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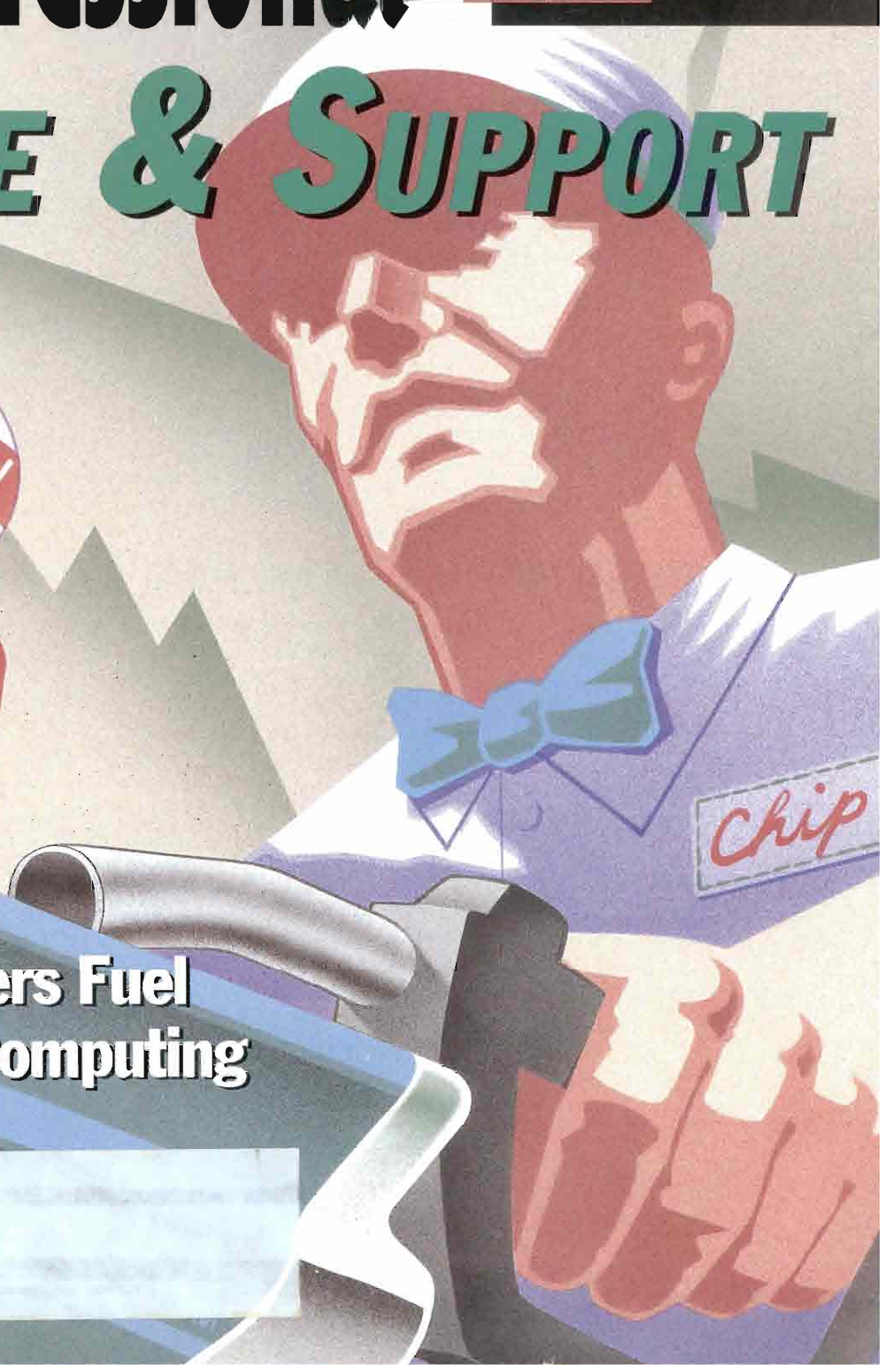
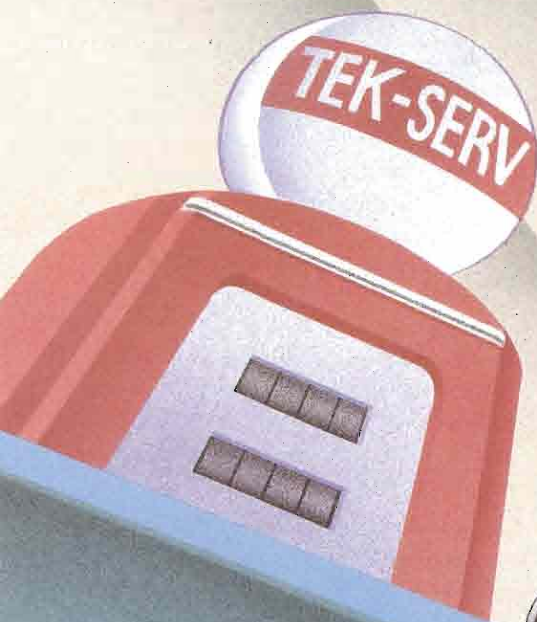
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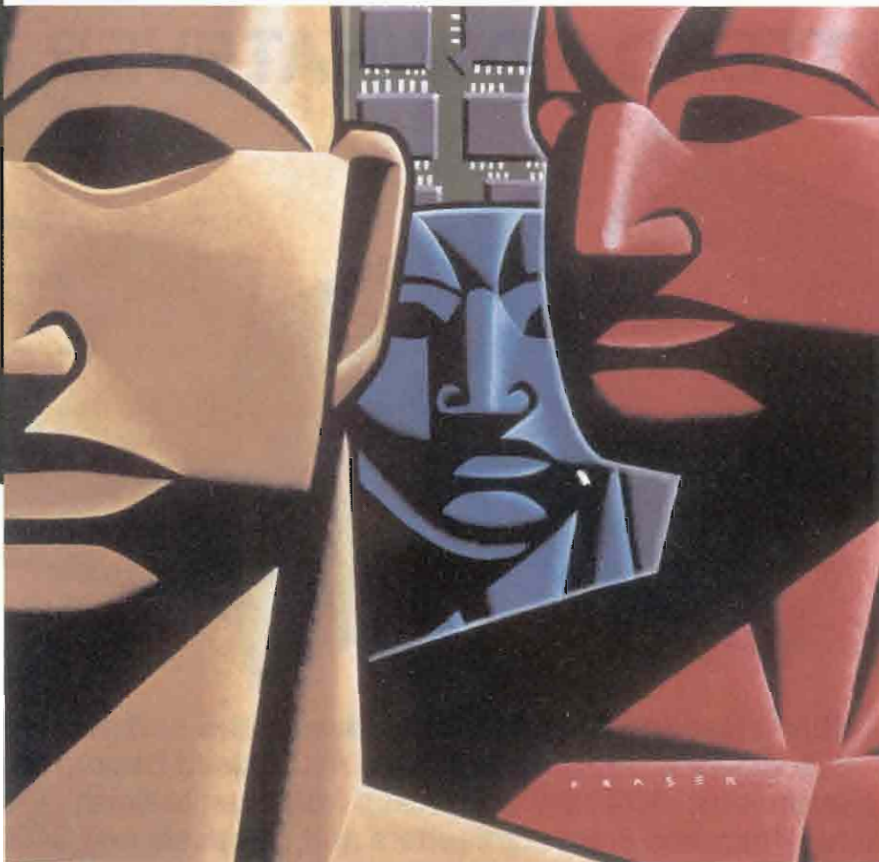
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Happy New Year! You Hate Your Jobs!

Well, actually, those of you who still have jobs don't necessarily hate them. In a formal survey of randomly selected *HP Professional* readers, 61 percent of you said that your companies have undergone some sort of structural change. Of those, 73 percent say it's currently in progress or has occurred within the past year.

The bad news is that 65 percent of you classify the restructuring as a downsizing effort — in other words, a reduction in staff. Nine percent experienced growth independently, without acquisition, merger or sale of assets. Five percent acquired other companies and 15 percent experienced a restructure through merger or being acquired themselves. Six percent took the plunge and made a complete change in market or primary products and services offered as part of their restructure.

So, what did the downsizing mean to your every day work routine? Well, surprise, 81 percent say their workload increased, with only 6 percent receiving a wage increase. Only 4 percent say their workload went down. And 6 percent say their wages actually decreased.

Fifteen percent of those surveyed say new positions were created through the restructuring, while 63 percent maintained that positions were eliminated. Ten percent say their department's budget increased, while 36 percent say it decreased. Twenty-two percent found they had more autonomy after a restructuring and 10 percent said less. Six percent are still waiting to see what shakes out.

While these numbers aren't surprising, they are hardly acceptable. As if the loss of jobs was not enough, the real impact may not even have been felt yet. Those left after a restructuring are faced with disillusionment, disappointment, confusion and fear. These emotions are aimed at their individual companies as well as business in America in general. Incidentally, this was one of our highest responded to surveys of 1994, indicating how strongly you feel about the subject.

On a personal level, 11 percent feared layoffs, 34 percent were "mad" at how the restructuring was handled and 21 percent were "sad" at the loss of co-workers. However, 20 percent were eager for new duties. Seventy-eight percent said they did *not* believe moneys saved from budget and personnel cutbacks would come back to them.

About half of you said these emotions and feelings affect your daily job performance. I gotta believe it's not positively. In fact, 71 percent said employees were less loyal to their company after a restructure and only 6 percent were more loyal. Twenty-three percent said there was little or no impact at all. One restructured reader describes the situation at their company as "Employee morale is down, frustration is high, pride and commitment are gone. Nobody cares and communication in the company is lacking." And one participant simply summed up the entire survey with "Zero morale where I work."

And you clearly believe these feelings will spill over to impact corporate America in general. Ninety-five percent of our surveyed readers believe there is a corporate loyalty shift in America. A shift that 73 percent said will denigrate the corporate landscape, and only 12 percent feel will



By Charlie Simpson

continued

improve it. You are almost split on how you think corporate restructuring impacts our economy in general, 40 percent say positively and 60 percent negatively.

One participant wrote, “Getting more work from less people is good and profitable overall, and *should* create more jobs eventually, but pay less.” What a bargain! Gee, let me guess what your title is, ye who still has a job. Others were a bit more sympathetic comparing a restructuring to quitting smoking. “In the long run it’s good for you, but it’s hell to go through.”

Half of those surveyed believe the prevailing attitude in today’s corporate climate is: “Do what needs to be done today; worry about tomorrow, tomorrow.” The other half were almost equally divided around these sentiments: “Quality no longer counts,” “Close your eyes and hope for the best” and “Change is good.” Change being good is encouraging provided change doesn’t automatically mean downsize.

So who’s to blame? “NAFTA, GATT — Need I say more?” one reader suggests. But, I have to wonder, do you really think it was so much better two years ago, five years ago? Were there ever any good old days where every kid could grow up and be anything they really wanted? I’m told the ’50s was the decade to have lived in, but a World War can be a pretty hefty price to pay, even for that kind of prosperity. Well, we may still get another whack at it in Bosnia.

Some readers blamed the immediate gratification syndrome. “The process is being driven by short-term Wall Street interests with no concern for long-term survival.” Still others lashed out at their own management, another easy target. “Senior management wasn’t affected, but all got pay raises and significant bonuses, amidst lay-offs and cutbacks,” writes one upset reader.

Obviously people are hurt and worried at the loss of co-workers, or upset at taking on more work for the same amount of money; but the real damage is done by not addressing the employees’ “What’s next?” concerns. What comes next week, next month or next year? One reader thought that “decisions are not made from a position of being well-informed; but that they are based on preconceived and misconceived notions.”

This loss of trust starts with a lack of communication. If employees don’t share in the corporate vision of the future, they do not believe one exists. So rather than seeing a restructuring as a time to pull together and get through together, the remaining staff feel apprehensive and begin to look for new opportunities. And the best employees who do survive the downsizing are jumping ship. All of which sends the company in a downward spiral, often impossible to recover from.

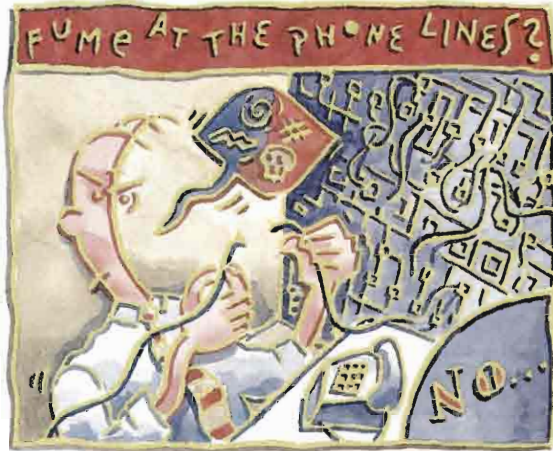
As we move faster and faster toward mechanization, basic human demands and needs — such as recognition, achievement and purpose — must not, *cannot*, go unanswered. People aren’t loyal to companies just because they work there. Management has to learn to instill and earn loyalty, they can’t just demand it.

So, as the argument over downsizing remains one of the longest ongoing exercises in rhetoric, one thing is certain — people need to participate in working toward a common goal of success. Otherwise all the restructuring will result in a pile of rubble.

Charlie Simpson

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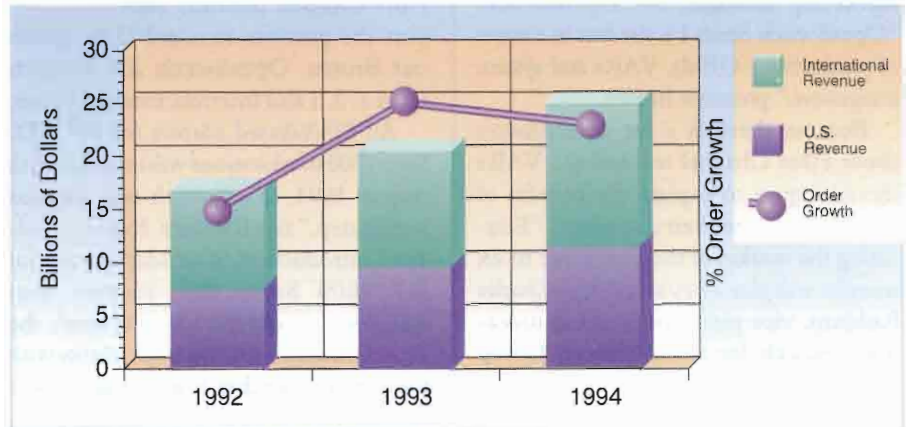
George A. Thompson

A HAPPY OLD YEAR!

HP closed out their 1994 fiscal year (October 31) with a bang. Fourth quarter net revenues increased 23 percent; net earnings increased 60 percent; and orders increased 25 percent compared to fourth quarter 1993. With \$1.83 per share earnings for the quarter, HP bested the Wall Street consensus estimates of \$1.55 per share.

Most analysts credited HP's printer division as the driving factor in the growth. However, HP 9000 workstations, servers and PC-based desktops and servers also did very well. An increase in orders for computer service and support were driven by a demand for consulting from HP's Professional Services Organization.

For the 1994 fiscal year, HP posted \$25 billion dollars in net revenue, an increase of 23 percent over 1993's total. Approximately 54 percent of HP's total revenue was derived from outside the United States. Although the cost of sales



HP Revenue And Order Growth

continues to increase for HP (as well as its competitors), most Wall Street analysts are confident that HP can hold down its operating expenses. For example, this past November, in an effort to streamline manufacturing efforts, HP began an 18-month shutdown of its Exeter, N.H. manufacturing plant acquired in the 1989 HP/Apollo deal. Reportedly, all 400 plant employees were offered the opportunity

to apply for other positions within HP.

Low Platt, HP's chairman, president and CEO, noted that HP's people deserve the credit for the improved results in 1994. "Order and revenue growth and better profitability were achieved with very little increase in employment. That's a tribute to the resourcefulness and energy of HP employees around the world." ●

HP ASSUMES A LOTUS POSITION

In November, HP and Lotus Development Corp. announced a strategic alliance covering joint developments in E-mail, groupware, network management and consulting services. Beginning this past December (and continuing through May 1995), HP will bundle Lotus Notes Release 3.2 with each HP 9000 Series 800 Business Server it ships in the United States, Canada and Europe. Each bundle includes Notes software and licenses for one server, one HP-UX one Windows client and 30 days free support.

HP also announced a commitment

to Lotus' Communications Server (LCS)/Notes as its exclusive future integrated groupware and messaging standard. Matt Cain, program director at The Meta Group research firm (Stamford, Conn.), thinks it's a good fit. "HP didn't have a product in the groupware space." It also adds up "to additional hardware sales for the HP 9000," says Cain. Cain does, however, have reservations about HP's long-term intentions to continue to provide OpenMail as a separate product.

To provide interoperability between HP OpenMail and Lotus Notes, the two companies promised to develop the OpenMail Exchange Facility for Lotus Notes. Lotus also is

developing Lotus NotesView, an HP OpenView monitoring facility, for use in Lotus Notes release 3.x and has selected HP's OpenView as its exclusive development platform.

In addition, HP's and Lotus' respective consulting organizations plan to work together within corporate enterprises. There's very little downside for Lotus, says Cain. "They get a world-class management application and the opportunity to migrate a million of HP OpenMail users onto Lotus Notes." And by joining forces with HP's ever-growing consulting business, Lotus gains access to more companies looking to downsize from host- to LAN-oriented platforms. ●

SWITCH ON THE FIBRE CHANNEL

OEMs, VARs and system integrators should mark their first quarter calendars for volume shipments of HP's OpenSwitch Series I product, HP's first Fibre Channel switch solution. "Because we wanted to speed the adoption of the technology, we deliberately chose a [third-party] channel strategy," says Debby Brown, marketing manager for OpenSwitch. "OpenSwitch Series I is the first in a series of products for OEMs, VARs and system integrators," promises Brown.

Because there is a lot of confusion about Fibre Channel technology, VARs should expect to explain the benefits of Fibre Channel to their customers. "Educating the market in the next three to six months will play a key role," says Charlie Robbins, vice president of communication research for the Aberdeen Group (Boston, Mass.).

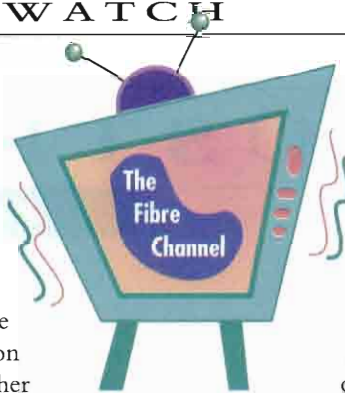
Because it can duplex up to 16 devices, OpenSwitch will work well in collaborative engineering and medical environments where file sharing and high quality images are necessary. "Every user gets the full bandwidth and it guarantees data — no bits are dropped," notes Brown. "You don't want any dark spots on the image of an X-ray." OpenSwitch provides link speeds up to 266 Mbps and will eventually support speeds up to 1 Gbps by 1995.

For video-on-demand applications, Brown says, "we see it as a complement to ATM; both need to be part of the solution." For example, Fibre Channel is appropriate for retrieving video at the

back end while an ATM network delivers it into homes or offices.

OpenSwitch Series I supports ANSI X3T11 protocols, adhering to version 4.2 of the Fibre Channel standard from the Fibre Channel Association (Austin, Texas). Most other Fibre Channel products support the previous standard (3.9), points out Brown. OpenSwitch also supports Class 1, 2, 3 and Intermix message classes.

An EISA-based adapter for HP 9000 Series 700 workstations was introduced in August 1994, so a "switch was the next logical step," says Robbins. Expect a mid-1995 introduction of an adapter card for HP 9000 Series 800 servers. But Aberdeen's Robbins asks, "Where's the Fibre Channel hub?" Interoperability with the various switches is important, but it



should be interoperable with other parts of the network as well, he says.

Robbins likes the entrepreneurial spirit of HP's Canadian Network Group (North York, Ontario) which is responsible for HP's fibre channel technology. "The OpenSwitch strategy is indicative of their goal to find technology, apply it and move it into the mainstream."

OpenSwitch, like all fibre channel technologies, supports existing transfer protocols like IP and SCSI, is limited to a three- to six-mile connection, has a low latency and can actually be used over any media including coaxial, fiber and shielded twisted-pair lines. A full-featured 16-port switch, based on an annual dollar commitment, starts at under \$28,000. ●

RESEARCH ROUND-UP

■ "Why All The Fuss About TP Monitors?" That's the question posed in the October 1994 issue of MarketVision, a monthly newsletter from Summit Strategies (Boston, Mass.). With a paltry \$200 million in 1993 revenues, one would not expect client-server transaction monitors to merit the attention from the likes of HP and IBM. Au contraire.

Both of these leading systems vendors view TP monitors as strategic technologies and are investing tremendous financial, marketing, sales and development, and support resources in them, as well as integrating them into their product lines. Witness HP's CICS/9000 and IBM's CICS/6000 products. Why? Because client-server environments are now beginning to accommodate large transaction processing applications that are being migrated off mainframes.

According to the newsletter, when the migration begins in earnest over the next 18 months, demand for client-server platforms,

software, integration and support will far exceed the volumes we have seen to date.

■ You could be singing auld lang syne for Business Processing Re-engineering (BPR) in 1995. Over 70 percent of BPR initiatives fail according to industry researchers at the META Group. And there's more bad news: even when BPR efforts are successful, it rarely helps companies leapfrog the competition.

A new approach called "Business Regeneration," seems to be taking shape that focuses on re-inventing businesses based on growth and future opportunities versus merely downsizing and improving existing processes. New Year's Resolutions, anyone?

■ There are 54,000 commercial Internet accounts in Europe; 75 percent were dial-up corporate accounts and single mailbox users. The number of accounts is expected to double by the end of 1995. Europe represents nearly a quarter of the world Internet hosts, according to BIS Strategic Decisions (Norwell, Mass.).

NOTABLE QUOTABLES

**"If you are not
somebody@something.com,
then you are nobody."**

— Robert J. Frankenberg,
CEO of Novell

From his 1994 Comdex keynote address. Frankenberg, was the former vice president and general manager of HP's Personal Information Products Group, and credited with turning around HP in the PC market.

270MB UNIT IS AVAILABLE FOR HP9153 REPLACEMENT

ISA announced the addition of a new 270 MB unit to its family of HP9153 replacement Hard Drives with Floppy. ISA has been supplying 46MB and 118 MB units in the market for more than 10 years, and this release would give more choice to the users. Price is \$2,220.00. Contact Floppy Disk Family Dept. 713/493-9925. **CIRCLE 403 ON READER CARD**



MEMORY BOARDS AND VIDEO RAM AVAILABLE FOR HP712

ISA introduced memory cards and video RAM cards for HP712. The memory cards are available in 64MB and 32MB capacities. For pricing, contact Texas ISA, Inc., 713/493-9925. **CIRCLE 401 ON READER CARD**



MULTIFUNCTION 4MM SUB-SYSTEM

Texas ISA, Inc. introduced a new 32GB Multifunction 4MM Sub-System at Interex '94 in Denver, Colorado. Two models are available: 5032S-Dual for DDS-I and 5034S-Dual for DDS-II. The unit features: off-line tape-to-tape copy, verify, mirroring, cascading, and alternating drives. Supports HP, SUN, IBM and DEC. Contact John Larmie; 713/493-5746. **CIRCLE 402 ON READER CARD**



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ISA and Mitsubishi Electric developed a new intelligent UPS (Uninterruptible Power Supply) system combined with ISA's well-known Model 7020, or 7030 Auto Shut-Down unit. The system features: Simplified shutdown process initiation, Timer operation, Network, Remote Control, Digital and analog sensor inputs. Multi-Platform support (HP,



Sun, IBM, DEC, SGI, etc.) 1, 2, 3KVA models are available. **CIRCLE 404 ON READER CARD**

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single
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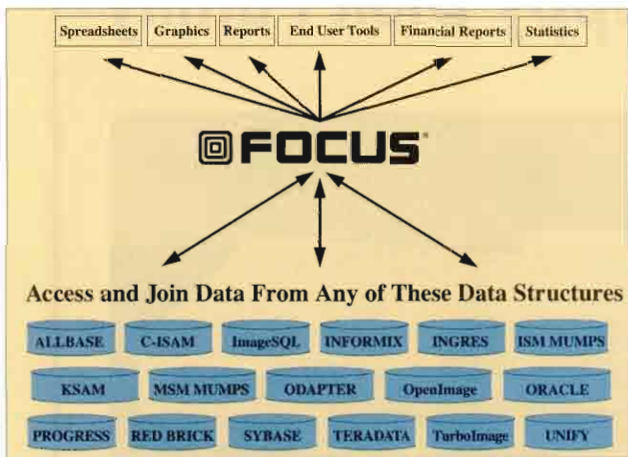
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Information Builders Inc.

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tel: (212) 736-4433
fax: (212) 967-6406

CIRCLE 356 ON READER CARD

Most people know FOCUS, from Information Builders Inc. (IBI; New York, N.Y.), as a mainframe report writer, first developed in the 1970s. But the mid-1990s version spans and links desktop PCs, minicomputers/servers and mainframes.

Available on the most popular platforms, including HP-UX and MPE/iX, FOCUS directly accesses most data structures, including the HP-UX and MPE/iX structures shown in the accompanying diagram. When combined with IBI's middleware product EDA/SQL, FOCUS can be scaled up, down and across the organization.

FOCUS for HP-UX and MPE/iX report writing features

include: an ad hoc query language (TABLE); a report generator (TableTalk); a forward/backward browser with string search and column fencing; extract file creation; matrix reports and JOINS from heterogeneous data structures; and automatic subtotals, headings, footings and aggregation functions.

Decision support features include: statistical analysis (ANALYSE) and a graph generator (PlotTalk); transaction processing, which has a data management language (MODIFY), a transaction procedure generator (ModifyTalk) and a screen painter; an Allbase/SQL read/write interface (HP-UX and MPE/iX); and an IMAGE/SQL interface (MPE/iX only) which has an IMAGE/SQL read/write, Omnindex (DISC) read interface and an MPE V TurboIMAGE gateway.

FOCUS's 4GL code generators use menu-driven, point-and-shoot facilities to enable even casual users to become productive quickly. The underlying non-procedural FOCUS language can be used to replace traditional 3GL programming languages. FOCUS' 4GL runs on all HP 3000 Series 9xx (MPE/iX 3.0 or higher) and HP 9000 Series 7xx and 8xx (HP-UX 7.0 or higher) systems.

FOCUS can directly access IMAGE/SQL datasets on MPE/iX systems and Allbase/SQL tables on HP-UX and MPE/iX

systems. No conversion or middleware is necessary. The AutoSQL facility automatically generates a FOCUS description of Allbase/SQL tables and the AutoIMAGE facility automatically generates a FOCUS description of the IMAGE/SQL master and detail datasets. MPE/iX IMAGE/SQL users should note, it is not necessary to "attach" IMAGE/SQL databases to a DBE to use FOCUS.

The FOCUS universal JOIN enables users to join multiple Allbase/SQL tables with KSAM (MPE/iX), IMAGE/SQL (MPE/iX), Oracle (HP-UX and MPE/iX), Informix (HP-UX), Ingres (HP-UX), and other MPE and HP-UX data structures transparently in a single request.

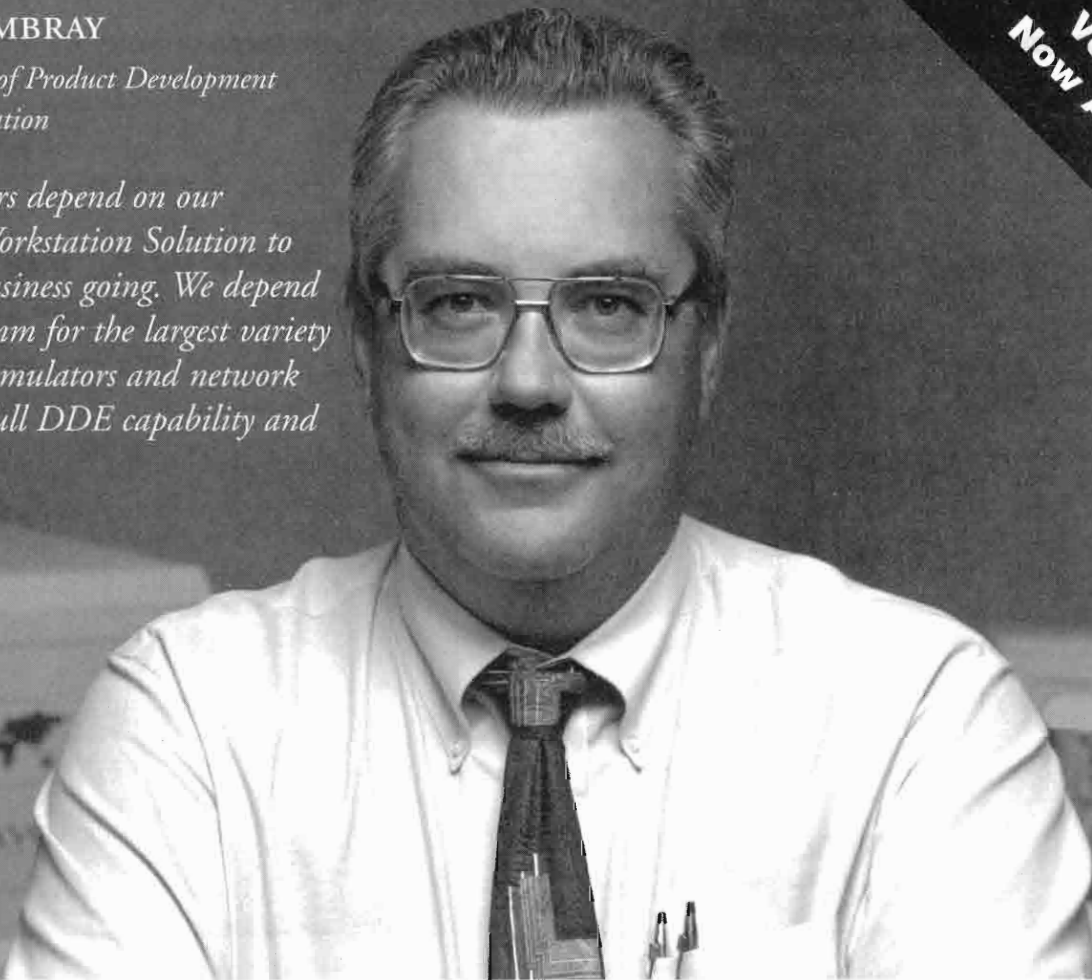
Linda Sadler and Karen Levy of Chemical Residential Mortgage Corp.'s (CRMC) IS group chose FOCUS as their report writer. But now use it to create applications, either standalone or mixed with more traditional 3GL programs. Their data resides in IMAGE/SQL databases and in KSAM files on two HP 3000/992 MPE/iX systems. Although 3GL programmers have to adjust somewhat, "my programming staff in general loves FOCUS," says Sadler.

— John P. Burke,
HP 3000 Columnist

JOHN CAMBRAY

*Vice President of Product Development
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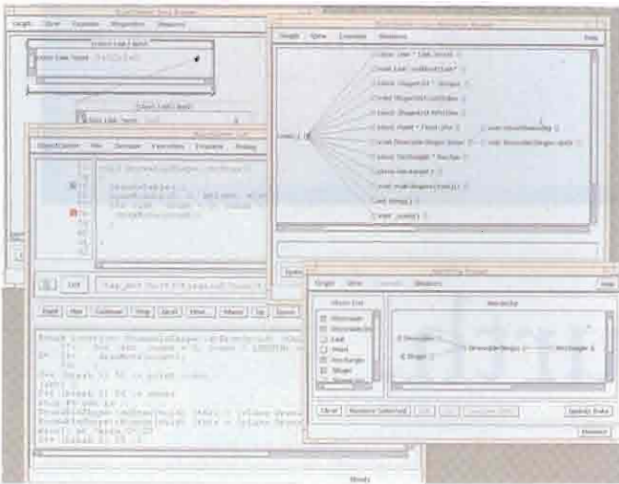
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CIRCLE 355 ON READER CARD

Most programming languages simply extend existing C language debugging technology to C++. But CenterLine Software Inc.'s (Cambridge, Mass.) ObjectCenter is a UNIX C/C++ programming environment that adds a unique, interpreted Interactive Workspace that provides programmers with the ability to test a few lines of code without having to write a complete program or module.

"The number one reason for using ObjectCenter is its interpretive nature of development — it's easier to prototype, especially with the user interface," says Brian Mounts, a member of the technical staff at Texas Instruments (Dallas, Texas). "You can build a small part, and run and test it without having to put

the whole thing together." Mounts has been using ObjectCenter running on HP-UX, SunOS and Solaris for about three years to build user interfaces for CAD tools.

ObjectCenter's Data Browser can be used to inspect complex objects and modify data structures. Visual access is easier than with traditional dbx-style debuggers, because the objects can be manipulated directly from within the browser. The Source Area simplifies exploration and debugging of your program's execution and lets you step through code line-by-line (including C++ templates), set breakpoints and watchpoints and even conditionally branch to "actions" (temporary code) in the Interactive workspace.

Class and library information can be viewed with The Class Examiner and Inheritance Browser, which graphically depicts all levels of the hierarchy, and includes virtual classes. The Class Examiner displays member functions or data. Filters let you separately explore inherited, public, protected or private interfaces and selectively display static, virtual, constructor or other member types.

The Project Browser provides top-level views of an entire program, showing all loaded modules. The Project Browser also provides a graphical interface for standard control systems such as

SCCS, RCS and others. The Cross-Reference Browser allows you to trace cross-references to any function or variable including class member functions, constructors, overload functions and virtual functions.

According to Mounts, "Most of the changes have come in terms of performance and usability." But, he also notes that one major feature is the fact that the C++ compiler has kept up. ObjectCenter includes CenterLine's CenterLine-C++ compiler which precompiles files to reduce compilation time when using large class libraries and reduces object code size for debugging.

Support for debugging C++ components in ObjectCenter includes: breakpoints on overloaded names and individual object instances; interaction in terms of unmangled names; visualization of complex data objects; and pre- and post-conditions and assertions. Code is checked for 250 run-time and static errors, whether it is loaded as a module or entered through the C/C++ interpreter in the Workspace.

ObjectCenter is based on Release 2.1 of the AT&T C++ Language System. Platforms supported include: HP 9000 Series 700/800, Intel x86 UNIX, Motorola Delta Series and Sun SPARC Solaris 1.0 and 2.x.

—Deborah Schwartz,
Assistant Editor



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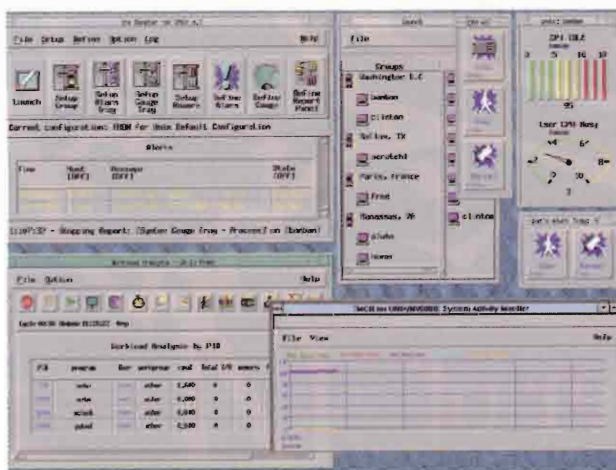
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- Prices range from \$750 to \$5,200, depending on system size. The management station application costs \$5,000.

Landmark Systems Corp.

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CIRCLE 353 ON READER CARD

In a client-server environment, nothing lasts forever. But you still need some consistency, especially when it comes to system and network management. "We were looking for a product that would be there with us for a long time," says Bruce Cochrane, president and chief architect for network and support management at IT Support Solutions Inc. (Ottawa, Ontario), a network and systems management consulting firm.

Cochrane, formerly chief scientist at HSL System House, recently chose The Monitor for UNIX (TMON for UNIX) from Landmark Systems Corp. (Vienna, Va.) because TMON for UNIX offers comprehensive monitoring of all aspects of systems performance, including CPU, disk, memory, network and application utilization. "It

provides a generic application that runs on all popular networking platforms as well as mainframes," Cochrane says.

TMON for UNIX provides centralized management of multiple UNIX systems from one or more workstations regardless of location with a single easy-to-use interface. "It's an all-in-one product that provides a consistent look and feel," says Cochrane. OSF's Motif 1.2 and X-Windows X.11R5 interfaces are supported.

Some consultants will look at 15 different products in network and system management, all the while trying to define a set of core requirements that fit with typical client's strategy when the end goal should be to find a product that can be reused over and over. "When using three or four products, a diagnosis can be difficult. TMON provides a single tool to diagnose the problem — to look at the system end to end," Cochrane says. "It also can track down a response time problem to a specific process, not just a system."

For Cochrane, TMON's adherence to standard management platforms, like Sun Microsystems's SunNet Manager, IBM's NetView/6000, HP's OpenView and Tivoli's Management Environment (TME), is a real plus. "It minimizes the amount of integration work we must do, which ultimately leads to lower costs."

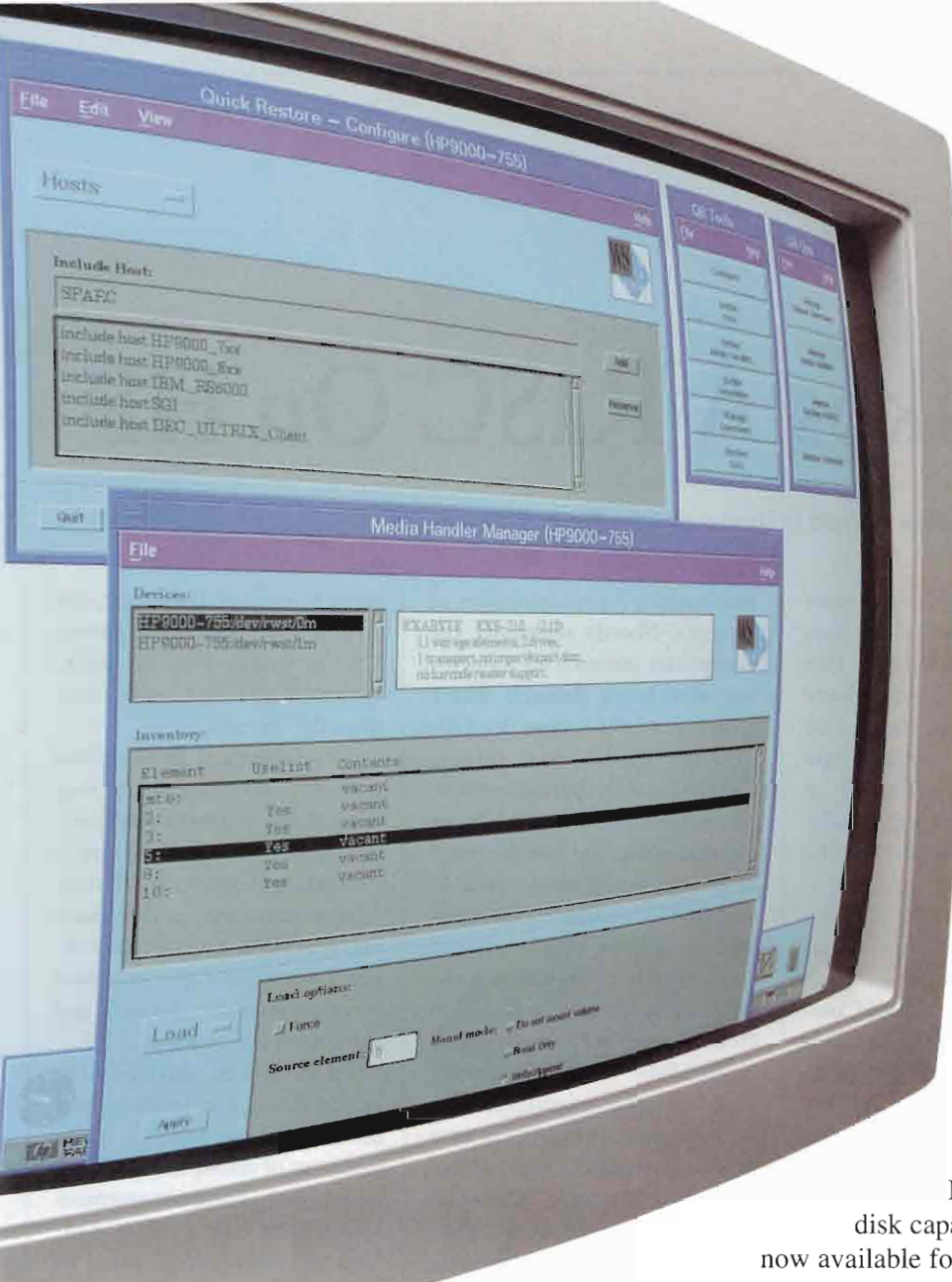
TMON also is integrated with the SAS system which facilitates the creation of month-end reports. "We can keep a better check on where we stand in terms of service level objectives and can possibly aid in capacity planning," Cochrane says.

TMON for UNIX is designed for: technologists moving their companies from mainframe to client-server environments; UNIX users in the manufacturing, telecommunications, utilities and financial industries; applications developers who need performance data to analyze and debug software; and systems managers needing performance data to help solve distributed management problems.

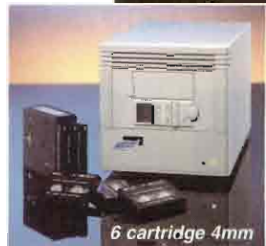
Clients require a minimum of 32 MB of RAM and 20 MB of hard disk capacity; servers require a minimum of 4 MB of RAM and 10 MB of hard disk capacity.

TMON clients are supported on: HP-UX 9.0 and higher, IBM AIX 3.2.4 and 3.2.5, and Solaris 2.3. The TMON server portion (which includes intelligent agents) runs on HP-UX 9.0 and higher, IBM AIX 3.2.4 and 3.2.5, SunOS 4.1.3 and Solaris 2.3. Prices range from \$750 to \$5,200, depending on system size. The management station application costs \$5,000.

—Deborah Schwartz,
Assistant Editor



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Vice President
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Convex Computer Corp.

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CIRCLE 351 ON READER CARD

Supercomputers were once the aristocrats of the data processing world. But RISC-based processors have turned the tables on them. And to prosper, even survive, some supercomputer vendors, like Convex Computer Corp. (Richardson, Texas) have decided to join 'em rather than fight 'em.

In 1982, Convex founded the mini-supercomputer market. Their products sold for less than half a million dollars. And Convex did very well, thank you, through three generations of its C Series machines, competing against the likes of Cray Computer. As a result, Convex has the largest installed base of supercomputers in the world — 46 percent.

Unfortunately, for the last five years, Convex has been unprofitable. "It was clear we had to adopt a scalable architecture based on a RISC chip," says James A. Balthazar, vice president of marketing. "In 1991, we evaluated all the chip vendors and selected HP's PA-RISC. In a nutshell, the relationship between the two companies was extremely complementary," according to Balthazar

In 1992, a partnership between the two companies was announced: Convex would use HP's PA-RISC technology in its scalable parallel systems while HP

purchased a 5 percent equity in Convex. Shortly afterward, the companies announced a licensing agreement through which Convex would license the HP-UX operating system making Convex' scalable parallel systems compatible with HP's workstations, and assuring that the range of desktop applications available for HP-UX would run unmodified on Convex' parallel system.

In March 1994, Convex announced its Exemplar SPP1000 (Scalable Parallel Processor) based on HP's PA-7100 RISC processor and offering binary compatibility with HP-UX. Available in two models, Compact Design and Extended Architecture, Exemplar starts with two PA-RISC processors and scales to 128 processors.

Last October, in perhaps the most significant event in the relationship with HP so far, Convex announced that HP would resell the Exemplar product through HP's direct marketing channels as the high-end server platform for HP's networked workstations.

The partnership with HP only includes the PA-RISC-based Exemplar. Convex has recently announced a fourth generation system to its older C series product line. Balthazar sees some opportunities for the product among customers downsizing from high-end Cray machines and upgrading from older Convex C

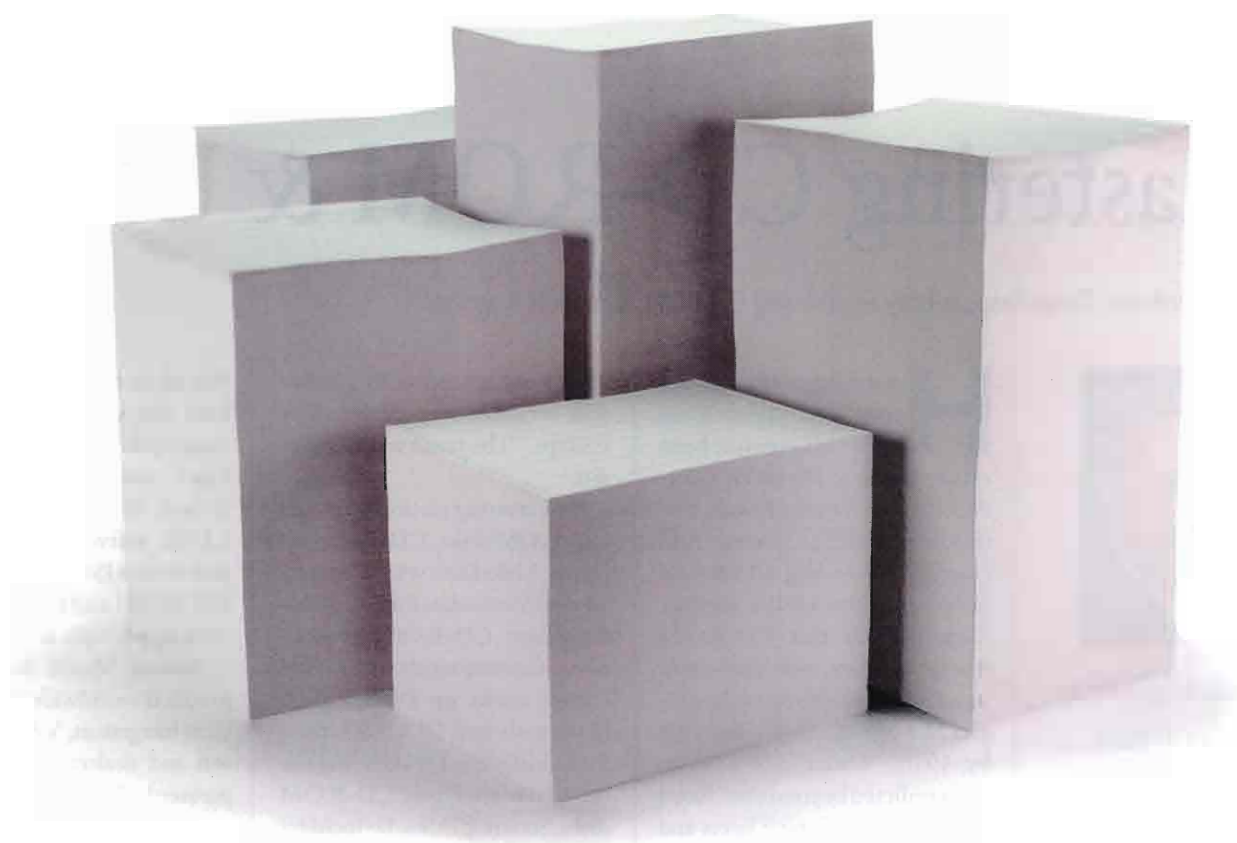
series computers. But at best, that is a limited market segment. "We're targeting the PA-RISC technology for dramatic growth," he says.

For Convex, a \$200 million company, the partnership may bring the new growth that's necessary. For HP, it represents a strengthened product offering. Target customers include markets that HP has traditionally focused on: oil and gas, manufacturing, university research and the federal government.

"The typical environment you will see this product sold into," Balthazar says, "is a department of multiple HP workstations doing compute-intensive applications like CAD/CAM. You will have two or more of these compatible, scalable servers doing the back-end computation or file serving for the workstations."

In Balthazar's opinion, Convex is regaining hardware momentum already. "We're starting to see the turnaround in our business results," he says. "New product revenue is growing. We've shipped over 50 SPP systems to date and that's encouraging. Analysts are projecting that Convex will break even in early 1996. As a result of these projections, our stock is at a two-year high."

Sam Dickey,
Contributor



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CIRCLE 175 ON READER CARD



Mastering CD-ROM & UNIX

Young Minds Inc. Takes Responsibility For Bringing CD-ROM And UNIX Together



"It will be possible to create a CD that's readable across a range of platforms — from a Cray supercomputer to the lowest cost PC."

David H. Cote
CEO
Young Minds Inc.

Young Minds Inc.

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CIRCLE 354 ON READER CARD

Have storage capacities and costs been on your mind lately? It's certainly been on the mind of David H. Cote. As CEO of Young Minds Inc. (Redlands, Calif.), a privately held company providing CD-ROM products in the UNIX market, Cote predicts that CD-ROM storage capacity, with the help of standard compression technologies like MPEG, will quadruple by 1996. "Other increases are also predicted beyond that, based on shorter wavelength lasers and layered CD-ROM disks. It will be possible to put two hours of video on a CD."

Since its founding in 1989, Young Minds has been busy resolving the issues of mating CD-ROM technology with UNIX. The company's first product, MakeDisc, provided CD mastering software for UNIX workstations. In 1991, Young Minds expanded their software to include the Portable File System (PFS), a portable CD-ROM driver. Based on NFS protocols, PFS acts as a transparent communication link between a CD-ROM reader and the various flavors of UNIX.

In 1992, Young Minds began selling its first UNIX-based CD-Recordable (CD-R) system. Based on a Sony SCSI-based system, "you could write on a CD from your desktop for \$40,000 and each disk cost \$40," recalls Cote. "Later that year, we di-

verted our attention to a lower cost recorder manufactured by Phillips." The result was CD Studio.

For creating platform-neutral CD-ROM disks, CD Studio includes MakeDisc which enables users to format data for ISO 9660-compliant CD-ROM production. Consequently, CD Recorder works on DOS, OS/2, Macintosh and 25 UNIX platforms including HP-UX. For the creation of encrypted CD-ROM disks, Secure CD Studio includes the NSA-approved Tracor SSP310 encryption device.

During 1992, Young Minds' president, Andrew Young developed and wrote the Rock Ridge Interchange Protocol (yes, it's named after the town in Mel Brooks' *Blazing Saddles*). The ISO is currently in the process of adopting the Rock Ridge protocols as an adjunct to the ISO 9660 CD-ROM standard, according to Cote.

Once officially adopted, all ISO 9660-formatted disks using the Rock Ridge protocol will be readable by the same UNIX systems regardless of the hierarchical file system they use. "It will then be possible to create a CD that's readable across the full range of platforms — from a Cray supercomputer to the lowest cost PCs available," explains Cote.

UltraCD, another Young Minds' product, connects optical jukeboxes to desktops and networked UNIX systems, so

that all an end user sees is a large hard disk or a set of large hard disks. In the Microsoft Windows-based market, Young Minds added SimpliCD in 1993, CD-R software for Windows that creates ISO 9660-compliant CD-ROM and CD-ROM/XA discs in multiple sessions.

Young Minds distributes its products worldwide through systems integrators, VARs, distributors and dealers. There also is a partnership with CACI, a large systems integrator in federal government. In fact, the Defense Printing Office is using CD Studio to place their records and manuals on CDs. It's part of a government initiative that will convert a paper-based process into a digital one, says Cote.

Commercial customers include AT&T which sends telephone invoices to business customers printed on CD-ROM. "We also have relationships with over 700 major companies in the Fortune 1000 group."

In the future, says Cote, the now \$9 million company (up from \$1.7 million in 1992) will continue to provide the resources to resellers who want to implement CD-ROM CD-R technology. "We will support the UNIX market, on a broad base, and develop the requisite server products for the Windows NT platform."

—George A. Thompson,
Technical Editor

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CIRCLE 203 ON READER CARD

Keep On Truckin'

*ESI/Technologies Cements
HP And Oracle Together
At Oshkosh Trucks*

Making things is deeply rooted in America's industrial past: Cars, clothing, appliances. So, it's no small wonder that the process of manufacturing has become second-nature for America's biggest corporations. But in the post-industrial age, the focus will not be on manufacturing but on distribution — the process of moving things. Oshkosh Truck Corp. (Oshkosh, Wis.) is already one of the world's largest manufacturers of specialized heavy duty on/off highway motor vehicles (e.g., concrete trucks, snowplows, and airport fire fighting and rescue vehicles) but distribution is becoming an important part of their IT strategy.



When Oshkosh wanted to move their distribution operations from their IBM 3090/DB2 environment to a client-server environment, Mike McCormick, product support systems manager at Oshkosh Truck, was disappointed. While many software vendors had popular and capable manufacturing solutions, their distribution applications were weak. But McCormick eventually found what he was looking for with the

Enterprise Management Information System (EMIS) from ESI/Technologies (Buffalo, NY), an HP Channel Partner ISV.

EMIS is natively-derived from Oracle's RDBMS and application development tools. Although ESI had the strongest distribution package Oshkosh insisted on a 30 day pilot. The 30 day "trial" was unusual for ESI, but it allowed McCormick "to beat up the software and benchmark the system," says Paul Seminara, account executive for ESI/Technologies. Although performance differences were marginal, two HP 9000 systems got the nod because of the three major UNIX players that were benchmarked, HP "seemed to have more flexibility when it came to optimizing it for the database," says McCormick.

The database, running on one the HP 9000 boxes, contains information on 450,000 parts and 3,000 Oshkosh customers. It's the single resource for all of Oshkosh Truck's six regional aftermarket distribution centers, which expedite parts and service for all Oshkosh's vehicles in the field. When one of the vehicles needs a part, the distribution centers are responsible for getting the part to Oshkosh customers.

With communications lines set up between each of the distribution centers, the key, says McCormick, is for the staff at each distribution center to be able to view the parts inventory of any other distribution center. For example, "if the Connecticut distribution center needs a part for a vehicle, an employee in our Lakeland, Florida facility can

send it out immediately," says McCormick. "We try to get everything to the customer within 24 hours."

"We took advantage of the software's strength," says McCormick. It's all part of a decentralized "virtual inventory concept" being developed at Oshkosh. It's about information accessibility, says ESI's Seminara. Terminal users inside the distribution centers work with a Oracle Forms interface. "You can put your cursor anywhere on the screen and do free form relational database search. You can find a particular kind of bolt with just wild card search. Users can get at the data without writing any code and no MIS interference — they are off the hook."

The first distribution center went on-line in May and the last in October 1994. The cost compared to the mainframe was much less, says McCormick. Additional benefits of the client-server implementation are reaped over the long term — via a reduction in maintenance and administrative costs, but the business benefits accrue to Oshkosh's customers. "We're focusing on the commercial business through our regional distribution," says McCormick "so we needed a customer focus."

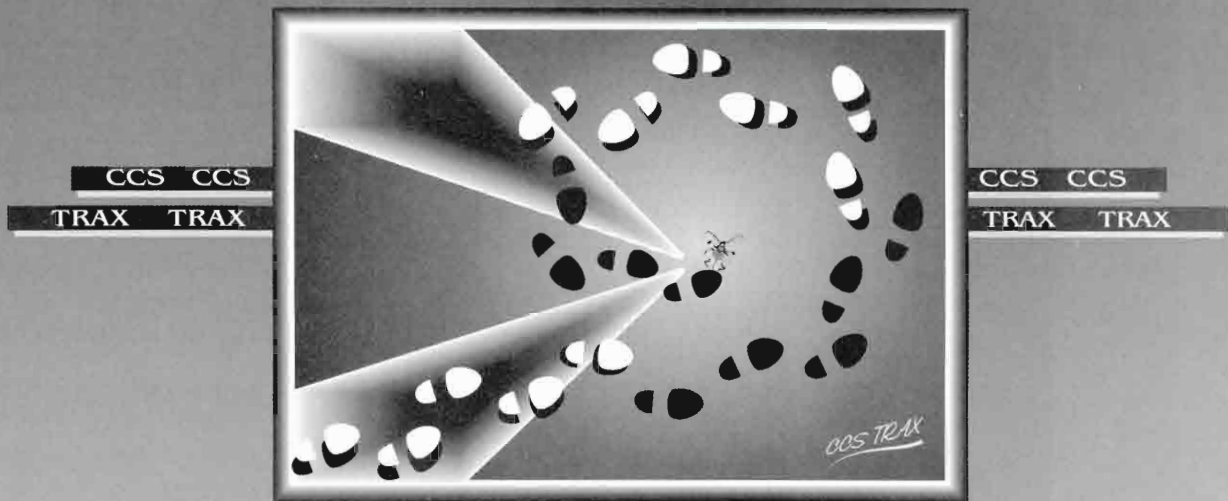
According to McCormick the distribution centers now process 150 orders per day; he expects that to increase to 100 to 200 percent. McCormick sums it up this way: "We can order parts [from any distribution center] without picking up the phone. We want to get [the parts] to our customers no matter where they are."

— George A. Thompson
Technical Editor

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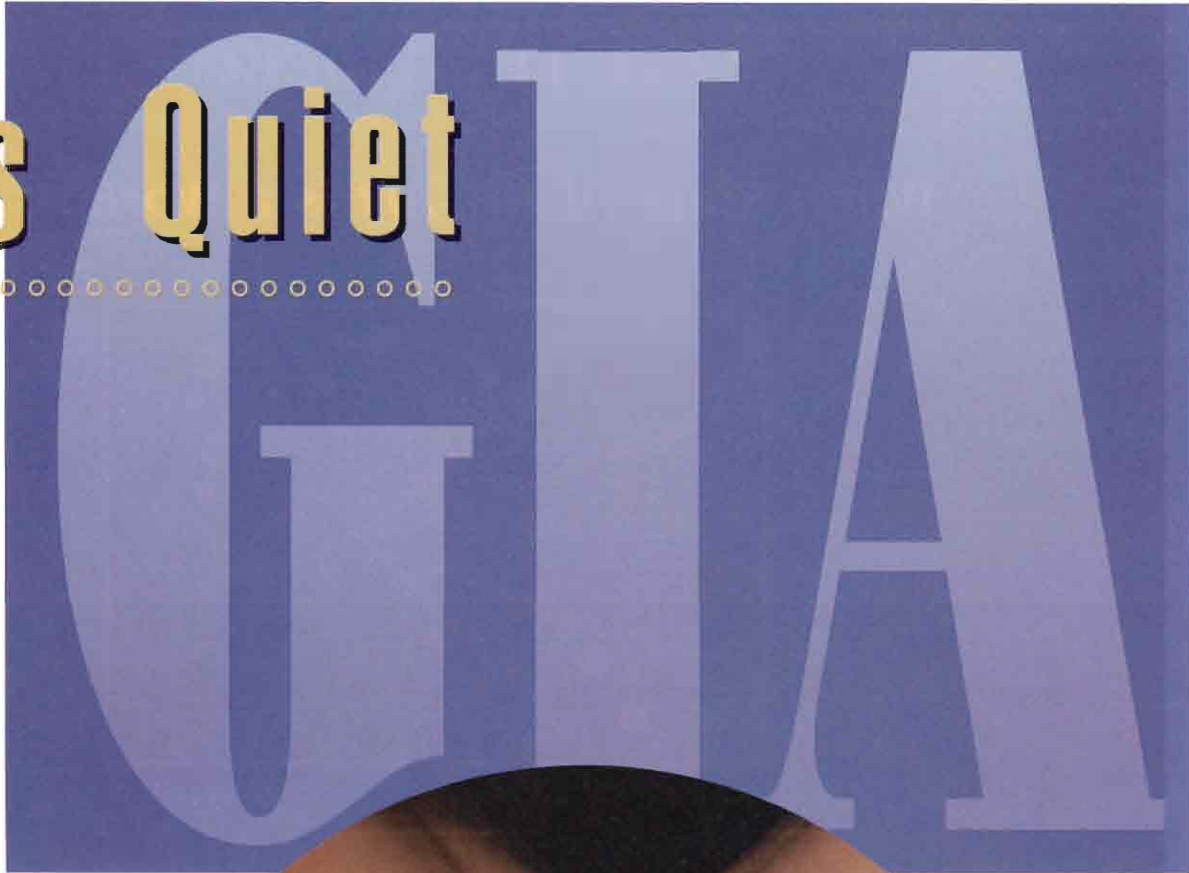
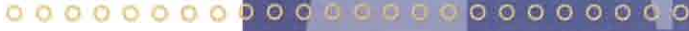
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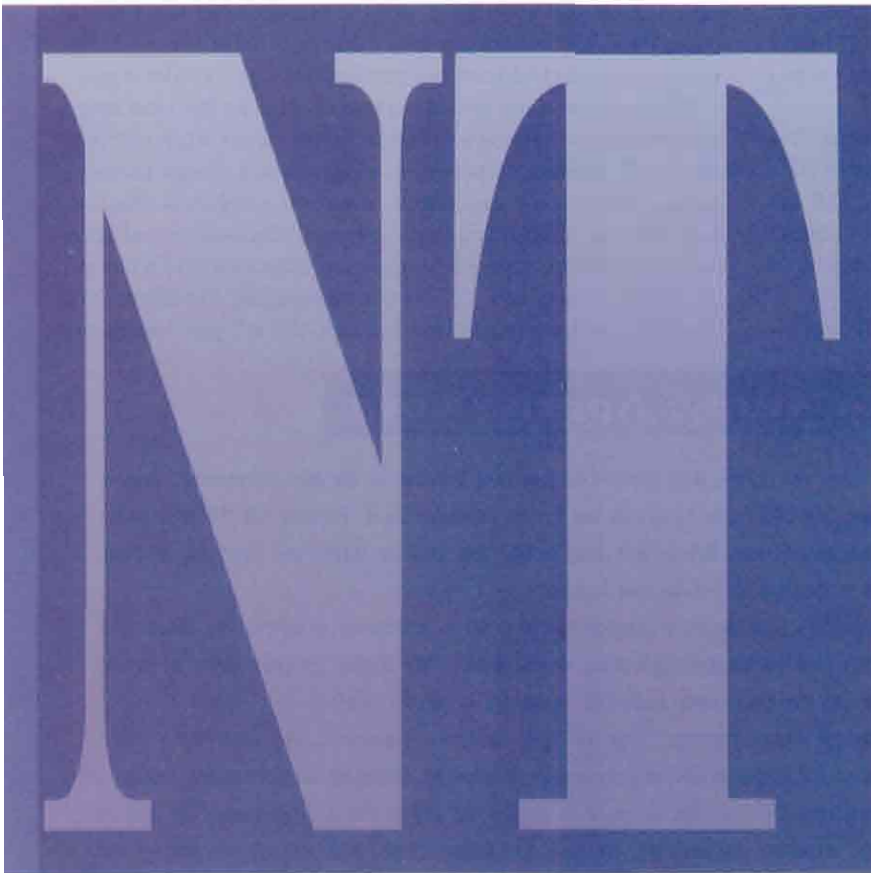
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CIRCLE 172 ON READER CARD

HP's Quiet





HP's Service

and Support Programs

Rise To Become A

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The pressure on an MIS staff to reduce operating costs, provide easy access to information and improve design by integrating advanced technology continues unabated. The technical solutions — downsizing, networking, open systems and client-server architectures — are by now familiar. Yet the technology is only half the answer. The other half, service and support for the new technology, can be a problem.

Service and support was once cut and dried. A vendor provided it for the products he sold, and a vendor's reputation could rise or fall in proportion to the level of service and support that was forthcoming. A customer's alternative was to provide his own service and support through an internal MIS organization. Both traditional support solutions had the advantage of simplicity. One group was responsible for everything. It's not that simple anymore.

For MIS, distributed computing can mean a loss of control. Spreading computing assets around an organization, on end users' desktops far away from a data center, represents a major challenge to systems design and management. Moreover, the pace of technological change demands constant retraining, or a search for the few technicians with experience in the new technology.

From the vendor's point of view, the single vendor, enterprise-wide computing solution is increasingly a thing of the past. The optimum solution today almost requires mixing and matching hardware and software from multiple vendors. In addition, falling prices mean that the amount a vendor can charge for service and support for its own products, an amount that traditionally was linked to the price of the product, is being squeezed relentlessly.

Adequate services and support require a major commitment in terms of investment and trained personnel from a vendor. But the commitment is not without a

SAM DICKEY

QUIET GIANT

return. As falling prices push hardware products to commodity levels, service and support will represent the primary differentiator among IT vendors, determining a vendor's reputation to an even greater degree than in the past.

HP can see the return and has made the commitment. According to Ann Livermore, sales and marketing manager of HP's Worldwide Customer Support Operations (WCSO), HP has built a substantial support organization. The WCSO employs close to 20,000, and generated \$4.8 billion, or 24 percent of HP's revenue, in fiscal 1993.

The WCSO is responsible for supporting all of HP's computer products, as well as the products from other vendors that make up the rest of a customer's complete solution. Although the world outside HP may not always distinguish between HP's separate support organizations, HP's service and support business is composed of four basic groups. They include the Professional Services Organization, Systems Support, Operations Support Division and Technical Finance Division.

The Professional Services Organization (PSO) provides systems integration, technical integration services, consulting and education. Systems Support provides ongoing multivendor hardware, software and networking support through field support technicians and 27 support centers worldwide. The Operations Support Division (OSD), a new organization as of January 1994, provides systems and network management and operations (i.e., outsourcing services), customer helpdesk services and disaster recovery. The Technical Finance Division, the equivalent of a bank, will arrange leasing or rental of hardware and software products, as well as service and support agreements.

Unlike other vendors, HP's finance operations are a part of its service and support organization. "This allows us to help customers manage the financial aspect of their systems, as well as the technical part. That's one of the things we think is unique about our support," Livermore says.

All but the PSO are part of the WCSO. According to Glenn Osaka, PSO general manager, because the work it performs is different from traditional reactive product support, the PSO was split off from WCSO in 1991 and fused with the computer systems organization. "What we do is more in the area of edu-

cation, technical consulting, project management and systems integration, so the strategy and delivery of what we do needs to be tightly aligned with our product strategy," Osaka says.

The education and consulting provided by the PSO can range from the typical training a customer would expect when purchasing an HP product, to providing education as a change management vehicle which can help a customer's employees move to new skill sets as technology moves toward client-server and open systems. "We are strongest in technical education and technical consulting," Osaka says. "We're not management consultants. We don't tell you how to run your business. We tell you how to ap-

Case Study: Apprise Corp.

Apprise Corp. (Morristown, N.J.) is the data processing provider for the nine independent insurance companies that once made up Crumb and Forster Insurance Group. Formerly the MIS organization for Crumb and Forster, Apprise now must service nine separate clients, and beginning in 1996, compete in the open market for their business.

A mainframe shop, Apprise's intention was to retain its mainframes as servers, but offload some applications and develop new applications on new servers. "We reached the point where we needed to move into the client-server world, but we needed to identify standards in a number of areas," says manager Donna Yavorsky. "That led us to fundamental questions, like identifying a target architecture and guidelines for our programmers to follow for developing client-server applications."

Complicating the task was the need to support the different client companies. "The issue is we're not supporting one company. We have nine distinct clients, each with its own strategy and direction," Yavorsky says. "One is using UNIX now. A couple are still wedded to the mainframe. Some are moving slowly into client-server applications.

"I talked to a number of organizations about what we needed and how to go about identifying it," Yavorsky continues. "HP came back with a very thorough proposal. They were willing to start from ground zero with us."

Over six weeks in late 1993, a team from HP's PSO conducted a series of workshops designed to reach a group consensus for key Apprise personnel. According to Mike Short, PSO project manager, the workshops were structured in three phases. An educational session was followed by documentation done by the PSO team and then feedback on the completed document.

The educational sessions covered technology categories, such as operating system and platform, interfaces, connectivity, communications services, and database and transaction management systems. "We would go through the three-phase cycle for each one of these categories," Short says. "We trained them on the key standards, then, based on the kinds of functionality they would have to have in light of the business environment, arrived at decisions on technical standards."

According to Yavorsky, the result was a strategy Apprise can use as a framework for working with its client organizations. "I provided the PSO team with material regarding our customers. They spent time up-front understanding who our clients were, what they had in place and what they needed. We then identified the key business principles for Apprise and defined the target architectures we needed. They were very focused."

The consulting engagement was independent of any purchasing decision. "Our job was to pick standards based on architectural components, not recommend HP hardware. In our executive summary stating our conclusions, I presented an HP set of recommendations, but that was the only time HP was mentioned. Our position was that of trusted advisor," Short says.

ply client-server and open systems technology to help you run your business.”

The need for the education and consulting services is a result of the fragmentation of the hardware and software marketplace that has occurred as a result of the move toward open systems. The promise of open systems is, of course, that all the pieces will work together. In reality, most customers face at least a small knowledge gap, in some cases a broad one, that needs to be bridged by an organization with more experience. “We can help minimize the risk customers take on when they move to a new computing paradigm,” Osaka says.

For example, the PSO was engaged to plan, design and implement a network for the Hughes Aircraft employees credit union (Long Beach, Calif.) last year. Moving from three Data General MV systems to four HP 9000s, the credit union was without an adequate high-speed network. According to Marc Quin, vice president of information systems at Hughes Aircraft, “The Data General systems architecture was such that hooking up cables to devices was from port to de-

**“The PSO is technical
education and consulting.
We’re not management
consultants.”**

Glenn Osaka, PSO General Manager



vice. We had hundreds of cables under the floor which was very inefficient and difficult to maintain.”

Over a four month period, PSO engineers completed a site design and installed cabling for a LAN at the headquarters office, and a WAN which extended the LAN to the credit union’s 24 branch offices. Although the migration to the new system was not without difficulties, Quin says, the network design and implementation completed by the PSO was flawless.

The PSO also helps customers deal with technological change. “It’s difficult for an organization’s IT staff to keep up,” Osaka says. “Most of what an IT staff does is to keep its environment going. They can’t afford to spend a lot of time looking ahead, keeping their skills current or learning how to apply leading edge technology. We can ease the transition to the newest technology and figure out the right pathway for them according to their needs. That’s our business.”

Although the PSO’s services can include implementing systems as well as planning and design, its involvement is normally at the consulting level. If a customer organization wishes to retain responsibility for a systems infrastructure, but requires consulting assistance to get it up and running, it is a job for the PSO. If, however, the customer determines that it would be more advantageous to hand over the management of all, or part, of its systems to an outside firm, it’s a job for the OSD.

Outsourcing services for computer operations are widely available. It is not unusual for a customer to outsource an entire data center on a long-term basis, or during a transitional period. What is

Case Study: Bilmar Foods

A food manufacturing company specializing in turkey products, Bilmar Foods (Zeeland, Mich.), a division of Sara Lee, has been in business for 50 years. For the last 12 of those years, its data processing systems have been exclusively HP — three HP 3000s, and since 1991, two HP 9000s. In addition, Bilmar currently has a population of 280 networked PCs, a population that is increasing at a rate of five to 10 per week.

According to Mary Overweg, information center manager, a year ago Bilmar restructured its PC support operation, deciding to replace in-house support with an outsourcing service. “We wanted to maintain a certain level of expertise, but found it difficult to do it in-house,” Overweg says.

“Things changed so fast in the PC world, we were constantly training people. There was no way we could keep one person capable of supporting all the different software packages. Even though we’ve standardized our main packages. By going with an outsourcing service, it puts the pressure on the outsourcer to keep our people trained,” she says.

Overweg says that alternative outsourcers were considered, but because the majority of their PCs were from HP and because of past experience as an HP customer, HP’s OSD seemed the right fit.

There is now a full-time, on-site technician from HP who is responsible for all day-to-day hardware support, including setups, installs and troubleshooting for the PCs and servers. “We had a lot of input in the selection of the HP person,” Overweg says. “We were given the opportunity to be part of the screening process and had final approval.” After a year, Bilmar is now considering additional on-site technicians from HP.

In addition to outsourcing support services for its PC network, Bilmar Foods uses HP’s Response Center for system-wide problems when they arise. So far, Overweg says, the support they have received has been up to their expectations. “For the most part it has been excellent. We’ve grown to really depend on it.”

QUIET GIANT

different about the service offered by the OSD is selective outsourcing. A customer can turn over the management and operation of only part of its operations to the OSD, in effect allowing the customer to customize an outsourcing solution.

For instance, as customers move toward a distributed computing environment, particularly client-server, they typically face natural decision points based on in-house skill and service levels that may make outsourcing an attractive alternative to maintaining direct control themselves. Selectively outsourcing new technology may be preferable to building expertise in-house. Or, for a company that has trouble delivering end-user support internally, it may be preferable to outsource the support function.

The OSD's strengths, Livermore says, lie in managing distributed computing environments, client-server, UNIX and the desktop, as well as legacy HP environments. Although the OSD is not in a position to outsource mainframe applications itself, it will partner with other outsourcing providers for the mainframe and still manage a customer's entire operation.

Even though the OSD is a new independent business group, much of the infrastructure required to do network and systems management has been built up over the past 10 years in HP's Systems Support organization's international network of Response Centers.

Systems Support handles traditional support "where the hardware meets the software," says Tony Engberg, Response Center operations manager, and group research and development manager for the WCSO.

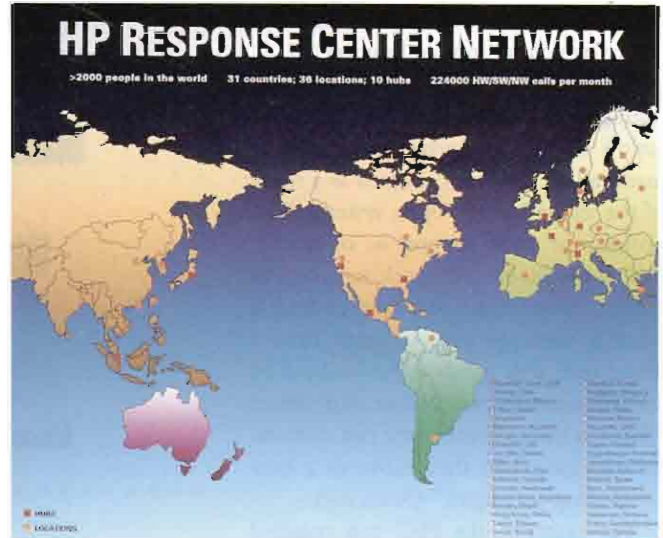
According to Engberg, the challenges faced by providers of traditional support, like HP's Systems Support group, are a result of a new set of customer expectations. Customers expect what marketers promise them, which is plug-and-play. "Luckily," he says, "we've had experience over the last few years working with multivendor hardware and software. That experience has come into good use for us."

Engberg adds that customers are increasingly reluctant to pay what they consider high fees for support, when the costs of the systems themselves are dropping. "Customers are used to correlating the cost of support with the value of the hardware," Engberg says. "We expect the costs to keep dropping. And, as low-end systems become more powerful, the margins keep shrinking."

The idea that a customer should pay \$200 per month for support for a \$1,200 PC strikes customers as ludicrous, Engberg says. "I understand that. But it gets translated into, 'I have a bunch of these \$1,200 PCs on a LAN and it should only cost me \$50 per month to support the whole thing.' As long as that's the customer's expectation, we have to do our best to meet it. We try to deal with this margin pressure with technology-based solutions."

Customers can access support electronically from HP's 27 Response Centers, which saves the cost of sending a technician to the customer's site. Receiving nearly 200,000 calls per month, software at the Response Centers can diagnose and solve over 90 percent of customers' hardware and software problems.

"Customers prefer a direct solution, or a self solution,"



HP's Response Centers handle over 130,000 hardware and 60,000 software related calls each month.

Engberg says. "The need for a live human constantly at the other end of the phone is dropping off where customers can get a quick solution through a electronic access system. Every time we've gone online with some new delivery mechanism we've seen a three- to five-fold increase in the first few months — big leaps, thousands of users coming online in short periods of time."

The challenge for the next few years will be to deliver support inexpensively with the same or greater quality and reliability. "That's the reason we're investing heavily in electronic support technology," Engberg says

Meeting or exceeding customers' expectations is the first of two core requirements for a successful support operation, according to WCSO's Livermore. The second is technological competence. "Service and support are purchased on references," she says. "The first differentiator among service providers is a strong track record for customer satisfaction. The second is to know as much or more about what the customer is trying to do than the customer does. We have to be the experts."

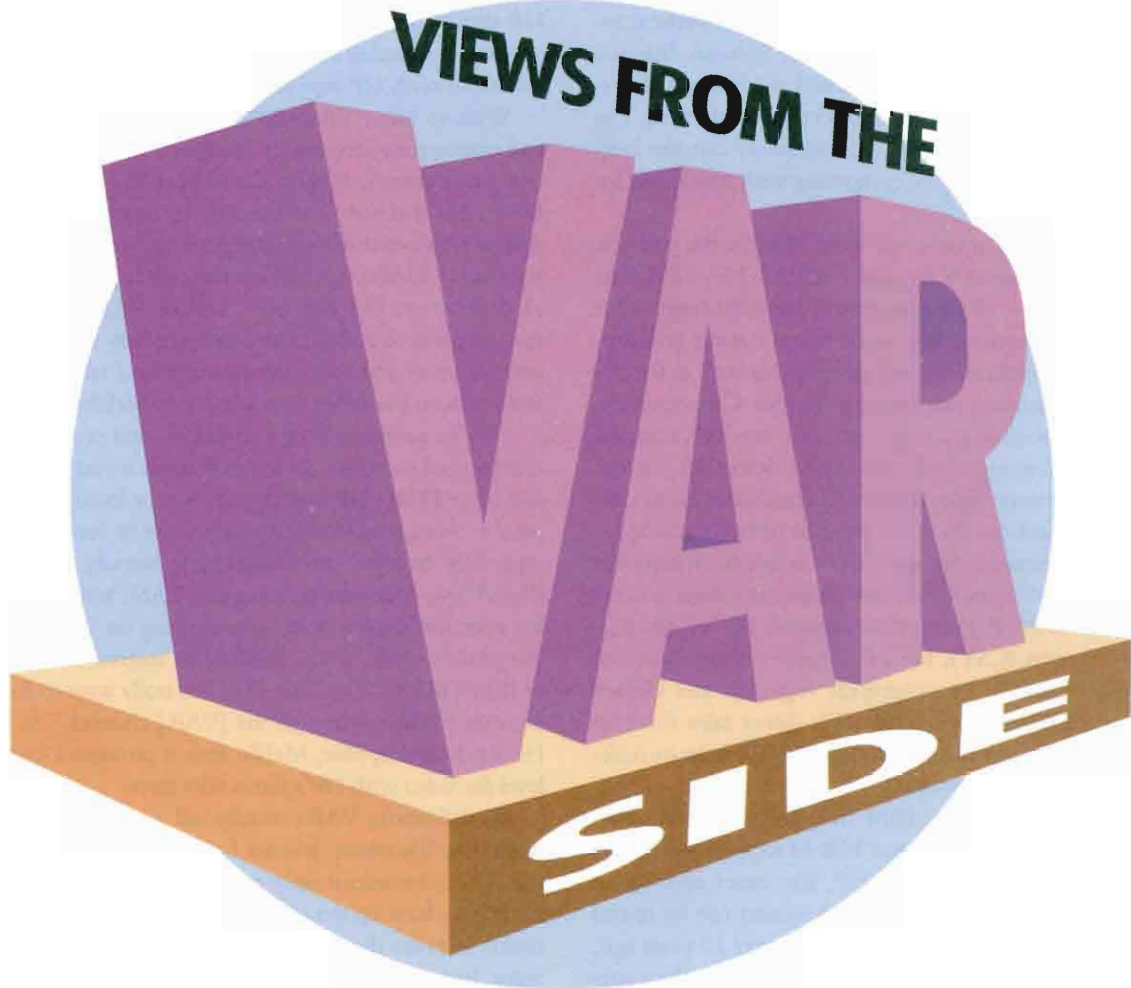
In Livermore's opinion, HP's strength is in its ability to provide a complete range of support services. "I think of it as life cycle support," she says. "We can plan a system, design it, implement it, support and maintain it, and operate it. Finally, we can wrap our financing capability around all of it as a way to help pay for it."

HP's investment in service and support comes down to a simple formula: a leading computer company must offer superior products and superior service and support. As Livermore says, "We think that over the long term an on-going balance between the two is what will make us the top computer company."—*Sam Dickey is a freelance writer based in West Chester, Pa.*

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There's a battle royal going on for your IT dollars. Your IT budget is on one side.

And on the other side are vendors, value-added resellers (VARs) and system integrators (SIs) aligning, partnering and otherwise cooperating, as well as competing, for new ways to get to your IT means. If it seems confusing, don't worry. It is.

Current trends reflect what industry analysts have already predicted: third-party services will play a critical role in what will be an unrelenting onslaught of client-server and open systems technologies. The once tightly bundled services, taken for granted once upon a mainframe, are being replaced by a myriad of "value-added" services — consulting, education, integration, outsourcing and training — offered by a growing number of suppliers.

For vendors, having good products just isn't good enough. Having great products isn't good enough. In fact, having the best products still isn't good enough. So, what's a multibillion dollar technology company to do? In addition to selling prod-

ucts, they must help customers plan migration paths and design, build, install, deploy, train and support open systems solutions. Think of it as a kinder and gentler client-server migration.

For example, the goal of HP's Professional Services Organization (PSO) is to become the leading provider of open systems and client-server computing solutions. To more closely align its services with its computer products, the PSO, formerly a part of the Worldwide Customer Services Organization (WCSO), became a part of the Computer Systems Organization (CSO) in November 1993. The PSO itself however, is part of larger group called the Solutions Integration Group (SIG)

GEORGE A. THOMPSON

VAR SIDE

established last year. To help it provide a focus on vertical solutions, the SIG also includes: the Telecom Systems Business Unit, the Federal Computer Operation and the Integrated Systems Division. According to the market research firm The Gartner Group (Stamford, Conn.), HP is already one of the largest worldwide system integrators, competing with traditional integrators like EDS.

But one vendor cannot do it all alone. Within the past few years, all the major computer vendors — DEC, HP, IBM, Sun and even Microsoft — all have established groups responsible for identifying the needs of key markets, recruiting and supporting third-party applications and partners, as well as for developing and administering marketing programs. Consequently, indirect sales are becoming a large part of a vendor's strategy. For example, DEC is reportedly aiming to derive 63 percent of their product revenue from indirect channels during its current fiscal year; almost double its 33 percent of two years ago.

In an effort to expand the use of the indirect channel for HP 3000 users, the Client-Server Integrators Program was established in July 1994. A joint effort between HP's Commercial Systems Division (CSY), HP's field sales organization and a group of SIs organized by geographic region in the United States, these integrators work with HP's direct sales force to provide the installed base of HP 3000 users with help in making the transition to client-server.

In the past, both DEC and IBM have been soundly criticized for their short sightedness and lack of support for VARs and other selling partners. But for HP, the exact opposite is true. In fact, a large part of HP's current success can be traced to its Channel Partners Program. Established over 10 years ago, "it's one of the longest running reseller programs in the computer industry," says Brad Fortier, manager of Channels Communication.

The Channel Partners Program provides resellers with sales, technical and marketing support. "Our channel program reflects everything we provide for our own direct sales force. However, while the direct sales force handles most of HP's strategic accounts, Fortier notes, "our partners are not just an extension of our direct sales force. Except for some initial customer prospecting, there's little interaction with us."

Channel Partner is the generic term HP assigns to all the companies with an agreement to resell or leverage sales of HP products. But, while all Channel Partners are created equal, not all Channel Partners are exactly the same. Some resellers like VARs, original equipment manufacturers (OEMs), distributors and distributor authorized resellers (DARs) purchase HP products for resale directly to end users.

Other "leveragers" like independent software vendors (ISVs) and sometimes SIs have software or hardware solutions or integration expertise with solutions that run on or in conjunction with HP computer systems. Leveragers generally do not purchase

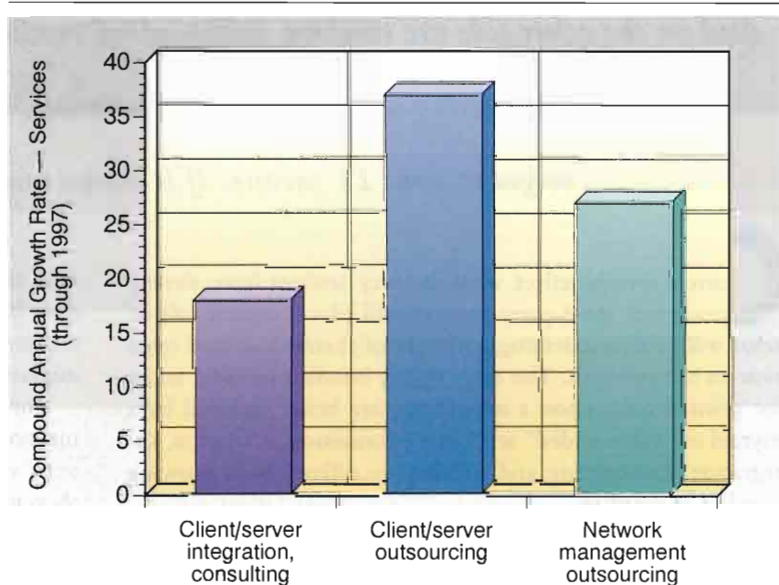
HP products for resale to customers. The availability of their solutions enhances HP sales and they often participate in sales situations with HP reps and HP resellers.

With so many third-party suppliers often providing similar and overlapping services, the designations are anything but clear-cut. For example, Melillo Consulting Inc. (Somerset, N.J.) is a DAR, but it is now moving toward being a VAR. "DARs are part of a two-tier distribution process," explains Mark Melillo, president. "DARs typically go through large warehousing agents or distributors like Merisel." Unlike VARs, however, DARs are less particular about the hardware they sell. "They sell their own services and software products and take on relationships with various hardware vendors," says Melillo.

"We've primarily been a consulting and product development company of our own. So up until about a year ago, we were like any other DAR, HP wasn't our primary focus." But as his company evolves, Melillo says it makes sense to become an HP VAR, especially because the company is already a VAR for HP's OpenView, OperationsCenter and CASE tool products. For the last year, Melillo has been concentrating on "any kind of systems integration work. Those looking to migrate from [DEC] VMS or [IBM] MVS over to HP-UX. We really want to focus on moving more business through the [VAR] channel." As an exclusive HP hardware supplier, Melillo feels it provides a certain comfort level for them with HP's direct sales force.

By definition, VARs usually sell a particular vendor's hardware. But Bluestone (Mount Laurel, N.J.) is an unconventional HP VAR, because it only resells HP software. "It took awhile for HP to draw up the contract (called a software supplier agreement) because they were used to people reselling their hardware but not reselling their software," says Bob Bickel, Bluestone's director of products.

Bluestone, an HP Channel Partner since 1992, resells HP's



Services, including client-server systems integration and outsourcing, and network management outsourcing, represent a fast growing opportunity.

UIM/X and db-UIM/X GUI builder tools, and HP SoftBench, its CASE environment. Bluestone also works with HP's PSO to provide migration services for those moving from Sun and DEC platforms to HP systems. But like a traditional systems integrator, Bluestone also offers consulting and other services. In fact, HP acts as a Bluestone VAR reselling Bluestone's training courses relative to UIM/X.

Unlike traditional systems integrators like Andersen Consulting and EDS which take complete control of a project, Bluestone offers what Bickel calls a "technology infusion" or technology transfer. "What many companies really need is an infusion of a particular technology into their organization so that they can move forward. We go in and assist the customer in taking in that new technology and putting it into their environment — with their people and their applications."

With VARs like Melillo Consulting and Bluestone offering consulting, integration and migration services, the differences between VARs and systems integrators are becoming less clear. "There's a lot of overlap," says Terry Kittigawa, and as channel manager for HP's systems integrators (GSY), he ought to know. Because his charter is "to establish, build and maintain the infrastructure that entices and motivates SIs to do business with us," he's primarily responsible for managing relationships with traditional systems integrators like Andersen Consulting, EDS, ISSC and CSC.

According to Kittigawa, the migration from mainframe systems to client-server platforms provides an opportunity for SIs and vendors to cooperate. "Customers serious about migrating to an open system environment are not going to go to a hardware vendor for migration services. And SIs can't keep up with all the technology that they need to know about," he says. "So we need to have a better understanding of the SI market place, and SIs need a closer alliance with the leading hardware vendors like HP." The point is underscored by a three-fold in-

crease in sales through SIs from 1993 to 1994, according to Kittigawa.

"Transformational outsourcing" — it's one of the recent trends that Kittigawa sees developing in the SI market. Transformational outsourcing is different than traditional outsourcing in which parts of the data center are entirely turned over to an SI. "IS managers are saying transition me from a mainframe data center environment to client-server and give it back to me." As a systems integrator itself, HP is sometimes faulted for its lack of knowledge about non-HP products. So HP depends on so-called boutique integrators.

"Our portfolio also includes boutique integrators like DSG, Cambridge Technology Partners and Innovative Information Systems," Kittigawa says. Boutique integrators are focused on client-server technology and usually have under \$100 million in sales, says Kittigawa. HP uses these boutique integrators to provide help with non-HP systems, creating what Kittigawa terms a "fourth-party relationship."

David Rubenstein, vice president for Innovative Information Systems Inc. (IISI; Norwood, Mass.) is a systems integrator who doesn't mind being called a boutique vendor. "I'd rather have a beer from a microbrewery than a Budweiser anytime," jokes Rubenstein. But IISI fulfills a serious role. "We, as integrators, get to see a lot of finger pointing going on [among hardware and software vendors]. But we can't spend a lot of time placing blame. We have to spend the time fixing the issues. And getting our partners to the table. When no one is there to knit all the pieces together, the picture gets quite fragmented."

Although IISI can't compete with larger systems integrators like Andersen for large accounts (e.g., \$5 million or more), Rubenstein says there's a need for their services for accounts less than \$2 million. "That's major league computing for a lot of businesses," he says. "And we're able to turn on a dime a little bit faster. People who partner with us can get to the decision makers. I'm not afraid to give out my home number."

A VARIETY OF ADVICE

OK, you know you need help. But where do you turn? And what issues do you consider when looking for a third-party service provider? We asked the resellers in this article for their advice:

"What level of investment do they make with their partners? It's important to take a look at how a systems integrator works with its suppliers — the HP's, Sybase's and Microsoft's of the world.

What kind of access to they have to the labor market? Can they find and bring the resources that are needed to the table?

Be wary when using a product vendor for services. There are objectivity issues involved. I don't think it's so great for hardware vendors to be making integration decisions with other vendors' platforms."

David Rubenstein, Vice President
Innovative Information Systems Inc.

"Talk to your local HP rep and get references from other clients using a particular VAR or DAR. That's probably the best way to make a decision. Because it's to their advantage to make the customer happy, HP reps aren't going to be interested in promoting third parties that they don't think will do the job."

Mark Melillo, President
MJM Consulting

"If you are a large enough customer, you should be leveraging the size and power of HP. Understand what your problems are so that you are using the right HP Channel Partners. Ask HP who they recommend in certain areas."

Bob Bickel, Product Director
Bluestone

VAR SIDE

Now in business for 10 years, IISI has had an eight-year working relationship with HP.

By now it should be clear to even the most ardent mainframe loyalists and data processing purists that proprietary is passe. Because of increasing competitive business pressures around the world and faster changes in hardware and software cycles, no single IS shop can hope to do it all alone. Nor should they plan to. Vendors, ISVs, VARs and system integrators are making the transition too. That means you'll have plenty of help as they, and other kinds of technology partners pick up the slack as the migration to decentralized and distributed data centers evolves. So this New Year, these old acquaintances from mainframe-centric IS shops are best forgot: tightly bundled products and services.

Although it's sometimes hard to see the opportunities in moving to open systems and client-server technologies among the complexities, technology vendors are learning a market lesson that is as basic as the law of supply and demand (and one you should keep in mind): it costs more to get a new customer than it does keep one.

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Companies Mentioned In This Article

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Melillo Consulting
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Somerset, NJ 08873
(908) 873-0075
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Innovative Information
Systems Inc.
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Norwood, MA 02062
(617) 769-7511
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Editor's Note

Realizing the importance of service and support to Hewlett-Packard computing customers, *HP Professional* will feature the first ever HP Channel Partners Program Supplement with our September 1995 issue.

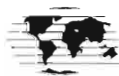
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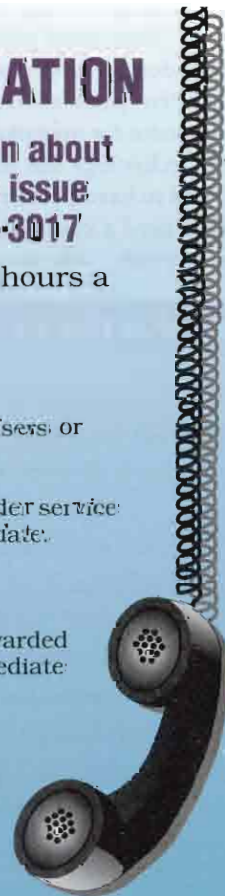
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Joy To The MPE/iX World

Interex'94, HP announces that ThinLAN/iX, TCP/IP, BSD Sockets, ftp, SNMP

Agent host-based telnet would be bundled into the Fundamental Operating System (FOS) with the 5.0 platform release of MPE/iX (variously called the 5.0 "Push," MPE/iX 5.1 and even MPE/iX '95). Referred to as "ARPA Bundling" in HP's press announcements, it helps create a level playing field for MPE/iX against HP-UX and other UNIX systems in out-of-the-box connectivity contests.

The initial bundling includes: ThinLAN/iX software, which contains the TCP/UDP/IP transport, BSD Sockets, SNMP agent and inbound VT; FTP/iX (HP36957A); and TELNET/iX Client (outbound). Later in 1995, TELNET/iX Server (inbound) will be introduced and bundled into MPE/iX FOS. Users will not see an increase in support costs. Those who already have any of the products included in the ARPA bundling, will eventually see them disappear from their support contracts.

ThinLAN/iX software includes all the components necessary to connect an HP 3000 to an IEEE 802.3 standard LAN. ThinLAN/iX includes the software corresponding to layers 1 through 4 of the seven-layer Open Systems Interconnection (OSI) Reference Model, and also provides node management software. The

link-level software implements the physical and data link layers (OSI layers 1 and 2, respectively). The network transport software implements the specifications of TCP/IP.

TCP/IP is a set of protocols for layers 3 and 4 of the OSI network model. They are, respectively, the network and the transport layers. TCP/IP was developed under the auspices of the Department of Defense by the Advanced Research Projects Agency (ARPA). TCP/IP has become the de facto networking standard, especially over Ethernet.

The basic unit of information on a TCP/IP network is the packet. The Internet Protocol (IP) portion of TCP/IP provides for the routing of packets from computer to computer. The IP layer can forward packets to their destinations without help from higher-level protocols. The Transmission Control Protocol (TCP) uses IP to send and receive message packets. TCP provides the reliability factor — it guarantees successful reception of packets.

BSD (Berkeley Software Distribution) Sockets is an industry standard interface for interprocess communications (read client-server). BSD Sockets is used as a network API, allowing applications on separate systems to communicate with each other.

SNMP (Simple Network Management Protocol) is the de facto standard for managing TCP/IP networks. SNMP Agent software on the HP 3000 allows it to report fault, performance and configuration information to one or more SNMP management stations running software such as HP OpenView.

"ARPA Bundling helps create a level playing field for MPE/iX against HP-UX and other UNIX systems in out-of-the-box connectivity contests."

Inbound VT provides PC session connection to the HP 3000 over a LAN. It is the first step in moving from a terminal/host topology to PC integration and client-server.

The ARPA File Transfer Protocol (ftp)

product provides the de facto standard network file transfer solution for the HP 3000. With ftp, you can transfer and access files on other systems (e.g., HP 9000s or other HP 3000s).

TELNET/iX Client software will provide outbound functionality from an HP 3000 to any host supporting a telnet server.

Burke's Bits

• **ALERT!** On January 20, 1995, HP is holding its next Technology Close-Up Video Conference. The topic will be IMAGE/SQL and client-server tools. Learn about developing client-server applications with IMAGE/SQL in this four-hour seminar. For information on attending, or to order a video of this or past video seminars, call (800) 224-HP3K. You also can order tapes of many past audio conferences.

• At the HP 3000 Strategic Directions Video Conference on November 15, 1994, HP announced that the target ship date for the MPE/iX 5.0 Platform ("Push") release is February 7, 1995. This is somewhat earlier than we had been led to believe and is probably indicative of the relatively few problems discovered to date in the 5.0 Pull release.

Jim Sartain, IMAGE/SQL lab manager, noted that TPI-awareness for IMAGE/SQL would enter Beta testing in December 1994. Coupled with HP's commitment to provide B-trees for IMAGE/SQL by the end of 1995, TPI-awareness gives IMAGE/SQL the performance boost it needs to be competitive in a fully relational environment with Allbase.

HP seemed to have backed away from the commitment to provide some sort of minimal LAN printing capability by the end of 1995, pointing out that there are capable third-party solutions available and suggesting that its plans for addressing this area were still under development.

• MPE/V users will recall that the **LISTF** command of the LISTDIR.PUB.SYS program would display segment, stack and capability information for files with the filecode **PROG**. LISTDIR.PUB.SYS was not migrated to MPE/iX. Instead, the functionality of LISTDIR.PUB.SYS was replaced by new (**LISTFILE**) and enhanced (**LISTUSER** and **LISTACCT**) MPE commands.

One item that initially escaped my attention, and may have escaped yours, was how to determine program information for CM and NM programs in MPE/iX: neither **LISTF** nor **LISTFILE** does it.

It turns out there is a program called VERSION.PUB.SYS that does the trick. The MPE/iX System Utilities Reference Manual says: "VERSION is a native mode utility program that displays segment, stack, data reference base and capabilities information for compatibility mode (CM) program files. For native mode (NM) executable files, it displays information on procedures, libraries, capabilities, stack, heap, entry names and \$version strings. \$version string information is displayed for NM object files and non-executable library files." See Figure 1 for an example.

By the way, CM information is still presented in octal.

Figure 1

```
:VERSION FCPY.PUB.SYS
:
# SEG: 5
STACK: %13100
MAXDATA: %74430
TOTAL DB: %4551
DI: %400
CAP: BA, JA

:VERSION ISQL.PUB.SYS
:
MAX STACK SIZE: 819200
MAX HEAP SIZE: 8192000
CAPABILITIES: BA, JA, PM, PB
UNSAT PROC NAME:
ENTRY NAME:
LIBRARY SEARCH LIST:
```

For example, a terminal or PC logged onto an HP 3000 as a session will be able to use the telnet command to hop to an HP 9000 on the same network.

The TELNET/iX Server software will be functionally similar to HP's DTC installed TELNET Access Card (TAC) or HP's TELNET Express Box. It allows users at remote hosts on the network, or individual PCs, to telnet into the HP 3000. TELNET/iX Server is intended for relatively light traffic. HP intends to continue to offer the TAC for customers with heavy telnet traffic because the TAC solution offloads communication from the host.

Even if you currently have just one HP 3000 and no LAN, ARPA bundling is important. Having this bundle even allows you, with the addition of some freeware, to access the Internet and get on the Information Superhighway.

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EDITOR'S NOTE:

You'll find more information about taking advantage of the "ARPA Services", in this month's Networking column by Tim Cahoon.

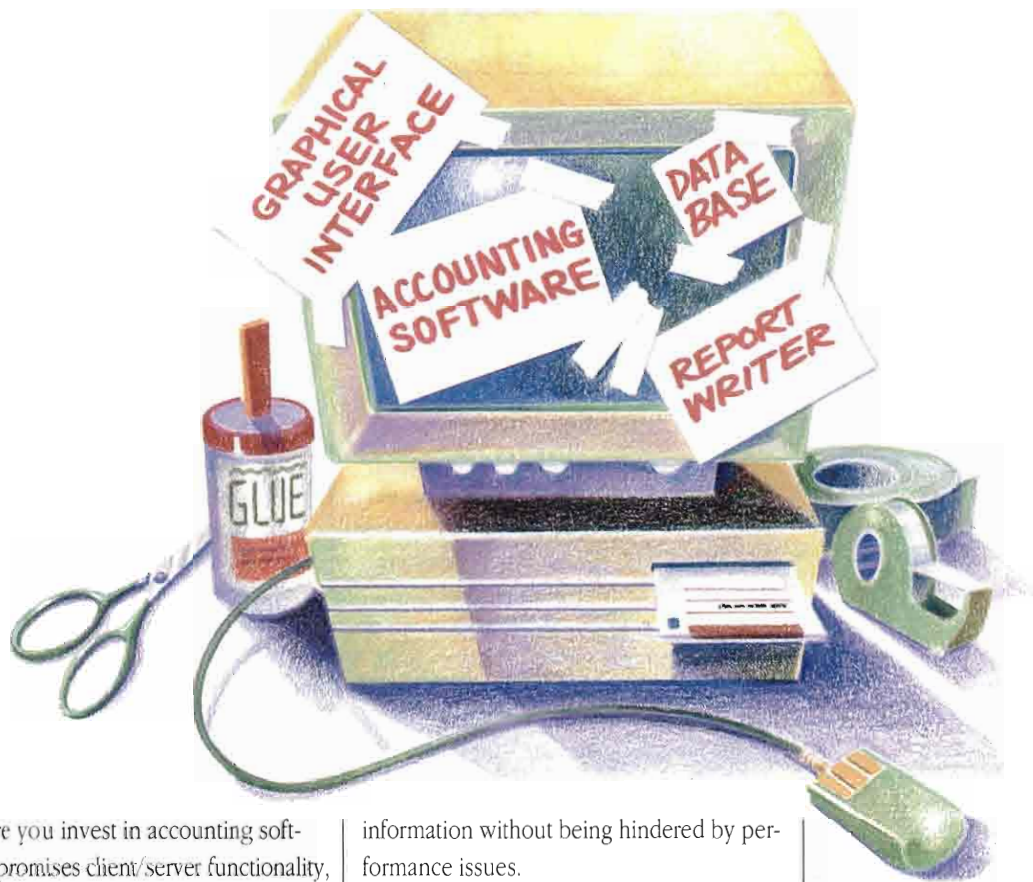
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Aliases, Functions and Scripts

How can you improve the functionality and usability of HP-UX shells? By

using scripts, aliases and shell functions.

A shell script is simply a file that contains one or more lines of shell commands and statements. When the file that contains the shell script is marked as executable, you can perform the statements in the file by simply typing its name. Virtually all of the popular shells — Bourne, C and Korn — support powerful scripting languages which include loops, tests, file and arithmetic operations.

Once a script grows, it may be easier to write and debug C code than the shell script. And when you use scripts, HP-UX spawns an additional shell as a new task, and therefore environment variables and permissions can be tricky to manage. Still, when you have a number of repetitive tasks to automate, shell scripts can be powerful and useful.

Figure 1 shows a simple script to report the file type of all files in the current directory. Note this script forces use of

Figure 1

```
#! /bin/ksh
for i in *
do
echo $i is of type \c
file $i | cut -d : -f2 | cut -c3-
done
```

the Korn shell regardless of the shell you are running when you invoke this script.

Shell scripts can be a handy way to link together common programs to perform more complex tasks without the need to code in C or awk.

USING AN ALIAS

An alias is an alternative name for a shell script, an executable program or a built-in command. One reason to use the alias command is to eliminate much of the typing you do at the command prompt. For example, if you always want to use the long file listing, you can enter the command:

```
alias ls='ls -l'
```

Then, whenever you type **ls**, your shell will execute the command **ls -l**.

A second use of the alias command is to save time and avoid using a longer PATH than you need. For example, if you use the program `/usr/local/bin/doit`, you might be tempted to add its directory to your PATH. However, doing so adds another directory to the path searched every time you enter a command.

If **doit** is the only program you want to use in `/usr/local/bin`, you may do better to define an alias:

```
alias doit='/usr/local/bin/doit'
```

When you type **doit** at the command prompt, your shell executes the program directly with no path search, and without the delay of long path searches for all of your other commands.

A third reason to use an alias is to help

you remember command names. For example, if you are familiar with MPE and you find you can remember **listf** better than **ls**, you can define an alias:

```
alias listf='ls -l'
```

You also can link more than one command in an alias by separating the commands with a semicolon. For example, an alias to display the current directory name and list all the files and directories might be:

```
alias sd='pwd; ls -l'
```

You can define aliases in your .profile start-up file; in fact, the template system profile file includes a number of useful aliases that you can uncomment and use as you see fit.

FUNCTIONS WITHIN A SHELL

Both the Korn shell and the C shell allow you to define function subprograms to simplify the task of writing complex shell scripts. For example, if you need to modify your PATH from several different places within a script, you might define a function that modifies the specified path depending on the parameter passed to the function.

Within the Korn shell, you also can define functions at the HP-UX command prompt and use them interactively as you might use a shell script or an alias. The advantage of using a function over an alias is that the shell function is loaded into memory once, and is always available. In addition, when you invoke a function, the shell can execute it directly without loading another shell. And the shell doesn't need to search the PATH to locate a script, so repetitive tasks will perform better.

Another benefit of functions over shell scripts is that they have direct access to the environment of your current shell; there is no need to export environment variables that change within a function.

You define a shell function in almost the same way that you create a shell script. In fact, one way to load a library of functions is to maintain all of your useful functions in your .profile start-up file.

Figure 2 shows a brief function defini-

tion that will display the system date in a useful way, without the extraneous information provided by the shell date command.

Figure 2

```
function t {  
  date +%r  
}
```

You can build quite a collection of functions without the task and performance consequences of shell scripts.

FROM WHENCE IT COMES

Once you have defined a number of aliases, functions and scripts, you may find it hard to remember where any particular command is defined. To solve this problem, you can use the **whence** command in the Korn shell.

Whence reports how a particular command is defined. Using the **-v** option provides even more information. Figure 3 shows the output you might see if you've defined the scripts and functions described earlier.

Figure 3

```
$whence -v ls  
ls is a tracked alias for /bin/ls  
  
$whence -v ps  
ps is /bin/ps  
  
$whence -v t  
t is a function
```

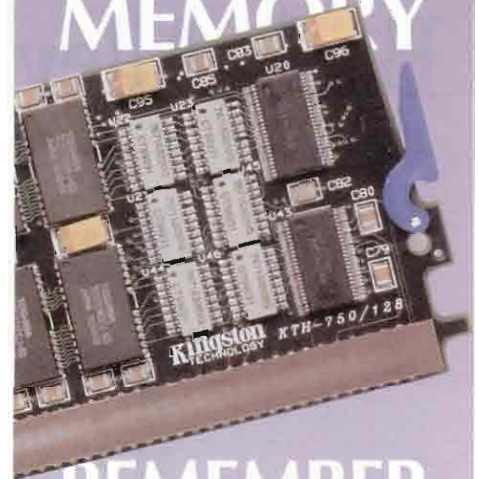
You can see that for executables, **whence** is similar to **which**, the command to search your path for an executable filename. But, unlike **which**, **whence** reports functions, aliases, scripts and executables.

Using these capabilities, you can make the HP-UX shell more to your liking. You may not find yourself in the command shell very often, but when you do, it's nice to know your way around.

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It's in the newspapers.
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know about you, but all this talk about the Information Superhighway has left many of my colleagues feeling frustrated. They feel left out because they don't have Internet access. What they don't realize is that many of the tools they need are probably right in their own shop. So if you are using either HP 9000s or HP 3000s (sorry Classic users), you may not be as far behind as you think.

Mosaic, the most talked about Internet tool, used to access World Wide Web (WWW) servers is available for free or as shareware. The WWW server software, traditionally thought of as UNIX-only, can now be downloaded in versions for Windows NT and Windows 3.1.

HP's bundling of ARPA Services provides for outbound telnet, ftp and soon for inbound telnet. This in turn will make your HP 3000 a host just like millions of others, including HP 9000s, which are accessible on the Internet.

PCs running TCP/IP stacks with programs, such as telnet, ftp and Mosaic, complete the picture by providing the ultimate Internet client. You now can inexpensively set up your own private Information Superhighway test track.

Telnet can be best described as a terminal emulation program that uses the net-

work to provide a dumb terminal session to the user. There are generally two types of telnet programs: One supports the VT100 and VT220 terminals; the other type supports the IBM 3270 terminals and is known as TN3270 telnet.

Ftp stands for File Transfer Protocol and is used to move files between computer systems over the network. It generally refers to the client piece which interacts directly with the user and the ftp server program on the remote host. Ftpd or ftp server refers to the host program that responds to the ftp client and helps send the file. A feature called anonymous ftp has been developed to more securely allow outside users to access files designated publicly accessible by you on your system.

A directory structure is made on the host computer and the username anonymous is created with read-only access to those directories. The ftp server software on the host is then configured to allow ftp users to sign on using the username anonymous. Visitors that use that particular user name are controlled by the ftp server, so they don't stray outside the anonymous directories. On the Internet, this is commonly how files are retrieved.

At the workstation, you have a second kind of telnet and ftp programs available to you. These programs are similar to the ones you would find on the HP 9000 and HP 3000 (with the ARPA services) boxes but they reside directly on your PC. This software may provide a telnet, ftp and ftp server program as well as your TCP/IP protocol stack.

Walker Richer & Quinn (WRQ; Seattle, Wash.) provides all of that when you

combine their Reflection Network Series with their terminal emulation programs. Many of you are already using the Reflection Network Series 3000 Connection to communicate between PCs and HP 3000s using NS/VT across the network. The new Reflection Network Series for Windows includes a fully-featured TCP/IP stack that doesn't require the use of TSRs.

The stack is completely Windows-based using VxD/DDI architecture. It also is WinSock-compliant. The WinSock standard allows applications to become independent of the actual protocol stacks. Now, companies can write software to a single specification rather than having to write their code to work with 10 TCP/IP stacks from different vendors.

With a copy of the Network Series 3000 Connection and a WRQ terminal emulator, you can NS/VT to an HP 3000, telnet to an HP 3000 (once ARPA services are in place) or HP 9000 and ftp to an ftp server host (HP 3000, HP 9000 or a PC running an ftp server).

If you don't have the Reflection soft-

ware series, Spry Air For Windows, Novell's LanWorkGroup for DOS or any of the other packages used to access UNIX machines all have telnet and ftp software as part of the package. Spry's Air For Windows has an ftp user interface that works just like Windows File Manager.

You need to dig around and find the software you have. It may be installed on PCs, but never used; or you just purchased it to get another TCP/IP stack license. Once you find it, however, get it installed and learn how to telnet and ftp. If you can do it locally, you then can do it across the Internet without a problem.

Now you're ready to actually access and use "the net." There are several approaches you can take: The most expensive is to become a host directly on the network. Today, many users do that using either SLIP or PPP. These protocols provide for running TCP/IP over a dial-up line. SLIP comes with the WRQ Reflection Network Series and PPP comes with the Spry Air for Windows software.

Another method is to pay a service that

allows you to dial into their host computer. Once connected to their host, you can access just about every Internet service except for Mosaic. This is the type of service being offered by CompuServe and America Online.

The last method is access via E-mail. If you haven't tried it, don't knock it. You can actually do a lot with E-mail, including ftp. While the ftp transfers via E-mail can be very slow (a day or two), it can be done. How do you get E-mail access to the Internet? You already have it if you are using CompuServe forums to support your PCs or services such as MCI Mail or AT&T EasyLink to send corporate E-mail. All these services let you address mail and receive mail from the Internet.

One problem with E-mail is learning how to address your message. For example, you can sign up for a list called THIS-JUST-IN that's sent out every week. THIS-JUST-IN contains off-beat and funny news stories gathered from major wire services across the world. Here is how you sign up:

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More information can be found in the Internetworking library of the Telecom Forum on CompuServe which provides monthly updates to the *Big Dummy's Guide to the Internet*.

Cahoon's internet address:
cahoon@cardinal.com

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Mosaic: Piecing It All Together

If you want to try out Mosaic and set up your own Web server, you're in luck. WWWFAQ.ZIP in the PCUKFORUM on CompuServe is a Frequently Asked Question (FAQ) document on the World Wide Web. These files can be found easily with the CompuServe IBM File Finder using the keyword "web."

Web server software also is available on CompuServe. A Windows NT version is available in the WUGNET forum Win NT Shareware library called HSI386.ZIP. A Windows 3.1 version is available from the PCUKFORUM forum in ONLINE/INTERNET as file WHHTTPD.ZIP. There are Mosaic versions for OS/2, Windows 3.1 (both 16- and 32-bit), and Windows NT on Alpha AXP, MIPS and Intel platforms. Windows NT Mosaic software can be found on CompuServe in the WUGNET forum in the Win NT Shareware libraries.

To support and help develop Web server pages, you also can find a Microsoft Word conversion utility which converts Word documents to the HTML format which is used by the Web and Mosaic. There also is an HTML Editor as an additional way to write Web server pages.

All you need are Windows-capable PCs to get you started. I've installed the HSI386.ZIP file on an Windows NT Advanced Server in a 386/33 machine with 25 MB of memory on a Token Ring network. As a Mosaic client, I have used the NCSA Mosaic which is free, as well as the Spry Air for Windows Mosaic.

IT BEATS WAITING FOR FED EX

When you have a serious problem with your HP 9000, system managers can make good use of E-mail gateways to the Internet to receive software patches from the HP Response Center. After you call the Response Center, if patches are required, the engineer can usually E-mail them to you. They will usually arrive in 30 to 60 minutes, depending on the gateways the files need to pass through.

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CIRCLE 232 ON READER CARD

V-2 The Software Engine

In *Three Days of the Condor*, a former OSS spy is asked by a young CIA

agent what he misses most from the old days. The aging spy, answers, "The clarity." Clarity is also missing from most discussions of software engineering. Which brings me to Barry Boehm, one of my favorite software writers.

Take his description of software validation and verification, for instance. According to Boehm, verification is defined as "Are we building the product right?" And, validation is defined as "Are we building the right product?"

Validation and verification (V&V) is an integral part of any software project. It should begin the day the project is conceived and proceed concurrently with all the development phases.

The V&V team should be separate from the development team. However, although the V&V role is somewhat adversarial, they are not the enemy. Many good project managers hire outside V&V organizations called IV&V teams. An IV&V team maintains a watch over the project from inception through deployment. This is an important function for contracted software, and essential for safety-critical or high-budget software. Large Department of Defense weapons systems routinely have an IV&V team monitoring the project day-

by-day. The cost is much less than buggy software.

Almost every mature software engineering organization has established a kind of quality assurance (SQA) program. More often than not, the SQA program is designed to make sure the software is doing the job right (verification). The testing process is constructed around the prevention of software failure. More often than not, there's not enough emphasis on validation.

FEATURE CREEPERS

Validation focuses on matching the software product to the Software Requirements Document (SRD). And it's as essential to the quality of software as verification. Validation is often much more difficult, because it is not enough to simply ensure that all the features in the original SRD are included. Rooting out "feature creep," those little enhancements that some programmer thought would be really neat, even though the designer forgot to include them in the original specs, is important too.

Feature creep kills a piece of software, increases its budget, keeps it from operating under the given resource constraints or causes a program to break during some later maintenance cycle. Undocumented, these features may be so well-hidden that no one ever suspects they are there.

WITH A TRACE

Validation is a tracing process. A good V&V team traces every software function back to the SRD. Often they make recommendations to enhance traceability.

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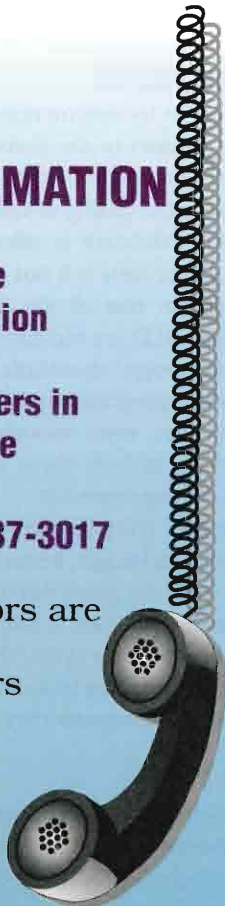
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I've seen some really good source code that included line-by-line comments citing the corresponding requirement in the SRD. This makes validation tracing much easier.

Sometimes a program contains code that represents derived requirements. A derived requirement is one that, although not itemized in the SRD, is an outcome of software requirements analysis (SRA). Or, supports software engineering practices required for defect prevention and management. Whatever the origin of the source code, original SRD or derived requirement, it should be traceable to some supporting document.

For example:

```
procedure Smooth (V : in out Variable_Name);  
  - SRD 1.3.5.2
```

tells the V&V team where to locate the requirement for this specification. The implementation might have even more comments, but it might be enough to merely trace back at the specification level for validation purposes.

Verification will require examining the implementing code. This separation of specification from implementation is one of the validation benefits of using ANSI C prototypes, Ada package specifications or C++ class definitions. If it is not traceable, there is no accountability. If there is no accountability, there is trouble in your future.

OBJECTS MAKE IT EASY

Languages that support object technology can enhance the validation process. The practice of separating specification from implementation permits the V&V team to do early validation assessment. In fact, if this is done correctly, source code can be compiled and tested long before any implementing code is produced. This process combines validation with the potential for early system-wide component integration. All object-oriented languages, including the future Object-Oriented COBOL standard, support this development feature.

Once object technology has been adopted, an all-too-frequent practice is the abbreviation of the software requirements process. This trend to requirements short-cutting results from a misuse of the

principle of "cyclic extensibility," characteristic of many of object-oriented projects. This flexible software construction method sometimes referred to as "Design a little, code a little, test a little" permits development to cycle through successive, small incremental changes.

Although it's true that cyclic extensibility may enhance some aspects of the software development process, it does not obviate the need for a thorough SRD. And even cyclic extensibility should be traceable back through the SRD. It is certainly appropriate to revise the SRD, but such revisions should occur before, not after, the application of cyclic extensibility. This will ensure greater validity of the final product.

It's never correct to allow new features to propagate wildly throughout a design because the programmers need to exercise their creativity. Yet many software organizations are (mis-) managed in exactly this way.

INTEGRATION TESTING

One benefit of object technology is the ability to do early integration testing. A properly designed object-oriented program is a set of abstractions that defers implementing the code. That is, no algorithmic code is written in the early stages of the project. This is particularly easy with Ada, Eiffel, C++ and Smalltalk.

The point of this early integration process is to discover flaws in the high-level design sooner rather than later. You'll prevent a lot of flaws during in the implementation process. And, you'll do a better job of V&V throughout the entire development process.

Don't let object technology become an excuse for ignoring the importance of both validation and verification. Validation ensures that your software does the right job. Verification establishes that it does the job right. Both are equally important in ensuring the quality of your software. And if you are not using object technology, don't ignore V&V.

Riehle's Internet address:
riehle@cardinal.com

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new Products

SOFTWARE

Razor Supports Two New Platforms

Tower Concepts Inc. announced the availability of its Razor software product on two new platforms. Razor now supports HP-UX and Silicon Graphics's Irix under the Motif GUI.

Razor is an integrated tool suite for software developers, combining a tailorable issue tracking system with traditional version control and build coordination capabilities. Razor is already available running under the Solaris and SunOS operating systems.

Razor is priced at \$495 for a single floating license.

Contact Tower Concepts Inc., 103 Sylvan Way, New Hartford, NY 13413; (315) 687-7988.

Circle 400 on reader card

ParaSoft Announces Insure++ V2.0 for C++

ParaSoft Corp. announced Insure++ (formerly Insight++) for C++, a powerful, automatic, run-time debugger.

Insure++ pinpoints bugs quickly and provides all the information necessary to repair the bug immediately. Insure++ detects: memory corruption, operations on uninitialized, NULL, "wild" pointers, memory leaks, errors allocating and freeing dynamic memory, and operations on pointers to unrelated data blocks.

Insure++ can identify bugs specific to C++, such as distinguishing between new, delete, malloc and free. It also finds problems with overloading operators, C++ dead code and errors in calling class functions. Insure++ supports the newest features available in C++, including templates, exception handling and RTTI.

It also includes: Invision, a unique algorithm validation tool that produces visual images of memory and data patterns; Inuse, a graphical "Malloc Monitor"; and TCA

(Total Coverage Analysis) which provides information about which pieces of your code have been tested, how much code was tested and how many times different code blocks were executed.

Insure++ is available for HP 9000, IBM RS/6000, Sun SPARC, DEC, SGI and SCO machines. It works with most C++ compilers. Pricing begins at \$1,495 for a three-user license.

Contact Parasoft Corp., 2031 S. Myrtle Ave., Monrovia, CA 91016; (818) 305-0041.

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Liant Upgrades C++/Views

Liant Software Corp. upgraded C++/Views with features for OSF/Motif (AIX, HP-UX, Solaris 2 and SunOS operating systems), as well as OS/2 and Windows environments.

C++/Views is an object-oriented application framework for developing multiplatform, native GUI applications using C++. Like previous releases, Release 3 includes a comprehensive library of over 100 C++ classes that support a broad range of GUI software development requirements, including interface design, data management and event processing. It also includes several higher-level interface classes such as table, toolbar and multiple document interface (MDI) classes.

C++/Views Release 3 for Windows, OSF/Motif and OS/2 costs \$749, \$999 and \$1,999, respectively.

Contact Liant Software Corp., 959 Concord St., Framingham, MA 01701; (508) 872-8700.

Circle 398 on reader card

WRQ's Reflection 1 Plus Adds Mac To HP Sessions

WRQ announced that multiple HP host sessions running concurrently on one Macintosh are now available in a new release of Reflection software.

Version 4.1 of Reflection 1 Plus for the

Macintosh gives the users the ability to connect to different HP hosts and to run the host sessions side-by-side in separate windows. The new version also adds access to HP 9000 hosts via VT220 emulation.

Other features include: fast file transfer which lets users exchange files with a drag-and-drop interface (files are exchanged between the Mac and the HP hosts at speeds up to 3000 Kps; complete support for the Mac Communications Toolbox File Transfer Manager which lets users use any third-party file transfer tool, providing plug-and-play file transfer capability.

Reflection 1 Plus includes telnet, LAT and NetWare for LAT, plus serial and modem tools; intuitive script editor and recorder which allows users to easily automate repetitive tasks and customize their Reflection menu bar; comprehensive setup dialogs which make it easy to define settings during initial setup, as well as change settings over time; and graphical keyboard mapping which gives users a more intuitive way to map host keys to PC keys.

Single copy price is \$329.

Contact WRQ, 1500 Dexter Ave. N., Seattle, WA 98109; (206) 217-7100.

Circle 394 on reader card

Arens Introduces PRESENTATION GRAPHICS

Arens Applied Electromagnetics Inc. announced PRESENTATION GRAPHICS (PG), a business and scientific graphics program for the HP 3000.

PG is a powerful, flexible and easily automated graphics software program. It can automatically update charts from any ASCII file — including all chart titles, labels, legends and the actual data. Run through an HP Stream Job, the user's database report writer can create the ASCII data file (it can be the actual final report) and then PG can be run to send the charts to any HP-GL spoolable output device (LaserJets, plotters or line printers).

PG automatically positions all chart elements in the most visually pleasing arrangement. It also automatically sizes the chart based on the requested layout. PG can draw unlimited charts on a page and automatically resizes them from full to partial page, and they may overlap.

Contact Arens Applied Electromagnetics Inc., P.O. Box 329, Gaithersburg, MD 20884; (301) 258-0970.

Circle 395 on reader card

Algor's Houdini 2.0 Offers 113 Interface Options

Algor Inc. released Houdini 2.0, an enhanced version of its interface between CAD solid modeling and finite element (FEA) software.

Houdini enables engineers to automatically generate eight-node "brick" finite elements directly from a CAD solid modeling source, and now offers 113 interface options for FEA solid model generation from a CAD solid model.

Houdini performs meshing and processing options for the following types of source models: solid models; 3D plate/shell models using triangular elements; and 3D finite element models from CAD and FEA sources that use tetrahedral elements.

Contact Algor Inc., 150 Beta Dr., Pittsburgh, PA 15238; (412) 967-2700.

Circle 397 on reader card

AIB Software Corp. Announces Sentinel II

AiB Software Corp. announced Sentinel II for use in multiplatform, run-time memory testing for UNIX C and C++ developers.

Sentinel II employs a platform-independent technology called Object Module Transformation (OMT) which enables monitoring of all memory accesses that an application performs and detection of memory errors before they cause fatal program crashes. OMT is the process that converts object code into a system-independent representation of the program under test. It then transfers this representation into machine-dependent object code with full debugging capabilities.

It is available on Sun, HP, IBM Intel 80x86, DEC Alpha, DG, Sequent and Silicon Graphics. Support is planned for Sun SPARC, HP PA-RISC and IBM RS/6000 platforms. Contact AIB Software Corp., 46030 Manekin Plaza, Dulles, VA 20166; (703) 430-9274.

Circle 389 on reader card

HARDWARE

IEM Introduces Building Blocks

IEM announced Building Block products that combine to build the storage and backup solution to meet your needs.

IEM's dynamic Building Blocks include modular and interchangeable tape, optical and disk drives, tape autofeeders, RAID controllers and power supplies. IEM Building Blocks slide into enclosures which hold from three to 21 Building Blocks.

Building Blocks include: 2 and 4 GB Winchester; DDS-2 DAT drives; DLT drives; CD-ROM drives; 8mm tape drives; multifunction optical drives; HP six-tape DDS-2 DAT autfeeder; and power supply.

The available enclosures are: desktop

enclosure (holds three Building Blocks); tower enclosure (holds up to seven Building Blocks with one power supply); and cabinet enclosure (holds up to 21 Building Blocks).

If a Building Block needs repair, just pull it out and swap it with another one without powering down the system.

Contact IEM, 1629 Blue Spruce Dr., Fort Collins, CO 80524; (303) 221-3005.

Circle 384 on reader card

JetEye PC Provides HP 200LX Infrared Connection

Extended Systems announced a cordless connection for desktop computers and the new HP 200LX palmtop computer. JetEye PC provides a point-and-shoot infrared link between the 200LX and any DOS-compatible desktop or portable computer.

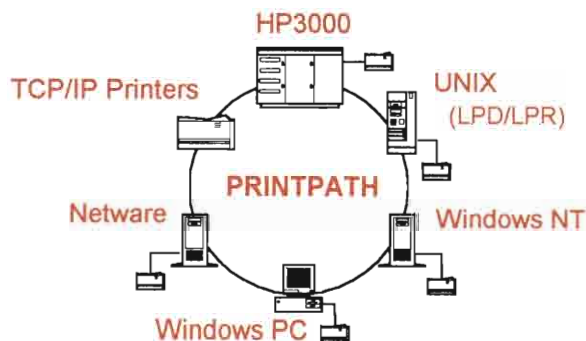
JetEye PC ESI-9610 uses the Filer or LapLink Remote Access software included in the HP Connectivity Pack to establish a connection with the 200LX. These applications allow 200LX users to move files, update information from Pocket Quicken and perform other file functions. LapLink Remote allows users to access the 200LX from their desktop or portable computer. Files from the 200LX also may be moved or printed to network file and print servers if the desktop PC is connected to a network.

The JetEye PC connects the infrared receiver to a serial port on the desktop computer. Both the 1 and 2 MB models of the 200LX are supported.

Contact Extended Systems, 5777 N. Meeker Ave., Boise, ID 83704; (208) 322-7575.

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CIRCLE 451 ON READER CARD

Reader Information

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IEM CO. CIRCLE 122

IEM offers affordable solutions for the HP environment, including 4mm and 8mm tape drives, autofeeder and carousels, QIC tape drives, optical drives (WORM, MOD, Multifunction and CD-ROM), fixed Winchester drives, floppy disk drives and combination drives. Most IEM products are available with an HP-IB or

SCSI interface for HP 1000, 3000 and 9000 computers. IEM offers software solutions, including automated backup and archiving. **Call (303) 221-3005 or (800) 321-4671.**

KINGSTON TECHNOLOGY CORP. CIRCLE 281

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

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TEXAS ISA INC. CIRCLE 245

Complete range of mass storage devices and their peripherals for HP 3000, 1000 and 9000 from ISA. **Call (713) 493-9925, FAX (713) 493-2724.**

UNISON SOFTWARE INC. CIRCLE 499

Unison-Tym Labs is a supplier of networked systems management solutions for both UNIX and MPE. Product areas include workload management, storage management, print automation and desktop integration. **Call (408) 245-3000.**

WRQ (WALKER RICHER & QUINN) CIRCLE 263

Makers of Reflection Series Software. HP terminal emulation for PCs and Macintoshes. **Call (800) 872-2829.**

WESTERN SCIENTIFIC MARKETING INC. CIRCLE 480

Western Scientific offers a line of high-performance peripherals to upgrade and enhance your Sun, HP, Silicon Graphics, DEC, IBM RS/6000 and Novell workstations. We use quality components from premier suppliers such as Seagate, HP, DEC, IBM, Conner/Archive, Exabyte, Tatung Overland Data/Cipher and Adic. We configure, integrate and test innovative disk, tape optical, RAID, jukebox and memory subsystems to meet your application requirements. **Call (800) 443-6699.**

The logo features the letters "HP" in a large, bold, serif font. To the right of "HP", the word "Professional" is written in a smaller, elegant, serif font.

PASS THE WORD — SAY YOU SAW IT IN HP PROFESSIONAL

Andataco Ships Two GigaRAID Products

Andataco announced GigaRAID/RS and GigaRAID/DS, RAID 0, 3 and 5 systems designed for SCSI interface servers in data center environments. The high-performance GigaRAID family now features support for redundant RAID controllers resulting in

greater fault tolerance and data availability, multiple RAID arrays (ranks) providing a massive capacity of up to 120 GB, and rackmount enclosures allowing GigaRAID systems to be stacked in any 19-inch RETMA data center cabinet. In addition, GigaRAID systems include RAID Management Utility (RMU) software — a

comprehensive set of configuration, monitoring and tuning utilities that provide real-time status and control of GigaRAID systems from a data center console.

The advanced features of the GigaRAID systems are based on the ARC-525 RAID engine used in the original GigaRAID, and therefore include: high performance with a caching, RISC-based, parallel I/O architecture; fault tolerance through redundancy and online fault detection, alarms and recovery mechanisms; user replaceable drive carriers and power supplies for ease of service, as well as a user-friendly but sophisticated front panel and RMU GUI interface; flexibility with interfaces to Fast, Wide, Single-Ended and Differential SCSI-2 interfaces, support for one to four drive arrays per RAID engine using only a single SCSI target ID and support RAID levels 0, 3 and 5.

GigaRAID systems are compatible with UNIX workstations and servers from Sun, HP, IBM and SGI.

GigaRAID/RS and GigaRAID/DS pricing ranges from \$25,000 for an entry-level system, to \$270,000 for a 120 GB configuration with dual RAID controllers.

Contact Andataco, 10140 Mesa Rim Rd., San Diego, CA 92121; (619) 453-9191.

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Thanks to Harmonizer, over 1400 Aldon customers are humming a new tune about installing new packaged software releases.

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Conduct your own examination — for a free software trial, call toll free, 1-800-825-5858.

Micropolis Announces Multigigabyte Disk Drives

Micropolis Corp. announced two multigigabyte 3.5-inch Fast SCSI-2 hard disk drives offering a 7,200 rps spindle speed. The new drives also are available in AV-optimized versions to support the demand for application-tuned storage.

The Capricorn Model 3243 provides 4.29 GB of formatted capacity and the Taurus Model 4221 disk drive offers 2.1 GB of formatted capacity in a one-inch high form factor.

The new drives are available with a Fast SCSI-2 or a Fast Wide SCSI-2 interface, providing up to 20 MBps data transfer rate. In addition, the drives have a high-performance SCSI-2 controller which provides internal data rates of up to 49 to 81 MBps, an 8.9 ms seek time and a low command overhead.

The Capricorn Model 3243 costs \$3,765 for the Fast SCSI-2 version and \$3,895 for the AV version. The Taurus 4221 costs \$2,320 for the Fast SCSI-2 version and \$2,410 for the AV version.

Contact Micropolis Corp., 21211 Nordhoff St., Chatsworth, CA 91311; (818) 709-3300.

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CIRCLE 163 ON READER CARD

Spectrographics Signs GSE Development Agreement

Spectrographics Corp. announced that it has signed a development agreement with HP to provide 5080 Graphics Systems Emulation (GSE) technology on the HP 9000 Series 700 family of workstations.

The Spectrographics GSE5080 product provides IBM 5080 graphics terminal emulation as a software application running on an HP workstation, connected to an IBM mainframe through a communications controller. The GSE5080 also will allow HP workstation users to simultaneously view and edit mainframe CAD/CAM/CAE drawings or models alongside other applications in a multiwindow environment.

This alliance will link HP workstations and mainframe-based environments to Spectrographics' TeamSolutions family of information sharing tools.

Contact Spectrographics, 9707 Waples St., San Diego, CA 92121; (619) 587-6831.

Circle 381 on reader card

Hitachi Digital Graphics Introduces MultiPad

Hitachi Digital Graphics announced the MultiPad 609J graphics tablet, which features a cordless pen, 2540 lines per inch resolution, 256 levels of pressure sensitivity, 128 levels of tile for drawing and painting applications and .007 inch accuracy. The tablet also gives up to a 205 points per second read rate for fast pen-to-screen drawing.

The MultiPad will be available in five models for: PC Windows and DOS, Macintosh System 7 in ADB and serial; Silicon Graphics' Irix OS; Sun Microsystems' Solaris; and HP's HP-UX platforms.

The MultiPad can be used in most applications supported by a mouse. The ergonomic pen can act as all three switches of a mouse, while working in any application.

Price is \$269 for the Mac version and \$249 for PC and other models.

Contact Hitachi Digital Graphics Inc., 250 E. Caribbean Dr., Sunnyvale, CA 94089; (408) 747-0777.

Circle 380 on reader card

HP Ships 100VG-AnyLAN Hubs

HP's 100VG-AnyLAN networking hubs enable customers to take advantage of applications like multimedia, and color network printing and scanning.

HP also shipped its 100VG-Bridge/SNMP module, making it possible to connect

the 100VG-AnyLAN hub with existing Ethernet networks.

The recent product offering includes a 15-port 100VG-AnyLAN hub and adapter cards for ISA and EISA buses that permit customers to select either 100 Mbps 10BaseT or 100 Mbps 100VG speeds.

The HP AdvanceStack 100VG Hub-15 costs \$3,750. The HP 100VG Bridge/SNMP module costs \$1,495. The HP 10/100VG Selectable ISA Adapter costs \$349. And, the HP 100/100VG Selectable EISA Adapter costs \$449.

HP RENTALS



HP WORKSTATION RENTALS



WORKSTATIONS

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725	720	GRX-24Z	425 S	GRX	380	345	320
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Value-Added Hostage

Added Value Often Adds Up To An Added Ransom



I was recently in the market for a new system, having hit the wall with my old 386 PC. When I heard about HP's \$4,000 PA-RISC workstations, I started entertaining the notion of getting a real computer.

But I wanted enough disk space to actually store some data, a color monitor and enough memory to run some programs. That workstation was going to cost almost twice as much.

It doesn't take a genius to figure out that this equipment can be found in a plain vanilla PC for little more than \$2,000 in any computer store in the country. As my kid says: "Du-uhh!" What makes this stuff so special?

I don't expect PC prices for proprietary hardware. High volume is the main reason for ridiculously low PC prices. No vendor of proprietary workstations is going to match them. When I can buy a 1 GB disk drive for \$600, why, pray tell, should I pay HP \$1,500 for the same thing? When 16 MB of memory should cost \$650, why pay HP twice that? So why the markup on standard high-volume peripherals?

This is where that wonderfully intangible concept of added value comes in. Added value is something like priests blessing holy water. When they get done, it still looks like plain old water, smells like plain old water and tastes like plain old water, but it's not. It's special. How do we know it's special? Because they say so.

OK. I'll buy that, within reason. Hey, if you're a fan, you don't complain about the few hundred bucks HP squeezes out of you for Vectras, which are presumably a few hundred dollars better than other PCs, because they are made by the Black Forest gnomes who used to put BMWs together. But, besides the gnomes, where's the added value in the aforementioned PA-RISC workstation? The processor chip? The attractive, but undersized case? The fine HP-UX operating system?

For \$4,000, the system itself isn't such a bad deal. But the overpriced add-ons are the same generic peripherals I can get anywhere — not made by gnomes — but by immigrants in some Silicon Valley sweatshop.

HP can argue that it takes a lot of evaluating, testing, tweaking and fussing around to make sure that vital hardware components like memory, disk drives and monitors work properly. That makes sense, but I wish they hadn't bothered. I still have a busted old Vectra hanging around that had so much added value I couldn't fix it when it broke. With a proprietary disk drive, video card, monitor, mouse and BIOS, it wouldn't even run a standard version of MS-DOS properly.

That machine made me a hostage to HP. As far as I can see, all this added-value nonsense mostly benefits the vendor, not the customer. By guaranteeing that you'll have a hard time putting third-party pieces on an HP machine, you too will be a hostage.

I recently had a go-around trying to connect a Fujitsu scanner to an HP 9000 Series 800 server for an imaging application. The company that provided the OCR software said we could only use it with a particular HP-provided driver. But for whatever reason, the driver was discontinued and unsupported. Well, I could live with discontinued and unsupported, but I couldn't cope with unavailable, which is what it really was.

I called HP. They wouldn't even acknowledge that the driver had ever existed. I called Fujitsu. Then I called every company that had ever written a scanner driver for Fujitsu. No driver. No Fujitsu. No luck. How about an HP ScanJet? HP had drivers for that.

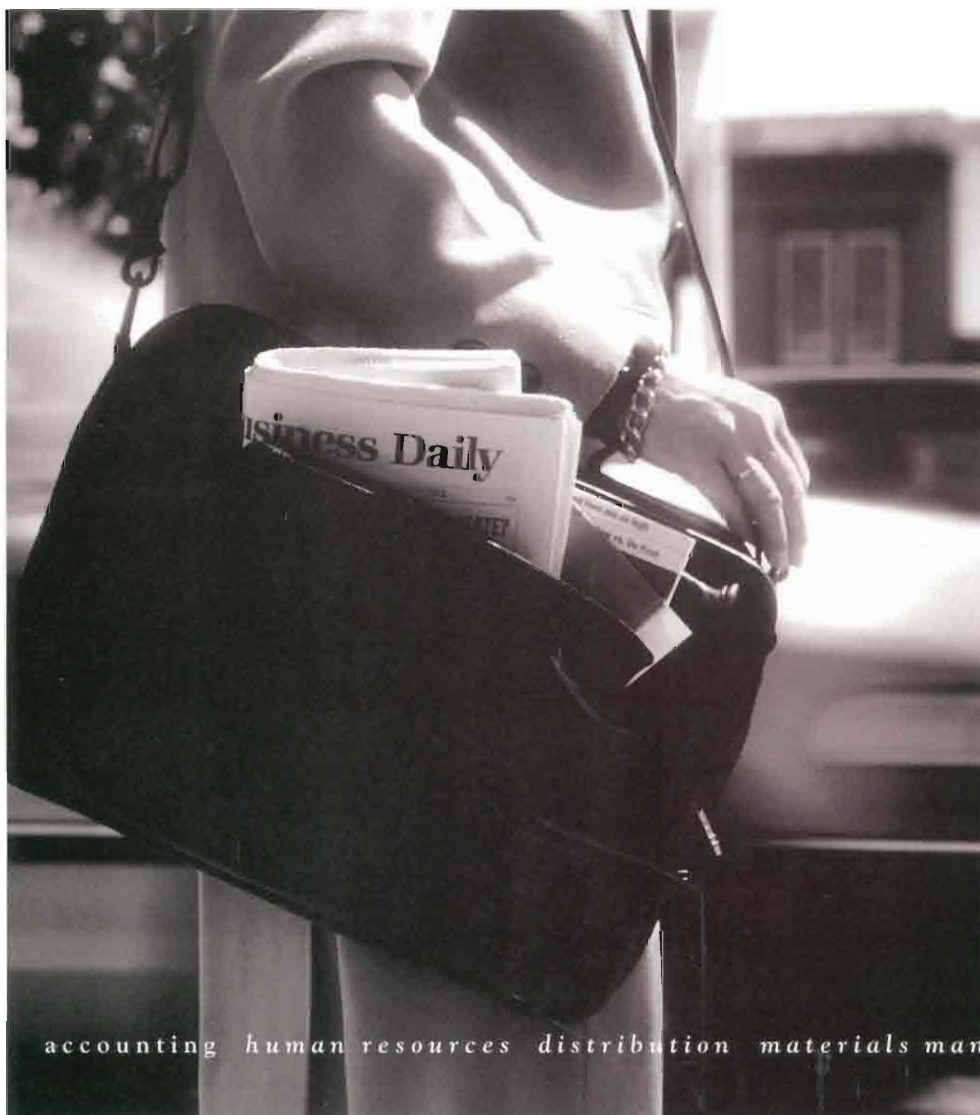
Anyhow, back to my quest for a new computer. I bought a Pentium-based PC from DEC. It's rather unremarkable and was reasonably priced, with little in the way of added value. What I found amusing, though, was that the whole damn machine was only a couple hundred bucks more than the price DEC quoted one of my customers for a 16 MB memory upgrade for one of their 486/33 UNIX machines.

So you crave added value? How are your hostage negotiation skills?

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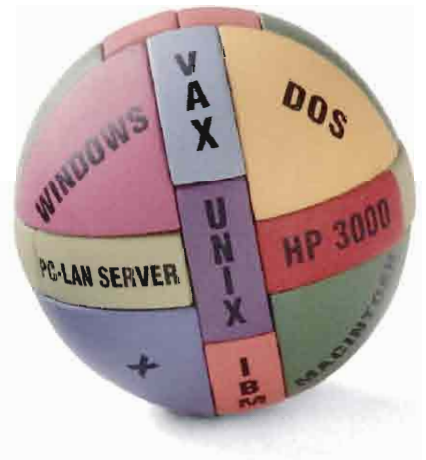
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