NAS deal brings new lineup to plug-compatible market

BY JEAN S. BOZMAN and CLINTON WILDER

SANTA CLARA, Calif. — Months of uncertainty for users of National Advanced Systems' CPUs came to an end last week when National Semiconductor Corp. announced plans to sell 50% of its mainframe unit to Memorex Telex N.Y.C.

After dozens of rumors about the potential sale, the deal — a total package estimated at between $300 million and $350 million — appears to guarantee continuity for customers, at least in the near term. NAS management will stay in place, and no work force reductions are anticipated, a NAS spokeswoman said. But with Memorex Telex obtaining an option to buy out all of National Semiconductor's stake at a unspecified future date, further changes could occur.

"National obviously is headed in a different direction than they were before," but we're encouraged that they kept half the company," said Richard Lester, vice-president of corporate development at Seattle-based Associated Grocers Inc., which runs a NAS AS/400 and 90/60. "We've done business with Memorex for several years, and we're very comfortable with them."

Continued on page 8

On SQL Server's test trail

BY DOUGLAS BARNEY CW STAFF

A glaring shortage of front-end development tools and the lack of a finished product has not stopped several of the U.S.'s largest corporations from testing SQL Server applications.

SQL Server, announced one year ago by Ashton-Tate Corp., Microsoft Corp. and Sybase, Inc., is a multiserver database engine designed for the OS/2 operating system.

It implements the so-called client/server architecture, under which a server handles data management while users' workstation provide the interface or front end.

Users who are anxious to get cracking have been forced to buy the $1,995 Network Development Kit, which is essentially a beta-test version of the software.

Of the 800 units sold, some 200 to 250 have been snapped up by corporations, according to Microsoft SQL Server product manager Dave Kaplan.

System One Airplane Services, a subsidiary of Texas Air Corp., already has a prototype application running under SQL Server, and the results are promising, Curt L. Abraham, Continued on page 6

Chip prices drop; PC prices don't

BY WILLIAM BRANDEL CW STAFF

While several vendors used memory costs as an excuse to hike personal computer prices last year, no one is yet promising to bring them down now that the shortage is over.

According to memory-card product vendors and industry analysts, dynamic random-access memory chips are now increasingly available, and prices are dropping. Prices of 1M-bit chips are projected to plummet more than 50% by year's end.

Already, the volume purchase price of 1M-bit chips has dropped to less than $20 per chip. When the memory crisis peaked in June, the price hovered at $50 to $60. Semiconductor price trackers now project that chip prices will fall below $10 this year.

But vendors that raised system prices during the dearth — including Apple Computer Inc., Continued on page 11

When the chips come down

With availability increasing, the price for 1M-bit memory chips has dropped slightly in recent months and is expected to plummet

<table>
<thead>
<tr>
<th>Month</th>
<th>Price per chip</th>
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<tbody>
<tr>
<td>Nov '91</td>
<td>$3.85</td>
</tr>
<tr>
<td>Dec '91</td>
<td>$3.85</td>
</tr>
<tr>
<td>Jan '92</td>
<td>$3.50</td>
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</tbody>
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Average price per chip over 1,000

SOURCE: DASCOM, INC.
CW CHART: JOHN YORK

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A series desktop model set to roll out from Unisys labs. Page 12.

Tough times confront the Big Three. Page 4.

Oops! Continental acquisition, faces stumbling after tough financial choices. Page 12.

HP plans LAN Manager repackage for Unix systems. Page 8.

Despite 3990 delays, IBM's high-end storage controller wins early user endorsements. Page 27.

Court: States may tax net traffic

BY MITCH BETTS CW STAFF

WASHINGTON, D.C. — A U.S. Supreme Court ruling last week will allow states to tax interstate voice and data traffic.

With several states having already enacted such taxes and others desperately seeking new sources of revenue, the decision could raise the cost of business communications and affect the location of data centers.

The decision upheld an Illinois law imposing a 5% excise tax on interstate voice and data transmissions that begin or end in the state. Approximately a dozen states have similar taxes, and more states are expected to follow suit.

Network Enhancers

A dozen states already have some form of tax on interstate telecommunications, and more are expected to follow as a result of last week's green light from the U.S. Supreme Court.

Revenue enhancers

A dozen states already have some form of tax on interstate telecommunications, and more are expected to follow as a result of last week's green light from the U.S. Supreme Court.

"This will definitely affect site-location decisions," said Kenneth L. Phillips, vice-president of telecommunications policy at Citicorp in New York and chairman of the Committee of Continued on page 16
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We'll whoosh right over.
BY BRUCE HOARD SPECIAL TO CW

I've known Bud Goodoe for eight years. We've collaborated on a lot of Super Bowl stories. And let me say that Bud Goodoe is one of those rare people who are as bright off the sports beat as if I came to them with a story calling for a tie in the Super Bowl. But I didn't. Instead, I said, "OK, Bud, then what was the football story?"

Before he answered, I heard the sound of rustling readouts. Or may be it was the sports page. The latest line picks San Francisco by seven points. Finally, he spoke: "I'm gonna take Cincinnati and the seven."

There is, of course, a computer-based method to his madness. Each week during football season, he masses more than 170 variables per page three different ways as part of a 60-page readout. That readout currently rolls to the head coaches of nine NFL teams. And he loves the graphics he's able to produce with his new Hewlett-Packard laser printer. Bucking the trend in linebackers of late, Bud's been downsizing. His Franklin AT is the latest step in a genealogy of hardware that's seen him go through a Sperry 1100 and an IBM 4381.

**Offensive balance**

Turning to the 49ers-Bengals matchup, he talked about the statistical strength of both teams. But he dedicates 50 variables to the clash of offense and defense. "On the first 16 statistics, San Francisco has an advantage over Cincinnati's defense," he reported. "And on the first 17 statistics, Cincinnati's offense has the advantage over San Francisco's defense."

These statistics, amassed during the regular season and playoffs, include passing efficiency, fumbles allowed and yards per pass attempt.

When Bud weighed out the whole week's analysis of the PC, the outcome was so close it was a wash statistically. And he is loath to contradict it. "I never want to go against the computer, because when I do, I'm wrong nine times out of 10," he noted.

If the game is tied and time is waning midway through the fourth quarter, what does he predict? If the Bengals have the ball, they will try to eat up the clock by running fullback Ickey Woods behind their lethargic offensive line. If the 49ers have it, they will run and simulate the run with short, safe "dump-off" passes to running backs such as Roger Craig.

Bad does not like to think his game has fallen off. And he has little respect for some of his emerging, computer-based forecasting competition. "The last one I saw was in USA Today, and I burst out laughing," he said. "I don't think they know what they're doing."

If that's what Bud feels, I agree.

---

**MIS shies from second-tier PCs**

BY CLINTON WILDER CW STAFF

The MIS executive's short personal computer list is getting shorter.

"I'm using more sophisticated PC applications and the desire for control over their organization's technology. Corporate information systems departments are narrowing their approved PC vendor choices. And the trend, with this accelerated in 1989, will mean success on the corporate desk top for top-tier vendors IBM, Compaq Computer Corp. and Apple Computer, Inc. and tough times for lower priced compatible vendors such as Wyse Technology, Tandon Corp. and AST Research, Inc."

Faced with this trend, MIS directors say, is spurred by the emergence of more powerful PCs as the platform for critical, make-or-break business applications once entrusted to minicomputers. "If I'm using a PC as the central communications controller for a warehouse management system, I'm going to be very careful about where that machine comes from," said Richard Lester, vice-president of corporate development at Associated Grocers, Inc. in Seattle.

Portland, Ore., steel maker American Industries, Inc. says it is happy with its turnkey Wyse system for computer-aided design and standards applications. But for future purchases, MIS director Larry Potter's ethic is IBM's Personal System/2s or Compaq compatibles.

"I don't have a complaint in the world about Wyse," Potter said. "They're just not one of the major players that I think about."

Chris Kryzan, product marketing manager for PCs at San Jose, Calif.-based Wyse, responded that in large corporate accounts, there is room for at least a Big Three of IBM, Apple and Compaq, plus "a fourth compatible, low-cost alternative. Our strategy is to become that fourth brand."

Financial analysts expect to see the trend reflected in computer industry fourth-quarter results to be announced this week. Apple and Compaq are expected to continue to post stellar growth rates while AST and Wyse have already announced expected losses from battered profit margins and, for Wyse, declining revenue.

"The industry polarization is getting stronger," said Thomas Galvin, the analyst at Smith Barney, Harris Upham & Co. "As users get more and more into the PC market worldwide, the size and reliability and quality will be stretched to the limit. People feel more comfortable with the top-tier products."

**Comfort is tops**

At IBM 4381 shop Pacific Standard Life Insurance Co. in Davis, Calif., OS/2 has made Jerry Watera, vice-president and director of IS, into an IBM hardware man. He says the key selling point for standardizing on the FS/2 is not technology or price, but comfort.

"It may not be the best way, but it's the best way to address our long-range strategy to migrate to OS/2 for distributed processing," he said. Waters noted that his shop is not all-IBM, with peripherals from Memorex and Xerox Corp. Waters also exemplifies another trend toward shorter market lists — the desire to simplify one aspect of increasingly complicated job. "I don't have enough people for someone to go through magazines" looking for PC vendors, he said. "I just want one that will do the whole job and be in business in five years."

Confusion about operating system software is also playing into the hands of the largest PC vendors. Users are trying to sort out Unix, OS/2, OS/2 Extended and DOS 4.0, says industry consultant Richard Shaffer, president of New York-based Technology Partners.

"The more confusion there is in software, the more buyers try to deal with it by reducing the confusion in hardware." Bechtel Group, Inc. in San Francisco, with some 2,500 PCs corporatwide, is currently in the process of narrowing its PC vendor list. "As you try to network all these systems together, you want to cut back on the number of variables, and one of those is the number of different suppliers," he said. William Waters, manager of information technology.

**CORRECTION**

Supercal, a mainframe spreadsheet sold by Computer Associates International, Inc., was incorrectly termed "the leading mainframe spreadsheet" [CW, Dec. 31]. It is one of several products in that market.
The power to make or break products in the computer industry begins with a few powerful people. Consultants. And analysts. When they talk, we listen.

On IDMS/SQL: "Cullinet has delivered as promised—a relational database management system for the DEC VAX with superior performance, reliability and security."
—Charlotte Walker

On KnowledgeBUILD: "What vendors offer in the way of development tools, is in my mind, an increasingly important distinction. Cullinet is in the front of the pack on performance, but it's the power and sophistication of their KnowledgeBUILD toolset that gives them the edge for tomorrow."
—Michael Braude

On VAX and mainframe connectivity: "A clear demonstration that Cullinet now offers not only a powerful database and a rich development environment for the VAX, but also an architecture that permits a simple transparent exchange of data between a mainframe and VAX."
—Charlotte Walker

On the future: "Cullinet has given us a good example of strategic product development. I expect they will shortly evolve this architecture to the point where it is CPU independent. And they will be able to port it from the VAX to any other platform with full power and functionality intact."
—Michael Braude

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N E W S

NEWS SHORTS

Virus bites term papers?
The common Scare virus, which has chased Apple-Computer, Inc. Macintoshes at universities, corporations, universities and government agencies nationwide to bomb in recent months, has popped up again. This time, the virus shut down a Mac in a computer laboratory at the University of Oklahoma's Bizzell Memorial Library, according to university officials. Several students last Friday under the virus was swept off the Macintosh hard disk drive with a vacation program. To ward off further attacks, the library is stationing extra computers at the entrance of the computer lab. These machines will be used to test programs and data disks for viruses before they are used on computers in the laboratory, according to a spokesperson.

Jason virus strikes again
Meanwhile, last Friday, the 13th, brought unconfirmed reports of a virus attack on PC systems in the UK. According to published reports, the virus slowed deleted files; it reportedly hit a UK-based firm with over 400 personal computers. "I got feeding that it is a modified version of the Israel virus," said John McPe, president of the Computer Virus Industry Association, UK. The virus, called a "time bomb" designed to go off on May 13, 1988, the 40th anniversary of the last day of Palestine. "I don't know if it is a virus and work with non-Ashton-Tate applications. Fees will be decreased.

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Ashton-Tate targets MIS
Ashton-Tate Corp. last week unveiled a consulting and training group that is aimed at helping MIS departments implement new database architectures and communications systems. The group numbers less than 100, but it will be growing throughout the year. The focus of the group will be the Ashton-Tate/Microsof SQL Server and ODBC. Ashton-Tate offers technical assistance and training in the area of database management systems. The group will also offer consulting services.

Unisys moves up shipments
Unisys Corp. said it will get its 220/400 mainframe series out a month ahead of schedule with the delivery of one model to New Jersey Bell in February. The company also recommitted to a March shipment date for its smaller mainframes, the 220/400 line, which were supposed to be out by the end of 1988. The company announced in September that the 400s were nearly completed a thorough test of the hardware and software configurations. The 400s are designed to be used in the telecommunications industry and will be available in the third quarter of 1988.

Taken down a peg
IBM may have enjoyed a comeback year in the mid-range marketplace and on the bottom line, but it slipped in the eyes of corporate America. After six years as Fortune magazine's most admired computer company, and one of the most admired U.S. firm, the industry giant fell behind Hewlett-Packard Co. and Apple Computer, Inc. among computer vendors. Digital Equipment Corp. dropped to fourth from second last year, while AMDahl Corp., a newcomer to the computer top 10, came in sixth. Electronic Data Systems Corp. remained the most admired diversified services firm, and Control Data Corp. stayed in the top 10 least admired companies in all industries.

COMPUTERWORLD

JANUARY 16, 1989

Monitoring the inauguration

BY ALAN J. RYAN and MITCH BETTS

WASHINGTON, D.C. — The committee planning Friday's inauguration of the next president-elect George Bush is busy with more than simply planning and keeping track of its associated events and pages. It is also selling souvenir license plates made at prisons.

The license-plate operation springs up every four years and dates back to 1906, but this year the Presidential Inaugural Committee (PIC) is taking advantage of 36 personal computers donated by NCR Corp., according to Bill Johnson, who is in charge of logistics for the inaugural committee developments. Back in the operations center, Chuck Williams, who became responsible for the effort after Nov. 16 shortly after retiring from the U.S. Air Force, has a staff of seven to ensure that the 36 official inaugural events run smoothly.

Second time around
The Bush inauguration is the second for Williams, and it can be hectic at times, he said. When the FCA committee set up its quarters in November, it was nothing more than an empty warehouse. "While these guys were putting together the hardware and software and trying to find a desk to set this equipment on, workers were busy building the walls around us," Williams said.

In the marketing area, most of the microcomputers — NCR's PC810 and PC916 models — are used to handle orders and monitor trends in sales of inaugural memorabilia, including license plates. Twenty PCs are linked into a Novell, Inc. local-area network, Johnson said.

In addition to using typical software packages such as Wordperfect Corp.'s Wordperfect 5.0 and Borland International's Paradox, the marketing department is using custom software from American Management Systems, Inc. (AMS), a firm based in Arlington, Va.

Prison plates
The AMS software handles order entry, processing, billing and label printing for the license-plate operation. Software comes from database in the Novell file serv-

ers. Orders are sent by Panafax Corp. facsimile machine to two prisons assigned to make the commemorative license plates.

In the operations area, the three printers are hitched to monitors so that information can be viewed and captured. The group is connected through two Novell networks with other PC's throughout the building.

One of the networks runs Direct- line from Must Software In-

ternational, which is being used to update event information from word processing, graphics and database packages. Data from outside sources such as the National Weather Service is also fed to the server. Information is accessed through handheld remote control devices rather than keyboards, Williams said.

So far, the computer systems have run smoothly in the high-pressure environment, the PIC's marketing depart-
technology that would span IBM 3090 mainframes. Unannounced front-end tools from Sybase will be ported from database and minicomputers to SQL Server. Kaplan noted.

Waiting for Cobol
Travelers Insurance Co. has completed a thorough SQL Server evaluation and has reported a production database from another PC-based local-area network for testing, said Mike Moby, manager of distrib-

uted processing for Travelers' database administration group. Although SQL Server provides impressive performance gains, Travelers will hold off on produc-
tion implementations until Cobol support is available. Moby said it took only two hours to move the data to SQL Server.

What could prevent widespread implementation of SQL Server at Travelers is IBM. If IBM en-

hances its OS/2 Data Manager to its database architecture, graphical database that uses Basic as its development language.

The product is in early testing at some sites but will likely not reach the market until late this year, sources reported. Eventually, graphical front-end tools from Sybase will be ported to SQL Server along with existing database administration tools.

The big advantage of an IBM offering is the eventual evolution of a distributed database system that would span IBM 3090 mainframes. Application System/400 and Personal System/2 micros. "That will never be supplied by Microsoft," Moby noted.

Chuck Williams tracks inauguration system

A diversified East Coast Fortune 100 firm is hard at work re-

writing a tracking system to replace a similar application running under IBM's MVS. Un-

like Travelers and System One, which have ported databases, this firm is building its applica-
tions from scratch, using the unreleased SQL Server and Ome-
ga, the unreleased and unannounced front-end tool from Microsoft.

The firm has big plans for SQL Server and is anxiously awaiting new versions of products such as Paradox to serve as a front-end to server.

According to sources, Ral-

ston Purina Co. is considering using SQL Server to help auto-

mate its manufacturing opera-
tions, and Covia Corp., a division of United Air Lines, is reportedly considering SQL Server to auto-

mate reservation systems.
At Nielsen Media Research, the top-rated program isn’t on the air.

It’s on the system. And it’s VMCENTER II.

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The VM Experts
**Muscular 68030 Mac SE to show up at Macworld**

**BY JULIE PITTA**

CUPERTINO, Calif. — Apple Computer, Inc. will kick off what is expected to be a busy year for system introductions next week by coming out with a more powerful version of the Macintosh SE, its mid-range Macintosh system.

The Mac SE/30, slated for a Macworld Expo debut, will be powered by Motorola, Inc.'s 68030 chip, according to sources. It will be offered in two models—one with 2MB of random-access memory and a 40M-byte hard drive and a second with 4MBbytes of RAM and an 80M-byte hard drive.

Pricing is expected to be in the $5,000 range for the 40M-byte hard drive version and in the $6,000 range for the 80M-byte hard drive model.

To the likely disappointment of Apple customers, Macworld will not see the introduction of the long-awaited Macintosh laptop, sources said. Apple Chairman and Chief Executive Officer John Sculley has promised a Mac laptop debut in 1989.

**NAS deal**

FROM PAGE 1

"If there were any change, we probably wouldn’t see it for six months or more," agreed Gene Robbins, assistant vice-president of academic administrative services at Queens College in New York. "Only time will tell if our relationship with NAS will be status quo or turn negative later on." The college has a 3-year-old NAS 8023 disk drives. It has used NAS machines since 1982.

The partial marriage matches hard-charging, acquisition-minded peripherals veteran Memorex Telex with an IBM plug-compatible mainframe seller whose fortunes stagnated last year.

NAS performance was a major drag on National Semitech's bottom line at times during the past year, and it was clear to users and analysts that the chip-making parent was seeking both an exit from the systems industry and needed cash.

But NAS' uneven financial performance often made it the star performer when National Semi's other operations were unprofitable. NAS' performance slipped badly during the six months ended August 1988, but the second fiscal quarter ended Nov. 30 brought record bookings for CPU and disk-drive orders.

NAS disk drive customer Michael S. Heschel, corporate vice-president of the information Resources Sources at Baxter Healthcare Corp. in Deerfield, Ill., agreed that any change would come later on. "We'll see what happens over the next six to 12 months," he said. "I don't think even the two parties involved know exactly how it'll come out." Pass the book

Under terms of last week's agreement, National Semi will receive $250 million in cash and 3.4 million shares of Memorex Telex common stock, equal to 10% of the privately held company. The cash will not come directly from Memorex Telex but from a consortium of financial institutions raising the $250 million by lending the assets of NAS, according to a NAS spokeswoman.

"This is just a transitional step to the merge yet to come," said Bob Djurdjevic, president of Annex Research in Phoenix. "Ultimately, Memorex Telex will probably exercise their purchase option and buy the rest." If that happens, Memorex Telex will surpass Amdahl Corp. as the leader in total sales of IBM plug-compatible systems and peripherals, with annual revenue of about $3 billion.

The two will have a major role in the full spectrum of products, either directly or indirectly. NAS has 1.6 million shares of Memorex Telex common stock, representing 1.26 million votes, which gives it 23% of Memorex Telex's voting power. A NAS spokesman declined specific comment on the NAS-Memorex Telex deal.

"If [NAS is] joining forces with Memorex, the question would be whether they would go on to move away from the Hitachi product line and toward the Memorex product line," Baxter Health Care Corp.'s Heschel said. Hitachi's "philosophy has been to leave their options open and to let the product flow through multiple distribution channels," Djurdjevic said. In Europe, for example, there are three Hitachi CPU distributors — Comparex, Ing C. Olivetti & Co. and NAS Europe.

A Hitachi spokesman declined specific comment on the NAS-Memorex Telex deal.

Memorex Telex's corporate headquarters in Tulsa, Okla., is within 100 miles of an 18-month-old Normal, Okla., Hitachi factory that produces disk drives for NAS. The 73,000-square-foot Hitachi factory is doubling its capacity this year (CW, Jan. 9).

**HP plots Unix desktop ports**

**BY PATRICIA KEEFFE**

Healtwell-Packard Co. will detail its strategy next week for integrating Unix minicomputers and workstations into IBM's PC line, according to sources, and HP said the mini maker plans to beef up its work group and Starlan 10 product lines.

"There are reports deferred to confirm or deny the reports," HP said the mini maker planned to beef up its work group and Starlan 10 product lines.

The Mac SE/30 retains the traditional Mac look, with the smaller screen incorporated into the base of the system. It offers a single expansion slot.

"The Mac SE/30 retains the traditional Mac look, with the smaller screen incorporated into the base of the system. It offers a single expansion slot." By introducing a Mac SE fulfills other promises made by Apple last fall when it introduced the 68030-based Macintosh IIX.

At that time, Randy Battat, vice-president of product marketing, said the Mac SE and the Mac II would become the foundation of two distinct product lines.

The Mac II, which debuted in September, was the first new Macintosh since the original Mac II and Mac SE were unveiled in spring 1986.

**Standard drive**

Battat also said that Super Drive, a 1.44M-byte flexible drive that can read and write Mi-

crosoft Corp. MS-DOS and OS/2 files, would put the standard Mac peripheral. Super Drive requires 4M bytes of RAM. It will be offered with the Mac SE/30.

The Mac SE/30 retains the traditional Mac look, with the smaller screen incorporated into the base of the system. It offers a single expansion slot.

"The Mac SE/30 retains the traditional Mac look, with the smaller screen incorporated into the base of the system. It offers a single expansion slot."

The Mac IIIX sports a larger, stand-alone screen and six expansion slots like its predecessor, the Mac II.

**HP Manager hybrid links OS/2 to Unix servers**

**CW CHART: DOREEN DAHLE**

**NEWS**

**THE U.S. installed base of IBM and compatible mainframes showed a slight decline for NAS in early 1988**

**SLOW GOING**

**SOURCE: ANNEX RESEARCH AND COMPUTER INTELLIGENCE NETWORKING CORPORATION (CW CHART: DOREEN DAHLE)**

"This arrangement will allow each company within the $3 billion entity to specialize in its own product area: NAS will provide the full range of CPUs and peripheral products, while Memorex Telex will provide complementary peripherals and communications products." There are interesting potential synergies regarding Japan's Hitachi Ltd., supplier of both NAS and Memorex Telex products. Hitachi has supplied Memorex with solid-state drives for resale under the Memorex label. NAS sells the same solid-state drive as the NAS 9700 Semiconductor Disk.

"If [NAS in] joining forces with Memorex, the question would be whether they would go on to move away from the Hitachi product line and toward the Memorex product line," Baxter Health Care Corp.'s Heschel said. Hitachi's "philosophy has been to leave their options open and to let the product flow through multiple distribution channels," Djurdjevic said. In Europe, for example, there are three Hitachi CPU distributors — Comparex, Ing C. Olivetti & Co. and NAS Europe.

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Net management star of Comnet

BY ELISABETH HORWITT
CW STAFF

WASHINGTON, D.C. — Network management will once again hog the limelight with high-speed host networks as the other major attraction at this year’s Communications Network conference.

Among the Comnet show’s network management high spots will be Cincom Systems, Inc.’s introduction of Expert System Foundation, development tools for automating the management of IBM Systems Network Architecture networks through Cincom’s Net/Master. The offering was designed to help network managers lacking programming skills to implement their knowledge in automated network management procedures, said the firm’s senior product manager, Vicky Duckworth.

A Group 40 IBM MVS-based version of the product is priced at $10,000. Cincom also announced Net/Stat, a rule-based system driven by the changing status of network devices rather than by events, Duckworth said.

Other announcements at the Feb. 5-8 show should include the following:

- AT&T is expected to roll out major components of its Unified Network Management Architecture, which reportedly will provide integrated monitoring, troubleshooting and diagnostics across a wide variety of AT&T voice and data networking equipment and services. According to one industry source, the announcement, which will take place either at Comnet or the week before, will include a link to IBM’s NetView and to Cincom’s Net/Master.
- Start-up company Clear Communications Corp. in Deerfield, Ill., is expected to announce Clearview, a network management system that monitors carrier lines and generates performance reports based on a variety of parameters, company spokesman Robert Roscino said. The system, which can be interfaced with T1 equipment vendors’ network management systems, arms managers with the information they need to anticipate network failures, correct carrier billing and compare competing services, Cophithorne said.
- Two products are expected to vie for the title of first channel-attached mainframe network based on the Fiber Distributed Data Interface (FDDI) standard.
- Fibronics International, Inc. in Hyannis, Mass., will announce its FX822 IBM-to-FDDI Controller. The product will link the channels of IBM and IBM-compatible mainframes over a FDDI local-area network, a company spokesman confirmed. In data streaming mode, the link will handle speeds of up to 24M bit/sec., the company said.
- Integrated Networks Corp. in San Diego will announce Fiber-talk 3000 Channel Interface Unit, an FDDI-based network that can support full host-chained speeds of 4.5M byte/sec., or approximately 35M bit/sec., over distances of up to 1.2 miles, a company spokesman said. The units are said to support IBM mainframes and compatibles as well as IBM cluster controllers.
- A third channel-based networking product introduction is expected from Data Switch Corp. in San Diego. The Channelnet Model 9455 Channelplexer is said to extend up to four IBM or compatible host channels over a 45M bit/sec. T3 circuit at speeds up to 3M byte/sec. The product is said to save money for users by supporting up to four links between host channels and high-speed peripherals over the same T3 link.

A GROUP OF THE Comnet show’s network management high spots will be Cincom Systems, Inc.’s introductions.
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OSF details user interface

BY AMY CORTESE
CW STAFF

The Unix tables have turned once more. The Open Software Foundation (OSF) has apparently gained renewed credibility with its selection of a user interface, leaving AT&T supporting an interface that differs from what is likely to be the standard look and feel.

The reaction among Unix vendors and observers was generally positive last week, as the OSF explained its rationale for choosing its graphical user environment, called OSF/Motif. The OSF said it chose the Presentation Manager appearance offered by the joint Hewlett-Packard Co./Microsoft Corp. interface to facilitate the migration of personal computer users to Unix systems.

Changing their tune

Analysts, once skeptical of the OSF, applauded the action. Amy Wehl, president of Bala Cynwyd, Pa.-based Wohl Associates, said the OSF was successful in accomplishing a technically and politically difficult task in a short amount of time. "I didn't believe they could do it, but they managed to pull it off," she said.

The OSF's decision to adopt the Presentation Manager look and feel is expected by some analysts to establish that screen behavior as the dominant one in the industry. Tom Kuchary, president of research firm Summit Strategies, said it was a foregone conclusion that Presentation Manager will be the standard user interface look, excluding the Apple Computer, Inc. Macintosh market.

Both DEC and HP have indicated that their separate user interfaces, Decwin- dowsn and New Wave, will evolve to comply with OSF/Motif, and some observers ventured that AT&T would be forced to do the same. Indeed, an AT&T spokesman stated that Open Look may not be bundled with the next release of Unix System V, although developers' tool kits will be available sometime this quarter.

OSF/Motif reportedly will be available midyear and will be offered separately as well as bundled with OSF/1 when that becomes available. The OSF said it expects the interface to be ported to other environments such as Unix System V and proprietary operating systems.

The OSF also revealed what are considered to be generous licensing terms to make the product appealing to software developers and computer manufacturers. In addition to a $1,000 charge for a source license, computer vendors are subject to a $40 binary license per unit that Motif is used with. The vendors likewise must pay a $10 runtime license fee for each software application Motif is bundled with. There are volume discounts applied to both the runtime and binary license fees, and the costs will most likely be passed on to the end customer by vendors.

CIS lender woes could force sale

BY NELL MARGOLIS
CW STAFF

SYRACUSE, N.Y. — Dogged by liquidity woes, Continental Information Systems Corp. (CIS) is negotiating the sale of part or all of its business, a company official confirmed last week.

Analysts who followed the company through its climb to the No. 2 status in the computer leasing industry said that CIS' problems, which one analyst called "a tragedy," were particular to the company and not indicative of trouble in the industry at large. "Actually, the industry is doing well," said L. Cranford Hays, an analyst at Robert W. Baird & Co. in Milwaukee.

In fact, that potential is there for CIS, according to Theodore Levy, who follows the company for Rochester, N.Y.-based analyst Sage. Rutty & Co. However, neither CIS' $110 million lease portfolio nor what Hays referred to as "a huge cash flow" may prove sufficient to stave off creditors that have grown skittish in the face of CIS' apparent inability to turn around problems stemming from its 1987 acquisition of arch-competitor CMI Corp.

"CMI had an admirable record — it's earnings went straight up from 1984 to 1987," Levy said. "But even then, they were highly leveraged.

Costs associated with the assimilation of CMI figured largely in CIS' reporting a multimillion dollar first-quarter loss last spring. The company's stock fell, and its creditors panicked, Levy said. "If you're a leasing company and your creditors back away," he noted, "you're in bad trouble." CIS' trouble may have come to a head last week, when the company defaulted on a $3.8 million debt payment due Monday.

CIS is contemplating a whole or partial sale of its operations, although the spokesmen declined to give details of the negotiations except to confirm that CIS does not believe that filing for bankruptcy under Chapter 11 of the U.S. Bankruptcy Code is the route to take.

The spokesman declined to give details of the negotiations except to confirm that CIS is contemplating a whole or partial sale, that the possibility of an equity investment by an unnamed investor or investor group is also under discussion and that CIS does not believe that filing for protection under Chapter 11 of the U.S. Bankruptcy Code is the route to take.
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Court
CONTINUED FROM PAGE 1
Corporate Telecommunications Users.
Some states will jump on the tax bandwagon, Phillips said, while others may choose to become tax havens in order to lure businesses to their states, similar to "data haven" in Europe.
State and city governments have enacted a variety of taxes on the fast-growing business of telecommunications equipment and services, including private lines, according to August H. Blegen, executive director of the Association of Data Communications Users in Bloomington, Minn. "That is absolutely uncalled for and runs opposite to the direction legislators ought to be going," he said.
But state governments, facing severe budget pressures, are turning to taxes on high-tech operations to boost revenue. Massachusetts Gov. Michael Dukakis, in developing a $604 million tax package announced last week, included such a provision in the wake of the Supreme Court's ruling, according to local reports.
The Supreme Court decision, in the case of Goldberg v. Sweet, amounted to an endorsement of the Illinois Telecommunications Excise Tax Act of 1985. It taxes interstate telecommunications that begin or end in the state and are charged to an Illinois address. The law provides a tax credit if the taxpayer can prove that another state has taxed the same call.
The high court unanimously rejected arguments that the state tax is an unfair burden on interstate commerce, which is protected by the U.S. Constitution's commerce clause.
Tax dancing
An Illinois trial court ruled that Illinois was unfairly trying to tax the entire cost of an interstate act, which takes place only partly in Illinois. But the lower court was overruled by the Illinois Supreme Court and on appeal at the U.S. Supreme Court last week. The high court downplayed the prospect of multiple taxation and ruled that the Illinois tax is fairly apportioned. "Its economic effect is like a sales tax, the risk of multiple taxation is low and actual multiple taxation is precluded by the credit provision," the opinion said.
The court acknowledged that interstate communications is not a local event but said it was reasonable for Illinois to tax calls originating or terminating there because it is virtually impossible to trace or separate each state's role in an interstate call.
Because of computerized switching, the court said, "the path taken by electronic signals is often indirect and typically bears no relation to state boundaries."
The plaintiffs were two Illinois residents and GTE Sprint Communications Corp., the predecessor of US Sprint Communications Co., which is required to collect the tax because it is a retail provider of communications services.

Timeplex aims to loosen up T1 net services

BY ELISABETH HORWITT

NEW YORK — Timeplex, Inc. is expected to announce tomorrow a group of products that may give users far more flexibility in how they configure T1 lines — and also give Timeplex's market share a much-needed shot in the arm.
The T1 switch vendor will announce equipment that will allow carriers to provide and users to access "fractionalized T1 services," a Timeplex spokeswoman confirmed. Fractionalized T1 refers to the ability to bundle together multiple 64K bit/sec. DSO channels and treat them as one channel that can be routed and billed separately from the main T1 link.
This type of technology directly addresses the needs of user sites with enough data traffic to justify, for example, eight 64K bit/sec. channels but not enough to justify a full T1 link, which supports 24 such channels. It is more economical to buy a T1 circuit than to pay for individual 64K bit/sec. channels — but only if at least half of the T1 circuits are being used, said David Langhoff, telecom planning manager at Mervyn's department store chain.
Mervyn's, like many companies, would like to run T1 links between its major data sites and drop and insert bundles of DSO circuits at various smaller sites along the way as needed — except that most carriers and equipment vendors do not provide this capability, Langhoff said.
Timeplex is one of several vendors that Mervyn's is considering in its search for a T1 equipment supplier, Langhoff said.
The vendor's ability to offer fractionalized T1 "could give them an edge and help them recover lost market share," he said. "My guess is they've been working on this for a couple of years to leapfrog Network Equipment Technologies and Stratacom," firms that have lately been threatening Timeplex's dominance in the T1 marketplace.
"The announcement will have a significant impact on digital communications options for users this year," agreed Thomas Nolle, president of Haddonfield, N.J.-based consulting company CIMI Corp.

What if they all ran on different fuel?

The streets of the world are filled with different types of vehicles. Fortunately, most of them run on gasoline.

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The framework for accomplishing this is called Systems Application Architecture. SAA will enable customers and software vendors to build consistent software applications for different types of IBM computers—from personal computers to mainframes. SAA will make it possible for everyone in an organization to access information regardless of its location.
Lawyers fret over risks of EDI growth

BY MITCH BETTS
CW STAFF

WASHINGTON, D.C. — Someday, somewhere, an electronic data interchange (EDI) transaction is going to go awry, and the hostile finger-pointing is going to land the parties in court.

The risks in EDI transactions include transmission errors, faulty data, failed communication, unauthorized disclosure to third parties, interception during transmission, late or delayed transmission and transmission to the wrong parties, according to a report by an American Bar Association’s (ABA) task force.

That is why several industry groups are urging EDI business partners and vendors to consider the legal implications of EDI transactions and prepare for that inevitable day in court.

“EDI replaces paper documents — a medium that enjoys a long history of support under the law as a carrier of legal information — with a new, electronic medium, the status of which is not well defined in the law,” according to a monograph written by Dallas attorney Benjamin Wright and published by TDCC/EDIA.

EDI transaction error

EDI transactions may not be enforceable as contracts under the U.S. statute of frauds because they are not “written” and “signed,” legal experts said. In addition, there are questions about who is liable for transmission errors.

The topic is getting increased attention from associations, standards committees and vendors because the legal uncertainties could stifle the fast-growing EDI market.

At the TDCC/EDIA’s December conference here, a seminar on legal issues was so crowded it had standing-room only. “We’re not trying to scare anybody,” said attorney and consultant Michael S. Baum, “but EDI uses technology to form a business contract. That has a high level of legal content, so it deserves commensurate attention to the legal implications.”

Baum is president of Independent Monitoring, a consulting firm in Cambridge, Mass., as well as chairman of the ABA’s Electronic Messaging Services Task Force. He also serves as chairman of the ANSI X.12 Committee’s newly formed Legal Issues Task Group.

Among the participants in the X.12 task group are Bank of America National Trust & Savings Association, LTV Steel Co., Mobil Oil Corp., Shell Oil Co., DuPont Co. and Electronic Data Systems Corp.

EDT was suggested that MIS managers educate corporate attorneys about EDI technology, monitor legal developments and review internal procedures and trading agreements with an interdisciplinary team of technical, managerial and legal experts.

The prospect of EDI-related lawsuits will increase as the EDI trading universe grows to include less-sophisticated users and companies that may have financial problems, Baum said at the TDCC/EDIA conference.

A classic case

J. T. Westermeier, a partner at the Washington, D.C., law firm Abrams, Westermeier & Goldberg, said EDI is a classic case of technology advancing faster than the law or courts can keep up. So far, there is no case law providing guidelines for how to structure legally enforceable EDI transactions.

To compensate for the fact that EDI transactions are paperless, some EDI users have negotiated written “trading-partner agreements” to preauthorize the EDI transaction and set terms and conditions.

The ABA task force is starting the difficult task of developing a model trading-partner agreement that provides a minimum level of protection and fairness, Baum said, adding that it could be tailored to meet the needs of specific industries.

An important part of the trading-partner agreement is to spell out who is liable when something goes wrong. But apportioning liability — among the trading partners, value-added networks and software vendors — gets more difficult as the transactions get more complex and the number of third parties increases, the ABA’s report said.

Under the provisions of negligence law, errors in business transactions must be fixed quickly after they are discovered or the liability goes up dramatically, Westermeier pointed out. Consequently, it may not be wise to leave EDI systems running unattended, he said.

Weight, Baum and Westermeier cited other legal issues that create uncertainty in the EDI marketplace. One is that EDI transactions may not be compatible with certain government regulations such as those that require paper forms and written signatures. The ANSI X.12 Government Project Team is working on this problem.

Another is that EDI could raise antitrust concerns if an industry’s EDI standards or the cost of EDI systems creates an unreasonable barrier for small companies trying to break into an industry.

What’s more, all software written to SAA specifications will provide similar screen layouts, menus and terminology. This will make it easier for someone trained to use one type of IBM computer to learn to use others. These are only some of the benefits of SAA — benefits that make it easier for you to “talk” to computers and for computers to “talk” to each other.

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taking the hard road to database nirvana

IBm WATCH
GEORGE SCHUSSEL

Despite IBM's prodigious resources, it will be harder for the company to provide distributed database capabilities across its systems than for any other vendor.

IBM is committed to a distributed database development program that conforms to the Systems Application Architecture and SQL. IBM understands well that in the 1990s, mainframes will become repositories and network servers for a large variety of midsize and small machines, at which most of the processing will occur. Cooperative processing and distributed databases will be the technologies that allow this new scheme to succeed.

IBM's plan for providing distributed database capabilities is based on a multi-phased approach. There are three steps yet to be accomplished. They involve a remote unit of work, a distributed unit of work and a distributed request.

Stepping-stones

In step one, an application may send discrete units of work to different remote databases. However, each unit must go to only one physically remote database. This requirement is loosened somewhat in step two, at which each commitable unit of work may consist of a number of discrete SQL statements, and each one of those SQL statements is then required to go to a single physical site.

In the third step, the constraints of physical separation are removed and individual SQL statements may support physical execution on data that is located at diverse sites.

In terms of currently accepted definitions in the industry, it is only this final phase that can be considered a true distributed database environment. IBM's plans call for delivery of phase-three capabilities in 1992 or 1993.

An essential ingredient in this plan is determining which IBM database systems will play. Four principal development laboratories are currently participating, including Toronto (SQL/DS), Santa Teresa (DB2), Rochester (Application System/400 SQL) and Austin (OS/2 Extended Edition).

Currently announced future product plans from the IBM laboratories only support "like-like" environments. What this distinction means, for example, is that the DB2 remote unit of work (step one) capability that is to be delivered in late 1989 will only work with diverse DB2 partners. SQL/DS and OS/2 Extended cannot play — yet.

At some point, distributed capabilities will be supported over unlike partners, but this feature adds a significant level of complexity, especially because of IBM's strategy designating different relational database engines.

Although IBM developers share research and product development plans among different groups, they do not share source code for the DBMS engines. The result of this policy is that even for the two different SQL DBMS engines that run on IBM 370 systems (SQL/DS and DB2), there are significant differences — different return error codes and different handling of nulls.

Santa Teresa staffs argue that differences among the SAA operating systems mean each must have its own physical implementation of SQL to operate efficiently. This is true for implementation-specific functions, such as cross-memory services and memory management. However, since the essence of distributed database services is distributed query management, IBM's task would appear to be much simpler if it could interface the same DBMS on different operating systems.

Another reason for the separate product/separate operating system policy is IBM's management and accounting policies. IBM products have to stand on their own for profitability analyses. If two groups are building DBMS for two different environments, and one sends its query management source code to the other, then there must be a cross-subsidy agreement between the two. IBM doesn't seem to want to tackle this problem.

The ultimate success of IBM's distributed database strategy is tough to forecast. A number of mainframe competitors, such as Computer Associates, Oracle and Relational Technology, appear to be ready to offer distributed database capabilities to their customers years before IBM's products are delivered. The real issue here is going to be how technically successful these distributed DBMS products will be when they live in and support the MVS environment.

Schussel, president of Digital Consulting, Inc. in Andover, Mass., is a lecturer and futurist. He chairs the Database Cooperative Processing Symposium, Software Futures, 4th and 5th Generation Data Management Software and Unix Futures conferences.
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WHEN YOU'VE GOT AN EPSON, YOU'VE GOT A LOT OF COMPANY.
The new limit

TWO YEARS AGO, a leading market research company predicted that desktop computers would operate at $1,000 per 1 MIPS by 1991.

Now, we all remember other predictions for the videotex market, the home computer market, etc. And often it seems to be the rule that long-range predictions are grossly optimistic.

But last week DEC apparently broke that performance/price barrier with the introduction of its reduced instruction set computing-based Decestation 3100, which headlined what the company termed its most significant set of product announcements ever. DEC’s aggressive workstation thrust will touch off the most ardent competition within the computer industry since the PC clone makers began batting a few years ago. This seems to be one struggle in which the customer base will almost assuredly emerge a winner.

For one thing, prices are going to fall — perhaps hard — across the workstation spectrum. As margins tumble, vendors tend to become almost solicitous toward their customers, like car dealers during the turn of the model year.

Further, increased demand stimulated by cheaper hardware invariably coaxes that much more software development from the third-party vendors — in this case, the Unix developers.

No wonder the research companies are calling for 70%-plus growth in workstation sales this year. That’s one prediction users can bank on.

Name-dropping


Besides being a Who’s Who of the computer industry, these corporate leaders make up the Chairman’s Committee, which will submit nominations for Computerworld’s Awards for Innovative Application of Information Technology.

Hatched in association with the Smithsonian Institution, Computerworld’s awards will be presented June to members of the information systems community who have achieved outstanding progress for society through visionary applications of information technology.

We wish to express gratitude to these individuals, who give their time and energy to seeking out the many quiet heroes of the IS world.

DB2 battle is over

Frank Sweet’s article on the future of databases [CW, Nov. 28] is mostly superficial or simply wrong. He sees a battle still raging between DB2 and old DBMSs such as IDMS and Ada- base that has long been over. He calls Oracle and Ingres “small newcomers.”

He criticizes the SQL database language for not being a development language, but that, for various reasons, was the precise intention. He claims that SQL has “so many different ways of accomplishing the same thing that it is hard for one person to understand another’s program.” Really? SQL statements per se are not programs — that’s the whole point.

He may be right that SQL “is unlikely to be popular among programmers,” but only if they continue to ignore the relational approach behind SQL, seeing the language just as a portability and connectivity standard for traditional applications. Indiscriminate application of procedural thinking and unwillingness to distinguish between the physical and logical levels does indeed defeat major practical objectives in SQL, any hope for fixing its deficiencies and, thus, acceptance. It is terribly misleading to claim that “relational once meant lacking explicit interrelated relationships” and it is absolutely untrue that “today it means enabling them to exist.”

Fabien Pascal
Washington, D.C.

Kissing IS goodbye

I read with interest Michael Alexander’s article entitled “Don’t kiss IS guy goodbye” [CW, Nov. 28]. I feel, however, that it would have been much more realistic if the title had been “Don’t kiss IS guy goodbye yet.”

No one can dispute the fact that for the last 10 years or so a rather significant force has transformed traditional centralized computing into distributed computing. This trend, which led to the advent of personal computers, workstations and LANs, was really the result of general dissatisfaction among users for the services they were getting over the years from the “high priests” of MIS and the data center.

I agree that there will be a need to protect these enthusiastic users from hurting themselves; a sort of internal technology advisory group may be necessary to coach them. But, that’s all that will eventually remain from the bloated hoards of MIS and data center operations staff of the past. Centralized computing in the form of powerful supercomputers will soon have a place only in certain CPU-intensive environments like R&D.

Gus A. Galatianos
President
Advanced Computer Consulting International
Whitestone, N.Y.

Ashston-Tate loyalty

In your article “Ashston-Tate sues Fox over copyright” [CW, Nov. 28], you stated, “Equally ironic in Ashston-Tate’s own product strategy, which has bor- rowed liberally from the work of others. Multimate, the word processing program Ashston-Tate acquired in 1986, was clearly patterned after a Wang Laboratories, Inc. word processor.”

Ashston-Tate did not borrow anything from the Wang word processor. The Multimate product does look as if it were built based on Wang’s powerful word processor, but Ashston-Tate didn’t do the construction. A company aptly named Multimate International designed the program.

Ashston-Tate bought the Multimate International company in 1986, long after the product was in the public’s hands.

I am not a computer user who gives my sole loyalty to any piece of software easily. However, Ashston-Tate has become a very good supplier of PC software, and I think it deserves the benefit of the doubt in this case.

Bill Komanetzky
IBM
Tampa, Fla.

No VSE aftertaste

Regarding the article “VSE users upbeat” [CW, Dec. 5] — what bitter aftertaste? The only aftertaste that might be bitter is from the lack of press coverage on VSE and related products.

As IBM’s most widely used operating system, VSE deserves a lot more coverage.

The features that you claim users have “long coveted” have been coming forth in a steady stream for the past four years. There are still many more features that VSE users want, like additional address spaces, ACF/VTAM in a private address space.

Computerworld welcomes com-
ments from its readers. Letters may be edited for brevity and clarity and should be addressed to Bill Laher, Editor, Compu-
terworld, P.O. Box 9171, 375 Co-
chituate Road, Framingham, Mass. 01701.

LETTERS TO THE EDITOR

NEWS ITEM: REPLACEMENT COMPUTER SYSTEM AT NORAD TENDED UNSTABLE AND PRONE TO FAILURE

EDITORS

JANUARY 16, 1989

COMPUTERWORLD

22
A (data) space odyssey

CHARLES P. LECHT

At a time when microcosmic space consumes the attention of most computer scientists, it is interesting to imagine the macroscopic space above our Earth as a computer data storage medium.

Suddenly, we are relieved of dealing with the mysterious un-seeable inner space of a centimeter-square sliver of silicon on which a hundred miles or more of space to consider a world we can described. since time immemorial.

A 64M-bit chip can contain more than 3,000 pages of text at microworld to create chips of ever smaller size. As I see it, what might practically be contained on a chip today or in the future is but a mere fraction of what might one day be contained on a single channel in wideband radio and/or in the light-wave frequencies we send.

The data storage possibilities in the medium we usually refer to simply as "space" boggles the mind. For example, between a very high satellite and Earth, we could create just about all the data we have ever created or will create.

Broadcast as radio waves or laser beamed as light waves, data could be placed in continuos loops that bound and re-bound between reflective facilities on both the Earth and the satellite, to be cycled forever — however long that is — and to be drawn upon whenever needed.

Since the number of such loops could virtually be unlimited, so could the amount of data these could contain. If the satellite was capable of also storing data, it could hold some in a superficial memory bank employing scores of chips at virtually no refrigeration (space is cold) or electrical (because of solar power) cost.

Let's face it: The thousands of disk data files being used by organizations such as government agencies and possibly populated countries are inaccessible, or access time can run into days or even months.

But we are not limited to people-made satellites for reflective media. There are the natural heavenly bodies, too. Of course, depending on how far away the reflecting body is in space, return time may not be as fast as we'd like.

A trip by data to our planetary bodies or even farther before its return to Earth could be measured in minutes, hours, days and years.

But the volumes that could be stored grew proportionately to the distance to their target re-locator, so there is a limit in using these, too. Talk about archival storage.

Spacing it out

Of course, the implementation of space data loops in today's technollogial era is not endlessly possible. The means to broadcast, maintain and use the databases these might contain are unavail-able to us. And broad bandwidth communications facilities with proper signal-to-noise ratios that are unaffected by phenomena such as a raging storm on the sun are unavailable, too. Laser technology, which is most promising in its capability to be unaffected by natural phenomena, is in its infancy.

But we can dream of the day that the necessary technologies exist and speculate on what effect they may have on our world of computer science — if not just our world.

Standards still missing in information world

AMY D. WOHL

As we begin this year, PC power is an ordinary fact of business life. The question isn't whether the average worker will get one, but when and which one.

Yet the real value of a PC probably isn't the information that the worker can personally generate, but rather its ability to connect him to a world filled with information other people create. We all want and need to be a part of a seamless environment — a place where all the information we need is available — wherever and whenever we want it.

Wohl is president of Wohl Associates in Palo Alto, Calif., and is editor of "The Wohl Report on End-User Computing" newsletter.

JANUARY 16, 1989

VIEWPOINT

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Continued on page 24

Continued on page 24
The standard now set in the PC software industry, IBM is still an important factor in this market. IBM’s Displaywriter continues to enjoy substantial market share, and many expect IBM to have much more to say on the subject of compound document architectures (CDA). DEC has been an important player in the office automation market with All-In-1 but has never been a high-profile rulemaker in the word processing game.

CDAs are, of course, about much more than processing words. They are really about using documents as containers and vehicles for holding and transporting information.

Such documents will surely include words, but they will also include graphics, pointers to databases and other application programs, sophisticated formats and dozens of new information objects (voice? animation?) that are still immature and relatively undefined.

Hindsight is 20/20
The vendor or group of vendors that sets the standard for compound document architectures for the next round will have important advantages:

• Buyers will perceive that vendor as the market leader or standards bearer.
• Its products will attract more third-party incremental software — making it much more valuable — than that of other, nonstandard vendors.
• It will be in a better position to manipulate the standard to best show off and support its own product offerings. That prize is worthy of much effort, and winning the compound document standards battle is likely to attract a number of worthy opponents.

But if from the battle a standard emerges, it will be only after genuine champions and their desktop PCs become infinitely more useful as more and more information can be easily, readily and transparently accessed and combined.

Letters
CONTINUED FROM PAGE 22
space and support for more than 10M bytes of real storage. Once given the resources and priorities like all DP shops have, you can probably rest assured that these items will come to fruition.

Perhaps when trade journals stop viewing VSE as "ambiguous," they will finally realize that IBM's development efforts toward VSE are not being rekindled; they've been blazing all along.

Jeffrey E. Smith
Technical Support Manager
Saint Luke's Hospital
New Bedford, Mass.

Mediocrity, my foot
I take strong exception to Frank Sweet's statements in "Database directions" [CW, Nov. 28] that "SQL's syntax is mediocre at best" and in his suggesting that "it has so many different ways of accommodating the same thing..." is a negative attribute.

I have found SQL syntax exceptionally easy to learn and teach. SQL is a clear departure from anything capable of being labeled "traditional." Rather than being a programming language, SQL extends the capabilities of other languages by providing a set of database access statements that blend into most languages smoothly.

It is easy to describe SQL as "fat and complex" without genuine comparisons with other approaches. Having had several opportunities to solve test problems with both SQL and "traditional" languages, I have found SQL and a good structured language to be an easy to learn and teach. SQL is clear departure from anything capable of being labeled "traditional." Rather than being a programming language, SQL extends the capabilities of other languages by providing a set of database access statements that blend into most languages smoothly.

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Letters

FROM PAGE 24

The math/science budget at our school will allow us to repair older PCs or even update them somewhat; we can even buy new hardware and software that's available for newer PCs. — I cannot afford to purchase a new PC or to update older ones; we can even buy new computer graphics to the whole class at once. It is hard to teach to tomorrow's scientists, engineers and mathematicians with a blackboard. These kids need to have access to new equipment and information. They need to be able to enter, manipulate and edit data.

So if any corporators out there would like a good tax write-off, I will give you my old computer and equipment and information.

Larry Roberts
Mathematics Chairperson
Grandsview High School
Grandsview, Wash.

Not so fast

Regarding your article saying that image transmission times have been reduced from 10 seconds to 1 second, I must object. It takes the improved Photophone two seconds to retrieve an image from a diskette and display it on the screen, not to transmit the image. Transmission time ranges from about 12 to 25 seconds, depending on the selection mode selected and the content of the image itself.

Larry Burke
Director, Corporate Communications
Image Data Corp.
San Antonio

Both sides now

Janet Ruhl's article "Now you see it..." [CW, Nov. 21] struck a chord in me. I feel quite strongly about honesty in hiring. It is worth mentioning that there are those of us on the hiring side who believe that fair and full discussion of both the job and the applicant's qualifications is right, both ethically and in terms of the long-term benefits derived by the company and the employee.

In my department at Wang, managers and peers interview candidates. This gives us a broader view of the candidate, allowing us to make a more conser- vated decision. Just as important, it gives the candidate the opportunity to really see the environment in which he or she may soon be working.

In an interview, I always turn it around and invite the candi- date to interview me about the job, the group or Wang in general, and I answer as accurately as I can on the role we par- ticipate encourages honesty in our candidates. Then if both sides decide to go ahead, we get an employee who is more likely to reach produc- tion though this behavior and stay with us. The employee is more likely to land a job that solidly meets his or her career objectives.

Charley B. Cross
Manager, Investment Systems Development
Wang Laboratories, Inc.
Lowell, Mass.

All this and more

Regarding Bill Gates' statement on OS/2 memory requirements [CW, Nov. 21] that "true multi- tasking won't work in a 1M-byte system," perhaps Mr. Gates has forgotten Microsoft Corp.'s product, Amiga Basic, which ships with every Commodore Amiga. The base Amiga configuration includes 512K bytes of random-access memory and 256K bytes of read-only memory. Amiga Basic multi-tasking quite nicely in this amount of memory. In fact, run- ning two or three moderate-size programs plus a space command line window is possible on a 512K-byte machine.

Neil W. Plosn
Bolton, Mass.

Leading the pack

I read the article titled "Cray lays out product plans for next decade" [CW, Nov. 21] with interest. Cray Research is again on the forefront of technology. The article indicates that it is even redefining the classical measure- ment of memory capacity. Which system capacity will now be sized in millions of floating-point operations per second rather than in bytes or words.

Larry Burke
Director, Corporate Communications
Image Data Corp.
San Antonio

Finding a balance

I agree with Michael Alexander's article "Downsizing threatens MIS influence" [CW, Nov. 28], in which he states that the issue may lie in finding a balance between distributing technology throughout the organization on the one hand and keeping and managing the data center on the other.

A changing role of MIS is to build the architecture through which the dispersed systems will function. MIS will also be re- sponsible for managing the con- nectivity of the organization's networks along with setting guidelines and creating a methodol- ogy for using and controlling the network.

While connectivity is important, connectivity alone will not do. At early stages of the organi- zation's networks, it is critical to develop and document accepted guidelines for using the network. In such guidelines, it is impor- tant to document who performs what functions and when.

Security issues should also be considered before security viola- tions occur. It should be clearly stated which department is re- sponsible for developing and maintaining part of the methodology for us- ing the network. Maintenance instructions should be resolved. The second important step is to en- force the methodology through- out the organization.

Dan Kamaji
Standards Analyst
Merchants Service Corporation
Indianapolis

A real country

I thoroughly enjoyed your editorial "Glass not" [CW, Nov. 28]. Since I am of Ukrainian descent, however, I feel it is important for your editorial staff to recognize that the use of the word "the" before Ukraine is inappropriate.

The use of this form suggests that Ukraine is a region when it is, in fact, a country of 60 million people. Respectfully, I, along with millions of Ukrainians in the free world and those under Russian oppression, lose a mirror in which precious grain of dignity left to us as people each time our country is referred to as a farm plot in the Soviet Union.

Gregory Hauyrych
Rochester, N. Y.

Source of power

Thank you for publishing David Gabel's piece "Protecting computer power" [CW, Nov. 28].

I am a computer power source as a matter of course rather than waiting to be interrupted or powered off. Blackouts and brownouts are sure signals that something is wrong with your power source — whether internal or because of power company supply — there are many other not-so-four- able power-related problems. Random missing data, periodic unnoticeable crashes and other arbitrary glitches often are caused by faulty power.

Readers should monitor their power source as a matter of course rather than waiting to pinpoint that it is indeed the cause of their problems.

Alison Harris
Managing Editor
Service News
York, Maine

Another brick

I enjoyed reading your recent Viewpoint article by Efrem Mal- lach about reduced instruction set computing (RISC) technol- ogy [CW, Nov. 28]. I found him to be right on the mark in regards to the "RISC marketplace" be- ing a fictional entity created by marketing enthusiasts. Howev- er, Mr. Mallach unfortunately continued to propagate a basic misconception about the ac- tual nature of RISC design.

RISC is actually just another step in the evolution of the Sys- tem, once again made possible by continuing advances in miniaturization. Chip miniaturization has already allowed us to put there is enough room on a single chip to once again build comput- ers from completely integrated microchips that must first inter- pret their instructions.

Eventually all will come when there will be so much space available on chips that we may see operating systems in microcode, on chip main mem- ory or perhaps even entire sys- tems that include device control- lers on the chip.

David Spencer
Sacramento, Calif.

A true linkage

Regarding "IBM pushes SAA-Unix" [CW, Nov. 28], the wide range of overlapping op- tions makes the choice of appli- cations system and archi- tectures all the more difficult. "Traditional" Unix compo- nents such as Network File Sys- tem and X Window System have been announced for MVS, VM and CICS. Also, LU6.2 and other X.25 protocols (SAA) components have been announced for IBM's AIX.

Before deciding on an internetsys- tem connectivity architecture, the following pair of questions needs to be answered:

• Which system is best for each application component?
• Which system will be best in terms of the overall application component?

In the "AIX Family Defini- tion" announcement, the follow- ing is found in the summary: "The AIX Family Definition is IBM's long-term strategy for providing, across multiple IBM environments, a consistent set of interfaces, conventions and protocols." Following up on this strong statement in the "IBM AIX/370" marketing brochure is a section entitled "Systems App- lication Architecture Relationship."

This reads: "Where conflict exists between IBM and SAA, IBM will give priority to main- taining consistency in the Unix environment."

Perhaps the ultimate role of SAA-Unix connectivity will be to foster migration of applications from SAA to Unix as IBM enters the age of the open sys- tem and leaves the closed sys- tem behind.

Ron Wolf
Foothill Research, Inc.
Belmont, Calif.

Foothill Research, Inc.
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—Software Magazine 1988 Software Market Survey
Users say yes to IBM 3990

Performance a big boost, despite shipping and advanced feature delays

ANALYSIS

BY ROSEMARY HAMILTON
CW STAFF

Users of the IBM high-end storage controller that shipped at the end of 1988 are already reporting big performance boosts for their mainframe operations.

As a result, they say they do not care that IBM failed to meet its original delivery schedule and delayed the more advanced features for the product until sometime later this year.

"Check out on the additional features come out, we'll pick up more performance," said George Kolman, first vice-president of MIS at Integrated Re-

sources, Inc. in Elmswood Park, N.J. "Actually, it ended up being an easy phase-in of the system."

The controller, the IBM 3990 Model 3 with cache capability, was originally scheduled for delivery in the third quarter of 1988. It was to be a major leap in technology from both IBM's earlier 3380 controller and the initial models in the 3990 line. The newest 3990 promised not only to boost basic controller features such as channel speeds but also to add new features such as DASD Fast Write and Dual Control.

In mid-1988, IBM announced that it would not in fact ship in the third quarter and targeted first-quarter 1989 as a new ship-

ment date. In late September, IBM again changed the schedule and said it would deliver the Model 3 with cache capability by year's end. But the DASD Fast Write and Dual Copy, also known as the Extended Features, would still be delayed until sometime in 1989.

Despite these delays, users contacted by Computerworld last week said they are impressed with the product because even the base Model 3 without the cache boosted their performance.

The cache capability, delivered in December, and the Extended Features, expected this year, are viewed as bonuses.

Data View

Widening the lead

As availability increases, 3380-type devices are prospering at the expense of other direct-access storage devices on IBM and plug-compatible mainframes systems.*

PERCENT OF DEVICES INSTALLED

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*Survey basis of approximately 15,000 systems each year

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HARD BITS

Kodak flashes image sensor

Eastman Kodak Co. said its research scientists recently fabricated an ultra-high-resolution image sensor with four million pixel elements, which it says is more than double the pixel elements of current sensors. High-resolution image sensors are used in high-speed video motion analysis, vision robotics and image processing. Kodak introduced a one-million pixel image sensor in 1986.

Silicon Graphics, Inc. said it recently shipped the 1,000th Personal Iris. Out since October, the machine is the firm's low-end three-dimensional graphics workstation. McDonnell Douglas Corp. received the 1,000th system, which it will use in commercial jet design operations.

National Customer Engineering, Inc. recently announced deliveries of two new hardware packages for the Iris.

Inside

• AS/400 serves minilab maker. Page 29.
• Intergraph unveils new workstation line. Page 29.
• Costel Business Systems serves up a 32-bit computer for restaurants. Page 34.

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MANTIS - Environment: the integrated solution to your CASE needs. Use it as a complete set. Or choose individual components. THE CASE ENVIRONMENT is your superior all-purpose CASE tool kit because it's the flexible way to make application design, development, and maintenance faster. Easier. And more cost-effective: whether you use PCs, minis, or mainframes. On IBM® Digital,” or other platforms. With IMS, DB2, another DBMS — or no DBMS at all.

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Little guys get stacked DEC

In the second week of January 1986, Digital Equipment Corp. rolled out its Vaxstation 5700, a Unix-based color graphics workstation.

The announcement was perceived as DEC's first real aggressive push for workstation business and, as such, it was viewed as a serious threat to Sun Microsystems and Apollo — both then relatively small companies with potential.

Sun had its own announcement small companies with potential.

In a soup-to-nuts strategy, DEC came out with personal computers, workstations and servers.

The Interpro 3050 and 3060 will be based around the firm's C300 Clipper microprocessor, which is capable of processing 10 million instructions per second (MIPS). The firm said the products will offer full binary compatibility, ensuring that software created on earlier generations of Intergraph workstations will run without modification.

All of the 3000 series Interpro workstations also include an Intel Corp. 80386 I/O processor and custom graphics processors. Memory options for the series range from 16 to 112 MB of main memory. Disk options can extend the Interpro's disk capacity from a standard 335MB or 670MB-byte capacity to up to 40GB.

The Interpro 3050 and 3060 will also gain great leverage by sticking with standard IBM products — and with third-party software. "Most companies are trying to do their own thing," Buckler said. "They write their own programs, and if they're through, the programs are technically obsolete. We spend far less than other companies do, but we're getting better results by letting IBM and application software provider System Software Associates, Inc. [SSA] in Chicago cope with the changing technology." All the application software was written by SSA, whose Business Planning and Control Systems (BPCS) contains 25 modules that handle everything from accounts payable and receivable to scheduling, shop-floor control and manufacturing resource planning. Systems analyst Sandy Smith said Dometic has implemented 15 of the BPCS modules.

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**SOFT NOTES**

BMC carves $4.5M deal

BMC Software, Inc. said it signed a purchase agreement to acquire the Toronto-based TriStar Software Systems Ltd.'s IMS/VS Fast Path software products. The $4.5 million deal will be closed early this year, both firms said.

BMC, based in Sugar Land, Texas, said it plans to keep all TriStar employees and to maintain the Toronto office for ongoing IMS/VS Fast Path product development.

Unixix Association will host sessions by both the Open Software Foundation (OSF) and Unix International, Inc. at the association's winter conference. The OSF session is scheduled for Jan. 31, from 8 p.m. to 10 p.m. The Unix International session is scheduled for Feb. 2, from 7:30 p.m. to 9 p.m.

The conference will be held at the Town & Country Inn in San Diego from Jan. 30 to Feb. 3. For more information, call 213-592-3243.

Information Builders UK Ltd. said that Barclay's Bank extended an order for Focus for VAX. Information Builders' fourth-generation language and database management system. The contract is the second that Barclay's has signed with Information Builders this year and in continued on page 31
There are terminals. And there are terminals.

You will never see an ordinary terminal with the name IDEA on it. Because if we can’t build a terminal with a better idea behind it, we won’t build it at all.

Of the vast number of terminals made for IBM’s AS/400 and other midrange systems, only one is built to support virtually every type of office printer. Ours.

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The fact is, if we can’t add value to something through better technology, we won’t build it. Whether it’s a terminal, board or chip.

And if you think that’s an intelligent idea, give us a call at 1-800-257-5027.

The intelligence to do things better.
CONTINUED FROM PAGE 27

1989 announcement was not as threatening as that single DEC Unix box was three years ago, as far as industry observers are concerned.

Why? Because its competitors are no longer just small companies with some potential. Instead of going after the little guys as it did then, DEC is now trying to hold serious competitors back. That’s potential. Instead of going after the little guys as it did then, DEC is now trying to hold serious competitors back. That’s good news for DEC users and workstation users in general. DEC is holding the little guys back by coming out with systems that should have been out sooner, meaning users can finally get what they want.

Give and take
In the three years since the Vaxstation II GPX was unveiled, DEC continued to upgrade its workstation line but didn’t offer the razzle-dazzle three-dimensional graphics that some users required. It kept its pricing fairly aggressive but didn’t boost the raw performance to a level that users wanted. It kept up with its Unix offering, Ultrix, but never gave the industry a sense that it was seriously behind Unix.

Sun spent those three years spreading the Unix word. It sold past DEC in performance by coming out with a RISC-based system that came in around 10 million instructions per second (MIPS) in late 1987. Meanwhile, two other companies — former market leader Apollo and Silicon Graphics — kept up with performance and also concentrated on putting out some of the best 3-D graphics systems on the market.

All of this meant that users had to look somewhere other than DEC when it came to three major areas: high-powered graphics, performance and a serious commitment to Unix. And look elsewhere they did. But DEC’s announcement last week shows that DEC is very aware of that fact.

So we saw a big push for Unix, as Ultrix took on a starring role in the announcement. We saw a VMS-based system that goes into the estimated 10-plus MIPS range. We saw an Ultrix-only RISC-based workstation that offers an estimated 14-plus MIPS. There still wasn’t a high-quality 3-D graphics component, but most analysts agree that this has become a high-end niche in the market that not all vendors need address.

Some observers reacted to DEC’s rollout by saying it was trying to do too much and would confuse users by offering so many systems. Perhaps, but DEC’s announcement is also giving DEC users, and other users as well, more of what they want than ever before. The question now is how much of an advantage over DEC have the one-time little guys established since that January in 1986.

Hard bits
CONTINUED FROM PAGE 27

nounced maintenance support for Sun Microsystems, Inc. workstations and peripherals. The company, headquartered in San Diego, has a total of 33 regional service centers.

Briggs & Stratton Corp., a manufacturer of small gasoline engines, recently bought a Control Data Corp. Cyber 960 mainframe and 41 Cyber 910-400 graphics workstations. The CDC system will be used for design and engineering applications.

Unisys Corp. won an $8 million contract from United Airlines for a 2200/600 series and a 1100/92 series mainframe computer. The systems will be used as part of the airline’s effort to consolidate its San Francisco and Chicago data centers into one center in Chicago. The 2200/600 is intended to be used as part of Unisys’ Unimatic flight operations application, which is currently running on a Unisys 1100/93 mainframe.

Soft notes
CONTINUED FROM PAGE 29

cludes the acquisition of 63 additional site licenses.

Envos Corp., a spin-off of Xerox Corp.’s Artificial Intelligence Business Unit, recently signed a $4 million deal with Sun Microsystems, Inc. that will enable Envos to bundle its artificial intelligence development environment with Sun-4 workstations.

Synon, Inc. and Pansophic Systems, Inc. announced that they have reached an agreement that calls for Pansophic to no longer sell the Synon/2 computer-aided software engineering tool under a Pansophic label. Synon will be the exclusive provider of the software tool, which has been sold by Pansophic as part of its Telon product line.

Synon said it will continue to support the Pansophic customers, who purchased the product as Telon/38 for the IBM mid-range platform.

The Saddlebrook Corp. said it plans to sell the Ross Systems Renaissance series of financial and management accounting products.

The licensing agreement formed between the two companies gives Saddlebrook exclusive rights to the software for the thrift and mortgage banking market in the U.S.

Obviously these people never considered the advantages of incorporating planned rentals into their capital equipment acquisition strategy.

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Data Communications

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JANUARY 16, 1989

COMPUTERWORLD 31
dred spirits in computing as if to say, “If we made a personal computer, it would be mighty.” Sculley and Apple were mighty proud of the Mac, which was in essence a personal computer, but DEC was not. DEC had sent out the message that it was bringing Desktops to Microsoft’s MS-DOS market, but DEC pulled its punch, saying that it would be an midsize desktop unveiling and that it was “just a small but devoted following of Honeywell users.” It was later decided that Honeywell’s AS/400 Model 60 was intended to be a Multics-like follow-on operating system. In April, Honeywell announced at a users’ meeting that it was bringing Decwindows to Microsoft’s PC. It would run on a PC with the OS/2, which was connected. Although Decwindows uses up lots of memory and is too large to be contained in MS-DOS, it could be accessed in expanded memory as virtual disk.

IBM 3990

IBM’s 3990 was announced. It is a mainframe computer that can be used to access the file system. An early support program for the Extended Features is scheduled for the first half of this year. The conversion to handle files as virtual disk was delivered. An IBM 3990 Model 2, which has already been handling some Multics support, will develop software and tools to help users migrate to XPS 100. Support for migration to the Open Software Foundation’s OSF version of Unix will be offered later, Kaiser said. Honeywell Bull is an OSF founder.

Minibar maker

Minibar maker Buckler said that the company’s 300 series of workstations will each sport a 19-in. 3M bit/sec. channel speed. The Interserve 3005 is a single-user system/38 to the AS/400. By Monday morning, we started dragging data files across from the System/38 to the AS/400. By Monday morning, we were up and running.

Intergraph series

Intergraph spokesmen said that the announcement was moved up a few days so that we can sit down and talk with our customers and avoid all the blabbing that’s going to go on with that announcement,” said George Ralls. "This way, we figured we can sit down and talk with our customers and avoid all the hoopla."

IBM 3990

IBM’s 3990 was announced. It is a mainframe computer that can be used to access the file system. An early support program for the Extended Features is scheduled for the first half of this year. The conversion to handle files as virtual disk was delivered. An IBM 3990 Model 2, which has already been handling some Multics support, will develop software and tools to help users migrate to XPS 100. Support for migration to the Open Software Foundation’s OSF version of Unix will be offered later, Kaiser said. Honeywell Bull is an OSF founder.
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See us at the Federal Computer Conference, #555; and UNIX Expo, #449.
NEW PRODUCTS — SYSTEMS & SOFTWARE

Processors

Contel Business Systems, Inc. has unveiled a line of 32-bit computers with enhanced applications for the restaurant industry.

Dubbed the Contel Solution/1 series, the Intel Corp. 80386-based system reportedly features multiuser capabilities and performs restaurant-to-restaurant networking functions. The main processor operates under the AT&T Unix System V Release 3 operating system, according to the vendor, and the coprocessors run within a proprietary operating environment.

Contel Solution/1 computers range in price from $12,000 to more than $40,000, depending on system configuration and cabling requirements.

Syntec, Inc.'s Graphics Division has announced an add-on rendering system designed to allow present users to increase rendering power in a cost-effective way.

The 3653 dual-purpose graphics system reportedly allows users to install up to three CPUs in the 3653 computer. The add-on CPUs can also serve as black-and-white workstations for modeling and animation design, according to the vendor.

The 3653 includes one CPU with 4M words of memory and a 380M-byte enhanced small device interface disk. It is priced at $59,850 from now until March 31. Additional 3653 CPU upgrades are available for $35,950 each.

Syntec, 1401 Westwood Blvd., Los Angeles, Calif. 90024. 213-478-0681.

Data storage

Real Time Enterprises, Inc. has expanded its RTE Optical Disk File Manager (ODFM) product family. The ODFM line was designed to provide on-line access to the Optimem non-erasable optical disk drive for Apollo Computer, Inc. computers. The latest addition, the ODFM-300, reportedly offers support for the new Optimem drive, the Model 2400. The double-sided ODFM-300 has 1.25G bytes/side, the vendor said, and is suitable for all applications that require random access to large databases of permanent or historical data.

The ODFM-300 costs $20,060.

Real Time Enterprises, 3000 Winton Road S., Rochester, N.Y. 14623. 716-427-8090.

NEW PRODUCTS — SOFTWARE

Applications packages

Spectrum Information Systems Programming, Inc. has announced that its System/36 Distribution and Light Manufacturers application software will be available in native mode for the IBM Application System/400 mid-range computer.

Scheduled for delivery in April, the base package with source code will be priced from $32,000 to $56,000, depending on processor model.

Spectrum, 1990 S. Santa Cruz, Anaheim, Calif. 92805. 714-937-1311.

Control Data Corp. has announced that it has added a set of programs for manufacturing automation to the company's Integrated Computer-Aided Engineering and Manufacturing (ICEM) software.

The programs are collectively labeled ICEM Robcad and are designed to run on CDC Cyber 910 engineering workstations. The software can simulate and optimize automation systems, as well as prepare installation drawings and program robotic controllers, the vendor said.

ICEM Robcad is priced from $45,000.

Control Data Corp., P.O. Box 0, Minneapolis, Minn. 55440. 800-553-2215.

Utilities

Softool Corp. has released Version 3.0 of its Change and Configuration Control (CCC) software for Harris Corp.'s HCX/UX users.

The latest release offers support for multiple levels of modules, absolute path names, database and journal file integrity checkers and an enhanced build facility, according to the vendor.

CCC for the Harris H CX/UX system is priced at $30,000.

Softool, 340 Kellogg Ave., Goleta, Calif. 93117. 805-683-5777.

Software Partners/32, Inc. has enhanced its remote device access system software for Digital Equipment Corp. VAX/VMS environments.

Version 2.0 of Thruway offers increased Decnet file and transfer capabilities and now handles remote printing of files on other nodes in the network, the vendor said. Current users will receive Version 2.0 as part of their warranty upgrade program.

Thruway 2.0 can be licensed for $4,000 for the first two CPUs, regardless of processor size.

Software Partners/32, 447 Old Boston Road, Topsfield, Mass. 01983. 508-887-6409.

“I wanted to go with a wide area network company that had really been around. Vitalink’s done it 5,000 times.”

When you’re consolidating your Ethernet or token ring LANs into one wide area network, it’s no time to fool around.

Pick the company with the most installations.
Digital announces a new line of products which brings the proven superiority of distributed computing to a totally new level.
Until now, desktop computer power has been measured by what you can do at your desk.

According to experts, the true measure of power will be what you can do from your desk. And that takes complete hardware and software integration.

Today, there's one company with a family of desktop computing systems whose power, by both these measures, is second to none. Digital.

**Powerful new hardware.**

For PC users, there's the DECstation™ 210, 316 and 320 systems—the first industry-standard PCs sold and supported by Digital.

For UNIX® users, there's the DECstation 3100 workstation. Its state-of-the-art RISC technology makes it the fastest desktop workstation in the world today.

For those who want it all, there's the VAXstation™ 3100 workstation. It's a VAX™ workstation that runs the VMS™ operating system and industry-standard UNIX and can run MS-DOS® applications as well. Its price/performance is triple the world's best-selling workstation—our own VAXstation 2000.

To complete the picture, there's the VAXstation 3520 and 3540 systems. They give you all the power you need in 2-D and 3-D graphics workstations.
Powerful new software.
Our new DECwindows™ desktop software, part of Digital's Network Applications Support, offers something no other windowing system can. The ability to access applications across operating systems.

Imagine the possibilities. If your desktop computer runs the VMS operating system, you can display VMS applications, plus applications from any UNIX or MS-DOS computer. The same is true if you're running a UNIX system. Whether you're a user or an applications developer, with DECwindows software there's one, easy-to-use interface that's the same across operating systems. You can display text, graphics and imaging all at the same time.

Behind it all, standards.
Our ability today to offer such total, systemwide integration comes from years of experience working for a single goal. To make it easy for people to work together. And that demands an adherence to standards.

It's why we've taken a leading role in standards bodies, championing the adoption of open standards. It's why we're the leaders in networking, with more multivendor networks than anyone else. And it's why we back up our products with worldwide, world-renowned service.

Now, with our family of desktop computing systems that lets information be shared from desk to desk anywhere in the world, we'd like to show you how much more productive everyone in your company can be.
Now anyone can have a window office.

With DECwindows software on a VAXstation 3100 workstation, getting the whole picture is easier than ever.
Our new DECwindows desktop software, part of Digital's Network Applications Support, opens up a whole new way to look at windows. Because it lets you do the one thing no other windowing system can—share applications across operating systems.

Here's how it works.

If your desktop computer runs the VMS operating system, you can display VMS applications, plus applications from any UNIX or MS-DOS computer. The same is true if you're running a UNIX system. You even have access to applications running on large computers like VAX, IBM® and Cray systems.

The beauty of it is, it isn't complicated. DECwindows software makes it very simple.

Whether you're a user or an applications developer, with DECwindows software there's one, easy-to-use interface that's the same across operating systems. You can display text, graphics and imaging all at the same time. And with our new DECwrite™ and DECdecision™ software, you can link your document's information with its source. Whenever it changes there, your document can be instantly revised.

DECwindows desktop software. It's your window for integrating all the computing resources of the organization. All right from your desk.
Now anyone with a PC can join the company.

Program development on a VAXstation 3100 workstation in one department can be shared with programmers in other departments.

The PCLAN/Server 2000 system lets PC and workstation users share information across the network—locally or company-wide.
If you just want to tie your PCs together in a local area network, any PC LAN vendor will do. But, if you want to tie your PCs together and make them an integral part of your company's network, any PC LAN vendor won't do. Because it's not what they do. It is, however, something Digital does better than anyone else.

With our PCLAN/Server™ 2000 system, the latest implementation of Digital's Network Applications Support, you can easily tie together PCs from major manufacturers like Apple®, COMPAQ®, IBM, Olivetti and Zenith. Besides letting PC users share information with each other, the PCLAN/Server 2000 system lets them share information with any computer on the network—no matter what size it is, no matter where it's located. It's the kind of total integration that only Digital can deliver.

Because the PCLAN/Server 2000 system is powered by VAX technology, not PC technology, users can avoid the usual LAN bottlenecks that slow down their access to information. Because it's VAX technology, it also means you can grow in any direction you choose. And finally, Digital offers full service and support for any system on the network.

The PCLAN/Server 2000 system. All the resources of your company's network are now available on a local area network.
From the beginning, our success, as well as the success of the leading companies we work with throughout the world, has been based on a single vision. To design totally integrated computer systems that work together so people can work together.

With the introduction of our new desktop computing systems and DECwindows software, we extend the vision even further. Now there's one company that provides total hardware integration to join your company at every level. One company that provides total software integration to make software a common resource shared by all. One company that provides total service and support to make sure it all works the way you want it to work.

That one company is Digital.

We invite you to discover the rewards of working together. And to discover what a difference it can make.

To learn more, write to Digital Equipment Corporation, Desktop Products (ZI), MKO1/W83, Continental Boulevard, Merrimack, NH 03054-9987.

A way to work together like never before.

Digital has it now.
Frank bucks the big guns

Cut Frank a break. Frank Rogers thought he would do something good for personal computer software customers. So after hours he wrote a $69 Ashton-Tate Dbase-compatible program, quit his job as an MIS director and formed 1 Plus 1 Computer Solutions, Inc. in Trumbull, Conn., to market the thing. Based on the letters Frank received from customers (and forwarded to us), 1 Plus 1 has a bright future.

Fox didn't like it, but it had to live with it. Now Frank is in danger of offending Ashton-Tate. In a magnificent display of saber-rat-tling, company Chairman Ed Douglas Barney said they are not ready to let their products and is nearby. I've gotten a little spoiled by that.

Microsoft takes aim at C market

Computer languages are not supposed to be easy to use, but don't tell that to Microsoft Corp. The firm is working to shorten the learning curve needed with its products by using built-in hypertext-based Help system. The latest Microsoft language to receive this treatment is Microsoft QuickC 2.0. This product is locked in a vicious tug-of-war for a share of the low-end market with Borland International's Turbo C.

Wang 800 line rings few bells

With its new mail-order program, Wang Microsystems aims to make ordering equipment as easy as making a toll-free telephone call, but MIS managers say they are not ready to let their fingers do the walking.

For many information systems purchasers, the direct-dial ordering concept triggers mail-order flashbacks and nightmares: late deliveries, no service or support and nasty surprises when they open the shipping boxes. In addition to mail order's tainted image in the minds of many MIS managers, the Wang Laboratories, Inc. division has its own image problems to overcome if it is to call MIS managers to the phone.

Wang user Joseph Janello, corporate MIS manager at Amerada Hess Corp. in Woodbridge, N. J., said, "Any 800 number in and of itself gets no reaction from us."

"Maybe in a different situation, it would interest me," said Jean Gible, MIS manager at EIS Brake Parts in Berlin, Conn. "But we deal with the local distributor, who supports their products and is nearby. I've gotten a little spoiled by that."

However, Wang's latest marketing approach may be its best chance of broadening its presence in the personal computer market. Analysts have noted that Wang has been locked out of many PC distribution channels, which has impeded the company from breaking into the corporate environment in many instances.

Bruce Stephen, PC analyst at International Data Corp., a Framingham, Mass.-based market research firm, said that considering Wang's obstacles in getting

Continued on page 47
Harry Houdini had one theory anyone could appreciate: If you want to stay out of a bind, you've got to be flexible.

We agree. In fact, that theory is exactly what's behind EXTRA! Connectivity Software.

For instance, if you're currently linked via coax or modem but you plan to switch to a LAN, EXTRA! gives you the freedom to connect all three ways. And that includes LANs using IBM's Token-Ring Interface Coupler (TIC).

It's flexibility like this that prompted PC Magazine to name EXTRA! as its Editor's Choice for PC-to-host software running on LANs.

There's something else we don't want you to forget about EXTRA! It's your memory. EXTRA! uses so little of it, you'll have plenty of RAM left on your PC.

Plus, Attachmate's devotion to total IBM* compatibility assures you that you'll never get dead-ended by proprietary protocols.

Which reminds us of something else Houdini used to say, "Don't get into anything you can't get out of later."

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Presenting The Houdini Theory Of Micro-To-Mainframe Connectivity.
What makes the grade in remote software?

Remote communications software is similar to traditional hardware. You have the ability to remotely control another computer as if it were your own. The five packages in this review and comparison share a number of features, including phone directories, chat windows, and a host program, CCHelp. The host and remote programs included in one Carbon Copy package cannot be used together. Carbon Copy Plus' powerful terminal emulator allows you to connect with mainframes, on-line databases and bulletin boards. Another nice touch is a script language which automates recurring communication activities and supports Honeywell Bull, Inc.'s Kermit, Xmodem, and Ymodem file transfers. A compiler checks script syntax and creates a machine-language module that quickly executes scripts.

**Performance:** Satisfactory to very good. Performing our standard benchmark tests, Carbon Copy Plus earns a satisfactory score for speed. The wide range of compatible modes and the cross-mode compatibility earn the product a score of very good in compatibility. It is the only program in this review that was capable of working with IBM's Enhanced Graphics Adapter (CGA) on one machine and Color Graphics Adapter (CGA) on another. However, we did run into a few problems.

Security features include a password table that holds valid passwords and phone numbers for individual incoming calls to the host. An option is available to stipulate the number of password attempts allowed. Another feature enables you to force varying degrees of host access. Carbon Copy Plus' logging facility can record passwords and phone numbers to very good. Performing our security test, we were able to obtain the product a score of very good in compatibility. It is the only program in this review that was capable of working with IBM's Enhanced Graphics Adapter (CGA) on one machine and Color Graphics Adapter (CGA) on another. However, we did run into a few problems.

**Ease of use:** Good. Once you have mastered the vocabulary and set your initial parameters, Carbon Copy Plus is not very mysterious to use.

**Value:** Good. Each package sells for $195: Two packages are required. Although it is not as easy to learn as other products in this review, it is a logical choice if you want an all-in-one communications/remote program.

**Norton-Lambert's Close-Up Version 3.00A**

Norton-Lambert Corp.'s latest release of Close-Up Version 3.00A is especially useful as a remote support tool. Close-Up is sold in two parts: Customer/Terminal for the host computer and Support/ACS for the remote system. The Automated Communications System (ACS) is a simple but powerful script language that lets you program the support program to perform unattended tasks. Close-Up provides a traditional terminal emulator that lets you communicate with any other computer. Its special feature is its capability to run in the background.

**Value:** Good. Each package sells for $195: Two packages are required. Although it is not as easy to learn as other products in this review, it is a logical choice if you want an all-in-one communications/remote program.

**Performance:** Good to very good. Although Close-Up is a little slower at most things than the other programs in this comparison, it earned a good rating in our speed tests. As far as compatibility, Close-Up ran everything we attempted without a hitch, including graphics.

You can set up passwords with varying degrees of file-transfer rights. You can also set up a callback routine for any of the passwords and even specify commands or applications to run automatically once connected. During remote operations, you can disable the host screen, keyboard, or both.

Close-Up keeps normal session logs under whatever file name you want. If you specify the name of an existing log file, the new information is appended to the end of that file. ACS keeps an additional log for script files. You can also videotape your sessions and take snapshots of the screen.

**Continued on page 66**
Remote software
CONTINUED FROM PAGE 45

Documentation: Satisfactory. Each module comes with a software, ring-bound manual. In place of a tutorial, there are several step-by-step procedural outlines. The table of contents is impressive, but the index is weak. There is no on-line help.

Ease of learning: Very good. Unless you are a complete novice, you will be able to use Close-Up almost as soon as you get it out of the box.

Ease of use: Very good. Close-Up's Lotus Development Corp-style menus and pull-down submenus lead you through hardware configuration and basic program operation.

Error handling: Good. When we tried to force errors, Close-Up provided the appropriate error messages. We had trouble with our EGA and CGA display mismatch. Although the program never locked up on us, the CGA caller was left staring at a blank screen.

Support: Satisfactory to very good. Norton-Lambert provides a 90-day media-only warranty. Technical support is available via a toll-free number Monday through Friday between 7 a.m. and 4 p.m. Pacific time. When we called technical support, the technician was immediately available on four of five calls.

Value: Good. Priced at $245 for the host and $195 for the remote, this is the most expensive package in this group. However, it does offer extensive features and reliable operation.

• Co-Compute Version 2.14
Harmony Technology Associate's Co-Compute was designed primarily for collaboration, training and conferencing.

Features: In addition to the standard host/terminal operating mode, Co-Compute offers a symmetric mode in which only keystrokes are transmitted over the phone lines. To do this, the same application is run on both machines in synchronization. This speeds things up by eliminating the transfer of entire images.

Performance: Satisfactory to excellent. We performed our tests for Co-Compute in its symmetric mode. All of our standard tests responded as if you were sitting at the local machine, earning Co-Compute excellent marks for speed.

You should be able to do everything you can do on your computer while in Co-Compute's symmetric mode, as long as your partner's computer is equally equipped. We could not get a screen capture with Imcap, a screen utility used to record software screens, while the conferencing menus were displayed. We were also unable to load Aldus Corp.'s PageMaker remotely or work with Microsoft Corp.'s Word in either text or graphical mode. Co-Compute rates satisfactory for compatibility.

Although Co-Compute does not support any identifiable security features per se, all remote functions must begin with a voice call. Session logging and recording features are not supported.

Documentation: Satisfactory. The manual does a fine job of describing the Co-Compute features but lacks an organized summary of how you make them work. The manual also lacks screen shots and enough illustrations to support the text.

Ease of learning: Satisfactory. Co-Compute takes a while to learn, mostly because of the symmetric mode. Installation is straightforward.

Ease of use: Good. Once learned, using Co-Compute is quick and easy, although keeping in sync a symmetric mode takes some getting used to.

Error handling: Good. We did not lock up while using the program. Co-Compute is relatively foolproof.

Support: Good to excellent. Harmony offers a 90-day media warranty with a toll-free support number Monday through Friday. When we called technical support a couple of times when no one was available, our calls were promptly returned. The staff answered our questions clearly and accurately.

Value: Good. The package sells for $123.75 per module. Two modules are required. We do not think it is the program of choice for support applications, but we like it for collaboration or training.

• PC Anywhere III Release 3.0
DMA, Inc.'s PC Anywhere offers all features of a first-rate remote-control program.

Features: The PC Anywhere package contains separate program disks for the host and remote computer; Anywhere runs on the host system and Aterm runs on the remote system. However, you can use almost any communications program on the remote computer. In fact, the remote computer does not even have to be an IBM Personal Computer compatible. PC Anywhere has built-in support for more than 30 terminals. The automatic mode lets Anywhere sit in the background and wait for calls, but it leaves you without direct control over whether a call will be answered. The resident mode puts Anywhere in the background on standby, waiting for you to press the hot keys to access the menu. The menu lets you direct Anywhere to wait for a call, initiate a call or put Anywhere into the automatic, resident or disabled mode.

Performance: Good to very good. For our standard benchmark tests, PC Anywhere was faster than most of the other remote products, earning a good rating for speed. We tested the package...
with a variety of software with little conflict — another good rating for compatibility. PC Anywhere’s security features let you designate a master password. Individual passwords are set up with no passwords at all. You can also specify commands to be executed as soon as a caller is connected.

The session-logging routine reccts who called, the session start and stop times and the operator’s comments. You can review past activity reports and billing reports and print them to a printer, screen or file. Attern’s session-recording function lets you take snapshots of screens.

Documentation: Good. PC Anywhere’s manual is professionally prepared and well laid out. The table of contents and index are complete, but there is no tutorial. On-line Help is limited.

Ease of learning: Very good. Most procedures are intuitive or clearly prompted. Users with basic computer knowledge should be able to use and run the software in a few hours.

Ease of use: Very good. Most operations are easy to perform. Users with even limited computer knowledge will be able to use Remote 2.

Error handling: Satisfactory. In most cases, PC Anywhere handled errors smoothly. However, we did encounter trouble with the 2,400 bit/sec and with our IBM EGA and CGA display mismatch.

Support: Good to satisfactory. DMA licenses PC Anywhere on an-as-is basis without a warranty. It offers technical support Monday through Friday, 9 a.m. to 5 p.m. Eastern time via a toll-free call. We had difficulty reaching technical support by phone. When we did, the assistance was fairly helpful.

Value: Good. If you need a program to run your own computer remotely or provide support to a single client, the $145 PC Anywhere package is as good as any.

**Crosstalk Communications’ Remote 2 Version 1.00**

Crosstalk Communications Co.’s Remote 2 is one of those all-too-rare packages that feels right while you are using it.

Features: Crosstalk markets Remote 2 as a two-module set, including R2Host for the host users and R2Call for the remote user. You can buy the modules separately. You can also use Crosstalk Mk.4 or Crosstalk XVI on the remote computer with minimal loss in capability. If you do not have either of these programs, you can use a terminal emulation program — or even just a simple dumb terminal.

R2Host runs in one of three modes. The Always Ready mode puts R2Host in the background to answer incoming calls automatically. The Manual mode is simpler, except that the host operator must direct R2Host to answer calls. The Restart runs in the foreground and turns the host computer into a dedicated host, available for local use. Remote 2 lacks voice/data switching, session recording and a call-out capability for the host.

Performance: Satisfactory to very good. Remote 2 is slower than the others at updating text displays. However, it paints graphics screens faster than any of the rest. We rate Remote 2’s speed as good.

Incaps, a screen utility used to take pictures of software screens, was unable to capture on-line R2Host messages, earning a satisfactory rating for compatibility.

Security options let you make Remote 2’s host as secure as you like. Session logging is less detailed for Remote 2 than other products in this review.

R2Call logs outgoing calls, recording the host name, time, date, duration and comments. R2Host logs each caller’s user ID, time, date, duration of call and unsuccessful logon attempts. Session recording is not provided.

Documentation: Very good. Remote 2 comes with two well-written ring-bound manuals. They include detailed tables of contents and indexes. Clear instructions lead you through each function, explaining processes fully. In addition, Remote 2 has on-line context-sensitive Help.

Ease of learning: Excellent. Users with a moderate level of computer communication experience should be running their first successful on-line sessions within a few hours. Installation is quick and easy.

Ease of use: Excellent. We were impressed with how well things work and fit together. Remote 2 does not require you to remember much more than a couple of basic commands.

Error handling: Excellent. Remote 2 either handled our errors without a problem or, in the case of mismatched bit/sec. rates, would not establish the link. Remote 2 uses a special error-correction routine to eliminate noise on bad phone lines, which can be disabled if the line is error-corrected.

Support: Poor to satisfactory. Remote 2 is sold without a warranty. Free technical support is provided for registered owners, Monday through Friday, from 9 a.m. to 6 p.m. Eastern time via a toll-free call. The technical support number was busy nine out of the 10 times we tried to call during a period of three days.

Value: Excellent. Remote 2 sells for $195 for the host and remote package, $129 for the host only or $89 for the remote only. We miss the capability to switch between data and voice, record sessions and originate calls from R2Host but are still impressed with the package.

The Book about the Payroll Tax System with the Track Record to Keep You Far Ahead.

CONTINUED FROM PAGE 43

In fact, if it were not for Borland and its aggressive pricing, Microsoft would probably not be selling a $100 C compiler in the first place.

On the high end, Microsoft faces challenges from Rational Systems, Inc., with its incremental compiler approach and ability to tap memory beyond 640K bytes, and Waterloo Microsystems, which produces tight, fast code.

According to Microsoft officials, the new version of C was developed with the help of users groups across the country that tested the product and made suggestions even prior to its official beta-test cycle.

In addition to ease of use, QuickC 2.0 gains incremental compiling features that speed the edit to executable cycle; incorporates an improved ability to integrate assembly language into C; and includes support for more memory models, including small, medium, compact, large and huge.

According to the company, QuickC 2.0 runs on IBM and compatible personal computers and is currently available for $99.

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Wang CONTINUED FROM PAGE 43

timg its PCs to market, mail order may turn out to be a viable alternative channel for the company.

Stephen noted that the mail-order approach is probably better suited for buying software than hardware because of the rigid barriers involved in shipping equipment by mail.

Despite the risks, companies such as Dell Computer Corp. in Austin, Texas, and many smaller PC vendors have managed to carve out a viable niche in the PC market using the 800-number technique, Stephen said. IDC statistics indicate that Dell sold 1.2% of the PCs shipped in the U.S. last year.

But while the PC market is growing, Wang’s market share shrank to 0.7% last year. That decline makes it that much more important for Wang to succeed with a mail-order strategy, Stephen said.

Wang officials said that the effort will soon be complemented by large-scale advertising and direct mail campaigns. They insisted that by standing out as the only major computer vendor in a world of mostly no-name and supportless mail-order houses, customers will be “compelled” to order Wang equipment.

But MIS managers warn that Wang mail orders, lack of inventory and late deliveries have disenchanted him from ordering by mail again. However, he said the merchandise usually arrives in good shape.

But while MIS managers may not feel altogether secure in ordering computer equipment by mail, IDC’s numbers indicate that managers still continue to use mail ordering as an alternative to traditional distribution channels. According to IDC, PC mail orders now represent 5% of sales and are expected to grow.

MICROSOFT CONTINUED FROM PAGE 43

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CASE tool facilitates Windows applications

BY WILLIAM BRANDEL
CM STAFF

Personal computer programmers writing for Microsoft Corp.'s increasingly popular Windows interface now have a new tool to help surmount the development hurdle.

The graphical nature of Windows adds complexity to applications programming, a vexing situation for those used to character-based interfaces. CASE W from Caseworks, Inc. in Atlanta, Ga., acts as a bridge, easing the transition of today's applications to the graphical environment.

The $1,495 CASE W Version 1.0 helps generate code that is specific to the Windows environment. With CASE W, programmers still write the code for the core functionality of an application; after that, the Caseworks tool generates code to create menus, windows and dialog boxes and to provide memory management. This has been the most difficult portion for many programmers used to older, character-oriented environments.

The product is created from Windows code sets and production rules and includes a complete programming environment that generates concise, pre-tested code, officials said.

It also includes a front-end prototyper that gives the user a way to describe the application program's windows and controls. The prototype window can serve as a blueprint for the essential characteristics for the program's main window and menu system. CASE W then automatically generates the program code files and produces the files necessary to develop the remainder of the program.

Other features

CASE W reportedly supports many of the Windows controls such as menu bars, pop-up menus and dialog boxes. The product's design models can extend to interface with dialog boxes not linked by the program's main menu system. CASE W also generates the Windows routines to process the dialog boxes.

CASE W runs on Intel Corp. 80886- or 80386-based machines with at least 640K bytes of memory. A hard disk drive is highly recommended.

It also requires the Microsoft Windows Software Development Kit, C Compiler Versions 5.0 and 6.0, Windows Linker and a text editor compatible with DOS or Windows.

In addition, CASE W helps generate code that is quite different from Dbase. But he now faces a new dilemma, if Rogers fades away, Ashton-Tate can prove no damages and likely won't sue. If he becomes successful, then Ashton-Tate may bring in the legal experts. Of course, healthy sales would constitute a healthy defense fund.

A PC is just a phone call away.

There is plenty of airco

The software runs on an IBM Personal Computer AT or compatible with 512MB bytes of run-access memory and a 20MB hard disk drive running Microsoft Corp.'s MS-DOS 3.0 or higher. Dataware Technologies, however, believes that if it run on an Intel Corp. 80386-based machine with as much as 43MB of RAM and hard disk with four times the capacity of the expected database volume.

Barney

FROM PAGE 43

Eber has cast a dark cloud over Frank's decision to take on the database management system giant. Not only did Eber sue Fox Software — a company he almost bought — for copyright infringement, but he has made threats against other Dbase-like products, including, defining the issue for Microsoft Corp.'s Home Shopping Network last fingering the memory card, IBM probably doubled its entire unproductive sales in those 15 minutes.

But on closer inspection, this is a company that has made some product. After all, the Convertible has more than a few canine qualities, and it is clear that IBM is firing a warning shot. In fact, the original machine with 256K bytes now lists for a paltry $500, and that printer goes for a mere $142. So $1,000 is more than a bit steep. If the Home Shopping Network would only offer real bargains and start selling AT's.

Sorry, Mort — you're wrong.

Corporate Software founder Mort Rosenthal makes a nice living selling software and seems to understand user concerns pretty well. But there is one point Mort has made that rules against the grain of what Computeworld and MIS are all about.

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You wouldn't believe what computer systems cost these days.

If you thought Hewlett-Packard only made superior but expensive systems, maybe you should think again.

Just take a look at original purchase prices and support costs over five years. You'll see that HP computers can cost up to 28% less than comparable IBM, DEC and Sun systems.

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We also back them with the responsive support and service that has given HP the best overall record in Datapro surveys* over the past five years.

All of which gives Hewlett-Packard computers a significant edge over our competitors. Just as they can give your company the edge over yours.

For more hard facts about HP's approach to computing, call 1-800-752-0900, Ext. 282A. The call is free. The savings could be substantial.
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Joint effort opens E-mail door

Aerospace group prods service providers into supporting X.400 link

BY PATRICIA KEEFE
CW STAFF

WASHINGTON, D.C. — A pressing need to communicate electronically with business partners at a reasonable cost is what prompted one trade association’s successful bid to get a prominent group of electronic mail providers to agree to support gateway services to competitive mail services.

The Aerospace Industry Association (AIA) recently met with eight such service providers to hammer out interconnection requirements for participation in an AIA pilot network slated to kick off Feb. 1.

The AIA is a trade organization representing manufacturers of commercial, military and business aircraft and related equipment and components.

The pilot will involve a select number of AIA members including Hughes Aircraft Co., Boeing Co. and Northrop Corp. The test will be set up so that each user is connected to a different mail system, with some attached to more than one service.

Initially, the pilot will focus strictly on enabling AIA members to send messages — as opposed to electronic data interchange documents — to each other and outside trading partners via private and commercial e-mail systems, according to Peter Donaghy, who represented Hughes Aircraft Co.

The way to go

“Without interconnection, this process is difficult and may require subscription to multiple mail services,” said Joseph Duskyresco, AIA’s associate director, operations service. This is precisely what many AIA members are forced to do today and what they hope to avoid in the future.

Instead, AIA is asking its messaging suppliers to use the CCITT X.400 standard for interconnection and to provide gateways between proprietary mail systems to X.400 as well as security and quality of service parameters.

That will do

“We are not mandating that they all hook to every other service — just that they support X.400 in the same manner, which will provide the appropriate level of interoperability,” Donaghy explained. “We asked if they could have this capability in place by Feb. 1, and none of them balked.”

Participating service providers included IBM’s Information Network, GE Information Services, AT&T, Western Union Corp., Dialcom, MCI Communications Corp., McDonnell Douglas Computer Systems Co.’s Tymnet and Teletel Communications Corp. Two other suppliers were invited to participate but declined.

These suppliers were chosen because they are the ones currently serving AIA members.

Data View

LANs in power

Through 1989, dominant LAN suppliers should see their customers in the utility industry maintain or increase their spending over 1987 levels

<table>
<thead>
<tr>
<th>PERCENT OF RESPONDENTS WITHIN EACH VENDOR BASE</th>
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SOURCE: THE HERA GROUP, INC.
CW CHART: JOHN YORK

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NCR Comten launches SNA salvo

BY ELISABETH HORWITT
CW STAFF

ST. PAUL, Minn. — NCR Comten, Inc. has released yet another product salvo against IBM in its ongoing battle for market share in the Systems Network Architecture front-end processor arena.

The NCR Corp. subsidiary announced upgrades that are said to provide the Comten 5660 with 50% more throughput, in terms of transactions per second, than comparably configured 5660 models without the enhancement. Comten 5660s equipped with the feature have 80% more throughput than a comparably configured 3745 Model 210, according to a Comten benchmark test.

The Model 216 is IBM’s single-processor version; Comten gave no comparison with IBM’s dual-processor 3745 models.

The feature is priced at $60,000 for new systems and $75,000 for an upgrade. Comten also announced that it was cutting the 5660’s base price from $300,000 to $175,000.

The High Performance Feature allowed Donovan Data Systems, Inc. in New York to increase throughput, connect more lines and add more applications without having to add another front-end processor — which would be expensive both in terms of hardware and support dollars, according to Ronald Dang, database services vice-president. Since the enhancement was added last summer, Donovan Data has 50% instead of 20% utilization of its Comten 5660, he said.

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ISDN still rolling at full steam

BY PATRICIA KEEFE and ELISABETH HORWITT

Often derided as an acronym for “I Still Don’t Know,” the market for ISDN, or Integrated Services Digital Network, picked up a head of steam in 1988, and that momentum has continued into the new year with a spate of announcements and reports.

AT&T recently announced what company spokeswoman Daisy Ottman described as “yet another ISDN building block” — a Clear-Channel Capability that allows customers to use the full 64K bit/sec. bandwidth within each of the 24 data channels in its Accutel T.1 service. This paves the way for links between Accutel and ISDN services, since ISDN B Channels also carry clear 64K bit/sec. bandwidth.

Currently, however, the main benefit of Clear-Channel Capability is increased utilization of available T1 bandwidth, Ottman said. Currently, AT&T provides no link between Accutel T.1 and international or domestic providers.

Big guys help Apollo boost NCS as standard

BY ELISABETH HORWITT
CW STAFF

CHELMSFORD, Mass. — Apollo Computer, Inc. has been steadily gaining ground in its efforts to make Network Computing System (NCS) an industry standard. Last May, the workstation vendor proposed NCS as part of the Open Software Foundation’s (OSF) planned open software environment.

Since then, IBM, Hewlett-Packard Co. and, most recently, Digital Equipment Corp. have licensed the software from Apollo.

Software tools within NCS allow the user to “take a single application program, split it up, and have the parts executed on different machines, then brought back together,” DEC spokesman Peter Kobs said. Different segments of an application can communicate or even data via remote procedure calls.

One of the features that diferentiates the product from its competitors is a "location broker" residing on one system that keeps track of the location of various software and data elements, according to Apollo senior product manager Paul Marcar. DEC has not committed itself to definite product plans for NCS. However, “I don’t think DEC has any choice” about incorporating NCS into its Ulrix systems, said Bruce Richardson, vice-president at Advanced Manufacturing Systems, Inc. in Cambridge, Mass. Given that the Unix environment is "inher
Fleig
CONTINUED FROM PAGE 51
tasks to subordinates.
Thus, we have the need for a balance
between security and accessibility. "You
obviously can't allow every user to have
free run of the system, but at the same
time, you want a network that users feel
comfortable with," says a DP manager at
a San Francisco-based travel agency.
Achieving that balance involves
weighing a number of factors, including
the size of the organization, the sensitiv-
ity of the data on the network, the sophis-
tication of the user community and the
number and types of networks and users
on each system.

It also requires taking a whole new
look at security and how it is handled in
the organization. All too often, security
measures are focused on the network it-
self, through the use of file- and system-
locking on the server as well as a suite of
passwords.
But the physical network is only one
component of security. Two other key
factors often overlooked are the corpo-
rate security policy and educating the
user community.
"A comprehensive security policy is-
ued from the top can have a big effect on
the use of the network," says the MIS
director of a Chicago-based insurance
agency. "If users down the line see exec-
vatives employing backup security —
whether it is for copying a disk or for a
network — they're more willing to lis-
ten."

The creation of a comprehensive se-
curity plan starts with the MIS depart-
ment. The first step involves resolving
conflicts between servicing user needs
and protecting the information base.
The goal is a policy that achieves the max-
imum in user productivity while effec-
tively protecting that information base.
Next, MIS should develop a plan to
handle day-to-day access operations as
well as special circumstances such as
planned break-ins, curious hackers and
user access to the network from nontyp-
ical remote sites.

When the policy is drafted, it should
be reviewed and then disseminated from
top management, so that it is given more
weight by network users.

Ideally, the security procedures
should cover all company DP operations,
including mainframe and personal use.

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whether it is for copying a disk or for a
network — they're more willing to lis-
ten."

The creation of a comprehensive se-
curity plan starts with the MIS depart-
ment. The first step involves resolving
conflicts between servicing user needs
and protecting the information base.
The goal is a policy that achieves the max-
imum in user productivity while effec-
tively protecting that information base.

Next, MIS should develop a plan to
handle day-to-day access operations as
well as special circumstances such as
planned break-ins, curious hackers and
user access to the network from nontyp-
ical remote sites.

When the policy is drafted, it should
be reviewed and then disseminated from
top management, so that it is given more
weight by network users.

Ideally, the security procedures
should cover all company DP operations,including
mainframe and personal use.

"You obviously can't allow every user to have
free run of the system, but at the same
time, you want a network that users feel
comfortable with," says a DP manager at
a San Francisco-based travel agency.

Achieving that balance involves
weighing a number of factors, including
the size of the organization, the sensitiv-
ity of the data on the network, the sophis-
tication of the user community and the
number and types of networks and users
on each system.

It also requires taking a whole new
look at security and how it is handled in
the organization. All too often, security
measures are focused on the network it-
self, through the use of file- and system-
locking on the server as well as a suite of
passwords.

But the physical network is only one
component of security. Two other key
factors often overlooked are the corpo-
rate security policy and educating the
user community.

"A comprehensive security policy is-
ued from the top can have a big effect on
the use of the network," says the MIS
director of a Chicago-based insurance
agency. "If users down the line see exec-
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on each system.
WHEN YOUR PEOPLE HAVE SO MANY DIFFERENT COMPUTERS TO CHOOSE FROM, WHERE DO YOU DRAW THE LINE?
ISDN
CONTINUED FROM PAGE 51

tic ISDN services. It does, however, pro-

vide an ISDN gateway to Accuent

Switched Digital Service, which handles

64K bit/sec.

Clear Channel Capability is provided as

an upgrade to the AT&T network and is

available free of charge with new orders

for interoffice channels on Accuent T1.5,

according to AT&T.

Chip maker Advanced Micro Devices,

Inc. in Sunnyvale, Calif., has both reduced

the price on its Am79BC30A Digital Sub-

scriber Controller, which is reportedly a

highly integrated chip for ISDN termi-

nals, and shipped the Amlink3, an ISDN

software development kit that costs

$4,000.

Ongoing technology and yield im-

provements have sliced $5 off the chip

price, which now lists at $24.50. The im-

pact on end users is the fact that ISDN

equipment and service costs will decline

as component expenses are reduced,

making them competitive with existing

analog and non-ISDN digital offerings.

Compaq Computer Corp.'s former

subsidiary Telecompaq is said to be rising

again as an ISDN software house. Ad-

vanced Connectivity Systems, Inc. in

Richardson, Texas, which reportedly was

founded by refugees from Compaq's now-

discarded division, is said to be readying

an ISDN-based personal computer software

package that will combine electronic mail

and voice connectivity features originally

developed by Telecompaq, an ISDN user

claimed. Release is scheduled for the first

quarter of this year.

Another ISDN consulting service has

emerged, this time from CAP Interna-
tional, Inc. in Norwell, Mass., which has

launched the ISDN Architect Strategic

Planning Service for integrated net-

works. The service will focus on market

forces, deployment and consumption is-

sues, as well as worldwide ISDN trends. It

will also address standards, regulatory

impacts, competitive stances and con-

sumer adoption criteria.

Users seeking more information about

ISDN can peruse either of two reports

published by Information Gatekeepers,

Inc. in Boston.

The first is a report initially prepared

for the National Aeronautics and Space

Administration by the University of Colo-

doro Center for Space and Geosciences

policy. "NASA and the Challenges of

ISDN: The Role of Satellites in an ISDN

Network" lists key organizations, the current

status of key standard recommendations and do-

mestic and international ISDN implemen-
tations. It also suggests that

NASA could work with other space

agencies to ensure a coherent posture

with regard to the role of satellites in

ISDN.

A second effort, "ISDN Applications,"

lists and describes more than 70 applica-
tions, including some taken from field tri-

als and actual applications used by South-

western Bell Corp., AT&T, GTE

Communications Systems, Ameritech,

Bell Canada and US West.

The tome includes about 30 applica-
tions identified by the national ISDN Us-

ers Forum, which, coincidentally, is meet-
ing tomorrow through Thursday in

Gaithersburg, Md.

Apollo
CONTINUED FROM PAGE 51

costly multivendor, if DEC wants to be

considered on par with Apollo, Sun and

other Unix workstations in need to in-
corporate leading server technologies," he
added.

"A lot of users won't take VAX seri-

ously as a Unix server because it is too

much of a DEC solution," Richardson
said. While Ultrix systems can exchange
files with other types of workstations via
Open Systems Interconnect or Transmis-
sion Control Protocol/Internet Protocol,
they currently have no way to share appli-
cations, he added.

While DEC does offer distributed pro-
cessing on its systems, NCS "is a horse of
a different color," Kobs said. DEC, he
added, has "symmetrical multiprocessing
on a single system" and some job-sharing
on Vaxclusters, but it lacks the distribut-

ed functionality offered by NCS.

Backed by leading computer vendors
should help NCS win acceptance into the
DIF environment, Richardson said. Par-

ticularly significant are IBM's plans to in-

tegrate NCS into its Unix-like AIX oper-

ating system, because AIX is already

established to be part of the open software en-
vironment.

Is it enough?

Still in question, however, is whether
NCS' growing stature as an industry stan-
dard will help Apollo catch up with archri-
tical Sun Microsystems, Inc. and other
workstation market, Richardson said.

Sun has not produced a successful
competitor to NCS in the distributed ap-
plications arena. However, Sun's Net-

work File System (NFS), supported by
dozens of vendors, has been hailed as an
industry standard for several years.

Last week, Symbolics, Inc. announced
Symbolics-NFS, its own version of Sun's
protocol, which will allow Symbolics' arti-
ficial intelligence workstations to commu-
nicate with a wide variety of workstations
and operating systems, the vendor said.

Symbolics-NFS is priced at $1,000.

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Morgan Cosmetics Inc.
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New Products

Local-area networking hardware
A high-speed data communications controller has been introduced by Computer Modules, Inc.

Designated the LSPC Serial/2, the unit is reported to be a dual-channel, multiprotocol, asynchronous/synchronous serial interface designed for the IBM Personal Computer AT bus.

The controller has a maximum data rate of 400K bit/sec. and incorporates a 3-byte receive buffer on each channel.

The LSPC Serial/2 costs $245.

Computer Modules, 2346C Walsh Ave., Santa Clara, Calif. 95051. 408-496-1881.

Cabletron Systems, Inc. has announced an Extended Media Adapter designed for integrating installed thin-wire devices and network segments into twisted-pair Ethernet local-area networks.

According to the vendor, the product allows users of personal computer LANs, Digital Equipment Corp. workstations and other devices with Ethernet ports to utilize the star topology, wiring management and centralized network control offered by twisted-pair LANs.

The Extended Media Adapter costs $550.

Cabletron, P.O. Box 6257, Rochester, N.Y. 14602-9334-9400.

Local-area networking software
Knowledge Network Systems, Inc. (KNS) has announced an office automation platform for Novell, Inc.'s personal computer local-area networks.

Called Oasis, the system reportedly protects against several types of security breaches, including computer viruses, by providing a controlled environment at the corporate management level. It also includes an interpretive language facility for application development.

Oasis is priced at $2,995 per server. The number of workstations that can be incorporated is determined by the type of LAN.

KNS, Suite 1800, 3800 Concord Pkwy., Chantilly, Va. 22021. 703-968-0378.

Kortek, Inc. has introduced a remote communications software package with Microcom Networking Protocol error-checking features for the IBM Personal Computer and Personal System/2 market.

Called Freeway Remote, the software offers a debugger and programmable keyboard control functions. Other features include a voice-to-data switch and a graphics support file.

Freeway Remote costs $249.95.


Modems/Multiplexers
Best Data Products, Inc. has entered the Apple Computer, Inc. marketplace with the introduction of the Smart One 2400XMAC external modem.

The Macintosh-compatible device offers data transmission rates at 2,400 bit/sec. and includes autoanswer and autodial capabilities, the vendor said. It is priced at $279.

Best Data, 5907 Noble Ave., Van Nuys, Calif. 91411. 818-786-2884.

Halley Systems, Inc. has introduced a T1 broadband modem developed for high-speed data links.

The Z2000 reportedly provides protocol-transparent, serial data transfers at the T1 rate and is said to be ideal for any application that requires high-speed point-to-point data transmission, including workstation-to-mainframe and private branch exchange links.

The Z2000 costs $3,950.

Halley Systems, 281 Orchard Pkwy., San Jose, Calif. 95134. 408-434-3500.

JANUARY 16, 1989

COMPUTERWORLD
New thrust brings CEP closer to MIS

BY LARRY STEVENS

Onnie Whidden is willing to defer to MIS, but only up to a point. Whidden, a graphics and administrative services manager at Kawasaki Motors Corp. U.S.A. in Irvine, Calif., reports to information services and was, in fact, a data processing staff member before shifting into her current post. However, she prefers to think of the MIS role in her department's electronic publishing operations as an advisory, rather than a supervisory one.

"MIS acts as a consultant for us," Whidden says. "They are part of a research committee and implementation committee. They have their expertise, we have ours, and other areas of the corporation such as marketing also need to be involved." Robert Shepard, vice-president of information services, basically agrees with that assessment. His primary concern, he says, is to make sure that the electronic publishing operation stays in line with what other users are working on. "We're looking for something that is good for the entire organization vs. people making individual decisions," he says.

So far, that mission has not conflicted with the interests of the electronic publishing operation. "Everything they've requested has fit into our compatibility requirements," Shepard says. Unfortunately, that degree of agreement is somewhat rare in this uncertain period, when MIS organizations are only starting to figure out what their responsibilities should be in relation to expanding corporate electronic publishing operations.

Through the back door

Like personal computers in the early 1980s, corporate electronic publishing equipment has often arrived in corporations through the back door — with departmental funds and without MIS involvement. For a long time, the impact of these systems was minimal and could be safely ignored.

Now, however, corporate electronic publishing is evolving into an enterprise-wide activity and being accorded strategic importance.

"It's a $3 billion business this year that has grown from almost zero a few years ago," says Vera Allen-Smith, an industry analyst at market research firm Dataquest, Inc. in San Jose, Calif. "Companies are taking seriously the electronic publishing center and being accorded strategic importance.

"It's a hot area," Shepard says. "MIS is being pulled into corporate electronic publishing reluctantly, just as they were pulled into the PC arena," says Virginia Campbell, director of the electronic publishing center at the Dallas Infomart.

MIS managers are not necessarily anxious to get involved with publishing activities, Campbell says, but they also are not about to make the same mistake they made with PCs — letting the technology grow wild and without standards. "They don't want that to happen to them again. So they're asking questions," she says.

Different questions

Not surprisingly, the questions that MIS managers ask are not the same questions that graphics and publishing people ask, according to Campbell. "MIS wants to know about security, file management and power," she says. "It's important information and things that the graphics people don't ask about. I think there could be a good marriage between the two as long as jealousies don't get in the way."

Whether it is jealousy or just different points of view, the relationship between MIS and electronic publishing can get off to a rocky start.

At GTE Corp. in Thousand Oaks, Calif., for example, Mel Taylor, supervisor of composition and printing, says MIS' control of a new system purchased two years ago nearly produced a disaster.

"It was MIS' job then to assimilate our wish list, research the type of equipment that would best satisfy our needs and make recommendations to management," Taylor recalls. But, he adds, "They didn't do a very good job of it. This is not to denigrate them, but it's just that they were used to looking at different things than we were."

According to Taylor, MIS ignored most of the composition issues that he considered important and concentrated instead on information such as the number of pages (200,000) the department would have to process each...
New thrust from previous page

year. Using hard numbers as a guide, MIS determined the best system that could meet the requirements considering cost, efficiency and capability.

Although MIS did an excellent job of meeting its own parameters, Taylor says it downplayed issues such as the number and types of fonts, the ability to kern or manipulate line endings and output to a typesetter. "The system it proposed wouldn't even do the same job that the system it was replacing did," Taylor says.

Taylor's requirements were taken into account after further negotiations; now, he says, relations with MIS are good.

But then again, the MIS department, he says, "has authority that it originally had. "MIS advises us and helps us, but we have the final decision," Taylor claims.

That situation highlights a problem of growing urgency. As CEP becomes a more important part of the firm, it is not really clear in many organizations who controls tie systems.

Herman Prescott, vice-president of SEI Information Services, an Atlanta-based consulting firm that helps set up CEP operations, says that the realization that everyone feels entitled to some part of the department — MIS, marketing, public relations — feels that they have a say in CEP, he notes.

Certainly MIS's claim is neither entirely clear nor well-established in most organizations.

Many firms start with PC-based electronic publishing systems and then graduate to workstations or minicomputer mainframes. Some of these systems are later connected to other users or the corporate mainframe through a network. As a system grows, and as networking and computer standards become necessary, MIS involvement may also grow. The extent of that involvement differs greatly from organization to organization.

A lot of companies are now at the point where they are trying to standardize both the forms that their publishing departments will create and the software — such as spreadsheet or word processing or page layout — that users throughout the corporation use to create these forms," Dataquest's Allen Romano says. "This is an area MIS has grown, and one of his major responsibilities now is systems management. His department is responsible for producing 8,000 different forms, plus display ads, invoice stuffers, public relations materials, and so on.

In many organizations, corporate electronic publishing is strong enough that MIS is setting administrative guidelines, says Frank Romano of Kawasaki's Shepard. "We put the twisted-pair cabling in place mostly by ourselves. This is primarily our project, and we are learning how to do it."

At Acurex Corp. in Mountain View, Calif., Sarah Paralo runs a 22-person CEP operation that supports all four of Acurex's major divisions — aerospace systems and equipment; aircraft galley refrigeration equipment; the data acquisition, measurement and control division; and the environmental division. Her story is a similar one of day-to-day growth and selective alliances with MIS.

The department's current systems administrator, who was

Publishing centralization isn't a solution for everyone

While the trend in many companies is for corporate electronic publishing departments to grow through MIS, the goal is to create closer links to other areas of the organization, some firms are moving in the opposite direction.

Especially in companies in which the publishing unit has not been able to provide services for the user community, some departments are taking it upon themselves to create miniature corporate electronic publishing operations which are reminiscent of the distributed data processing movement.

One such example is at the Cambridge, Mass.-based Automation Applications Division of the U.S. Department of Transportation. According to Project Engineer Richard D. Wright, his organization does have a publishing department — although it is not electronic — that had produced most of the publications that his division submitted. But when Wright found himself with a two-month deadline on a 1,500-page document for the Federal Aviation Administration, "If we send it to the [corporate] publishing department, we have to get it in and out. We have to be careful what might happen if the relationship were tested by the kind of conflict that occurred at GTE.

"So far, we haven't had to make any sacrifices, since everything in the CEP requested did fit into our compatibility requirements," Shepard says. "But if necessary, we would veto equipment that isn't compatable.

Even if Whidden, who comes from a data processing background, were inclined to be more conventional, GTE's Taylor is more typical of publishing managers in general. He comes from a graphic arts, rather than a technical, background.

Taylor's technical sophistication has grown as his department has grown, and one of his major responsibilities now is systems management. His department is responsible for producing 8,000 different forms, plus display ads, invoice stuffers, public relations materials, and so on.

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The department's current systems administrator, who was

Put to good use

Departments in a typical Fortune 500 company use corporate electronic publishing for a range of projects

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<thead>
<tr>
<th>General and administrative</th>
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Source: Dataquest, Inc.
“Before MIS involvement grows, the engineering, marketing and other departments that feed us things have to have data in electronic form. MIS can’t help us if our users want to scribble something on paper and send it to us by messenger.”

Sarah Paralo
ACUREX

“Before MIS involvement grows, the engineering, marketing and other departments that feed us things have to have data in electronic form. MIS can’t help us if our users want to scribble something on paper and send it to us by messenger.”

Paralo sums up her relationship with MIS this way: “MIS helps get the

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material to us. We're responsible for formatting the document, editing it, [providing] technical writing support if necessary, assigning photography, creating a bindery and interfacing with the photo lab and art department. There is no way anyone can even imagine that any of that should be under MIS purview."

While MIS does have to sign off on hardware and software purchases, Paralo says that this requirement rarely precipitates a conflict.

The relationship between CEP and MIS is also a good one at General Atomics, Inc., a San Diego-based company that does research in nuclear energy. But that affinity is probably to be expected, because CEP is handled there through the MIS role.

Deakins says that many organizations are now considering the creation of a new position called chief publications officer, who will have overall control of the operation. It is not expected that this person will either emerge from or report to MIS, but instead will likely look to that department for consultative assistance and additional support.

"We take care of all installation, communication and repair of the terminals as well as teaching courses to others in the corporation," she says. "We get a lot of support from MIS when we have to interface with their equipment."

It remains to be seen whether more active MIS intervention in electronic publishing will become necessary. SEI's Prescott says that many organizations are now considering the creation of a new position called chief publications officer, who will have overall control of the operation. It is not expected that this person will either emerge from or report to MIS, but instead will likely look to that department for consultative assistance and additional support.

"We're responsible for formatting the document, editing it, providing technical writing support if necessary, assigning photography, creating a bindery and interfacing with the photo lab and art department. There is no way anyone can even imagine that any of that should be under MIS purview."

What does the future hold for corporate electronic publishing? According to Anthony Deakins, vice-president and general manager of the Composed Output Applications Division of Cincinnati Bell Information Systems, future advances in technology will naturally bring about changes in corporate electronic publishing. He sees such advances as checking account statements with scanned images of checks and more graphs with telephone and utility bills.

"The first step is to find reasonable ways to store and transmit disparate forms of data including object-oriented and bit-mapped graphics along with text."

One innovation in this area occurred in September with Digital Equipment Corp.'s release of the CDA specifications for its Compound Document Architecture (CDA). The CDA specifications define a networked environment for creating, revising, managing and distributing compound documents containing text, graphics, images, spreadsheets, charts and tables. These links are "live" in the sense that the data is automatically updated when the source data is updated.

Deakins says corporate electronic publishing today is more concerned with fonts and line spacing than with networking and direct-access storage devices. But when CDA becomes implemented and custom documents that require extensive use of the database become more common, electronic publishing will gradually move closer into MIS's domain.

"Right now, MIS has to be ready to provide the networking and storage support for corporate electronic publishing," he says. "As the technical issues become more complicated, it will have to do a lot more."

LARRY STEVENS

NOW THERE A TO THE POST

THE OUTSIDE

To professionally print words and pictures on the same page, all you need are laser printers and typesetters that speak the right language. The language of PostScript. As the standard page description language of electronic publishing, PostScript software from Adobe Systems is your key to complete device independence—giving you the freedom to select the right hardware, software and vendors for your needs and budget. Isn't it time you put the power of PostScript on your side?
Two IC/Ps set new pace
But IBM and Xerox take different architectural approaches

BY DAVID HUDSON

Large-scale in-house publishing is made possible by cost-effective high-speed — 80 page/min. and above — nonimpact printers. These peripherals are often referred to as centralized intelligent copier/printers (IC/P).

For publishing applications, these devices must be graphics capable and accept cut-sheet paper as opposed to data processing formfold stock. Duplex, or two-sided, imaging is also required.

Last year, both IBM and Xerox Corp. introduced IC/Ps targeted at the high-volume in-house publishing market. In February 1988, IBM rolled out the 3827, the company's first high-speed cut-sheet printer. The copier provides print speeds of up to 92 image/min. with a resolution of 240 by 240 dot/in. List price is $193,000.

Seven months later, Xerox, the historical market leader in high-speed cut-sheet printing, introduced the 4090. The 4090 also prints at speeds up to 92 image/min. but has a resolution of 300 by 300 dot/in. List price is $150,000 for an IBM 370 channel-attached configuration.

Although the two printers are positioned closely in speed and price, they take different architectural approaches to resource and document management.

IBM's 3827 is based on an LED print engine and incorporates an IBM Advanced Function Printing (AFP) controller. AFP is an umbrella term for IBM's Systems Application Architecture (SAA) printing architecture. Its significance, like SAA's, lies in IBM's move to standardize various protocols across operating systems and hardware platforms.

With the 3827, IBM hopes to move its customer base from AFP-only controllers to a more general environment data streams to the page description language-like AFP formats. By introducing advanced printers with AFP-only controllers, IBM is prodding its customer base to develop new applications, possibly for publishing, and migrate older applications to the new standards.

Architecturally, the 3827 has a symmetric relationship with its driving host. Fonts, forms, graphic images and format command files are stored in AFP software libraries on the host. Document data streams are routed to the AFP software driver, the Print Services Facility, which manages resource allocations to the 3827 and converts the data stream to the receiving printer. A two-way printer-host dialogue allows the host to establish the present resource status of the printer to avoid redundant downloading.

IBM's host-based approach to printer intelligence offers the traditional advantages of centralized management. Printing resources such as forms and fonts can be directed to any compatible (read AFP) printer on the network. Maintaining a single resource copy also makes version management simple.

Disadvantages of the 3827 include the need to download graphics-intensive resources at print time if they have not been cached, which ties up valuable communication bandwidth and slows throughput.

The Xerox 4090 uses laser imaging and is based on Xerox's 1090 copier engine, which is coupled with a stand-alone controller unit housing a Digital Equipment Corp. J11 processor and hard-disk subsystem for resource storage. The 4090 attaches to an IBM host as an IBM 3211 protocol line printer. Xerox's approach to printer intelligence puts the processing power in the printer itself. With local hard-disk storage capacity of up to 1.1G bytes — 370M bytes in standard — the printer can store massive amounts of imaging resources such as scanned images, fonts and forms.

Data files can also be buffered for printing multiple-document copies without data file retransmission from the host. By locally storing graphically intensive resources such as font bit-maps, throughput is enhanced at print time.

The disadvantages of this approach are those typical of distributed processing in general. In a multipriner network, each printer must have a local copy on hard disk of each required resource. Managing multiple copies of resources is difficult. For example, when updating a stored form, the new version must be loaded to hard disk of each required resource. Managing multiple copies of resources is difficult. For example, when updating a stored form, the new version must be loaded to hard disk of each required resource. Utilities that facilitate resource management also add overhead.

Offering cut-sheet duplex printing, average monthly print volumes in excess of one million pages and optional postprocessing paper handling, both machines are solid platforms for in-house publishing of high-quality documents. @

LAST YEAR, both IBM and Xerox introduced IC/Ps targeted at the high-volume in-house publishing market.
Mixed-platform publishing challenges systems managers
BY PATRICIA McGREW AND WILLIAM McDANIEL

Imagine for a moment that some of your text files reside on a personal computer network, some on a workstation and some on your mainframe. You also have graphics and data that you want to share among departments. File-transfer software allows you to move files from one environment to another, but how do you keep track of where each file is and when it was last updated?

What you have been imagining is a mixed publishing environment, and it is the new challenge for systems managers. Mixed environments, especially those that involve networks, provide almost unlimited flexibility. That degree of freedom is a blessing in some ways for document resource management, but it can also be a curse.

On the positive side, users can share resources produced by different departments, each of which uses a different computing system. End users can take advantage of the best features of each of the processor platforms while sharing the fruits of their labor across those platforms.

For instance, host-based graphics tools are heavy resource consumers and lack many of the features of PC-based tools. Alternatively, host-based chart design facilities are usually more powerful than their micro-based counterparts. PC software typically offers better tools for improving the writing and readability of documents; comparable software is often difficult to find in the mainframe environment. Inexpensive proofing printers or high-quality laser printers are usually attached only to PCs, while high-speed production printers are typically attached to a mainframe.

Managing document resources in this kind of environment requires very careful planning and monitoring in a variety of areas. Strategies must be mapped out for text creation, graphics, composition and target printers. File-transfer methods must be weighed and measured. Font compatibility across all printers must be arranged, and a method must be found for tracking where all files are at all times.

The most important part of managing the environment is understanding what types of files can be created and how portable they may be within a mixed setting.

THE MOST important part of managing the environment is understanding what types of files can be created and how portable they may be within a mixed setting.
transfer such files to a host system in a DCF-compatible format, but the files that end up on the host use a primitive set of DCF Generalized Markup Language; if they are modified in any way, they cannot easily be sent back to the originating office system platform.

If graphics are used within text files, there are just as many formats and just as many extra steps with which to contend. Furthermore, regardless of their original format, all graphics must finally be translated into either raster images, which are rectangular arrays of dots represented by strings of binary numbers, or into a page description language such as Postscript.

If a raster image is required, it must not be translated when it is transferred between the host and the PC, so careful control of the file-transfer method is vital. It is also important to know if the originating software platform can translate the file back to the original form if changes are made in a different environment.

Other questions are involved in managing the composition process in a mixed environment. You must know whether you maintain printer-ready files and, if so, the type of printer to be used and where it is attached. You must know whether all the printers use the same data stream. And, if not, you must decide whether to use software to convert the data stream or recompose for each type of printer.

Then, too, there are the complications that arise because fonts are printer-specific and fonts available for one printer may not be available for use with another. Fonts and printers vary in their resolution needs better than IC people can. And because we know that UDS people, working to UDS standards, will keep us — and you — ahead of the intensifying cost, quality and performance demands of tomorrow’s datacomm systems.

If you’re designing, integrating or managing in an atmosphere of datacomm evolution, you need the modem provider who’s a step ahead. For product details, contact Universal Data Systems, 5000 Bradford Drive, Huntsville, AL 35805. Telephone 205/721-8000; Telex 752602 UDS HTV.

MOST IBM printers are 240 dot/in. devices, while most other printers are 300 dot/in. These resolution differences make it impossible for documents to look identical even if the same fonts have been provided for both. The advent of Postscript as a de facto standard for many printer vendors may alleviate this problem to a considerable degree because Postscript’s fonts are resolution independent. That still leaves the manager with the question of whether all the printers throughout the environment are Postscript compatible and whether the specified fonts are available.

File-transfer software is, of course, required in a mixed environment. Commercial software can be used, but if you have the time to create your own, it is possible to build in tracking functions that will prove helpful when files are moved from one platform to another.

There is little in the way of automated solutions to manage text files created on more than one platform. Most people start out by creating their own file management methodology by using naming conventions to identify the home location of a given file. Programs can be added later to warn a person changing a file in one place that the same file exists elsewhere at a higher revision level. Alternatively, some managers settle on a library-based system, which requires that a file be checked out from and returned to a specific platform.

The only certain fact in this kind of situation is that managers of mixed-document-composition environments are forced to rely on their own ingenuity.

Suggested procedures

Recommended steps for making document resource management work in a mixed environment are as follows:

★ Review technical requirements for text entry, graphics, composition, printing and file transfer before you try sharing files across platforms.

★ Make sure that file formats are compatible across all environments.

★ Provide tools for transferring files between platforms that minimize the need for user intervention.

★ Appoint a controller to oversee hardware and software use and acquisition.

★ Develop internal tracking of source files by where they reside, what documents use them and who controls them.

★ Determine whether it is better to maintain print-ready files to permit demand printing or to recompose all files on an as-needed basis.
INTERVIEW
Intersection with image processing

Woodrow H. Vandever Jr. is executive vice-president of Interconsult, Inc., a Cambridge, Mass-based research and consulting company that specializes in new information technologies, including those associated with electronic publishing. Vandever recently spoke with Corporate electronic publishing about the ways in which the new technologies of electronic publishing and image processing are converging.

You say that there eventually will be a merging of electronic publishing technology and image processing technology. Why do you think this is inevitable?

I think it has to occur, because without it, you are not going to be able to take full advantage of electronic publishing. This evolutionary step is necessary because of the volumes of information that electronic publishing will generate. As this information begins to expand, you run into immense problems involving the storage of electronic databases, the management of versions and revisions of documents and the distribution of information throughout the corporation.

When you look at it that way, the need for immense archives of volume storage is a natural outgrowth of this process. You need large amounts of storage, and you need efficient software access mechanisms for image, text and numeric databases, and then you need a way to disseminate it throughout the corporation.

Can you clarify that connection?

Right now, the vendors of image processing systems are responding mostly to the needs of a customer base that was previously buying microfilm, and they save the information in raster format vs. some kind of a logical format. They don't know that documents of the future are going to be done electronically, and hence, the source material is already in some kind of an object orientation, such as characters or vectors.

When you step to think about it though, these systems are nothing more than large, archival electronic storage devices for documents that the corporation or government agency uses.

How do you see this affecting the content of corporate electronic publishing?

When it affects the business more than it actually changes corporate publishing. It is a mutual rather than causal relationship. The major impacts will be that you will be able to optimize the use of information — making it available to people in a way that is as easy as electronic mail.

Is this important because corporate publishing is becoming a more strategic undertaking?

Absolutely. In addition to accessibility, what you are talking about is turnaround time. You can interact with your customer more rapidly. You can get your document out. If you are a manufacturing corporation, one reason that corporate electronic publishing looks so nice is not just the hard cost savings but also the soft cost savings. For example, most manufactured goods cannot be shipped without the documentation. But effective compression means that you can save a lot more of volume than talking about. How can image processing systems be adapted to accommodate a larger volume?

One of the problems with image processing is the sheer volume of data that you have to carry around and store.

If you have to save little rasters, you wind up at resolution of 300 by 300 dots/in., with 9 million bits or roughly one megabyte of information for an 8½-by-11-in page. People use different compaction schemes, but they tend to wind up having limits of around 80-to-1 ratio for compression. And that still means 12,000 bytes for a single page.

If, as information becomes electronic, you can save the things in a logical format, then you have a higher data compaction, you effectively have recognition occurring. And that is invariant, small, compressed — and you can save a lot more of it.

Image processing systems are not set up right now to accommodate the kind of varied input and widespread exchange that you are talking about. What tactics have to happen in order to make them effective vehicles for corporate archival electronic storage?

First of all, there has to be a recognition that image processing is no longer a unique entity. Image processing is really an outgrowth of automating microfilm/microfiche, which were optomechanical means for reducing the volume of paper that people needed to save while still keeping the information it contained accessible.

When image processing came along, people realized that they could scan information in and keep it electronically, ship it around the system and display it electronically.

But they are still treating it as if it were hard copy and the best compaction you can get, over the number of bits that you have to save per page, is probably around 80. And most people don’t get anywhere near that.

But effective compression of information would be a must to deal with the kind of volume you are talking about. How can image processing systems be adapted to accommodate a larger volume?

One of the problems with image processing is the sheer volume of data that you have to carry around and store.

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On the output side, for example, the industry has pretty much settled on Postscript as the de facto output media in the non-IBM mainframe world. And Postscript can actually be thought of as a compaction scheme because it not only contains the document format and textual information but also effectively contains large numbers of the images in kind of a vector or programming format. Image processing systems need to be able to take advantage of that kind of efficiency, capturing the large volumes of newly generated documents in either the output or interchange formats where they reside, because these formats are much more efficient in terms of compression.

It is true that some image processing systems use CCITT Level IV, which is a very compressed format, but a lot have their own special formats.

And that is a problem, not only in terms of compression but also compatibility, right?

True. As interchange standards such as ODA/ODF (Office Document Architecture/Office Document Facility), SGML (Specialized General Markup Language) and CDA (Digital Equipment Corp.'s Compound Document Architecture) become available, then large numbers of documents in the system will want to be able to live in the interchange format, so that the information is reusable — can be modified, changed, grabbed in sections, and so on.

When that happens, people will also want to be able to disseminate that information throughout the company, across the network, and use the standard terminals on their desk to see it. And that means image processing systems are going to have to...
# CORPORATE ELECTRONIC PUBLISHING

## PRODUCT SPOTLIGHT

### Document Composition Software

<table>
<thead>
<tr>
<th>COMPANY</th>
<th>PRODUCT NAME</th>
<th>HARDWARE SUPPORTED</th>
<th>NETWORK COMPATIBILITIES</th>
<th>MEMORY REQUIRED (IN KB)</th>
<th>WORLD PROCESSING SOFTWARE SUPPORTED</th>
<th>TEXT ENCODING SUPPORTED</th>
<th>SCANNERS SUPPORTED</th>
<th>OUTPUT DEVICES SUPPORTED</th>
<th>STANDARDS SUPPORTED</th>
<th>MANIPULATION OPTIONS</th>
<th>PRICE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aldus Corp.</td>
<td>PageMaker for the PC</td>
<td>IBM AT, PS/2 and compatibles, DEC Vaxmate, HP Vector PQA, Olivetti M280, Tracer 3000/4000, Wang PC 300 and 500</td>
<td>Xicom 3-v., Novell Network, VAX</td>
<td>NP</td>
<td>None</td>
<td>RP Laserjet</td>
<td>No</td>
<td>EA</td>
<td>NA</td>
<td>Automatic justification, paragraph justification, multiple columns</td>
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<td>Baptise Ltd.</td>
<td>PageMaker for the Macintosh</td>
<td>Macintosh Plus, SE, II</td>
<td>AppleShare, Xerox, 2+ Mac</td>
<td>NP</td>
<td>512K</td>
<td>Postscript-compatible, QuickDraw-compatible laser printers, Lasercom 100/200/300</td>
<td>Yes</td>
<td>Yes</td>
<td>TIPP, EPY, Macprint file format</td>
<td>No</td>
<td>Auto-text flow, auto-text threading</td>
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<td>Ashton-Tate Corp.</td>
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<td>No</td>
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<td>Canon USA, Inc.</td>
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<td>512K</td>
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<td>No</td>
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<td>No</td>
<td>Mathematical formulas, auto-index, auto-index tables of contents, formatting by paragraph</td>
<td>No</td>
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</tbody>
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*Designation partial listing


The companies included in this chart responded to a recent telephone survey conducted by Computerworld. When a vendor is unable to provide specific information about its product, the abbreviation NP (not provided) is used. When a question does not apply to a vendor's product, the abbreviation NA (not applicable) is used. Further product information is available from the vendors.

JANUARY 16, 1989

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### CORPORATE ELECTRONIC PUBLISHING

#### PRODUCT SPOTLIGHT

**COMPANY**

**PRODUCT NAME**

**HARDWARE SUPPORTED**

**NETWORK COMPATIBILITIES**

**MENTS-DRIVEN**

**VOICES PROCESSING**

**EDITED SUPPORTED**

**TEXT EDITORS SUPPORTED**

**OUTPUT DEVICES SUPPORTED**

**SUPPORTED**

**VIEWS/COMPRESSIONS SUPPORTED**

**GRANULARITY STANDARDS SUPPORTED**

**TEXT MANIPULATION OPTIONS**

**MANIPULATION OPTIONS**

**PRICE**

<table>
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<td>Fontrix for IBM</td>
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<td>Hahn Avery, Inc.</td>
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<td>IBM PC, XT, AT and compatibles</td>
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<td>Honeywell Bull, Inc.</td>
<td>Honeywell Bull Component Document</td>
<td>Honeywell Bull Open Systems Interconnect LAN</td>
<td>Ethernet, Open Systems Interconnect LAN</td>
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<td>Intergraph Corp.</td>
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<td>Ethernet, 6M</td>
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<td>Apollo, Sun, DEC, IBM Personal Computer RT, PS2 Models 70, 80, Macintosh II</td>
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<td>IBM AT, PS2 and compatibles</td>
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**January 16, 1989**

**Computerworld**
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<tr>
<th>COMPANY</th>
<th>PRODUCT NAME</th>
<th>HARDWARE SUPPORTED</th>
<th>NETWORK COMPATIBILITIES</th>
<th>MEMORY REQUIRED (IN KB)</th>
<th>WORD PROCESSING SOFTWARE SUPPORTED</th>
<th>TEXT EDITORS SUPPORTED</th>
<th>GRAPHICS FORMAT SUPPORTED</th>
<th>IMAGE MANIPULATION OPTIONS</th>
<th>PRICE</th>
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<td>Inkjet Graphics Corp.</td>
<td>PTV</td>
<td>IBM AT and compatibles</td>
<td>Networked</td>
<td>Yes 64K</td>
<td>Writer, Wordperfect, FFS</td>
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<td>1K-7900 or 5000</td>
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<td>L. Fish, Inc.</td>
<td>Spellfinder Desktop Publisher</td>
<td>IBM PC, XT, AT and compatibles</td>
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<td>Any DOS networks</td>
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<td>High Style</td>
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<td>IBM PC, XT, AT, PS/2 and compatibles</td>
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<td>Displaysetter IV, Microsoft Word, Lotus 1-2-3, WordPerfect, PC Writer, Office, Wing Commander*</td>
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<td>Ready Set Go 4.5</td>
<td>Macintosh Plus SE, II</td>
<td>Apple-compatible networks</td>
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<td>QuickDraw-compatible</td>
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<td>Magazine</td>
<td>IBM PC, XT, AT, PS/2 and compatibles</td>
<td>Any Noles-compatible network</td>
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<td>Media Cybernetics, Inc.</td>
<td>Halo DPE</td>
<td>IBM PC, XT, AT, PS/2 and compatibles</td>
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<td>Micropages International Corp.</td>
<td>Writer 5</td>
<td>IBM PC, PS/2, and compatibles</td>
<td>3 Advanced Network, IBM Token-Ring</td>
<td>No 384K</td>
<td>Writebat, Writerbat 150 printers</td>
<td>Yes</td>
<td>Insert Pic</td>
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<td>Molecular Design Ltd.</td>
<td>Chemist</td>
<td>IBM PC, XT, AT, PS/2 and compatibles</td>
<td>386, Ethernet</td>
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<td>NBI, Inc.</td>
<td>Legend</td>
<td>IBM PC, XT, AT, PS/2 and compatibles</td>
<td>IBM Token-Ring</td>
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<td>Officeworks</td>
<td>Net/50 Series</td>
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<td>Novell Advanced Unix</td>
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<td>Boolean logical tests</td>
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<td>Text/Letext/Imprint</td>
<td>DEC VAX/VMS</td>
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<td>286- and 386-based systems</td>
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<td>Pomax</td>
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<td>QuarkXPress, Inc.</td>
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<td>Macintosh SE II</td>
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<td>ETG Plus</td>
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<td>Socratic</td>
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*Includes hardware*
Interview

FROM PAGE 66

become compatible with all the standards that drive the process.

In the future, the only thing specialized about image processing will be the software-based capability to control, manipulate and manage large-volume text, an efficient fashion. The rest of the components will be standard.

There will be some big database management problems that will have to be tackled, but image processing won’t be the specialized problem domain that it has been in the past.

What kind of database management problems are you talking about?

The size of the textual streams and the size of the image streams are so big that you can't effectively get things back. It's a new game, and we'll have to develop a whole new set of paradigms to deal with it.

This sounds like something that is logical and economical only at a certain level of need. I agree with you, but that is today. Tomorrow, I look at it differently. The reason I say that is that tomorrow, as information basically becomes electronic, then the need for high-volume archival storage just becomes an automatic offshoot. I'm going to have to use these electronic databases in most corporations, whether I like it or not, just by the fact that I am going to do corporate publishing. So in the future, it is a question of volume.

And the neat thing is when we do this route, then the actual cost goes down because you won’t have all the special hardware for format translation. You can use your network through your own company and have things accessible.

Are we talking about significant savings here? Enough to make cost a deciding factor?

Well, I guess I think the dynamics are a little different. I think there will be cost savings, but the cost savings get down to the fact that volume storage is going to get cheaper and cheaper.

Still, I can’t imagine that every corporation would really have a need for such massive electronic document archives. That is true, but there may be a class of people for whom that will not be necessary. There are several scanners capable of doing this now and a lot more in development.

When would you expect that we might see some real merger between the two technologies? It is hard to say exactly when that will occur. It could occur tomorrow morning or in five or four years. All that I can say for sure is that it will occur.

My guess, however, is that the point of need. I talk to a number of the potential autonomic publishers and I'm not sure they recognize the potential.

Is the situation similar among corporate electronic publishing vendors? To a certain extent, yes. You have to separate the people who are selling composition and page generation systems from larger corporations such as DEC, IBM and Xerox. For the smaller ones, it is not so much a lack of vision as a lack of resources.

When you go to IBM and DEC, on the other hand, or Sun and Apple, you run into a different situation. I believe they do see this as the way of the future.

Do you think the real catalyst for what we've been talking about is going to be the read-write CD-ROM? Absolutely. That kind of thing will make it all feasible.

Why do you say that?

Well, I've talked to a number of the people who are players in the image processing market, and I'm not sure they recognize the potential.

ASK THE VENDOR

We use IBM's Solutions On a PC with the IBM Person- al System/2 Model 70 with the IBM 4216 printer. It only allows us to run one PC into each printer. Does IBM have plans for an adapter that will allow us to run more PCs into the 4216 printer?

Paul Olenski
Director of MIS
Chicago Transit Authority

IBM: The 4216 laser printer may now be shared in a local-area network. This month, IBM will unveil a maintenance release which will allow printer sharing by multiple PS/2s, Personal Computer AT's and XT 286s.

JANUARY 16, 1989

COMPANY

PRODUCT NAME

HARDWARE SUPPORTED

SOFTWARE SUPPORTED

MEMORY REQUIRED (IN BYTES)

TEXT EDITORS SUPPORTED

OUTPUT DEVICE SUPPORTED

GRAPHICS FORMAT

STANDARDS SUPPORTED

TEST MANIPULATION OPTIONS

HARDWARE MANIPULATION OPTIONS

PRICE

Scitex

(617) 275-5150

Visualizer

Macintosh

Color

Yes

IBM

ASCII test files

$16,000

Scitex Systems, Inc.

(415) 281-5800

Scribe Document Production Software

Domain, Argic, BM, Micro, IBM

Yes

IBM

ASCII test files

Scitex

SoftQuad, Inc.

(416) 963-8337

SoftQuad Publishing Software

Unix

No

IBM

ASCII test files

SoftQuad

Syntactics Corp.

(603) 626-6400

Crystal Document Management System

HP 9000/640, NCR Tower, Perman 905, Unisys 600, Toshiba T3100, Sequent S3 and S4, IBM 860

No

IBM

ASCII test files

Syntactics

Talbot Systems, Inc.

(613) 687-0787

OCR reader

None

No

IBM

ASCII test files

Talbot

Unison World, a division of Kyocera Usui

(415) 748-6938

News Master II

IBM, AT, PS2 and compatibles

No

IBM

ASCII test files

Unison

Xerox Corp.

(800) 852-9979

Xerox Ventura Publisher

IBM, AT, PS2 and compatibles

3.5

IBM

ASCII test files

Xerox

Scitex

SoftQuad

Syntactics

Talbot Systems, Inc.

Unison World

Xerox Corp.

ComputerWORLD
Others talk about database speed.

Every time a DBMS company publishes an OLTP (on-line transaction processing) benchmark study, that company's DBMS is fastest. Which would indicate that every DBMS is fastest. How can that be?

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But, frankly, it's the TURBO XPT (Extended Performance Tuning) capability within INFORMIX-TURBO that enables us to offer you this guarantee. Very simply, it provides more tuning features than any other UNIX RDBMS.

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Please send me the INFORMIX-TURBO Guarantee InfoPak, including your free booklet, "How to Benchmark and Tune an OLTP Application."

Name __________________________ Title __________________________
Company ________________________
Address __________________________
City ____________________________ State ______ Zip ______ Phone ______

Please check the boxes that apply to you:
☐ Business User
☐ Over 1000 employees
☐ 100 to 1000 employees
☐ Less than 100 employees
☐ VAR/Developer
☐ Computer Reseller
☐ OEM
☐ Gov't. Organization
☐ Educational Institution
☐ Student

What kind of hardware/operating system do you use?

☐ I plan to purchase a DBMS product:
☐ within 6 months
☐ 6 months or longer
☐ do not plan to purchase

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shared memory. Thereby avoiding time-consuming physical disk access.

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TURBO XPT includes a full-screen, menu-driven tool that lets you monitor application performance, locate bottlenecks, make precise adjustments and then observe the effects of your adjustments as your application runs.

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INFORMIX #1 for good reason.
IBM displays are getting attached to DEC, Data General and Prime computers.

The fact is, IBM* 3151 ASCII displays are getting attached to all kinds of multi-user systems.

It's not surprising. IBM 3151 displays are inexpensive both to buy and own. Model 160 starts at $399*, including one-year warranty. Other models are available with a 3-year warranty. Add an IBM Maintenance Agreement, and you'll get five years of IBM service for just $54.

The 3151 family of displays provides most of the popular emulations compatible with DEC, Wyse, Data General, TeleVideo and more. Models 310 and 410 utilize unique cartridges which provide additional capabilities: auto dial, PC compatibility and concurrent dual host connectivity.

IBM ASCII displays are everything you'd expect from the company that ships more terminals than anyone. All models are equipped with high-quality IBM keyboards, designed for use with your ASCII applications. Non-glare 14" flat screens in green or amber/gold provide crisp character resolution.

How can you get attached to an IBM ASCII terminal?

For a free brochure and to find a distributor near you, call 1-800-IBM-7257 ext. 84. Or call your IBM Marketing Representative.
So your users want a PIM

The whys and wherefores of choosing personal information managers

BY ALAN RADDING

Comdex may be the ultimate metaphor for the information industry, encompassing both the great promise and overwhelming burden of information systems. There is so much information that one person cannot assimilate it.

Adam Rostoker appreciates, better than most, the overwhelming amount of information that surrounds the Comdex exhibition and conference. Last year, Rostoker worked for The Interface Group, Inc., which runs the show. As conference manager for the spring event, he had to juggle the needs and demands of the exhibitors, visitors and show managers. He had to concern himself with everything from the event to the mundane.

Managing Comdex is enough to drive anyone slightly crazy. So to cope with the incessant flood of information, Rostoker turned to his Intel Corp. 80286-based NEC Corp. personal computer and a new category of software called personal information managers (PIM). The versatile PIM that Rostoker used was Info-XL from Valor Software in San Jose, Calif.

"I handled all of Comdex last spring with Info-XL and word processing software," says Rostoker, who is now the executive director of the Windows/Presentation Manager Association.

During Comdex, with the help of Info-XL, Rostoker says he was able to keep track of the endless number of people, projects, due dates, meetings, deadlines and varied bits of constantly changing information that is required to mount the giant trade show.

Today, in his new position, Rostoker uses another product—a Microsoft Corp. Windows-based PIM called Packet from Polaris Software in Escondido, Calif.

From soup to nuts

Like running a large trade show, managing a United Way campaign within a large organization is a chore that can drive even the hardest manager a little bit nuts. But after doing such a good job of organizing the United Way effort in his division last year, Robert Rubin, vice-president of MIS at Penney Corp. in Philadelphia, was rewarded with the job of doing the same thing in 1988 throughout the entire company, an international chemical firm with $1 billion in sales.

Rubin turned to another PIM, Grandview from Symantec Corp. in Mountain View, Calif., to help him with his return to the United Way drive. "I wasn’t going to use it simply [for] a general to-do list or anything like that. I used Grandview as a strategic tool," he explains.

With the product, Rubin found he was able to pull together the bits and pieces of reports and documents that he and others had previously developed.

Next, he combined that information with more recent in-house memos and database documentation to create the documents that detailed the strategy for the latest campaign. He then circulated the resulting strategic plan to other senior company executives for action and feedback, which was incorporated, via Grandview, into the next iteration of the strategy.

Yellow sticky-note deluge

Today, people are inundated with information. The flood, driven in large part by computer systems, overburdens the conventional methods people have long used to manage the everyday flow of information. Desks are now cluttered with lists on yellow-lined sheets of paper, brief notes stuck all over the telephone, clippings, calendars obliterated by meetings scheduled and changed repeatedly and reports piled on top of each other.

To deal with the ever-growing problem, PC users are, indeed, turning to PIMs.

"Personal information managers are the first products specifically designed to solve a problem that computers created—information overload. We can create it faster than we can assimilate it," claims Valor Software’s Steve Sando, the developer of Info-XL, in a research paper on the general subject of PIMs.

Complicating the job of information management is the fact that people absorb their information in so many different forms simultaneously. Rarely does an individual work only with text or numbers or neatly structured files.

"We all have lots of different information: lists, documents, spreadsheets, notes. That’s always been the problem," says Jeffrey Tarter, publisher of the "Softletter" newsletter in Cambridge, Mass. "When we’re involved in a project, we use it all."

If you need to manage numerical data, there is the spreadsheet. If you work with text, there are word processors and outliners. For structured data, there are a range of database products from simple file managers to full-powered relational databases. Each category of software manages one type of information. "So far, all we’ve really done is automate the pieces," Tarter notes.

Even integrated software products that provide the smooth flow of data from one application to another do not fully solve the issue of multiple types of data.

"The user needs to relate letters, memos, notes, names, companies, topics and dates. Integrating applications provides only a very small portion of the answer," Sand'o writes. Users still must make the connections

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between different types of data. He points out that instead of integrating applications, the emphasis must be on integrating data.

Personal information managers are an attempt to automate and integrate the entire flow of data. The software accepts data in any form from any source, and allows users to access that data in whichever ways they choose. The PIM, with minimal input from the user, automatically structures the data.

Surging interest

A sudden surge of public interest in PIMs developed last year as the first fully functional PIM products—such as Lotus Development Corp.'s Agenda, Daysoft Corp.'s Daysoft Tracker and Info-XL—appeared. "These [types of] products transcend the traditional boundaries" between existing software categories, Tarter notes.

Until the advent of PIMs, users were forced to "interface with the computer in a flawed manner," Rostoker claims. Users tried to force their particular problems into the structure of whatever application they were most comfortable with, such as the spreadsheet or address book.

"PIMs break through that barrier," Rostoker continues. "They are more task oriented.

With a PIM, the goal is managing information rather than creating a database or a spreadsheet.

Predecessors to the current PIMs have been available for some time. Programs such as Borland International's Sidekick, Askam Systems, Inc.'s Askam and a variety of other products offered limited PIM-like capabilities. There are a host of products to manage the notes that accumulate," Tarter says, but these products all lack the cross-referencing capabilities that are the essence of a true personal information manager.

PIMs, ideally, are software products that allow the user to input information of any size and type from any source and then extract portions of that information in any sequence, depending on connections either the user or the system has made.

Personal information managers provide the ability to store, retrieve and sort any data to allow the user to draw inferences and make connections that were not explicit at the time of the data's entry. For instance, the same information entered randomly from a variety of sources concerning people, dates, projects, meetings, significant data, financial projections and competitive reports can be returned by the PIM as a prioritized list of things to do, a project timetable, a profile of an individual's activities or progress, a marketing analysis, a sales forecast or something else, depending on how the user wants to view the information.

What they're not

PIMs are not likely to replace spreadsheets, databases or word processors, although various PIM products have strong elements of those applications. Instead, the current expectation is that information managers will share the computer with one or two of those other primary applications and be used in conjunction with them.

For instance, databases are best for dealing with large quantities of highly structured, relatively static data, but they are "too structured to use to synthesize changing data," explains Andrew Hammond, product marketing manager for Lotus Agenda, one of the industry's leading personal information managers.

Word processors were designed primarily to create data, not organize and retrieve it. So, too, outliers do not have the power to do much more than duplicate what users already do on a notepad.

Spreadsheets, in some ways, are closest to PIMs, because the spreadsheet gives the user the capability to relate one piece of data to another and change the data and relationships at will. Unfortunately, spreadsheets can only exercise those capabilities on numbers for quantitative analysis.

The most likely scenario for the widespread use of PIMs is that they will exist in a synergistic relationship with the current popular applications.

Most PIMs provide the capability to import spreadsheet, word processing and database files into the PIM. The more sophisticated information managers, such as Persoft, Inc.'s Ize, offer macro-like capabilities, called hot links, which automatically retrieve data from outside sources.

Hammond says he sees the spreadsheet and the personal information manager operating in a left-brain/right-brain scenario, depending on whether the user's immediate need is for strict numerical analysis or for a broader, more intuitive view.

PIMs are directly related to the concept of hypertext. Essentially, hypertext refers to the interconnection of static information in nonlinear or unstructured ways.

"Hypertext creates a network of links so that you can traverse information in a variety of ways," explains Persoft Chairman Ed Harris.

Hypertext programs basically rely on multiple keywords to identify each item of information. A basic fact can be tagged

\[\text{DOS, OS, or CICS Frustration?} \]

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\[\text{IN DEPTH: PERSONAL INFORMATION MANAGERS} \]

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with a keyword designating its subject area, its source, its time- and date-stamp or any other metadata that is pertinent to a keyword or combination of keywords to view what otherwise appear to be unrelated items.

Hypertext is not a new idea; it has been kicking around the mainframe industry for several decades. The technology got a big boost, however, with Apple Computer, Inc.’s introduction of Hypercard in 1987.

While Hypercard utilizes hypertext, it is not a PIM in the way that Agenda, Info-XL, Grandview, Dayflo Tracker or a
two of Info-XL’s biggest markets are detectives — the FBI — and ministers.

JEFFREY TARTER

"SOFTLETTER"

Project management, on the other hand, refers to critical path management, the kernal of project management and other formal project management activities, according to Joos. It's not an information manager! In many cases, the first PIM users are the corporate users who already use spreadsheets, databases and word processors. “I've got a customer probably 80 percent of a manager in a group with several people to oversee and maybe several different projects,” Joos says. Analysts and marketers, however, suggest that eventually the products could attract broad array of new users to personal computing.

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JEFFREY TARTER

"SOFTLETTER"

"I CANT SEE MIS worrying about how people keep their personal phonebooks.

LESLIE FIERING

BANKERS TRUST

standard within each organization, much the way 1-2-3 macros have.

To speed the process, the major marketers are testing add-on products that will give users immediate access to effective structures for specific applications. Indeed, a marketing battle is building for dominance of the PIM arena, which the manufacturers regard as potentially as large as the spreadsheet niche. “Lotus has started getting its share of the market,” says one of the key suppliers. “It is starting to coalesce, and probably will be the market leader.”

Corporate PIMheads

The key to acceptance in the corporate environment is the rise of personal information managers, or PIMs, which are being used by corporate users who already use Lotus 1-2-3 — a product that is already pervasive within the corporate environment.

Fiering predicts that organizations will eventually embrace a flexible standard with regard to PIMs. “To the extent that you need to standardize to receive the economies of scale, there will be a corporate standard,” she says. That particular standard will be enforced more through the availability of support, templates and macros rather than by corporate command. “I can’t see MIS worrying about how people keep their personal phonebooks,” she concludes.

Other industry observers suggest that one PIM will never dominate because user needs are too varied for one product to effectively fill all users. “There will be four or five dominant PIMs because people will use different products for different reasons,” predicts Dayflo President Bob Gilchrist. Like word processing, as many as a half-dozen preferred products will coexist at the top of the market, the market without a clear-cut leader, he says.

While it is too early to predict whether personal information managers such as Coopers & Lybrand Inc. or Bankers Trust will develop into a standard analytical tool and become as pervasive as spreadsheets, the category is destined to quickly find its way into productivity applications. Agenda even plays a key role in the recently released movie "The January Man."
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— Bob Healy
Vice President/Marketing
Relational Technology

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MIS takes the field
Connolly puts together Meadowlands operation

BY STANLEY GIBSON CW STAFF

In the mid-1970s, the outlandish idea of filling in a New Jersey salt marsh with sand dredged from New York Harbor and thereupon building a football stadium became reality.

Giants Stadium at New Jersey's Meadowlands was a bold declaration of that state's independence from its larger neighbor, New York. Over the years, the complex grew by adding the Meadowlands race track and the indoor Brendan Byrne Arena. In contrast to the grand scale of the buildings, information management at the Meadowlands was at first an ad hoc affair; organization was sparse, and paper ruled. But the need to gain control over strategic information was irresistible.

"We did so many things manually, really people realized there had to be a better way," says Gerry Connolly, MIS director at the New Jersey Sports and Exposition Authority, which operates the Meadowlands in East Rutherford, N.J. Two years ago, Connolly, a 16-year MIS veteran, came to the Meadowlands to bring order to its MIS shop. Just as the complex was a pioneering effort for New Jersey, so the 43-year-old Connolly had to carve out an efficient MIS operation. The tools he inherited were a recently purchased Unisys Corp. Mapper 10 system and a handful of personal computers.

Calculating the costs
His mandate is to improve the Meadowlands' profitability by making information on the costs of running events available to management. Connolly feeds data on receipts and expenses to his boss, Chief Financial Officer James Durkin.

"I want efficient daily and monthly information," says Durkin, who sees that the authority, as landlord of the complex, turns a profit. In 1987, the authority earned $46.5 million.

The MIS shop's responsibility does not extend to tallying wagers at the racetrack, which is done by a service bureau, and the finances of the Meadowlands' sports teams — the New York Giants, New York Jets, New Jersey Nets and New Jersey Devils.

At one time, the MIS group at Fidelity Investments in Boston was little more than a maintenance shop, says Claire McGhee, who was formerly the director of that company's systems planning. When the group decided to start developing computer-aided software engineering (CASE) applications, they found the greatest success when they placed a high value on people and set reasonable goals rather than lofty ones.

And when a president at The New England, a Boston-based insurance and financial services firm, decided he needed help wading through the scads of reports that crossed his desk, he talked to the systems people.

"If you have high attrition, the training investment does not make much sense," a stable development environment also consists of two-way communications between management and staff, high quality and stable physical facilities, she said.

Most developers are tempted to jump feet-first into a project once they have been given the go-ahead. Instead, it is important to carefully define what the end results should be. "Rather than have technology drive the solution, it was just a part. We defined the need, and technology completed the solution," Piccaluga said.

Next, be certain that all of the necessary tools and training are in place before starting. Many companies make the mistake of taking the "fire, ready, aim" approach, trying to implement too many tools and technology for solutions, McGhee said. Others run into trouble when they implement systems that are out of synch with the company culture.

These tenants are responsible for their own computing. Carrying out his assignment, Connolly proceeded to build too much what was available. He used Mapper, Unisys' fourth-generation language, to develop applications quickly and added an in-house system for making office employees more productive.

Adventures in tech implementation

BY ALAN J. RYAN CW STAFF

CAMBRIDGE, Mass. — It all looks good on paper. But when the time comes to actually implement CASE tools, executive information systems and expert systems, the best advice those who have been through it can offer is to keep it simple, do not get in over your head and enlist the help of users.

When Frank Morelli, associate director of expert systems at Colgate-Palmolive Co. in New York, was called upon to evaluate knowledge-based systems (KBS), he formed a group of users to discuss which areas of the company would be suited to such a system. Then he built his test system around an actual in-house problem using a personal computer-based expert system shell.

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Everyone's computing needs are unique. Which is why different people choose different solutions. And why so many diverse computing environments are being used today.

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Army's ISC may head East

The management of one of the world's largest MIS organizations will be shifting from Arizona to Massachusetts if the U.S. Congress approves a federal commission's proposals for the reorganization of U.S. military bases.

The U.S. Army Information Systems Command (ISC), headquartered at the Information Systems Center in Fort Huachuca, Ariz., to Fort Devens, Mass. The overall plan is to reorganize or close 145 military facilities by 1995. The ISC oversees systems development and operations, communications, printing, television facilities and records management at Army sites throughout the world and employs 42,000 people.

Under the proposal, 1,556 military personnel and 2,784 civilian jobs will shift to Fort Devens. Personnel will come from Arizona and the consolidation of three ISC organizations now headquartered at the Information Softwar Center in Fort Belvoir, Va., the Information Systems Management Activity in Fort Monmouth, N.J., and the Software Development Center at Fort McPherson, Ga.

The Commission on Base Realignment and Closures offered few reasons for its suggestions. The panel said Fort Devens is well suited for a national command, which led to speculation that the officials want the command sited closer to Washington, D.C., and to the pool of computer-oriented talent in Massachusetts.

Ryan

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tion is then passed along to the company's employees.

According to Bill McGowan, founder of MCI, the executive-level breakfast meetings are the place where rumors are stopped before they can be started. The managers, in turn, are told to spread the word to the masses.

"Does it really work?" McGowan says yes. "When people are aware of what is happening anywhere in the company, they can better make decisions in their own areas," he says.

J. Raymond Caron, president of Cigna in Philadelphia, agrees. It is important to let employees know where the company is headed, he says, and how they fit into its direction: "We also have to let them know when we are not there and why we are not there. But it works both ways. We need to allow for the employees to let us know what works and what isn't working."

This certainly means more than sharing with employees the fact that the boss will be retiring in 1992. Strategic information should be shared. Employees will most likely perform better when they know what goals they are supposed to be striving toward. At the same time, care should be taken so that highly confidential information does not leak out.

By being straightforward, a manager will gain trust and respect from his employees. Ignorance is rarely blissful in business; more often than not it will lead to ambivalence from the workers.

While that approach is prudent in some instances, it can become habitual, he said. And the company that follows this practice will be missing out on new developments that, while not perfect, can achieve favorable results.

The speakers cautioned that projects such as EIS, that are user-driven, can cause friction with the traditional data processing group.

"Don't treat new technologies separate from traditional systems. They are just new tools in the information systems toolbox," Morelli advised.

Another important lesson, Piccaglia added, is to be realistic. No system is a long-term answer. "Executive information systems have to be designed to expect and accept change," he said.

Adventures

CONTINUED FROM PAGE 81

Do your homework, she urged.

Part of that homework should involve talking to users to see what they might expect from a new system and to inform them of a system's limitations, Colgate's Morelli said.

The homework should also include a visit to a noncompetitor working on a similar project, the speakers said. And when you finally begin, start off small, if possible, and be sure to establish relevance; do not develop an expert system to solve a problem that could be effectively addressed with a spreadsheet.

It is also important to have a core of users supporting the efforts under way. "If you don't have a core of user champions, it is going to fail," Morelli said. The users' opinions are critical not only for creating a successful system but also for helping with the final product's acceptance.

To keep this continued support, be willing to show results at various phases of the project and do everything you can to have the project completed on time, the speakers advised.

A typical mistake that many companies make is postponing projects in the hope that the technology will be more fine-tuned and prices will drop soon, said David Neus, a professor at The Wharton School at the University of Pennsylvania and director of systems development at TV Guide.

...
With an MIS staff of four, Connolly hired consultants to create approximately 10 programs in MAPPER. The PC population grew from four to 40 in a year, and another 40 PCs are slated to be added in the next two years. Connolly’s staff, meanwhile, doubled from four to eight.

The MIS department at the Meadowlands is housed in the authority’s corporate office on the ground level of Giants Stadium. Connolly, who had grown accustomed to a buttoned-down atmosphere in his prior MIS stints at Pepsico, Inc. and McGraw-Hill, Inc., is fascinated by the running of the facility that surrounds him and enjoys taking strolls around the stadium during breaks. However, he must be on guard for football players who may suddenly appear out of nowhere as they jog in the bowels of the stadium. It’s not the typical 9-to-5 environment.

The Meadowlands’ Unisys system was likewise new to the MIS director. Connolly, who began his career as a Cobol programmer, had always worked in IBM shops. But he credits the Mapper language with allowing him to bring up applications quickly and avoid a backlog.

Brian Gorman, systems administrator and assistant to Connolly, has also become a Mapper fan. “If you understand the application, you can program,” he says. Gorman, who worked as a security guard at the complex as a student, was promoted to its roster.

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Meadowlands
CONTINUED FROM PAGE 81

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JANUARY 16, 1989

MANAGEMENT

WE DID so many things manually, people realized there had to be a better way.”

GERRY CONNOLLY
NEW JERSEY SPORTS AND EXPOSITION AUTHORITY

information in detail or globally,” Connolly says.

Another ongoing project is to use information systems to improve the race-track’s operations. A number of variables can affect racing attendance and betting take. For example, a snowstorm can cut attendance sharply. But if management knows how many hard-core racing enthusiasts are likely to brave foul weather, they can make sure the right amount of staff is on hand at the track.

In addition to keeping up with current goings-on, Connolly must look ahead to prospective events. Next year, Giants Stadium will host the Army-Navy football game, and the MIS department is busy figuring out its cost-benefit.

Further down the road, professional baseball could come to the Meadowlands, even if a recent proposal to build a baseball stadium was turned down by New Jersey voters.

The idea is not expected to die, however, and Connolly, an avid baseball fan, looks forward to the day when New Jersey, which only a few years ago hosted no major league sports, adds a baseball team to its roster.

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Glenn Rifkin

DEC bungles nomenclature

If Yogi Berra was out in Littleton, Mass., last Tuesday, he probably mumbled, "It's deja vu all over again." For those of us who have been in the business long enough, DEC's glittery personal computer announcement last week seemed eerily like a similar big day DEC put on in May 1982.

On that day, a beaming Ken Olsen stood on a brightly lit stage in downtown Boston and introduced DEC's contribution to the PC wars - the Pro, the Rainbow and the Decmate II. He showed off the machines himself, holding up one of the monitors in his huge hand and declaring, "This set of products is better than I've ever seen before."

More excitement in the company has created more enthusiasm, analysts say. Olsen introduced DEC's contribution to the fast-track microcomputer sector and triumph for IBM.

"This set of products expressed more conservative optimism than outright enthusiasm," noted Timothy McColm, an analyst at Dean Witter Reynolds, Inc. McColm predicted that the numbers coming from major personal computer and workstation vendors - Apple Computer, Inc., Compaq Computer Corp. and Sun Microsystems, Inc., for example - will be largely favorable.

Even in the relatively vital microcomputer sector, analysts expressed more confidence in DEC than in DEC's contribution to the computer industry fourth quarter market, heightened user expectations and an impending price war in the fast-track microcomputer sector and triumph for IBM.

The marketplace's move toward the desk top continues, analysts say. The battle on field in fourth quarter

BY NELL MARGOLIS CW STAFF

Analysts predict tough yardage for minicomputer sector, laurels for IBM

Analysts last week predicted a battle on field in fourth quarter for Compaq, Apple, IBM; "It looks like a good quarter for Compaq, Apple, IBM; nothing should change that."

However, Shaffer cautioned, a microcomputer user community that is increasingly "more sophisticated, more demanding and more able to do something about it" is quickly creating a market that will not tolerate poor quality, poor service or poor price/performance.

Breather from buying

In addition, according to Redding, Comc.-based computer industry analyst Dale Kutzick, the microcomputer sector is undergoing egregious overcapacity at a time when large corporate customers are taking a breather from buying until prices come down even lower than they already are.

Continued on page 93

St. $ilicon, a.k.a. Jeffrey Armstrong, is not seeking a computer-literate only. The required audience response to his preaching is not "Amen" but "Enter."

"How many of you have ever lost data?" this curious high priest of high-tech asks his audience on the main street of Santa Cruz. "The church has something to say about it." He's Purge-atory. The gate to Purge-atory says "Abort? Retry? Ignore?"

"There's a price to pay for each of these," Armstrong said. "It's a price that is increasingly ''more so''".

"For those of us who are immersed in computers to the historical and sociological meaning of our technological society."

"merly Apple Computer, Inc.'s representative to the board rooms and occasionally from the streets. For member of Data, or god, to two branches of the church - the Garden of Eden, or the Griden of Readen.

"The Griden of Readen is where Odd-om learned to garden through a serial port connection. He was able to do so that companies can rectify it, an SIA spokesman said.

The Massachusetts study that triggered SIA interest was sponsored by Digital Equipment Corp. and examined 750 female semiconductor operations employees in 1986.

Chip production involves a variety of hazardous materials including solvents, arsenic (arsenic) and heavy metals.

Chip production involves a variety of hazardous materials including solvents, arsenic (arsenic) and heavy metals.

"The Griden was surrounded by a group of computer managers with wide bandwidths, and out of its assumptions grew many different kinds of tree structures branching out in all directions. And in this spot, man was to be provided with a great variety and a great abundance of code.

"To create Eve's, the Giver of Data cast Odd-om into a DP sleep. And so it was that Odd-om got Eve's."}

"The serpent, which Silicon describes as an "excellent salesmen and on commission," enters. "A worm entered the garden through a serial port and wrapped himself around the tree."

Once his audience is thoroughly trained, Armstrong hopes that something more than tortuous puns sinks in. Labeling himself the patron saint of appropriate technology, he addresses the industry's underlying technological assumptions.

"At first, when you go to work in the [computer industry..."
Tandem lands first OEM contract with AST Research

BY NELL MARGOLIS CW STAFF

CUPERTINO, Calif. — An approximate- ly $30 million contract with AST Research, Inc. has given transaction processing provider Tandem Computers, Inc. its first OEM agreement in the personal computer arena.

Under the terms of an agreement signed last week, Tandem will distribute the Irvine, Calif.-based desktop computer vendor’s entire line, which spans Intel Corp.’s 80286-based models to the high-end 25-MHz AST Premium/386.

AST products will be distributed under the Tandem label. Starting entries, based on AST’s 20-MHz 80386-based Premium configurations, are slated for a second-quarter rollout as Tandem PSX 300A workstations, a Tandem spokeswoman said.

For AST, the contract is an affirmation of the company’s status as a major OEM supplier, sales Vice-President Bob Becker said in a prepared announcement.

For Tandem, it signals a new departure. The company has been selling workstations manufactured by Wyse Technology.

However, the Tandem spokesman said, “we will be winding down that relationship over a period of time.”

It is also the maiden marketing effort of The Tandem Source Co., a recently established corporate division chartered to buy and distribute workstation and terminal products targeted at Tandem customers. Headed by former Tandem sales vice-president Lawrence McGraw, the unit is already negotiating a second OEM contract with an unidentified supplier, the spokeswoman confirmed.

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FOR IN BRIEF

Altai fires back

Data center scheduling software vendor Altai Software, Inc., is fighting a copyright infringement lawsuit by Computer Associates International Inc., and filed its own suit against CA. Altai asked that CA be ordered to divest the former Uccel Corp. operations. "The only way we can obtain relief in [CA's] suit is to have no monopoly power in the marketplace," said Gary Leslie, Altai's chief financial officer.

"Altai's position is absurd," said Michael McElroy, CA's assistant vice-president and secretary. He charged that Altai's suit "is based on a theory that it is all right for a small company to steal source code from a larger competitor, but when the larger competitor complains, that's a violation of the law."

Spring into multiple megabytes

Formerly Crosswinds, Inc., is now based in San Francisco, and will develop "multiple megabyte" computer memory-disk technology. In a licensing agreement with Early Venture Investors, Inc., Crosswinds will manufacture and market a wholly integrated head, fixture assembly and circuit on a chip—reportedly an industry first.

IBM buys Corning subsidiary stake

IBM announced a 25% equity investment in Corning Glass Works and a manufacturer of devices that allow high-volume data transmission on fiber-optic cable. The investment price was not disclosed.

Decision decides on FDR

Decision Data Computer Corp., recently made a major move to boost its third-party maintenance business by acquiring FDR Field Services Co., an affiliate of First Data Resources, Inc., FDR services point-of-sale systems and CPUs. Decision Data will fold FDR into its Decision-Systems division, a former service unit, one of the four largest third-party maintenance providers in the U.S.
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Apollo gains marketing maven

BY NELL MARGOLIS CW STAFF

Apollo Computer, Inc. in Chelmsford, Mass., has taken some heavy hits from analysts in the area of its marketing ability. Last week, the organization put some muscle into its oft-stated intention to toughen its marketing arm, introducing its new manager of worldwide marketing and strategic planning.

Migliore has headed his own consulting firm, Creative Strategies, Inc., since 1987. He will report directly to Apollo Chief Executive Officer Thomas Vander-slice.

In his fourth day on the job, Migliore characterized himself as a man with a relatively easy mission. “A lot of companies wish they had the name recognition and the superior products that Apollo does,” he said, noting that increasing the market’s perception of such advantages will be largely a matter of “consistency and repetition.”

The new marketing leader will get an early and auspicious public debut. On Feb. 1, he will keynote the U.S. introduction of RealDL/I at a San Francisco radio station. He says he has a standing invitation to the Vatican, as well as speaking engagements and sales of his books to his memory chips. Will his hard disk get too big for his car? With his discs 640Kb of RAM, only to rise from storage on David Packard’s birthday?

Only the Giver of Data and the Internal Revenue Service know for sure.

REalis announces RealDL/I, a fast, clean emulation of mainframe DL/I. It’s compatible with Realia COBOL and RealCICS, so you can download a CICS DL/I application to the PC or PS/2 for development and testing, then either upload it or leave it on the PC for execution.

No conversion. No retraining. And no outrageous memory requirements — RealDL/I itself needs only 130Kb, plus about 10Kb for your execution environment. With DOS, Realia COBOL, RealCICS, and RealDL/I loaded, you’ll still need only 512Kb.

With RealDL/I you can isolate development workstations — or take advantage of shared databases and environments in multi-user mode. Powerful, easy-to-use utilities allow real-time database query; debugging with RealDBUG, Realia’s source-level debugger; DBD and PSB compilation from downloaded or user-entered source; and database unload, reload, and rebuild.

RealDL/I comes with superb support, automatic upgrades, and guaranteed upward compatibility with the fastest, most efficient set of COBOL programming tools available for the PC. (If you’re still using Microsoft COBOL or COBOL/2 from Micro Focus or IBM, note that RealDL/I supports them, too.)
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COMPUTERWORLD
DE C bungles
CONTINUED FROM PAGE 87

...tion is only one: I'd hate to compete with these machines."

Enough said. It's kind of cruel to bring up this failure as DEC basks in the positive response to its latest desktop announcesments. The fiasco that was DEC's PC strategy for the past six years has been well documented.

But one couldn't help but notice the parallels on Tuesday. In 1982, DEC unveiled three machines, all running different operating systems and all purporting to be targeted to different audiences. Olsen decided against choosing one PC to represent DEC, claiming that "the market will decide." And as one of his product managers pointed out, "The market decided, and it chose IBM."

This time around, DEC introduced anew new machines ranging from a base model personal computer to several high-powered workstations. The machines themselves are impressive, as were the ones in 1982. But once again, marketing questions have leaped up and are begging for answers. Such as, who thought of the names of these varied machines?

The PCs are called Decstations and the workstations are called Vaxstations — except for the main workstation, which is called Decstation. And the machines were given numbers such as 210 and 3520. There were lots of numbers in fact, and not one made any sense. Why, for instance, is there a Decstation 3100 and a Vaxstation 3100? Are they related in any way? Is the customer supposed to be able to differentiate between them?

If, by accident, customers order a Decstation 3100 instead of a Vaxstation 3100, they'll end up with an $11,900 reduced instruction set computing-based Unix machine instead of a $7,950 desk-
top VMS-based unit.

I asked Jack Smith, DEC's senior vice-president of engineering and manufacturing, about the names, and he gave me a wry smile and said, "We're still thinking about the names." He admitted that there was confusion and said he hoped that people would keep referring to the products by their well-publicized code names, PMAX and PVAX.

I asked Olsen about the names. "They're as confusing to me as they are to you," he replied.

Does this kind of planning represent a marketing strategy? If DEC is starting to get marketing religion, why didn't anybody think of better names for these products? Certainly the names won't make or break them, but confusion about the prod-
cuts helped kill the 1982 PCs. Confusion about product identity has never been a characteristic of success.

These announcements are crucial for DEC, a signal that the company understands which way the trade winds are blowing. It cannot afford to lose the workstation market the way it did the PC market, and these products make it clear that DEC will be a prominent, if not dominant, player. But the new products stand a far better chance of success if DEC learns to play the name and marketing game.

Rifkin is a Computerworld senior editor and co-author with George Harrar of The Ultimate Entrepreneur: The Story of Ken Olsen and Digital Equipment Corporation.

Fourth quarter
CONTINUED FROM PAGE 87

Variations on one or more such themes, Kutnick said, already underlie warnings of fourth-quarter losses by Wyse Technology and AST Research, themes, Kutnick said, already underlie the promise of a great 1989 should temper any negative reactions to DEC's December quarter, he added.

What can we expect in the workstation niches? "World War III in 1989," according to S. G. Warburg & Co. analyst David Wu. Analysts are looking to billion-dollar market leader Sun for a continuing ascen- cent. Apollo Computer, Inc. should be profitable but not as strong as analysts would like to see it, Dean Witter's McCollum said.

Software and services companies overall enjoyed a good, solid quarter, ana-
lysts said. Probable high rollers include Computer Associates International, Inc. and Microsoft Corp., which clearly has the strongest momentum in the microcomputer software sector, according to Rick Sherlund, an analyst at Goldman Sachs & Co.
Ups and downs of job hopping
Employers weigh implications of resumes indicating frequent changes

By Janet Ruhl

To programmers, changing jobs every year or two has long been a simple solution to the question of how to raise both salary and skill level, at least during the first five years of a career. The chronic shortage of experience in this field is part of the picture. Another one is that a manager hiring a new employee can usually offer a more attractive salary than can the employee's current manager, who likely is forced to remain within corporate rate guidelines. Such factors have helped ensure that the technical employee can usually boost his pay 10% to 20% with each job change.

Furthermore, an MIS professional's long-term value to employers rises with his exposure to a variety of software and systems, and changing jobs often equips workers with the skills they need to continue pursuing profitable careers.

The downside
But while job hopping may benefit the professional and his new employer, it can also be an ongoing headache for MIS managers.

Edward Wiernikowksi, vice-president of Staffing at Bank of America Systems Engineering in San Francisco, says a pattern of jobs lasting three to six months is probably the most disturbing, suggesting that the employee has failed to get through the probationary period.

According to Mark Jacobs, a senior consultant at Data Pros, an East Hartford, Conn., recruiting firm, most employers prefer to see an employee who has put in three years or more at a company.

But, Jacobs says, the major factor determining a manager's attitude toward frequent job changers is the career pattern prevalent among current employees. As a company at which most managers are long-term employees — many coming to the firm straight out of college — job hoppers have a much slimmer chance of being considered than do those at companies employing many who built their careers by making well-timed changes.

A manager's decision to hire a professional is the career pattern of the individual doing the hiring. Managers who have made their careers with one or two companies tend to look less favorably at frequent changers.

Edward Wiernikowski, vice-president of Staffing at Bank of America Systems Engineering in San Francisco, says that in his organization, he finds wide differences in how job hopping is defined, with the determining factor more often than not being the career pattern of the individual doing the hiring. Managers who have made their careers with one or two companies tend to look less favorably at frequent changers than do managers with more varied histories.

But longevity in a previous job does not guarantee that an employee will be satisfactory. "I got burned by solid resumes too," Jacobs reports, who says some hires had stayed on in previous postings, saying that in their case "we weren't bad enough to get fired."

Jim Wetzel, a general supervisor in the information systems department of Baltimore Gas & Electric Co., claims that for him, the key to screening out candidates with this kind of "stability" is to make certain there has been another situation that can influence the decision is the hiring manager's familiarity with the applicant's previous employers. If the companies are known to have serious, ongoing turnover problems, paying or a reputation for promising would-be employees more than they can deliver, managers tend to be less suspicious on employees who have left jobs after a short time.

A manager's decision to hire an attractive, obviously capable prospective who has a history of frequent job changes also has a lot to do with the manager's feelings about how well his own company treats its employees.

The manager who knows his company will not let him lose a good employee over a few dollars an hour is more likely to approve a hire in a borderline case.

Hopping helps consultants
Interestingly, the job hopping that works against the technical person applying for a regular job may work for him if he is being considered as a consultant. When evaluating consultants, who are usually only expected to work for a short time on a project, clients are interested almost exclusively in the applicant's skills — something frequent job changes can expand.

The clients do not have to worry about spending their training budget on the consultant, and if a consultant turns out not to have the skills his claims, the contract can be immediately terminated.

Tom Reason, an independent consultant and software developer at J.P. Software in Arlington, Mass., points out that for consultants, a history of short-term assignments can be a good record, because it shows that "they did their contracts and the client to do."

Furthermore, once a prospective consultant proves he is an effective consultant and shown that he fits into the department, the client might hire him as an employ-

W HILE JOB HOPPING may benefit the professional and his new employer, it can also be an ongoing headache for MIS managers.

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• 3 years experience in developing large, complex systems in a client/server environment. Must have experience with SQL/DS and/or DB2.

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• Proven ability to manage documentation specialists.

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• Extensive experience in documentation of large computer systems.

• Familiarity with IBM DB2, SQL/DS, and OS/2.

• Must have strong people skills.

• Must have strong people skills.

Send your resume to:

Ms. Shirley Winter
Fourth Generation Technology, Inc.
Department 390
11280 North Military Highway,
Suites 200 & 201
Annapolis, MD 21401

An Equal Opportunity Employer — A No Smoking Environment

ANNOUNCING A NEW POSITION
Information System Coordinator

A Major Southwestern County Government

Maricopa County, which includes the Phoenix Arizona metropolitan area, is seeking for the right individual to coordinate, implement and maintain the County Information System Organization. The successful candidate will work with the various units and departments of the County Government to develop a County-wide long range information systems program. This key staff position will work towards the goal of implementing a client/server information system within the County Government. The ideal candidate for this position will have experience in the County Information Systems Steering Committee and the County Management Board. The successful candidate will also be responsible for coordinating and implementing a County-wide client/server information system. In order to be successful, the ideal candidate will have a solid background in Information Systems and will be familiar with the latest trends and technologies. The ideal candidate must be familiar with the County's organization and have a proven track record of success. The successful candidate will be required to demonstrate a strong commitment to the County and this position. The salary range is $30,000 to $40,000 with an excellent benefit package.

If you meet the criteria above and you would be interested in a challenging and rewarding position as the Information System Coordinator, please forward your resume by February 15.

Walter & Wilson
Department MC
407 E. 2nd Street
San Francisco, California 94102
Maricopa County is an Equal Opportunity Employer

COMPUTERWORLD
JANUARY 16, 1989

94
### EXECUTIVE LIFE

If you're prone to performance over-drive, Executive Life offers a challenging environment in which you can excel. We're the largest life insurance company in the Western U.S. and we value Programmers/Systems Analysts who don't know when to stop.

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Our benefits package is top rate and includes a Health & Fitness Center, employee restaurant, flexible spending account, tuition reimbursement, comprehensive medical/dental/life insurance plans, and a new child care resource assistance program.

We continue to surpass our own growth projections... now it's your opportunity. If you can hack it, call John McFarland at 1-800-323-8617 or 213-312-2311 or send your resume to: Executive Life, 11444 W. Olympic Blvd., Los Angeles, CA 90064. EOE. Principals only.

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Our data processing organization plays an integral role in our worldwide scope, and our current openings for IS professionals provide the opportunity to make important contributions to complex projects.

We have a few positions available that require six or more years data processing experience. Prefer one plus year of marketing, human resources or finance experience. Additionally, candidates must possess the following qualifications:

- Bachelor's degree
- Experience in design, planning and implementation of information systems
- Extensive experience in the development of computer applications and the evaluation/selection of software packages
- Knowledge of various systems analysis techniques and families with various programming languages, especially COBOL and Fourth Generation languages
- Track record of success in system design and project management
- Strong planning and analytical skills
- Excellent oral and written communication skills

For confidential consideration, please send resume with salary requirements to: Dept. DB/34, Corporate Headquarters/employment, The Coca-Cola Company, P.O. Drawer 1734, Atlanta, GA 30301. An Equal Opportunity Employer.

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1-800-221-4864
COMPUTER CAREERS

November 1988 computer recruitment advertising activity*

PERCENT OF SPACE PLACED BY VENDOR VS. USER COMPANIES

<table>
<thead>
<tr>
<th>Category</th>
<th>Vendor</th>
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<td>Midwestern region</td>
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<tr>
<td>Eastern region</td>
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<td>47.37%</td>
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</table>

*Percentages are based on a sample of 50 advertisements from each category. (Computerworld, Jan. 16, 1989)

SOURCE: CW PUBLISHING, INC.'S RECRUITMENT MARKET RESEARCH DATABASE

INSURANCE ANALYST PROGRAM

Large Phoenix-based national insurance operation is seeking an individual with a minimum of 5-6 years’ programming experience with an emphasis on Property & Casualty insurance. Exposure to "C". UNIX, insurance programs and financial accounting is desirable. Responsibilities will include problem analysis and definition, design and programming, AA or BS in Computer Science or equivalent desirable. Excellent salary and benefits. Limited Travel. Please reply to:

KENDA SYSTEMS, INC.
3401 South 27th Street
Omaha, NE 68105

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Bloomington, IN 47401

SOFTWARE SERVICES CORP.

50 East Service Drive
West Orange, NJ 07052

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A computer company engaged in developing and marketing high performance software products is seeking an experienced individual with a minimum of 5 years of management experience to manage product development. Responsibilities will include defining product strategies and road maps, development and implementation of software product plans, and management of the software product development organization. The ideal candidate will have experience leading and managing a software product development organization. Bachelor’s degree in Computer Science or related field is required. Experience in the educational software industry is preferred. Experience in software development and management is essential. Please send resume with salary requirements to:

Corporation for Educational Software
Box 2321
Woburn, MA 01805

CASE

Leach & Associates is seeking a Senior Consultant to join their growing team in the Atlanta, GA area. The ideal candidate will have experience in software engineering, software development, and software project management. Bachelor’s degree in Computer Science or related field is required. Experience in software development and management is essential. Please send resume with salary requirements to:

Leach & Associates
50 East Service Drive
West Orange, NJ 07052

HABRECHT

SUN/UNIX System Administrator

Sun Microsystems is seeking a SUN/UNIX System Administrator to manage the system operation and support of SUN/UNIX systems. The ideal candidate will have experience in managing SUN/UNIX systems and managing technical support. Bachelor’s degree in Computer Science or related field is required. Experience in SUN/UNIX system administration and technical support is essential. Please send resume with salary requirements to:

Sun Microsystems
50 East Service Drive
West Orange, NJ 07052

VERMONT

COMPUTER CAREERS

O'Brien & Company

Applications Developer

Our client, a leading supplier of software to the financial services industry, is seeking an Applications Developer to join their team. The ideal candidate will have experience in software development and management. Bachelor’s degree in Computer Science or related field is required. Experience in software development and management is essential. Please send resume with salary requirements to:

O'Brien & Company
50 East Service Drive
West Orange, NJ 07052

OBRIEN & COMPANY

APPLICATIONS DEVELOPMENT

Our client, a leading supplier of software to the financial services industry, is seeking an Applications Developer to join their team. The ideal candidate will have experience in software development and management. Bachelor’s degree in Computer Science or related field is required. Experience in software development and management is essential. Please send resume with salary requirements to:

O'Brien & Company
50 East Service Drive
West Orange, NJ 07052

PROGRESSIVE ANALYSIS

Our client, a leading supplier of software to the financial services industry, is seeking an Applications Developer to join their team. The ideal candidate will have experience in software development and management. Bachelor’s degree in Computer Science or related field is required. Experience in software development and management is essential. Please send resume with salary requirements to:

O'Brien & Company
50 East Service Drive
West Orange, NJ 07052

FOCAL POINT TECHNOLOGIES

This position is available to our client, an established software company in the financial services industry. The ideal candidate will have experience in software development and management. Bachelor’s degree in Computer Science or related field is required. Experience in software development and management is essential. Please send resume with salary requirements to:

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50 East Service Drive
West Orange, NJ 07052

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50 East Service Drive
West Orange, NJ 07052

O'Brien & Company

APPLICATIONS DEVELOPMENT

Our client, a leading supplier of software to the financial services industry, is seeking an Applications Developer to join their team. The ideal candidate will have experience in software development and management. Bachelor’s degree in Computer Science or related field is required. Experience in software development and management is essential. Please send resume with salary requirements to:

O'Brien & Company
50 East Service Drive
West Orange, NJ 07052

VERMONT
prepare and interview applicants. If you qualify, we will contact you. McMillin: call 813-222-0103, or send your resume to either address below by mail, or to FAX 606-567-3668. Our client companies pay all resumes.

**TANDEM SOFTWARE ENGINEERING OPPORTUNITIES**

**Technical Specialist.** A hands-on position requiring 3-7 years software development in Tancent environments. You must be an expert in Data and Telecommunications/OSF, XBL, SNMP, UNIX, X.25, LU6.2, and design. Prior manufacturer experience in a software engineering environment is required.

**Sr. Systems Engineer.** Responsible for project level activities including requirements analysis, design, implementation management, planning, and test management. Knowledge of Tancent, UNIX, XBL, and application support is a plus.

**Software Engineer.** Design and programming in an environment involving the implementation and support of Tancent products. Experience with Tancent protocols is a plus. Knowledge of DEC or Tanenter operating systems and protocols is a plus. Our long term project plans need your expertise.

In addition to a solid career, we’ll offer you a highly competitive salary and benefits package. Florida’s first-rate climate and beautiful locations, where you can enjoy a wide variety of outdoor activities, offer the perfect combination to live and work. Our professional atmosphere and competitive compensation are designed to provide you with the resources and recognition you deserve.

Please send resume and salary requirements to: RSVP Services, 222-0153, or send your resume to either address below by mail, or to FAX #609-667-3106.

One Cherry Hill Mall, Ste. 614, Dept. C, Cherry Hill, NJ 08002

Fischer International Systems Corp.

222-0153, or send your resume to either address below by mail, or to FAX #609-667-2606.

Jerry Lee, 5401 W. Tradewinds Ave. #302, Lauderdale by the Sea, FL 33308

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- TANDEM COBOL, TAL, PATHWAY, 703C
- SCMS, UNIX, and VM

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St. Louis, MO 63143

(314) 789-0900

(303) 918-0839

**SOFTWARE DEVELOPERS**

Southwest Florida software development company has several positions available for experienced software developers. Electronic Mail and Communications software is being developed for the following environments: IBM mainframes, MS/DOS, UNIX, XENIX, and OS/2. Languages include "C", 370 Assembler, and IBM PC Assembler. OSI, SNA, X.25, or VTAM experience a plus.

Please send resume and salary requirements, or call Mr. Vivas at 800-237-4510 (in Florida, call 800-331-2884).

Fischer International Systems Corp.

4073 Merchandise Avenue

Naples, FL 33942

**CONSULTANTS COUNTERTRACTS EMPLOYEES**

Human Resources, Payroll/Personnel CICS/VSAM, DB2

Please send resume to: Integral Systems, Dept. PS, 2145 North California Blvd., Walnut Creek, CA 94596. Principals only. Please, we are an equal opportunity employer.
It's the efficient way to recruit qualified computer professionals.

Now you can target your recruitment advertising to the qualified computer professionals you want to reach - where you want to reach them. All you need is the new IDG Communications Computer Careers Network. Here's how it can work for you:

You choose the newspapers. Depending on who you're looking for, you can select the combination of four newspapers that best suits your needs - Computerworld, InfoWorld, Network World, Digital News, and Federal Computer Week Editions.

You choose the region. If you wish to recruit within a specific area, you can advertise in the regional editions of the newspapers you choose - East, West, or Midwest. Of course, national buys of individual newspapers or various combinations are also available when you need to extend your reach.

You don't pay for readers you don't want. Gone are the days when you have to worry about paying for waste circulation. The Computer Careers Network puts you in touch with qualified computer professionals - and only those qualified computer professionals you need to reach.

To put the new Computer Careers Network to work for you - regionally or nationally - call the sales office nearest you. Or contact John Corrigan, Classified Advertising Director, at 508-879-0700.

**Sales Offices**

**BOSTON:** 375 Cochituate Road, Box 9171, Framingham, MA 01701-9171, Nancy Percival, Account Executive; 800-343-6474. (in Massachusetts, 508-879-0700).

**NEW YORK:** Paramus Plaza I, 140 Route 17 North, Paramus, NJ 07652; Warren Kolber, Regional Manager, 201-967-1350; Jay Novack, Account Executive 800-343-6474.

**WASHINGTON, D.C.:** 3022 Javier Road, Suite 210, Fairfax, VA 22031; Katie Kress, Regional Manager, 703-573-4115; Pauline Smith, Account Executive 800-343-6474.

**CHICAGO:** 10400 West Higgins Road, Suite 300, Rosemont, IL 60018; Patricia Powers, Regional Manager, 312-827-4433; Ellen Casey, Account Executive 800-343-6474.

**LOS ANGELES:** 18004 Sky Park Circle, Suite 100, Irvine, CA 92714; Barbara Murphy, Regional Manager, 714-250-0164; Chris Glenn, Account Executive 800-343-6474.

**SAN FRANCISCO:** 18004 Sky Park Circle, Suite 100, Irvine, CA 92714; Barbara Murphy, Regional Manager, 714-250-0164; Chris Glenn, Account Executive 800-343-6474.
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Its many options help you recruit qualified computer and communications professionals - regionally or nationally - with combination buys of up to four leading newspapers. And all together, the Computer Careers Network delivers your message to an audience of well over 2 million qualified computer professionals.

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Customize your recruitment program. The Network's four newspapers - Computerworld, InfoWorld, Network World, Digital News, and Federal Computer Week editions - let you tailor your recruitment program to your specific needs. You can buy the basic pa. of three - or as many as four with add-on options. That way you can recruit from the combination of computer and communications professionals that's best for you.

Target your ad placement. You can place your advertising exactly where you want. If you wish to recruit within a specific area, you can advertise in the regional editions of the newspapers you choose - East, West, or Midwest. Or you can extend your reach by running in two regions - or even nationally. Plus - you can still take advantage of stand-alone national rates for individual newspapers.

Reach qualified professionals cost efficiently. Gone are the days when your top choice... Cesar Namba is Vice President for MIS Recruitment for MIS Recruitment at Imperial Corporation of America (ICA), a financial services organization based in San Diego, California. For Cesar, being important MIS/DP positions is the name of the game.
"Computerworld does an excellent job of getting our image across to people - and getting them interested in our company. It's the right vehicle for reaching our target audience.

For all the facts, call John Corrigan, Classified Advertising Director, at (800) 443-6474, today.
Peter Jozwik, President of The Search Firm, makes it clear that his company is a recruiting organization, not an employment agency. Recruiting firms like his locate qualified personnel to fill their clients' well-defined positions — whereas employment agencies find positions for job seekers.

The big difference, Peter explains, is the networking approach The Search Firm takes. In talking with candidates, he gains a greater understanding of the types of professionals currently in the job market — and whether they match the needs of other Search Firm clients. And to reach these professionals, he turns to Computerworld.

"We're looking for name recognition in the computer community. It's that simple, for the most part. We really don't advertise specific positions — just our company and our specialized services.

"And we're particular about where we advertise. Computerworld gives us the audience that's perfect for us. We're reaching all kinds of computer professionals at companies of all sizes in just about every industry. Obviously, if you're a professional recruiter, that's just what the doctor ordered.

"Results? Put it this way: Computerworld is the only place we advertise. And that's a decision that keeps looking better every day. Awhile back we experimented with advertising in other publications — an experiment that proved Computerworld is the only vehicle for us. So for the future, I see no reason to do anything but advertise regularly in Computerworld."

Computerworld. We're helping serious employers and qualified information systems, communications and PC professionals get together in the computer community. Every week. Just ask Peter Jozwik. For all the facts on how Computerworld can put you in touch with qualified personnel, call your local Computerworld Recruitment Advertising Sales Representative today.
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- DB2/IMS
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SYSTEM DEVELOPMENT HEAD

Purdue University Calumet, 15000 Calumet Avenue, Hammond, IN 46323

Technical Position Unisys A6F Mainframe

FISI International, a worldwide leader in the design and manufacture of semiconductor products and components, is excited to offer you a job to a team of innovative professionals who share a vision of our company's exciting growth potential. To meet our demanding goals, we seek an exceptional person for the following position:

Data Base Administrator

Primary responsibility is data base design and maintenance. Other duties include database planning and acting as a backup for data communications. You will use DMSII, COM, NOLI and COBOL.

To qualify, you need 5+ years and systems programming experience with a minimum 2 years as a data base analyst.

FISI International offers relocation compensation, a 401(k) plan, and a competitive salary and benefits package in a progressive working environment.

Located in suburban Minneapolis/St. Paul, our area offers excellent schools, medical facilities and community services as well as cultural, sporting and entertainment opportunities. Interested applicants should send resume to Human Resources Department.
Telex used values remain stable

BY LUCINDA SANTISARIO
IDC FINANCIAL SERVICES CORP.

A little over a year ago, Memorex Telex N.V. announced the 1191, 1192, 1091, 1092 display station families. These terminals have been positioned against IBM's 3191 and 3192-compatible level 12-in. color terminal that is currently trading for 42% ($800) retail. The 179 Models 2, 3 and 4 are enhanced 14-in. displays, which were announced to compete against IBM's 3179 Model 1. The 179 Models 2, 3 and 4 are currently trading for 47% ($900) retail.

In comparison with IBM, few used Telex terminals trade on the secondary market. It is for take-out market to be a "what-ever you can get for it" situation. Dealers are painfully aware that they may have to sit on one of these terminals for a while before finding a buyer. Therefore, they are offering end users low take-out values as a hedge against future used market declines.

For more information, contact IDC Financial Services Corp.'s Terri LeBlanc at 508-972-8500.

Telex terminals

<table>
<thead>
<tr>
<th>Model</th>
<th>List</th>
<th>Retail</th>
<th>Closest IBM Equivalent</th>
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<tbody>
<tr>
<td>078-1</td>
<td>$1,355</td>
<td>26%</td>
<td>3178</td>
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<tr>
<td>079-1</td>
<td>$1,895</td>
<td>42%</td>
<td>Color 3178</td>
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<tr>
<td>179-2,3,4</td>
<td>$1,895</td>
<td>47%</td>
<td>3179</td>
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SOURCE: IDC FINANCIAL SERVICES CORP.

Used/Lease/Rent

The BoCoEx index on used computers

Closing prices report for the week ending Jan. 6, 1989

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<thead>
<tr>
<th>IBM PC Model 076</th>
<th>$675</th>
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<td>PS Plus</td>
<td>$850</td>
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<td>II</td>
<td>$1,150</td>
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<td>Toshiba T3100</td>
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Before You Reach the End of Your Line... Call ICS

- Upgrades
- Processors AS400, 36, 38, 43XX
- Peripheral Equipment

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If you have used computer equipment to sell, Computerworld's product classified Marketplace is the best place to do your selling. That's because Marketplace features a Used Equipment section to help you market your equipment to the very people who are looking to buy.

And when you advertise in Computerworld Marketplace, you reach a total (ABC-audited) audience of over 112,000 computer professionals who turn to Computerworld for information, features - and Marketplace - every week.

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COMPUTERWORLD's Product Classified MARKETPLACE

- Upgrades
- Processors AS400, 36, 38, 43XX
- Peripheral Equipment

in California
(714) 838-3717
Call:
(800) 258-2233

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COMPUTERWORLD

107
Unraveling SQL for MIS pros

Trainers should be versed in the language's many far-reaching effects

BY JONATHAN SAYLES
SPECIAL TO CW

Sequential query language — known as SQL — is a database access language that is emerging as the industry standard for relational database management systems. It presents a unique challenge to data processing trainers for several reasons.

First, relational DBMSs are new to the production world in most organizations. Requests for training in IBM's DB2 and other systems are just arriving.

Second, there is an implied contradiction in marketing hype surrounding these products, such as the claim "simple, yet powerful." These contentions raise questions such as, How simple? Simple for whom? Simple without training or because of it?

Third, SQL is new. Its role in production applications is not well defined in many shops. Is SQL a programmers' language? An end users' language? If it is the latter, how far do we take end-user training?

Finally, SQL exists in many dialects among different vendors' DBMSs. If you use Relational Technology, Inc.'s Ingres on personal computers, Oracle Corp.'s Oracle on Digital Equipment Corp.'s VAX machines and DB2 on the mainframe, which SQL do you teach?

Fortunately, unless DP trainers are directly involved in SQL training, there is no need for them to become experts in the technology. They will, however, need to be conversant in the following four areas:

- Relational terms and concepts. The near and long-term future of DB belongs to relational and distributed relational systems and products. You must be able to identify and describe the basic components and critical issues of these new technologies.

- SQL. The common data access language for relational and distributed relational systems will be SQL. You should understand SQL at least to the extent that you currently know Cobol.

You should participate in an SQL class or computer-based training course to gain a first-hand understanding of the technology's strengths, which include set-level processing, English-like syntax, a short initial learning period, data independence and simple data structures. Don't make any long-range SQL training decisions until you have met SQL in person.

WITHOUT the support of trainers, many of the financial gains made possible by productivity-enhancing tools and services can be lost.

- Relational database and application design. The system development life cycle is being changed in fundamental ways by extended relational analysis, prototyping tools and techniques and modern database and application design methodologies.

These changes will alter your company's training needs dramatically. However, DP trainers, except for ones teaching database or application design, need understand only what these methodologies are (at a high level); how the organization is going to employ them; and who needs to master them, as well as the training alternatives, which are usually limited.

- Decision support products, computer-aided software engineering tools and fourth-generation language application generation. The technologies in this category, aimed at improving productivity, vary greatly. Again, trainers in general need only understand what they are, how their organization is going to employ them and what training alternatives are available.

Everybody thinks so

If all this learning seems like a lot of work, take heart — your sentiments are echoed throughout the organization. Moving to new technologies is work for all affected areas of a company. The phrase "gearing up" for DB2, Oracle or Ingres means taking the time to get retrained in new methodologies, concepts and approaches — not fearing radical new means of going about your day-to-day business.

Poor training, misdirected training or — worst of all — lack of training in these technologies will lead to ineffective use by applications personnel. The decision to go to a relational database does not simply involve purchasing software and a few more direct-access storage devices; it means a restructuring of job specifications as well as systems design and development methodologies, not to mention a hefty amount of training.

These repercussions are the reason DP trainers must become conversant in the relevant areas. Without their advice and help, corporate efforts to implement new technologies such as SQL can end up costing more than necessary and perhaps even failing.

Training is not a peripheral or secondary support activity; it is an intrinsic part of the successful deployment of SQL or any new strategic corporate technology.

Sayles is director of educational services at The Systems Group, Inc. in Glastonbury, Conn.

1989 Computerworld
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At Tridex Corporation of Nashua, New Hampshire, the sales team often wins customers by being customers. That's because the company, which deals in new and used DEC and DEC-compatible equipment, is active in buying as well as selling these products.

As president Joseph Sestito explains, Tridex will offer to buy outdated (or no longer useful) equipment from a potential client. That opens the door to the sale of equipment that does serve that client's needs. Another way to open the door to sales, he adds, is advertising in Computerworld Classified Marketplace. "Our goal in advertising is to generate quality leads. We want to hear from decision makers and people who do the buying at user organizations. I know, after 11 years in this business, that Computerworld is the leader when it comes to delivering those decision makers. In short, we expected high-quality response from Computerworld — and that's exactly what we got.

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Stockade

CIS finds itself in a jam when it fails to meet payment

Upstate New York is known for its tough winters, but Syracuse, N.Y.-based computer leasing firm Continental Information Systems Corp. (CIS) was battered by much more than the cold and snow last week.

CIS stock, already trading at depressed levels from earlier company woes, lost more than 50% of its value in four days, plunging from 2½ points to Thursday's close of 1 point, a new low for the year. Precipitating the drop was the company's revelation that it was late on an interest payment to a creditor and is seeking the sale of all or part of the company (see story page 12). CIS traded as high as 9½ points during the past year.

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The market reacted coolly to Digital Equipment Corp.'s splashy workstation announcements. DEC lost 9½ of a point on announcement day but ended Thursday with a net gain of ¾ of a point to close at 100½. IBM, in a strong week for the Dow Jones industrial average, rose 14% points to 123½.

CLINTON WILDER
DEC products received with cautious optimism

BY JAMES DALY  CW STAFF

Maynard, Mass. — If it were the Super Bowl, the announcer might say that in last week’s desktop product blitz, Digital Equipment Corp. President and quarterback Ken Olsen uncorked a long game-winning pass into an end zone filled with waiting receivers.

Trouble is, many of DEC’s customers are still deciding whether they will — or even can — catch the pass.

Users contacted last week by Computerworld expressed a mixture of reserved optimism and lingering doubt as they crossed their arms and fingers and waited to see whether DEC could really do what it has boldly promised — deliver a quick and total desktop package.

More than a dozen hardware and software announcements constituted the largest introduction in DEC’s 31-year history, including machines ranging from personal computers to a workstation capable of processing 14 million instructions per second.

Die-hard DEC devotees said they thought the broad rollout was just what they have been waiting for. “I like DEC, and I’ve been taking a lot of lip because Sun and Apollo are doing a better job in the workstation market,” said an impressed Steve St. Ong, systems manager at Square D Co., an electrical equipment maker in Milwaukee.

St. Ong said that his firm is interested in connecting the new DEC VAXstation 3100 to its VAX-11/780 because “we’ve got developers who like that machine a lot, and it’s going to be tough to sell them on anything but VAX and VMS.”

Other DEC supporters said they are keeping their cards a little closer to the vest, especially those with lingering memories of DEC’s earlier ill-fated desktop products. “We’ve been looking forward to it, but we’re not going to recommend the VaxStation to our customers,” said Peter Link, manager of engineering systems at Marathon Electric Manufacturing Corp. in Wausau, Wis., who was evaluating the high-end Decstation 3100. “[DEC’s past desktop failures] will make us think twice about buying. We’re not going to jump in and say ‘They’re here at last’ without being very careful.”

DEC’s past desktop failures have made even the most devoted fans edgy. “I’m a big DEC fan — I’ve always had DEC equipment and probably always will — but I would trust them more with medium- and large-scale mainframes than what they would come out with for the desktop,” said Black Chambers, director of communications and information technology at Duquesne University in Pittsburgh.

“Even some of their own salesmen wouldn’t recommend the Vaxstation to us.”

It is these devotees that DEC’s marketing department needs to pursue most vigorously if it is going to attain the company’s goal of becoming the No. 1 workstation vendor in the world. “Our goal is to win the desktop market,” vice-president of Low-End Systems Dom Lacava said.

And they may have already made leaps in that direction, claiming at least 5,000 first-day orders for the new products.

DEC may achieve at least part of its goal by simply maintaining accounts that have been hemorrhaging out to vendors such as Sun Microsystems, Inc., Apollo Computer, Inc. and Hewlett-Packard Co. “DEC’s customers could put up with its lousy [workstation] performance for only so long; then they looked elsewhere,” said Steve Blank, head of marketing at Ardent Computer Corp. and cofounder of Mips Computer Systems, Inc., which makes the R2000 reduced instruction set computing microprocessor used in the DECstation 3100. “I think this could stop that sort of attrition.”

Still, DEC may face an uphill battle among even its loyal users. “We’re not overwhelmed, because there is nothing magic in the announcement,” said Clark Lambert, director of data processing at the Kansas City Star in Kansas City, Mo., where a VaxStation supports more than 100 personal computers.

Solbourne Sun-4-compatible bows

By Nell Margolis  CW STAFF

Longmont, Colo. — Japanese-backed startup Solbourne Computer, Inc. will announce today a multiprocessing superworkstation that claims full software compatibility with Sun Microsystems, Inc.’s Sun-4 workstation series.

Solbourne uses Sun’s Scalable Processor Architecture (Sparc). The company’s goal is to establish the Sparc-based Sun-4 as the de facto standard workstation platform while offering current and prospective Sun users an alternative source.

Analysts and early users last week said that the fledging company could do just that. “We’re pretty bullish on Solbourne for several reasons,” said David Burdick, an analyst at San Jose, Calif.-based market research firm Dataquest, Inc.

Technology touted

One reason, he said, is the technology itself. The machines include the eight-model, one-to-four-processor Sun-4/6000, which offers between 9.5 and 30 million instructions per second (MIPS) and is capable of 1.6 million to 4.7 million floating-point operations per second.

By way of comparison, a two-processor Sun-4/6002 equipped with 16M bytes of memory, a 237M-byte disk and a 150M-byte cartridge tape yields up to 17 MIPS for $51,400 — bettering the performance of a similarly configured Sun-4/260 by 70% at a 14% price break, according to a Solbourne spokesperson.

“We’re very happy with Sun, but we’d like to stretch our limited resources as far as possible,” said Mitchell Levin, director of the Computer Science Laboratory at Rensselaer Polytechnic Institute in Troy, N.Y. “A fairly heavy Sun user” and Solbourne beta-test site, RPI jumped at the chance to try an alternative at a price/performance advantage.

The Solbourne workstation, used since October in a computer stereo vision application, “has essentially done everything Solbourne promised,” Levin said.

Japanese electronics giant Matsushita Electric Industrial Co., which owns 52% of the company and is manufacturing the Sun-4, funded Solbourne’s research and development effort to the tune of $11.75 million and is providing a $38.5 million round of startup funding.

More from DEC blitz

DEC also disclosed the following last week:

• VAX PC, a Microsoft Corp. MS-DOS-based VAX computer; will be available in March 1989 at a single-user charge of $850.

• A future release of VAX PC will include DEC’s VAX/VMS services for MS-DOS. That will allow VAXstation and PC users to share MS-DOS-based data, applications, disks and printers, said Richard Treadway, Decwindows program manager. An Ultrix version is scheduled to come later.

• Several components in its VaxStation program, including the VaxStation Scanner Subsystem, a $5,000 scanner for VMS workstations. DEC also announced Vaxstation Scanning Application, a $600 package for creating image files. Vaxstation Application Services is a set of software tools for Vaxstation image applications. It is priced at $1,200 for a single-user license.

The products are scheduled to be available in February.

• Applications written for Ultrix cannot run on the reduced instruction set computing Decstation 3100 without some porting. Out of roughly 1,000 Ultrix applications, 20 have been ported to the Decstation 3100.

• Ultrix will eventually be offered in a version that includes symmetrical multiprocessing. Until then, the VAXstation 3520 and Vaxstation 3540 will be able to run Ultrix only in asymmetrical multiprocessing mode.
Can the No. 1 desktop vendor be connectivity — not hardware or software? Digital Equipment Corp. believes the answer is anchored by Desktops. DEC announced that Desktops, already shipping in DEC’s Ultrix Version 32 Edition, will be included in its Release 5.1 of VM/VS Kernel to ship in February.

In preaching the connectivity gospel, DEC President Kenneth Olsen reiterated a position he has expressed numerous times previously: that DEC would not innovate standard desktop hardware or software but would tie disparate desktop devices together. Such a strategy is far from new. In 1986, the company gave birth to the Vaxmate, a Microsoft Corp. MS-DOS system that had built-in communications capabilities. That system failed to scribe last week remains only conceptual for now. But if connectivity alone will provide DEC, can an application of the required software be there yet and will not be announced until later this year at the earliest. Indeed, much of what was described last week remains only conceptual for now. For example, “live link,” a capability of DEC’s Compound Document Architecture (CDA), can update a document in one user’s application from a document in another user’s application. But two software packages offering the capability, Decwrite and Decdecide, will not be available until May.

The ultimate goal of CDA is to offer instant updating of a document from information in remote databases and spreadsheets, but no database currently now complies with CDA specifications, according to DEC officials, who gave no date for when products will be available.

However, 15 independent software vendors have endorsed CDA and are said to be developing CDA-compliant software. Another missing building block is MS-DOS-based Windows, which is not offered on a stand-alone personal computer. Instead, it will only be offered on a server — a consequence of the PC's ability of supporting open systems. A user would have to buy both DEC's MS-DOS application to operate in Desktops from the server. MS-DOS Desktops Display Facility, which would allow this, has no price or shipping date.

“I’ve got problems with MS-DOS not being a PC. A user with a lot of PCs on a LAN may not want a server,” said Frank Dzubeck, president of Network Communications Architects, Inc. in Washington, D.C.

However, Digital Equipment Corp. announced its Desktop program manager at DEC, said the company considered bringing Desktops to the MS-DOS platform, said because of the large amount of added memory that would be required.

In addition, the X-library of applications would be difficult to implement in MS-DOS. “We didn’t think that would be enough demand,” Treadway added.

Under VMS, the recommended minimum amount of memory in a VAXstation to run Desktops and several applications is 4M bytes. Under Ulitrix, the recommended minimum is 6M bytes. In a VAX-based server, the recommended amount is 8M bytes, according to DEC.

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Copyright is not violated by a half-dozen other systems vendors, however. With the exception of IBM, which manufactures much of its own 1M-bit memory components, an aggregate system price erosion at an average of 12% to 15% is in the offering, said John Dankle, vice-president of Work Group Technologies, a PC market research group based in Boston. Harvard, users will have to pay a price for making a show of price memory in critics’ minds,” he said.

Memory prices will take a dramatic dive this year for three reasons: First, DRAMs have been successfully converted to 1M-byte chips by the middle of the year, he said. Second, semiconductor manufacturers have ramped up at breakneck speed to reach 500 production levels in a matter of days. Finally, many vendors devoured by the shortage of DRAMs, will not shutter stockmemory to avert any future crises.
Ever since divestiture, telecommunications has played an increasingly crucial role in the competitive plans of Fortune 1,000 firms and other large users, according to a study by The Eastern Management Group.

Of the MIS and communications managers surveyed at 12,000 organizations, 27% said that they anticipated telecommunications personnel and budget outlays to grow between 10% and 50% during the next five years. Some 13%, representing the largest companies, anticipated a growth of 50% to 100%, the study found.

Telecom executives said they expected their budgets’ percentage of overall corporate budget to grow from 2.8% to 3.8%, on average, by 1993. In contrast, data processing/MIS managers predicted a growth of from 5% to 5.7% for their departments during the same period.

A reflection of telecommunications’ increasing strategic importance is the fact that in 1988, three-fourths of major companies had placed the function under DP/MIS, the report said. This also points to increased integration of voice and data operations, according to the study.

Before divestiture, 42% of the study group had housed telecommunications within administration and human resources.

The low end without Lowe. IBM will hold a product blitz this spring for its low-end systems, its first major announcement after the departure of former low-end systems President William Lowe, according to sources. The PS/2 line is to be enhanced at almost every price point, and IBM is incorporating the Intel 80386SX microprocessor and AT bus should be introduced as well. IBM will make available bus mastering cards that were demonstrated at Comdex/Fall '88 and is also expected to announce third-party bus mastering cards. The Armonkites are also expected to announce applications developed by third-party vendors for PCs running OS/2 that will be sold under the IBM label.

Listen to what we say, not what we say. A Radio Shack spokeswoman apparently mispoke when she was quoted here last week saying that DEC's OEM versions of Tandy's PCs are "Digital's in name only." Ed Juge, director of marketing at Tandy, last week said the comment was unfortunate and inaccurate. As with any OEM customer, DEC is free to "add or subtract features," and it would be surprising if the company merely relabeled the Tandy boxes, he said.

What is IS? The desire to polish the image and expand the role of the computer management profession meant changing the department name from data processor to management information systems and lately to just "information services." Could that lead to confusion? Well, if you spotted the newspaper help-wanted ad for a "Director of Information Services" at Merck & Co., it may have. According to the fine print, IS in this case is actually (shudder!) public relations; the top computer executive at Merck is the vice-president of "computer resources."

No show, no refund! One notable no-show at Comnet will be DEC, which canceled a 2,000-square-foot booth too late to save its $56,000 fee, according to company spokeswoman Pam Lattimer. A companywide reevaluation of marketing strategy resulted in the decision to focus more on DEC-sponsored shows such as Dectop and Decworld, she added. DEC will not be exhibiting at the Interface conference in March, Lattimer said, and the company may also bow out of the Comdex/Spring '89 show, rumor has it.

Ship-sliding away. In a February 1988 announcement, Microsoft said it would send its Unix port of OS/2 LAN Manager, LAN Manager/Express (LM/X), for an early 1989 release, preceded by a software developer's kit that was to ship by the end of last year. In an update, Paul Sribblad, Microsoft's director of Zenix marketing, says early LM/X code has shipped but that the developer's kit will be late. It will not be available until Uniform in late March. The release was delayed to incorporate TCP/IP transport software, he said.

Open and shut. The graphical user interface recently announced by the Open Software Foundation (OSF) left out a key piece that was widely expected to be included: Adobe's Postscript imaging model. Apparently, Adobe did not agree to the OSF's licensing terms, and a suitable pact was not worked out by the Dec. 30 announcement. However, both parties confirm that they are still negotiating.

With no snow in the Northeast, Massachusetts high-tech execs are apparently thinking summer. Jim Manzi, chairman of Lotus, paid $4 million for a beachfront home on Cape Cod, according to published reports. Apollo Chairman Thomas Vanderstiche is going downsacle, reportedly negotiating for a $2 million cottage on the Cape. If you've got any reason to believe these guys or any other execs are thinking retirement instead of summer, give me a call at 800-343-6474 or 508-879-0700 and tip off News Editor Pete Bartolik.

### TRENDS

#### Telecom and MIS

Growth in telecom spending to outpace that of MIS in all sectors

<table>
<thead>
<tr>
<th>Year</th>
<th>Telecom</th>
<th>OP/MIS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1988</td>
<td>7.1%</td>
<td>3.3%</td>
</tr>
<tr>
<td>1989</td>
<td>7.3%</td>
<td>3.3%</td>
</tr>
<tr>
<td>1990</td>
<td>7.4%</td>
<td>3.3%</td>
</tr>
</tbody>
</table>

*Projected

#### Market forecast echos spending hikes

<table>
<thead>
<tr>
<th>Year</th>
<th>Value of U.S. telecom equipment market in millions</th>
</tr>
</thead>
<tbody>
<tr>
<td>1984</td>
<td>$20.9</td>
</tr>
<tr>
<td>1985</td>
<td>$24.8</td>
</tr>
<tr>
<td>1986</td>
<td>$27.4</td>
</tr>
<tr>
<td>1987</td>
<td>$28.5</td>
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<tr>
<td>1988</td>
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<tr>
<td>1989</td>
<td>$30.7</td>
</tr>
<tr>
<td>1990</td>
<td>$33.8</td>
</tr>
</tbody>
</table>

*Projected

SOURCE: THE EASTERN MANAGEMENT GROUP AND THE NORTH AMERICAN TELECOMMUNICATIONS ASSOCIATION

### INSIDE LINES

The low end without Lowe. IBM will hold a product blitz this spring for its low-end systems, its first major announcement after the departure of former low-end systems President William Lowe, according to sources. The PS/2 line is to be enhanced at almost every price point, and IBM is incorporating the Intel 80386SX microprocessor and AT bus should be introduced as well. IBM will make available bus mastering cards that were demonstrated at Comdex/Fall '88 and is also expected to announce third-party bus mastering cards. The Armonkites are also expected to announce applications developed by third-party vendors for PCs running OS/2 that will be sold under the IBM label.

Listen to what we say, not what we say. A Radio Shack spokeswoman apparently mispoke when she was quoted here last week saying that DEC's OEM versions of Tandy's PCs are "Digital's in name only." Ed Juge, director of marketing at Tandy, last week said the comment was unfortunate and inaccurate. As with any OEM customer, DEC is free to "add or subtract features," and it would be surprising if the company merely relabeled the Tandy boxes, he said.

What is IS? The desire to polish the image and expand the role of the computer management profession meant changing the department name from data processor to management information systems and lately to just "information services." Could that lead to confusion? Well, if you spotted the newspaper help-wanted ad for a "Director of Information Services" at Merck & Co., it may have. According to the fine print, IS in this case is actually (shudder!) public relations; the top computer executive at Merck is the vice-president of "computer resources."

No show, no refund! One notable no-show at Comnet will be DEC, which canceled a 2,000-square-foot booth too late to save its $56,000 fee, according to company spokeswoman Pam Lattimer. A companywide reevaluation of marketing strategy resulted in the decision to focus more on DEC-sponsored shows such as Dectop and Decworld, she added. DEC will not be exhibiting at the Interface conference in March, Lattimer said, and the company may also bow out of the Comdex/Spring '89 show, rumor has it.

Ship-sliding away. In a February 1988 announcement, Microsoft said it would send its Unix port of OS/2 LAN Manager, LAN Manager/Express (LM/X), for an early 1989 release, preceded by a software developer's kit that was to ship by the end of last year. In an update, Paul Sribblad, Microsoft's director of Zenix marketing, says early LM/X code has shipped but that the developer's kit will be late. It will not be available until Uniform in late March. The release was delayed to incorporate TCP/IP transport software, he said.

Open and shut. The graphical user interface recently announced by the Open Software Foundation (OSF) left out a key piece that was widely expected to be included: Adobe's Postscript imaging model. Apparently, Adobe did not agree to the OSF's licensing terms, and a suitable pact was not worked out by the Dec. 30 announcement. However, both parties confirm that they are still negotiating.

With no snow in the Northeast, Massachusetts high-tech execs are apparently thinking summer. Jim Manzi, chairman of Lotus, paid $4 million for a beachfront home on Cape Cod, according to published reports. Apollo Chairman Thomas Vanderstiche is going downsacle, reportedly negotiating for a $2 million cottage on the Cape. If you've got any reason to believe these guys or any other execs are thinking retirement instead of summer, give me a call at 800-343-6474 or 508-879-0700 and tip off News Editor Pete Bartolik.
From the advanced design studios of sunny Southern California comes a new version of super performance. New breakthroughs in lightweight materials give pedal pumping a technological twist. New designs on the boards feature superlight aluminum alloys and carbon skins. The rough angular shapes of traditional bike frames, pedals and gears are giving way to sleek contours that rival those of an exotic Italian sports car.

Of course the high-performance rider needs the right equipment. Advances in rugged yet lightweight clothing have resulted in windproof gear that offers an incredible degree of functionality with a minimum weight penalty. New breathable fabrics in a vast array of colors allow you (Cont.)

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