Software firms end year with a bang

By Charles Babcock

The closing quarter of 1986 is providing a powerful spur in revenue for a number of software companies formerly smarting from the prolonged 1985-1986 slowdown, particularly for those that have diversified away from dependence on IBM mainframe system sales.

The last quarter of the year is typically the strongest in generating revenue as corporate customers make buying decisions that had been postponed for competitive evaluation or chilled by IBM product moves earlier in the year.

Companies like Software AG of North America, Inc., McCormack & Dodge Corp. and Cincom Systems, Inc. report a growing share of their revenue coming from the VAX marketplace. Likewise, companies such as Pansophic Systems, Inc., Management Science America, Inc. and Computer Associates International, Inc. have rushed to acquire firms that offer Digital Equipment Corp. VAX software.

Cincom reports a 30% growth in revenue this quarter compared with revenue of a year ago, fueled by sales of its Supra relational data base management system and both IMS and manufacturing systems for the VAX.

VAX products represent 20% of Cincom's business this year, up from 11% last year, according to Thomas McLean, Cincom vice-president for marketing.

"Just about everybody has a VAX product now," notes Robert Therrien, an analyst for Paine Webber, Inc. In addition, several large companies are renewing their interest in providing services as well as packaged software. Among the latter are application leader MSA in Atlanta, Policy Management Systems Corp. in Columbus, S.C. and Cullinet Software, Inc. located in Davis, California.

By David A. Ludlum

Despite the current preoccupation with communications, compatibility and distributed processing, the sugar-plums dancing in the heads of some MIS managers this holiday season spring from a more traditional concern: programmer productivity.

The wish lists of managers surveyed by Computerworld address quite a variety of other issues as well, including more contemporary concerns with communications and corporate cohesion.

George DiNardo, executive vice-president of Pittsburgh's Mellon Bank, N.A., says he wishes for "one thing and one thing only — error-free code."

Errors stem in part from complicated, changing federal regulations, he claims.

PC managers facing tough network choices

Early buyers risk conversion costs

By Elisabeth Horwitt

Users of personal computer networking computer networks are in a dilemma: Put those networks on hold until IBM's LU6.2 peer-to-peer networking strategy pays off in available products, or buy current networking products and face a tremendous conversion cost at a later date.

"IBM says migrating from Netbios to LU6.2 will be easy, but I'm not sure about that at all," says Steven Berto, office systems project manager for Metropolitan Life Insurance Co. IBM and PC networking vendors are placating their customers with promises of LU6.2 products to come. But these early arrivals are likely to offer either low-level gateways between the PC network and IBM's Systems Network Architecture world, or a way to have LU6.2 perform the same functions that already exist on a PC network, industry authorities claim.

"What is required over the long term is transparent PC-to-mainframe access, allowing people to call up Ashton-Tate's Phase II and have it query the mainframe, access data and bring it down. No one in the industry is doing that right now," says Roy Polk, Ashton-Tate executive vice-president.

A lot of software will need to be written in order to tie together the pieces of this revolutionary micro-to-mainframe communications environment, and for some time, customers will be writing their own software to fill in the gaps not yet addressed by the vendors.

On the other hand, if they can play it safe until LU6.2, "I want a voice tube that you speak into and out the bottom comes code," DiNardo says.

Larry van Goethem, director of corporate systems at Sara Lee Corp. in Chicago, says his wish list is topped by better productivity tools for his staff, such as fourth-generation languages. Their comments reflect the perennial nature of concerns in programming.

DiNardo took part in Computerworld's survey of wish lists last year, when he said he yearned for software productivity aids.

Again in the programming arena, Laurance T. Burdens, corporate vice-president of Firestone Tire and Rubber Co. in Akron, Ohio, would like to see his staff get up to speed in

Seeing hard drives with tools, by golly!

By Mitch Betts

WASHINGTON, D.C. — The Federal Communications Commission last week unveiled a deregulation proposal that would give AT&T and other local exchange carriers greater flexibility in pricing their packet services or any network service provided to large users under competitive contracts.

"It's clear that the proposal might provide the carriers with more flexibility, but whether that translates into lower prices is another matter," said James S. Blazasak, counsel for the Ad Hoc Telecommunications Users Committee.

The FCC said it intends to eliminate full-blown tariff regulation when such regulation could "hinder the efficient, low-cost offering of certain services."
Strike places MIS staffers in unusual end-user positions

By Jeffry Beeler

OAKLAND, Calif. — Hundreds of MIS professionals at a Northern California health maintenance organization (HMO) last week resumed their usual duties after completing what amounted to a crash course in empathizing with end users.

In temporarily reassigned most of its information services staff to assorted end-user positions, Kaiser Permanente Medical Care Program suffered some short-term inconvenience and discomfort. But in the long run, the experience will probably prove far more beneficial than harmful, according to Neal Bell, director of the HMO's information services unit.

Debriefing systems workers

So helpful, in fact, may the personnel transfers ultimately prove that Kaiser's managers have debriefed its systems employees and solicited their advice for improving the organization's future development efforts. The week-long experience was based on the results of surveys of the HMO's MIS work force.

Under normal conditions, the information services staff at Kaiser consists of some 300 analysts, programmers, managers, data base technicians and other high- or mid-level systems specialists. But from late October until mid-December, all but a handful of Kaiser's MIS employees were assigned tasks that historically have been performed by computing novices.

During a seven-week walkout by 9,000 of the HMO's unionized workers, who called the strike to protest a proposed restructuring of their systems, many of the 300 analysts, programmers and managers, who had been asked to fill in for striking end users never once had an opportunity to work with any automated applications during the entire episode, Poole said. "Instead, they were assigned to housekeeping tasks or performed a broad range of other functions that rely mainly on manual labor."

For at least some of its reluctant targets, the sweeping reassignment of Kaiser's MIS work force had its negative side. Al Sandberg, the HMO's productivity support manager, found the abrupt redefinition of his job function frightening at times.

"The experience of suddenly doing something new made me anxious," Sandberg said. He worked part of the strike as a receptionist in Kaiser's physical therapy department and the rest as a systems operator in its medi-cal records libraries. In dealing with patients who are in distress and are waiting for much-needed treatment, Kaiser said, "you wonder whether you'll be able to hack the pressure or make a fool of yourself."

Unmatched opportunity

In working intensively as users for an extended period, the Oakland-based facility's computing specialists have gained an unmatched opportunity to become as intimately acquainted as possible with what their nontechnical counterparts need, Bell said. "How a system works in a test and debug mode is often quite different from the way it runs day to day in a production mode," he said.

"So when someone who has developed a system later becomes one of its users, the way he looks at the application and his approach to program design changes a lot," he added. "Probably nowhere are Bell's observations more graphically illustrated than in the experiences of Paul Royer, an in-house consultant for Kaiser's end users. While the just-settled labor dispute lasted, Royer pulled a five-week stint as a systems operator in the HMO's regional payroll center. His assignment strengthened his belief that application developers need to heighten their sensitivity to their clients' demands.

E-mail centers clog during holidays

By Peggy Watt

Not only the U.S. Postal Service, but electronic mail centers, too, run the risk of a clogged system at holiday time.

A Hewlett-Packard Co. regional information systems director recently cautioned users to reserve business E-mail strictly for business, even when it might be tempting to send holiday greetings by electronic means.

It seems that recent months have seen users sharing electronic graphic, as well as sending personal notes and even E-mail chain letters over the corporate system. As many as 60,000 HP employees in the U.S. have mailbox filters on HP Desk, the company's internal E-mail system, which is based on HP 3000 minicomputers.

"At times we have some abuse, but it's never anything malicious," said Steve Peterson, who is based in the corporate system. As many as 60,000 HP employees in the U.S. have filter mailboxes on HP Desk, the company's internal E-mail system, which is based on HP 3000 minicomputers.

"If you have a choice of sending holiday greetings by E-mail vs. paper, I bet E-mail ends up cheaper," he said. "But I'm sure there are thousands of examples of misuse of conventional in-house mail, too."
As 1986 draws to a close, Oracle Corporation would like to share the warmest Seasons Greetings with the people who’ve helped to make this our most successful year. This year, Oracle’s sales grew by 140% to over $55 million, our profits increased 280%, our staff grew from 375 to over 800 talented professionals, and our product line entered a new era of performance, quality and diversity.

First and foremost, our thanks to the Oracle customer and user communities, who have placed their trust in ORACLE as a solution for their most challenging database and application problems.

Thank you for making us the fastest-growing software company in the world. We hope you share our enthusiasm about the exciting new products and services of this year... and those of the year to come.

Next, we thank our OEMs, whose ranks were swelled this year by the likes of IBM, NCR, ATT, and Wang. Our thanks to each of you. And, of course, thanks to old friends Prime, Stratus and Sperry (Unisys) and DG who’ve grown with Oracle over the years.

We thank our VAR relicensors, the vertical market software companies and systems integrators who have helped Oracle provide complete solutions to our customers’ problems.

We thank our employees for tireless efforts through long nights and non-weekends and for their commitment to excellence and quality.

We thank the international community who’ve made ORACLE and SQL the standard from Canada to Europe, Australia to China.

We thank the ANSI SQL committee who have validated our commitment to the SQL language, pioneered by Oracle seven short years ago.

Finally, we thank Mimi, proprietress of the Oracle Cafe and Deli, who cooks the best imitation Egg McMuffins* in the world.

We hope you all will join us in an equally successful 1987.

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Software firms end '86 with bang

From page 1

Westwood, Mass.

Analysts offer the following views on the major companies:

**Computer Associates**, a Garden City, N.Y., systems house, is “prod-
uct-rich and extremely well diversi-
ﬁed,” particularly after its acquisi-
tion of Dataware of Cambridge, Mass., that a turnaround will be
expected in the December quarter.

**IBM** will continue to diversify its 
product line through the acquisition of
Comserve Corp., the manufacturing applications vendor, according to 
Mortenson.

**Cincom** of Cincinnati says, the firm will need a resurgence 
to deliver products to the VAX mar-
etry of system management software 
acquisition of Comserve Corp., the 
manufacturing applications vendor, 
**Computer Associates** is expected 
to be buying it, Taylor says.

**Taylor** says. **Computer Associates** is expected 
to be buying it, Taylor says. 

**Dell Computer** Corp.'s McLean says. 

**AS/400** has boosted sales.
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What makes 'em so special? Well... (1) TURBO PERFORMANCE: Have you ever stepped down on the gas in a dangerous driving situation and discovered... nothing? Well, that'll never happen to you with these two vehicles.

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If you'd like to put a little high technology in your VM tank, give us a call. We might even take your used VM dump-restore or sort program as a trade-in!
Strategy hinges on distributed DP

By Alan Alper

NEW YORK — Compagnie des Machines Bull will stress distributed data processing and networking when it begins running Honeywell, Inc.’s computer business sometime early next year, according to Francis Lorentz, president and chief operating officer of the French firm.

In an interview last week, the Bull executive went to the McDonald’s Corp.-Illinois Bell site trial for the first time at the McDonald’s Lodge in Oak Brook, Ill. — Voice, video and data transmissions shared the same standardized Integrated Services Digital Network (ISDN) connection for the first time at the McDonald's Lodge. Lorentz said. He will do what Bull believes will be even more significant in the future, "We're treating this test as a training sequence and an investment in the future," Parrish said. Several hardware suppliers have agreed to provide ISDN gear. Hardware from AT&T Network Systems Group, Fujitsu America, Inc. and NEC America, Inc. was used at the demonstration, while hardware from Teled. Hayes Microcomputer Products, Inc. and Harris Corp. is expected to be used at McDonald's by 1987.

Several years ago, new management turned the company’s information systems department and facilities management over to ISDN equipment to conduct business. "We consider ISDN to be an LAN [local-area network] in and of itself," said Pat Krause, McDonald's telecommunications director. It has the potential of replacing dozens of LANs set up throughout McDonald's, he said.

Voice/data/video workstation

It is Illinois Bell's hope that daily use of ISDN specified hardware from five McDonald's sites in Oak Brook will prove out the technology [CW, Dec. 1]. It should also guide systems designers in CT&T sets and in the data/video ISDN workstations. As it stands currently, separate telephone, video and data ISDN services can be used in conjunction with a terminal adapter to transmit ISDN's digitized messages.

During last week's ISDN demonstration, Illinois Bell President Ed Rensi, who was in McDonald's office building about one mile away.

Video images

After the connection was established, Wade turned on a modified Datapoint Corp. Micro videoconferencing terminal on which Renzi could be seen talking. A small television camera built into the side of the Wheat Point set sent Wade’s video image to Renzi as well.

Unfortunately, the connection was made in such a way that there was a sub-second lag in Renzi's spoken responses. Something that could have been avoided, Illinois Bell spokesmen said, if the demonstration had been wired differently.

The video image also seemed somewhat halting, because of the way compressed video systems "factor image" images that are not moving. A compressed video system "factor out" images that are not moving. The correct name for the maker of the Best/1 software product, "Endata, Inc. in the Dec. 15 Compuworld stock trading index were transposed.
Multics future dim despite Honeywell/Bull merger

By Rosemary Hamilton

The joint venture plans recently announced by Honeywell and NEC, intended to breathe new life into Multics, have met with mixed reactions by Multics' users community earlier this month as some users speculated that the joint venture might be a spark of hope among its Multics community while others doused such hopes by stating that the Multics strategy will not be altered.

"Obviously, there will be some guys who'll want us to call the tooth fairy and bring back everything," said Eugene Manno, group vice-president of Honeywell's Information Systems group. "But the actions and direction we've taken will continue. I don't foresee any changes."

According to a top Compagnie des Machines Bull executive, the company is not yet sure what it will do with the Multics operating system, which Honeywell said it would not support beyond 1994. "I don't understand what the people at Honeywell are doing," said an interview last week that Bull probably has as many customers running Multics as does Honeywell.

"In many cases we will be able to sell customers add-ons to their mainframes and follow their needs in power until that date," Lorentz said. "It's unclear what we will do after that."

Nonetheless, one Midwest Multics user who requested anonymity said the Honeywell joint venture, which will merge Honeywell's Information Systems division and Bull and NEC Corp., leaves open a "possibility that the new company will take a second look at Multics."

"Maybe it's a one in a million shot," he continued. "But maybe we can get someone to take a look at it."

It was more than a year ago that Honeywell announced it would stop further Multics development, and since that time it has been working with users, many of whom remain irate despite the decision to incorporate Multics features into a new version of the operating system, the 4 S Plus, which will be available sometime in 1988 and will run on the vendor's newest line of minicomputers.

Some members of the Multics community, a small but highly visible group of users that includes Ford Motor Co., said they hoped the new company would give Multics another chance, primarily because there is a substantial European Multics community with a few dozen sites in France that has bought systems through Bull.

Alain Buis, head of the French Multics user group, said he would "love to see them reconsider" the fate of Multics, "but it's not evident."

"Bull may stand up on its hind legs and support its Multics users in France, or they could be wimpy and say Honeywell in the U.S. knows what they're doing and go along with it," said Bruce Sanderson, a software specialist at Ford and a member of the Multics review committee of the Honeywell Large System User Association (HLSUA). "But I'd say there's less than a 50% chance," he added.

Multics users of HLSUA recently presented four major features to Honeywell that they said must be incorporated in the new operating system for migration to be possible. Those features include the Multics Relational Data Base Store and the virtual file functionality as well as the PL/I language and third-party software support.

Manno said Honeywell will officially respond to users in the next few months. The Bull-controlled joint venture will continue with the Multics migration plan, he added.

"There have been some glitches in it. There were some things left out that we wanted to do, so instead of going into production, it went into another beta run," said Sharon Cuppett, Datavue product manager. "We didn't want to have any major bugs."

Quadram sheds laptop bugs

By Douglas Barney

NORCROSS, Ga. — After technical problems and the reassigning of engineers to other projects, Datavue Corp. will ship its Keystyle 80 laptop computer and Writestyle portable printer this month.

The products were originally set to ship last summer, but the response from beta-test sites, especially concerning the issue of IBM compatibility, led to much of the delay.

"There have been some glitches in it. There were some things left out that we wanted to do, so instead of going into production, it went into another beta run," said Sharon Cuppett, Datavue product manager. "We didn't want to have any major bugs."

In addition, some of the engineers from the Keystone project were transferred to the Snap 1+1 project. Snap 1+1 is a recently announced laptop with a detachable keyboard that can be used separately. "When you start pulling people off of one project and changing projects, it takes a little longer. That did stall some of the Keystone work," Cuppett said.

Keystone 80, first shown more than a year ago, can work with the Writestyle to provide the functionality of an electronic typewriter.

The $399 Keystone 90 can operate as a stand-alone laptop and will be available with an 80-char. by 8-line screen with built-in word processing and communications.
Network utilization key issue among Dexcel attendees

Multivendor, cost solutions top goals

By Donna Raimondi

NEW YORK — Networks — creating them, buying them and optimizing existing ones — were the main topic of conversation at the Dexcel conference held here last week.

While most third-party vendors hawked add-on memory equipment, data base management software, decision support systems or storage subsystems for Digital Equipment Corp. computers, computer managers walked around looking for solutions to their networking problems.

“We want to optimize our network,” said Irving Heskel, telecommunications manager at Citibank N.A. in New York. The predominant- ly IBM customer also includes DEC VAX machines and Tandem Computers, Inc. fault-tolerant processors.

Heskel said he wants to make his network more cost-effective and to add redundancy for safety. Although Citibank is satisfied with its existing network, the company prides itself on being state of the art, he added. To that end, Heskel was looking at data private branch exchange (PBX) multiplexers and other communications products at Dexcel.

Two-thirds of large net- works were looking for ways to iron out some problems. A lot of networking solu- tions don’t work when you have a lot of different computers,” said John Dallen, who directs computer services for the Geographic and Computer Science Department at the U.S. Military Academy in West Point, N.Y.

“We don’t have a good han- dle on how to address the need to link 4,500 nodes that will be on the network,” Dal- len said.

West Point has equipment from DEC, Unisys Corp., which is the partnership of the former Sperry Corp. and Burroughs Corp., and a variety of “odd machines” plus close to 5,000 IBM units. Daleen said.

The problem at West Point is linking the different equipment outside the major net- work system, Dransky said. “The network needs a closed network for security reasons. The problem is compatibility and bugs in the software. When people use different applica- tions, it makes it hard to link smaller networks. Large net- works are easier to link through a central node that can tie the entire campus to- gether.”

At Lehigh University in Bethlehem, Pa., an Intecom, Inc. network links about 4,650 students and faculty to superminis and mainframes from Control Data Corp., DEC and IBM. “Our students can talk to the library, call all the mainframe computers for bulletin board information, log back and forth with other microcomputers and ex- change documents with pro- fessors,” said George Dra- binsky, business manager for the mainframe computing center.

The search for LANs is ongoing. “You can talk to the library, call all the mainframe computers for bulletin board information, log back and forth with other microcomputers and exchange documents with professors,” said George Drabinsky, business manager for the mainframe computing center.

Jansen of Grumman Space Engineering and Office Automation, said he firmly be- lieves that PC networking was viable.”

“The problem is that all have access to the same systems. Because the server and client need to be back and forth with each other,” Jansen said.

One vendor’s solution may be the best terminal or software. “Networking is going very well. We use all DEC products,” said Daleen. “The one-vendor ap- proach minimizes the prob- lem of having to deal with software and hardware. He claimed that the small price differen- tial is worth it. “Staying with one vendor saves time, aggra- vation and effort. We have done some comparisons with departments at Grumman Space Engineering and Office Automation, and we decided to stick with DEC.”

He is working with systems engineers and analysts on a Strategic De- fense Initiative Space con- tract, all have access to the same systems. Because the facility is closed for security reasons, the analyst could be faster, but for us the I/O speed isn’t the bottle- neck. “But while SMB may prove to hook into the LU6.2 world.”

Application software ven- dors such as Ashton-Tate and Borland, meanwhile, are looking at their migration to LU6.2. It is already possible to imple- ment SMB/LU6.2 on top of MS-DOS and Windows 3.1, using SMB toLU6.2 to do the same things that can be done with the redirector/redirector” shared resources and files,” Ashton-Tate’s Folk says.

However, the difficult job of extending PC networking into those PC networking into more sophisticated systems, still remains, according to Folk.

During a recent interview with Computerworld, Micro- soft’s Krause noted that “internetworking is a gray area — we don’t know where it is regarded as red and ourselves.”

“There is no conflict between SMB, EEP/SNA and DCE,” notes Micro- soft Network Product Manager David Melin. “The potential con- flict is in the timing and method of IBM’s long-range plans, and whether SMB and redirector are in them.”

PC managers face choices

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based products become available, customers will try to put their PC networks on hold for several years.

PC managers of add-on vendors, meanwhile, are scrambling to get on board the PC networking bandwagon before they get crushed.

At a recent seminar, the software firm had one of its major clients, Larry Gates told his audience, “It’s very critical for us as a gateway to move into LANs in a variety of fashions. From a practical and effective point of view, it seems that probably will be at the top of the list to start out with.”

Service Requester Processor Inter- face (SRPI) has been de- scribed by some industry proponents as an entry-level PC-based product that forms a bridge to 3270 main- frame software environ- ments.

The irony is that the LU6.2 dilemma arises just as PC networking products are fi- nally coming into their own as a de facto networking standard, user groups are growing number of network hardware and PC software vendors.

Developed by IBM, Microsoft and Sytek, Inc., compo- nents such as the redirector and server message block (SMB) have been incorporat- ed into an increasing number of popular PC networking hardware and software prod- ucts.

Recently, several major big system vendors, includ- ing Digital Equipment Corp., Hewlett-Packard Co. and Tandem Computers, Inc., have announced SMB-com- patible products that allow their hosts and agents to act as servers on a PC network.

While SMB may prove to be the best terminal or software, “multiuser networking” that use a multivendor ap- proach, and we decided to stick with DEC.”

Banyan Systems, Inc. PC net- works to IBM hosts. Banyan has PC-to-mainframe products, Enhanced Connectivity Fa- cility (ECF) and SRF. ECF converts a mainframe into a PC server that provides virtual dial-up printing and the like. While companies wait for IBM to get its peer-to-peer act together, the PC networking and software vendors are racing to hook into the LU6.2 world.

Network vendor Ungermann- Bass, Inc. currently supports the non-LU6.2 version of SMB.

Both Banyan and 3Com Corp. have promised their customers future LU6.2 im- plementation on their PC net- working products.

However, William Krause, 3Com’s product marketing manager, put SMB’s support at the bot- tom of a list, below support of IBM communications pro- tocol Network File System and Open Systems Intercon- nect protocol FTAET. “I think that is also the priority order for the PC network marketplace, which is driven by applica- tion software availability,” Krause said. “Multiuser net- working software is finally coming out for SMB/redirector (protocols). Now IBM starts spouting LU6.2 and compa- nies say, ‘Sure we’ll have it in a couple of years off.’”

Application software ven- dors such as Ashton-Tate and Borland, meanwhile, are looking at their migration to LU6.2. It is already possible to imple- ment SMB/LU6.2 on top of MS-DOS and Windows 3.1, using SMB toLU6.2 to do the same things that can be done with the redirector/redirector” shared resources and files,” Ashton-Tate’s Folk says.

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Consultants seek to ease tax reform impact on contractors

Meet with sponsor of 1706 provision

By David A. Ludium

An independent computer consultants' group has launched a drive to soften the blow of a controversial section of the Tax Reform Act of 1986 by limiting its effect to technical subcontractors who are placed in jobs by brokers.

Section 1706 of the tax act could force many independent computer workers — both contractors and subcontractors — to become employees of organizations they work for, requiring income taxes to be withheld from their pay and eliminating many tax deductions they have been able to use.

Amid outcry from many independents last week, representatives of the section's sponsor, Sen. Daniel Patrick Moynihan (D-N.Y.), formed a task force to try to clarify it.

Moynihan aides met Tuesday with representatives of the Independent Computer Consultants Association (ICCA) and officials of Congress's Joint Tax Committee and the Internal Revenue Service.

Repeal campaign

The ICCA, a leading opponent of Section 1706, may mount a campaign to repeal it, but first must clarify how members should address the bill when it takes effect Jan. 1, said Jim Haake, an attorney for the group.

The group will try to limit the section's impact to subcontractors working through brokers, he said. Government officials asked the ICCA to provide them with information that will help them interpret the section by Friday.

"They want us to take a first shot at it, and they'll give us their reaction," Haake said.

Under Section 1706, starting Jan. 1, free-lance technical service workers will have to bear the burden of proof that they function as independent businesses rather than employees. They must do so by addressing 20 common law principles that the IRS uses to determine whether a taxpayer is an employee.

The principles address issues such as whether the worker is paid by the hour, week or month or in a lump sum, has invested in equipment, provides services in a "continuing relationship" or can realize a profit or loss.

"My belief is that the vast majority will remain independent contractors, but they must go through the burden of proof," Haake said. The ICCA hopes the IRS will issue guidelines for determining independent or employee status by year's end, he said.

According to several accounts, a drive to include Section 1706 in the tax law was spearheaded by the National Technical Services Association (NTSA), a trade group of 79 technical services firms, and in particular by Joseph Siders — vice-president and counsel of NTSA member CDI Corp. in Philadelphia, president-elect of NTSA and chairman of its Legal and Legislative Committee. Siders could not be reached for comment.

David Hicks, president of the Software Consultants' Brokers Association and chairman of David Hicks Associates of San Francisco, said CDI's Siders spearheaded promotion of Section 1706. Siders testified for a similar state proposal in California and said NTSA pushed for Section 1706, he added.

Chris Quackenbush, owner of Q Tech, a consulting, technical services and temporary help firm that until recently was an NTSA member, said she also believes CDI and Siders led the drive. Her firm recently quit NTSA, in part because of the group's opposition to independent consultants, she said.

Joe Morris, director of member services for NTSA, whose members compete with service brokers and independent contractors, said there was contact between members of the group and Moynihan's office but that he did not know which members were involved.

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Upgraded Lotus 1-2-3 extended

By Douglas Barney

Cambridge, Mass. — Lotus Development Corp. has indefinitely extended its upgrade program for Lotus 1-2-3 Release 2.0, the latest version of the product that solves most, but not all, of the compatibility problems with earlier versions.

“Our customers are telling us that we need them to consistently fix problems concerning the compatibility issue. They understand that ultimately, when you fix something in place, it is going to pop up and hit you on the compatibility side somewhere else,” said Peter Simon, general manager of Lotus’ Business Applications Group. “So we did the best we could in the time, but we needed to do it in, from a marketing standpoint.”

Users contacted by Compu- terworld said they are satisfied with Release 2.01, which was announced after customers complained about incompatibilities between 1-2-3 Version 1A and its successor, Release 2.

For one user, however, Release 2.01 is not compatible enough.

First Bank Systems, Inc. uses 1-2-3 extensively — in conjunction with packages of Fast from Financial Proformas, Inc. in Walnut Creek, Calif. — to analyze financial statements.

First Bank originally used Fast in conjunction with 1-2-3 Version 1A. It reported no compatibility problems when it began to upgrade to Release 1.01. “Minor incompatibilities”

Those problems have persisted with Release 2.01. “We are starting to find minor incompatibilities, but we haven’t narrowed down what the problem is yet. We know that it is giving some different responses from what we expect it to be doing,” DeVries, senior micro analyst for First Bank Systems Information Services, said of minor glitches.

“Printed reports we are getting text where we would have expected numbers. That is all that we are finding, but our report list is incorrect,” DeVries said. Despite the continuing problems, DeVries said he believes Lotus has done a good job of increasing the level of compatibility.

According to DeVries, Financial Proformas is modifying Fast to work with the latest version of 1-2-3 and has been working with Lotus to rectify the problem. “They have been helpful,” said Bill Kinney, vice-president of Financial Proformas.

Others report few problems

Other users report few or no problems with Release 2.01. “For the most part, it seems to have solved most of the compatibility problems,” said Judy Galango, manager of office automation for Grumman Corp. in Bethpage, N.Y.

Another user reported only minor problems that center around the documentation. “We have found some inconsistencies with 2.01. Sometimes the syntax is different from the earlier version, but only the more sophisticated user runs into the problem,” said Kathy McKinney, manager of technical support for end-user computing services at Nynex Service Co. in Boston.

Some reports have resolved the problems on their own and then informed Lotus, “They added.”

According to Lotus’s Simon, the upgrade program has been highly successful. Some 40% of all 1-2-3 Version 1A users have upgraded to Release 2 or 2.01, he said.

The key benefit for users is the ability to switch easily between Grid applications and other applications running on MS-DOS, both of which run on Grid laptops. “Grid users wanted access to MS-DOS, but will initially be aimed at the Grid user community.”

Some call it an unfair advantage. The firm’s existing line, the 80386-based machine should include RS-422 ports as bridges to LANs.

The systems will connect to the Unix environment using software provided by Microsolv, Inc. and Lotus Computing Corp., the source indicated.

The Televideo source said the firm would sell similar machines, but configured with monitors and disk drives, in some cases including a hard disk, and would price the systems aggressively.

The firm is expected to sell the systems in conjunction with its terminals and diskless workstations, the source said.

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FTD's data center operation

FTD network keeps florists on top of peak holiday season

By Jean S. Bezman

Online computer networks are not just computers, not just telephone systems, that carry messages between New York and Los Angeles, they are also electronic post offices, Indianapolis and Kansas City, and a number of other cities. And they are also an important part of the growing business of florists.

FTD, the Floral Telecommunications Network, Inc. (FTD), serves over 25,000 floral shops in the U.S., Canada and Mexico. It handles over 50,000 transactions per hour — for floral arrangements from thousands of florists.

In Chicago, where FTD's Floral Network is based in a turn-of-the-century downtown building, a three-CPU communications terminal from Unisys Corp. (formerly Sper-• cery Corp.) 1100 system is experiencing one of its peak periods. The orders are flowing in from computer terminals at 11,000 floral shops nationwide — nearly half of the shops in FTD's 23,000-member association.

The computer network is vital to the continued growth of FTD business, says FTD Executive Vice-President William Mass. "The Mercury computer network has become so important to FTD members in terms of dealing with the tremendous surge of Christmas business, that the shops simply would be lost without it," he said. "Almost 1.5 million orders will be handled on the system by Christmas Eve." Only Mother's Day vies with the Christmas season as a greater generator of floral sales. Dennis Blondell, assistant director of operations at Floral Network, is well aware why the computer peaks occur in May and December. "Sometimes we wish Mother's Day lasted a whole month," he joked. "We're working on it." When the peaks are not present, the Floral Network rents excess computer capacity to other corporations.

Each floral order is assigned one of five priority levels, ranging from immediate processing to two hours to 48 hours. This levels out the orders and holds back early orders that do not need to be filled at all. The computer system decides when to process the held orders.

In general, florists are pleased with the Mercury ordering system, which extends from Alaska and Hawaii throughout the continental U.S. and Canada. "It makes our work a lot easier," says Richard Daude- lin of Daudelin Flowers and Gifts in Westchester, Ill. "It's all done automatically when you press the Send button. You don't have to report everything on paper, he notes." After florists press the Send button, FTD's Floral Network's three-CPU, 36M-byte 1100/73 computer from Unisys Corp. runs the orders and by-passes programs, then sends electronic reports to FTD headquarters in Southfield, Mich. "Every thing and I don't need for the 12,000 off-line florists is handled, generated on a IBM 4341 mainframe.

All florists get computer-generated reports twice a month from Southfield's IBM 4341 showing how many orders were placed by other florists and how many were filled correctly by FTD, which keeps track of these billings, remains a not-for-profit association, the result of a Detroit-based effort in 1910, which was organized as the Florists Telegraph Delivery Association.

But it is Floral Network's Member Services group that has the job of developing the supporting computer users in these florist shops, mostly over the phone. "We're working on it," said Joel Friedman, assistant director of operations at Floral Network: "We can call up preprogrammed routines in the caller's florist shop. They can then view a florist's hardware history at their workplace. Friedman estimates. "It's a structured way to search for data that's already in the system." Floral Network's Maple technology has been using the automated query language for eight years to keep track of all its transactions, orders and network hardware support service. Even phone surveys done by Floral Net- work are keyed directly into Mapper files. For all its utility, Mapper takes only a minute or two to fill out, says 355K bytes, Friedman estimates.

Florists, however, cannot gain access to the Mapper unless they are linked to the Floral Network ordering system via ASCII terminals with preorder equipment or personal computers. For 650 a month, florists rent the terminal equipment they need to place computer orders. The equipment is owned by FTD, which this fall launched a massive upgrade campaign throughout its network.

There are several types of equipment used in the Floral Network: a 10-year-old Ford Aerospace & Communications Corp. terminal, several types of DEC personal computers and a new system, called Mercury 2000, based on Lear Siegler, Inc. (386) CTRs, Z-80 microprocessors, Okidata Corp. printers and Anchor Automation modems. The first group of the older Ford termi- nals was replaced by the Lear Siegler-based microcomputer systems. Under a mandatory swap-out program, the rest of the nearly 10,000 Ford units will be gone by 1990.

The Ford technology was simply outdated, said Blondell, and the bulky printers under the 45-lb. unit's covers often jammed or failed. So far, 500 terminals have been replaced, Blondell said, and before the program is finished in 1988. "Installation and training are done over the phone," Blondell says. "We send the florists the installation instructions and a manual, and then we take them through it over the phone." About 1,000 florists have opted for two systems based on DEC PCs. One is based on a DEC Rainbow PC with 384K of memory and a 10M-byte hard disk, while the other is based on a Micro-11 PC with 512K of memory and a 10M-byte hard disk. For all its utility, Mapper takes only a minute or two to fill out, says 355K bytes, Friedman estimates.

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FCC plans to regulate

From page 1

The dramatic proposal would substantially reduce traditional tariff regulation in two areas in which the FCC believes the dominant common carriers face intense competition: data transmission via packet switching, and networks provided to large business and government users under contracts awarded through a competitive bidding process.

The commission said it would strengthen the regulatory framework by requiring less detailed justification in the filing and by presuming that the carriers' tariffs are legal from the start. This shifts the burden of proof, which traditionally fell on the carriers, to the FCC.

The FCC tentatively concluded that contract services are inherently competitive, including the so-called value-added network services provided to large business and government users under contracts awarded through a competitive bidding process.

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The North Pole is a busy place. Obviously, Santa's Workshop is the world's number one manufacturer of Christmas toys. And it's also the Arctic region's largest employer.

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Take it to the limit.
Fibronics to base LAN on ANSI compatibility standard

Network focus to be expansion, not speed

By Stanley Gibson

HYANNIS, Mass. — Fibronics International, Inc. is expected to introduce in January a 100M bit/sec. fiber-optic token-ring network, likely based on the Fiber Distributed Data Interface (FDDI) standard.

"The real value is that with the standards, you can have communication between a variety of systems," said John Kessler, president of Kessler Marketing Intelligence in Newport, R.I. "Now there are variations that don't permit complete interchangeability. The movement toward standards is very important," he added.

ANSI casting expected

Weinberg declined to name the specific standard on which the network is based, but said he expects final casting of the standard by American National Standards Institute (ANSI) to take place within the next several months. "No one has built one conforming to this standard before," he declared.

Industry analyst David Terrie, president of Newport Consulting in Boston, pinpointed ANSI's FDDI standard as the only probable one on which the network could be based.

Weinberg said the product's first customer, whom he declined to name, will receive the network in February. Weinberg termed the customer a large data communications company. Beta tests on the product were carried out by Fibronics internally, Weinberg said.

Hedging on VLSI

The price per node for the first customer will be between $50,000 and $70,000. Weinberg said he aims to bring this price down to about $20,000 later in 1987 through the use of very large-scale integration (VLSI) technology. He said he does not want to commit to a VLSI chip design before the ANSI standard is formally set.

Terrie said the network's relatively high price would not be a deterrent if a user could gain a real advantage. "It's not a price-sensitive market," he said.

Weinberg said a key role for the network will be as a supernetwork, or backbone, connecting numerous subnetworks of such established standards as Ethernet and IBM's Token-Ring Network. Although interfaces to these networks have not yet been established by Fibronics, they will be in 1987, according to Weinberg. He said the connection to IBM's Token-Ring would include links to both the current system and the anticipated 10M bit/sec. version that many expect in 1987.

"This will enable people to construct a tiered network," Terrie said. "The real value is that with the standards, you can have communication between a variety of systems," he added.

The interface technology will be developed by Spartacus Computers, Inc., a unit of Fibronics based in Lowell, Mass., Weinberg said.

Noting Spartacus's use of Transmission Control Protocol/Internet Protocol (TCP/IP) in its software products, Terrie speculated that the network product would implement the popular protocol. He suggested the use of TCP/IP will make it easy to move to a fully International Standards Organization (ISO) compatible interface when those standards are established.

TCP/IP is the closest thing to ISO. It will be easy to migrate," Terrie said. The FDDI ANSI standard uses only the first two ISO layers, Terrie pointed out.

Weinberg said he has high hopes of selling to customers such as large banks and the U.S. Department of Defense. The network can theoretically be expanded to 1,000 nodes with little degradation in performance, thanks to its token-ring design, he said.

Because of the new network's anticipated use on a corporate-wide basis, Weinberg said Fibronics would study the feasibility of connecting to IBM's Netview network management system.

He also said he "will have to deal with" possibly paying patent royalties to Olof Soderblom, who holds patents on a token-ring networking scheme.
Political pundits are fond of saying there are two things one never wants to watch being made: Sausage is one, legislation the other. The unsavory messiness of the legislative process became apparent last week, as a previous overlooked section of the 1986 Tax Reform Act was finally exposed to press scrutiny.

Section 1706 eliminates the independent contractor designation for technical specialists — engineers, designers, systems analysts and the like — and subjects them to common-law rules determining who is an employee. Under such standards, most of them would lose their independent status and the tax advantages that go with it. Meanwhile, nontechnical free-lancers, such as writers and artists, retain their independent status.

Naturally, there is consternation within the ranks of technical service workers, the firms that broker their services and the companies that hire them. They charge the provision unfairly singles out technical specialists, while restricting the flexibility of employers to use workers efficiently.

Arguing for the provision are larger computer consulting firms who work through employees; not surprisingly, they view contract workers as unfair competition. Although the actual sequence of events remains murky, it now appears that the chief impetus for the provision came from such firms, who aggressively lobbied Congress's Joint Committee on Taxation at just the moment legislators were searching for ways to generate additional tax revenue.

Now the provision's chief backer, Sen. Daniel Moynihan (D-N.Y.), is calling for a special task force to develop guidelines for taxing such Section 1706, a tacit admission that the provision never received appropriate congressional body prior to a bill's passage. This is messy lawmaking, indeed.

Those arguments deserve a fair, full discussion with input from all segments of the computer industry. After-the-fact discussion is place of an airing of the issues before the appropriate congressional body prior to a bill's passage. This is messy lawmaking, indeed.

Ron Schneiderman's article, "Employee productivity: Big Brother is monitoring you" [CW, Nov. 10], misses the heart of the matter in dismissing worker objections to computer monitoring.

Computer operators being electronically surveilled are much different from sales representatives, who fill out reports, or football players coached from the sidelines, as Schneiderman disingenuously draws the comparison.

With the computer, workers can be watched every fraction of every second of their workday. More information, in greater detail, can be collected than ever before. The potential for abuse is obvious.

Schneiderman notes that the product of monitoring is information, and he raises important questions: How important is the information? How relevant is it? Does it truly reveal the quality of the work being performed?

In far too many cases, managers collect far too much information, without the employees knowing what is being collected or how it is to be used. To limit these potential abuses, 9 to 5, the National Association of Working Women, suggests the following:

* Ban the use of subliminal software programs.
* Notify workers when auditory, visual or computer surveillance occurs.
* Allow employees complete access to their personnel files and provide them with information on how data is collected and used.
* Establish a grievance procedure so employees can appeal incorrect data, since the computer is not always right.

In order to start out with the best foot forward, statistics should be collected by work group, rather than by individual worker. Productivity standards or work quotas should be set with employee input to reflect system problems, such as downtime and response lags, quality of service and work load variability.

These are just a few ways to prevent some of the worst abuses and give employees a minimum of protection, until, in Schneiderman's words, employers can "figure out what information is really worth and can evaluate its timelessness."
Undes its navy blue dust cover, my Kaypro II is but when I walk across the office and hit the switch on my IBM Personal Computer AT, the whir of the disk drive starting up is music to my ears. The speed, the convenience of the hard disk, the variety and usefulness of programs such as Microsoft Excel is the order of the day.
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Enhanced graphics are Vega's draw

One of the most visible benefits to users of the open architecture of IBM and compatible personal computers has been the intense competition among hardware suppliers. Were it not for open architecture, prices would be far higher and products far less innovative than they are.

The Vega Deluxe graphics adapter from Video-7, Inc. in Milpitas, Calif., is a perfect example of the fruits of this competition. Video-7 was among the first to take advantage of the Chips and Technologies, Inc. Enhanced Graphics Adapter (EGA) chip set, based on the IBM EGA standard, to build a short-slot EGA-compatible board. Vega-7 is also one of the first board vendors to make a heavy commitment to surface-mount technology. Under its own label the company has established itself as a key supplier of high-quality graphics boards.

The Vega Deluxe represents another innovation for Vega-7. It provides the ability to support all four major graphics adapter standards: IBM's Monochrome Graphics Adapter, Color Graphics Adapter and EGA as well as Hercules Computer Technology, Inc.'s Hercules Graphics Card.

The Vega Deluxe does more than that, however. Its distinguishing feature is a proprietary EGA Integrator chip that supports the NEC Corp. Multisynch Monitor and similar devices. This support makes it possible to obtain higher resolution graphics than the EGA's 640- by 350-pixel resolution.

With autoscanning monitors like the NEC Multisynch, the Vega Deluxe provides... See VEGA page 22

Zachmann is vice-president of research at International Data Corp.

NEW THIS WEEK

■ Barrington Systems enhances its Clarion programming language

■ For more on this and other new products, see pp. 45-47.

INSTANT ANALYSIS

"What IBM does in concert with a DOS 286 and new machines based around the 286 will set the stage for what kind of software we can write for the next five years."  — Edward M. Esber Jr., chairman and chief executive officer of Ashton-Tate

Microsoft delay bemoaned

Users say costly 80286s weren't worth investment

By Eddy Goldberg

While micros based on Inte1 Corp.'s 80286 chip are grabbing headlines, many corporate users are still upset that an operating system from Microsoft Corp. able to utilize the full power of the 80286 processor will not be available until late next year. Major applications for that operating system are expected to lag behind its availability by six to nine months.

"When the Intel 80286 machines came out, we made the assumption that a DOS would be available before long to utilize them completely and obtain the benefits of that processor. So we've been buying 286s for more than a year as a standard product and spent a lot more on them that we would have on the 8088 machines," says C. L. Hodges, supervisor of the Personal Computer Services Center at Chevron Corp. in San Ramon, Calif.

"Meanwhile, we get very little benefit out of that extra expenditure, and the thought that people have on those machines are that much less productive because they can't use the capabilities that were there in the new DOS," he adds.

And until Microsoft's MS-DOS 5.0 comes along, "there's no other use for the 8086 right now other than it runs faster than the 8088," says a consulting engineer at a large Western bank.

Of his users, Hodges says, "They can't address more memory, they can't have multitasking capabilities and whatever other features might come along with the new DOS.

If one takes his situation and multiplies it across the country, Hodges said, the result is a large number of underutilized IBM Personal Computer AT-class machines.

"This is a big bill that somebody is having to pay because we haven't had a DOS to use those machines, and I feel a little irate, really," he says. "But I think we're the biggest victims of all — the users. We paid money for these machines, not getting what we paid for, and we have a right to be irate," Hodges adds.

Although Hodges used to blame Microsoft for the delay, he says he is now unsure, adding that he believes Microsoft may be caught up in "having to triage around from one IBM division to another." He says he has begun to view Microsoft somewhat as a victim, rather than as a villain.

"I don't know exactly who's to blame, but somebody ought to fix it, and having to wait until fall of next year is a travesty," he says. "I think it's to the point where it has a measurable effect on the productivity of American business. I think it's really serious."

One corporate user who asked not to be identified says his company is stagnating around 286-class machines. But he says that change in management was hormonoged.

"It's the old 'peek under the kimono trick' that IBM and Microsoft are adept at playing. They try to use this like a secret organization does and use nondisclosure to make you feel like an insider. It's just like a con artist with a pigeon," the user states.

In purely practical terms, he says, does not see the justification in the price of a 286 when measured against existing 8086s and the needs of most office users.

"I disagree with the choice. People do word processing don't need that kind of power, but they're going to get it anyway," he says.

However, other corporate users are satisfied with the current generation of single-tasking IBM PCs running MS-DOS 3.1 or 3.2. "Multitasking to date on the PC has not been a major concern to us," says Jim Kartabel, personal computing manager at Fort Howard Paper Co., located in Green Bay, Wis.

And until Microsoft's MS-DOS 5.0 comes along, "we don't know that it (the delay in MS-DOS 5.0) has made a big impact on us," states one manager of end-user computing at a major company in the Midwest that sees MICROSOFT page 22

Problem is user error, not flaw, Lotus says

By Douglas Barney

CAMBRIDGE, Mass. — Lotus Development Corp. recently announced that it had dropped the lawsuit that it had filed against Lotus, saying, "If you are familiar with the United States Football League case, the USFL got one dollar in damages, which was trebled to $3. That is $3 more than Cummings got," commented Jim P. Manzi, Lotus chairman and president, at a meeting of analysts and investors at a First Boston Corp. high-technology conference.

Neither Cummings nor the firm's counsel received any payment from Lotus as a result of the lawsuit dismissal.

Blames Symphony for underbid

The suit charged that a flaw in Lotus's Symphony-integrated program caused Cummings, at a Florida-based construction firm, to underbid a construction contract by $250,000. Lotus maintained that Symphony had no such flaw and argued that it was user error that created the problem.

According to the attorney representing Lotus in the case, the user added a new figure to a spreadsheet within Symphony that was outside the range specified by the user. "It was not within the range, and that was their problem. If they had inserted it within the range, it would have automatically been included in the calculation," said Hank Gutman, an attorney with O'Sullivan, Grave & Karabin, New York.

"They did not take into account the fact that when you insert a new line, it shifts everything down the column, including the formulas and accordingly, including the range," Gutman said.

Symphony remains unchanged

No changes have been made to Symphony as a result of the lawsuit.

"The feature of the Symphony program which the Cummings employee tripped over is a feature that is not by any stretch of anyone's imagination a defect," Gutman said.

"It is an intentional design feature of the program which is common not only to Symphony, but 1-2-3 and every other spreadsheet that any of us have ever encountered," said congratulate President James A. Cummings, who spoke through his secretary, declined to comment on the situation.

Condition of silence

In fact, one stipulation of the dismissal was that Cummings would not comment, according to Gutman.

"To dismiss a lawsuit at this stage requires the consent of both sides. One of the conditions of our agreement to the dismissal was that it include this provision precluding them from talking," Gutman said.

"According to Gutman, Cummings is still using Symphony.
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Vega graphics enhanced

From page 19

vides two additional resolutions of 752- by 410-pixel resolution — at a 25-KHz scan rate — and 640- by 480-pixel resolution at 29.4 KHz. These higher resolution modes can be very helpful in graphics-intensive applications.

You cannot, unfortunately, use these higher resolution modes unless software is written to take advantage of them. The Vega Deluxe, however, comes with software drivers for Microsoft Corp. Windows.

Installing the high-resolution drivers for Windows proves to be easy and straightforward. The 752- by 410-pixel resolution mode seems to alter the aspect ratio for some Windows applications. Once you’ve seen the 640- by 480-pixel resolution in action, however, you’ll never want to go back to the resolution of the EGA again.

But software that does not run under Windows — which, today, means most software — cannot take advantage of the higher resolution modes of the Vega Deluxe. Software developers will need to incorporate drivers before these modes can be used.

The $596 list price on the Vega Deluxe is only $100 more than the older Vega board, so the additional capability comes at a modest incremental cost. And software support for the Vega Deluxe’s high-resolution graphics is certain to grow steadily with time.

More sophisticated users can develop their own software, of course, and can provide their own support for the high-resolution modes of the Vega Deluxe. Source code and detailed implementation instructions are available at no cost from Video-7.

Like the earlier Vega board, the Vega Deluxe comes with software that can be used to switch among different graphics modes. It also includes a screen Save feature that will turn the screen off after a specified interval if keyboard input has not been received. This prevents burn-in on the screen phosphors.

Dip switches are accessible from behind the system to configure the Vega Deluxe for the appropriate display and secondary adapter-display, if attached, and to enable or disable emulation modes. A larger toggle switch sets the monitor type.

The standard EGA feature connector and light-pen port are also included. This ensures full compatibility with all the connectivity features of the EGA.

Video-7 fully warrants the Vega Deluxe for two years. In addition, the company provides an innovative guarantee that the Vega Deluxe will be compatible with all software written for any of the four graphics standards supported. Under its Compatibility Guaranteed Program, Video-7 offers a full money-back guarantee for any compatibility problems that cannot be satisfactorily resolved within 30 days.

The movement toward higher resolution graphics, not only in computer-aided design/manufacturing and other specialized applications but in the broad business use of personal computers, is inevitable.

Video-7’s Vega Deluxe is a solid product with a lot to offer for users who want the flexibility of handling all the standard graphics modes. It brings with it the ability to take advantage of even higher resolution graphics modes as well.

Microsoft delay angers

From page 19

has 1,000 microcomputers. Hodges acknowledges that there are gains from the 286 machines beyond speed, most notably their 16-bit data path and the faster hard disk. Despite the greater speed, Hodges says the 286s were not worth the added cost. "When you think about all the money spent on the 286s in the hope of getting that advantage, they could have gotten that same advantage with a crystal change — put a speed-up crystal in the 8088 and gotten as much benefit as we’ve gotten out of the 286 machine," Hodges concludes.
Clips from the cutting room

As 1986 draws to a close, several comments come to mind that never fell within the confines of Computerworld's weekly news columns. Lest they slip away without seeing the light of day, here are a few projects for whom we see fit to print at the last minute:

IBM's Cross System Product (CSP) is selling at an interest rate not far from a final judgment on it. John Landry, in a report to ADAPSO on software development technology, said CSP/Query "mixes flashes of brilliance with traditional IBM head-scratching."

In the middle of the year, a special commission investigated the logjam in the New Jersey Department of Motor Vehicles concluded that Price Waterhouse & Co. missed a fourth-generation language in response to political pressures.

The language was Ideal, an Applied Data Research, Inc. (ADR) product that has won praise in other quarters, and the commission attempted to warn Price Waterhouse not to do what it was about to do. ADR offered instruction in Cobol to the Big Eight accounting firm's employees, saying it would be needed for transaction processing.

A call to a December 13 breakfast meeting between ADR representatives and Price Waterhouse partners to discuss Ideal's role in the contract, according to President Joseph W. Farrelly told Price Waterhouse managers that if they intended to use Ideal exclusively, "This meeting should end right now," the commission report said.

Babcock is Computerworld's senior editor, software & services.

Oracle launches ALLIANCE program for software VARs

Oracle Corp., supplier of the ORACLE distributed relational DBMS and application development tools, has announced a new program to encourage VARs who build or convert their applications to use Oracle's products to use ORACLE with their products. Chief among these benefits is ORACLE's portability and the portability of ORACLE-based applications, allowing applications and data to be shared between different platforms. Oracle also provides the link software to exchange database information among the different machines.

Babcock concludes, "Generous discounts plus support, training and co-marketing combine to make the Alliance program an outstanding opportunity for software VARs!"

Oracle Corporation, founded in 1977, builds and markets the ORACLE distributed relational DBMS, 4GL and DSS tools. ORACLE was the first commercial SQL-language DBMS, and is compatible with IBM's DB2 and SQL/DS DBMSs. ORACLE provides a standard software environment across a wide base of operating systems, including IBM mainframes, minicomputers from DEC, DG, ATT, HP, Stratus, IBM, Apollo and many others, and IBM PCs. Oracle can run with IBM's MVS and VM/VMCMS, DEC's VAX/VMS and DG's AOS/VS among others, as well as with UNIX on most systems. All versions of ORACLE, from the mainframe to the PC implementation, are identical. ORACLE is the only relational DBMS which provides the complete portability of data and applications across a wide variety of systems. Oracle's SQL*Star architecture links dissimilar systems running various operating systems.

Oracle Corporation markets its products worldwide through 30 direct sales offices and distributors and the Authorized Oracle Dealer network. In addition, Oracle is sold by numerous hardware manufacturers, including IBM, Honeywell, Sperry, Stratus and Prime.

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NEW THIS WEEK
- Symbolsics introduces its Com-
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  Compiler

For more on this and
other new products, see
pp. 45-47.

INSTANT ANALYSIS
"What's a fourth-
genration lan-
guage? It's a
point in time,
nothing you
can really define."
— James Dauer,
senior research
associate, Digital
Consulting, Inc.

Software & Services

Software Notes
IBM market deal lacks luster

Not all joint marketing agreements with IBM end in a pot of gold for a lucky software company. Artificial Intelligence Corporation, Walcham, Mass., ended its joint marketing agreement on its Intellent natural-language product at the end of this month. Artificial Intelligence Corporation, based in Santa Barbara, Calif., says it has a compiler that uses expert system techniques to optimize execution of a Fortran program that has undergone one of the standard restructuring techniques will have a McCabe "essential complexity" of one, unstructured programs of complexity that is greater than one, Bush said.

A second McCabe measure is cyclomatic complexity, an indication of how difficult a program is to test. In a 50-line Fortran program with 25 IF statements, you can build 3.5 million potential paths through it. You can't build 3.5 million test cases,

When the potential number of paths through a program rises to more than 10, "the error rate goes up steeply. There's something about the human psyche that loses comprehension when the possibility is so large," Bush noted.

By automating these two measurements, an MIS shop can obtain standard reports on "the level of complexity," something you can really define.

"What's a fourth-generation language? It's a point in time, nothing you can really define."
— James Dauer, senior research associate, Digital Consulting, Inc.

"Blindfold Selling"
The company described "blindfold selling" as the ability of a VAR's salesman to walk into an end-user site blindfolded and say, "I don't know what types of hardware you're using, or how many types there are, but my applications run on all of them."

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Shorter Time To Market

The company also cited the high level of productivity offered to VARs by Oracle's broad range of application tools, including a forms system, integrated spreadsheet, graphics and other tools. These yield development and maintenance efficiencies that translate into shorter time-to-market and lower costs.

And, Harrman adds, "Oracle is the most complete and mature SQL-based DBMS on the market. SQL is becoming a national standard, so developing applications with an IBM-compatible, portable DBMS makes business sense in both private-sector and public-sector markets."

Harman concludes, "Generous discounts plus support, training and co-marketing combine to make the Alliance program an outstanding opportunity for software VARs!"

Ramis II users assay purchase

By Merv Adrian

Users groups are greeting the recent purchase of Ramis II, the information center-oriented fourth-generation language from Martin Marietta Data Systems, Inc., by On-Line Software International, Inc. in Fort Lee, N.J., with guarded optimism.

Rosalie Galazka, president of Forum East, a prominent Ramis II users organization, says she views the acquisition as "an opportunity for things to improve. We have already met with the new management team and we think we will work with them very well."

On-Line officials say they consider the group's feedback valuable and have organized joint committees to discuss future directions of the product.

Software Notes

IBM market deal lacks luster

Not all joint marketing agreements with IBM end in a pot of gold for a lucky software company. Artificial Intelligence Corporation, Walcham, Mass., ended its joint marketing agreement on its Intellent natural-language product at the end of this month. Artificial Intelligence Corporation, based in Santa Barbara, Calif., says it has a compiler that uses expert system techniques to optimize execution of a Fortran program that has undergone one of the standard restructuring techniques will have a McCabe "essential complexity" of one, unstructured programs of complexity that is greater than one, Bush said.

A second McCabe measure is cyclomatic complexity, an indication of how difficult a program is to test. In a 50-line Fortran program with 25 IF statements, you can build 3.5 million potential paths through it. You can't build 3.5 million test cases,
Ramis II users
assay purchase

From page 23

On-Line has been an IBM CICS mainframe system utilities supplier since it was founded in 1969. In addition, it offers two micro-to-mainframe products, Omnlink and Free-link.

It markets these products with a telemarketing staff and, until the Ramis II acquisition, had no direct sales force.

"Obviously, we wouldn't have taken on Ramis, which has been losing money, if we didn't think it could be turned around," says Susan Leuchanger, On-Line's vice-president for information systems.

Loren D. Hurwitz was, until shortly before the sale of Ramis, product manager for the personal computer-based Ramis Workstation product family.

He left the firm in part because he felt "the product was not being adequately marketed. We had made major advances in Ramis in the last year or two and the response from our users was excellent, but we weren't connecting with new sales," he explains.

Hurwitz has formed and is president of Relational Software Solutions, Inc. in Princeton, N.J.

A proven record

"What I've heard from my clients so far," Hurwitz adds, "is relief that Ramis has been bought by a software house with a proven record."

"They'll have to go a long way to catch up," says Jeff Bernknopf, president of Fournier Information Systems in Old Bridge, N.J. Bernknopf has published several studies of the fourth-generation language marketplace.

"Ramis lost the lead to Informa-
tion Builders, Inc.'s Focus sometime in 1983 or '84, and that lead has been extended. However, with their CICS expertise, On-Line could really address the efficiency issue and go head-to-head with IBM," he comments.

At this point there are no fourth-
generation languages that run well under CICS, Bernknopf adds.

Read/write interface

Leuchanger indicates development of the main product will be continued in several already established projects, the most important of which is the IBM DB2 read/write interface.

The repackaging of the product is another priority. "At the present time, Ramis is sold as a large number of separate modular products," Leuchanger notes.

"We'd like to get away from that and supply a complete product which contains the core functions all in one place. This will simplify distribution, development and support."

Another new approach will be the introduction of Ramis Workstation, a bundling of a series of end-user tools into a cohesive whole.

Adrian is chairman of the micro-
to-mainframe Special Interest Group of the New York PC Users Group and senior programmer/analyst at Shearson Lehman Brothers, Inc.

Notes: Wang to lower VS rates

From page 23

tran program on its parallel proces-
sor, the Culler PSC. On a Livermore Loops benchmark, the compiler yielded a 50% performance boost, Culler spokesmen claim.

Wang Laboratories, Inc. is offering software development services for applications to run on its VS min-
is at rates lower than those generally available in the U.S. by making use of Datamatics Consultants Ltd. in Bombay, India. Low-cost software pro-
duced in Bombay will be supported by a third firm, Information Manage-
ment Consultants, Inc. in Falls Church, Va., Wang spokesmen said.

Videodial, Inc. in New York says its IBM CICS application, Iterex.25, can give an IBM 3270 terminal access to external ASCII information sources, such as the Dow Jones News Retrieval and Dialog. Internal corporate data bases can also be accessed with the product, spokesmen claim.

Infodata Systems, Inc. has re-
ceived a $1.9 million contract from the U.S. Army for a text data base management system for the Army Threat and Intelligence Production System of the Army Intelligence and the Research Center.

Execucom Systems Corp. and Digital Equipment Corp. have signed a marketing agreement to promote Execucom's financial planning and decision-support software.

Cobol tool released

From page 23

Corp. in Los Angeles.

Transamerica has purchased Ins-
spector and is about to install it, Cohn said. The firm has a library of more than 1,000 programs. "I need to get a feel on a system-to-
system basis what shape those sys-
tems are in," Cohn said.

Inspector is available for $29,500 to run under either IBM's MV5 or VM.
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   21. Director/Manager/Supervisor/Director of Computer Systems
   22. Director/Manager of Operations/Admin. Serv.
   23. Systems Manager/Systems Analyst
   31. Manager/Supervisor/Programming
   32. Programmer/Analyst
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   42. Manufacturing/Design/Technical/Scientific Management
   51. Consulting/Management
   52. Computer Management
   53. Systems Management/Operations/Planning
   54. Education/Seminar/Institute/Consultant
   55. Other

3. COMPUTER INVOLVEMENT (Circle all that apply) Types of equipment with which you are personally involved either as a user, vendor or consultant.

   E. Office Automation Systems
MCI leases part of fiber net

By Elisabeth Horwitt

To avoid falling behind competitors in the race to implement fiber-optic networking, MCI Communications Corp. has decided to lease, rather than build, its own Chicago-to-Los Angeles fiber-optic link. The Midwest-to-West Coast fiber-optic connection will be integrated with MCI-owned East Coast-to-West fiber-optic lines to provide a complete coast-to-coast connection by January 1987, according to MCI spokesman John Houser.

The leased-line portion of the network, which will handle up to 810M bit/sec., will be provided by Williams Telecommunications Co. in Tulsa, Okla. The financial terms of the agreement were not released. Williams Telecommunications is a member of the National Telecommunications Network consortium of regional fiber-optic network providers.

MCI chose to lease a portion of its fiber network in order to get the capacity faster, according to company spokesman Gary Tobin. "A lot of fiber is available now for low cost," he said. MCI will lease the cable's entire capacity of 22 fiber pairs, although the company will initially only use three pairs to support its switch-to-switch high-speed digital backbone, Tobin said.

Leasing the whole cable ensures that MCI can add capacity at need, he added. "It costs $100,000 per mile to build and operate your own fiber-optic network with three pairs in use and only about $10,000 per mile to go to 19-pair capacity, whether you lease the lines or own them," Tobin said.

The economies of scale offered by fiber-net

Look before you link

The Christmas spirit has yet to visit local-area network (LAN) software vendor Novell, Inc., according to one extremely irate value-added reseller (VAR).

Computer Education & Consulting Group, Inc. (CECG), an Old Bridge, N.J. based VAR, recently purchased Novell's Netware 86 Version 2.0A for its client, Revlon, Inc. CECG is in the process of evaluating a number of IBM Personal Netware 86 Version 2.0A for its client, Revlon, Inc. CECG is in the process of evaluating a number of IBM Personal Netware 86 Version 2.0A for its client, Revlon, Inc. CECG

Revlon wanted software that turned an IBM PC into a nondedicated file server that could also run PC applications. Novell sold CECG, as Revlon's agent, a copy of Netware 86 as a nondedicated file server, Geier says.

But when the VAR actually tested the software on a PC network server with a 200M-byte disk, it found that there was actually no room left in main memory for additional applications after file server operations such as file caching, allocation tables and directory were taken care of. "We couldn't even boot the program up as a nondedicated server," Geier says.

When Geier called up Novell's support center in New York, the vendor informed him that Netware 286 supports extended memory, which would leave enough room in random-access memory to support PC applications. "I said, 'Fine, but Netware 286 is not a

Internal software costs daunt potential MAP implementers

CHICAGO — Fortune 500 companies are holding off on implementing Manufacturing Automation Protocol (MAP) networks until the standard offers more significant software-engineering cost savings, according to a recent study by Advanced Manufacturing Research (AMR).

Of 20 "check-signing decision makers" interviewed by the Chicago-based research firm last October, the majority only expect to make limited use of MAP in the next few years, AMR said. The respondents represented a variety of industries including automobile, aerospace, consumer appliance and electronics.

Only 10% of the companies surveyed expect to implement MAP pilots in a limited capacity by 1988, while 40% said they expect to implement plantwide MAP networks by 1988, AMR said. Thirty-five percent of the respondents said they do not expect to undertake plantwide MAP installations until the 1990s (see chart left), according to the study.

Approximately 75% of all respondents

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Many business needs today can be satisfied with a stand-alone computer, and AT&T is committed to meeting those needs today and tomorrow. But every AT&T computer will also be optimized for networking solutions. Why? Because our experience shows that—as a business grows or adds computers to its operations—computers must be more than isolated islands of information. They must communicate. Networking becomes a necessity...and an opportunity.

We believe data networking is the next wave of the Information Age. We have made its accomplishment one of the basic goals of our business.

Data networking, as we see it, enables electronic systems in one or many locations to work together. It keeps people informed and in control, while the systems exchange, process and act on information automatically.

Computers within a data network process information, reordering it into useful form to solve problems.

In manufacturing, for example, data networking can tie together retail sales terminals, factory assembly lines and parts suppliers so seamlessly that nearly every order can be custom-made.

In service businesses, data networking can tailor every transaction to the needs of an individual—making it easier and more convenient to send, receive, and use all kinds of information. Computers within a data network will not only share information instantly, they'll act on it intelligently, reducing many of the hassles of everyday life.

THE NEED FOR OPEN ARCHITECTURE

The communications capability of a data network permits active connections among people, computers and machines. If the architecture of the network and the computers is open, many different kinds of robots and billing machines and input terminals and so on can work together. Then the network can do exactly what's needed.

Data networking requires AT&T to do three things. First, build links that are active and flexible, able to deliver information in the right form, to the right place, at the right time. Second, design and build computers that can both stand alone and be efficiently networked. And third—and most important—design and engineer systems that enable customers to use AT&T computers and communications links in the most intelligent way for their specific needs.

At the same time, we will sell PBXs and terminals that are optimized for data networks, which include computers. In short, we will supply whatever is required to provide integrated solutions to our customers' needs—to enable them to move and manage information efficiently and effectively.

In a data network, no computer is an island; communications, computers and applications are the inextricable parts of a single system. AT&T envisions these systems beginning with business and rapidly extending to the rest of the world in the creation of Telecommunity—the ultimate merging of computers and communications that will allow people anywhere to handle information in any form as easily as they make phone calls today.
Long-term benefits of MAP

*Unsuspect MAP to cut communications software engineering costs*

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Software costs daunt users

From page 25

* cited connection costs, in particular relating to internal software engineering, as a major disincentive to MAP. This may be a factor in the low adoption rate of MAP — at least over the short term.

Too much emphasis has been placed on dropping hardware costs for communications boards," an electronics industry respondent told AMR. "Our main cost in building communications systems is in-house software development." An appliance manufacturer told AMR that "hidden costs" for the software integration costs" can increase the initial hardware costs of any multivendor network system by a factor of 1.5.

Ninety percent of the respondents claimed that using currently available MAP protocols and products would lower software development costs only slightly or not at all.

"Software integration is what's missing" for both MAP and computer-integrated manufacturing applications that MAP networks would support, AMR managing partner Michael Novell said. Vendor is "doing harm through oversimplified in product presentations," lead engineers to underestimate the amount of customized software that must be written before a factory communications system becomes viable, he added.

"Management thinks it will cost $1,000 and then finds out a year later that the price is really half a million," Frischetta added.

A spokesman from an industrial equipment manufacturer told AMR that his company does not "see MAP today offering us much of a break" in software development costs until the next version.

By 1988, 60% of the respondents expect MAP to have a significant impact on real cost-to-connect; by 1990, 40% expect MAP to provide viable networking solution, AMR said.

Sixty percent of the respondents reported that they were having trouble managing-related issues as another impediment to implementation. Corporate planner at a conglomerate told AMR that "Even if a standard communications solution was invented tomorrow, there is a multyear process of phasing it into most of our facilities." He added that reporters at the technology advances, his company still has to "deal with retrotitizing existing processing and workstations, management retraining issues." His company expects MAP to "meet our 1990 and beyond committed budgets."

According to Frischetta, MAP promises "more standardized tools that will provide a stepping stone toward computer-integrated manufacturing." The big issue still is how big a commitment users are willing to make.

— Elizabeth Horwitt

Tymnet unveils low-end processor

By Elizabeth Horwitt

SAN JOSE, Calif. — Tymnet/McDonnell Douglas Net-work Systems Co. recently unveiled a low-end member of its Engine family of computers — not the floppy disks work Systems Co. recently announced products that allow Microsoft Corp. MS-DOS-based microcomputers and peripherals to connect more efficiently to its local-area network.

Starbuilder, a half-size network card and software package, provides the first direct connection between personal computers and Arc networks. Datapoint is offering us much of a break in software development costs until the next version.

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— Elizabeth Horwitt

Look before you link

From page 25

nondedicated servers," Geier reports. "They said, 'We made an announcement last week — there is now a version of the SE800 software that supports both expanded networked and nondedicated file server.'"

The announcement was made the same week he received the software. "When I asked if I could exchange the Netware 86 package for the new Release 7, they asked me if I had broken the seal on the package," he says. "Because I had broken the seal on the instruction manual — not the floppy disks — they refused to give us credit," Geier continues. "I would have to pay between $500 and $1,000 for an upgrade. This is insanity to me. How can I tell Revlon to give me another $1,000 because Novell did me the wrong product?"

Adding insult to injury, one of the people who had called Geier with Novell held him the following analogy: "If you as a consumer want a certain color lipstick from Revlon, and the next day they released the color you really wanted, would you be entitled to credit for an upgrade?"

John Barragough, Novell's director of public relations, was apologist when Computerworld appraised him of Geier's tribulations. "We feel sick about what happened; there have been communications problems within Novell, not everyone in the chain knew about the update," he said. Novell "plans to 'make it up' to Geier with either some form of reimbursement or credit for the package he mistakenly bought."

Barragough added that in November Novell set up a Netware Service Division with toll-free number "to handle just this sort of problem."

The Division was not in operation when Geier's problem arose. If there is a moral to this story beyond "Look before you link," it probably be, "Before you open a package, make sure it's the one you want — especially when it comes to LAN software."

Tools add to PC, LAN costs

By James A. Martin

SAN ANTONIO — Data point Corp. last week announced products that allow Microsoft Corp. MS-DOS-based microcomputers and peripherals to connect more efficiently to its local-area network (LAN). The product also implements components of Datapoint's Vista-office automation software packages on MS-DOS, enabling PC users to interface with the network via the Vista-guide user interface.

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Starbuilder is also said to address security problems by enabling the MS department to assign passwords and access levels to end users on the Arc network. The product will be available in March 1987. The cost is $594 per user for 20 to 60 users, which includes both the network card and Vista software. In addition, Datapoint announced products that allow Microsoft Corp. MS-DOS-based microcomputers and peripherals to connect more efficiently to its local-area network (LAN). The product also implements components of Datapoint's Vista-office automation software packages on MS-DOS, enabling PC users to interface with the network via the Vista-guide user interface.

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**Watch production levels**

**Could be key to tracking IBM systems’ depreciation**

By James Connolly

LAS VEGAS — Recognizing when IBM factories reach full production levels for a mainframe is the key to knowing how long to depreciate and when to sell the previous generation of systems, according to one of the designers of the operating system for the IBM 360.

It is around those full production points, not announcement dates or first customer shipments, that IBM bases its product cycles, said Jack van Kinsbergen, senior vice-president of Boole & Babbage, Inc. Van Kinsbergen addressed a group of capacity planners at CMG ’86, Computer Systems Measurement Group, Inc.’s International Conference on Management and Performance Evaluation of Computer Systems.

Van Kinsbergen, who worked on IBM’s 360 development team during the 1960s, talked about ’what has happened’ in the ‘60s and production levels from the late ’60s up to the current generation of 3080 mainframes.

He then used those charts to analyze residual values of the various systems. “IBM CPU schedules are driven by the need to maintain factory capacity,” van Kinsbergen said. “If you can predict when IBM will reach full peak production of the next CPU, then you can predict when the current CPU’s market value will slip below the 40% level.”

He also observed that IBM reaches those peak production levels for system generations roughly every eight years, with two families of CPUs — such as the 3089 and 3090 mainframe families — covering those eight years. Using that formula, van Kinsbergen estimated that the 3089s being produced today will be worth 30% of their list price in 1991, when the next generation of machines is rumored as Summit, reaching full production. He predicted that Summit will be announced in 1988 with initial shipments in 1989.

Van Kinsbergen also maintained that despite the computer industry’s focus on personal computing and mid-range systems, mainframe technology is far from dead. “Mainframes are here to stay, regardless of what happens with PCs and minis,” he said. “Mainframes are here to stay regardless of what happens with IBM’s 9370s. When all of those things are networked, demand for mainframes is going to go up,” he predicted.

*See KEEP page 32*

**DATA VIEW**

**Center usage**

Departmental staff makes most of information centers

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**Emulex announces switches, disk drives at DEXPO**

**DEC-compatible tools slated to ship in ’87**

By Donna Raimondi

NEW YORK — Emulex Corp. announced four products for the Digital Equipment Corp. marketplace at last week’s Dexp, DEC’s third-party show.

The Net41 switching option for an Emulex CS4111 DEC-compatible asynchronous multiplexer allows up to 143 terminal users to access any one of up to six DEC VAX host computers, Emulex said. No external switching hardware is required, and the Net41 provides a port on each of the VAXs, and the switching function is distributed among the host systems so that the failure of any one system will not impact operation of the network. Terminals can be placed up to 5,000 feet apart using a single twisted-pair cable.

The CS41 with Net41 occupies a single hex-size slot and features 50,000 char/sec throughput. The CS41 with one 24-line distribution panel and a Hitachi firmware costs $4,500. Adding the Net41, which will begin shipping in March, will cost $1,000.

A removable Winchester disk subsystem, aimed at applications that require portable, modular data storage, is housed in a 19-in. rack-mounted chassis that also contains the power supply, drive status indicators and a disk controller that connects the subsystem to a Small Computer System Interface (SCSI) bus.

The subsystem consists of one or two disk drives, each encased in a portable drive module. Either an Emulex UC04 Q-bus or UC14 Unibus host adapter, as appropriate, is required to connect the subsystem to DEC’s Microvax I or II, PDP-11, MicroPDP-11, LSI-11 or VAX-11.

Storage capacity ranges from 170M bytes in a single portable drive module to 760M bytes in two modules.

**Linking subsystems**

Users can obtain as much as 30 bytes of storage by linking four subsystems in a daisy-chain with the SCSI interface. The subsystem costs $4,500, and the portable drive modules cost $3,372 for 170M bytes and $7,422 for 380M bytes. The subsystem is also expected to ship in March.

The company also released the QD03 dual-wide DEC Q-bus-compatible Storage Module Drive/SMD-Enhanced disk controller, which emulates the DEC KDA05. It supports the Microvax, MicroPDP-11 and LSI-11 based systems using a standard Mass Storage Control Protocol command set. The $2,700 unit provides an interface from the host CPU to two SMD/EMD compatible disk drives with data rates of up to 3M bytes/sec.

The CS08 eight-line Q-bus multiplexer with DEC DHV 11 multiplexer emulation is said to connect as many as eight terminals to the Microvax II.

It uses half the mounting space as the DRIV 11 for the same number of asynchronous lines, the company said. The CS08, which costs $1,000, is a dual-width board with RS-232 interface compatibility.
"What if...

you could grow from one PC to a network of a thousand without losing control?"
In fact, with HP's Personal Productivity Center (PPC), you can start small or big and create a compatible office information network. A network that lets you manage growth easily. A network that can change as you change, grow as you grow.

The PPC combines the strengths of data processing, personal computing and advanced networking. So individuals, work groups, departments or entire corporations can access, share and exchange information better.

Naturally, this lets your people work smarter and more productively. But improving the way your people work with information is just part of the story.

PPC products are compatible across a wide range (more so than even IBM), so you can easily alter, upgrade or expand a PPC configuration. Without re-writing one line of software.

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If you need mainframe performance, one of our new HP 3000 Series 930 superminis can supply processing power to as many as 400 users. And, to create a company-wide information network, our HP AdvanceNet provides powerful networking solutions that link together multiple systems. So everyone can make better decisions faster.

Where your network goes from there is up to you. It's that flexible.

The PPC is flexible in other ways, too. It can include advanced electronic mail, easy database access from PCs, and IBM mainframe communications that let your people manage information more effectively. The PPC supports a full range of HP products like our IBM PC/AT compatible Vectra PC, The Portable and HP LaserJet printers, to name a few. And since it also supports IBM PC's, you can extend the PPC to these users as well.

To determine how the PPC can fit your needs, HP people can help. People who don't just sell products, they solve problems. People who follow through with service and support programs. People you can count on to deliver the right Personal Productivity Center — no matter what size you are, or how big you wish to grow.

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HEWLETT PACKARD
Business Computing Systems
Challengers spur IBM to up price/performance ratios

Mid-range systems, mainframes affected

Competition is in a marketplace can be scary for businesses, but even for IBM, when one consultant, it's proving to be so can be beneficial, and, according to who do battle. But competition also firms, tracked price/performance fig- mediate systems such as the IBM 4381 grew at a compound annual rate from 1980 to 1985. -In during a three-year period with the 3090s during the first three quarters of 1986, according to Djurdjevic asserts that compa- notes. Djurdjevic points to as evidence, Djurdjevic says I as 3090s in some environments and a replacement for optical cards. Adamson says, it is an application — 12- or 14-in. optical disk, which cost — not quite ready to take off. But there exist yet because the technology is — 15% per year from 1980 to 1985; how- in 1986, with the competition li- the growth rate slowed to 3.7%. Furthermore, Djurdjevic notes that price/performance in the inter- 15% from list prices. The con- sultant notes that in 1985 there was little pressure on the 4381, which still seems to be carrying the load for the 4381 line. Now the situation has changed, he notes. Djurdjevic asserts that compa- nies such as Digital Equipment Corp. and NCR Corp. and PCs such as Nixdorf Computer Corp. and National Advanced Systems Corp. are chal- lenging the 4300s, which re- quire the computer's mid-life kickers for the 4381 line. In another price/performance analysis, International Technology Group reports that the 3090 price/perfor- mance gain of the recently an- nounced IBM 3090 over the older IBM 4381 is the largest IBM hardware price/performance boost since the 4331 and 4341 were introduced in 1978. The group says IBM is working hard to reduce costs and speed pro- duction in connection with the mid- range 3970. ITG reports that IBM hopes to produce 3970s in one-fifth the time it took to make the 3631s. The benefit for IBM might be a booming gross margin of 80% to 90% for the 3970s by early 1986, according to ITG.

Southwestern Bell Telephone Co. plans to use Tandem Computers, Inc. Nonstop EX10 and Nonstop TXP systems to manage its Public On-Line Operations network. That network deals with revenue, marketing, in- mercial processing and other business functions for Southwestern Bell's public-pay-telephone operations. Tandem's TXP will be in the company's St. Louis headquarters for software development. The EX10s are being installed in nine cities throughout the Southwest during 1987 and 1988. The network will tie into existing Southwestern Bell mainframes for sharing service order and toll data.

Cipher Data Products, Inc. signed to supply IBM with the Cipher 1880 Microstreamer tape drive with support for IBM's microcomputer peripheral interface (IPI). The IPI drive will be used with the 3090. A Cipher spokesman says IBM is the first major company to contract for the 16-in. reel-to-reel Microstreamer drive with the IPI.

Intel Scientific Computers, a di- vision of Intel Corp., sold two Intel IPSC concurrent computers — both 32-node, one vector and one expand- ed memory with LISP model — to the Air Force Institute of Technology (AFIT) in Dayton, Ohio, for use in computer science research related to the Strategic Defense Initiative (SDI). The SDI is the national program re- sponsible for defense against ballistic mis- siles.

"It is clear that massively parallel computing is the only means to real- ize the computing power needed for the SDI program," said Lt. Gen. John E. Wilson, director of the SDI organization. APFIT will use the systems for study and analysis of dis- tributed processing systems.

Scientific Computer Systems Corp. (SCS), received $15 million in third-round funding, bringing its to- tal equity financing to $32.7 million. The company also announced ship- ment of its first minisupercomputer, the SCS 200, to the Defense Com- puter Center at the University of California. SCS will consolidate its West Coast, Ore., and San Diego opera- tions, where three quarters of its employees work.

An automated optical disk media manufacturing facility for 3M Corp. is near completion in Menomonee, Wis., a 3M spokeswoman said. The write-once disk manufacturing sys- tem was built to 3M specifications by the West German firm Leybold-Her- sena, a manufacturer of thin-film vacuum coating equipment. Leybold-Techna- bex of Belgium, a robotics and materi- als handling specialist.

Drexler already has 27 licensees working on drives and testing mar- kets for the laser card, he says, or million cards a year, and a spokes- woman says 1987 will be the year the cards get put into use. Five large Japa- nese companies that license from Drexler have developed prototype systems and are moving quickly to implement the technology.

Lifecard International President John Adamson says he has high hopes for the optical card industry. The optical card is an immediate future seems to be in patient cards in hospitals or consumer cards in banks or insurance companies. But beyond that, Adam- son says, the tiny piece of plastic — about the same size and flexibility as a credit card — may offer an alternative to optical disks in imag- ing systems and a replacement for magnetic tape in data storage applica- tions.

Another possible use for the tech- nology is as storage media of choice for aircraft, automobiles or other machines. A California company is building a system that al- lows cars to drivers to access maps on a screen. While the company is design- ing the system with magnetic tapes, Adamson says, it is an application that would lend itself to the tiny optical cards.

A shoebox-size unit full of the optical cards, which Adamson says he believes he can make mass- produced for about 25 cents each, could replace an optical jukebox for imag- ing storage. At 200,832 bytes apiece, 10 to 15 of the cards would replace each 12- or 14-in. optical disk, which cost about $300 apiece. He says 12- or 14-in. optical disk, which cost about $300 apiece. He says at this point, such conjectures are pie-in-the-sky. Optical disk prices will come down, says he, as a stand-alone write units need to be developed for the cards, and a market does not exist yet because the technology is not quite ready to take off. But there are signs that point to a good-size market.

Drexler has already developed a prototype that will not take over the work now being done at 3M's Moun- tain View, Calif., branch, leaving the latter company to develop and market the cards get used. Five large Japa- nese companies that license from Drexler have developed prototype systems and are moving quickly to implement the technology.

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Jacks of all trades
Four veterans recall DP’s salad days

By MICHAEL SULLIVAN-TRAINOR

Information systems professionals seeking posts in today’s highly competitive MIS environment might envy the ease with which Ed Berger became systems manager for Rayovac Corp. in Madison, Wisc., more than 40 years ago. “It was working in the clock department, and my boss was the manager of punched cards and clocks. When he learned he was drafted, he turned to me and said, ‘There’s the punched card equipment, Ed. Go ahead and figure out how it works,’” Berger says.

Berger started at Rayovac in 1936 as a mail boy, and he had worked his way up through the accounting department when he was handed the data processing responsibility. The move paved the way for a 48-year career with the company.

“My dad said, ‘Don’t be a job-hopper,’ and I took his advice to heart,” he says.

Berger’s unglamorous entrance into the computer field was not unlike that of many of his peers. For example, Ray Spurr and Jack Feise, each of whom had data processing careers spanning more than 30 years, were not prompted by a long-standing interest in computers. They both became involved in systems operation because they were in the military at a time when computer operators were needed.

Likewise, Rex Farley, who worked for state and county government data processing departments in Arizona from 1960 to 1984, decided to take an IBM course in computer operation because he was dissatisfied with his job as a supervisor at the Arizona unemployment office.

“The average man on the street didn’t know there was such a profession. Most of the people back then got into it by accident,” Spurr notes.

DP ruled the roost

Although they entered the field with little experience and often had to deal with inefficient computer equipment, these early data processing managers had one thing that most of their counterparts do not have today — absolute control.

Rather than having to deal with demanding corporate needs and savvy personal computer users, the old-timers worked within corporations where the rest of the company relied on their services but had little or no knowledge of how computers worked. These old-timers were allowed to build an independent domain where they

‘When I was managing equipment, I knew everything that was going on in my shop. As the DP job has become more complex, one person can’t keep up with it all.’

— Ray Spurr
Retired large-systems manager
U.S. Army

Sullivan-Trainor is a senior writer for Computerworld.
were the rulers. “Data processing was the source. All documents were delivered there, and all output came from there. We spoke our own language, and we used to call it ‘data processing.’” Berger said. “People would be able to talk to end users in this strange dialect and give them a snow job. They didn’t know what it was because they didn’t know what we were talking about,” Feise says. With this power came the responsibility of maintaining the equipment. This was a challenge that was not always easy to overcome because of the lack of sophistication of the computer industry at the time. Often the data processing manager was the only person in the organization who knew the ins and outs of a particular machine, so the DP manager himself had to double as a systems troubleshooter or repairman when problems arose. “In the early days, you had more control of the equipment. You had to have the control because there was a lack of engineers. A lot of us had to be engineers ourselves, and we worked ‘round the clock. We also hired girls from the farms because they knew how to use a pair of pliers fairly well. We were self-sufficient,” Berger says.

With the punched card systems, aggregation rather than averaging was often required to keep the machines operating, according to Berger. “Back in 40s, when the punch cards went down, and I couldn’t figure it out, I did call one of the servicemen. He told me to take a paddle and hit it. So I kicked the hell out of it, and whatever it was that had been stuck came loose, and it started working again.”

Starting his career in 1960, 10 years later than Berger, Feise found that technicians were more available, but he still ended up making his own repairs. “I would have the telephone in one hand and the screwdriver in the other,” he says.

IBM or nothing

When Berger made equipment purchases in the 1940s, there really was not a lot of choice. During his tenure at Univac, he used mainly IBM punched card systems, including the 402, 403 and 405. Even though IBM and tried to get into some other equipment, but the city of Madison was pretty solid

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COMPUTERWORLD

99

— Ed Berger Retired Rayovac systems manager

Available, was not an attractive one because the early unpunched card machines were unreliable, according to Feise. “There were tubes all over the place in those machines. The early computers were not that great, and the electromechanical parts were far easier to maintain,” he says.

Berger also favored electromechanical equipment because of its maintainability. “I would liken it to automobiles. I

A lot of us had to be engineers ourselves, and we worked ‘round the clock. We also hired girls from the farms because they knew how to use a pair of pliers fairly well. We were self-sufficient.”

— Ed Berger

IBM 1440 computer, a new addition to the University of Hawaii’s computer operations at the time. After a brief time in private industry, Spurr went back to the military in 1965, one of the first machines he worked on was an IBM 1440 computer, a new addition to the University of Hawaii’s computer operations at the time.

When Spurr began his career in the Army Air Corps in 1941, punch card equipment was the prevalent data processing machinery, and the world knew little about computers. “The word ‘computer’ was not thought of, at least not as we know it today,” he says.

Back in the Depression, Spurr found it hard to get a job, and his lack of college training did not leave him many options. Fortunately, IBM was working with companies to train employees in the use of computers, and Spurr’s aunt happened to work in an insurance company participating in the program. Through this connection, Spurr was able to take the classes, and after 4 days of travel, he was hired to maintain IBM equipment.

“People would ask me what I did, and it used to be that the DP person was more of a working manager. Of course, there were a lot of things we had to do with computers and it took a half hour, that used to be my job,” Feise says.

Being an IBM operator meant he could fix a card jam, install a sorter brush or replace contact points, but anything electronic that needed to be repaired Spurr left for an engineer within the company or one on call from IBM.

When Spurr was drafted and the Army found out he was an IBM operator, his superiors not only knew what he could do, but they also put him to work in a mobile records unit that recorded data in the field. He was subsequently transferred to the Pentagon, where he worked at the Army Air Corps headquarters maintaining advanced punched card machines and multipliers, such as the IBM 405.

The Army Air Corps received the latest in computer equipment before it hit the market. One of these machines was the first three-line punch reader, which had three punched-card reading locations.

Latter, Spurr worked with the Advanced Calculator Unit, a machine that was faster than any computer he had worked on previously, one that processed 50 or 60 cards per minute.

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Parallel processing

The next generation is already under way

By GLENN RIFKIN

At the Thomas J. Watson Research Center in Yorktown Heights, N.Y., IBM researchers are at work on a machine that will calculate the mass of a proton. Such a calculation, which requires 3x10^17 arithmetic operations, would take a supercomputer like the Cray 1 approximately 100 years to complete. IBM researchers decided the problem could be solved only by parallel processing, and they set out to build a machine to do it.

Once this computer, capable of running at 11 billion floating-point operations per second (GFLOPS), is completed within the next 12 months, the machine will spend approximately one year focusing on this problem of quantum chromodynamics theory — determining the transition probabilities of quarks and antiquarks within a proton, which in turn determines the mass of that proton.

Though this type of esoteric scientific research is a long stretch from IBM’s typical applications in the MIS world, it does represent an opening of the door to the future. This IBM research computer, composed of 576 processors and called the GF11, is but one of many parallel processing projects underway in both corporate and university research labs. And it is parallel processing, a logical but dramatic step beyond traditional von Neumann serial processing, that promises to usher in true artificial intelligence and the next generation of computing.

“It is our view that the right question is, ‘What kind of parallel processing will one be doing in the future?’ not whether we will be doing parallel processing or not,” says Tilak Agerwala, director of symbolic and numeric processing at IBM’s Watson Research facility.

“It’s a revolution,” adds Prof. Michael Dertouzos, director of MIT’s Laboratory for Computer...
Next generation of processing

Continued from previous page

Science. "It's going to sweepingly change our field. The reason is simple. You are looking at a field that for 30 years has been using single processors, and now suddenly you open the gate and say, 'We don't have to work alone.' We are moving from a world of silicon to a world where you have like single craftsman building shoes in the basement to the mass factory era where you've got two or three thousands of computers working on one job."

The idea of running a program in parallel is simple to conceive but the actualization is not easily attained. Obvious benefits include these:

- Higher performance.
- Better price/performance ratio.
- Higher availability.
- Upper scalability.

Although debates rage as to the physical limits of single processor machines — the exact limit are as to the speed of light — everyone in the industry agrees that that wall looks out to be large and impenetrable.

Using multiple processors is an alternative; it is the only alternative, especially if one hopes for breakthroughs in AI applications.

"It is clear that the applications that we are dreaming of — speech, vision, more intelligent programs in general — cannot be achieved with single processors," Dertouzos says. "We're going to need multiple processors to have any hope of tackling these problems."

If parallel processing does in fact represent a revolution in Information Age, as many of its proponents claim, then the fires and drums are already set to play. Parallel processing computers are off the drawing boards and are being sold today, albeit by just a handful of makers to specialized audiences.

The early efforts, however, are impressive. In Cambridge, Mass., two companies with markedly different approaches are already selling and installing massively parallel computers. One, BBN Advanced Computers, Inc., a subsidiary of Bolt Beranek and Newman, Inc., has taken the pragmatic approach with its 556-processor Butterfly machine. Down

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Parallel symbolic computing extends AI opportunities

By CAROL WEISZMANN AND SUSAN MESSENHEIMER

The link between parallel processing and artificial intelligence is not structurally inherent. But it is being forged anyway by those who believe there is tremendous power and opportunity in what is being called parallel symbolic computing. The bottlenecks caused by the centralized controllers of sequential, on-board management of better models and procedures are as limiting to AI applications, which tend to be computationally very intense, as to numeric ones. But it is important to understand just how AI applications such as expert systems can and cannot benefit from parallel processing.

In applying parallel processing — or multiprocessing or concurrent processing — to solving problems with exponential complexity, which is typical of AI, it must be understood that parallel processing is useful in solving computationally difficult but not in extending the solvable problem size. The key to extending AI problem size is the development of better models and more efficient heuristics, not parallel processing.

Within the bounds of that caveat, parallel processing holds as great a promise for the computational liberation of AI as for numeric ones. But the significant differences between numeric and AI applications mean that parallel symbolic computing will bear its own distinct characteristics and will require unique kinds of research.

The differences are worth noting. Numeric computation emphasizes the arithmetic; the principal function of numerical programs is to deliver numbers to an arithmetic unit to calculate a result. Numerical programs usually have a comparable data-independent flow of control with a relatively predictable control sequence.

In contrast, symbolic computation emphasizes the rearrangement of data; the principal function of a symbolic program is to recognize a set of data so the relevant information in it is more useful and easier to extract. The sequences of operations in symbolic programs is often highly data dependent, and control sequences are far less predictable than in numeric computation.

So putting parallel processing to work on numeric problems becomes in large measure a software issue. In general, there have emerged two approaches to programming parallel processors: "parallelizing" compilers and parallel programming languages. The former are attractive for the effort they save. Conventional, nonparallel programs can be parallelized by a compiler and run-time system, relieving the programmer of having to think about parallelism. On the other hand, parallel programming languages encourage programmers to develop whole new ways to solve present problems and offer the means to tackle new breeds of problems.

Hence, those researchers and commercial developers who are applying parallel processing to AI applications have begun to develop parallel AI programming languages. Some of these have been independently developed, others have been developed with specific machines. While most of this activity is under way in university labs, the beginnings of commercial parallel symbolic computing are emerging.

From MIT has come the LISP — a version of the LISP-like language, Scheme, extended to allow the programmer to specify concurrent execution.

Cambridge-Mellon University's Agora is an environment explicitly designed to support multiple languages and highly parallel computations; it can be used for many applications, like knowledge-based systems for speech and vision understanding, and was initially used to build a prototype speech recognition system.

On the commercial side, Gold Hill Computers, Inc. in Cambridge, Mass., has released an experimental version of its CommonLISP for its Butterfly parallel computer.

Under the Defense Advanced Research Projects Agency sponsorship, Bolt, Beranek & Newman, Inc. is developing a parallel symbolic programming environment based on CommonLISP for its Butterfly parallel computer.

These efforts represent only the beginning of the synergy between AI and parallel computing. It is a synergy seen now mostly in terms of parallel processing helping AI. Besides doing AI better, parallel processing will help break new AI ground, because the power of parallel machines will allow the application of algorithms that are inherently parallel. If an application of interest to AI researchers could in fact be expressed in terms of parallel processing, then parallel computers would be a more attractive alternative to conventional processing. Indeed, it is clear that in the years to come, parallel AI programming languages will be as important as or even more important than parallel computers, for two reasons:

- AI applications will come to dominate the software scene on both the high and low ends. On the high end, AI applications will tackle problems previously beyond the reach of even the most powerful conventional computers. On the low end, AI applications will be required for development of programming languages will be needed for development of the applications themselves as well as system control capabilities.

- Parallel AI programming languages will be needed to develop software to handle interaction between the distributed and embedded AI applications that will be proliferating in the next decade.

Thus, parallel processing will also have a critical role in AI. But AI will also help parallel processing, which is now a new hardware technology that will be in need of revolutionary thinking in software development.)

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Weiszmann and Messenheimer are principals in AIM Publications, Inc., a Uwatch, Mass.-based research firm specializing in artificial intelligence commercialization that publishes the monthly "AI Market Newsletter as well as a series of market research reports on AI.

Parallel processor start-ups: a sampling

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Data provided by International Data Corp.
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chine. Although both were funded by
Agency (DARPA) grants before going
similarity ends there.
ident of Research and Engineering
lowing a simple guideline into paral-
Randy Rettberg, prides itself on fol-
single-user, mainstream computer
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says about BBN's 15-year foray into
— a technique that focuses each of
rather than in incremental parts.
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Calif., labs are under way on ma-
mean to greater processing power.
Jeffry Canin, a supercomputer ana-
However, has yet to find a way to
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by a specific parallel processor architecture. Typically, fine-grained machines — such as Thinking Machines' Connection Machine — have thousands of relatively weak processors. Large, coarse-grained machines, such as BBN's Butterfly — have several hundred strong processors, and coarse-grained machines — such as the Cray 2 — have a very few strong processors.

"There's no way you can work at the leading edge of parallel processing, generally the academic researchers, put perhaps this one's a straw and the straw label. At the Center for Supercomputing Research and Development at the University of Illinois, Champaign-Urbana, David Kuck has spent the past 20 years working on issues and answers in the field. He says he believes that 'you don't want to get into parallelism unless you have to.'

"Recently, we put up the center's Cedar Project, a parallel supercomputer currently employing eight processors. We're really doing things that are parameters that must be adhered to in order to produce a useful parallel computer. Shared memory, he says, is a given. With that problem, software problems develop immediately. Others take exception to Kuck's stipulation on shared memory, believing that shared memory machines are only the interim step between today's computers and future massively parallel machines.

Kuck says he also feels strongly that for the parallel route to be worthwhile, the individual processors must be extremely fast. The Cedar project, for example, uses processors with power ranging from 10 million to 20 million floating-point operations per second (MFLOPS). The Connection Machine, he points out, uses slow processors that generally do not come close to 1 MFLOP.

"Some people see cheap processors and parallelism, Kuck says, and think of many of these things as we can. They are making a big mistake in terms of the difficulties in interconnecting them and having them share memory.

Kuck says. Ultimately, the issue comes down to price/performance, he says. Although he strenuously defends his own philosophy on parallelism, Kuck says he believes that the vast search effort and the research efforts embodied in The Connection Machine, which has more than 100 processors, is significant. He points out, uses slow processors that generally do not come close to 1 MFLOP.

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"We are talking about a fundamental difference between our research effort and the research efforts embodied in The Connection Machine or the work Floating Point Systems, Inc. has done or the hardware or other massively parallel processors. The individual processors in those machines are orders of magnitude slower than the individual processors in the Cray machines.

Our objective is to build a parallel processing machine in which each processor is the most powerful computer in the world. Whenever you can get all the machines working in tandem together on the same problem, obviously you're going to go faster. But we assume that that's not going to be all the time and, in fact, probably not even a majority of the time.

Another fundamental difference is that the Cray is a machine that's hovering in the cost range of middle six figures or maybe up to a million dollars. The machine that we want would be $10 million and up. Obviously, our machine has to be 10 times better than a million dollars. Very easy; otherwise, nobody would buy it.

I would argue that therefore there are interest price points, different performance points, and overall these projects are in different markets. However, if somebody figures out how to make a million dollar massively parallel processor really go, well that's fine, because then we'll make the $10 million version of that.

What would the implications be if you could build that $10 million machine with 1,000 processors, all operating in parallel?

It's a little bit like the difference between the left brain and the right brain. What we make are left brains. They're very fast, rational, deterministic kinds of machines. I think to use a mass parallel machine effectively, it's got to work more like our minds do.

Where we have a lot of processors in there, they're all slow, but they have a way of working together that's not deterministic. It's where our creativity comes from and our intuition. If you get a machine working with 1,000 processors simultaneously, it's going to be thinking a whole different way from the way our machines think.

Why are you taking the evolutionary approach?

No one has demonstrated the other one yet. As a practical matter, that's what we can sell today.

How will problems with software development be solved to take advantage of the increased power of parallel supercomputers?

That's an interesting but tricky fundamental things that need to be done to partition a problem across 1,000 or 10,000 or 65,000 processors. In my mind it's not a trivial thing. I don't know how that's going to be done.

Our approach is different. Our first approach is to have a very coarse cut at splitting up the problem. Let's see if we can split it in two pieces. Okay, we've done that; now let's see if we can split it in four pieces. We've done that. Now let's see if we can do 16.

Are current languages, such as Fortran and Cobol, adequate for this kind of programming?

We're struggling with that now at the four- and eight- and 16-processor level, trying to take Fortran code and extending it as a parallel processing machine. We're having some success, but it's not that easy.

It seems to me if you're going to program 65,000 processors to do something, it's only logical that some kind of new language will be required.
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programming, and further, one has to make a decision of how much of that programming ought to be left to the computer itself and how much to the programmer.

According to Canin, that debate rages on among academicians as well as among vendors. Some researchers, he says, would insist that for any breakthroughs in performance, one is going to have to reprogram from scratch using new languages. Others, such as Kuck, believe that languages such as Fortran and C can be reprogrammed in parallel and should be incorporated in a parallel system.

Alliant, for example, relying on theoretical work by Kuck, unveiled its FX/1 and FX/8 minicomputers last year to a highly positive response. The Littleton, Mass.-based company developed an automatic compiler that translates Fortran and allows that code to run on its eight processors. Using that technique, Alliant claims it can run programs designed for the DEC VAX at twice the speed for half the cost.

BBN Advanced Computers’ Rettberg takes exception to the idea that automatic compilers are the answer. The Butterfly requires the programmer to parallelize the software, but BBN provides what it calls the Uniform System, a programming tool that automatically allocates parts of the work to each processor.

Rettberg is skeptical of compilers claiming automation of this function. “You have to look at the details of what Alliant is doing,” he says. “It’s simple to say that it is an automatic compiler; you just dump in your old Fortran program, and poof — it’s all perfect. But I wonder about that. Because if in fact programming in parallel is hard to do, I wonder about our ability to automate that kind of thing. It’s hard enough to automate things people know how to do.”

Rettberg says that the software issues surrounding parallelism will disappear as more parallel machines get into the hands of more talented people. Despite Rettberg’s optimism, the software issue takes on even more critical proportions when drawn against the commercial background. Canin says he feels that researchers in academia and in DARPA may in fact be looking at the most difficult experimental architectures, ones with little commercial appeal.

For data processing to embrace parallel processing, there must be a clear rethink of what is required of the user, according to IDC’s Mikita. IBM dominates most markets, and its competitors all offer similar conventional architectures. This presents a formidable obstacle to new vendors and novel approaches. The vast investment in current technology, software and training users also presents barriers to change.

“If in fact programming in parallel is hard to do, I wonder about our ability to automate that kind of thing. It’s hard enough to automate things people know how to do.”

— Rich Mikita
International Data Corp.

‘The revolutionary effect is not something I would look for in the MIS world anytime soon.’

— Gordon Bell
National Science Foundation’s supercomputer project, takes it a step farther. He says he believes that the Information Age would readily embrace parallel machines, offering a cheaper, cost-effective alternative to today’s supercomputers: in fact, it is so difficult to get time on today’s supercomputers; in fact, it is so difficult to get time on today’s supercomputers that an alternative is a must.

But there is a fatal flaw: mistaken assumptions. According to Bell, researchers tackle the main hardware questions in parallel, but such issues as software and peripherals — the balancing elements — are generally ignored. “You could run payroll like gangbusters on the Connection Machine, and those folks are working to build a disk system that will really exploit the machine. But we have no parallelism in the disk area yet; that’s called balance, and that’s the stuff that never gets talked about.”

Bell declares.

Current developments in parallel processing

The scope of parallel processing computer development is vast and varied. The following is a sampling of what is being done in both the commercial and research worlds.

IBM. Among IBM’s research projects are two massively parallel computer prototypes, one a highly specialized machine as described earlier and the other more general purpose.

Agerwala points out that IBM has already created highly parallel processors aimed at specialized, computationally intensive applications. “In these cases, the architecture, design and programming are very fine tuned so that you can get extremely high performance on a given well-defined application,” Agerwala says.

There’s no reason why you can’t have highly parallel processors in the hundreds of GLOPS or even a teraflop [trillion] range in use by the end of this decade.”

IBM has, in fact, built two parallel processing machines already — the 256-processor Yorktown Simulation Engine for high-speed digital logic simulation; and a wire-routing machine used for the routing of interconnection of wires on chips.

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Super power: Never enough
By KARL REED

The computing community's thirst for CPU power is insatiable. Modern commercial systems can supply between 50 and 100 million instructions per second, more than an order of magnitude more power than the first supercomputer, the Control Data Corp. CDC 6600 delivered only 30 years ago.

Supercomputer vendors now talk in terms of millions of floating point operations per second or even billions of floating point instructions per second (GFLOPS), and still there is no limit in sight for the amount of power that can be delivered.

Increases in computer power come from two main sources: parallelism and increases in circuit speed. At any point in time, it can be cheaper to provide more parallelism than it is to attempt to increase the speed of a single CPU by using faster logic. Many of today's higher performance commercial machines contain two or more CPUs, and most supercomputers have multiple arithmetic units capable of applying a single instruction stream to multiple data streams.

There are basically three mechanisms by which conventional machines can be coupled:

- Closely coupled. Each machine has access to the same or some shared memory at the internal bus level and may share a common pool of peripherals.
- Loosely coupled. Machines may be connected to an I/O channel or some other high-speed channel. However, they cannot have direct or equal access to central memory.
- Networked. Machines communicate via a network, operating independently and communicating at relatively low speed.

Most modern supercomputers and most modern high-speed commercial machines are tightly coupled. The limits of tightly coupled or monolithic architectures seem to be currently around 2 to 10 GFLOPS, a figure that does not even vaguely satisfy those applications that are black holes for computer resources.

Currently, the massively parallel architectures are not in the category of solutions in search of problems, say major scientific supercomputer users, despite the apparent difficulty of converting existing codes.

This conversion problem is quite severe, since the internal architecture of each machine is such that the best performance can be obtained only by coding the programs to match the architecture. Most performance improvements result from the application of some new concept of the machine's architecture, invalidating programs written for other machines.

Nobel laureate, Kenneth Wilson, director of the Cornell University Supercomputer Laboratory, says that the commercial future of the parallel processor companies should be secure with sales to scientific users alone. He argues that it is easy to convert applications that may be only 1,000 lines of code.

"Of course, 100,000 lines of code is a different matter and will be difficult to convert to any new architecture, even a new vector machine," Wilson cautions. He has pressed for new languages that reflect the nature of the problem and the architecture upon which it is running to simplify the recoding. The situation is vastly different in the commercial DP area. There have been few studies of the impact of vectorization on commercial data processing, even though Ken Iver son invented APL in 1961 and even though relational data bases are becoming more popular.

There are great incentives for finding a means of allowing commercial problems to be transferred to these multiple systems, mostly in terms of price/performance.

The fundamental problem, however, is that we currently describe our commercial problems in languages such as Cobol and PL/I, which have a property I call "linearly elaborative." They describe a computational process that is a series of instructions executed in a totally predictable manner, one after the other. Also they require that the program, or the problem description, be written down one statement at a time, that is, linearly.

Further, the combination of the design methodologies used to write the programs and the compilers that translate them produces executable versions of our problems requiring a large contiguous address space. As mentioned, the massively parallel machines will work well for problems with small data volume that are reasonably stable relative to the length of the computation.

Any design methodology that recognizes this fact and allows a commercial system to be described as a collection of tasks that are largely independent but that communicate occasionally would produce solutions that may run satisfactorily on a massively parallel machine.

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current projects, the GF11 and RP3, are two different approaches to the parallel problem.

The GF11 is a single-instruction, multiple data stream machine with 576 proprietary processors capable of delivering 20 MFLOPS of power. Because the machine is so carefully matched to the problem it is intended to solve, Agerwala anticipates it will run at 90% utilization and be able to sustain 10 GFLOPS on the computing problem.

The computer, loosely targeted for completion in 12 months, is equipped with a powerful proprietary switch, a component that may be as important as the processors themselves, according to Agerwala. The RP3, he points out, is a more general-purpose machine using shared memory and a very high-speed network to achieve parallelism. It reportedly will include 512 processors and will run at 800 MFLOPS and is due to be finished in 1987.

In pursuing the RP3 architecture, IBM sought to answer a list of questions about parallelism:

@ How much parallelism is in the problem?
@ How much parallelism is in the application?
@ How should the parallelism be certified by the user or detected by the compiler?
@ What is the impact of communications and bandwidth on the system performance?
@ How do you write operating systems for these machines?

Agerwala concedes that neither machine will be used for the commercial side of parallel processing, but insists that the company recognizes its importance for the future. "The field is very much in its infancy, and there is a huge amount of potential. We just haven't had much experience with machines like this," he declares.

Despite his enthusiasm, Agerwala is not ready to discard traditional computing methods. "There will always be a place for very high-speed conventional von Neumann machines," he states. "We understand a huge amount of software, having worked on them for the last 35 years, so we aren't going to let all that wash down the drain."

MIT. Not surprisingly, MIT stands at the forefront of parallel processing research in the U.S. Activity in this area spans more than 15 years, and, according to Dertouzos, who heads MIT's Laboratory for Computer Science, more than half the lab's 350 researchers are working on multiprocessor-related projects.

Dertouzos recalls that thinking on parallelism began even earlier than 15 years ago, but it was not until the advent of the large-scale integration technology that any serious work began. MIT's first major project, and the one that ties its interest in parallel processing, is Prof. Jack Dennis's Dataflow concept.

According to Dertouzos, conceived that computing could be done more quickly and efficiently than the current Von Neumann method if computations could be performed in parallel -- handling whatever was ready as it came up rather than waiting for each instruction to be processed sequentially -- a structure that would allow more and more complicated, you still adhere to the basic rule, compute when ready," Dertouzos says. Using the Dataflow concept, the MIT lab is building a machine based on the concept of a Dataflow Machine, a 50-100-processor computer that will incorporate the dataflow concept of parallelism.

Prior to embarking on the actual building of the Tagged Token machine, the MIT lab used a simulation model of the unit to simulate what could be the expected result of the actual computer. This Multiprocessor Emulation Facility (MEF) comprises 40 LISP machines from Texas Instruments, Inc., which are tightly interconnected with a high-bandwidth network. The MEF was used to simulate the dataflow machine before building began.

In a third major project, the MIT lab is parallelizing the LISP language into something called Multislip. To do this, a computer called Concert was built consisting of 60 Motorola 68000 processors. The project is being conducted in conjunction with Harris Corp., which is developing a commercial machine to run Multislip.

BBN Advanced Computers. BBN Advanced Computers is mandated to make a commercial success out of Bolt, Beranek and Newman's long involvement with parallel processing. In 1978, with funding from DARPA, BBN began work on its Butterfly parallel processing computer. The 256-processor Butterfly depends on a powerful proprietary switching network that not only allows for shared memory but provides for flexible upward scalability. BBN is already using this upward scalability and a different DARPA grant to develop the Monarch, an 8,000-processor computer that is not scheduled for completion for three years.

Meanwhile, the Butterfly has been a major success story for BBN. At last check, the machine is either the breakthrough computer to the next generation of computer or a rehash of a failed model created years ago. The $3 million machine is designed for programs with a heavy concentration of matrix operations; the optimum is more than 10,000. Funded with DARPA money, the Connection Machine is available for military AI projects and in commercial research settings.

At the heart of the Connection Machine is its innovative data-level parallelism, a new technology created to get the optimum use of the 65,536 processors and 32M bytes of memory. The computer will execute one billion instructions per second.

As explained by Thinking Machines, data-level parallelism gains efficiency by doing many things at once. With two major sections to any computer application, the control section and the data section, these applications have tens of thousands of data elements. Many of the instructions in this application are independent and may be executed in parallel by multiple processors. This control-driven technique is the same technique used by multiprocessor vendors. For the Connection Machine, this is implemented on a front-end DEC VAX or a Symbolics, Inc. 3600.

Dertouzos says he is not independent and may be carried out by multiple processors. This data-level parallelism is also simpler than in control-level parallelism. There is no need, Thinking Machines says, to break up a program and assign sections of it to processors in order to get the benefits of parallelism. The processors are not assigned to the instruction level; instead, schedules are assigned to the data. Moreover, a single copy of the instruction sequence is understood by all the processors.

Widely the Connection Machine reaped great publicity when it was announced, not everyone is convinced of its innovation. Illinois' Kuck is skeptical. "There's very little there that wasn't thought of and in fact implemented 10 years ago at Goodyear Aerospace Corp. on the Starman machine and the Massively Parallel Processor," Kuck says. "They built a machine very similar to the Connection Machine. They didn't do it with DARPA money, but they did it in the public domain, and they tried to put applications on it and still will tell you it's a nice idea but a few, but it's too tough to go.""}

"It's intriguing. I look at it as an experimental vehicle," Kuck says. "It's an impressive product to see, and it will probably be suitable for a small number of special applications. For the near term, though, I believe it will be restricted to research applications."
Avoiding the burnout blues

With year-end project deadlines looming, burnout is a word that strikes fear into a manager's heart. It can significantly lower trained employees' energy and lesson their ability to perform effectively. And all too often, managers have lost valuable staff members to its demoralizing effects.

There are several precautions you can take as a manager to prevent losing employee energy and boost productivity. First, you must be able to recognize its characteristics. A worker with burnout can experience the following common symptoms: negative self-image, antagonistic attitude, withdrawal and alienation.

But you can take steps to help a staff member suffering from burnout. According to DeAnne Rosenberg, president of DeAnne Rosenberg, Inc., a Lexington, Mass.-based training and management consulting firm, the following actions have often proved to be effective:

- Detoxify the situation. Sit down and talk it out with the employee. Loosen the tension by communicating and bringing the problem out into the open. Let the employee know you are trying to help.

By Alan Aiper

Fiderio is a Computerworld Senior Editor.

TWA, Northwest target Sabre in reservation wars

By David A. Ludlum

A data processing partnership being formed by Trans World Airlines and Northwest Airlines is looking for five additional carriers to join it as partners, according to a newsletter for the organization.

The additional players would give the partnership, PARS Marketing, much more capital and marketing clout, according to Jerry Hagerty, its manager of marketing communications.

PARS Marketing seeks major domestic and European airlines as partners, Hagerty says. "We're going after big ones," he notes. With the addition of the Northwest, the PARS organization may want to expand in Asia, Hagerty adds.

The organization is one of two being formed with the purchase of one half of TWA's PARS reservation system by North- west. The other concern formed by that purchase, PARS Services, provides reservation services for the airlines.

Approved by DOT

PARS Marketing sells reservation and office automation services to travel agents and others. The partnerships were recently approved by the U.S. Department of Transportation; their formations were expected to be finalized last week, according to Hagerty.

PARS officials report that they hope the new partners will help them close in on the leading airline reservation systems, American Airlines' Sabre and United Airlines' Apollo.

"Our five-year goal is to become the No. 1 reservation system in the country. Right now we're No. 3. We've got our work cut out for us," Hagerty says.

Following Sabre and Apollo, PARS Marketing plans to offer systems using personal computers — rather than using dumb terminals — sometime in 1987, according to Hagerty.

Firm analyzes employee benefits

By Alan Aiper

NORTHEN, Conn. — In 1982, Rob Chernow figured that unless someone found a solution to the escalating costs of corporate health benefits, many companies could be forced to cut the benefits or even go out of business.

So Chernow, along with some colleagues from Yale University, founded Corporate Health Strategies, Inc. (CHS) to provide computer and consulting services to companies seeking to hold the line on health care bene- fits costs.

CHS's stem analyzes claims data pro- vided on a CD by a client's insurance carrier. After reformattting and analyzing the data, the firm recommends ways in which health care costs can be lowered.

This is a service that many MIS depart- ments would like to perform internally but cannot. The departments are already overburdened with a multitude of other jobs such as payroll, and they lack the time to take on many new assignments.

"Companies which are not doing any- thing to manage their costs are facing in- flationary increases in medical care and insurance of between 10% to 20% a year over the next five years," says Ron Goetz- sel, CHS's director of marketing.

CHS provides two types of services: C-See FIRM page 44

Managers' bonuses a mixed bag

Slow economy stifles year-end spirit of giving

By David A. Ludlum

Year-end bonuses in information systems departments may be down somewhat from last year, although management analysts say that departmental results, says M. Victor Janulaitis of Positive Support Review, Inc. in Los Angeles. "They are typically MIS executives with real management responsibility."

Janulaitis describes how company performance is af- fecting bonuses of three top executives, each paid $125,000 or more and managing data processing budgets of at least $10 million. One, with a successful restaurant firm, is getting 18% of base pay. Another, in financial services, is getting a similar percentage. The third, with a manufacturer that has not done well, is getting no bo- nus.

In general, bonuses are lower in the nation's troubled Midwest industrial belt than on both coasts, Janulaitis says.

MIS executives at securities brokerage firms are more likely than those at other companies to get big bonuses tied to company performance, Gable says. The bonuses tend to be larger at MIS departments as profit-and-loss centers, she notes.

Even at the top, Wall Street MIS executives do not see MIS page 44

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Even at the top, Wall Street MIS executives do not see MIS page 44

Managers' bonuses a mixed bag
Firm analyzes worker benefits

From page 43

ents can either receive a written analysis detailing how they use their benefits and where costs savings can be made or they can access their health care benefit data themselves.

For the latter method, an IBM Personal Computer AT-class computer is installed at the client site. A package called Corporate Health Analysis Package (CHAP) enables users to dial up an IBM 3083 mainframe that CHS uses on a time-sharing basis to access and analyze its health benefit and insurance data.

Using CHAP, a client can examine minute characteristics of its health care benefits. It can analyze plant sites, job categories and age groups or specific doctors and hospitals that treated employees and can analyze their charges, Goetzel says.

Measures costs against norm

CHS's system uses Diagnosis Related Groups (DRGs) — the statistical model used to gauge Medicaid reimbursements — to compare a company's health care benefit costs against national norms. DRGs, which the company founders helped develop while at Yale, use factors such as patient type and length of hospital stay to determine average health care costs for specific categories of illness.

The company has built up a coterie of clients ranging from multinational conglomerates to state governments and nonprofit organizations. Among them are American Express Co., American Red Cross, AT&T, General Motors Corp., the state of New York and Metro North, the arm of the Metropolitan Transit Authority responsible for commuter rail service in northern suburbs of New York.

At Metro North, it became painfully obvious earlier this year that health care costs were skyrocketing. While overall expenses increased 25% from 1985 to 1986, costs for Metro North's major medical plan for some 5,300 employees were up 45% in the same time period.

CHS discovered that among the reasons for the railroad's increasing health care costs was the fact that employees were remaining in inpatient care too long. CHS put together a detailed analysis of Metro North's major medical benefits and devised what it calls a savings-oriented action plan (SOAP).

In the SOAP, CHS prescribed a program that it said could save Metro North $2 million under optimal conditions. Its recommendations included predetermination reviews to determine hospital stays, third-party treatment for long-term illness, more home health care and skilled nursing, second surgical opinions, mandatory outpatient and presurgical testing and preventive programs.

Anticipating cost hikes is even more important, Dick Bahr, assistant director of personnel and compensation at Metro North, points out. He has CHS preparing a health care cost analysis for the next five years based on employee demographics. Bahr declined to say how much it has cost Metro North to have CHS analyze its health care costs.

"Whatever it costs, it's well worth it," he says.

Avoiding the burnout blues

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- Set the person loose working on a small project with clearly defined goals. This allows the employee to step back and refocus his attention on a task that is not overwhelming and offers a fresh challenge.
- Encourage the employee to seek out new information; challenge your employee to see his position and his surroundings in a new light.
- Allow tinkering with new ideas. Tinkering with a pet project can interest employees in their work again.
- Try to maintain a rich work environment. Unnecessary drudgery work for all employees — especially those experiencing a period of burnout — should be kept to a minimum.
- Be a cheerleader. Employees need feedback. The value of a pat on the back or a well-deserved word of encouragement simply cannot be underestimated.

MIS bonuses a mixed bag

From page 43

get the bonuses os: two to three times their salary that some traders and salesmen win, but some may get 100% of salary, according to Tamblyn.
"A level or two down you might find 50%," he adds. This year's Wall Street MIS bonuses appear to be at least as big as last year's, Tamblyn adds.

Innovative bonuses

Bonuses for MIS workers are appearing in a variety of innovative forms.

These forms include the task mastery bonus, which is offered for mastering a specific task, and the team bonus, which is offered for work done on a major project, according to Ronald LeBlue, who is a managing partner of Software People Concepts, Inc. in New Haven, Conn.

Bonuses are also being used as an extra attraction for MIS workers when companies require salary equity among divisions, LeBlue says.
Digital Products offers 30-port data exchange

Digital Products, Inc., based in Watertown, Mass., has announced a 30-port version of its Netcommander intelligent data exchange.

The Netcommander 30 is available in two versions: One uses DB 25 RS-232 cables, and the other uses RJ-45 telephone cables for two- and four-pair twisted-pair RS-232 connections. One- or two-box configurations are available. IBM Token-Ring cables can also be used on the RJ models, the vendor said.

All models have a minimum 500K-byte random-access memory (RAM) buffer and are available with 32K-, 1M-, 2M- and 4M-byte buffers.

Provides port selection

Netcommander is an asynchronous network that uses the vendor's Sublan technology, said to provide port selection and contention management, printer and other peripheral sharing, file transfer and data collection.

Netcommander can link up to 30 asynchronous serial and parallel computers and peripherals of any combination of manufacturers, the vendor said.

The Sublan also is able to be a server in larger LANs through standard network interfaces or through the vendor's IBM Systems Network Architecture gateway offering.

Handles multiple protocols

Features of the Netcommander 30 include the ability to handle multiple protocols, bit/sec. rates and job management while providing a hardware buffer for print spooling, message store-and-forward and speed changes. Rates range from 9.6K to 19.2K bit/sec.

The device automatically establishes multiple concurrent point-to-point links and can store up to 64 messages or print jobs and schedule them automatically in a priority queue.

The Netcommander 30 costs $3,895 for the 32K-byte version and $5,485 for the 500K-byte unit.

EMC adds expansion card for 3880 DASD models

EMC Corp. in Natick, Mass., has announced a cache expansion card for IBM's 3880 Storage Control Unit Models 21 and 23.

According to a company spokesman, IBM 3880 is a direct-access storage device (DASD) controller unit featuring an electronic cache subsystem. The EMC upgrade expands the caching capability of the Model 21 and the Model 23.

Caching, the vendor explained, is a process by which the controller stores commonly used information in high-speed random-access memory (RAM) in anticipation of future use. It is said to improve system response time by reducing the number of time-consuming disk seeks that must be performed by the storage control unit.

EMC's cache storage upgrades are available in 16M-byte increments, which consist of four 4M-byte cards. In addition, 1M-bit RAM devices are used to achieve the 4M-byte capacities. Both the Model 23 and Model 21 controllers can be upgraded to a maximum of 64M bytes.

Cache storage benefits

The spokesman said that by increasing the amount of information that can be held in cache storage, users will see a corresponding improvement in system performance.

Adding additional cache capacity to the 3880 controller also decreases the programming time needed for system tuning and increases DASD lifetime, the spokesman added.

A 16M-byte upgrade costs $48,000. Delivery will begin in January, the vendor said.

Compiler ties AI to workstations

Ports programs created on Symbolics 3600s

Symbolics, Inc. in Concord, Mass., has introduced its Symbolics CommonLISP Cross Compiler.

The company claimed the product allows users to port artificial intelligence programs developed on Symbolics' 3600-family machines to general-purpose workstations.

The CommonLISP Cross Compiler, written by Lucid, Inc., is said to support Motorola, Inc. MC68000-based workstations from Sun Microsystems, Inc. and Apollo Computer, Inc.

Cross-compiler integration

According to a company spokesman, integration of the cross compiler with Symbolics' software development environment enables programmers to use the editing and debugging facilities of the vendor's Genera software environment in the design and development cycle.

This holds true even if the programmers are developing applications to run on general-purpose machines.

The environment supports features such as rapid prototyping, symbolic debugging, incremental compilation and advanced user-code generation, according to the vendor.

Testing in design phase

These features are said to allow the concept to be tested at the design phase, rather than at delivery.

Genera includes Symbolics CommonLISP, New Flavors of Symbolics CommonLISP running on the target machine.

The CommonLISP Cross Compiler is priced at $11,900. According to the vendor, it requires Genera Release 6.1 or higher.

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SOFTWARE & SERVICES

Systems software

Promod, Inc. has introduced Promod/RT, a systems software computer-aided software engineering environment for the analysis and design of real-time programs. Promod/RT is available for the Digital Equipment Corp. VAX and IBM Personal Computer environments. According to the vendor, it automatically transforms system description data as developed during structured analysis into a control-oriented modular design hierarchy. Promod/RT allows the separate decomposition of data and control flows and provides text editing and graphics tools.

Promod/RT is priced from $25,000 for DEC VAX versions and $9,950 for PC versions.

Promod, 22881 Alcalde Drive, Laguna Hills, Calif. 92653.

Applications packages

ICL North America has announced Sales Force, a hardware and software system designed to automate sales departments.

Sales Force includes ICL’s DS series of departmental computers, data base, office automation, communications and sales management software. It provides software for call management, customer profiles, sales forecasting and planning and sales performance and administration.

A Sales Force system for a department of 20 sales representatives, including software and a DS Model 4 departmental computer, costs $45,000.

ICL North America, P.O. Box 10276, 777 Long Ridge Road, Stamford, Conn. 06904.

Languages

Whitesmiths Ltd. has ported its Version 3.0 C and Pascal cross compilers to the Gould, Inc. Powernode 6000 and 9000 series.

The compilers support the development of free-standing programs or programs to be hosted under Microsoft Corp. MS-DOS or IBM PC-DOS. Features include a C source-level interactive debugger with breakpointing and variable display, enhanced support for read-only memory able code and improved code generation, the vendor said. The compilers also produce compiler and assembler source listings.

The Gould-hosted C cross compiler costs $3,000. With Pascal included, the price is $3,500.

Whitesmiths, 97 Lowell Road, Concord, Mass. 01742.

MICROCOMPUTERS

Systems

Point of Sale Systems Corp. has introduced a multiuser IBM Personal Computer version of its Manager's Assistant retail point-of-sale inventory control software.

The Manager's Assistant is an integrated software system. It replaces conventional cash registers with sales terminals linked to an in-house multiuser computer. Administrative terminals are also linked to the computer and are used for purchase or backorder printing and support for Intel Corp. 8087 and 80287 math co-processors.

Slik is priced at $149.

Daybreak Technologies, Suite 103, 2271 200th St., Torrance, Calif. 90501.

Software languages

Barrington Systems has enhanced its Clarion programming language. Added features include a converter utility for importing and exporting Data Interchange Format, Ashton-Tate Dbase II and III and Basic files and the availability of no-cost run-time modules to support Clarion-based applications.

Other features include a Cross-refer utility providing a cross reference of data labels; an open file extension that bypasses the DOS limitation of 20 open files; and a file selection window that acts as a mini director utility to allow the user to select a file name from a list of file names.

Clarion Version 1.1 costs $495.

Barrington Systems, Suite 200, 150 E. Sample Road, Pompano Beach, Fla. 33064.
network. Building-to-building network connection up to a distance of 11,000 feet is provided via 50- or 62-meter optical fiber. The system costs $1,495.

Standard Microsystems, 35 Marcus Blvd., Hauppauge, N.Y. 11788.

Software

Novell, Inc. has announced the System Fault Tolerant (SFT) New Work Connection 386 for Macintosh systems. The operating system features two options for protecting shared localarea network (LAN) data against loss or contamination due to system hardware failure. The first is disk mirroring, enabling users to duplicate disk drives containing critical data.

The second option, Transaction Tracking System, ensures that interruptions or failures in LAN hardware performance do not cause partially updated portions of data to contaminate or destroy the LAN data base. SFT New Work Network Level II costs $3,905. The Transaction Tracking System costs $995.

Novell, 748 N. 1340 West, Orem, Utah, 84057.

Multiplexers/Modems

Racial Milgo has added the RM-4827 to its RM-4826 and the RM-9629 to its RM series of modems. Each of the three models is designed for synchronous leased-line applications. The RM-4800 operates at 4.8K bit/sec, with built-in local and remote test capability. The RM-4827 operates at 4.8K bit/sec. It features four-port modem sharing, dial-up and integral asynchronous support options. The RM-9629 operates at 9.6K bit/sec.

Prices for the RM-9629, RM-4827 and RM-4800 are $1,850, $2,500 and $3,050, respectively.

Racial Milgo, 1601 N. Harrison Pkwy., Sunrise, Fla. 33323.

SYSTEMS & PERIPHERALS

Turnkey systems

Interactive Training Systems, Inc. has introduced Infoexpress and the Financial Services Software Library, a public access electronic merchandising system for the financial services industry.

Contained in a self-service kiosk, Infoexpress is a personal computer-based system said to combine full-motion video, audio and presentation graphics with a touch-screen interface.

Consumers can apply for and open accounts as well as access information on products and services.

Software and customization pricing starts at $200. Hardware pricing ranges from $15,000 to $20,000.

Interactive Training Systems, Nine Oak Park Drive, Bedford, Mass. 01730.

Processors

Gould, Inc. has added the 894X to its line of general purpose 1280-1024 pixel color graphics/imaging controller board set for the Q-bus.

The device is equipped with a Matrox-supplied VMS driver and installs in a Digital Equipment Corp. Microvax I or II. It operates at 60Hz noninterlaced and has 8 bit planes with a 256 or 16 million color palette. It provides VT-100 terminal operation, local graphics input support for mouse and trackballs.

The QG-1280A features three-drug processor boards. The QG-1280A is priced at $4,995. Matrox, 1055 St. Regis Blvd., Dorval, Quebec H9P 3T4.

Data storage

Sigma Information Systems has announced the SDC-BQD11-EC quad-height Q-bus to enhanced small device interface (ESDI) disk controller with mass storage control protocol emulation on board.

The controller is said to provide an interface between four ESDI drives and a Digital Equipment Corp. Microvax II or LSI-11 system. Up to six controllers can be utilized on a single system. Features include 13MB of cache memory, disk drive logical partitioning and drive shadowing and selectable base addresses. The two standard modules include the SDC929 multiprocessor module and the C916 CPU.

The Gould 894X programmable logic controller is priced at $6,200. Gould, P.O. Box 3083, Andover, Mass. 01810.

Graphics systems

Matrox Electronics Ltd. has announced the QD-10A general purpose 1280-1024 pixel color graphics/imaging controller board set for the Q-bus.

UPSi is said to be an interactivepublishing tool featuring advanced graphics capabilities, and has been shown on workstations from Apollo Computer Inc., Digital Equipment Corp. and Sun Microsystems, Inc. Other features include the ability to handle multicolumn text and a math package that allows users to build formulas.

UPSi is now priced at $995.

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Industry year in lists

By Elisabeth Horwitt

Philadelphia - Bell Atlantic Corp. recently announced the acquisition of Technology Concepta, Inc., a privately held software and consulting company, for an undisclosed amount.

The regional holding company plans to acquire several more software companies as part of its strategy to provide software and services in both the telecommunications and data communications markets.

In addition to network consulting, Sudbury, Mass.-based Network Technologies offers a Community, a packet-switched networking software product based on Digital Equipment Corp. Decnet protocols. Company President St. George said the acquisition was the architect of Design.

Community currently runs on IBM Personal Computer systems. Versions for systems from Sun Microsystems, Inc., Valid Logic Systems, Inc. and CAD/CAM Systems, Inc. will ship in the next two weeks.

Bell Atlantic was one of several regional holding companies that Network Technologies approached with the intention of being acquired. The firm decided on acquisition as part of its strategy to provide software and services in both the telecommunications and data communications markets.

"We didn't want a venture capitalist to drive us, and we didn't want to be part of a computer-oriented company because we want to stay connected to the telecom market," Wecker said.

"Network Technologies brings to the table the ability to bridge the gap between a data network and the telecommunications world, because we've been in both," Wecker said. The firm recently developed a front end for 800-number services for Bell Communications Research Corp.

Founded in 1981, Technology Concepta is a 55-employee firm whose 1986 sales are expected to exceed $5 million. Financial details of the acquisition were not disclosed.
AT&T suffers 27,400-job cut

By Clinton Wilder

NEW YORK — AT&T announced its long-awaited layoff and cost-reduction measures late last week, cutting 27,400 jobs and anticipating a major downsizing for several months, are the key elements in the fourth quarter.

The layoffs, which have been the subject of intense industry speculation for several months, are the key component of a major corporate downsizing. AT&T has been in the process of reassessing its strategy away from computers and office equipment, businesses in which it will lose more than $500 million this year, analysts estimate.

An after-tax charge of $1.7 billion, or $1.63 per share, will cause AT&T to report a loss for the fourth quarter, but the telecommunications giant said it will show a small profit for the year. However, a one-time gain of $100 million in the first quarter from a change in pension-fund accounting (CW, April 21) may be all that AT&T's out of the red for the year.

The work force reductions, most of which will take place in the fourth quarter, will include 8% of AT&T's management ranks and 9% of its nonmanagement employees. The pretax charges will include $1 billion for personnel costs, $1.2 billion for plant closings and facility consolidations and $1 billion for inventory write-downs, primarily for unspecified communications and office automation gear.

IBM retirement plan attracts 10,000

More than 10,000 IBM employees will take advantage of Big Blue's previously announced early retirement program, exceeding the company's expectations. IBM will take a $250 million charge for the retirement plan — other unspecified charges, in the fourth quarter.

An IBM statement said a cautionary note on the financial outlook, noting that the retirements will negatively impact this year's earnings and will not produce savings until the second half of 1987.

The company "sees no signs of improvement in its general worldwide business climate as 1987 approaches," the statement said.

3Com Corp. reported that sales and profits roughly doubled in its second quarter ended Nov. 30. The Mountain View, Calif.-based local-area network firm earned $1.4 million, or 10 cents per share, on revenue of $28.3 million.

President and Chief Executive Officer Bill Krause cited strong in-coming orders for the Sirius3 net-work server and 3+ software and said 3Com awarded $328,000 in performance incentive bonuses to its employees.

3Com archival Novell, Inc. reported virtually identical $28.3 million in revenue for its fourth quarter ended Oct. 25, a 130% increase over year-earlier sales. Profits roughly doubled to $3.4 million, or 29 cents per share.

For the year, Novell's sales rose to $81.5 million from $33.6 million in fiscal 1985. Earnings were $10.1 million, or 90 cents per share, up from $4.4 million, or 41 cents per share, in the prior year.

Digital Equipment Corp. will begin work on its NUBUS network in the future. A DEC spokesman confirmed that Edward Kramer, vice-president of engineering, will leave in early 1987 to seek a CEO job, while Jean-Claude Pe-tergros will leave in March to work with Third World nonprofit organizations.

Software Research Corp. (SRC) has told two of its major customers that it is no longer operating as a company, the customers told Computerworld.

Having begun 1986 with a workforce of approximately 125, the Na-tick, Mass., networking software firm had reduced the company's work force to a handful of employees. Calls to SRC President Martin Waters were not returned.

Bridge Communications, Inc. has announced its intent to acquire Phoenix Technology, Inc. for an undisclosed amount.

The acquisition is expected to improve Bridge's competitive position with Ungermann-Bass, Inc. in the Ethernet and token ring-based local-area network market. Phoenix has developed a fault-tolerant Transmission Control Protocol/Internet Protocol communications server based on the Bridge CS/1 server.

Microsoft keeps MS-DOS rights

From page 58

signed for the 80256 and more advanced chips.

In 1981, Microsoft bought the operating system from Seattle Comput-er, which was then a thriving busi-ness, manufacturing S-100 bus boards.

Microsoft, still a young startup run by Harvard University dropouts Bill Gates and Paul Allen, then li-censed what was known as MS-DOS back to Seattle Computer for royalty-free use with Seattle Computer's own hardware.

Seattle Computer, which has now dwindled to two employees, also asked to add fraud charges to the suit, alleging that Microsoft amended the 1981 contract from a license to a direct sale at the last minute, "where the risk/rewards are a little better."

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Restructuring proves costly

Honeywell, CDC project substantial losses for year

By Clinton Wilder

MINNEAPOLIS — Honeywell, Inc. and Control Data Corp. announced last week that they will both report substantial losses for the year, owing mainly to restructuring charges.

Honeywell will post a loss of roughly $30 million, or 83 cents per share, by far the largest in its 101-year history. CDC, which lost $657.5 million in 1986 during a severe debt crisis, will lose about $250 million this year. It will take a fourth-quarter restructuring charge of $290 million.

Honeywell, underwritting its exit from the computer business, will take fourth-quarter charges and, in the downswing of approximately $357 million, well in excess of earlier expectations of approximately $250 million (CW, Dec. 16). The figure will include $400 million in charges related to the sale of most of Honeywell Information Systems to a joint venture with Compagnie des Machines Bull and NEC Corp. Honeywell will account for the computer unit as a "discontinued business.

The $400 million charge includes the previously announced $250 million, representing the amount below book value for which Honeywell will sell the computer business; unrealized foreign exchange losses; the costs of reducing the information systems workforce by a previously announced 800 employees; and other costs associated with accounting for the trans- formation of the unaudited venture.

The additional $175 million includes restructuring charges for Honeywell's aero- space and building and industrial controls business, plus funds to service the debt incurred in the $1.03 billion purchase of Unisys Corp.'s Sperry aerospace business.

Honeywell also announced it will reduce its 42.5% stake in the new venture to 19.9% at the end of 1989. After that, Bull will own 65.1% and NEC 15%.

"They are simply writing off the com- pany," said Gary Buckner, analyst at Dain Bosworth, Inc. in Minneapolis. "Now we can see why they were willing to part with it for such a low price. They were tired of being around with it and wanted to wash their hands of it completely."

CDC Chief Financial Officer John K. Buckner said the company's fourth-quar- ter charges bring its major restructuring program to an end.

Microsoft keeps MS-DOS rights

By Peggy Watt

SEATTLE — Microsoft Corp. will pay $925,000 to Seattle Computer Products, Inc. in return for keeping all disputed rights to MS-DOS, ending a civil suit that threatened Microsoft's monopoly on the widely used microcomputer operating system.

Wall Street analysts called last week's out-of-court settlement for Microsoft. The settlement was reached after the case had gone to the jury for deliberation.

At least one financial analyst had cautioned investors to hold steady until the suit was settled but quickly revised his assessment once Microsoft won some pretrial limitations.

"I had pointed it out as a concern at first," said Bruce Johnston, analyst with First Boston Corp. "But the settlement is very satisfactory for Microsoft. $925,000 is peanuts, and the agreement rids any possibility of appeal."

William Shattuck, analyst with Mont- gomery Securities, said most investors doubted from the start that Seattle Com- puter had much of a case. "But investors don't like that kind of uncertainty hanging over their heads," he said. "The settle- ment is definitely seen as positive."

Seattle Computer's potential award was already limited by Judge Gerard M. Shal- low, who ruled early in the trial that the 1981 contract between the two companies applied only to versions of MS-DOS designed to run on Seattle Computers' Intel Corp. 8086-based hardware. Microsoft has said future versions of DOS will be de- restricted.

First Boston Corp. "The merger ma- nia in corporate America is a boon to IBM and DEC, since combined companies usually rationalize their computer opera- tions by kicking out the least estab- lished ven- dors."

— Steven Milunovich

First Boston Corp.

GM shareholders' suits challenge Perot buyout

By Alan Alper

Electronic Data Systems Corp.'s (EDS) new president and chief execu- tive officer, Lester Alberthal, said last week that there would be no changes in the strategy and daily oper- ations of the firm despite the upheaval within the firm's executive ranks.

Meanwhile, EDS Founder and for- mer Chairman H. Ross Perot's Dec. 15 deadline for parent company General Motors Corp. to reconsider its deci- 

sion to buy his $742.8 million worth of shares passed without action. Institutional investors met with

Perot and GM executives last week to discuss the high GM's pur- chase of Perot's shares. A number of shareholder suits have been filed against GM regar- ding the Perot buyout.

Alberthal, stressing a theme of "business as usual" in a presentation to the New York Society of Secu- rity Analysts, said EDS would continue to operate autonomously and vigor- ously pursue business out- side of GM. Alberthal as- sumed the chief executive post after the departure two weeks ago of Perot and three other top executives. "GM has reaffirmed its commit- ment to allowing EDS the freedom to retain its entrepreneurial spirit," Al- berthal said. "They have no intention of GM-izing EDS or changing EDS's traditional customer focus in any way."

The so-called new man- agement team at EDS, Al- berthal pointed out, has been running the company for the last few years. "Our top 15 managers have an average of 15 years' tenure with the company and the senior officers' tenures range from 15 to 22 years with EDS," Alberthal noted.

EDS is making headway toward resolving compensation re- ceived for GM projects, he said, an is- sue that has caused much consterna- tion for executives of both firms. The "perpetual master agreement" EDS signed with GM last January gives EDS base protection of cost plus profit, the absence of other service agreements.

Nine fixed-price contracts with GM business units, representing 8% of EDS's total GM revenue, have been signed, with the balance expected to be completed within the next six months, Alberthal said.

Regarding the status of Perot's Dec. 15 deadline with GM, an EDS spokesman said the two-week period was an arbitrary date "that sounded good to him." Perot did not remove the GM buyout funds from escrow last week.

Members of the Council of Institu-

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Industry year in lists

T ax reform. Insider trading.

Costs. The headlines of 1986 are already being immor- talized as the print media attempts to wrap up the last 12 months in a nice, neat package for posterity.

But within the computer industry, even with the definitive end-points of Microsoft vs. IBM, the year can defy easy classification. Is 1986 the year the slump continued? Not for Digital Equipment Corp., Apple Computer, Inc. or Microsoft Corp. It wasn't even the long-awaited Year of the Personal Computer. But with the obvious caveat that a year cannot be easily labeled, it is none-the-less defined by events, trends and per- sonalities. Following, then, is the inaugu- ral edition of "The Computer in the Year in Lists." It meant to be neither definitive nor beyond de- bate, but will, it is hoped, provide a useful frame work to sort out the indus- try consolidations and upheavals of 1986, of which there was certainly no shortage.

The entries are not listed in any particular order.

The top 10 industry stories:

1. Burroughs Corp. acquires Sperry Corp. to form Unisys Corp.
2. IBM encounters financial troubles, including the very real specter of a doomsday in revenue.
3. DEC enjoys financial, product and market wins.
4. Honeywell, Inc. spins off its computer business into a joint venture with NEC Corp. and Compagnie des Ma-

See INDUSTRY page 55

Wilder is Computerworld's senior editor, computer industry.
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