states of the object, and hides/encapsulates information about how states are changed. The interface specification is visible to the user of the object, while the behavior is not.

For example, my television set is an object. It has attributes, states and behavior. I never look inside at the underlying electronics, but I do have a set of operations available to control both its behavior and state. With my remote con-

**M**any software professionals have difficulty discerning the difference between simple modularity and designing with software objects.

trol I can easily interface with all of the behavior important to me while sitting on a couch and munching popcorn.

Some early definitions of software objects emphasized the object-oriented programming process. This level of abstraction emphasizes implementation rather than design. Such programming definitions focus on language mechanisms such

as inheritance, polymorphism and dynamic binding. When considered at the programming level, these mechanisms are certainly important. At the analysis and design level, software objects tend to be viewed at a somewhat higher level of abstraction. Keep in mind, also, that an object will be designed as a "class." Actual objects will be derived from the class.

### State Declaration

An important characteristic of a software object is its "state" i.e., an object can be characterized by its different states. If you were to design a software class, `fifo_queue`, two of the states associated with objects of that class would be "full" and "empty." Other states would represent how full, or how many components are in the queue. A graphic object, such as a box drawn on a screen, might have states such as filled or not filled (with a pattern).

One problem in designing classes for software objects is identifying the states of that object. This is even more problematic because objects can have both states and attributes, and it may be difficult to decide which is which. An object can change its own states. It cannot change its own attributes.

One key to determining state is acknowledging the notion of change of state. This is essential to understanding software objects. It can be summarized this way: An object has state(s) and associated behavior to change and inspect the state. The behavior is actually part of the object. We can place the behavior into two broad categories: (1) operations to alter state, and (2) operations to select and return information about state.

Suppose class `fifo_queue` represents a table of integer components. The implementation schema for `fifo_queue` is not visible to the user of an object. We, the

## T A B L E

```

Class : fifo_queue; // a first in first out queue

private
queue : // some definition of the queue

public
    integer Value // components are type integer

    operation Insert (Value, Queue)
    operation Retrieve (Value, Queue)
    operation Clear (Value, Queue)
    operation Copy (Queue, Queue)
    operation Is_Empty (Queue) : Boolean

end class;
```



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users of `fifo_queue`, have no access to the underlying structure. Is it a linked-list, a bounded array or what? The behavior that changes the state of the queue consists of a set of operations such as insert, remove, display, retrieve and clear. These operations change and inspect the state of the queue and are designed into the object. Such operations do affect the state of the `fifo_queue` but do not affect the state of the components.

The operations are an integral part of the queue object. In fact, if the queue object is designed correctly, no other operations will be permitted on the queue except those that have been defined for `fifo_queue`. Also, the components, themselves, might be defined as objects, with all of the characteristics we have defined for any other kind of object.

*Table 1* is an abstract example of a `fifo_queue` class in a high-level pseudo-language.

This class is specific to a queue of integer components. In some development environments the designer could make the class independent of any predetermined component type. Also, the actual definition of the queue is hidden in a private part of the class definition. Anything in the private part of the class is not directly accessible to any user of that class. The only operations permitted on a

queue are those specified in the public part of the class definition.

## Operation Menu

There are five operations permitted on objects of class `fifo_queue`. Four of these modify the state of queue, and the third inspects the state of the queue and returns a result of type boolean. A well defined class always will have some inspection operations that provide information regarding object state.

With any luck, our pseudo-language is so simple that you won't have trouble following it. C++ programmers will find the pseudo-language somewhat familiar. Even Ada programmers should be able to read this code. The point is not the code, but the idea of an object. This class encapsulates a potential object of `fifo_queue` that has both state and operations to alter and inspect state.

Notice that there is no implementing code for the operations on this object. At this level we are dealing with the specification for the class. The focus is on design of an object class, not on the underlying algorithms. The implementing code can be developed later. The designer is first concerned with creating an abstraction that represents a well-defined, fully encapsulated, software object.

In a later discussion of inheritance, we

## T A B L E

# 2

```
main :: import fifo_queue // make fifo_queue visible to this program

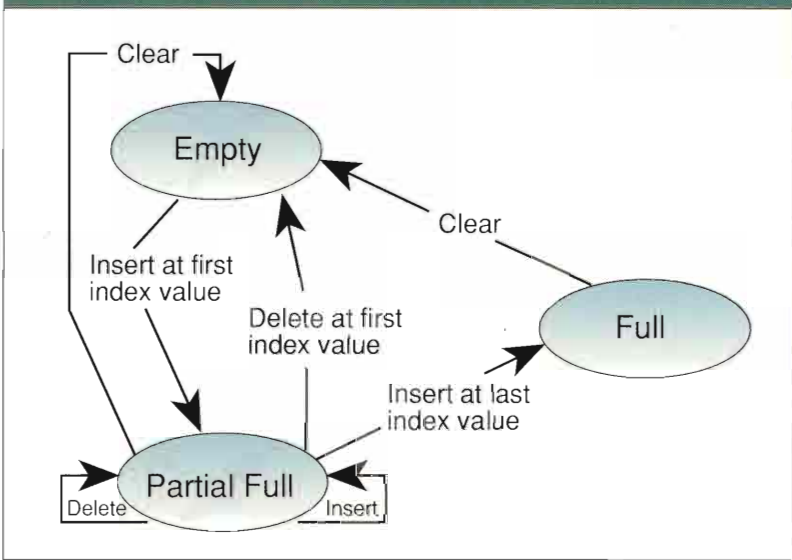
fifo_queue.queue Q1, Q2 // two objects of fifo_queue.queue
integer The_Value // the component type and variable name

begin
  fifo_queue.clear(Q1) // set Q1 object to empty; note dot qualifier
  loop
    // some operation to get The_Value
    fifo_queue.insert(The_Value, Q1)
  end loop

  if not fifo_queue.is_empty(Q1)
    fifo_queue.copy(Q1, Q2)
  end if

end main
```

FIGURE 1



will demonstrate how a design can be constructed from other existing classes. At this point we keep the design to a more simplified example.

To use class `fifo_queue`, the programmer could create code like that shown in Table 2.

One object is assigned to another via the "copy" operation. There is no infix assignment operator defined for objects of class `Queue`. If your environment has overloading capability, you might have defined the specification for the `Copy` operation as:

```
operation "=" (Queue) : Queue
```

And implemented it in the `main()` as:

```
if not #fifo_queue is_empty
  Q2 := Q1
end if
```

Again, because this is a pseudo-language syntax, we are free to assume that overloading is available.

The objects `Q1` and `Q2`, derived from the class, `fifo_queue`, are protected from any other operations. In this example an object is the combination of an object name and a set of behaviors (operations). The behavior of the object is as much a part of the object as the object name. The data structure, `fifo_queue`, is implemented as a class, and each object derived

from this class is an instance of a complete entity.

One important thing we can do with objects is model their behavior with State Transition Diagrams (STD). An STD, sometimes called a Mealy Diagram, is a visual representation of the available states and possible transitions for an object.

For `fifo_queue`, an STD might look like that found in Figure 1.

An STD is a good technique to determine whether you're really designing a software object. If you can represent the object with a discrete set state changes you probably have an object. Frequently, an object can be further decomposed into other objects. — *Richard Riehle is president of AdaWorks in Palo Alto, CA.*

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There are two new books on object-oriented design you may find useful.

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- *Object-Oriented Modeling and Design*, by James Rumbaugh, Michael Blaha, William Premerlani, Frederick Eddy, and William Lorensen, published by Prentice-Hall.

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## MANAGING YOUR HP 3000

John P. Burke

# A Toolset For All Systems

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OK, maybe nothing that melodramatic; but you *are* concerned. And, rightfully so. This *is* your career we are talking about. And many a career has been derailed over a botched conversion.

## What Are You Getting Into?

First, note HP's choice of words in describing the upgrade to HP-PA. Hewlett-Packard has carefully avoided using the dreaded "c" word (conversion) since the introduction of the Series 900 machines. OK, I understand. After all, the word "conversion" is saddled with all sorts of ugly baggage.

But *migration*?

You're probably comfortable with the notion that birds, animals and even humans migrate from one locale to another. But now, in what should be an award-winning example of techno-babble, we have programs and applications "migrating" from one system to another. Of course, the intention in appropriating the word "migrate" is to convey a sense of ease. After all, you're just moving your systems from one machine to another "compatible" one!

"Compatible" is another interesting choice of words. Why not emulate? "Emulate" means "to imitate" or "to equal or approach equality with," while "compatible" is defined as "capable of existing together in harmony."

What "compatible" really means to you is that you *may not* be able to just STORE your MPE/V-based systems to tape and then RESTORE them to a se-

ries 900 machine and expect everything to work without flaw.

Somewhere between the marketing hyperbole of the painless migration and the (perhaps apocryphal) tales of conversion woe, lies the truth. To be sure, you aren't looking at an IBM System/36 to AS/400 or DOS/VS to MVS horror story. You are, however, looking at something much more fraught with potential dangers than a Series 58 to Series 70 box swap or even MPE/IV to MPE/V upgrade. And what the heck is an MPE/iX anyway?

What can you do (preferably inexpensively and with a minimal time commitment), to assess your level of exposure and the potential manpower requirements of a migration?

## What's It All About?

The Migration Toolset (HP32428A, \$100) contains three tools for use in evaluating migration issues. All run on MPE/V machines:

- OCA — Object Code Analyzer.
- RTM — Run Time Monitor.
- MPT — Migration Planning Tool.

When the complete product arrives (assuming you can figure out how to order it, the product arrives while you still have use for it, and it is the correct version for your system...), it will consist of the Migration Process Guide and a system update tape. And you thought you were going to get away easy.

Do *not* immediately proceed to update your system before reading the Migration Process Guide. If you hope to use the RTM tool and want to get the most out of MPT, you'll probably have to change your system logging configuration. Logging must be *on* and Program Event Logging (type 16) must be enabled.

The Migration Process Guide steers you through the entire migration process, not just the use of OCA, RTM and MPT. It covers setting up a migration plan, when and how to use compatibility mode (CM), when and what to convert to native mode (NM), and when a combination of CM and NM using switch stubs might be appropriate. It also addresses data format and alignment issues. The Guide contains an excellent section

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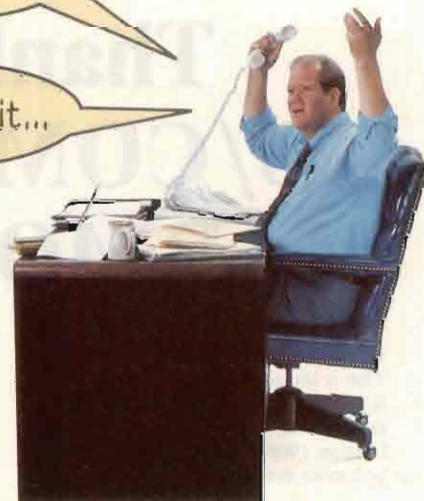
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on incompatibilities between MPE/V and MPE/XL (now MPE/iX).

### The Object Code Analyzer

The Object Code Analyzer (OCA) operates on SL and program files. It reports on both definite and potential problems.

OCA can be run against a single file, your entire system, or anything in between. You use indirect files and MPE fileset specifications to limit the scope of the analysis. You also may specify your own list of incompatible procedures which OCA will add to its internal list and check

against the programs or SLs being scanned.

OCA produces two types of reports: a brief version which is the recommended first step and a detailed version which typically would be run only against PROG and SL files already identified as presenting serious migration concerns. In either case, the program runs swiftly.

The brief version primarily lists names of externally referenced procedures that have been identified as presenting possible incompatibilities (CM, CM/NM or just NM). For example, some FCONTROL control codes are incompatible on MPE/iX. OCA (brief) tells you if FCONTROL is referenced. This may be enough to determine if you have a problem.

If the detailed report is specified, OCA reads every record of the file and determines the location (segment number and offset) of all procedure calls to potentially incompatible procedures. The detailed report also produces a useful general description of a program's structure.

### The Run Time Monitor

The Run Time Monitor (RTM) monitors executing programs for occurrences of specific predefined events. The tool consists of three parts:

- RTM.PUB.SYS, a program used to enable and disable run time monitoring and specify the event classes to monitor.
- RTMREP.PUB.SYS, a program which generates reports from the program event log records in the system log files.
- RTMSL.PUB.SYS, an SL used by the system LOADER (when RTM is enabled) at program load time, which intercepts certain system calls, generating Program Event log records.

System logging and program file event logging (log type 16) must be enabled and this is usually accomplished through the MPE/V SYSDUMP facility. Installing the Migration Toolset requires an UP-DATE, so with proper planning, you should be able to correctly set up logging criteria at the same time.

RTM uses some extra stack space and therefore could cause problems with very

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large programs. The manual proposes several work-arounds in the unlikely event that RTM causes a program abort.

A more likely problem will be consumption of disk space. When using RTM, you'll need to closely monitor disk space usage by the system log files.

The RTMREP program produces two types of reports:

- A summary report that shows all events generated by each program — a counter shows the number of times that a particular segment/offset caused the event.
- A detailed report that shows all events logged (and uses up several trees worth of paper in the process).

### The Migration Planning Tool

The Migration Planning Tool (MPT) is really a whole suite of tools that aid in the migration planning process. To get the most out of MPT, you should use RTM first to generate an activity record in the system log files.

Curiously, MPT is a TELESUP utility and not a fully supported Hewlett-Packard product.

MPT will:

- Generate a report listing all installed HP software products.
- Create a database (MPTDB) with migration related information (including results from RTM).
- Produce six types of reports containing information on disk capacity requirements and potential incompatibilities.

A job stream (which can be customized) is included with the product. It handles database creation and loading and basic report generation. Caution: this job can take a *very* long time (six to eight hours or even more!) to process. MPTJOB took more than five hours wall time and over 11,000 seconds cpu time on my Series 58.

MPT examines not only programs and SLs, but also, job files, UDCs and RTM events for potential problems. It also

gives a detailed estimate of disk space requirements under MPE/iX (CM, OCT and NM).

A curiosity is the installed products report (and you thought you knew what was installed on your system didn't you?). It generated questions, but provided no answers. For example, why and how did HEBREW/NLS get installed on my system? And, what does it mean that HPSPELL is 65 percent installed on my system?

### Tha-Tha-That's All Folks

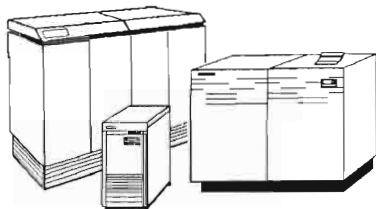
The Migration Toolset is a valuable addition to any MPE/V shop — even if you have no short term plans to migrate to MPE/iX. The tools will give you a better understanding of your system. —John P. Burke is the system manager for Construction Computer Center, Philadelphia, PA.

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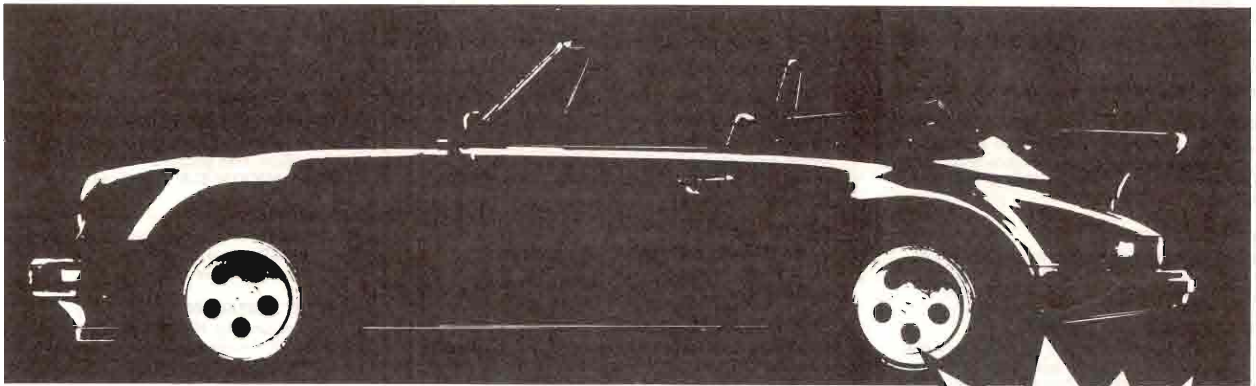
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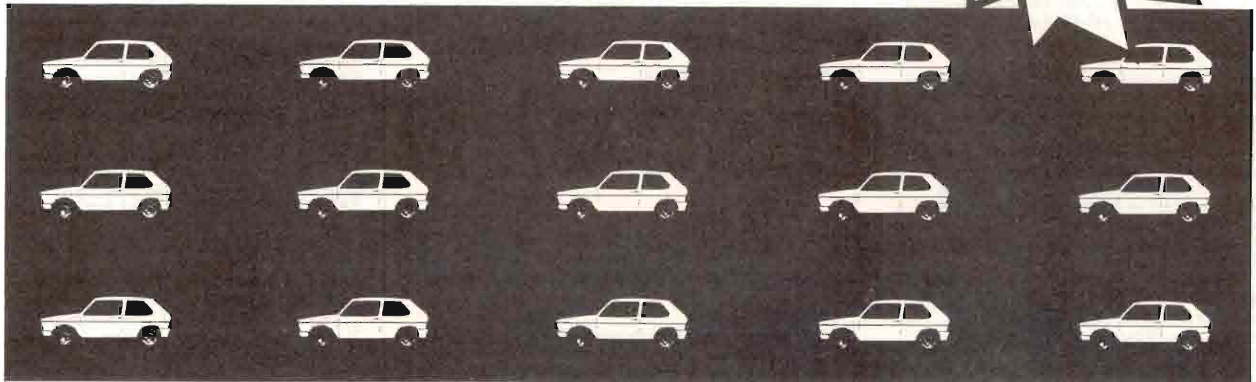


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HP-UX

Andy Feibus

# Developer's Aid

This month I present another episode in the continuing series "Know Your \_\_\_\_\_" (fill in the blank with your favorite rarely-defined-but-often-used technical issue). This month's hot topic: POSIX.2, also known as the IEEE 1003.2-199x. This column is based on the information contained in Draft 11.1 (June 1991); final approval of the standard is expected to occur by June 1992. The final standard should be similar to the information presented here.

Most UNIX-based operating systems are currently compliant with POSIX.1 (IEEE 1003.1-1988), which describes a portable operating system interface and environment at the source code level. POSIX.2 describes a command interpreter (the shell) and a set of common utilities that many applications may need to run.

The intent of POSIX.2 was to include only those utilities and shell features that might be needed by application programs (including shell scripts). The standard doesn't specify the interactive features of the shell language or utilities you might want to use. In general, a feature is included only if it might be needed by an application program and if it could be executed either with a pipe or in background mode. In fact, the standard requires that any POSIX.2 feature be executable from either the pipe(2) or the system(3) library routines.

POSIX.2, like POSIX.1, borrows

heavily from the existing UNIX implementations and avoids directly conflicting with historical practices. Only in a few cases was one particular implementation of a utility selected over another implementation, and the choice was usually made because the implementation was either vastly superior or more popular. Because of this practice, most implementations of UNIX (including HP-UX) should be POSIX.2 compliant soon after its final approval. Other operating systems will require more effort to comply with POSIX.2.

### What's In It?

So, what's in the standard? A POSIX.2 compliant system supports the functional

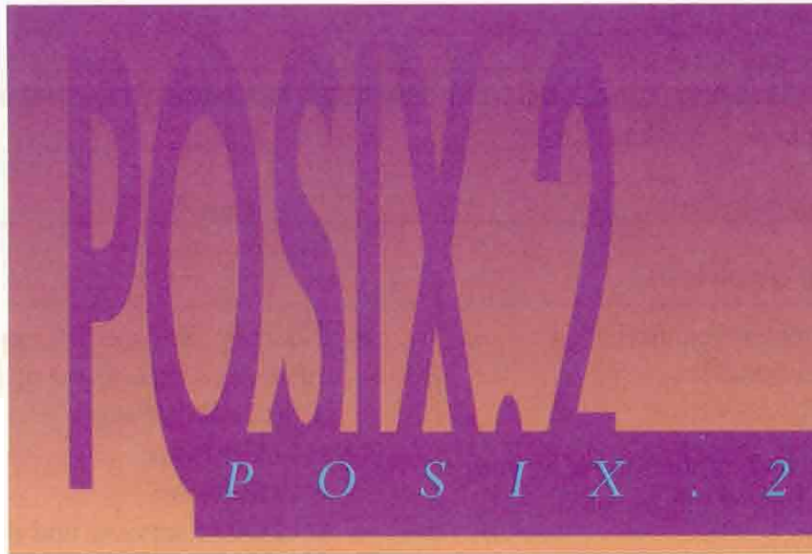
in this standard, don't worry — you may find the command as part of the POSIX.2a standard, which specifies the "user portability extension" to POSIX.2.

The shell specified by POSIX.2 is based on the Korn Shell (see October 1991 and January 1992 HP-UX columns). However, the standard only covers those features deemed necessary for creating shell scripts. Shell aliases, job control, and shell interaction weren't included in the standard; these features are being negotiated as part of POSIX.2a.

### Gee, How Can I Get a Copy?

If you develop software applications, I highly recommend purchasing a copy of this standard from IEEE. To order, call either (800) 678-4333 or (908) 981-0060 and request a copy of the 1003.2 standard. My Draft 11.1 copy cost \$100; copies of later drafts or of the final standard may be priced differently. Ask about the 1003.2a draft standard while you're at it.

By the way, HP tells me that you should expect HP-UX to be mostly compliant with POSIX.2 next year and fully compliant in the first-half of 1993 (assuming the standard is actually approved by the summer). — *Andy Feibus is an interplatform systems consultant based in Atlanta, GA and author of UNIX, Quick! from Professional Press Books.*



behavior of the shell command language and 71 utilities. The shell command language is based on the Korn Shell (ksh, which the standard renamed sh). Additionally, a set of optional sections also are defined (e.g., Software Development Utilities Option), although a conforming system doesn't need to implement the features detailed in these sections.

If your favorite command isn't present

Would you like to continue to see articles on this topic?  
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yes 336 no 335

The commands/utilities specified as part of POSIX.2 are:

Command Description

**awk** Based on the new version of awk (aka *nawk*), a pattern scanning and processing language.

**basename** Return the non-directory portion of a filename.

**bc** An arbitrary-precision calculator.

**cat** Concatenate and copy files to standard output.

**cd** Change working directory.

**chgrp** Change group ownership of a file or directory.

**chmod** Change file/directory access permissions.

**chown** Change owner of a file/directory.

**cksum** Generate a checksum value. Similar to *sum* except that *sum* isn't included in POSIX.2, because irreconcilable differences existed between the BSD and System/V versions.

**cmp** Compare two files. The files may be binary.

**comm** Select/reject lines common to two files.

**command** Execute a simple command. Used to favor a standard command over a shell function.

**cp** Copy files.

**cut** Cut (remove) selected fields from each line of a file.

**date** Write the date and time in a specific format.

**dd** Copy a file, possibly converting the file using specific input and output block sizes.

**diff** Compare two files.

**dirname** Return the directory portion of a filename.

**echo** Write arguments to standard output.

**ed** A simple, line-oriented text editor.

**env** Set/display environment for command invocation.

**expr** Evaluate arguments as an expression and write the results.

**false** Return false value (a non-0 return code).

**find** Find files based on certain attributes (e.g., the file's name or last modification time).

**fold** Filter for breaking lines greater than a specified width.

**getconf** Get the size of any system configuration variable.

**getopts** Parse command-line options. Used primarily with shell scripts.

**grep** File pattern searching.

**head** Return the first part of a file's contents to standard output.

**id** Return the identity (user and group id) for the current user.

**join** Output a single, combined line for every line in two files that have an identical "join field".

**kill** Terminate or send a signal to a process.

**ln** Create a "hard" file link. Symbolic links aren't part of the POSIX.2 standard.

**locale** Get location-specific information.

**localedef** Define locale environment.

**logger** Log messages, although the standard doesn't specify where these messages are recorded.

**logname** Return the user's login name.

**lp** Send files to a printer.

**ls** List directory contents.

**mailx** Process mail messages.

**mkdir** Create a directory.

**mkfifo** Make a FIFO (named pipe) special file.

**mv** Move files.

**nohup** Invoke a utility and make sure that the signal SIGHUP is ignored.

**od** Dump files in either hexadecimal, octal, character, decimal or floating point.

**paste** Concatenate corresponding lines of two or more files.

**pathchk** Check that one or more pathnames are valid (i.e., could you access or create the file/directory without error?).

**pax** Portable archive interchange utility. Intended to replace *@@Bcpio@@SR* and *@@Btar@@SR*.

**pr** File formatter.

**printf** A new form of *echo* that provides formatting similar to that provided by the library routine *printf(3)*.

**pwd** Return the current working directory.

**read** Read a line from standard input.

**rm** Remove files and directories.

**rmdir** Remove an empty directory.

**sed** Stream editor.

**sh** The standard command language interpreter. Similar to the Korn Shell in syntax. Interactive usage will be defined in POSIX.2a standard.

**sleep** Pause for a specified period of time.

**sort** Sort the lines in a file, merge lines of a set of files, or check that a file is sorted already.

**stty** Set the terminal control options. Possible options correspond to the terminal line modes defined by POSIX.1.

**tail** Return the last part of a file's contents.

**tee** Copy output from standard input to standard output, optionally making a copy in one or more files.

**test** Evaluate an expression, returning 1 if the expression is false and 0 if the expression is true.

**touch** Change the file access and modification times.

**tr** Copy standard input to standard output, substituting or deleting selected characters.

**true** Return 0 as an exit code.

**tty** Return the user's terminal name.

**umask** Set the file mode creation mask for the current shell environment.

**uname** Return the information about the system, including system name, hardware type, node name, operating system release level and implementation name.

**uniq** Report or ignore repeated lines in a file.

**wait** Wait for completion of a particular process.

**wc** Word/line/byte counter.

**xargs** Construct an argument list and invoke a specified utility with this list.

## Cygnets' OPServant Serves As Management Tool

Cygnets Software announced its OPServant PC Windows-based system management tool for the HP 3000. The OPServant is a software solution for system management, covering job monitoring, output control and command extension.

OPServant applications perform Copy, move and delete commands on specified filesets, groups and accounts, or spoolfiles; session handling including message broadcasting for system availability, and automated abort of sessions for batch processing; JCL monitoring for conditions on criteria such as batch run errors and aborts, and alerting operation personnel of exceptions; report distribution automation, reporting by department, logging report output history, creating banner pages, copying and collating output, and routing output to mainframe or remote PC printers; file set data manipulation (search and modify data strings); invoking third-party utilities automatically; and monitoring and event logging of system interfaces.

System requirements are a 386-based computer running Windows 3.0 and a serial port connected to the HP 3000. The OPServant price is \$1,499.

Contact Cygnets Software, P.O. Box 4667, Incline Village, NV 89450; (702) 831-4652.

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## Kelly Enhances Product Line With Memory Arrays

Kelly Computer Systems shipped its 32 MB RAMDISC memory arrays for the HP 3000 Series 9X7 and the HP 9000 Series 8X7.

RISC systems inherently use large amounts of memory. The new PA-RISC 1.1 architecture achieves higher levels of performance because of improvements in I-cache, D-cache and TLB hardware in the processor.

Additionally, operating system improvements (in MPE XL and HP-UX) in

areas such as the memory manager, the scheduler, the dispatcher, and mapped files allow increases in performance with increases in main memory.

Kelly's RAMDISC/XL also uses the 32 MB arrays as a solid state disk to eliminate I/O bottlenecks from the system. I/O is fed immediately to the requesting program in less than 1 ms.

The 9X7 and 8X7 families support a maximum of 384 MB of memory.

Kelly's Model 3907A provides 32 MB of memory and is fully compatible with the Series 917 through 977 and the Series 817 through 857. The memory subsystem uses 4 Mbit dynamic RAMs with an access time of 80 ns. System features such as single bit error correction, double bit error detection, memory error logging and battery backup are supported.

Contact Kelly Computer Systems, 274 Ferguson Dr., Mountain View, CA 94043; (415) 960-1010.

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## PeopleSoft Delivers PS/HRMS For Microsoft SQL Server

PeopleSoft Inc. announced PS/HRMS, a Windows 3.0-based, client-server human resource application, on Microsoft SQL Server for OS/2.

PS/HRMS is a fully-integrated system offering international support and comprehensive payroll, benefits, flexible benefits and human resource functionality. Customers use PeopleTools, a Windows-based development environment, to design, customize and maintain their PS/HRMS application.

PS/HRMS supports Microsoft's MS-DOS, OS/2 and the LAN Manager networking operating system, as well as Microsoft Word and Excel reporting tools. It also is available on SQLBase on OS/2 and DB2 on MVS.

With PS/HRMS, SQL Server users can handle management of recruiting, benefits and

personnel administration, training and development, career planning, and position control, all in a client-server, Windows 3.0 environment. SQL Server offers PS/HRMS users the benefits of a high-end OS/2 relational database.

PS/HRMS for SQL Server ranges in price from \$150,000 to \$350,000 depending on hardware configuration.

Contact PeopleSoft, 1331 N. California Blvd., Walnut Creek, CA 94596; (510) 946-9460.

Circle 398 on reader card

## Version 9.5 Functionality Broadens HP 3000/JOBSCOPE

Jobscope released the HP 3000/JOBSCOPE application version 9.5, which includes new features that allow the user to specify the date format to be used in streams, either MDY, YMD or DMY; provide the ability to store records during entry and make corrections on the screen prior to the record's being processed; automatically calculate the quantity completed based on the number of hours reported; allow the user to receive several PO Line Items simultaneously; provide the ability to manually enter the date received on all screens related to receiving. If the date field is left blank, the system date is used; split material browse from material analysis, allow the user to access material browse more easily; display an asterisk (\*) on the user text function key label when user text has been entered for a displayed record; and allow the user to select estimates to be stored.

Contact Jobscope Corp., P.O. Box 6767, Greenville, SC 29606; (803) 234-4847.

Circle 397 on reader card

## Proactive Enhances FANTASIA For HP 3000/LaserJet Users

Proactive Systems announced a new release of the FANTASIA laser printing software. FANTASIA provides forms printing, report enhancement and graphics for HP 3000/LaserJet users.

In this release all the common bar code formats now are supported. Also, new free fonts have been added including MICR fonts that can be used for check printing. Other improvements include: a new command to simplify the formatting of tabular data; the ability to emulate multipart preprinted forms automatically without changing the users application in any way; a spoolfile processing module that supports automatic processing and distribution of laser printed output, and changes to allow support of all the facilities of the LaserJet III/II and the HP 5000 series printers.

Contact Proactive Systems, 4 Main St., Los Altos, CA 94022; (415) 949-9100.

Circle 396 on reader card

### Pacific Magtron's Disk Drive Provides 14 ms Seek Time

Pacific Magtron Inc. introduced its MT-6120 1.2 GB 5-1/4 inch hard disk drive.

The MT-6120 has an unformatted capacity of 1,204 MB. Its high-performance rotary voice-coil actuator provides an average seek time of 14 ms, with a maximum seek time of 30 ms.

The MT-6120 is available initially with a SCSI interface and offers a SCSI bus transfer rate of 5.0 MB per second. Its advanced dual-buffer printer system supports high speed data access. Sector size can be specified with one-byte granularity from 180 to 4096 bytes for optimum disk utilization.

Contact Pacific Magtron Inc., 568-8 Weddell Dr., Sunnyvale, CA 94089; (408) 744-1188.

Circle 395 on reader card

### PROGRESS Encourages PC To UNIX Connectivity

Progress Software's latest version of PROGRESS, its application development environment, adds comprehensive support for LAN-based application developers. The PROGRESS application development environment consists of a 4GL and RDBMS, as well as associated tools for application

development, and end-user query and reporting.

The key features include: A PROGRESS NLM Server that allows users to run database management systems on the Novell NetWare 3.11 File Server while also using print, file and other network services; Windows 3.0 compliance, which brings the benefits of the Windows environment to PROGRESS developers and end-users; new options for PC to UNIX connectivity.

Progress also has added support for HP's ARPA Services, FIP Software Inc.'s PC/TCP, Novell Inc.'s Portable NetWare and LAN WorkPlace for DOS, Sun Microsystem Inc.'s PC/NFS, and Wollongong Group Inc.'s PathWay; and support for the CTOS Cluster Protocol that enables PROGRESS DOS clients to access CTOS-based PROGRESS database servers.

Prices for the Windows-compliant version of PROGRESS range from \$225 to \$1,675. PROGRESS NLM Server packages range from \$1,125 to \$15,100.

Contact Progress Software Corp., 5 Oak Park, Bedford, MA 01730; (617) 275-4500.

Circle 394 on reader card

### HP NewWave Users Benefit From HP & Simpact Remark!

HP and Simpact Associates Inc. announced Remark! for HP NewWave 3.0 for Windows, a voice-integration product that lets NewWave users create, edit and play back voice messages within the HP NewWave desktop manager.

Remark! requires no additional hardware, and it works with existing IBM-compatible PCs, telephones, LANs and telecommunications networks.

Unlike voice mail alone, this product allows users to store voice on their desktop manager, move it across a computer network and share it with any HP NewWave user.

To create a voice message, the user opens an icon on the HP NewWave desktop manager and selects a location in which to

New Model

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store the message. Remark! displays a window that resembles a tape recorder with buttons that record, play, pause, restart, fast forward, or rewind voice messages.

Remark! also stores recordings from voice mail systems and conference calls.

Prices range from \$5,500 to \$20,000, depending on system configuration and the number of concurrent users.

**Digital Tools Integrates AutoPLAN Into SoftBench**

Digital Tools Inc. encapsulated its AutoPLAN project management software into SoftBench, a software-development environment produced by HP.

SoftBench provides an integrated set of program-development tools along with a tool-integration platform that runs on several workstations and allows disparate software tools to communicate with one another.

AutoPLAN, designed for project managers, provides a framework for organizing a project's many variables. It enables the user to view the network of

relationships involved in a project and quickly explore alternative or "what-if" scenarios.

The encapsulation of AutoPLAN into SoftBench framework allows users to develop and maintain their project schedules directly from other software applications operating within SoftBench. Schedules can be modified as the work occurs, rather than remembering the status of work items at an end-of-week project update session. Project activities can be added, deleted or edited in the AutoPLAN schedule from any software application.

AutoPLAN runs under a UNIX operating system on the HP Apollo 9000 Series 400 and the recently introduced HP PA-RISC-based Series 700.

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

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**Boston Software Works Distributes InterOFFICE V2.0**

The Boston Software Works announced a new version of its InterOFFICE electronic

mail gateway for several integrated office systems, including HP's DeskManager, DEC's ALL-IN-1 and Wang's OFFICE.

The InterOFFICE product family is a software-only solution patterned after the OSI X.400 and X.500 recommendations that require only one copy of InterOFFICE per HP 3000, DEC VAX, Wang VS or IBM AS/400 office system network.

InterOFFICE transparently automates directory synchronization, conversion of revisable documents, conversion of structured messages, and translation of multinational character sets. Users of one integrated office system can send any office system object, including text memos, revisable word processing documents, meeting invitations, or binary files such as spreadsheets, to users of remote, foreign, and incompatible office systems, without learning any new commands, addressing formats or keystroke sequences.

InterOFFICE version 2.0 is available at a one-time license fee ranging between \$4,500 and \$24,500 per office system platform.

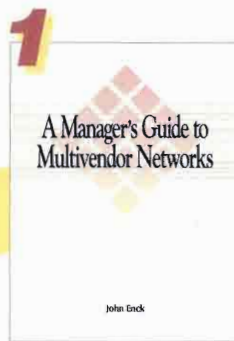
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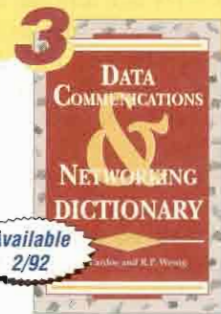
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## RECITAL Version 7.1 Performs On HP 9000s

Recital Corp. announced the availability of RECITAL version 7.1 running under UNIX on the HP 9000 Series 300, 400, 700 and 800 workstations.

New features of RECITAL 7.1 include support for RECITAL/4GL, executable programs executing from shared global memory, which reduces memory requirements for large applications. Recital also introduced a distributed cache manager, as well as over 60 additional enhancements to its 4GL and associated development tools.

RECITAL's new shared global memory support allows compiled 4GL programs and procedure libraries to be loaded into shared memory. A RECITAL application is transparently loaded once into memory and shared by any number of users. This functionality provides enhanced memory utilization and reduced paging.

Also included in RECITAL 7.1 is support for a distributed cache manager (DCM). The DCM implements a sophisticated caching technique that allows database and index I/O operations to be reduced. The DCM operates on single cpus, networked cpus and VAX cluster configurations.

Contact Recital Corp., 85 Constitution Lane, Danvers, MA 01923; (508) 750-1066.

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## Hybrid Systems Solutions Breeds LaserSprint EX

Hybrid Systems Solutions released the LaserSprint EX, a full-feature, 300 dpi, 16 pages-per-minute (ppm) continuous-form laser printer that offers full HP LaserJet compatibility with added functionality. The LaserSprint EX provides complete support for stand-alone printing environments and most leading LAN-distributed computing environments including HP, DEC, IBM, PC, Novell and Data General platforms.

The LaserSprint EX is the first in a family of continuous-form, unattended operation laser printers using Hybrid's HP compatible controller. The enhanced LaserSprint EX controller boosts processing speeds up to 16 ppm on most jobs and provides 2 MB of

main memory, expandable to 8 MB. Based on a 16-ppm tractor-fed laser engine offering 300 dpi, the LaserSprint EX arrives fully loaded with RS 232 and Centronics parallel interfaces and an IBM Twinax interface is also available. The printer provides complete terminal emulation support for the HP PCL4 and ASCII line printer standards.

The LaserSprint EX is \$7,295. Contact Hybrid Systems Solutions Inc., 347 Congress St., Boston, MA 02210; (617) 357-1838.

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## Automated Technology Releases Enhances RQM

Automated Technology Associates (ATA) released an enhanced version of RQM. RQM's latest enhancements include the ability to support multiple servers, additional X Window capabilities, a new manual data entry facility, and operator work instructions.

This version of RQM easily increases applications capacity through the use of multiple servers in a client-server configuration. This has become even more important with the significant gains in computational power offered by today's workstations, minicomputers and PCs. This option also allows for better utilization of hardware resources regardless of whether it's new or existing equipment. The new manual data entry facility and operator work instructions feature, increase user productivity by avoiding unnecessary time delays due to operator error, or lack of adequate knowledge or timely instruction information.

RQM now includes the X Windows version of ATAPLOT. ATAPLOT is ATA's interactive/programmatic technical graphics development and analysis tool. The X Windows version of ATAPLOT provides the necessary graphics support, required by RQM, for x-devices allowing users to be fully supported in an X Windows environment. Contact Automated Technology Associates, 9000 Keystone Crossing, Ste. 1000, Indianapolis, IN 46240; (317) 573-9000.

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## Lund Solutions Unveils New HP 3000 Solutions

Lund Performance Solutions introduced two new applications for MPE V and MPE XL HP 3000 systems.

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PC-based prediction tool that allows you to predict future hardware requirements as well as the effect of application changes. Data collection is performed on MPE XL and MPE V, and the analysis and graphic display is performed on an IBM PC or compatible. Utilizing host data, FORECAST/3000 Capacity Planner calculates and reports

current and future response times, utilizations, and throughput for user defined workloads.

Q-Xcelerator Resource Manager provides continuous supervision of the cpu resource. You direct Q-Xcelerator as to which applications are to receive priority response time. Available for MPE V and MPE XL HP 3000 systems.

Prices for FORECAST/3000 Capacity Planner start at \$1,195. Q-Xcelerator is priced starting at \$995.

Contact Lund Performance Solutions, 34130 Parkwoods Dr. N.E., Albany, Oregon 97321; (503) 327-3800.

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### Tymlabs And Bradmark Enhance BackPack/XL

Tymlabs Corp. and Bradmark Technologies announced DBCHECK as an add-on module to Tymlab's BackPack/XL system backup utility for MPE XL systems.

While adding only five to 10 percent more cpu time to backup operations, DBCHECK verifies and reports on areas such as label corruption, bitmap inconsistencies, synonym and chain pointer inconsistencies, and delete chain corruption of IMAGE databases. BackPack/XL's new database diagnostic function is activated by adding the DBCHECK keyword to the STORE command. If any root file errors, file errors, master set errors or detail errors are found, messages are sent to a file called DBCKLIS1. A printed report can be easily generated from this file.

The performance overhead added by using the DBCHECK option depends on the percentage of data on the system that is in the IMAGE database. Tymlabs reports that given a fileset composed 50 percent of IMAGE databases, the integrity check adds about eight percent to the total backup time.

With the DBCHECK option, the price of BackPack/XL ranges from \$2,000 on a Series 917 to \$16,000 on a Series 980. Current BackPack/XL users can purchase the new module as an upgrade, priced from \$400 to \$3,200.

Contact Tymlabs, 811 Barton Springs Road, Austin, TX 78704; (512) 479-0735.

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### SSG Enhances PROBE/X UNIX Performance Monitor

Strategic Software Group released version 2.00 of PROBE/X, its UNIX system performance monitor.

PROBE/X version 2.00 has been enhanced to provide information on full filename support, improved device access statistics, stream queues, per-process memory detail (including address space and shared libraries information) and file access history (listing last 100 files accessed).



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Session for Macintosh gives you point and click access to any HP, DEC, or UNIX-based host. Business Session provides complete emulation of HP 700/92, DEC VT100, and HP ANSI terminals. Graphic Session adds full HP 2397 color graphic capabilities. And fast file transfer support is included in every copy of Session.

### Hand your communications tasks over to TermTalk: New in Session 4.0.

Use TermTalk to automate both routine and sophisticated Mac-to-host interactions, like logging on, checking E-Mail, or retrieving data for later analysis. Session's built-in editor and recorder can even build the script for you. TermTalk does it all.

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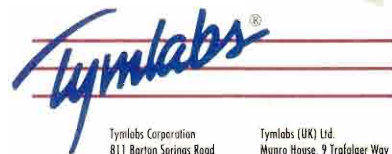
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Russell Davis  
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Dear Russell,

Here is the Software License agreement for Posthaste. Sorry it's taken so long to get it returned to you. I want to let you know how much everyone here at Channel 6 likes Posthaste. It has revolutionized this organizations communications. We are more productive but even more than that departments and individuals are sharing information and communications in ways they never did in the past. It is being credited with being the single most productive action to improve station morale in years. It makes me look like a hero (heroine), thank you.

Sincerely,

JC Strote

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PROBE/X version 2.00 is fully supported on HP-UX for the HP 9000 8xx/7xx, RS/6000 AIX, SCO UNIX, Sun SPARCStations and SPARCServers and Interactive Systems UNIX.

Contact Strategic Software Group, Ltd., 11050 5th Avenue N.E., Seattle, WA 98125; (206) 362-2231.

Circle 385 on reader card

## TeleUSE GUI Development Tool Now Available On HP 9000/700

TeleSoft announced the availability of its GUI development tool TeleUSE on the HP 9000/700 family of workstations and servers.

TeleUSE is a user interface management system (UIMS) for interactive development of user interfaces based on OSF/Motif. Using TeleUSE, a developer can design, prototype, evaluate, code and maintain GUIs. TeleUSE includes an Interface Design Tool (IDT) that lets a developer interactively paint the static user interface using a WYSIWYG approach instead of manually coding calls to the X Window System or OSF/Motif.

TeleUSE's Dialog Manager gives the interface designer a set of tools for developing the dynamic parts of a user interface and eliminates at least 75 percent of the C language programming otherwise required.

TeleSoft also announced that the TeleUSE Porting Kit is now available for the HP 9000/700 platforms. The Porting Kit allows GUIs to be developed on the HP 9000/700 and then ported to any platform using the X Window System and OSF/Motif.

TeleUSE is currently supported on HP 9000 Series 400 and 700 workstations, HP Apollo, Sun SPARC systems, IBM RS/6000 and DECstation platforms.

TeleUSE is priced at \$7,500 and includes OSF/Motif version 1.1.3. and X11R4. The optional Porting Kit license fee is priced at \$3,500.

Contact TeleSoft, 5959 Cornerstone Court West, San Diego, CA 92121; (619) 457-2700.

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## Dennis And Schwab Release Turbo Edit For MPE XL

Dennis and Schwab Inc. announced Turbo Edit, a programmer's editor making full use of the facilities available in MPE/XL (iX). Designed as an element of an ongoing line of software, Turbo Edit eases the development and support of HP 3000 software.

Turbo Edit's user interface is a multi-window, full screen, character mode, WYSIWYG display. Keystrokes are minimized through the use of programmed function keys, special keys and a macro capability, all implemented using the typeahead facility. The eight function keys are downloaded with the most commonly used requests; Mark, Delete to Save, Copy to Save, Insert Save, Goto, Delete, Search and Menu.

Users can open up to 20 buffers containing up to 20 source files that can be manipulated simultaneously (including Cut and Paste) with up to four windows displaying different buffers or different regions of the same buffer. Repetitive operations are enhanced through a MACRO facility. Any completed request can be repeated as a single key REPEAT LAST request. Turbo Edit performs over 100 edit requests covering Windowing, File Related, Cursor Movement, and Miscellaneous Requests including executing MPE/XL commands or interrupting to MPE/XL.

Turbo Edit has been tested on most HP terminals, compatibles and PC terminal emulators, including the HP2392a, HP700/9x, and Reflection connected asynchronously via the DTC.

Turbo Edit software licensing is priced from \$1,500 to \$7,300 based on the HP model number.

Contact Dennis and Schwab Inc., 17330 Newhope St., A, Fountain Valley, CA 92708; (714) 241-2445.

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**IEM's New 8mm Drives Offer Built-In Data Compression**

IEM Inc. released new 8mm tape drives with built-in data compression. The new drives double, triple or quadruple the capacity of an 8mm tape cartridge without slowing the transfer rate.

IEM drives with built-in data compression have a number of special features to assist users in making full use of data compression. Data compression can be turned off or on from the terminal, front panel, or through driver instructions, allowing users to easily write an uncompressed tape to be read on another 8mm tape drive. IEM's drive automatically recognizes compressed or uncompressed tapes before reading them.

The front panel of these drives has been redesigned to provide users with the following information: current tape operation,

total data transferred, current transfer rate, tape drive and mode, compression status (on or off), current compression ratio, remaining capacity at current compression ratio, and error correction or rewrite percentage.

These drives are available for HP 9000 computers with SCSI interfaces, and are compatible with Series 300, 400, 700 under HP-UX 8.0, and Series 800 under HP-UX 8.05. Contact IEM Inc., P.O. Box 1889, Ft. Collins, CO 80522; (303) 221-3005.

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**JOBTRAK/3000 Keeps Track Of Job Streams And Run Time**

S.M. Gordon and Associates announced JOBTRAK/3000, a software package designed to help you keep track of the flow of your job streams as well as optionally keeping trending analysis on when jobs were run and how long they took to run.

One of the main functions of JOBTRAK/3000 is to scan through your job streams and create a cross reference of jobs streamed from other jobs. The report will show up to 10 levels of nested jobs, but will maintain an infinite nesting level internally. A side effect of this process is that JOBTRAK/3000 allows you to see what job gets streamed by other jobs as well as what jobs a job will stream.

The online process uses a proprietary PC like window interface. JOBTRAK/3000 will let you visually process a job stream through VESOFT's STREAMX product to see what it will look like after it has been parsed. You may also set up an alias dictionary with descriptions that will allow the software to look for user defined keys as stream commands and flag them appropriately.

This process is specifically designed to either help with the migration to a batch scheduler or to help people who are new to a shop track down the jobs left over from their predecessor.

JOBTRAK/3000 is \$350.

Contact S.M. Gordon & Associates, 807 W. West Way Avenue, Orange, CA 92665; (310) 302-1118.

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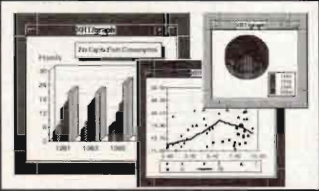
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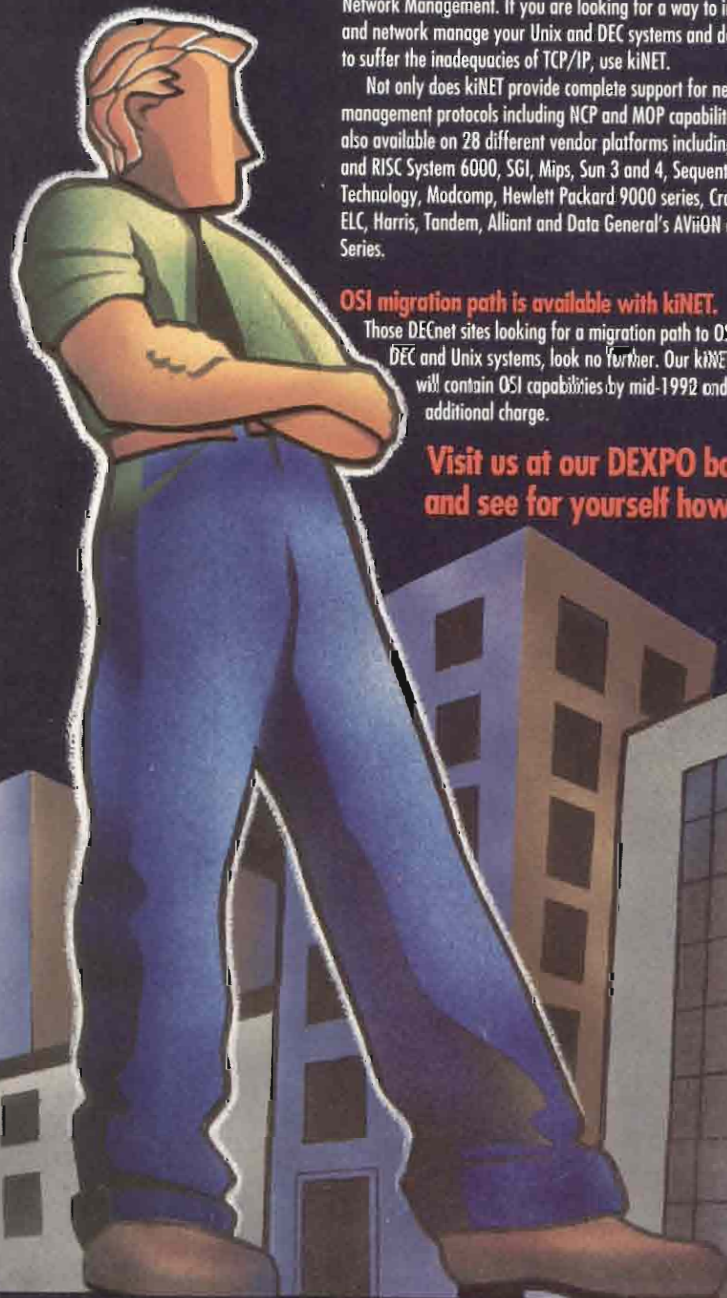
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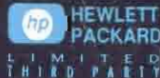
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