Apple-DEC plot gels
Firms to lay out framework for linking systems

BY PATRICIA KEEFE
CW STAFF

BOSTON — Apple Computer, Inc. and Digital Equipment Corp. are expected to unveil today the underpinnings of a strategy for enabling users to easily swap files, access databases and utilize peripherals between both companies' network environments.

In briefings to analysts last week, DEC and Apple said they would provide third-party and corporate developers with a blueprint of plans first announced eight months ago. The two firms will outline a set of base services that include software specifications, application programming interfaces and utilities covering file, print and other basic protocols.

These developer's aids will serve as the foundation on which to build advanced applications such as Apple Macintosh-to-DEC VAX SQL services, according to one analyst.

Micro Channel tuned out

BY ALAN J. RYAN
CW STAFF

Users anticipating a flood of IBM Micro Channel Architecture-compatible computers by the end of this year should instead begin preparing for a drought.

Acceptance of MCA has been slower than originally anticipated by vendors that were ready to dive into the potential profit pool created through IBM technology. And users willing to move to the new bus architecture are likely to buy IBM until the clones are able to prove their worthiness and compatibility.

While overall sales have been slowly rising for IBM's MCA-based Personal System/2s, IBM is not likely to surpass its 1987 Personal Computer AT sales with MCA sales this year. Meanwhile, some PC-compatible vendors are laying low, content to let IBM drum up business for the MCA architecture.

Little did Hess know he was being watched and his every command recorded. He finally got caught in a trap set by West German authorities. Hess was not prosecuted for the data invasion, but he got caught and put out of business.

Hess was not prosecuted for the data invasion, but he got caught and put out of business.
All the fixin's. The Blue maintenance umbrella will now cover non-IBM shops, providing a one-stop repair option to relieve the burden of dealing with multiple maintainers. Page 5.

Summer time over time. Ashton-Tate is scrambling to debug and decrease DBase code, but a September debut still seems doubtful. Page 84.

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SQL Server to roll sans front wheel
BY STEPHEN JONES CW STAFF
REDMOND, Wash. — It looks like the SQL Server database engine will roll off the assembly line this year as promised, but it is still unclear when a critical series of sporty front-end applications will make it to the showroom.

Users who have taken a first peek at SQL Server said the code is fairly clean and contains no major obstacles that would prevent the product from hitting its fourth-quarter shipment deadline. The technology for SQL Server was licensed by Microsoft Corp. from Sybase, Inc. Ashton-Tate Corp.; joined the development effort last January.

The companies had originally indicated that the product might ship in the second half of this year, but a source close to Microsoft said that deadline has been narrowed down to the last quarter of the calendar year.

Microsoft is expected to start a widespread beta-test program by distributing early copies of the software to developers at Comdex/Pall '88 in November. Sources close to the development effort said.

Solo performance
While the code for SQL Server seems to be relatively free of bugs, the product could find itself without any front-end partners at the time it ships.

Ashton-Tate has made the biggest pledge to support SQL Server. The company is building a version of its Dbase IV that will act as a front-end database and use SQL Server as a powerful back-end database engine.

"SQL Server has a very good kernel, but there is a need to develop good applications and development tools, and that is one area that we are not out there yet," said one user who has examined a copy of SQL Server.

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COMPUTERWORLD

SQL Server to roll sans front wheel
BY STEPHEN JONES CW STAFF

Sun's Cooke latest chief to hang up warbonnet
BY JAMES CONNOLLY CW STAFF

RADNOR, Pa. — Another well-known MIS director changed career paths last week. Sun Co.'s Dudley F. Cooke revealed plans to accept a voluntary early retirement package offered to Sun executives in the wake of corporate restructuring and a decision to spin off Sun's petroleum exploration and production groups.

Cooke, 56, said he will retire Dec. 1 with plans to establish a management consulting firm focusing on information systems. General manager of Sun's Information Systems Division for six years, Cooke has been active in MIS-related professional organizations such as the Society for Information Management and has participated in activities such as the Gartner Group Excellence in Technology Award Committee.

Cooke said Sun will not replace him and will eventually shift most of its 200 corporate MIS staffers to business groups.

"We've built one of the best organizations in the business," Cooke said, describing the MIS group that he took over after 20 years at Sun and seven years at Exxon Corp. in a variety of management jobs involving corporate troubleshooting, finance, materials management, marketing and plant operations. One of his assignments was a six-week project in which he oversaw the spin-off of Sun's external data systems operation.

Reflecting on his current group's accomplishments, he noted, "We are doing more work in two years than in our past decade." He said Sun had 1,111 systems employees when he started with the company and now has 520, even though systems use has grown 25% per year.

Cooke, who said the progress made in communications technology has surprised him even more than the gains in computer technology, offered advice to those seeking a top MIS position: "The biggest asset you can bring to the information systems side is to know the business. You have to be able to marry the available technology with what the business person needs."

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Flood system hopes to keep N.J. dry

BY ELIZABETH HONEWITT

The federal government is installing an advanced flood warning system in northern New Jersey that designers hope will reduce property damage because of flooding. As April 1989 approaches, four lives have been saved and $350 million in damages have occurred.

The system, developed by the National Weather Service, will cost approximately $1.1 million, with annual maintenance and operation costs of approximately $277,000. It could be incorporated into a $8 million flood control project proposed by the Army Corps of Engineers and currently being reviewed by Congress.

Grounded in the East

An overnight attempt to upgrade the air traffic control program at a Federal Aviation Administration regional training center in Framingham, Mass., disrupted East Coast flight operations for nearly three hours.

Flood system hopes to keep N.J. dry

BY ELIZABETH HONEWITT

the Department of Environmental Protection.

A Deskpro residing at the Morris County emergency office in Morristown, N.J., is connected to the hub of the Computer Corp. under a contract with IBM. It is one of the four-county UHF network and the satellite links out to the weather service’s Deskpros. To ensure that crucial information continues to flow even during violent storms, Sierra/Misco installed a backup gateway.

The system will cost approximately $1.1 million, with annual maintenance and operation costs of approximately $277,000. It could be incorporated into a $8 million flood control project proposed by the Army Corps of Engineers and currently being reviewed by Congress.

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IBM service plan to cover non-IBM gear

BY STANLEY GIBSON
CW STAFF

RYE BROOK, N.Y. — Stretching its ser-
vice umbrella to cover more of its customers, IBM said last week that it will provide
one-stop maintenance for users who have non-IBM equipment in their shops.

The program was designed for users who want to hand over to IBM the burden
of dealing with several maintenance vendors. Under the plan, called Technical
Services Management, IBM will subcontract with other vendors for service and contact them when a problem occurs.

IBM has offered the service to some
two dozen accounts on a test basis during the last six months, according to IBM Na-
tional Service Division Vice-President
John Patrick. Patrick said some of the pi-
lot accounts were large IBM customers
and others were small System/36 shops. The offering will be available to all shops regardless of size, he said.

"A lot of customers don't want to spend their time on service manage-
ment," Patrick said. But, he added, "it's not for everybody," explaining that some customers prefer dealing directly with all maintenance providers.

The one-stop shopping concept is simi-
lar to a program that Digital Equipment
Corp. instituted in 1983 and that third-
party maintenance providers have put in place in the past several years.

Jim Paster, head of IBM sales at Con-
trol Data Corp.'s Engineering Services, said the IBM program is targeted mainly at larger accounts. He said CDC could gain by acting as a subcontractor to main-
tain non-IBM equipment. However, he conceded that CDC could also lose busi-
ness if IBM tends to push other mainte-
nance vendor directly," said Joe Marion
of William Marion Co. in Hackensack, N.J., an IBM mid-range leasing and main-
tenance firm.

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Masscomp buys Concurrent
Merged company to target top real-time slot

By Nell Margolis

Boston — With their stated goal to become a $350 million company armed with advanced real-time computing technology, Masscomp and Concurrent Computer Corp. are joining forces to create the No. 1 spot in the worldwide real-time computing market.

Concurrent's shares will be acquired by Masscomp, much the smaller of the two, and the new entity will be called Concurrent Computer Corp. The choice of name——"Mass." in Masscomp. The new company will be headquartered at the current Concurrent's Tinton Falls home base.

"No customers of either company will be losers with this deal," said Vicki Brown, an analyst at Frazier & Co., a major Wall Street investment firm. "The conclusion that Systems/36 and 38 users who want more power will be the first to order in Concurrent's announced merger is a priority at Concurrent; it is a reality at Masscomp.

"Concurrent, which has already acquired a significant portion of Concentric's product line, is focused on the low-end mid-range real-time market, which will fill in a gap in Concurrent's mid- to high-end offerings," she said.

Commented IDC's Brown: "No customers of either company are going to be hurt by this merger."

"Perkin-Elmer gets out. The concurrent effect is a success; the customer has agreed to tender its 9.4 million Concurrent shares to Masscomp, has made no secret of its desire to exit the computer business and focus on semiconductor equipment and analytical instruments."

Notwithstanding the fact that Masscomp, much the smaller of the two companies, tactically acquires the party, the entry that emerges from the merger will be called Concurrent Computer Corp. With the choice of name seems inevitable: After the acquisition, there will be no Concurrent as a separate entity.

"It's so typical of IBM, when they announce a new product, to announce all the problems with it and then say the new product will save the company," said Donald Goodspeed, president of Computer Maintenance Consultants Ltd., in White Plains, N.Y., calculated that a client's maintenance bill. "It's so typical of IBM, when they announce a new product, to announce all the problems with it and then say the new product will save the company," said Donald Goodspeed, president of Computer Maintenance Consultants Ltd., in White Plains, N.Y., calculated that a client's maintenance bill.

IBM may have unwittingly given users an easy out from its Corporate Service Amendment (CSA). As a result of a maintenance price hike announced quietly late last month, in the low-key announcement, IBM raised maintenance costs on 3090 base and 3090 E models by 5%, effective Nov. 1.

The announcement was made concurrently with the rollout of the ES/3090 S models but was not included in the formal presentations or in materials given to the press or analysts.

It was also not mentioned in a general announcement of price increases made two days after the 3090 S rollout. That announcement boosted the price on many pieces of equipment by 5% and raised maintenance fees by 5%. At that time, IBM said all 3090 models were exempt from the price increase, not mentioning that maintenance on 3090 base and E models had been hiked two days earlier.

Together with maintenance price hikes made earlier this year, the increases could let some customers withdraw from CSA without paying a penalty.

CSA loophole in IBM price hikes?

Out with the old
IBM System/36 tops the list of systems being replaced by AS/400 buyers

By Stanley Gibson

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CSA, a discount program with contract terms up to five years long, specifies that should maintenance costs at a site rise by more than 3.5% in a year, a customer may withdraw from the program to avoid paying penalty. Otherwise, with price hikes made earlier this year, the increases could let some customers withdraw from CSA without paying a penalty.

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The VM Experts
Thailand micro channel planned
A government and industry venture in Thailand plans to take on IBM, Power Mac clones made by manufacturing machines compatible with IBM's Personal System/2 Models 50, 60 and 80. Tavorn Computer, well-known in Thailand for its microcomputer assembly work, is going into partnership with Nectoe, the National Electronic and Computer Technology Center, which is a unit of the Thai Ministry of Science, Technology and Energy.

Slow-going for 10M Ethernet
Four months after a study group of the Institute of Electrical and Electronics Engineers, Inc. (IEEE) submitted a plan to develop a standard for 10M bit/sec. twisted-pair Ethernet 802.3, local-area networks, niggling details are still being hammered out. Group Chairwoman Pat Thaler said she hopes the plan developed by Hewlett-Packard Co., Synoptics Communications, Inc. and Wang Laboratories, Inc. can be polished enough to go on the ballot at the next IEEE meeting in November. But “the plan is very aggressive,” Thaler confessed, adding that the next meeting after that will be in March.

Bell Atlantic LAN manager
Bell Atlantic Corp. said last week that it will add network management features to its central office-based LAN (CO-LAN) offering, beginning this fall. It’s industry’s first CO-LAN management service will allow customers to assign and change passwords, remove and restore workstations and generate management reports, Bell Atlantic claimed.

DEC reaches out to developers
Digital Equipment Corp. will license the user interface of Decwindows to independent software suppliers to encourage development of applications that work with the DEC windowing program. Called XUI, for X User Interface, it offers a tool kit, window manager and user interface language for DEC's VMS and Ultrix operating systems. XUI is part of the Developments that DEC has offered to the Open Software Foundation (OSF) as the standard user interface for the OSF's version of Unix.

Oracle auditor missing
While Oracle Corp. acknowledged it had more than one auditor working on its benchmark of Unix, the company's first CO-LAN management service will allow customers to assign and change passwords, remove and restore workstations and generate management reports, Bell Atlantic claimed.

Apple pulls even with IBM
For the first time in more than three years, IBM posted less than a 20% market share in sales through the computer specialty retail channel during the quarter ended May 1987, according to IMS America Ltd. Apple Computer, Inc. and IBM tied with a 19.1% market share, with Compaq Corp, following with 11.6%. "This is the first time in a non-Christian holiday season that Apple tied for the number one spot with IBM into that channel," said Stephen Roberts, a senior marketing manager at IMS. For the quarter ended May 1987, Apple had a 17% share while IBM led the pack with 25.9% and Compaq pulled in third at 19%.

Lotus bailouts continue
Lotus Development Corp. lost two employees last week. Di- rector of Sales Distribution and Planning John D. Shagoury jumped ship to join reseller Corporate Software, Inc. as vice- president of product marketing. Press pipeline Greg Jarboe will leave his post as head of corporate communications to re- join the media. Jarboe will serve as head of media relations for a new computer publication.

Apple to support Posix standard

By MITCH BETTS CW STAFF

WASHINGTON, D.C. — Apple Computer, Inc., trying to stay in the good graces of govern- ment buyers, said last week that future versions of its Unix-like A/UX operating system will comply with the pending IEEE Posix standard that has become so popular in the federal market.

In just the first quarter of this year, federal agencies issued 106 bid solicitations for Unix. The National Bureau of Standards is expected to issue a federal Posix standard soon that will be a mandatory part of federal contracts unless a special waiver has been obtained.

The draft of an interim version was published April 29, and experts vary in their views of complying with it (see story page 23). Posix defines a standard interface which have been the operating system and applications software to foster applications portability at the source-code level [CW, March 16, 1987] Eventually, Posix may become a complete stand- ards-based computing environment.

Roger M. Cooper, head of information systems at the U.S. Department of the Trea- sury, said that Posix portability is important because the government's competitive procurement rules guaranteed that agencies will have numerous brands of hardware.

Cooper, a featured speaker at Uniforum/DC, said: "When the Treasury and major Unix vendors at the U.S. Air Force and Navy, the Treasury and the U.S. Department of Agriculture — that will total more than $6 billion when contracts are awarded.

At the Uniforum/DC trade show last week, AT&T again stated its goal of delivering by next year Release 4, the merged Unix, that it said will blend its System 5 with Microsoft Corp.'s Xenix and Sun Microsystems, Inc. SunOS, which is based on the University of Cali- fornia at Berkeley’s version of Unix.

Meanwhile, the OSF remains committed to its plans to build on a yet-to-be-announced version of IBM's AIX.

Not the bad guy
"What's really going on is AT&T is trying to change the fact that the OSF formation made them look like the bad guy," said David Fiedler, editor of "Unix World," a Unix newsletter published by En- foporo Systems, located in Res- cue, Calif.

There was little agreement among analysts last week on what plans the OSF and AT&T could implement if they do decide to compromise with more than just words.

Craig Young, director of re- search at International Techno- logical Group in Los Altos, Calif., said one option would be for the two to develop an interface that would link AT&T's Unix System V to what the OSF will eventually deliver.

But Dyson said an interface would make no sense. "It's sort of crazy to develop something else on top of what they're doing," she said.

Fiedler said the two could possibly reach a decision to use AT&T's Unix as a base on which AIX will sit.

"That way, AT&T says its Unix is the kernel and IBM can say AIX is in the porting base," Fiedler said. "That would be the cost-free way of doing the whole thing."
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Don't bet on OS/2 Extended — yet

BY DOUGLAS BARNEY CW STAFF

It is the first major product written from the ground up for IBM and Microsoft Corp.'s OS/2 and the bedrock of IBM's Personal Computer software strategy. But so far almost nobody seems interested in buying the week-old IBM OS/2 Extended Edition.

"I haven't had anybody asking for it," said Carlos Frum, president of Northbrook Computers in Northbrook, Ill.

Then again, dealers are not going around praising sales of the base OS/2, either. Competitors are also not stealing IBM's thunder with sales of next-generation PC database management system products, most of which have yet to ship. In fact, the database and OS/2 wars have yet to begin.

Stumbling blocks

Holding back OS/2 Extended Edition is the wait for the Presentation Manager interface and new local-area network support; a dearth of OS/2 Standard Edition sales; a lack of applications; and persistent confusion over OS/2 Extended's MIS role.

In fact, the database and OS/2 wars have snuffed with the rest of the industry, accord-ing to Zachmann.

Added to these hurdles are the high cost of implementing the operating system that calls for a high-speed PC, nearly 6M bytes of expensive random-access memory and at least 30M bytes of hard-disk storage.

Despite the current lack of sales interest, a debate over the ultimate role of OS/2 Extended Edition rages. For International Data Corp. Vice-President William Zachmann, OS/2 Extended Edition is going nowhere fast. The reason? People are beginning to realize it is just not up to snuff with the rest of the industry, according to Zachmann.

IBM also views OS/2 Extended Edition as systems software rather than applications software. "It contains the basic building blocks. It is meant to provide an application platform," explained Pat Motola, OS/2 Extended Edition systems manager.

IBM has positioned OS/2 Extended as the PC cornerstone of its distributed database architecture, saying that DB2, SQL/DS and the Application System/400 DBMS will reach out from the top while OS/2 Extended will grow up from the bottom.

Many critics have focused on IBM's set of front-end tools, which analysts and some users have said are far weaker than competitive products. But what they may not see is the foundation upon which third parties can add an impressive array of tools. Borland International's Paradox, widely praised for its interface, is one such product.

In fact, OS/2 may live or die by the commitment of third parties, which has been scant. So far, many database and communications vendors have been rapping their sabres about competing against, not supporting, OS/2 Extended Edition.

The wading pool

While analysts argue and vendors lay low, corporations have almost unanimously taken a wait-and-see attitude toward OS/2 Extended. They are waiting to see how good it is, how much support it gains and how it works with existing systems.

Charles Schwab & Co. is still wading through the more than 100-pound OS/2 Standard Edition development kit and has yet to give OS/2 Extended any scrutiny. Also, the firm's machines do not have enough memory for OS2 Extended, according to Bob Duste, manager of software engineering at the investment firm. In addition, "we don't have a hard driving need yet," Duste said.

"Wait and see" are also the words from Whirlpool Corp., which plans to buy a copy for evaluation. Even if Whirlpool is impressed, OS2 Extended Edition would take time to implement. "It won't happen overnight or anywhere near overnight," said Robert Metz, a senior technical analyst at Whirlpool.

Like betting on a Super Bowl that is three years away, the OS/2 Extended game is simply too early to call.

The flat-file Q&A DBMS from Syman-tec Corp. can beat the pants off the data-base portion of OS/2 Extended, Zachmann said.

Slow-burning fire

Others vehemently disagree and see the product as a slow but eventually highly successful burner. In fact, disparaging comments were also made about IBM's DB2 when it was introduced in the summer of 1986. The success of DB2 has since changed the face of the mainframe software industry.

"Critics don't understand the technol-ogy, the internal architecture. It has abso-lute compatibility with the mainframe [DB2] at the programming level, optimi-zation, recovery and transaction control built in. Only a handful of products have that," said Rich Finkelstein, president of Performance Computing, Inc. in Chicago. Also tacked onto the base OS/2 operating system is a broad set of micro-to-host-ori-ented communications facilities such as the IBM 3270 and Digital Equipment Corp. VT terminal emulation.

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Like betting on a Super Bowl that is three years away, the OS/2 Extended game is simply too early to call.
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Trade bill tickles high-tech fancy

Industry giants support omnibus, but sanction clause worries some

BY MITCH BETTS

WASHINGTON, D.C. — The Senate passed the bill by an 85-11 vote, following approval by the House of Representatives last month. President Reagan, who vetoed an earlier version, is expected to sign this bill into law soon.

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The trade bill has a variety of little-known provisions that may affect the computer industry, including the creation of a 12-member advisory group called the Competitiveness Policy Council and the transformation of the National Bureau of Standards into the National Institute of Standards and Technology.

Furthermore, buried in the bill are sections creating computerized job banks in all 50 states; the National Commission on Supercconductivity; a federal database of trade statistics; the National Advisory Committee on Semiconductors; and the Clearinghouse on State and Local Initiatives on Productivity, Technology and Innovation.

In addition to addressing foreign trade, the bill "is a step toward addressing our competitiveness problems here at home," with provisions to boost research on advanced manufacturing technologies and improve education and training programs, Sen. Jeff Bingaman (D-N.M.) said.

The next generation of desktop computing will let us merge data from different sources into a useful flow of information.
HP face-lift leaves blemishes

BY JAMES A. MARTIN
CW STAFF

ORLANDO, Fla. — The more than 2,500 Hewlett-Packard Co. customers expected to converge here this week for the Interex users conference will find a company that has come a long way in the year since it shipped its long-delayed reduced instruction set computing (RISC) systems. Yet despite advances in technology, marketing and corporate stature since the 1987 conference, HP still faces formidable obstacles in its quest to challenge IBM and Digital Equipment Corp. in the minicomputer market.

Interest is expected to be a "state-of-the-state" show, with updates on HP's RISC-based Precision Architecture (PA) systems, the countersuit against Apple Computer, Inc. over New Wave and performance benchmarks from beta-test sites for the enhanced PA operating system, MPE.XL Version 1.1.

But the company will probably downplay some holes that users and analysts still see in its product line:

- A lack of relational databases and transaction processing capabilities on the HP 3000 Series 900, which make up the PA, or Spectrum, models. "HP is still playing catch-up with their software, and most users are not conditioned to having transaction processing and relational databases," said John Dean, a technology analyst at Montgomery Securities in San Francisco.
- A lack of new applications, both commercially and privately developed, for the Spectrum series. "Are HP's customers writing new applications for Precision Architecture, or are they just running the old applications on these higher performance, newer systems? That's the critical question," said Adam Cuhney, a technology analyst at Kidder, Peabody & Co.
- A lack of New Wave applications. Granted, HP's personal computer office automation environment was only recently placed in developers' hands and has become the target of a lawsuit by Apple. Nonetheless, it is imperative that HP build strong support for New Wave from independent software vendors. Currently, the most visible announcement was porting to New Wave is Microsoft Corp.'s Excel spreadsheets.
- A lack of support and interest in the HP 1000 real-time processors. Several users interviewed said they have been dismayed to see HP turn its attention away from the older HP 1000 systems in favor of Spectrum and the Unix-based HP 9000 workstations.

Support weakening

"The level of support for the 1000 seems to be decreasing at an amazing rate," said Donald A. Wright, president of Interactive Computer Technology in Lake Elmo, Minn., and an Interex board member. "HP tells us it's time to migrate. What we say is, we will continue to migrate those applications that are appropriate; but the RTE operating system on the 1000 can do the job so much better on some things, so we don't want to migrate completely." The HP 1000, once the firm's flagship minicomputer, has been repositioned as a real-time I/O application system, "which is really its strength," said Carmen Marchioni, technical systems marketing manager at HP's Technical Computer Group in Sunnyvale, Calif. Although the HP 1000 is not receiving any general-purpose computing enhancements and the last hardware upgrade was in 1984, Marchioni said Versions 5.1 and 6.0 of RTE, the HP 1000 operating system, are in development.

Overall, however, HP observers and customers are upbeat about the Palo Alto, Calif.-based company. HP's vigorous embrace of standards has gained the firm much respect in the industry. Its RISC technology has been well received by customers and Wall Street alike.

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EDITORIAL

Miles to go

THE MIRACLE OF Apple's comeback from near-washout to industry superstar has been told to death, but will the magic continue to work in the MIS market? As this week's Special Report on the Macintosh attests, Apple may still face its greatest challenge in gaining acceptance for the Macintosh as the machine of preference for corporate microcomputing. The distinction between preference and standard is important. The Mac is already an accepted option at many large firms, but it is still far from fulfilling a role as the machine for corporate microcomputing.

Telling statistic for Apple is the Mac's performance in a new survey of 174 MIS executives who are members of Computerworld's Editorial Review Board. Although 37% of the members have Macintoshes installed at their sites, only 29% said they plan to purchase Macintoshes during the next 12 months. More troubling for Apple, 54% said the emergence of graphic interface programs for the personal computer will probably cause them to purchase fewer Macintoshes.

The Mac's success to date has been a function of the markets it created. The hugely successful desktop publishing craze has led many publications, including this one, to standardize on the Mac for virtually all presentation graphics.

But as a tool for day-to-day business applications such as word processing, spreadsheets and electronic mail, the Mac's only real edge is its intelligence about user input. But against a base of 17 million DOS-based machines, it's also not a compelling argument for MIS to make it a front-runner.

To realize its potential as a favorite in MIS, Apple must move forward on several fronts. It must rapidly rectify its communications shortcomings with IBM hosts, particularly in the areas of Token-Ring support, Netview compatibility and cooperative application processing.

Apple must also get the flow of innovative new products started again. It has delivered no new computers since the Mac II shipped early this year. In a business in which one company controls and dictates all innovation within the hardware standard, inactivity is weakness. Advancing the state of the art is the answer. Suiting Microsoft isn't.

Finally, Apple needs to better establish itself as a business partner for MIS. The company has made great progress in this area in the last year, but the alliance is still rough around the edges. On the one hand, Apple officials say they have corporate religion. But they also endorse a strategy of working their way into those corporations department by department. MIS was blindsided by that approach five years ago with the PC. It isn't likely to repeat the same mistake.

This is a time of opportunity for Apple. MIS buyers are unimpressed so far with IBM's Micro Channel Architecture. They are open to alternatives. With just a little more attentiveness to their needs, Apple can be that machine of preference.

COMPUTERWORLD

LETTERS TO THE EDITOR

Just goods

Dynamic random-access memory chips in short supply? Suppliers afraid to ramp up production only to find a falling market? Inequitable distribution of available supplies among large and small customers? Double and triple ordering to ensure adequate supplies distorting bill-to-book ratio? All these problems were solved years ago in agriculture and mining with commodity futures.

Megabytes of computer memory are as much an information age commodity as steel, oil and copper are to basic manufacturing.

Electronic chips are no more highly manufactured than gasoline, refined metals and frozen orange juice concentrate. Shouldn't commodity electronic future contracts be available to minimize these periodic panics and provide an orderly market for suppliers and their customers?

Richard L. Kleier
Computer Systems
Berkeley, Calif.

This week in history

Aug. 7, 1978
Digital Equipment Corp. opens its first retail store located in the Mall of New Hampshire, promising immediate off-the-shelf delivery of small business systems, word processing systems and supplies.

Aug. 8, 1983
It's all systems go for the historic breakup of the Bell system as AT&T accepts the changes in its reorganization plan demanded by U.S. Federal District Judge Harold Greene.

Who's bad?

In "Morals over $$$" [CW, June 20], you editorialized about sanctions against South Africa. You made the doubtful statement that boycotts work and in general assumed that boycotting South Africa is a moral action. But that in itself is doubtful. What exactly are we against in South Africa?

Are we against repressive government? In that case, we have many far worse cases than South Africa to think about, including several close neighbors of South Africa.

For as long as Angola and Mozambique suffer Marxist dictatorship, we should boycott those countries rather than South Africa.

The movement to boycott South Africa is ignorant, thoughtless and hypocritical.

John A. Wills
Administrative Computing Center
Pasadena, Calif.

Computerworld welcomes comments from its readers. Letters may be edited for brevity and clarity and should be addressed to Bill Laboris, Editor, Computerworld, P.O. Box 377, 375 Chisnutte Road, Framingham, Mass. 01701.
Computers still silent partners in high-tech

Don't expect to chat with machines for a while

AMY WOHL

Expectations are a funny thing: When we see something new and exciting, our reaction is not to the newness or the excitement of the thing itself but to how this novelty compares with what we already know.

Many of the newest technologies relate to what computers see and hear and how they understand and respond. Our expectations here are very high, for there have been many disappointments — by earlier and cruder versions of similar technologies — and for they have been set not logically — by earlier and cruder versions of similar technologies — but rather by years of books and magazines, television and movies.

Sometimes the popular media speculates on a far-off future, but often it pictures that distant horizon as nearly or entirely within our present. Remember HAL, the human-sounding computer in 2001: A Space Odyssey? It not only understood everything it heard and replied in an engagingly human way, but it could also spy on you and even read lips when it suspected your intentions.

And all the human-looking, human-seeming robot characters that appear on TV and in the movies — they hear, they speak, they even seem to have emotions.

No wonder the latest voice recognition device or image scanner seems so mundane. Our unreasonable expectations bump into everyday reality.

Reality's not enough

Devices today can record voice in compressed and digital form. This capability permits it to be stored and forwarded, as in voice mail, or attached to text or data files, as in voice annotation.

A limited-vocabulary speaker-specific device can be built, and it would be adequate for commanding a device or program or for requesting information from a database, for example. The technology does not yet permit large-vocabulary continuous-speech applications such as the infamous talking (listening, really) typewriter that accepts dictation and accurately displays it on the screen of a computer.

Users are not satisfied with the devices created so far, except in very specific applications such as inventory control. We have watched HAL understand our most subtle emotions and reply to them. We can't help, even if subconsciously, expecting a computer to act just like that.

There are still significant barriers to be breached:

- **Continuous speech.** Being able to understand speech as it is ordinarily uttered, in phrases, sentences and paragraphs rather than individual words.
- **Unlimited vocabulary.** Understanding all of English (or French or German) rather than only a few hundred or few thousand words.
- **Natural language processing.** Being able to speak in ordinary English and have the system completely understand it. This ability is not just voice recognition but the ability to understand the meanings of words and their relationships through grammar.

In a language like English, which permits many unique constructions and exceptions, this ability is particularly difficult. Never mind all the "natural language" interfaces you keep seeing. They are simply products that understand a few English words. "English-like" would be a better, but less exciting, description of their capabilities.

- **Speaker independence.** Being able to understand any speaker without being trained to understand specific speech eccentricities. Better yet, being able to understand many speakers in the interruptive and confusing manner in which human discussions usually occur.

- **Real-time response.** HAL replies immediately. Computers could understand more difficult questions if they had more time to consider (that is, process) them. But we demand real-time processing and immediate response.

There are other problems to be met. How big can the machine be? How much will users pay for it? What else does it have to be? How much will users pay for it? What else does it have to be?

We are making unrealistic expectations about the newly emerging imaging technologies.

SERS ARE NOT satisfied with the devices created so far, except in very specific applications such as inventory control.

...Continued on page 22
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LANscape

CONTINUED FROM PAGE 19

freight train. Getting vendors to sign on
was fairly easily accomplished, and no
doubt Sun wishes they were just as eager
to be part of its current endeavors in
Unix.

Transients and holdouts
Another obvious example of a communal
networking breakthrough is the Manufac-
turing Automation Protocol, better
known and appreciated by everybody (ex-
cept DEC) as MAP.
Lots of other networks have come and
gone, and some have even managed to
hold on: IBM's Token-Ring and PC/Net,
Micom's InstantNet, Zilog's Z-Net, 3Com's
Cheapernet, GE's Genet and Network
Systems' Hyperchannel are only a few of
the myriad networks introduced during
the past decade.

Yet for all the interest in LANs during
the time of their emergence, once in-
stalled they became taken for granted as
just part of the system, much as the tele-
phone is. While the peripherals to the net-
work received all the attention, the actual
link — the network itself — was largely
ignored.

As such, there are few comprehensive
network software designers and imple-
mentors who are able to move LANs into
the field of office automation with a sense
of ease and savoir faire. In fact, a lack of
expertise pervades the entire business of
networking.

So for all the recent talk about LANs, it
really comes down to the computer indus-
try committing resources — namely,
manpower, time and money — to develop
workable networks. MAP is a good step,
but unfortunately, not everyone thinks
so.

The recent commitment on the part of
vendors to adhere to a proposed OSI in-
formation exchange format could also
help. Ultimately, it comes down to how
important the need becomes in the cus-
tomer base in the next few years and how
forcefully users press that need on ven-
dors.

Maybe someday all computers will be
able to network together, just like in the
phone system. Because as much as the av-
erage user complains about service,
there's a great deal to be said about the
fact that you can pick up a phone any-
where in the U.S. and communicate with
any other phone in the world.

Silent partners
CONTINUED FROM PAGE 19

as well, particularly those that deal with
recognition. A few weeks ago, I was de-
scribing a product that can read a particu-
lar individual's handwriting based on PC
(Intel 8088) technology. "It doesn't read
cursive handwriting," the local cynic
complained.

He meant that this product, from Linus
Technologies, Inc. in Reston, Va., re-
quired that you lift the pen at the end of
each handwritten letter so the system
would not need to understand how to tell
when letters begin and end.

Of course, it would be better if a sys-
tem could understand everyone's hand-
writing without training and without any
changes in the writer's normal behavior.
But isn't having partial solutions now at a
reasonable cost preferable to waiting for
"full" solutions at any cost?

Some imaging problems are already
solved. We can read characters of any size
or reasonably consistent style, in any mix-
ture, on very inexpensive (less than
$5,000) products. We can recognize col-
umns and separate text from graphics.

Soon we may be able to both associate
recognized text with accompanying im-
ages and find those images by automatic-
ally generated indexes. Should we refuse
to buy such products because they don't
also recognize the content of images?

Making do
What we need to learn is how useful each
of the above tools can be at each stage of
its development. A computer will not lis-
ten to your ordinary speech and immedi-
ately render a clever reply. And no, the
computer will not then translate this reply
into perfectly parsed French or Chinese.

But we are moving along the path.

One piece of technology can capture
human speech and another paper images.

Another bit can examine them and offer
partial analysis and recognition.

It is the addition of these technological
wonders to one another, rather like the
accretion of layers of luster on a pearl,
that in the end add up to something won-
derful, useful and valuable.

Pioneers can see and try these things
as they happen, with their small expecta-
tions often leading to pleasant and useful
surprises. Those with overblown expec-
tations will always be disappointed by the
smallness of reality.

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AUGUST 8, 1988

COMPUTERWORLD
IBM plays it to the limit

AUGUST 8, 1988

Tardy Posix ensnared in political tug-of-war?

More C series processors from Convex

Government Unix growing

By STANLEY GIBSON CW STAFF

RICHARDSON, Texas — Convex Computer Corp.recently added two C series processors, announcing the C201 and C202, which replace the Model C130. Both systems incorporate the parallel architecture announced in Convex's C series earlier this year and are compatible with C series Models C210, C220, C230 and C240.

As an entry-level system, Convex retains the C120 model. A C120 user moving to a parallel system would have to recompile his code manually for the parallel processing, a Convex spokesman said.

The C201 is a single-processor system that can be expanded to the C202 by inserting an additional processor in the cabinet. Each processor is a 64-bit scalar and vector computer. The C201 and C202 can be expanded to 2G bytes of physical memory.

The C201 is capable of 23 million instructions per second (MIPS) on the Whetstone benchmark; the C202 can perform 46 Whetstone MIPS.

"This time you can start with the C201 and plug in a board to get the C202," said Omri Serlin, president of Itom International, Inc. in Los Altos, Calif.

The C201 starts at $495,000; the C202 is priced at $755,000. The C201 has already been shipped to several customers, and the C202 is scheduled to ship in September.

Once consensus is reached, federal agencies follow the standard and use their collective purchasing power to require vendors to submit bids that meet its criteria.

Behind the scenes

James Isaac, Posix strategy director at Digital Equipment Corp., suggested last week that a political tug-of-war may be going on behind the scenes. Contracts that have been advertised for the U.S. Air Force, Department of the Treasury, Federal Aviation Administration and others amount to more than $5 billion, industry sources noted.

In the group of vendors pursuing these contracts, some, like DEC, comply with the NBS interim standard and some are calling full-use Posix specification from the IEEE.

"There are major procurements in the works," Isaac said. "By holding back or pushing [the interim standard] forward, different factions are trying to ensure they can be successful."

The National Bureau of Standards' (NBS) interim Posix specification — which was to be required in government contracts until an IEEE standard could be settled on — is still awaiting approval, although it was expected to receive the official nod several months ago.

The interim specification, proposed by the NBS last year as a federal information processing standard for the Unix operating system, awaits signatures from the necessary government agencies such as the U.S. Department of Commerce, according to NBS officials.

Under CSA, a customer can withdraw with no notice or penalty if maintenance prices for a given location rise more than 3.5%. To withdraw otherwise, notice (six months under the five-year plan) must be given.

A user who pulls out can go to a third party.

Bad dream?

So, will users wake up in a panic, give IBM notice and then shop around? No. After all, they signed the CSA agreeing that if IBM raised prices to 3.5%, it would be all right. And they had put out of their minds shopping among maintenance vendors for a few years. How many people go to the trouble of moving out of their apartment when the landlord raises the rent by 3%?

Indeed, the third parties, Continued on page 29

Analyzing

By ROSEMARY HAMILTON CW STAFF

The National Bureau of Standards' (NBS) interim Posix specification — which was to be required in government contracts until an IEEE standard could be settled on — is still awaiting approval, although it was expected to receive the official nod several months ago.

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Waiting for the complete or so-called full-use Posix specification from the IEEE.

Government Unix growing

A breakdown of new installations by sector shows the government claiming a larger share of the total number of systems

<table>
<thead>
<tr>
<th>PERCENT OF NEW INSTALLATIONS</th>
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<td>Utilities, transportation and communication</td>
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<td>Government</td>
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<td>Education</td>
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* Includes oil, mining, agriculture and construction

Minis chart race course

DG systems keep boats on-line in Mackinac dash

By JEAN S. BOZMAN CW STAFF

CHICAGO — For 100 years, the intrepid sailors who challenged Lake Michigan in the Mackinac Island race treasured the silence of the 333-mile journey from Chicago to the tip of Michigan's Upper Peninsula. The reason was simple: Silent running allowed the contestants to slip past competing sailboats.

This year, officials at the Chicago Yacht Club as well as anxious relatives waiting at Mackinac Island will have an idea of where the boats were — plotted within grids that were Continued on page 28

Inside

● Index links Excelerator, DEC's CDD/Plus. Page 25.
● CDC, Epic brands inks service program. Page 25.
CINCOM Boosts Production
At Holly Farms.

PROBLEM: Improving programmer productivity in order to reduce a large applications backlog
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“MANTIS was ideal for us because you don’t need 2-3 years of experience to use it,” explained Bill Clontz, Director of Computer Services at Holly Farms. “It lets us take new graduates, quickly train them and, in a matter of weeks, turn them into valuable programmers.”

As a result, programmer productivity at Holly Farms has reached an all-time high. “We’ve seen substantial improvement ratios,” Clontz said. “In the time a programmer might turn out one CICS command-level program, he can turn out from six to eight programs on MANTIS.”

Most of the 500-plus MANTIS applications now in production at Holly Farms are aimed at streamlining costs. For example, Data Processing used MANTIS to develop a model of how chickens consume feed over the course of their lives, allowing Holly Farms to cut production at one of its feed mills by 1½ days a week.

“We’ve got key users who are picking up on the term ‘MANTIS’,” Clontz noted. “Around here, MANTIS has become a synonym for ‘get it done quickly’.”

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Two market leaders pooled strengths last week when Index Technology Corp. announced a link between its Exclarerator front-end design and analysis tool and Digital Equipment Corp.'s VAX Common Data Dictionary/Plus (CDD/Plus). CDD/Plus, which debuted last month along with DEC's on-line transaction processing entry, adds distributed capability and open architecture foundation to DEC's CDD, with which it is compatible, said DEC marketing manager Larry Vilquin.

The link, which is slated to be available next month, runs on all VAXstations under VMS and lets users merge and integrate data from Exclarerator and DEC's Case/IS product line.

It will reportedly include a user interface with windows, which allows users to simulta-

neously view and manipulate data resident in Exclarerator/IS and in CDD/Plus as well as trans-

fer design data from DEC's sys-
tem to Index's.

Must Software International recently reported that it has acquired the rights to Decision Resources Corp.'s Rapid Information Processing System, a personal computer-based execu-
tive support system. Must said the product is "synergistic" with Nomad, its fourth-generation language development environment.

IBM may be grabbing the head-
line as the newest X/Open mem-
ber, but other companies continue to swell the X/Open ranks. Language Processor, Inc., a maker of software develop-
ment tools located in Framingham, Mass., recently signed on as an X/Open Software Partner.

Walker Interactive Systems in San Francisco has made avail-
able its mainframe financial ap-
plication suite for the IBM DB2 environment. Sold under the name Strategic Management Systems, the applications in-
clude management, budgeting and accounting, general ledger, accounts payable management, purchase order management and productivity tools.

Knauer Publishing in New York has released The Directo-
ry of DB2 Tools, a listing that profiles the currently available software tools for the IBM rela-
tional database management en-
vironment.

The state of Indiana recently picked Management Science America, Inc. (MSA) to pro-
vide financial and human re-
source software. The state also licensed Information Expert, a fourth-generation language tool that will be used to help swap data between MSA and non-

MSA systems.

Harris Corp.'s Computer Sys-
tems Division and Informix Software, Inc. have an-
nounced that they will jointly market the Informix line of rela-
tional database management systems and development tools for the Harris CX family of Unix-

based systems.

Prime Computer, Inc. in Na-
tick, Mass., and Progress Soft-
ware Corp., which is based in Bedford, Mass., recently an-
nounced that the Progress fourth-generation language and DBMS is available on Prime's EXL family of Unix-based super-

microcomputers. The two firms have also signed a worldwide joint marketing agreement.

The screenlets let the user de-
terminate at a glance not only a given agent's sales record or an agent's recruiting history to date but also whether an agent

whose bottom line is expanding is selling to more clients or selling more products to clients al-

ready brought on board.

While it is too early in the game for Shaffo to show tangible evidence of the system's suc-

cess, he has no doubt of the posi-
tive effect. "You get what you
expect, not what you expect," he said. "People respond to what they know management is look-

ing at. The reaction at all levels has been very positive."

Performance elixir revives Pyramid minicomputer line

By J.A. SAVAGE

CONTINUED ON PAGE 28

IBM.

IBM announced a program un-
der which Emulex Corp. will offer the system's on-site warranty service on a Performance 4000 Ethernet terminal server. Emulex's Performance 4000 is the first third-party Ethernet terminal server to be fully compati-
ble with DEC's Local-Area Transport protocol, according to Shaffo. The system fits the needs of the terminal server re-
ceive one year of warranty ser-
vice on a Performance 4000.

The New England's Shaffo
Digital
has
it
now.
Kaman Corporation is a Fortune 500 company and one of the nation’s largest industrial distributors. Kaman Bearing & Supply, its subsidiary, is connecting its 165 branches throughout the U.S. and Canada with a computer network from Digital. According to Harvey S. Levenson, President, “Digital is providing a network for transaction processing that will give each of our branches instant real-time access to the company’s entire nationwide inventory—in effect, one ‘big back room’ for distribution.”

“Transaction processing that lets Kaman manage an inventory of over 800,000 industrial parts with no paperwork.”

Digital’s technology played a major role in Kaman’s choice. Levenson stated, “We needed reliability, flexibility and as few people as possible to run the system. We’re getting a distributed transaction processing system to track the state of our business, and it’s the most cost-effective of all the alternatives we’ve examined. Digital helps Kaman be more competitive; we’ll run our business and serve our customers better, faster and smarter.”

To get your competitive advantage now, write: Digital Equipment Corporation, 200 Baker Ave., West Concord, MA 01742. Or call your local Digital sales office.
Minis
CONTINUED FROM PAGE 23
10-miles square. DG MV/2000 minicomputers estimated the sailboats' positions by using data points on the July 23 start at Chicago's lakefront, at a mid-race check-point and at Mackinac. Custom software took into account weather conditions. Weather information was fed into an MV/1000 minicomputer at Kavours Weather, a private weather service in Minneapolis. The MV/1000 communicated with two MV/2000s — one at the Chicago Yacht Club and one at Mackinac Island.

"We're plotting estimates of the points in between," DG spokesman Andrew Hettinger said. "That's not definitive, but until we added computers, the results were posted on a piece of paper." Even estimates can be thrown off by unusual weather conditions, as they were by a tail wind last year that knocked five hours off the record time for the race. A Mackinac race usually takes 30 to 48 hours to complete, but last year's was won in 25 hours.

Last year — DG's first as a Mackinac sponsor — end users had to scroll through a list of all 300 race entrants to find an individual boat's position in the race. This year, DG improved on that by customizing a Microrim, Inc. Rhine 5000 that can be accessed from multiple DG Dasher 286 personal computers. The minicomputers hosting the database communicate over AT&T voice-grade lines using the CCITT X.25 packet-switched protocol.

At least one sailboat in the race, the Swedish Carat, also made use of an onboard DG One portable computer. The computer was used on deck as a navigational support system while data was fed into a below-deck unit from four wind-direction sensors.

Performance
CONTINUED FROM PAGE 25
(MIPS) to 25 MIPS, a rating that has not increased from the earlier models. Instead, the increase in efficiency comes in software and cache improvements, according to Pyramid.

For database applications, increased performance of 35% to 75% is the result of an improved virtual cache subsystem, according to Jim Hughes, manager of last year's 7-MIPS Model 9810 to $425,000. Pyramid lowered the price on the new cache because the Transmission Control Protocol/Internet Protocol system can pass packets of information faster, Hughes said.

The entry-level system, the Model 9815, starts at $128,000. At the high end, the Model 9845 starts at $425,000. Pyramid lowered the price of last year's 7-MIPS Model 9610 to $110,000, a 25% decrease.

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Invitations to the ICC in your area are available from an ICC conference manager near where you live. Request yours today.
Gibson
CONTINUED FROM PAGE 23
many of whom followed IBM with price cuts last year, may follow suit now with price increases on the order of 3%. If this happens, there will be even less reason to switch.

Some old thing?
Many would say all this is typical of IBM: Same old thing? and then, when users are locked in, raise their plans, IBM's maintenance policies as an irritant that does not greatly change different vendors could benefit."

These squeezes third parties, because they will be unable to call on IBM to provide service in a pinch — a practice some had employed.
In addition, the 5% price hike applies to spare parts, so third parties buying these from IBM will have to pay more.

On the bright side, however, IBM is making parts available to volume purchasers on a 24-hour basis, as the result of a recent policy change.

Third parties have put up a brave front, saying they have seen little adverse impact from CSA and the other policies. But most third parties admit that CSA at least froze the maintenance decision-making process for a number of customers. Industry analysts say although the third parties may still be in business, their margins are being squeezed. They have cut staff and otherwise reorganized to make ends meet. Without question, CSA has hurt them.

Users gain
All this raises the question of whether there will be competition in the maintenance market in the future and, in the long run, whether the user stands to gain. The answer to that question would seem to be self-evident: The presence of competition helps the user; its absence hurts him.

This column has suggested before that users owe it to themselves to shop around in as many areas of computing as is feasible. Because without competitive bidding, there can be no leverage on vendors.

But already it is late. Maintenance prices may not yet be out of line. But in the future, getting true value for a maintenance dollar will become an ever more elusive goal.

Tardy Posix
CONTINUED FROM PAGE 23
ferent vendors could benefit." James Hall, a computer specialist with the NBS, said there is no behind-the-scenes fighting over the interim standard. When asked why approval has been delayed several months, he said "there's no good reason I can give you. I guess [the government agencies] want to be sure that everyone gets a look at it."

Asked when he expected the interim standard to become official, Hall replied, "It's the same old answer: Any day."
The interim standard was proposed by the NBS as a way of working around the slow approval schedule that has befallen the IEEE Posix standardization process. In 1984, the IEEE took over the Unix users group effort to establish a set of common, low level interfaces to Unix services.

While neither the NBS nor the IEEE standard is in final form, computer companies are taking different approaches to the proposed NBS interim standard. Unlike DEC, both IBM and Apollo Computer, Inc. have said they will wait until both the NBS and IEEE standards are published.

Until the interim standard becomes a federal information processing standard, the NBS says vendors should specify Unix functionality rather than referencing a Posix specification when responding to a government request for proposal.

Critical issue
The interim standard was an unusual move on the part of the NBS because it assumed a lead role rather than waiting for standard-setting bodies to publish criteria. However, the need for a Unix standard became critical over the past two years, as many government agencies put out contracts amounting to several billion dollars for Unix-based systems.

Eventually the NBS-Posix standard will be based on the full-use IEEE Posix due out this fall. It will depart from that standard in areas that the IEEE has identified as options and the NBS has identified as required by vendors.

In the meantime, some amount of confusion is swirling around the two agencies' efforts.

At Apollo, the interim standard is considered "a moving target" by Barbara Shelhoss, director of domain software product marketing. "We're very close to compliance with the interim standard," Shelhoss said. "But right now we will wait until the IEEE is finalized."

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AUGUST 8, 1988
Nemonix, Inc. has announced its next generation of system expansion products for Digital Equipment Corp.'s VAX.
The upgrade was designed for VAX-11/780 users and is said to increase overall systems throughput by 45%.
The Nemonix NX780-SPU is hardware and software compatible and includes proprietary micro diagnostics, memory diagnostics and benchmark software. The product also includes the CPU upgrade and 16M bytes of Nemonix memory.

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The NX780-SPU costs $29,900.

**Data storage**

A memory trade-up policy announced by Dataram Corp. allows users of Data General Corp. MV series computers to increase performance by adding memory without using additional expansion slots.

Under the new plan, users may trade in their existing memory boards for higher capacity boards from Dataram. The trade-up policy is said to apply to original DG and Dataram boards and covers memories for most DG processors, including the MV/15000 and MV/20000 models.

Dataram manufactures DG-compatible memory boards in capacities ranging from 2M to 32M bytes.

The trade-up allowance plan is effective immediately.

Dataram, P.O. Box 7528, Princeton, N.J. 08543. 800-892-0071.

**/O devices**

Magna Computer Corp. and the Computer Products Division of Computer Consoles, Inc. (CCI) recently announced a cooperative marketing effort that will make Magna's Falcon Enhanced Terminal available through CCI resellers.

The Falcon terminal costs $995.

Magna Computer, 24 KeewaYdin Drive, Salem, N.H. 03079. 603-898-3555.

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**SYSTEMS & SOFTWARE**

**System software**

Hewlett-Packard Co. has announced HP Laserrom for the HP 9000 Series 800 HP-UX computers, a service that delivers Unix operating system documentation and support information on compact disk/read-only memory.

According to the vendor, HP-UX adheres to AT&T's Unix System V Interface Definition Issue 2.

The initial version is said to contain the hard-copy equivalent of more than 10,000 pages in electronic form and will allow users to electronically search and retrieve information related to a Unix operating system. Topics include software design, support information and development manuals.

HP Laserrom for the HP 9000 Series 800 HP-UX computer is priced at $1,800 for a 12-month subscription, according to the vendor.

HP, 3000 Hanover St., Palo Alto, Calif. 94304. 415-857-1901.

**Information Processing, Inc.** has announced a low-end pricing structure for its Biis/Colob multiuser operating system.

The system was designed as a virtual-memory, multiuser on-line operating system and compiler for Data General Corp. machines and other DG Nova-compatible minis.

The price reductions will have the most impact on systems with one to 10 users, according to the firm. For example, a single-user 128K-byte system has reportedly been reduced from $1,280 to $440. A 10-user 128K-byte system has been reduced from $4,980 to $4,400.


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**AUGUST 8, 1988**
Northern challenge

Finns target DBMS server at U.S. market

BY DOUGLAS BARNEY CW STAFF

HELSENKL, Finland — From the land of long winter nights and mons-eating reindeer comes a database management system server aimed at the heart of IBM's personal computer software strategy.

And the company marketing the product appears as bashful as Matti Nykänen, who carried away with all the gold medals in ski jumping at the 1988 Winter Olympics. In fact, Princeton, N.J.-based Via Information Systems Corp., which sells Visa/DRS, has issued a challenge to all comrades: Outperform us if you can.

Despite the tough talk, Visa is still largely unknown in the U.S. But it does have many of the ingredients for success. The support for SQL is there. It runs on many popular local-area networks. And its supplier boasts of terrific response times.

Even that may not be enough to succeed for a U.S. market targeted by U.S. suppliers such as Oracle Corp., Lotus Development Corp., Sybase, Inc. and others. Although the U.S. market may be tough to crack, Finland seems to be another story. The largest law firm in Finland, Procope & Hornborg, uses Visa/DRS.

The company, however, is waiting for Lotus' next move, sources said.

'Strong and easy'

Longtime Excel user Peat, Marwick, Main & Co. has the application installed on roughly 10,000 Apple Computer, Inc. Macintoshes worldwide. "It's quick and easy to use, and we can train auditors in a short amount of time," said Dick Webb, partner in charge of Audit Technology.

But with all its high-quality charting capabilities, "is Excel the next generation — it's not a question anymore of whether you're going to spend the money for it, but when," said Jack Dreisin, director of development at Arthur Andersen's advanced computer audit techniques group. Excel fever has spread to Deloitte Haskins & Sells in New York, which tapped Excel as its standard spreadsheet for Intel Corp. 80286- and 80386-based PCs. With up to 1,800 high-end micros slated for purchase by year's end, Microsoft stands to markedly increase its presence in the industry.

Arthur Young and Peat, Marwick, Main & Co. have made similar recommendations for the Mac version of Excel. Sources said the England branch of Coopers & Lybrand, a 1-2-3 user, may also switch to Excel.
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As Sam Price, Vice President of Finance, acknowledges, "At St. Anthony Hospital, our cost-per-patient day for data processing is among the lowest in the nation, a benefit we are able to pass along to our patients. We're convinced one of the chief reasons for this is our choice of Data General equipment. Their computers are economical, simple to operate, and extremely reliable."

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22. Marketing/Advertising
23. Sales/Marketing
24. Management/Supervisory
25. Other (Please specify)

3. COMPUTER INVOLVEMENT (Circle all that apply) Types of equipment with which you are personally involved either as a user, vendor, or consultant
1. Mainframes/Superminis
2. Minicomputers/Small Business Computers
3. Microcomputers/Desktops
4. Communications Systems
5. Office Automation Systems
6. No Computer Involvement

(please specify)
MINISTER CHASES GERBIL — BACK TO THE VENDOR

BY ALAN J. RYAN

ASTON, Pa. — The Rev. Scott Capp sat in front of his Tandy Corp. personal computer several weeks ago, working busily on a paper for one of his doctoral-level classes. Suddenly, the PC locked up and Capp saw the word "Gerbil.doc" in the corner of the screen because he mistakenly mistook it for a document from First Choice, a document he thought might contain useful information.

"I was working on a paper for a class," Capp said of his experience. "I had just finished the section on Norton that allows you to go into ASCII files and erased them. I thought I erased the access part of it," he said. All told, Capp said, he lost several days worth of work.

MISTAKEN IDENTITY

Gerbil likely wound up on Capp's screen because he mistakenly opened up his First Choice document as an ASCII file rather than as a document from First Choice, explained Dale Yocom, Software Publishing's First Choice project manager. The characters Cupp saw were probably the random characters of a binary file.

"In desperation, Cupp contacted RG Software Systems, Inc., which makes Disk Watcher — a product that helps protect against viruses. Ray Glath, president of the company, took a special interest in Cupp's case, and after making several calls, found out where Gerbil had come from.

Glath said the problem, which is not unique to First Choice, is that it allows both its own First Choice program files and other files, including communications device and printer files, to be brought into the word processor in the same way a user would bring in a file. A simple error could lead the user quite baffled, he said.

Due to the virus scare, Cupp's awkwardness was due to his "throwing me out of whack for about three weeks," he said. But fortunately, Cupp was standing. "He has a PC of his own."
Rosenthal
FROM PAGE 33
client exchange of the information needed for day-to-day operations and increased support quality, his answer was an enthusiastic yes. Asked if he would be willing to pay $100,000 for the software application and the necessary hardware required, he was equally positive: $100,000 was a trivial cost relative to the efficiencies the application would create. It just so happens that that application could be developed using Lotus Notes, which is being written to work with OS/2. OS/2 is an enabling technology, meaning it provides many of the tools that make possible the kinds of applications that fundamentally make a task much easier for the people involved — the users. Demand for OS/2 will simply not be driven by the user who wants to do stand-alone PC applications in a different way. Instead, it will be driven by the ability to handle different applications; those that have not been possible on the PC before or that have simply not existed because the tools haven’t been there to build them. Some of these applications will be driven by connectivity; some will be driven by power; some will even be driven by the graphical user interface.
No MIS director or information center manager can afford to turn down those sorts of applications, regardless of the operating system they require or the cost of memory or new processors.
Rosenthal is chief executive officer and chairman of the board at Corporate Software, Inc., a supplier of PC software and value-added support services in Westwood, Mass.

Fax board
FROM PAGE 33
PC into a facsimile machine so the user can send and receive files of text and graphics and print out the incoming file on a variety of printers. A 4.8K bit/sec. modem resides on-board.
The facsimile board concept is rapidly catching fire. According to International Data Corp. (IDC), a market research firm in Framingham, Mass., 1,200 facsimile boards were shipped in the U.S. in 1986; 16,555 units in 1987; and 49,600 units so far this year. By 1991, the figure is expected to be 187,440 units, according to IDC.

Lookin’ good
Quadram’s entry is attractive for several reasons, users have said. The price — $395 — is less than most competitive models from vendors such as The Complete PC — the Complete Fax costs $499 — and the product is simple to use.
In addition, Quadram offers a portable facsimile board for $495 that can be attached to a laptop computer, enabling users to send and receive text and graphics files while on the road.
“I would be lost without it,” said Michael Sussman, a PC product reviewer at Menactics Videotext. Sussman is handicapped and lives in remote Upper Black Eddy, Pa., surrounded by miles of farmland. “More companies seem to have facsimile capability and they do E-mail or telex, so this allows me to get right to them using the files on my PC instead of having to print the file and scan it.”

Mixed reviews
Some reviews have criticized Quadram’s board as too slow, but the speed is just fine for Paul Connell, an attorney at Kilpatrick & Cody in Atlanta.
Connell has a JT Fax Board on both his home and office PCs, enabling him to send documents to the firm’s London office when he might otherwise be unable to.
Last winter, for example, a snow storm shut down Atlanta. “People in London don’t care if Atlanta has an inch of snow,” Connell said. “Because I had most of the document on a diskette I brought home, I was still able to get the document to London on time, despite the five- or six-hour time difference.”

The Xerox Ventura P
noble literature.

Every year, people around the globe produce documents that are well thought out, beautifully designed, and make a strong impression in every way.
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34
publisher prize for

For all these reasons, Xerox Ventura Publisher has been chosen by industry experts around the world as the best desktop publishing program, for everyone from novices to professionals. And it has become the best-selling desktop publishing program for MS-DOS systems and the IBM PS/2.

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Team Xerox.

We document the world.

Barney
FROM PAGE 31

sounds a lot better than that! If a long-time resister like Green has discovered SQL, the rest of the Dbase community is probably not far behind.

Sorry guys, "Third party" is a troublesome term. At least it was holding a Dbase conference and no third parties were invited. That's where the trouble began. What this person was really referring to were third parties that also sell products such as language compilers, which replace the need for Dbase. He was talking about Ashton-Tate competitors.

PC prices, Part 2. Last week, we ran an article about the end of that glorious era when PC prices fell often and fell a lot. But just because prices are stable today does not mean they will be stable tomorrow. Although there is some disagreement, analysts generally point to the easing of the dynamic random-access memory (DRAM) chip shortage and the advent of the lower cost Intel 80386SX chip as factors that may again push prices down — but when.

One theory is that the well-publicized 80386SX (a cheapo 32-bit chip with slow 16-bit data path) will create a domino effect. Cheaper Intel 80386 machines will drive down the cost of 286 machines, which in turn will cause IBM prices to fall, says John Murphy, of Wohl Associates. "By fall, you will see some drops," he says.

Another theory is that 386 prices will stay put for a while. "Prices won't fall until Intel cross-licenses the 386 chip, and it doesn't look like they are going to," says John McCarthy, director of Professional Systems Service at Forrester Research in Cambridge, Mass.

But McCarthy has good news. He believes that once Micro-soft and IBM's OS/2 begins to take hold later this year (he's an optimist), prices on ma-chines unable to run the operat-ing system effectively will fall.

A similar theory is espoused by Clare Fleig, director of re-search at International Tech-nology Group. Fleig says there will be no major price cuts in the immediate future because of the continuing DRAM short-age. But in 18 to 24 months, when users really make the transition to 32-bit systems, prices on anything less will fall. Since prices won't be dropping any time soon, it makes sense to drive a hard bargain and squeeze those dealers till they hurt. That way they can really cry on the way to the bank.

Barney is a Computerworld senior edi-tor, microcomputing.

Northern
FROM PAGE 31

for a variety of tasks, including administration, time recording, billing and bookkeeping, said Olavi Ylanko, senior partner with Procope & Hornborg.

But the best may be yet to come. "We have under develop-ment a system for depositing our word processing documents into an archive, and we have a search facility to find our previous work," Ylanko explained.

The product, which took three years to write as part of a joint U.S.-Finish effort, supports peer-to-peer communications between workstations. It also supports C and boasts an extend- ed C language object-oriented programming environment for complex interactive applica-tions.

The system, which runs pri-marily under Microsoft Corp.'s MS-DOS, sells for $3,500 per server and $1,395 for the object-oriented development system. An OS/2 version is available and will be enhanced to run with IBM's LAN Server.
Development tools

Computer Systems Advisors, Inc. has announced a software development tool kit for the computer-aided software engineering marketplace. Called Picture-Oriented Software Engineering, or POSE, the package is said to feature nine personal computer-based modules for planning, design and analysis of application software development.

The product can use either a data- or process-driven approach and has an interface similar to that of the Apple Computer Macintosh, the vendor said. The nine available modules include the Data Model Diagrammer, the Data Model Normalizer, the Logical Database Designer and the Database Aid, as well as the Decomposition, Data Flow, Structure Chart and Action Chart Diagrammers. The modules form an integrated set but can be purchased separately. The software runs on IBM Personal Computers, PC XT and ATs, Personal System/2s and compatible systems.

POSE is available at an introductory price of $295 per module or $885 for a set of four data- or process-driven modules. Call Computer Systems Advisors, 50 Tice Blvd., Woodcliff Lake, N.J. 07675. 201-391-6500.

Systems

A family of microcomputer-based supervisory control systems for discrete operations in process and manufacturing plants has been announced by Honeywell, Inc. Called the Manufacturing Automation System/Controller (MAS/C), the systems were designed to optimize cell and supervisory-level automation operations, the vendor said. The units reportedly integrate plant floor devices with plant-level information management systems to provide a total picture of production activities. Features include a multiple-window human interface with color screens and enhanced graphics, dynamic displays, function charts and pull-down menus. The product incorporates a proprietary manufacturing application control language and adheres to open system standards such as Manufacturing Automation Protocol, Ethernet, Unix and others.

Honeywell Industrial Automation Systems Division, Phoenix, Ariz. 85023.

Software applications packages

Software designed for companies that provide technical support to their customers has been announced by Tess, Inc.

Technical Support System, or Tess, was designed for on-line technical support transactions and runs on Apple Computer, Inc.'s Macintosh, Macintosh SE and Macintosh II systems. The package assists the technical-support process by providing an indexed customer-records database with attached free-form text records for tracking customer problems, the vendor said. It operates on a network of Macintoshs and can electronically mail support transactions across the network.

Tess costs $395 for the first user and $115 for each additional user on the network.

Tess, 21075 Bank Mill Lane, Saratoga, Calif. 95070. 408-741-1519.

Advanced Business Microsystems, Inc. has added an IBM and Microsoft Corp. OS/2 version to its Platinum series of accounting and management information system software.

According to the vendor, OS/2 Platinum, like its DOS counterpart, can support multiuser concurrent processing on local-area networks. Available application modules include Accounts Payable, Payroll, Accounts Receivable, General Ledger, Order Entry, Inventory, Fixed Assets, Spreadsheet Interface and others. OS/2 Platinum modules cost from $595 to $1,995, depending on the application.


Software utilities

Stairway Software, Inc. has introduced an add-in program for users of Micropro International Corp.'s Wordstar software.

Called Screenextender, the product reportedly manages the screen during Wordstar sessions to provide 25 rows and 80 columns of screen text. The number of rows and columns can be changed from Wordstar's opening menu or while editing a file, and as many as 58 rows of screen text can be selected.

The program works with IBM Personal Computer, PC XT, AT, Personal System/2 and compatible systems equipped with an IBM Color Graphics Adapter, Enhanced Graphics Adapter, Video Graphics Array or Hercules Computer Technology, Inc. graphics adapter.

Screenextender costs $59.95.

Stairway Software, Suite 204, 700 Harris St., Charlottesville, Va. 22901. 804-977-7770.
Twisted-pair link saves bucks

BY KATHY CHIN LEONG
CM STAFF

SAN FRANCISCO — West Coast media titan Chronicle Publishing Co. got the scoop on how to cut wiring costs by 50% after it opted to link its IBM Personal Computer workstations to its IBM System/36 minicomputer using twisted-pair cabling.

Chronicle Publishing is the holding company that produces the San Francisco Chronicle daily newspaper and runs a host of independent television stations.

The twisted-pair approach is unusual, since most users traditionally use twin-axial cable to link their workstations and terminals to the mid-range system.

The firm made the switch when the company moved to a new headquarters building last month. Although there are only 10 users on the network now, the company has wired the entire building in preparation for future growth, Chronicle MIS manager Don Hom said.

The benefits of employing twisted-pair over twin-axial are multifold, according to Hom.

First, the cost per port was approximately $65 using twisted-pair, half the price of twin-axial medium. The wire itself is less costly and the installation is cheaper because twisted-pair is a thin medium and therefore easier to install. The costs would have been brought down even more had Chronicle decided to use a smaller contractor to install the cable, rather than Pacific Bell, Hom said.

Second, twisted-pair wiring eliminates the need to link devices to an IBM System/36 in daisy-chain fashion.

The dark side

The disadvantage of that configuration is that it requires taking all terminals on the chain off-line every time MIS wants to bring down one terminal. "In the old building, this caused us a lot of frustration," Hom said. "One time we weren't up for another three hours."

The change in the cabling medium did not affect the speed of the data. While IBM publishes speeds of up to 1 Mbit/sec., Hom said his benchmarks show that the effective throughput is 9.6 Kbit/sec.

Also, with the twisted-pair architecture, a workstation can be disconnected without affecting other users. Since there are eight wires on the twisted-pair and the System/36 Model D only uses two, Hom said the other six can be used for future applications.

He acknowledged, however, that the twisted-pair medium is not for all users. "This is unshielded and won't work well in noisy environments," he stressed.

Another limitation of twisted-pair cabling is that it allows workstations to be only 1,000 ft. away from the System/36, as compared with 5,000 ft on twin-axial cabling. Hom said the 10 finance and accounting users are in nearby offices.

DEC, IBM
praise EDI
to the sky

BY KATHY CHIN LEONG
CM STAFF

SAN FRANCISCO — Archivists Digital Equipment Corp. and IBM hardly agree on anything, but when it comes to the benefits of electronic data interchange (EDI), they are humming the same tune.

As users of EDI gear, both companies said they have reaped cost savings and faster turnaround time from EDI.

At a recent EDI conference here sponsored by market research firm Input, Bill Carlisle, DEC EDI electronic business document services marketing manager, and Bruce Jackson, IBM manager of EDI marketing, outlined their EDI experiences. These advocates also have a vested interest in singing EDI's praises, as both supply EDI products. IBM sells EDI links into its

TIE-INS

Rabbit cuts data deal

Rabbit Software Corp. in Malvern, Pa., recently completed an OEM agreement with Ericsson Information Systems in Stuttgart, West Germany, to supply data communications products to link Ericsson's Ericsson microcomputer family with IBM's Systems Network Architecture environment.

Datatel, Inc. in Cherry Hill, N.J., has been awarded a contract valued at nearly $500,000 by the Miami-based Dade County Public School System for its

Data View

Greater than expectations

Last year, PC connectivity increased in popularity much more than forecasters had predicted

PERCENT OF PCs

<table>
<thead>
<tr>
<th>Year</th>
<th>Stand-alone</th>
<th>Networked</th>
<th>Actual</th>
<th>Projected</th>
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<td>40%</td>
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DATA STEAM

Patricia Keefe
LAN vs. mini still puzzles

Sometimes we get so caught up in the new and improved, we forget the ordinary users still stumbling over the dull edge of technology.

We all have this mental video clip of a razor-sharp Fortune 1,000, all grooving to a smartly appointed network strategy focused on network management and distributed applications.

While such may be the case for the Fortune 100 and perhaps even a good chunk of the Fortune 500, it just ain't so for the rest of the gang. Out of 33.9 million personal computers installed in U.S. businesses, only 18.33%, or roughly six million, are connected to something. That tells me that during the next three years, the managers of PCs, 35 million of which will be installed in U.S. businesses, only three years, the managers of PCs, 35 million of which will be installed in U.S. businesses, only 38 million personal computers in-
DEC, IBM
FROM PAGE 37
IBM Information Network [CW, May 2], and DEC recently introduced VAX/EDI, software the company said runs on a VAX supporting value-added networks in London.

'Absolutely critical'
Jackson called EDI “absolutely critical” to improving efficiency. "In three years, we want all 2,000 of our systems vendors to communicate to us via our VAN," Jackson said. IBM is also targeting 37 manufacturing plants and 80% of its communication requests.

Today, about 20%, or more than 200, of IBM's suppliers and customers are trading products through the Information Network. At IBM plants, shippers and suppliers communicate via the ANSI X.12 standard using applications such as purchase orders, shipping notices, invoices and electronic mail.

Using Information Network and X.12, customers can also tap into IBM databases to obtain technical and sales information or to submit orders for equipment.

EDI use has cut transaction costs while cutting turnaround time. Jackson declined to provide specific details on savings but noted they are comparable to those that DEC has experienced. DEC's Carlisle claimed his company has reduced the cost of preparing a purchase order from $125 to less than $32 while paring the preparation time down from two weeks to three days. Also, the time for order acknowledgment has dropped from five weeks to three days, according to Carlisle.

Although DEC has no domestic EDI offering available, it has built its own X.12 software for internal use. Today, the company communicates with 35 trading partners via its EDI gateway in combination with both Telegenet Corp. and GE Information Services value-added networks.

Four DEC sites use EDI formats for manufacturing, purchasing, financial, marketing, field service and distribution activities. The company said it makes more than 60,000 transactions per month using EDI protocols.

Like IBM, DEC's goals include using EDI for 80% of its purchase orders, invoices and payments by 1991. DEC also said it expects to cut the cost of purchasing transactions by 85% and cut or redeploy 30% of its procurement employees.

How Would You Deal With These Problems?

1. The CEO wants a completely overhauled customer information system in 3 months.
2. Marketing needs external research information in their database to keep ahead of the competition.
3. Accounting needs charges to the old system by the next close.
how best to accommodate a user population divided into 70% word processing and 30% dependent on access to a centralized processor. Her auditors have recommended a LAN, but her mini background has left her wary of LAN horrors.

Then there’s Monica McLean, a vice-president of her county Data Processing Management Association group, she’s also a computer systems coordinator for PCs at the State University of New York at Stony Brook. “I have PCs all over the place, and I’m at the point where I have to go to either a mini or a PC LAN.” What’s even more confusing is when these users get double-talked by large systems vendors. Take IBM for example. To listen to the Token-Ring sales representative, you’d think minis were dead and buried. But then again, those IBM Application System/400 reps talk a good game of host access and FUD. “They really tell you different things,” McLean says. What to do, what to do?

Many consultants will rattle off this mini primer to a micro solution: “The advantage of PCs networked together makes a more effective approach than either a mini or mainframe solution,” claims Doug Gold, an analyst at IDC.

PC LANS are lauded for cost cuts and productivity boosts. Attaching up to 10 users to a file server is much less expensive than a similar configuration involving a mid-range VAX from DEC, IDC’s Gold claims.

The rise of powerful 32-bit workstations and the downsizing of host applications to the desktop has made it easier to apply PC solutions to what were once seen as minicomputer problems. Other LAN advantages include software that users can share readily, a broader range of programs, the ease with which PCs can be moved, peripheral sharing and a plug-and-play approach.

Another consideration is development time and expertise. Rick Hopfer, a vice-president at Shearson Lehman Commercial Paper in New York, opted for a LAN over a mini to automate several departments. It’s not only easier to find micro talent and to maneuver within the confines of micro programming, he says, but applications take less time to write, he says.

A mini solution is good if the user is trying to protect a large investment in a specific brand of equipment, requires a lot of service and support or is tied to a specific application suite that may be tied to a specific hardware environment.

Going out of style?

Obviously, heavy users of record searches or database access tend to consider the power of a minicomputer. Undermining that rule is the emergence of dedicated database servers and distributed processing. “A year from now you won’t need a mini to do centralized processing,” predicts Tom White, an analyst at Infonetics.

He sees minis functioning as departmental information switches, while Gold expects to see more vendors positioning low-end minis as LAN servers within the next year. Some users are already talking mini servers into their PC LANS. Lanworks, Inc., a Minneapolis-based systems integrator, is taking that reasoning low-end minis as LAN servers within the next year.

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Local-area networking hardware

An Ethernet local-area network adapter card for the IBM Personal Computer AT and compatibles has been introduced by Gateway Communications, Inc.

Designated the G/Ethernet 16-bit AT adapter, the product is said to perform file server data transfers at rates of 1.066K byte/sec and features 64K bytes of on-board random-access memory. The card is fully compliant with the IEEE 802.3 Ethernet standard specification. The G/Ethernet 16-bit AT adapter costs $525.

Gateway Communications, 2941 Alton Ave., Irvine, Calif. 92714. 714-553-1555.

Local-area networking software

A software package designed for personal computer communications has been released by Allcom Computer Systems.

The product, designated Allcom, is said to give microcomputer users several capabilities, including remote communications, control of remote printing and the ability to send and receive up to 30 files in parallel bidirectionally. According to the vendor, all these functions can be performed simultaneously. The product supports Xmodem and Kermit communication protocols.

Allcom costs $120.

Allcom, P.O. Box 3097, Santa Ana, Calif. 92707. 714-261-8191.

Network management

The Interlan division of Micom Systems, Inc. has announced a combination hardware and software product for LAN Manager DOS workstations.

The LM9210-OSI is an IBM Micro Channel data-link controller that is combined with a host-based Open Systems Interconnect protocol to allow DOS workstations to communicate with an IBM and Microsoft Corp. OS/2 LAN Manager server.

The product offers either 16K or 64K bytes of dual-port A/D on-board random-access memory and provides workstation support for Ethernet, thin Ethernet or unshielded twisted-pair media. An IBM Netbios virtual interface is provided at the transport layer for either LAN Manager functions or DOS.

The LM9210-OSI costs $595.

Micom Systems, 155 Swanson Road, Boxboro, Mass. 01719. 508-263-9929.

Links

Logicraft, Inc. has released its latest version of 380Ware, an Intel Corp. 80386-based DOS server that attaches to Ethernet to provide up to eight Digital Equipment Corp. VAX or Vaxstation users with access to personal computer software.

The package has been enhanced to provide increased support for the Vaxstation, allowing the system to display a full 25-line PC screen. Drivers are included for displaying static PC graphics with both the Regis and Sizel graphics standards, and a Vaxstation RX33 disk drive can be used for loading microcomputer software into the system.

380Ware for four concurrent users costs $9,995; an eight-concurrent user version costs $11,995.

Logicraft, 22 Cotton Road, Nashua, N.H. 03063. 603-880-0300.

Relay Communications, Inc. said it will ship an upgraded version of its micro-to-mainframe linking software early this month.

Relay Gold 3.0 incorporates several major enhancements, including data compression and multiple session capabilities. The package reportedly will allow users to connect up to 15 simultaneous sessions and permits asynchronous communications through IBM 3270 emulation boards at the same time. Additional terminal emulations include IBM 3101 character and block modes, Digital Equipment Corp.'s VT-220 and VT-340, IBM 3278 Models 2, 3, 4 and 5 and IBM 3279 Models 2 and 3. The package runs on IBM Personal Computers and the Personal System/2.

Relay Gold 3.0 costs $995.

Relay Communications, 41 Kenosia Ave., Danbury, Conn. 06810. 800-847-3529.

Modems/Multiplexers

A facsimile communications center said to integrate facsimile, telephone, answering machine and copier functions into one terminal has been introduced by NEC America, Inc.

Designated the Nefax 3EX, the multifunction unit incorporates a CCITT Group 3 terminal and a 9.6K bit/sec. flash-back and step-up modem. The product offers transmission speeds up to 15 sec/page with identical units and up to 20 sec/page with other Group 3 units, according to NEC America.

The device measures 15.7 by 11 by 4.4 in. and weighs approximately 12 pounds.

The Nefax 3EX has a price tag of $2,995.

NEC America, Facsimile Division, 8 Old Sed Farm Road, Melville, N.Y. 11747. 800-782-7329

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MACS ON MAIN STREET: ARE THEY MAKING IT?

- The Fortune 1,000 challenge
- Is connectivity the key?
- Penetrating the government
- The DEC connection
- Will dealers get left out?
For once, a micro-to-mainframe link that will cure your fear of mice.

It's called MacMainFrame™. A totally transparent Macintosh®-to-IBM® mainframe connection that gives each one of your Macintosh to all the users access corporate data they need to excel in their job. While giving you the flexibility you need to excel in yours.

For one thing, MacMainFrame is as easy to learn and as easy to use as the Macintosh itself. So there's no training for you to worry about.

With extensive security features, MacMainFrame lets you decide precisely who can and who can't get into your data. Which information is accessible and which isn't. So you don't have to worry about your mainframe being - if you'll pardon the expression - overrun with mice.

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It works with IBM INDFILE.

It's even available with an optional Application Programming Interface.

And it's all backed up by the Avatar® service and support network. One which our competition, with all due modesty, would be hard pressed to duplicate.

For the name of the authorized MacMainFrame dealer nearest you, call 1-800-289-2526, ext. 28. Or write Avatar Technologies, 99 South Street, Hopkinton, Massachusetts 01748. Admittedly, you could give your Macintosh users something less than MacMainFrame. But wouldn't that be scary?

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Seeking Its Fortune

Corporations take a shine to Apple, but Big Blue still dominates big business

BY JULIE PITTA

Apple executives are fond of showing visitors a recent report from Macintosh Business Review listing the top 25 customers for the Macintosh computer.

With prestigious names such as General Electric Co., De Post Co. and Federal Express, the report is a showcase of Apple's remarkable progress in the four years since it first peddled the 128K-byte Mac to a largely disinterested group of corporate buyers.

However, a second look at the report offers a glimpse into the challenge that lies ahead in Apple's quest for respect from the Fortune 1,000.

Among the 25 corporations listed, only four have purchased more Macintoshes than Microsoft Corp. MS-DOS-based systems. And two of those companies have special incentives to purchase Macintoshes exclusively— one is Apple's accountant, Arthur Young Co., and the other is its advertising agency, Batten Barton Durston & Osborne.

"They need more testimonials from the big MIS guys that are using the Mac and connecting it," says Glen Miller, sales vice-president at computer equipment reseller Businessland, Inc.

Apple may be hitting the Big Blue barrier in its quest to sign Fortune 1,000 accounts. Corporate customers who are open to alternatives have likely already purchased their first Macintoshs, observers say. The rest promise to be a more stubborn sell, mainly because of a large installed base of IBM machines and their close relationship with that vendor. In a survey of 176 MIS managers on Computerworld's Editorial Review Board, 71% said they had no plans to buy Macintoshes in the next 12 months.

That barrier looks even more formidable when you consider Apple's weaknesses. Chief among those are a lack of extensive connectivity tools.
“Apple hasn’t really understood the big-company point of view. They treat them at arm’s length.”

AMY WOHL
WOHL ASSOCIATES

briefings in a private jet.

Joe Vincent, director of technology planning at Humana, Inc., remembers a visit he made to the IBM facilities in Poughkeepsie, N.Y., about 18 months ago. An IBM jet picked up Vincent and a dozen Humana executives at Humana’s headquarters in Louisville, Ky. The purpose of the trip was to offer Humana “a peek under the kimono” of IBM’s future hardware and software plans.

Despite a long relationship with IBM, Humana is reviewing the Mac as a possible costandard with IBM within the company. Among the criteria Humana will consider are the Mac’s ability to connect with the company’s IBM mainframe and Personal Computers and its price/performance when compared with the PS/2.

“There is a substantial difference between selling to an individual and marketing to a corporation,” says longtime Apple customer Timothy Turnpaugh, vice-president of MIS at Seafirst Bank, a Bankamerica Corp. subsidiary. “IBM has never been very successful in selling to the individual but has been hugely successful in selling to corporations.”

Trojan horse’

Apple officials insist that they don’t expect to displace IBM on desktops at large corporations. They say Apple will continue to work out the niches such as desktop publishing, which gained the company entry into a number of large corporations and which Chairman and Chief Executive Officer John Sculley has called Apple’s “Trojan horse” into business.

“We’re delighted with arriving at a position where we are 10% of the business market in a period of between three to four years,” says Jerry Malec, a former IBM executive with 17 years of experience who recently joined Apple as vice-president of business marketing.

“Our goal is to grow from 10% to 20% over the next couple of years, which means we won’t be the standard within these companies, but we will coexist with the standard,” Malec adds.

But Apple is furiously playing catch-up with experienced business suppliers like IBM. Since January, it has introduced or championed third-party products to fill in its communications offerings.

And it continues to try to spruce up its image, adding experienced veterans like Malec, former Cigna Insurance Co. MIS executive Allen Loren and former IBMer Donald Casey as vice-president of networking and communications.

Perhaps Apple’s greatest attention-getting tactic was its co-development deal with another IBM nemesis, Digital Equipment Corp., an announcement that kicked off 1988. So far, both parties have kept their public in suspense, offering few details on their development plans. An announcement is scheduled for this month at a joint developers’ conference.

All that may not be enough.

“Apple hasn’t really understood the big-company point of view,” says consultant Amy Wohl, president of The Wohl Associations in Bala Cynwyd, Pa., and editor of “The Wohl Report on End-User Computing.” “They treat them at arm’s length, telling them, ‘You have to go through a dealer to buy Macintoshes. You need to go through this third party to get this kind of software.’

“Apple doesn’t understand the relationship between an old-time IBM customer and IBM,” Wohl continues. “Technology doesn’t come between a relationship like that.”

Its traditional insistence on dealer sales may be a weak spot with which Apple will have to deal in the short term. While the company stubbornly clings to its dealer-referral program, IBM typically flies its corporate customers to product briefings in a private jet.
Apple has added significant numbers to its sales force last year, Malec says, but the representatives are still expected to make the first call on a corporate customer, then refer the account to the appropriate dealer. Even a loyal customer like Turpaugh — about 94% of Seafirst's PCs are Macintoshes — comments that Apple sales personnel don't always understand the needs of the corporate customer.

Looking for help
Corporate customers aren't just looking for a source of equipment; they are seeking a partner to help them implement MIS solutions, he adds.

"You have to have guys who understand mainframe and networking problems — who understand everything from top to bottom," he says. "When you sell to a corporation, you aren't selling boxes; you're selling solutions."

Not only must Apple educate its sales force, it must resolve a long-standing dilemma: how to retain the loyalty of its dealer base responsible for Apple's early success while satisfying corporate customers who wish to buy equipment from a vendor directly.

Trav Waltrip, vice-president of telecommunications at Travelers Insurance Co., says his company has only six Macintoshes — used primarily for desktop publishing — out of a total of 20,000 PCs. Unless Apple decides to sell directly to travelers, it is not likely to make any more sales there.

"Our relationship with IBM is not always warm and fuzzy, but it's close," Waltrip says. "It is very important to us that we deal with the vendor directly.

"We don't just buy workstations; that's only one component of our networking strategy," he continues. "A dealer just can't help us implement that."

Waltrip has a vocal supporter in Jeff Ehrlich, manager of computer technology at General Electric Co., Apple's largest corporate customer.

"Apple can't be beholden to a bunch of Mom-and-Pop dealers if it expects to be successful with corporations," Ehrlich contends. However, he adds, "Apple has sold a lot of products through dealers. This is a real dilemma."

Don't look behind now
Apple may have difficulty relying on its reputation as a leader in technology to sell Macintoshes now that the PS/2 has narrowed the gap. In the Computerworld survey, more than half said that PS/2 with OS/2 and Presentation Manager will cause them to buy fewer Macintoshes (see story page SR/9).

Charlie Oppenheimer, Macintosh group manager, concedes that the PS/2 package offers a serious challenge to Mac technology. He prefers, however, to downplay the threat it represents, repeating the new Apple credo: "We have it today.

"It will be years until you have the applications available on OS/2 and the Presentation Manager that are available today in the Mac environment," Oppenheimer maintains.

Apple says it hopes that IBM has created its own set of compatibility problems with the PS/2, which features a PC-incompatible bus, and its advanced but also incompatible operating systems. "It's almost as though IBM shot itself in the foot," Hamama's Vincent says. "Since the Mac offers a comparable environment to OS/2 and we can have it now, we'll be looking at it."

Apple is also telling corporate accounts that it has licked its communications problems, but its approach relies heavily on third-party vendors. Many users are taking a wait-and-see attitude.

"The heavy metal is where the data is," Turpaugh explains. "You have to connect LANs to WANs, and you need to do it seamlessly."

The first step
Apple's current customers are heartened by what they say is Apple's recognition of its vulnerabilities. Apple realized the weaknesses in its connectivity offerings and has worked to rectify them. It is wrestling with the dealer sales vs. direct sales issue, and it has hired the industry heavyweights that have faced these types of problems before.

"Recognizing you have a problem — or opportunity — is 75% of the battle," Turpaugh comments. "They understand that they need to understand us better."

Publicly, Apple has cast aside its usual bravado when discussing the enormity of the challenge that lies ahead. Oppenheimer concedes, "Just because you have the better mousetrap doesn't mean you have everyone on your doorstep."
Apple has taken a painfully long time to learn that in the eyes of MIS directors, no computer is an island. But about a year ago, it began exhibiting concrete evidence that it has finally realized connectivity is its only passport to the inner sanctum of corporate data centers.

Once low on the totem pole of priorities, Apple's much maligned data communications strategy has finally gained status by functioning as the underpinning of Apple's "democratic desk top," a much-touted campaign to penetrate the Fortune 1,000 with Macintoshes by promoting user freedom of choice.

For Apple to achieve long-term and lucrative success in this arena, it also has to consider MIS's phobia about mainframe access. "Connectivity is absolutely key because MIS won't approve anything that won't talk to their environment," notes Tim Bajarin, an analyst at Creative Strategies Research International, Inc. in Santa Clara, Calif.

Once that reality hit home, the Cupertino, Calif.-based vendor lost little time making up for missed opportunities. The last 12 months have witnessed a blast of product announcements and technology purchases (see story page SR/7).

"In the past we were perceived to be behind in connectivity, and we want to correct that," says David Nagy, Apple's manager of IBM connectivity products.

Apple's message is that it will support industry standards to help MIS leverage its investments, but its added value will be to integrate those standards with the unique capabilities that the Mac offers.

Clearly, the message is starting to be heard. Apple claims it has one million active network nodes installed, while Dataquest, Inc., a San Jose, Calif.-based research firm, estimates that 38% of the installed base of Macintoshes are linked to a local-area network. And a 1987 survey by Framingham,

John Sculley has launched a relentless campaign to bring together the IBM and Apple worlds.

Mass.-based International Data Corp. of 169,000 installations worldwide gives Appletalk, Apple's seven-layer architecture for connectivity, a 76.7% slab of the non-IBM-compatible personal computer LAN market. Apple has tapped into the LAN market by beefing up its Appletalk platform with connections to faster topologies, primarily Ethernet, and has taken steps to prepare for the migration to IBM connectivity.

"Has Apple turned itself around in terms of communications? You bet!" says Bajarin, echoing the prevailing sentiment among Apple watchers.

To reinforce the message, Apple Chairman John Sculley has launched a relentless campaign to bring together the IBM and Apple worlds. Realizing that MIS would be happy with nothing less, Sculley has promised that Apple will match IBM's connectivity march step by step.

"Our strategy is to support IBM's Systems Network Architecture, which is found in most of our customers' environments," Sculley said in a speech given in January. "Our goal is to provide not only terminal emulation or PC-like functions, but also access to complete [IBM] office systems and distributed data processing functionality."

Apple's customers agree with Sculley's assessment. "Our strategy for the future is highly dependent on SNA," says Ron Simon, technical support supervisor at Applause in Woodland Hills, Calif. Simon has one 15-node Appletalk pilot, but his networking plans revolve around his IBM systems.

As far back as October 1985, Sculley conceded that "a lack of communications hampers the effectiveness of personal computers in organizations" and promised that Apple would implement the following IBM protocols and architectures: LU6.2 (with PU2.1), Token-Ring network, Systems Network Architecture Distribution Services, Netbios, Document Interchange Architecture, Document Content Architecture and Distributed Office Support System Library services.

But it was desktop publishing, rather than those soothing architectures and protocols, that have moved a fair number of Macintoshes into the Fortune 1,000. Most of these Macintoshes are either employed standalone or linked to LocalTalk, the low-speed (230K bit/sec.), low-cost implementation of Appletalk, for peripheral-sharing purposes.
What will spur connectivity between Macintoshes and IBM? "MIS wants us to build upon their MIS investment in IBM's mainframes," Nagy says. "They have all this stuff sitting there in IMS, DB2 or Oracle [databases] and they would like, through the Mac interface, to access it. But they are also saying, 'Show me how this fits into my organisation, and how it will leverage investments I've already made in technology, personnel and training.' Getting to the management level is critical."

What is standing in the way of achieving this integration, observers say, is a significant laundry list: Token-Ring support, network management, support for Transmission Control Protocol/Internet Protocol (TCP/IP) and end-user applications that either set a standard in a particular area or that have companion packages in the IBM world.

Porting encouraged
Analysts and users agree that it is imperative that Apple rally more IBM and Mac developers to port their products to the opposite environment. "Transparant applications make all the difference," says Murray, who maintains a consulting practice in Honolulu.

Apple says it is moving to address the following complaints:
• Token-ring card — Nagy says Apple will announce the card in November, with delivery set for the first half of 1989.
• Network management — This is probably Apple's weakest area. "In all likelihood, we will implement Netview for the Mac, but that is a bit farther out," Nagy says.
• TCP/IP — Apple has been promising TCP/IP support since December 1987 and is now stat- ing fall delivery.

Also unclear is Apple's response to architectures looming on the horizon — IBM's System Application Architecture and the Open System Interconnect (OSI) model. Apple's efforts here will no doubt be bolstered by its purchases this year of SNA network servers, IBM 3270 or Digital Equipment Corp. VT100 emulation and Ethernet support — meaning Apple can now support SNA and Ethernet.

"The problem with Apple's strategy is that Apple is now competing with IBM and DEC," says Thomas White, president of Infonetics, Inc., market research in San Clara, Calif. "Do IBM and DEC let third parties solely set the trend for what users see? Apple should be setting the standard in all areas."-

Apple's integration strategy

**Target environment**

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<td>Appletalk, third-party server networks</td>
<td>Appletalk, third-party server networks</td>
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Still, support for AFP is expected to grow slowly, and to get the really big accounts like Apple is going to have to do a lot more than don business suits, ordain protocols and spit out developer's kits.

Apple also has to win over mainframe programmers. It is no minor problem, notes Thomas as Noble, a consultant and principal at Haddenfield, N.J.-based Cimi Corp., that Apple uses different terminology to describe its technology. "Many of Apple's terms mean nothing to a mainframe programmer," he says.

Apple has begun to bridge that cultural gap with Macworkstation, which essentially allows programmers to develop Mac-compatible applications from the comfort of a mainframe terminal environment. But some rewriting of code is still required.

A second, possibly more important product, is MacAPPc, a business network evaluator, which uses Apple's and Apple's Intel and UNIX, that implements L6U.2 and PUI.1 SNA protocols to allow the Mac to talk to IBM hardware. The point is to build on programmers' existing knowledge while minimizing cultural changes.

Whether Apple can out-IBM IBM while retaining its unique Macintosh position remains to be seen. In the meantime, Apple must finish laying its connectivity foundations, generate some end-user applications to make all these pieces play and somehow package all these various components into a cohesive, comprehensible communications platform. And, unless the Mac is all got to be transparent.

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**Glossary: Apple's connectivity plans**

These are the products or technologies that will have a major impact on Apple connectivity:

**Apple Communications Framework** — Guidelines and parameters that make up the communications architecture used in Apple's connectivity efforts.

**MacAPPc** — Apple's implementation of IBM's L6U.2 and PUI.1 Systems Network Architecture (SNA) protocols. When coupled with a coprocessor board, software written using this developer's tool will link Mac applications with other Advanced Program-to-Program Communication (APPC) implementations running on computers such as IBM mainframes. The tool kit was slated to ship in July.

**Macworkstation** — A developer's tool that functions as an interface between the Macintosh and host-based applications and is targeted at mainframe programmers. It allows a Mac to be used as a front end to a host using a customized mainframe application while maintaining a graphical interface. It supports Appletalk, IBM 3270 terminal, Transmission Control Protocol/Internet Protocol, RS-232 and Apple's Communications Connections Language.

**Masterterminal** — A multifunction terminal emulator that allows a Macintosh to emulate a Digital Equipment Corp. VT100 or VT101 terminal an IBM 3278 Model 2 terminal.

**Appletalk** — Now called Localtalk, Appletalk is Apple's low-cost, easy-to-use, media-independent network protocol. A $50 cabling kit attaches the Appletalk connector that is built in to every Mac, allowing users to link Macintoshes and Apple Laserservers into a network. The network is hobbled by an industry-low speed of 256K bit/sec.

**Appletalk File Protocols (AFP)** — An Apple protocol used for intercommunication between applications. Apple has had mixed success in trying to position AFP as an industry standard.

**Appleshare** — A dedicated file server for Localtalk network. Apple says it is supported to share files from multiple operating systems and provides printing and file service and file sharing for Macintoshes running any operating system.

**Ethertalk** — Developed by 3Com Corp, and sold under separate labels by Apple and 3Com, the Nobus-based card plugs into Macintosh IIs and supports connections to thin or thick Ethernet. The card works with Appleshare and 3Com's 3270 network operating system.

**Token-ring card** — The hardware is completed; software development continues. Based on the Macintosh Co Processor Platform. Apple is using the target the two Macs and two Motilora, Inc. 68000 processor and ST1212 bytes of random-access memory. The final product is expected to support Novell, Inc.'s Netware for Macintosh, 3Com, 3270 emulation, APPC and the CCIT T X.400 protocol while offering a choice of Macs and IBM machines. Pricing is slated to ship by mid-1989. Pricing has not been set.

**Appleshare PC** — Combined with Appletalk PC cards, this Mac compatible board uses IBM's Micro-Soft Corp. MS-DOS comput- ers with access to an AppleShare server and Laserwriter printers.

**Privatalk** — Developed by 3Com Corp, and sold under separate labels by Apple and 3Com, the Nobus-based card plugs into Macintosh IIs and supports connections to thin or thick Ethernet. The card works with Appleshare and 3Com's 3270 network operating system.

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If you think high performance comes with a high price, check Tandem Computers.

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Results of the standard debit-credit benchmark run by Tandem Computers and of the benchmark run by Digital.

We give you a 2 to 1 price/performance advantage.

At Tandem, we consider computer performance in terms of business needs. And computer prices in terms of business realities.

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What's more, NonStop SQL — Tandem's relational database management system — provides a single view of your distributed database. And gives you a clear view of your business.

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An Apple a Day
Still Not the Way
with MIS Execs

Despite Apple's heightened efforts to break into the Fortune 500 commercial accounts, MIS managers remain unenthusiastic about the Macintosh. According to an exclusive survey of 174 MIS executives who are members of Computerworld's Editorial Review Board, only 37% have Macintoshes in their organizations, and just 29% plan to purchase Macintoshes in the next 12 months.

More critical to Apple, however, is the finding that 54% indicated that the coming graphical interface programs, such as Windows and Presentation Manager for IBM's Personal System/2s, will cause their companies to purchase fewer Macintoshes.

The survey supports the view that MIS remains committed to IBM Personal Computers or compatible machines as the corporate choice. When asked why their organization was presently not using Macintoshes, 68% responded that their company had standardized on IBM exclusively, Microsoft Corp.'s MS-DOS or IBM compatibles.

Also reflecting current industry opinion, 60% of those responding who do have Macintoshes said they were purchased for desktop publishing, while 57% purchased Macintoshes for ease of use.

Since MIS continues to hold sway in corporate microcomputer buying decisions, Apple must find a way into this traditionally IBM bastion. Although 70% of the requests for Macintoshes were initiated by end users, MIS controlled the approval process in 65% of the organizations polled.

A key ingredient, according to the survey, is the ability to network Macintoshes into the mainstream computing environment within the company. Approximately 61% of the respondents pointed out that network capabilities are either important or extremely important requirements for the Mac.

Forty-five percent were currently using Appletalk as the Mac network of choice. Nine percent said they are tied into DEC networks; an equal number said they are tied into IBM networks.

Per cent of respondents (base of 173)

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<td>&quot;Does your organization currently have Macintoshes in use?&quot;</td>
<td>36.6%</td>
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<td>71.1%</td>
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Like being in pictures

PERCENT OF RESPONDENTS (BASE OF 108)

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<td>&quot;Do you feel that graphical-user interface programs, once entrenched on PS/2s, will cause your company to buy fewer Macintoshes?&quot;</td>
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like two Olympic runners in the home stretch of a race, Apple and IBM stay in top PC form by constantly forcing the other to look over its shoulder.

Battle lines are now drawn with IBM's recently announced Personal System/2 Model 70 and the Apple Macintosh II, released last year. Before the Model 70, the Mac was somewhat awkwardly positioned against IBM's only other Intel Corp. 80386-based machine, the PS/2 Model 80. This is still an option. The Model 80 is a better network server, but the Model 70, with its sleek design and burn-down-the-bushes clock speed, will be the machine against which the Mac II will now be directly compared.

IBM has weathered criticism for the lack of a cutting-edge product and its unwillingness to push the envelope of available technology. For instance, the first PS/2 Model 50 locked users into a hard disk that was slower than the recommended standard for use with the Intel 80286 chip. It's not known what fine-tuning, if any, the Model 70 will require, but suspicions are that it will alienate most naysayers. It is decidedly not a first-draft machine but a competent, full-featured personal computer that represents the maturing of the PS/2 line. To borrow a compatible homily, if you can find a better Microsoft Corp. MS-DOS single-user machine from another vendor, you should buy it without hesitation.

That the Mac's strengths are weighed against IBM's offerings proves that Apple's claim to a higher corporate profile is no idle boast. That the Mac currently can outperform its competitor's latest offering surprises IBM partisans and, in fact, shakes the foundation of that loyalty.

Both companies bristle at the suggestion of a head-to-head match between these two machines; they say it is an unfair comparison of apples and blueberries. That the Mac currently can outperform its competitor's latest offering surprises IBM partisans and, in fact, shakes the foundation of that loyalty.

Both companies bristle at the suggestion of a head-to-head match between these two machines; they say it is an unfair comparison of apples and blueberries. The Model 70 runs existing DOS applications at unprecedented speed but is intended to be a platform for OS/2 and its graphical user interface, Presentation Manager.

OS/2 proponents say it will offer far more than the Mac; Presentation Manager will be a priority-driven multitasking operating system, whereas Multifinder — Macintosh's multitasking facility — is only a task switcher. Apple does not dispute this point but says that the Mac gives users all the multitasking ability they need.

Apple disciples say they feel the comparisons are unfair for the same reason — equal systems are not yet available — but draw different conclusions. The Macintosh and its graphically based operating system are in full working order today, and there is no reason to wait the expected 18 months for IBM's Presentation Manager to gain critical software mass.

While certain aspects of the hardware can be measured directly, the machines are best judged by the software that supports them. For users, what each machine can do should drive the buying decision.

While the Model 70 and the Macintosh II are available in a variety of configurations, they are comparably priced. Including disk drive, video, memory or communications options, the machines can cost from $6,000 to $12,000 apiece. The Mac II does not emulate the ET-like visuals of its sister products and is several inches wider than the Model 70. Both machines fit comfortably on a desk top, with the monitor perched on the system unit in traditional PC style.

For their respective power, both use the most sophisticated processors now available — Apple's Motorola, Inc.-based 68020 and IBM's Intel-based 80386. Both use 3½-in. floppy disk drives; the same physical disks can be used on both but must be formatted to suit the respective systems. The Mac's base unit has no fixed disk, but a 40M-byte drive will be the minimum most users will need. IBM does not sell the Model 70 in a floppy-only version; rather, the "bottom-of-the-line" unit already has a 60M-byte, 27-msec fixed disk installed. Processor speed on the Mac is fixed at 16 MHz, while the PS/2 Model 70 will be available in 16-, 20-, and 25-MHz versions. A faster processor in and of itself is a slight advantage to IBM.
advantage but not a radical one.

Each machine has a proprietary sys-
tem architecture governing its expansion
capabilities, but for the Mac and Micro
Channel for IBM — and both were de-
signed to facilitate data transfer. Support
during the next few months.

IBM hardware has always been open
by nature — although the PS/2 is hardly
considered open — while the Mac is pro-
prietary. For that reason, there are no
Macintosh clones. This has given Apple
another advantage: 286-based compre-
ssor boards can fit into the Mac with
the ability to both run DOS software and in-
corporate it into the Mac environment. A
single-machine/dual-software environ-
ment solution can thus only be a Mac.

The Mac II is itself expandable, featur-
ing six slots — one of which is required for
a video interface. The Model 70 boasts
three, but the video, along with parallel
(printer) and serial (communications) in-
puts are built into the motherboard. The
Mac, then, has one more net slot than the
Model 70. Both machines have mouse and
keyboard ports on the rear panel, al-
though the Mac allows the mouse to plug
directly into the keyboard and daisy-chain
with other input devices.

Getting graphic
Both IBM’s Video Graphics Array (VGA)
and Apple’s graphics standard are analog
environments with the potential to dis-
play an infinite number of colors. Model
70 users are almost locked into VGA; oth-
er graphics systems can be installed, but
that means sacrificing a valuable expan-
sion slot and essentially not using some-
thing that has been paid for. Again, VGA
cannot be judged for what it is today, as
most software support is forthcoming.

Apple’s red-green-blue monitor, a cus-
tomized Sony Trinitron, has an inch more
of screen space than the IBM 8513. It
Captures less glare and its colors take on a
depth and a sheen the IBM machine lacks.
With the range of options available, a
monitor becomes the system’s wild card.
But Apple’s standard monitor — for many
the default purchase — will satisfy those
who do not seek a large-screen solution.
IBM buyers, many of whom will probably
select the 8513 on its own merits, should
still investigate comparatively priced third-
party options.

Video power boils down to software is-
ues, with Mac graphics programs cur-
tently more plentiful and easy to use.
Desktop publishing, the application that
for many users makes graphics practical,
is possible on the PS/2 Model 70 but is
one area in which the Mac has a hands-
down advantage.

Some corporate trainers estimate 100
hours are needed to gain DOS proficien-
cy. Presentation Manager is expected to
cut that time considerably. Still, it’s not
hard to get a productive level on a PS/2,
among many users don’t bother to learn
the subtleties of the system.

Macintosh users, however, find that if
they master one program, they can use it virtually all of them. After learning Page
Mac, Wordperfect will be a snap. The
same is not true for the program’s Model
70 counterparts. Mac commands are
hard-coded across the top of the screen;
all programs derive commands from pull-
down menus. With the mouse-driven
hand-eye combination, using a Mac be-
comes an intuitive process. It is here that
the sharpest difference between the Mac
II and the Model 70 emerges.

On a hardware level, the machines are
arguably equal. The Macintosh software
environment has a continuity now lacking
in the PC world that results in a marked
advantage in ease of use. Presentation
Manager aims to eventually achieve a
similar unity. While IBM users see this
evolution as welcome and something that
will effectively designate the arcane DOS
command structure to the trash heap,
Mac fans have little sympathy or pa-
tience. Presentation Manager, they feel,
will only be a clunker version of what the
Mac already offers.

With the Mac’s consistency comes a
certain rigidity, as it can only run pro-
grams specifically written for its inter-
face. If the Model 70 is “clunkier,” it is
also more flexible, incorporating OS/2 po-
tential while maintaining DOS abilities.
While users are waiting for OS/2 to gain
steam — or if it fails to reach its potential
— the Model 70 can use the current soft-
ware platform to its best advantage.

The choice between the two machines
will only be easy for those who compute in
a vacuum. For ease of learning, software
continuity and sheer visual power, the
Macintosh quickly and obviously emerges
as the best choice. But corporations,
places where IBM has established consid-
erable strength, are not vacuums. And
Apple’s corporate gains come not so
much from an embrace of the hardware
but from an acceptance of some of the
Mac’s concepts. IBM, consequently, may
determine what aspects of the Apple
chart its customers desire and offer its
own alternative or work-alike solutions.
This competition’s ultimate result is ma-
chines of unprecedented power and scope
on the desk top today. While Apple and
IBM battle, the user wins.
Is Innovation Still at Apple's Core?

BY PAUL FREIBERGER and DAN MCNEILL

Apple is at a crossroads. For years, it has played the hare to IBM's tortoise, and its quickness has given it a technological edge and allowed it to prosper. But today its lead is waning. With IBM's Personal System/2 line, other 32-bit machines and the spread of the Macintosh interface, competitors are closing in. The big question hanging over Apple is: Can it spurt ahead technologically once again?

There are signs Apple is worried about its slipping edge. Its recent lawsuit against Microsoft Corp. and Hewlett-Packard Co. is a clear attempt to prevent grafting of the Macintosh framework onto the PS/2 and suggests that the 4-year-old interface remains vital to company plans.

"The wave Apple is currently riding has crested so high because of the visionary thinking of Steve Jobs, which appeared in the Macintosh and the Laserwriter," says Brian Mutert of Stratagem, a software consulting firm in San Francisco. "Many of those people are gone. That, coupled with the fact that Apple is becoming more, not less, concerned about holding onto its technology designs, causes concern about their ability to run forward and come up with the next generation of technology."

Though proud of their accomplishments to date, those within Apple realize the challenge. "We stake our future on Apple's ability to differentiate its platform," says John Zeisler, vice-president of marketing.

The Apple keynote has always been credible innovation. Despite such noted failures as the Lisa and the Apple III, the company has generally displayed a good sense of timing. It offers budding technology just when it is ready for general use, thereby legitimizing it. With its combination of market savvy and technical flair, Apple is following a two-pronged strategy for the future: Exploit the lucrative Macintosh to the hilt and cast about for innovations to perfect, introduce and legitimize.

The first approach is something of a holding action. The Macintosh earns tremendous profits — the company recently reported a net income jump of 71% for the fiscal third quarter — and Apple wants to press the advantage home. Eric Winn, an independent Silicon Valley marketing consultant, estimates that Apple receives 72% gross profit on every Macintosh SE it sells to dealers. The company ended its second quarter sitting on $611 million in cash with virtually no debt.

Apple is advancing along a number of fronts. It is expanding and diversifying its Macintosh line. It also has a Unix workstation.

"After the departure of Steve Jobs, some are concerned that Apple won't be able to differentiate its platform enough to ride the high-tech wave into the future."

Freiberger is a business writer at The San Francisco Examiner. McNeill is the author of several books about computers and is based in Southern California.
MAC TOMORROW
SPECIAL REPORT

though the software is not yet in final form, the Unix system is currently available. And Apple is preparing to release a Motorola, Inc. 68030-based Mac and a laptop Mac around the end of this year. It is also upgrading its operating system — offering true multitasking, enhancing its screen display, linking the Mac with office mainframes and minis and enhancing communication among programs.

The second task is diversifying the line. Apple's wedge into corporations is the Mac II, but is it enough? "I think Apple has only one product well suited to for-profits," says Bruce Lupatkin, an analyst at Hambrecht & Quist, Inc. in San Francisco. "They need to hurry up and have some complementary offerings.

One is a 68030 Mac and one is a laptop Mac."

Reports indicate the 68030-based computer will be a floor-standing as opposed to a desktop machine, designed to compete directly with IBM's most powerful PS/2s. The device will support at least six users through Apple Desktop Bus connections. It will include read-only memory-based Ethernet support and a built-in Ethernet connector. The machine could also have a built-in 500MB-byte write-once read-many drive, though this enhancement may be available as an option.

In addition, it will offer true multitasking. "They need to evolve into a full multitasking operating system," says William Shattuck, an analyst at Montgomery Securities in San Francisco. Observers note that Apple started with Switcher, software that allowed programs to be moved in and out of memory foreground and background, which has been improved on with MultiFinder. But complete multitasking is becoming essential.

Not everyone finds the spectacle of professionals conversing with cartoon figures enchanting.

Directly with IBM's most powerful PS/2s. The device will support at least six users through Apple Desktop Bus connections. It will include read-only memory-based Ethernet support and a built-in Ethernet connector. The machine could also have a built-in 500MB-byte write-once read-many drive, though this enhancement may be available as an option.

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With list "We need full multitasking," says Tom Lafleur, director of engineering at Qualcomm, Inc., a satellite communications firm in San Diego. Lafleur makes systems purchasing decisions for his company and has already bought hundreds of A/UX Microvisions. He says multitasking will assist him by allowing for concurrent use of software development and electronic mail programs.

Richard Shaffer, editor of the newsletter "Technologic Computer Letters," says: "I'm not going to go at the workstation market, they need a better multitasking operating system. They've gotta do a rewrite of the operating system. They need to do it."

The 68030-based machine could debut as early as this October, but plans are uncertain and the limited availability of components for the 68030 may push the date into 1989.

Laptop ahead? The company, according to recent reports, is also developing a laptop Macintosh. The laptop will have Motorola's 16-MHz 68800 CPU. It features chips specific to applications, an active-matrix screen, a track ball, an eight-hour battery, a 20M- or 40M-byte hard disk and perhaps a 4M-byte floppy drive. It, too, is expected to appear this fall or early next year. The laptop may not be a major product, but it could occupy a valuable niche. And offering Mac capabilities on a laptop gives Apple another technology edge.

Apple is promoting the Mac II as a workstation, and to that end it is altering its own version of Unix, called A/UX, which boasts a Macintosh "look and feel." The firm introduced it last year, selling a version of the Mac II with A/UX. But it is not seen becoming a mainstream product until more features important to workstation users are added to A/UX. Unix is a formidable operating system, and Apple wants to cover the blank where Sun Microsystems, Inc. lies with its own workstation.

Apple is pushing the Mac toward a variety of other means, including software and peripherals. Perhaps the most interesting is Hypercard, an intriguing graphical database and programming tool. Introduced to the kind of oohs and ahhs that usually greet new technologies, Hypercard has so far remained rather dormant. It could stay just that a brilliant but too-dominant and influential interface — a new standard.

"Nobody here uses it," says Qualcomm's Shattuck, taking time for someone to get into it and write applications. I think it's going to take more time to develop."

"It's a very useful tool, but there is a significant learning curve to figuring out how to use it," notes Lupatkin, adding that Hypercard alone is not yet leading corporate users to buy Macintoshes. "Yet Apple is basically a technology aficionado, and sometimes it takes a while for the world to follow suit. That was true with the Mac and the modem.

Apple is also investigating interprocess communication, called cooperative processing, which involves the automatic transfer of data from one program to another. For instance, if you're running a stock retriever program in one window and a spreadsheet in another, when the stock retrieval was updated, it would automatically update the spreadsheet and any other programs that depended on this data, Lupatkin says.

Apple has also announced that its developers will fall up in the operating system of the Mac operating system will probably include an interapplication facility, or IAC. IAC resembles Hot Links in Lotus Development Corp.'s Modern Jazz and offers a way for programs to communicate information without dealing with low-level protocols.

Also critical is display technology. The Macintosh screen is attractive, but it is what-you-get resolution at the expense of size, and users have long complained about tunnel vision in their work. As Stratagem's Mutert notes, "Apple has got to find a way to put larger devices on the Macintosh. People trying to work within the confines of the Mac SE monitor are suffering a severe productivity penalty." Apple is almost certainly following this advice.

The second avenue to innovation is that of the internal visionaries, who view Apple as a company with a hallowed air and a mandate to bring slick, easy-to-use computers into the home and office. Jeff Ress was noted for pushing Apple into new technological areas, and the company still has some of the leading computer scientists in the country, including Alan Kay and Larry Tesler. Their mandate is to push the company ahead with technology.

The Mac stemmed from this drive and will provide Apple with the surest future technological edge. Among the possibilities: reduced instruction set computing (RISC) computers with special-purpose chips, an audio-video interface, color laser printers and, perhaps, the ability to receive information in a graphical interface.

By 1991, Apple should be unveiling a new line of computers. "Apple has to keep the hardware platform well above IBM's," says one source close to the company. "They have to have something twice as powerful as the IBM PS/2 Model 80. And I think they will in early 1991."

Some of its features are expected to include the following:

• RISC-based CPU. The RISC CPU could be a good example of the Apple knack for offering the right moment. RISC chips already exist on some machines, and Japanese computer makers have appeared on boards for the Mac II. But Apple is expected to bring the technology to the mass market and use it to expand its technology edge in several areas, such as graphics and user interface.

The 1991 machine will likely center on a RISC-based CPU, according to an informed source. "They have to be looking at some sort of RISC-based technology just to keep up with price/performance requirements," adds Montgomery Se- curities' Shattuck.

• Audio-video interface. Apple has been demonstrating an audio-video interface featuring an original program called "Cartoon," which is what-you-get resolution at the expense of size, and users have long complained about tunnel vision in their work. As Stratagem's Mutert notes, "Apple has got to find a way to put larger devices on the Macintosh. People trying to work within the confines of the Mac SE monitor are suffering a severe productivity penalty." Apple is almost certainly following this advice.

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The Knowledge Navigator, in which the Macintosh would automatically scan electronic archives throughout the nation and down-load articles, maps and charts on whatever topic users selected. The Knowledge Navigator would employ the audio-video interface, and Apple has developed a stunning five-minute video depicting it.

Thinking ahead Even Sculley does not expect this wondrous before the 21st century, but Apple is already taking steps toward it. It is developing communications chips and desk-top terminal adapters to work with AT&T's Integrated Services Digital Network, a voice, video and data transmission scheme expected to become a global communications network for businesses and residential users.

Whether Apple can develop all these innovations by itself remains a matter of debate, but with its plug cushions' cash, it can always snatch up firms with promising products. It has already acquired两家 firms with acquisitions and, financially, Apple may prefer to let start-ups do the hard research work. "Any case, bringing innovations to market is a dark, sublimable art," Sculley has said. Apple has been a soaker at it, but it's "hard to know what value it will have," says Stewart Alsop, editor of "PC Letter."

"Apple has to continue innovating technology in such a way that they're meeting an unmet need for customers. They have to lay down their bets, but they may be wrong."

Display. Apple is almost certainly developing a superior display, "We want a computer that looks as clean an image as a color TV, and that's about to happen," one insider states.

• Printers. Apple is also likely working on a higher density laser printer, and possibly a color one. "If Apple could do for color output what they did for black-and-white, I think they'd have a real winner," Shaffer says. "If they could combine Japanese hardware and their own cleverness in a software a la Postscript, it would be a sensation. I don't see why it can't be done."

Knowledge Navigator. In John Sculley's book Odyssey, he describes a concept called the Knowledge Navigator, in which the Macintosh would automatically scan electronic archives throughout the nation and download articles, maps and charts on whatever topic users selected. The Knowledge Navigator would employ the audio-video interface, and Apple has developed a stunning five-minute video depicting it.
NUMBER, PLEASE:

A graphical look at Apple's progress in the never-ending quest for a bigger slice of the computing pie in the corporate heartland

Comparison shopping
Apple Macintosh product line configurations and pricing for existing and expected models

<table>
<thead>
<tr>
<th>Model</th>
<th>RAM Capacity</th>
<th>Storage Capacity</th>
<th>Price</th>
<th>Discount</th>
<th>Comparable MS-DOS PC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Macintosh Plus</td>
<td>1M byte RAM, single 800K-byte drive</td>
<td>$1,799</td>
<td>$1,259</td>
<td>$1,699</td>
<td></td>
</tr>
<tr>
<td>Macintosh SE</td>
<td>1M byte RAM, dual 800K-byte floppy disks</td>
<td>$2,898</td>
<td>$2,029</td>
<td>$2,999</td>
<td></td>
</tr>
<tr>
<td>Macintosh SE</td>
<td>1M byte RAM, single 800K-byte floppy disk, single internal 20M-byte hard disk</td>
<td>$3,698</td>
<td>$2,589</td>
<td>$3,999</td>
<td></td>
</tr>
<tr>
<td>Macintosh SE &quot;plus&quot;</td>
<td>(Expected) (Motorola 68000 based, 16-MHz)</td>
<td>$4,296</td>
<td>$3,068</td>
<td>$4,999</td>
<td></td>
</tr>
<tr>
<td>Macintosh II</td>
<td>1M byte RAM, dual 800K-byte floppy disks</td>
<td>$3,898</td>
<td>$2,729</td>
<td>NA</td>
<td></td>
</tr>
<tr>
<td>Macintosh II &quot;plus&quot;</td>
<td>(Expected) (Limited slots)</td>
<td>$4,598</td>
<td>$3,219</td>
<td>NA</td>
<td></td>
</tr>
<tr>
<td>Macintosh II</td>
<td>1M byte RAM, single 800K-byte floppy disk, single internal 40M-byte hard disk</td>
<td>$5,498</td>
<td>$3,849</td>
<td>$6,499</td>
<td></td>
</tr>
<tr>
<td>Macintosh II &quot;plus&quot;</td>
<td>(Expected) (Motorola 68030 based)</td>
<td>$8,500</td>
<td>$5,950</td>
<td>NA</td>
<td></td>
</tr>
<tr>
<td>Macintosh II &quot;plus&quot;</td>
<td>(Expected) (Motorola 68030 based)</td>
<td>$10,000</td>
<td>$7,000</td>
<td>NA</td>
<td></td>
</tr>
<tr>
<td>Laptop #1</td>
<td>(Expected) (68000 based, 16-MHz)</td>
<td>$6,000</td>
<td>$4,200</td>
<td>$4,700</td>
<td></td>
</tr>
</tbody>
</table>

Where they are going
Business now garners 70% of Macintosh shipments, according to 1988 figures

<table>
<thead>
<tr>
<th>Category</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Business</td>
<td>70%</td>
</tr>
<tr>
<td>Government and consumer</td>
<td>20%</td>
</tr>
<tr>
<td>Education</td>
<td>10%</td>
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</tbody>
</table>

Apple's Mac revenue forecast
U.S. continues to contribute far more than half of Macintosh sales dollars

<table>
<thead>
<tr>
<th>Year</th>
<th>Revenue in Billions</th>
</tr>
</thead>
<tbody>
<tr>
<td>1987</td>
<td>14</td>
</tr>
<tr>
<td>1988</td>
<td>42</td>
</tr>
</tbody>
</table>

Faring well at DEC sites
Apple claims third largest slice of PCs installed at commercial VAX sites

<table>
<thead>
<tr>
<th>Manufacturer</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>DEC</td>
<td>10%</td>
</tr>
<tr>
<td>IBM</td>
<td>60%</td>
</tr>
<tr>
<td>Apple</td>
<td>6%</td>
</tr>
<tr>
<td>Wang-Lee Packard</td>
<td>5%</td>
</tr>
<tr>
<td>Hewlett-Packard</td>
<td>5%</td>
</tr>
<tr>
<td>Unisys</td>
<td>5%</td>
</tr>
<tr>
<td>AT&amp;T</td>
<td>2%</td>
</tr>
<tr>
<td>Compaq</td>
<td>3%</td>
</tr>
<tr>
<td>Tandy</td>
<td>3%</td>
</tr>
<tr>
<td>Zendahl Data Systems</td>
<td>3%</td>
</tr>
<tr>
<td>Other</td>
<td>5%</td>
</tr>
</tbody>
</table>
SOME MAC STATS

Planned purchases at IBM shops

IBM and plug-compatible mainframe sites' buying plans show
Apple still has cut only shallow inroads to the business market

PERCENT OF PLANNED PC PURCHASES

<table>
<thead>
<tr>
<th>IBM PC XT</th>
<th>IBM PC AT</th>
<th>IBM Personal System/2</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>22.3%</td>
<td>7.5%</td>
<td>33%</td>
<td>4.8%</td>
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<td>4.8%</td>
</tr>
</tbody>
</table>

Planned purchases at the Fortune 1,000

Although Macintoshes are making headway, they still represent
only a small percentage of PC sales

PERCENT OF PLANNED PC PURCHASES

<table>
<thead>
<tr>
<th>Apple</th>
<th>Hewlett-Packard</th>
<th>Compaq</th>
<th>AT&amp;T</th>
<th>Data Systems</th>
<th>Texas Instruments</th>
</tr>
</thead>
<tbody>
<tr>
<td>2%</td>
<td>5%</td>
<td>7%</td>
<td>10%</td>
<td>2%</td>
<td>2%</td>
</tr>
</tbody>
</table>

How the Mac stacks up: A comparison of the Macintosh II with leading competitors

<table>
<thead>
<tr>
<th>MacBookintosh II</th>
<th>IBM Personal System/2 Model 80</th>
<th>Sun Microsystems Sun 3601/150</th>
<th>Compaq 386/20</th>
<th>Sun Microsystems Sun 386/250</th>
</tr>
</thead>
<tbody>
<tr>
<td>MIPS rate</td>
<td>2</td>
<td>2.5 to 3</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Key operating system</td>
<td>Multifinder</td>
<td>OS/2 or MS-DOS</td>
<td>SunOS</td>
<td>OS/2 or MS-DOS</td>
</tr>
<tr>
<td>User interface</td>
<td>Window, icon-bar menu</td>
<td>Window, bar menu</td>
<td>Window, icon-bar menu</td>
<td>Window, icon-bar menu</td>
</tr>
<tr>
<td>Maximum user memory (in bytes)</td>
<td>1.5G</td>
<td>16M (OS/2) 8M (MS-DOS)</td>
<td>3G</td>
<td>16M (OS/2) 8M (MS-DOS)</td>
</tr>
<tr>
<td>DOS sessions under standard operating system</td>
<td>Single with optional coprocessor</td>
<td>Single (OS/2) multiple (MS-DOS)</td>
<td>Multiple</td>
<td>Single (OS/2) multiple (MS-DOS)</td>
</tr>
<tr>
<td>Unix capability</td>
<td>Optional: Apple A/UX or Unix-Mac</td>
<td>Optional: Unix-AIX or Unix-DOS</td>
<td>SunOS</td>
<td>Optional: Unix-DOS</td>
</tr>
<tr>
<td>Standard processors</td>
<td>15.7-MHz Motorola 68020 CPU, Motorola 68813 math coprocessor</td>
<td>16- to 20-MHz Intel 80386 CPU</td>
<td>20-MHz 80386 CPU, Intel 80387/ math coprocessor</td>
<td>20-MHz 80386 CPU, 80387 math coprocessor</td>
</tr>
<tr>
<td>Internal memory (in bytes)</td>
<td>1M to 8M</td>
<td>1M or 2M to 16M</td>
<td>4M to 16M, 32K cache</td>
<td>Optional</td>
</tr>
<tr>
<td>Manufacturer-supplied graphics</td>
<td>640 by 480, 16- or 256-color</td>
<td>640 by 480, 16-color, 1,024 by 768 256-color</td>
<td>1,024 by 768 16-color</td>
<td>640 by 480, 16-color, 1,152 by 900 256-color</td>
</tr>
</tbody>
</table>

INFORMATION PROVIDED BY WOHL ASSOCIATES

AUGUST 8, 1988 COMPUTERWORLD SR/15
ACCESS THE ADVANCED FULL POTENTIAL, NOW! 

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William Corbin is a systems engineer at the Huntingdon, Pa., manufacturing facility of Owens-Corning Fiberglas Corp. Corbin introduced the Apple Macintosh to the entire company through his facility, and there are now more than 50 Macintoshes in the Huntingdon plant alone. The fever is spreading throughout Owens-Corning despite some resistance from corporate MIS. Senior Editor Glenn Rifkin spoke with Corbin about his experiences as a Mac pioneer.

Even with the success you've had, the Macintosh is not on the official corporate "buy" list? No. The corporate PC is IBM.

How long have you been using Macintoshes in your facility? Since February 1985.

And you were the catalyst to get them in? Yes. I had gotten some computer training when I taught at Penn State, and when I came here to work, I saw a group of engineers and engineering support people who had no computers. They had two PCs in here, but they had no hard drives, limited memory, nothing fancy. People didn't care for them. I knew a couple of local deal-

ers were carrying the Macintoshes, and I'd play around with the Mac. I borrowed one, brought it in here and showed it to the plant engineer, head of engineering and some of the staff people. Right away, you'd see the spark that got things going. People really liked it. We said, 'Hey, we ought to buy one,' and soon people were fighting over who would use it. One grew into two, and it just kept growing from there.

So MIS had nothing to do with bringing in the Mac? No.

What applications did you use? Initially, we used Multiplan. This was before Excel, so Multiplan was the only spreadsheet available. That gave the engineering group a whole new way to do cost estimating, tracking project costs. It was something they always did by hand. That in itself was a big change. We also had word processing with Macwrite. What people liked in this department was that you could mix text and graphics together very easily. This being an engineering department, a lot of our write-ups are so much better when you can put the graphics in them.

Now, we don't use much in the way of word processing, it's all page layout programs... Ready, Set, Go, things like that. Excel is the spreadsheet of choice, by far. We've got all kinds of database files set up for everything from blueprint tracking to work request planning. And CAD is big, we have MicroCAD and VersaCAD.

You're using the Mac in lieu of an engineering workstation? We're finding the Mac II has the kind of capabilities that, for what you're paying for them, I don't know if I could justify going out and buying a $30,000 workstation. Also, our engineering group is different than others. We don't have any full-time, dedicated design engineers as such. There's no one in this department who works eight hours a day at CAD. Instead, they do project work, CAD work, cost work, troubleshooting. That's mainly because it is a manufacturing center rather than a corporate headquarters. So we really didn't want a dedicated machine in only a narrowly defined area. We wanted something that would allow someone to go from CAD, switch into word processing, at the same time maybe go up on E-mail and upload and download messages. We found with the Mac II, with the windowing environment, Multifinder and the cross-compatibility of many of the programs, we were able to get that.

What about the Mac as a networking tool? It's one of the concerns MIS has expressed. Will you people be an island unto yourselves? Will you be able to connect with the rest of us? We can talk to our corporate headquarters. So we really didn't want a dedicated machine in only a narrowly defined area. We wanted something that would allow someone to go from CAD, switch into word processing, at the same time maybe go up on E-mail and upload and download messages. We found with the Mac II, with the windowing environment, Multifinder and the cross-compatibility of many of the programs, we were able to get that.

Does the proprietariness of the Mac architecture present any problems? Our experience thus far is that we've been able to find third-party resources to help us connect with equipment in the corporation. Our company uses a lot of HP 3000s. There are a couple of different emulator packages that we have that do as good a job to HP as HP's PC counterparts. We ran a test with the Amarillo, Texas, plant. They are running a program on the HP...
3000 that we don't have up here. The project manager said he actually liked the Mac II environment better as an emulator on the HP because he could copy and paste and move all the HP data around to other packages in the Mac environment.

What about supporting dual standards? Is that why there is corporate resistance?

Yes. One of MIS's concerns, and rightfully so, is that there is going to be duplication of effort. We have had that happen. MIS is in a position of limited resources, and they just can't get to all the plants to satisfy all the needs. So a lot of us on the plant level have found that we can't wait for them to make the change. We're going to make the change.

When you eventually hook the corporation-wide environment together, will that present a problem?

It could. That's something we've discussed. What we've tried to do here and with other people in the company is point out that in areas where we have our own local data and we're the only ones using it, we should have autonomy to do with it what we want. That's pretty strong among all the plants. There's a strong ownership... "Hey, we know what our local needs are, and we need some creative control over developing resources to satisfy those needs."

MIS says, "That's fine for certain things, no problem. But what happens in the future for on-line purchase orders, for example? Are you all going to be able to compute across the board when it comes to something like that?" And we have had meetings with corporate people where the manufacturing people got together and said, "These are the kinds of services we'd like to have that are global in nature" rather than just local data facilities. The question has come up, "How do we satisfy the Mac people and the PC people?"

My belief is that as long as third parties are making good emulation packages for the Mac, it's really no different accessing that data from the Mac environment vs. the PC environment.

What about advances coming with IBM's Personal System/2 and Presentation Manager? Will that make it more difficult or easier in favor of the Mac?

I don't know yet. I haven't seen a lot of movement from our company yet to push in the direction of Presentation Manager or OS/2. All the PC's they are buying are compatible with our entire VS line. No application conversion necessary. But the fact that may be most important to you is that the VS 5000 is an inexpensive way to get into image processing; Wang's most advanced business capability. We believe that image processing will be to the 90's what word processing was to the 70's. The word is over. Call about our VS 5000 today. Don't be left behind.
Uncle Sam Salutes the Mac

BY MITCH BETTS

Slowly but surely, the Macintosh is infiltrating a traditional stronghold for IBM-compatible micros: the U.S. government. Even so, it sometimes seems as if it takes an act of Congress to buy a Mac.

The U.S. Air Force, for example, has such a strong bias toward the Microsoft Corp. MS-DOS world that when the Strategic Air Command (SAC) in Omaha wanted to buy a network of 60 Macintoshes, it had to obtain a waiver from Gen. Robert H. Ludwig to stray from the Air Force's standard contract for Zenith Data Systems' PC compatibles.

Col. Joe LaBenne, deputy director of advanced systems, undertook the rigorous process of justifying a waiver from the Zenith standard. The Macintosh II and SE were the first products to meet SAC requirements for graphics, common user interfaces and low-cost training and networks, LaBenne says, "and I would not give up until the procurement met my requirements."

Mac evangelists like LaBenne, with help from Apple's new federal marketing group in Reston, Va., are gradually breaking down the barriers to Mac penetration in the federal government. "It's been a successful strategy, but there's still plenty of opportunity for them to expand," says David Powell, a workstation specialist at the National Institutes of Health (NIH) in Bethesda, Md.

Apple has gained a 5% share of the federal micro market in the short time it has been a significant player, but that is dwarfed by the 50% share held by IBM and the 23% share held by Zenith, according to Computer Intelligence, a market research firm based in La Jolla, Calif.

Thomas Young, an analyst at Computer Intelligence, indicates that Apple is steadily gaining on Compaq Computer Corp. and may surpass Compaq next year as the No. 3 micro supplier to Uncle Sam. About 90% of the Apple micros sold to the government are Macintoshes, he says. Apple's window of opportunity for capturing federal market share is not unlimited, however. One expert says the Macintosh and IBM's Personal System/2 are locked in an "interesting horse race" to see which will be the government's next de facto standard.

While the loser is not locked out completely — a waiver can be had to permit a deviation from the standard — the road is much tougher through the bureaucracy.

Apple's board of directors decided nearly two years ago to gain some credibility in the federal market by opening a local office and entering a few procurement contests, says C. Lloyd Mahaffey, director of Apple's Federal Systems Group in Reston. Before then, "everybody in the federal government thought Apple was a toy company," he says.

Last December, Apple launched the second phase of its federal effort. The size of the Reston staff was doubled to 100 people, upgraded on the Apple organizational chart as the Federal Systems Group and reorganized. The federal group now has separate operations staffs for civilian and defense/intelligence agencies; seven branch offices in key cities; and a Complex Systems Division to deal with systems integrators, such as Planning Research Corp. in McLean, Va.

Most federal buyers have their eyes on the Mac II because it is suited for use as a graphics workstation or low-end engineering workstation, says Tom Ellis, president of Falcon Microsystems, Inc. in Landover, Md., the largest Apple reseller to the government.

"We're in the second wave of Apple users," Ellis says. "We've gone beyond the Macintosh champion or guru to a much broader base of users now."

Daniel Adkins, past chairman of the federal special interest group of the Washington Apple Pi users group, says there are three categories of federal Mac installations:

• Research-oriented departments that get...
Before Apple entered some procurement contests, "everybody in the federal government thought Apple was a toy company."

C. LLOYD MAHAFFEY
APPLE'S FEDERAL SYSTEMS GROUP

who made a good decision to aggressively enter the market.

Apple reportedly hopes that the government market will become 10% of its business. Mahaffey will not disclose the Federal Systems Group's share of Apple's business, but he discloses that the group has already submitted bids for government contracts that could potentially amount to $1 billion in business during the next five years.

One reason Apple can enter those bidding contests is its commitment to making its technology comply with government standards such as the Poxix standard for software portability, the Government Open Systems Interconnect Profile for computer networking and the National Security Agency's computer security standards.

Moreover, the introduction of Apple's Unix-flavored operating system, A/UX, made it possible for Apple to bid for large Unix contracts at the U.S. Army and the Federal Aviation Administration. "That's probably what's inside Apple, the Federal Systems Group has taken the lead on our A/UX product and worked with the A/UX development team to ensure that we can comply with the government requirements," Mahaffey says.

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**People's choice**

An example of the bottom-up approach is the NIH, where the Computer Research and Technology Division decided to officially support the Macintosh as a workstation because of grass-roots user support, NIH's Powell says.

Powell is the leader of the Biomedical Research Macintosh Users Group (affectionately called "Beermug"), which has 300 users on its mailing list and 25 to 50 attendees at its meetings. "The success of the users group was cited by management as being a clear sign that the Mac was something that researchers wanted and needed," Powell says. The NIH now has roughly 500 Macintoshes, and that figure is likely to double next year, he adds.

The other reason the NIH adopted the Mac as a standard platform, along with IBM micros, was that Apple demonstrated its commitment to the government market by opening a federal marketing and support office. "I'm certain that our division would not have elected to support the Macintosh if Apple hadn't made that move," Powell says.

**Good decision**

Users say that Apple has made a lot of smart moves in its federal marketing effort, but they feel the best was simply the

**Mac evangelists are breaking down the barriers to Mac penetration in the federal government.**

the policy office could add graphics and make changes in the publication at virtually the last minute, Adkins says.

The DOE's decision to obtain the Macintoshes was made by William F. Martin, then deputy secretary of energy and a Mac enthusiast, Adkins recalls, illustrating the fact that Macintoshes can penetrate government offices via senior-level executives.

**Entry points**

Macintoshes enter government service in a variety of points — sometimes at the user level, sometimes from top-level edicts and sometimes sneaking in the back door when government contractors introduce federal employees to the Mac, Adkins says.

The U.S. Department of Energy in Washington, D.C., where Adkins is a petroleum supply specialist, bought 20 Macintoshes last year to produce a major report to President Reagan on energy security.

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What to Expect from Apple-DEC Alliance

BY MICHAEL MILLIKIN

John Sculley and Ken Olsen wowed audiences coast to coast with the dramatic announcement of a formal Apple-Digital Equipment Corp. alliance in January. But what is emerging from this coziness is likely to be less exciting than what was envisioned when the two powerful industry leaders shared the spotlight.

Nothing either vendor is working on producing will be exceptionally unique to the VAX-Mac union. This, crestfallen Macintosh evangelists aside, is the only sensible way to approach the marketplace at this point in time. DEC certainly would gain nothing by excluding the dominant IBM Personal Computer workstation platform from its network — or even by treating the PC as a second-class citizen. Nor would Apple find its interests best served by single-minded pursuit of a VAX connection at the expense of tapping into IBM's Systems Application Architecture. However, both vendors gain from cooperation mainly by speeding the development process.

Reaction to the relationship falls predictably along partisan lines. Mac fanatics seem to regard the alliance as a giant thumb stuck into IBM's eye. The DEC-Apple alliance would sweep corporate desks clean of those pestilential PCs, for which neither DEC nor Apple has much affection.

DEC supporters, for their part, seem to view the Mac as the next most acceptable alternative on the desk top (following, of course, any DEC product).

Indeed, there is a great deal of potential synergy between the two companies because of the high penetration of Macintoshes into DEC accounts. For both companies, however, the alliance is just one aspect of broader strategic plans.

For Apple, the alliance does bestow the Mac with increased legitimacy as a corporate machine. Not that the Mac had none; on the contrary, Apple has been working very hard to increase its communications and connectivity abilities. DEC is currently the largest major systems vendor substantively working to integrate the Mac into the larger information architecture. That proselytizing is good for Apple, but it is also good for DEC.

The alliance improves DEC's story about personal computer integration. Back in January, the relationship with Apple seemed particularly special. Since then, however, DEC has also entered into technology-sharing agreements with other PC system and component vendors (Compaq Computer Corp. and Phoenix Technologies Ltd., to name two). The Apple agreement thus becomes one aspect of a broader plan by DEC to seamlessly embrace a variety of standard workstation platforms within its architecture as proposed in the Network Application Support aspect of Decnet Phase V (Decnet/OSI).

The Apple view

The Mac initially had a difficult time gaining corporate acceptance because of its limited networking and communications possibilities. That condition is being corrected. Now, Apple says, the Mac should be as acceptable a desk top solution for a corporation as is an IBM PC.

Apple's efforts in integration are far from DEC-centric, however. Since the Apple-DEC announcement, Apple has acquired two major connectivity companies, Network Innovations Corp. and Orion Network Systems, Inc. Network Innovations is attractive primarily...
for its CL/1 server and software that gives Macintoshs transparent access to DEC VMS databases through the implementation of client/server model. Then, also early in June, Novell, Inc. announced its long-expected support of the Mac on Netware. The acquisition of Network Innovations and CL/1 demonstrates that Apple isn't sitting around waiting for the joint development with DEC to answer connectivity questions. Apple is driving ahead solidly on its own, and CL/1 will be a major component in Apple's own connectivity plans.

According to Apple's Scuiley, Network Innovations won't focus solely on the Apple-DEC environment. The IBM host environment is targeted next, and beyond that, Apple and Network Innovations will produce CL/1 tool kits to support DOS and OS/2 workstations as well.

So the bottom line is that although Apple may have superior connectivity first to the DEC environment, either through its own efforts or as a result of the cooperative agreement, Apple isn't relying on that one approach; IBM connectivity is just as important.

The DEC view

Identified areas of cooperation between Apple and DEC include the following:
- Mac access to VMS files.
- Distributed applications running on both systems.
- Electronic-mail compatibility.
- Sharing of print resources.
- Terminal emulation.
- Joint specification of database standards.
- Network management tools.
- Electronic conferencing.
- Videotex.

These areas are also encompassed in the scope of DEC's Network Application Support services, which means that what is available for the Macintosh will also be available for DOS, OS/2 and Unix workstations as well.

With Network Application Support, DEC intends to provide users in a mixed system environment of VMS, DEC's Uni-trix (Unix), Mac, DOS and OS/2 with the ability to have transparent, dynamic integration of information scattered across the enterprise.

Network Application Support has three primary components: Application Access Services, Business Communications Services and Information/Resource Sharing Services.

Under Application Access Services, DEC currently offers terminal emulation (with a promise to move to Decwindows-based distributed code and a piece of All- in-1 running on the Mac).

Business Communications Services is a big area for DEC, with solutions promised for electronic data interchange (ANSI X.12), E-mail (DEC's Mailbus), electronic conferencing and videotex.

Information/Resource Sharing Services provide support for a compound document environment as well as document interchange through DEC's DDIF, publishing services, network printing, file sharing and database access.

Put the two sets of features — those in Network Application Support and those in the DEC-Apple alliance — together, and you'll see that they map exactly. In other words, the fruit of this union is not going to be radically different than what will be available for other platforms.

Apple isn't relying on the DEC approach; IBM connectivity is just as important.

Mac-to-VAX integration might not eventually be unique in terms of the functionality it delivers, but these products certainly could be out on the market first. All vendors are recognizing that the coming architectures will be networked and distributed; for example, applications will be split between host servers and workstations. There is an agonizing amount of development work that has to be done to make this happen, particularly since the workstation environment will by and large consist of standardized platforms. That means development efforts across multiple platforms. For all the mileage DEC squeezed out of its “one company, one architecture" appeal, that approach soon will be relatively meaningless. DEC may have a uniform host/server systems platform, but it certainly is not going to have a solitary workstation platform.

Network Application Support is DEC's concession to market reality. The combination of solutions that provide advanced solutions will be the combinations that win bids. It thus becomes in the vendors' best interests to cooperate as best they can to speed the development process.

For example, with its proposed DDIF, DEC is going to have a powerful marketing weapon. DDIF will eventually be able to become the foundation for compound documents spread across a network consisting of multiple operating system platforms. In order to tout this, however, DEC needs the other platforms to support DDIF. Thus, one of the major efforts between Apple and DEC will be to provide Mac support for DDIF. Again, for both vendors, the result is an attractive one. The issue of the alliance is not one of exclusivity — it is one of timing.

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AUGUST 8, 1988
COMPUTERWORLD
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COZYING UP TO DIRECT SALES

Apple and its dealer network face unexpected challenges

BY BARBARA SEHR

ew personal computer manufacturers devote as many resources to the care and feeding of their dealer network as does Apple. Long before IBM Personal Computer clones began their battle for shelf space and the hearts and pocketbooks of consumers, Apple had established a large network of dealers that sold its popular Apple II exclusively. That network is still very much in place, selling Apple’s Macintosh product line.

Today, however, Apple and its dealer network face a challenge that is fraught with conflict for these once bosom buddies. The present-generation Macintosh has been targeted at corporate users who demand aid and comfort of a different sort. Large corporate accounts want hand-holding and tender loving care that often can only be accomplished through direct sales. Selling into MIS departments in the Fortune 1,000 can be done through a dealer or a value-added reseller. But in competing with IBM, which perfected the art form of direct sales, Apple finds itself trying to sit at two weddings with one derriere. Sensing a growing corporate demand for the Macintosh, Apple established its National Accounts Program in 1984 to offer “a direct interface” between the manufacturer and its largest corporate customers. Within a year, the National Accounts Program grew to 200 customers.

Michael Coleman, coordinator of technical research and development at Aluminum Company of America (Alcoa) in Pittsburgh, says his company, with Macintoshes representing 25% of its PCs, works directly with Apple for sales, system delivery and support. “There are times when we deal with a local computer store,” Coleman says, “but that is the exception rather than the rule.”

Apple’s dealers, however, were none too pleased with this turnabout. They wanted to know if this signaled a dramatic change in Apple’s philosophy; that the company would now compete directly with them. The company assured them that it didn’t. Instead of expanding the National Accounts Program, the company attempted to combine the best of both worlds by recently establishing the Account Manager Program, according to George Everhart, director of business marketing at Apple.

Some 200 other corporate users have opted for the Account Manager Program, in which systems are delivered through a third party. The Apple account manager is responsible for setting up the sale and acts as a liaison between the customer and local dealer. The product itself is then delivered through either a local dealer or a value-added reseller.

A major advantage of the program is the direct link it provides to Apple’s future plans. To corporate users planning future system acquisitions, this is a key element of the arrangement, at least as important as the volume discounts. Advance information also means Apple Account Manager Program participants serve as beta-test sites, a function not typically provided to small users, who may buy their systems through the same dealer.

There is no financial advantage for a customer to choose between the Account Manager Program or the National Accounts Program, Everhart says. The National Accounts Program still exists; some accounts remain reluctant to do business of any sort with a dealer. However, only some 75 accounts remain in that program, according to Everhart, and he says he does not expect the number to expand. In fact, he says, some of those customers have requested participation in the Account Manager Program — especially those corporate customers with locations in remote areas. “They are discovering that the needs of the local plant can be better served through a local dealer,” Everhart says.

Sehr is a free-lance writer based in Seattle.
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Resident users welcome a change of pace

Users span a number of industries, but what really distinguishes this group is size. According to Focus Research Systems, a market research firm in West Hartford, Conn., two-thirds of these organizations had 250 employees or less.

What these users were looking for in the System/34 and 36, for the most part, was a basic data processing system for applications such as accounting and inventory control rather than a platform for the development of sophisticated management information systems. "They wanted an existing package. They didn't want a development platform," says Paul Conte, senior technical editor of "News/3X-400," a Loveland, Colo.-based newsletter.

Overcoming obstacles
While simplicity was a benefit to users, it proved to be a hindrance to commercial software development.

Major software vendors, hindered by the machines' inability to provide the power necessary to run sophisticated applications, shied away from writing for this small, diverse group of users. This vacuum created a fertile ground for the development of an insular culture of small-scale software developers, many of whom were initially contracted to develop custom software and later turned the results into...
ASK THE VENDOR

The following questions were solicited from users and conveyed to the vendors for responses.

Logic International's software is currently written in the company's version of RPG-II, which allows us to run it on an IBM System/38. Will a version in RPG-III be released in the near future?

Larry Middleton

Maslan Carpet, Inc.

Mobile, Ala.

LOGIC INTERNATIONAL, INC.: We are planning to release RPG-III versions of our applications by the end of this month.

When using Bancroft's Versatile Pay Management System payroll software, we have had to write exempt employees so that the taxes are deducted from their paychecks but the wages show up on our quarterly tax revenue?

Pam Cobb

Excel Industries, Inc.

Phoenix

BANCROFT COMPUTER SYSTEMS, INC.: In the employee master file maintenance screen to not deduct taxes from the monthly 401K deposits for the year's end to show the total payroll totals are rolled over from their paychecks but the wages show up on our quarterly tax revenue.

We have been running New Generation Software's Accounts Payable and General Ledger packages since 1983. Can we purge some of the old data and distributions?

Les Dombrowski

Mrs. Paul's Kitchens

Philadelphia

NEW GENERATION SOFTWARE, INC.: Within the General Ledger and Accounts Payable systems, you can purge posted journals and distribution history using a built-in menu-based facility.

I need to create a report at tax time that shows the total employees 401K deductions by month, but our payroll totals are rolled forward every month and every quarter. How can I store data in Michaels, Ross & Cole's mrc-Query series so that this report can be created?

Marie Matyas

Marie Matyas

Coca-Cola Bottling Company

of Chicago

Niles, Ill.

MICHAELS, ROSS & COLE LTD.: Generate a summary file with the mrc-Query series that will store each month's 401K deductions for each employee. Then take the generated code and, with some customization, make it part of your period-close process. This would store monthly 401K deposits for the entire year and enable you to report contributions at date.

The users from page 43

commercial packages.

Things first changed when the System/38 came along. That machine, introduced in 1978, sported a faster, more advanced architecture, a 64-bit address and object-oriented programming. It attracted some new business as well as more prosperous and considerably more adventurous than the typical owner of either the now-discontinued System/34 or the vastly popular System/36.

The System/38 shifted the software game for developers and users, the Application System/400 has major seismic planning applications. As work-in-progress, inventory management and highly computerized. In response to his competition's use of on-line order entry, Baden became a major language on the AS/400. "I was concerned about RPG," he says. "IBM was saying that RPG is not included under SAA, so I was worried that RPG wouldn't be supported. I see that RPG is a major language on the System/38." Because RPG is available on the System/38, Baden is confident he will be able to move his current software over to the new system.

Curious, but not committed

Like most IBM mid-range users, Marc Spencer, manager of systems and programming at

IBM SYSTEM/36

APPLICATION SYSTEM/400

Paken software from a proven software company can help to get a head start on your project.

\* Sub-ledger user-defined GL number
\* The multi-company processing
\* Executing financials up to 49 companies
\* Strategic rates
\* Download to Lotus or EasyCalc & 13 or 16 processing
\* Trend report
\* Duplicate invoice check
\* Vendor name search
\* Legal contribution to 99 accounts
\* Multi-function fields
\* Cash or accrual option
\* Reconciliation reports to GL
\* Standard vouchers
\* Unlimited vendor budgets
\* Intercompany payments

\* Para Research

85 Eastern Avenue • Gloucester, MA 01930 508-283-3438

SOFTWARE FOR THE IBM MID-RANGE

PRODUCT SPOTLIGHT

AUGUST 8, 1988
KNOTT'S BERRY FARM

SOME OF THE applications we have developed, like our work order program, outshine anything on the market.

MARC SPENCER
KNOTT'S BERRY FARM

long-term strategy, he explains, was a plan to provide nurses with bedside access to patient chart information. That projected step would require 200 additional terminals and push the hospital beyond the limits of its System/38.

"The System/38 is the right one," Wildenberg says. He adds that any future move to the AS/400 will be an easy one, with a relatively simple conversion. Basically, all he would have to do is port the software over and boot it up.

Bellin Memorial maintains an active MIS department with eight programmers and a total staff of 20. The 243-bed hospital currently maintains two System/38s — with one used exclusively for testing and program development — and one System/36, used mostly for shared word processing. The hospital is automating its line services in a system built around the System/38.

Much of the hospital's software development has been handled in-house. General hospital management applications were developed internally. And some specialized clinical and laboratory applications were created by a contract programmer. Bellin Memorial did purchase a materials management program developed and sold by another hospital.

No one at the hospital had ever heard of Ethernet when the announcement was made. But Bellin Memorial did have 100-CSMA collision detection. Until now, the real world high performance, reliability and superior diagnostics of Chipcom's Ethernodent™ family of connectivity products has been available only to broadband users.

Now we bring Chipcom's commitment to Ethernet excellence to the fiber optic user as well, with our new ORnet™ active star fiber optic system. ORnet is the only family of fiber optic couplers and transceivers that give you true 10Mbps performance, standard redundancy features, long distance links and extensive diagnostic capabilities to let you spot faults at a glance. And like all Chipcom products, ORnet is fully IEEE compatible.

At Chipcom, we're fully committed to total Ethernet connectivity and performance. No matter what medium it's running on.

Bellin's Wildenberg

All grown up

At Bellin Memorial Hospital in Green Bay, Wis., the System/38 announcement relieved some of the pressure of planning for the future.

According to Jim Wildenberg, assistant vice-president of hospital information systems, system use there has been moving toward a full management information system. The largest question mark in that

AUGUST 8, 1988

COMPUTERWORLD 45
Developers board AS/400 bandwagon

BY BOB COZZI

They say all things come to those who wait, and for IBM's System/36 and 38 software developers, the proof of that expression seems to lie in the Application System/400.

The AS/400 "provides a level of compatibility that the industry has been looking for," says Mark Wasilko, senior vice-president of marketing in the applications products division at Computer Associates International, Inc.

Wasilko is not alone in his reaction. Many software developers are applauding the new machine and rushing to provide support in the form of new packages. Some have already converted existing software to the AS/400 environment. Others say they will convert gradually, taking aim when the first wave of machines begin shipping. All seem to concur in the belief that customers will accept the AS/400.

One major reason for this enthusiasm is the openness IBM exhibited during the AS/400's development cycle.

The new openness "I'd call it IBM's version of glasnost," says Jack Gable, vice-president of technology at software vendor American Software, Inc. "The world appreciates being consulted in advance."

Gable points out that IBM's willingness to bring software developers into AS/400's research and development process stands in stark contrast with its handling of other IBM mid-range and large-scale machines. In the past, he says, development work has taken place behind closed doors, frustrating developers and users.

With the AS/400, IBM opened its doors to both groups. The company's Rochester, Minn., laboratory, where the AS/400 was developed, held "Migration Invitational," inviting broad-based advisory panels of developers and users to actively participate in the machine's development. The program, which took place early in the development cycle, was designed to give third-party software providers a sense that their input was welcome.

The beauty of AS/400 for developers is that IBM has taken the System/36 and wrapped it in a separate user interface similar to the System/36. Therefore, as newer technologies become available, the interface can be replaced with little or no impact on existing users. If a graphical "Mac-like" user interface is provided, as System Software Associates, Inc.'s Roger Covey suggests, that interface can be added to the system without affecting existing users.

Covey says he expects the OS/400, the AS/400's operating system, to be enhanced with windows and pull-down menus later this year. About a year after that, he estimates, easy-to-use software packages with true what-you-see-is-what-you-get interfaces will start to appear.

Right now, most developers are content that the interface allows them to concurrently support System/36 applications while also allowing those applications to execute in an AS/400 environment. Current System/36 and 38 users will be able to use the interface to simulate their systems while slowly migrating to the AS/400 environment through directly mapped functions.

There are no emulators on the AS/400. Instead, each System/36 or 38 function directly maps to an AS/400 function. For example, the System/36 $SFGR display interface is vastly different from the AS/400 interface, but rather than using a slow-running interpreter/emulator, the AS/400 converts the $SFGR source code to the equivalent AS/400 display source. The resulting source code is compiled as AS/400 (native) source.

To the System/36 application developer, however, the $SFGR source is syntax checked and diagnosed with the same messages produced by the System/36. This approach provides System/36 users with the same performance as native AS/400 users. Another reason the interface, a seemingly small line item in the AS/400's list of features, may turn out to be a sleeping giant is its potential

THE AS/400 "provides a level of compatibility that the industry has been looking for."

MARK WASILKO

COMPUTER ASSOCIATES INTERNATIONAL, INC.
## Accounting Software

### SOFTWARE FOR THE IBM MID-RANGE

**PRODUCT SPOTLIGHT**

### Account Software

<table>
<thead>
<tr>
<th>COMPANY</th>
<th>PRODUCT</th>
<th>RUNS ON IBM SYSTEM/36, 38 OR AS/400</th>
<th>MODULAR OR INTEGRATED</th>
<th>STANDARD MODULES</th>
<th>STANDARD REPORT TYPE PRODUCED</th>
<th>OFFERS USER-DEFINABLE REPORTS</th>
<th>INCLUDES A BUILT-IN HELP SYSTEM</th>
<th>CREATES COMPARATIVE STATEMENTS</th>
<th>PRINTS REPORTS</th>
<th>PRODUCES GRAPHS</th>
<th>SPECIAL FEATURES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adroit Systems Management, Inc.</td>
<td>AP</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
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</tr>
<tr>
<td>American Software, Inc. (318) 372-5990</td>
<td>Accounting Solutions for IBM System/38</td>
<td>Integrated</td>
<td>GL, AP, AR</td>
<td>Financial reports</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>ASD Software, Inc. (800) 303-3564</td>
<td>Applications Systems</td>
<td>System/38</td>
<td>Integrated</td>
<td>GL, AP, AR, payroll, job cost, inventory control, general ledger, order entry</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
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<tr>
<td>Boscroft Computer Systems, Inc. (516) 393-1777</td>
<td>Accounting Information System</td>
<td>System/38</td>
<td>Integrated</td>
<td>GL, AP, AR</td>
<td>Financial reports</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
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<tr>
<td>Celco Publishing, Inc. (600) 303-3568</td>
<td>The Brite General Ledger</td>
<td>System/38</td>
<td>Modular</td>
<td>GL</td>
<td>Financial reports</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
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<tr>
<td>Cary Brown Associates, Inc.</td>
<td>General Accounting</td>
<td>System/38</td>
<td>Integrated</td>
<td>GL, AP, AR, payroll</td>
<td>Financial reports</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Bobauza Computer Systems Design (312) 595-0400</td>
<td>Business Computer Design Financial System</td>
<td>System/38</td>
<td>Integrated</td>
<td>GL, AP, AR, payroll</td>
<td>Financial reports</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
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<tr>
<td>Capital Project Management</td>
<td>System/38</td>
<td>Integrated</td>
<td>Project management</td>
<td>Financial reports</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>CCC Software, Inc. (518) 687-3170</td>
<td>General Ledger</td>
<td>System/38</td>
<td>GL</td>
<td>Financial reports</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>CODA, Inc. (800) 827-9400</td>
<td>General Ledger</td>
<td>System/38</td>
<td>GL, AP, AR</td>
<td>Financial reports</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Commerce Company, Inc. (303) 827-6400</td>
<td>The CCG General Ledger &amp; Financial Reporting System</td>
<td>System/38</td>
<td>Integrated</td>
<td>GL, budgeting, financial reporting, allocations, reconciliations, consolidations</td>
<td>Financial reports</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

1 Accounts payable * Accounts receivable * General Ledger

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

AUGUST 8, 1988

COMPUTERWORLD
<table>
<thead>
<tr>
<th>COMPANY</th>
<th>PRODUCT</th>
<th>PRICE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accounts Payable &amp; Cash Disbursement System</td>
<td>36, 38, A/3400</td>
<td>NA</td>
</tr>
<tr>
<td>Accounts Receivable &amp; Cash Control System</td>
<td>36, 38, A/3400</td>
<td>NA</td>
</tr>
<tr>
<td>Computer Systems Consultants, Inc.</td>
<td>36, 38, A/3400</td>
<td>NA</td>
</tr>
<tr>
<td>CTS Limited, Inc.</td>
<td>36, 38, A/3400</td>
<td>NA</td>
</tr>
<tr>
<td>Data &amp; Wellness</td>
<td>36, 38, A/3400</td>
<td>NA</td>
</tr>
<tr>
<td>Darcor Data Processing, Inc.</td>
<td>36, 38, A/3400</td>
<td>NA</td>
</tr>
<tr>
<td>Dexel Systems Corp.</td>
<td>36, 38, A/3400</td>
<td>NA</td>
</tr>
<tr>
<td>Dyelex Resources, Inc.</td>
<td>36, 38, A/3400</td>
<td>NA</td>
</tr>
<tr>
<td>EDS 36, 38, A/3400</td>
<td>36, 38, A/3400</td>
<td>NA</td>
</tr>
<tr>
<td>EDS 36, 38, A/3400</td>
<td>36, 38, A/3400</td>
<td>NA</td>
</tr>
<tr>
<td>Executive Technology Data Systems, Inc.</td>
<td>36, 38, A/3400</td>
<td>NA</td>
</tr>
<tr>
<td>Evans Technology Data Systems, Inc.</td>
<td>36, 38, A/3400</td>
<td>NA</td>
</tr>
</tbody>
</table>

**SOFTWARE FOR THE IBM MID-RANGE**

**PRODUCT SPOTLIGHT**

**RUNS ON IBM SYSTEM/36, 38 MODULAR OR INTEGRATED OFFERS USER-DEFINABLE INTERFACES WITH EXTERNAL SPREADSHEETS/DATABASES**

**REPORT FORMATS**

- Menu driven creates comparative standard modules
- Includes a built-in standard report writer
- Produces graphs

**SPECIAL FEATURES**

- Transaction/ageing
- Budget reporting
- 1099s
- Trial balance
- Cash flow
- PC support

**STANDALONE SOFTWARE FOR THE IBM MID-RANGE**

- **Accounts Payable & Cash Disbursement System**
  - Includes a built-in standard report writer
  - Produces graphs
  - NA

**INTEGRATED SOFTWARE FOR THE IBM MID-RANGE**

- **Accounts Payable & Cash Disbursement System**
  - Includes a built-in standard report writer
  - Produces graphs
  - NA

**MODULAR SOFTWARE FOR THE IBM MID-RANGE**

- **Accounts Payable & Cash Disbursement System**
  - Includes a built-in standard report writer
  - Produces graphs
  - NA
SOFTWARE THAT PERFORMS TO YOUR CHOREOGRAPHY.

Our IBM mid-range applications are designed with a unique underlying architecture that permits easy tailoring by users without the use of programmers. Mail this card for a brochure describing JDE's compatibility with IBM's NEW AS/400 series and our incorporation of SAA standards. We'll also include a full-color poster of the ballerina pictured here, suitable for framing.

Currently using:  
- Financial (GL, AP, AR, PA)  
- Anticipating AS/400  
- Oil & Gas  
- Human Resource (Payroll, Personnel)  
- Construction  
- Distribution

Your name:  
Company name:  
Company address:  
City/State/Zip:  
Company phone:  
Title:  

SOFTWARE FOR AS/400™ AVAILABLE TODAY!
Software should perform the way you want it to, not the other way around. That's why at J.D. Edwards we provide "user programmable" software—which can be modified by users without the use of programmers or programming skills.

This tremendous capability starts with development. In building our software we adhere to a rigid design methodology that provides integration, consistency and flexibility across all systems. The result: applications that users can tailor to fit, as their needs grow, without help from programmers.

And now, with the introduction of IBM's new Application System/400 series your System/36 or/38 software can keep growing as your hardware needs expand. As one of IBM's Business Partners, and a participant in IBM's Early Support Program (ESP), J.D. Edwards can deliver dozens of software applications TODAY for your AS/400.

User programmable software. A functionally rich, broad product line. And a growing branch office support team (currently 10 locations), all represent ongoing efforts to ensure that your investment in J.D. Edwards will be a lasting one. For a free brochure about our software for the AS/400, call today or write: J.D. Edwards & Company, 4949 S. Syracuse Street, Denver, Colorado 80237.

800-JDE-9380
In Colorado: 303-773-3712

JDEdwards
SOFTWARE THAT ENDURES
<table>
<thead>
<tr>
<th>COMPANY</th>
<th>PRODUCT</th>
<th>DUNS ON IBM SYSTEM/36, 38 (800) 208-6550</th>
<th>SOFTWARE INTEGRATED</th>
<th>MODULAR OR INTEGRATED</th>
<th>STANDARD MODULES</th>
<th>INCLUDES A BUILT-IN REPORT WRITER</th>
<th>STANDARD TRANSACTIONS</th>
<th>OFFERS USER-DEFINABLE REPORT FORMATS</th>
<th>MENU DRIVEN</th>
<th>ONLINE HELP</th>
<th>COMPARATIVE STATEMENTS</th>
<th>POSSIBILITIES REPORTING</th>
<th>PRODUCES GRAPHS</th>
<th>INTERACTS WITH OTHER SOFTWARE</th>
<th>INTERACTS WITH IBM MID-RANGE</th>
<th>SPECIAL FEATURES</th>
<th>PRICE</th>
</tr>
</thead>
<tbody>
<tr>
<td>IBM</td>
<td>General Ledger</td>
<td>Integrated</td>
<td>GL, AP, AR, fixed assets, financial transactions, budget variance, aging reports, check disbursements, check records, invoice, output, electronic inquiry, hard copy</td>
<td>Yes</td>
<td>Transaction history report, check disbursements, aging report, financial statements, balance sheet</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>PC-based</td>
<td>Up to 10-digit account number</td>
<td>$2,760-$5,000/module</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interaction Software Services, Inc.</td>
<td>Transaction Reporting</td>
<td>Integrated</td>
<td>GL, AP, AR, financial transactions, purchase orders, non-recurring, accounting, budgeting, payroll, cash flow management</td>
<td>Yes</td>
<td>Transaction history report, cash flow management, budgeting, non-recurring transactions, standard cost variance</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>PC-based</td>
<td>Data entry, check disbursement, report, output</td>
<td>$3,000-$7,000/module</td>
<td></td>
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<tr>
<td>Kim Computers, Inc.</td>
<td>Accounting Management Solutions</td>
<td>Modular</td>
<td>GL, AP, AR, fixed assets, reports, non-recurring, accounting, budgeting, payroll</td>
<td>Yes</td>
<td>Financial statements, budget, financial statements, aging reports, standard cost variance</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>PC-based</td>
<td>Data entry, check disbursement, report, output</td>
<td>$5,000-$10,000/module</td>
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<tr>
<td>Financial Reporting</td>
<td>Modular</td>
<td>Data collection, vendor tracking, 1099 reporting</td>
<td>Yes</td>
<td>Financial statements, budget, financial statements, aging reports, standard cost variance</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>N/A</td>
<td>PC-based</td>
<td>Data entry, check disbursement, report, output</td>
<td>$6,000-$10,000/module</td>
<td></td>
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<tr>
<td>Logic International, Inc.</td>
<td>General Ledger</td>
<td>Integrated</td>
<td>GL, AP, AR, fixed assets, financial transactions, budget variance, aging reports, check disbursements, check records, invoice, output, electronic inquiry, hard copy</td>
<td>Yes</td>
<td>Transaction history report, check disbursements, aging report, financial statements, balance sheet</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>PC-based</td>
<td>Data entry, check disbursement, report, output</td>
<td>$7,000-$12,000/module</td>
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<tr>
<td>Morris</td>
<td>Accounts Payable</td>
<td>Modular</td>
<td>GL, AP, AR, fixed assets, financial transactions, budget variance, aging reports, check disbursements, check records, invoice, output, electronic inquiry, hard copy</td>
<td>Yes</td>
<td>Transaction history report, check disbursements, aging report, financial statements, balance sheet</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>N/A</td>
<td>Data entry, check disbursement, report, output</td>
<td>$8,000-$12,000/module</td>
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<td>Naveen</td>
<td>General Ledger</td>
<td>Modular</td>
<td>GL, AP, AR, fixed assets, financial transactions, budget variance, aging reports, check disbursements, check records, invoice, output, electronic inquiry, hard copy</td>
<td>Yes</td>
<td>Transaction history report, check disbursements, aging report, financial statements, balance sheet</td>
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<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>N/A</td>
<td>Data entry, check disbursement, report, output</td>
<td>$9,000-$12,000/module</td>
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<td>Nonprofit</td>
<td>GL, AP, AR, payroll, fixed assets</td>
<td>Integrated</td>
<td>GL, AP, AR, payroll, fixed assets, financial transactions, budget variance, aging reports, check disbursements, check records, invoice, output, electronic inquiry, hard copy</td>
<td>Yes</td>
<td>Transaction history report, check disbursements, aging report, financial statements, balance sheet</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>N/A</td>
<td>Data entry, check disbursement, report, output</td>
<td>$10,000-$15,000/module</td>
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<td>Data entry, check disbursement, report, output</td>
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**PRICE**

**COMPUTERWORLD AUGUST 8, 1988**
THERE IS A BETTER WAY TO MANAGE CICS: CICS MANAGER.

CICS MANAGER Version 2 is the better way, the new approach to CICS management. An approach that helps you avoid CICS crises and meet growing service level demands 24-hours a day, 7-days a week.

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More than a monitor. It's a manager. CICS MANAGER lets you actively manage CICS performance:
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- Informational data helps you find the cause.
- Extensive Action services let you execute effective solutions.

You can tune multiple, even remote, CICS regions from a single terminal. Switching across regions, machines and data centers is as simple as changing the name of the CICS region on your screen. Even novice users can identify and solve problems within a single session.

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Boole & Babbage
International sales and support provided through The European Software Company and a worldwide distribution network.
Users
FROM PAGE 45
marketing/financial analysis pro-
gram built around the govern-
ment reimbursement code. For
diagnostic-related groups, a ma-
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Modern methods
WWOR-TV in Secaucus, N.J., is
typical of the newer IBM mid-
range users. While early users of
IBM’s mid-range machines often
wrote their own software be-
cause they couldn’t find appro-
appropriate computer packages, WWOR relies strictly on off-the-
shell applications.
Under its previous owner, WWOR’s data processing was
handled by its parent company’s DP de-
partment. Under its new
owner, MCA Broadcasting, Inc.,
WWOR suddenly had to handle
its own data processing on a Sys-
tem/38, according to George
Grippo, the station’s manager of
information systems.

To get running quickly, the
station purchased several com-
cernial software packages, in-
cluding payroll, general ledger,
accounts payable and financial
reporting. Next year, the station
intends to add a purchasing sys-
tem.
WWOR and Grippo prefer
commercial packages. “I’m com-
fortable with RFG, but we do
very little programming,” says

Grippo, a television industry
professional with PC expertise
and some familiarity with the
System/36. Most users it represents a giant
leap in computer sophistication.
As a leading element in IBM’s
grand Systems Application Ar-
chitecture design, the new ma-
chine puts the AS/400 user in the
forefront of a major comput-
er industry development.

Welcomes applications
Despite the advanced techno-
logical innovation that IBM has
put into the AS/400, System/36
and 38 users’ primary interest is

Money matters
Accounting packages led the way in a survey of software use at 18,000 System/34, 36 and 38 sites

| Accounts receivable | 61% |
| Accounts payable | 60% |
| General ledger | 55% |
| Payroll | 45% |
| Inventory | 35% |
| Office automation | 20% |
| Manufacturing | 19% |
| Report generator | 15% |
| Communications | 15% |

Percent of sites using each application

AS/400
FROM PAGE 46
ability to clone other systems.
Right now, IBM is only using the
interface to clone its System/36
and 38 environments.
However, if IBM could man-
age to simulate those environ-
ments, there may be little to

Productivity a bonus
Another attraction for develop-
ors is the programming produc-
tivity that the AS/400 offers.
The System/38 has been her-
alded as being a productive pro-
grammer tool.

The AS/400, which contains
more than 1.6 million lines of System/38 operating system
code, is at least 109 times more
productive than the mainframe
environment and possibly 30%
to 90% more productive than the
System/38. The AS/400 provides
the ability to extend that ratio even further through the
use of the program resolu-
tion monitor (PRM).

The FRM, the only real com-
piler on the AS/400, supports
the Machine Interface (MI) lan-
guage, an AS/400 version of as-
sembler more similar to PL/I
and strong for DEC.

Whether the mainframe soft-
ware vendors will leap at the
opportunity is debatable. None of
their few forays into this market
have been notably successful,
but System Software’s Covey
maintains that these vendors will
have no choice but to move ag-
gressively to support the
AS/400.

Within one year, it will be
obvious to even the most die-
hard mainframe advocates that
their companies cannot continue
to prosper without a significant
presence in the AS/400 mar-
ket.**

** Special Features
PRODUCT SPOTLIGHT
SOFTWARE FOR THE IBM MID-RANGE

<table>
<thead>
<tr>
<th>COMPANY</th>
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| Rand System Corp. (212) 331-9077 | Job Costing & Full Accounting
| Financial Management 2000 | 36, 38 Integrated
| IBM As/400 | 36, 38 Integrated
| Software Review Corp. (310) 480-1515 | SRC/85
| Bear Software Systems, Inc. | 36 Integrated
| System Software Associates, Inc. | 36, 38, 40 Integrated
| Terena Computer Services (312) 300-4000 | Term Business Management System/36, 38, 400 Integrated

<table>
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<th>PRODUCT</th>
<th>PRICE RANGE</th>
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<tr>
<td>IBM As/400</td>
<td>$3,000-$30,000</td>
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The dynamics of prototyping

Erron the side of over-management and you have a high-leverage tool at your disposal

BY MARK TEAGAN and LIZ YOUNG

Prototyping is not a dirty word. Yet negative stereotypes, unrealistic expectations and fears of losing project control have given it a bad name.

Even those who say they understand it often underuse or misuse prototyping. With no clear requirements definition, the project’s real objective eventually gets lost. This lack of discipline results in an expensive and tedious prototyping process in which the prototype itself becomes the goal.

But prototyping can be a viable productivity tool when managed like any other aspect of applications development.

From start to finish

Prototyping should be treated as a discrete activity with a defined beginning and end. Further, each phase within an application development effort can be handled as a project.

It doesn’t matter how many phases there are or what they are called. It matters only that the software developers and end users agree — up front — what the phases are, when each will begin and end and what deliverables will be produced. Whether it is part of the conventional system development life cycle or an entirely different life cycle, prototyping should be considered a project.


Under Productivity Management, users can apply the following six principles to projects, in both individual development phases and for the entire development effort:

- Define the job in detail — both in terms of what work must be done and what products must be delivered.
- Get the right people involved. Include the appropriate users, particularly during planning.
- Estimate time and costs. Develop a detailed estimate of each phase of the development process before undertaking that phase. Do not estimate what you do not know; explicitly address all assumptions.
- Use the 80-hour rule to break the job down into tasks that require no more than 80 hours to complete. Ensure that each task results in a tangible product.
- Establish a formal procedure for changes and ensure that all parties agree to it in advance.
- Establish system acceptance criteria so that acceptance is a gradual process rather than a one-time event at the end.

Define the job in detail

People in the field agree that prototyping is inappropriate for batch applications and those that are highly algorithmic. They disagree, especially regarding low-structure applications, about what other types of applications prototyping should be considered a project.

Teagan is marketing manager for Keane, Inc., a national application software company headquartered in Boston and specializing in project management, technical skills and database expertise. Young is manager of Keane’s management consulting group.

The answer is: It depends. It depends on things like the status of your database and the development tools you have available.

If, for example, you are developing a low-structure application like an ad hoc inquiry system and you have no database in place, prototyping is probably inappropriate since developing a usable database will constitute a good portion of the effort.

If, however, you have a good database in place, prototyping may be the best way to determine end-user access.

There is, of course, no rule against prototyping part of an application and using the conventional systems development life cycle on the rest.

Defining the job in detail means agreeing on which one of two basic kinds of prototypes will be built:

- Throwaways help users and project developers define systems requirements. These usually become part of the conventional systems development life cycle, replacing written documents with operating models.
- Prototypes ultimately become the final system or part of it. These are normally built with advanced tools and can require a life cycle that differs significantly from the conventional one.

If you agree on a throwaway prototype, users and developers must also concur on when the prototype phase will end, how it will integrate into the next phase of the systems development life cycle and precisely what level of detail will be delivered.

That is, they must “bound” it. And to ensure that prototyping doesn’t get out of control, users and developers should also agree on when walk-throughs will occur and on the number of iterations to be delivered.

If the prototype is to be one that will either evolve into the final system or become part of it, you must agree on what development methodology you will use and ensure that both users and developers understand what is to be delivered at the end of each phase.

Prototyping a job in detail goes a long way toward allaying user concerns. Take, for example, the systems implementation plans of a large Eastern bank. A new system was to replace one whose subsystem generated 85 different reports.

Because this output represented a security blanket to its users, they wanted all 85 reports incorporated into the new system. Project developers decided prototyping would be useful in the detailed planning and initial implementation of the new system, and all parties agreed.

In this example, prototyping ultimately became part of the conventional systems development life cycle and precisely what level of detail was delivered.

Fear of losing project control

- How to get end users committed enough
- The 80-hour rule
system — even though the analysts estimated it would take 12 man-years to do so.

The analysts estimated that they could cut this effort in half using a relational database management system with an on-line query facility and still provide users with all the information contained in the 85 reports. The users remained skeptical.

Keeping fears at bay

The developers used prototyping to address users’ fears. Relational databases were loaded, actual queries were handled on the prototype system and users got the dramatic proof they needed that this approach would, in fact, meet their information needs.

Perhaps the most important aspect of getting the right people involved is gaining the visible support of a key management person.

Needing to be well versed in office politics, this manager must understand whose jobs will be affected — and how — by new system implementation. The manager must have the authority to make the necessary decisions and the influence to resolve user differences that invariably arise.

If such issues are resolved, prototyping can be a highly effective tool for involving the users, far superior to the use of written documents.

The system developers and users can function as a team to create the best possible system. This kind of give-and-take between knowledgeable developers and involved users ensures realistic expectations from both factions.

Given the stereotype that prototyping involves little more than playing with screen formats, it is easy to underestimate the time users must devote to analysis.

Users’ involvement in the early stages will be frequent, and they will have to make decisions on which further iterations are based.

To avoid long turnaround times and the unavailability of decision makers, system developers must involve users on their inclination and ability to participate in an intensive process. Developers need to impress upon users the importance of such involvement.

For example, at a large manufacturer, a development team used prototyping to raise user expectations. The users had become convinced, after several failed attempts, that a multifacility labor scheduling system could not be automated because of many seemingly conflicting needs.

A user team was composed of members from key areas in the company and charged with developing screen layouts that would meet the needs of all the firm’s plants and operational areas.

Using a screen generator/code generator tool, the team, with the guidance of the developers, discovered that the company’s many needs could be accommodated in three screens. When the result was shown to end users at the plants, they too became enthusiastic.

Estimate time and costs

As each phase is completed, the result can be translated into an accurate estimate for the entire next phase. It is best to agree to a quick “broad” prototype that then becomes a baseline against which an estimate for the first phase can then be made. This is in perfect keeping with the notion that prototyping works best when the initial model is developed quickly and then updated frequently.

Prototyping does not eliminate the need to evaluate the uncertainties and intangibles that occur in any project environment.

As long as this uncertainty is explicitly addressed, prototyping will normally be a more effective tool than the alternative in reducing the uncertainty in controllable segments. But risk factors such as large project size, complexity of the

A COMMON FEAR about prototyping is that it too easily becomes a license to violate standards. Addressing assumptions in writing provides a mechanism for preventing this problem.

For some VAX-cluster users, good old “vanilla-like” mass storage is an acceptable solution. But those users with a taste for optimum performance must have the freedom to choose.

Which is precisely the case with Emulex’s SMDI (SMD-Interconnect) subsystems. SMDI lets you expand storage capacity

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SMDI works with the HSC50/70 so that fast, high-capacity industry standard SMD-E drives appear as RA drives to the host. It’s multiple gigabytes of storage in space-saving packaging.
This approach, along with explicitly addressing all assumptions, helps redress the realistic fears that many project managers have about prototyping's getting out of control.

The 80-hour rule provides the project manager an overview of the magnitude of the prototyping effort. It is used not only in scheduling and estimating but also in assigning work, tracking progress and facilitating user communications. By imposing many and frequent deadlines from the very beginning, project drift can be avoided. Finally, effective use of the 80-hour rule virtually guarantees that the other principles of Productivity Management are implemented.

Changing procedure
While accommodating change is part of prototyping's strength, it can also cause some project managers to fear loss of control. This fear, often legitimate, can be addressed by controlling change during the implementation of prototyped projects, just as it is during the system development life cycle.

All change requests should be submitted in writing. Each should then be evaluated by a designated person who conducts a cost/benefit analysis. Because analysis itself can be expensive, its costs should be allocated to a change budget that is agreed to and established before the project starts. No change is implemented unless it is approved in writing.

The spirit of such change control should also be observed during prototyping. If, for example, the end user wants to alter the proposed system, this number was previously agreed on, then the changes should be submitted and approved in writing. Their costs should be allocated in a way explicitly defined in writing.

Establish written criteria
System acceptance criteria should be established before coding begins. This has often been difficult with the conventional system development life cycle because users have understandably had trouble assimilating the precise ramifications of requirements and design documents.

Prototyping does much to remedy this problem. By seeing screen prints, filled forms, different screen layouts, system flow and file structures at the start, users can more readily visualize what they will get.

Since each phase is also a project, Productivity Management advocates that acceptance criteria be established for each phase before it is undertaken. This is most difficult for requirements definition, whether prototype or done conventionally.

Again, build a quick "broad" prototype that becomes the baseline against which the schedules and estimates mentioned earlier can be developed. It also serves as the yardstick by which users and system developers establish system acceptance criteria.

For example, at a Fortune 500 manufacturing company, users found it so difficult to formulate acceptance criteria that they tried to get the system analysts to write the criteria for drive.

The analysts wisely chose to define the job in detail by prototyping on-line capabilities of the proposed system.

This not only enabled end users to visualize the flow and dynamics of the transactions but also provided a vehicle for developing acceptance criteria.

In fact, screen prints, filled out with user-provided data, became a deliverable product of the prototyping phase and a major input for the unit test phase.

Management beware
Applying a formal project management approach to prototyping may appear to defeat the purpose of this underused productivity tool. But prototyping remains underused because of concerns about controlling it, and these concerns arise largely because it has often not been managed.

Particularly for project teams using prototyping the first time, it is best to err on the side of overmanagement.

In addition, strong management need not be incompatible with the unstructured, give-and-take nature of the prototyping sessions between users and system developers. The role of project management is simply to assure these sessions are part of a productive process.
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TAKing Charge
James Connolly

Let's get together, now

Systems integration is one of those buzzwords: words gaining strength as computer vendors talk more about offering "solutions" — a term that will not be used for the remainder of this article, rather than products and as MIS managers cast new roles for themselves.

More and more MIS managers are stepping back to get a broader view of their companies' information needs. Very often, what they see is a need to tie together a variety of systems, not just in the physical sense through networks but in an organizational way with an eye on how information flows from person to person and department to department.

It is clear that MIS executives recognize the value of a unified information management and systems approach — be it a centralized or decentralized strategy. Ask MIS managers about their greatest concerns and they will usually cite challenges such as multiprocessor databases, connectivity and getting people to talk with each other.

Of course, they also cite the problem of doing more work with fewer people. He said professional MIS staffs now average 600 people, a decrease of 1,600 from last year. He translated that reduction to annual savings of $2 million for each company.

New firms
"Staff reductions were achieved primarily through attrition and hiring freezes. We know of very few instances of outright layoffs and firings, but we do know that when an employee leaves, the position may stay vacant for longer than normal," Tamblyn said.

Perlin, which serves 47 New York-area companies, found demand slowing for MIS staff but strong for telecommunications specialists.

"One of the reasons we saw turnover slowing down a bit may be what happened in October. People may be reluctant to leave their jobs at this point," Perlin staff member Peter Tamblyn said.

Tamblyn also cited an emerging trend toward smaller professional MIS staffs, with companies trying to accomplish more work with fewer people. He said professional MIS staffs now average 600 people, compared with 650 a year ago, and he translated that reduction to annual savings of $2 million for each company.

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For a free brochure, or to arrange for a detailed discussion about the Application System/400, call 1-800-IBM-2468, ext. 82.
Melting pot continues from page 57

Since Emhart is an aggregate of small to medium-size companies, the computer systems used by these firms tend to be small to medium-sizes as well. Dandro rattles off a list of Emhart's vendors: IBM, Digital Equipment Corp., Unisys Corp. (both Burroughs- and Sperry-type systems), NCR Corp. and Honeywell, Inc., to name a few.

Emhart's only IBM mainframe is a 3984 Model Q, running MVS at the corporate data center in McLean, Va. The mainframe handles corporate recordkeeping but also serves as a time-sharing host for outside clients.

The computers that support Emhart's Hartford corporate headquarters typify the firm's attitude toward information systems: that is, to have enough to increase productivity but not more than is needed. The offices are served by a cluster of three DEC VAXes. An Ethernet local-area network connects 125 terminals and 60 to 70 personal computers to the host cluster.

Within reason

Dandro says he tries to spot places in which investments in MIS can be made but says he is wary of getting carried away. A few years ago, to speed financial reporting, Dandro sent word to all units worldwide to buy an IBM or compatible PC to file monthly financial results.

"The biggest challenge was to get people to use the PC," Dandro says. But once they did, users began manipulating data and turning their financial results inside out to improve operations, he says. At that time, the PC was the only computing "standard" shared by all Emhart units.

The mandatory review process for each unit's computer purchases often turns up opportunities for volume procurements as each division's needs are pooled to create corporate buying muscle. "We try to find ways to leverage our pow- er against vendors," Dandro says.

Carrying the principle a step further, Dandro has joined with other firms in a communications systems purchasing consortium called American Business Network, worldwide to buy an IBM or compatible PC.

Dandro brought his leveraging skills to Emhart from the MIS director's position at Borg-Warnor Co. in Chicago. He joined Emhart after his predecessor retired seven years ago. At the time, there was no burning MIS problem to solve, just the need to prepare an evolutionary path to the future.

However, Emhart underwent a cultural change two years ago, transforming itself from a quiet but profitable older Yankee company to an aggressive, growth-oriented concern. The change coincided with the accession of Peter Scott to the chief executive officer's position, his mandate for new growth coming straight from Emhart's board of directors.

One year ago, Scott asked for an overview of the firm's information systems. To assist in this, Emhart hired the Index Group, Inc. in Cambridge, Mass. The group has so far recommended that Emhart's information systems be tied more closely to its business strategy. The net result will be to establish a program in MIS that, while not extravagant, does not overlook the opportunity to invest where strategic advantage can be gained.

A large part of Dandro's duties will be to integrate diverse systems. "We want to integrate rather than convert," Dandro says.

In the integration process, constructing a corporate database is a key ambition. A catalyst for this could be personal computers. Intelligence on the desktop has put important data in every office worldwide. The data must be organized, transmitted and used.

"Before, we used to have just mainframes and minis," Dandro says. "Now, we have micros, mainframes and minis. There are exciting opportunities to integrate."

Connolly continues from page 57

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AUGUST 8, 1988
Those go-go software mergers

BY NELL MARGOLIS CW STAFF

FORT LEE, N.J. — Let's Make a Deal continues to be the name of the game in software and services during the first six months of this year, according to the recently released mid-year ADAPSO/Broadview mergers and acquisitions report.

Issued by Broadview Associates, an investment banking firm based here, the report showed corporate combinations going three ways: bigger, better and everywhere.

"If there is any softness in this market, we're certainly not seeing it," said Broadview partner Gilbert Mintz. "What have driven mergers and continue to drive them is valid strategic decisions to position companies with regard to new markets."

Eleven deals were consummated for $100 million or more in the first six months of this year, according to Broadway — more than in all of 1987. Of those, Dun & Bradstreet Corp.'s $1.6 billion buy-out of health care market information purveyor IMS International logged in as the second largest deals and software acquisition ever, exceeded only by the 1984 General Motors Corp.-Electronic Data Systems Corp. deal.

The total number of deals was up 39% from 137 in the first half of 1987 to 190 between this past January and June.

The trend toward internationalization noted in past reports continued apace, according to Broadway partner Charles Federman. While foreign acquirers still have the exchange rate advantage, he noted, U.S. companies are also showing interest in acquiring their way into worldwide markets.

One new trend noted by Broadway is a quickening of interest in professional services companies. Software products companies still accounted for the lion's share of the action — 57% of the total number of deals — but this figure dropped from last year's 67% mid-year figure. In contrast, acquisitions of professional service firms jumped from 12% to 21% at this year's mid-year count.

Mintz attributed the jump to corporate buyers who are realizing that end users want services to complement products and that the offer of one-stop shopping is a draw not to be over-looked. Among professional services firms, those most likely to be targeted by the acquirers are "basic shops with good geographical spread and strong marketing capabilities and specialty shops that can offer services in areas such as banking or brokerage," he said.

Fibronics seeks elusive profit in fiber optics

BY JAMES DALLY CW STAFF

HYANNIS, Mass. — Fibronics International, Inc. President John Hale must sometimes feel like the first guest to arrive at the party of the century. Invitations have been sent and attendance promised, but an end date does not start until the crowd arrives.

With the emerging Fiber Distributed Data Interface (FDDI) fiber-optic standard springing toward acceptance and research firms predicting a $3 billion fiber market by 1992, the industry's move toward fiber-optic communications seems inevitable.

But despite the hoopla from those who see a pot of gold at the end of fiber's rainbow, 11-year-old Fibronics still cannot shake one simple fact: It has not made an annual profit in five quarters. A $2 million loss on $36.5 million in 1987. Overtime was reduced. And Fibronics' work force was cut by 81 employees to 420.

One cash absorber, however, remained untouched. "A large amount of R&D money and talent was spent on FDDI development, but it was not money that was thrown away," Hale said. "We're basing a whole line of products on those investments."

Certainly, Fibronics has done its share of FDDI trailblazing. Its System Finex network was one of the first to implement the still-unfinished FDDI standard. Still, the company will not let its future hang by a fiber-optic thread. "In order to invest in FDDI, we've got to be profitable from other product lines," Hale said.

"Our greatest concern is federal monies to make up "a good part" of future revenue."
Shift at HP
Hewlett-Packard Co.
Executive Vice-President and Chief Operating Officer Dean O. Morton refocused his responsibilities solely on HP's computer business in a management shift last week. Morton had been responsible for test and measurement products as well; those functions will now report directly to HP President John A. Young.

Parodyne layoffs
Parodyne Corp., still struggling to regain profitability, will reduce its worldwide workforce by 10% through layoffs and other measures. About 300 jobs will be eliminated at the Largo, Fla., data communications vendor.

On-Line quarterly loss
As expected, On-Line Software International, Inc. announced a hefty fourth-quarter loss that stripped its earnings for the year to $700,000, compared with $4.9 million in fiscal 1987. Annual revenue climbed 29%, to $81.9 million. On-Line lost $4 million in the quarter ended May 31 on sales that dropped 12% from year-earlier levels to $18.8 million. Year-earlier profit in the fourth quarter was $1.7 million.

CDC gets credit
For the first time since surviving its fiscal crisis in 1985 and 86, Control Data Corp. has established a credit line with a group of U.S. banks. Bank of America is the lead bank of nine institutions providing a $225 million credit facility.

Goal to buy Altai
Software suppliers Goal Systems International, Inc. and Altai, Inc. have signed a letter of intent for the merger of Altai into Goal. Under the $14 million agreement, Columbus, Ohio-based Goal will pay $5.75 for each outstanding share of Altai stock.
more micros. Maintenance vendors are for the most part safe, since they operate under ongoing annual contracts that bridge the freeze. However, since the freeze does prohibit the placement of new maintenance contracts, a maintenance vendor could be hurt for those contracts coming up for renewal during the freeze. For most vendors, the freeze will be at worst a dry spell, a slight dip in expected sales, if noticed at all. For others, the freeze will be a lot worse, a drought. It's just a matter of where you are standing when the random arrow strikes.

Make is a partner at the law firm of Cohen & White in Washington, D.C., specializing in the federal procurement of DP goods and services.

**Roml**

*FROM PAGE 61*

changes, but the handwriting has been on the wall for a long time."

The manufacturing moves follow the March 1987 absorption of the entire Rolm sales force into the IBM sales group. Rolm insiders said the next to be merged will probably be marketing and finance, completing the integration of the company into the IBM fold.

Under the new structure, instead of reporting to Rolm headquarters in Santa Clara, the Colorado Springs manufacturing site for Rolm computerized branch exchange digital switch cards will report directly to the IBM Systems Technology Division in Charlotte, N.C.

The Colorado Springs manufacturing for Redwood, a small switch, will move over to an IBM plant in San Jose, Calif. Also moving to the San Jose plant will be some 700 manufacturing workers who worked at the Rolm facility in Santa Clara.

Rolm's Austin, Texas, site will report to the IBM Entry Systems Division, but development will remain in Santa Clara. By losing its divisional status, Rolm has more of a supporting role in the IBM picture. Carlsbad predicted that Rolm will eventually become another research and development lab.

While IBM announced last month it is consolidating its north-central and southwest marketing divisions, an IBM spokesman said the news has no impact on Rolm.

**Lives and times**

Rolm Corp., founded in 1969, was one of the success stories of Silicon Valley as the maker of the first digital private branch exchange. The letters in the company moniker are the first initials of the last names of the four founders.

Today, two founders remain with Rolm while the other two are pursuing their own interests.

Gene Richeson: The R in the equation, Richeson is a full-time volunteer and cofounder of the non-profit nationwide agency Beyond War. The group, which believes war is obsolete, is described as an educational foundation that promotes goodwill and resolution without war.

Kenneth Oshman: The former president, who departed in 1986, is a personal investor and will be teaching undergraduate classes in business management at the University of California at Berkeley in the fall.

Walter Loewenstern Jr.: Loewenstern served as Rolm's vice-president for administration and personnel. Today, he is employed at what is now the Rolm Systems division as a part-time company consultant.

As director of Rolm Systems, he advises the company on technical issues.

**KATHY CHIN LEONG**

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C programmers need not apply

Demand for the language hot in software development, cooler in MIS

BY ALAN RADDING PRE-AUG

In the world of computer software product development, C language is a hot skill for programmers. It is the overwhelming choice in development of personal computer- and Unix-based systems, making C programmers a highly sought-after breed.

"Never before have we had such a clearly dominant language in the development area," says Robert Kleven, president of Robert Kleven & Co., a Lexington, Mass.-based high-technology recruiter.

Corporate MIS departments, however, have not developed a similar hunger for C language programmers and continue to rely on traditional programming languages. "It is my understanding that the demand for C programmers in the typical corporate MIS department is slim to none. The dominant language is still Cobol," Kleven says.

Beyond the borders

Software vendors cannot find enough C programmers to fill their needs and have begun to search worldwide, says Lee Silver, president of L. A. Silver Associates, an international high-technology recruiting firm based in Framingham, Mass. Silver is heading to London in an effort to find 140 C/Unix programmers for a major vendor. "I won't be able to find all of them offshore, but I will find some," Silver says.

But Silver says he does not expect the insatiable demand for C programmers to last long. "It is a temporary thing. The schools are pushing out C programmers. The companies themselves are gearing up. I think the shortage will last two to three years," he says.

Gary Weischselbaum, manager of software recruiting at New Boston Associates in Woburn, Mass., is advertising for C programmers for his software development clients. "While Weischselbaum is beating the bushes for C-experts, his colleague, Dennis Travers, New Boston's manager of MIS recruitment, finds demand for C programmers within MIS virtually nonexistent. "Every now and then we get a request for C. Maybe somebody bought a super PC and wants to put something with Unix on it," Travers says. He cannot recall the last time he placed a C programmer in MIS.

Like Kleven, Travers continues to find the demand from MIS to be primarily for Cobol and CICS programmers. As MIS

"It's a temporary thing. The industry moves onto the next hot language is a hot skill for programmers. It is the overwhelming choice in development of personal computer- and Unix-based systems, making C programmers a highly sought-after breed.

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“We recently embarked on two major recruitment campaigns for systems programmers. First, we need to support our development of Unix*-related products and services. Second, we seek systems programmers to help us capitalize on our lead in fourth generation language (4GL) technology. “We want programmers who are well qualified, aggressive and systems motivated. The market for programmers with Unix kernel and shell development experience is extremely competitive. Just as it is for professionals with backgrounds in C programming, relational database and 1100 systems technology.

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Cesar Namba is Assistant Vice President for MIS Recruitment at Imperial Corporation of America (ICA) in San Diego, California. ICA is a financial services organization that has savings and mortgage institutions in 20 states.

For Cesar, filling important MIS/DP positions is the name of the game. Recently, ICA embarked upon a change in part of its corporate technology, and that meant that Cesar had to go to work finding qualified personnel. And for reaching the best possible candidates, he turned to Computerworld.

"Our goal in recruitment advertising is to do several things. Naturally, we want to fill vacant positions, and if we do it right away, that’s great. But there’s much more to it. We want our ads to create awareness of ICA as a company that hires MIS/DP professionals and we want to make contacts for future positions."

"Computerworld addresses all that we want our advertising to accomplish. First of all, it’s such a well-read publication; everyone I deal with in the world of MIS reads it. Computerworld is our top choice for reaching qualified candidates — in fact, we initially felt it would work even better for us than local newspapers.

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Dave Grinnell is Vice President and Advertising Director of Source Services Corporation, the parent company of Source Edp, the world’s largest recruiting firm that specializes in the computer profession. Source Edp has been an advertiser in Computerworld — almost from inception of the publication. Here’s why:

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Used equipment: Caveat emptor
Protecting yourself in areas of maintenance, reliability especially crucial

BY DAVID GABEL
SPECIAL TO CW

Roy C. Davis, executive director of the National Association of Computer Dealers (NACD), knows about the hazards of buying used computer peripherals. Take one of his line printers — please. "I could probably sell it for top dollar," Davis says, "but I know it will fail after 30 minutes."

Reliability is a major concern in purchasing used computer equipment, and the question is particularly germane in the case of peripherals. If anything breaks in a system, chances are it will be a peripheral that includes relays, drive motors, mechanical components as well as solid-state innards. It is not likely, however, that the person responsible for buying computer equipment can tell if a printer, disk drive or other electromechanical peripheral will operate properly, even for half an hour. Unlike a used car, there are few obvious indicators that the equipment is in good condition or ready for the junkyard. Fortunately, making a safe purchase is a relatively simple matter. "It largely depends on the dealer and the agreement for purchase," says Lee Kroon, editor in chief at Computer Economics, Inc. in Carlsbad, Calif., publisher of a series of newsletters on the economics of running a data center. "You have to get a reputable dealer who belongs to an association with ethical standards," Kroon says.

Let's make a deal
One of the largest such associations is the Computer Dealers and Lessors Association (CDLA) based in Washington, D.C., whose members account for about 80% of the market for used and leased equipment, according to Ned Livornese, the director. "We have a code of ethics we must adhere to," he says. "There are other similar organizations as well."

The other organizations include the American Society of Computer Dealers, also located in Washington, D.C., and the Digital Dealers Association (DDA), based in Chelsea, Mich. The CDLA's Code of Professional Conduct and Practices does not delve into standards of reliability. It does call on members to "follow through and complete any agreement made verbally or otherwise to any CDLA member, prospect or client" and to honor agreements as expeditiously as possible.

Doing business with a trade association member, therefore, may be only one step toward assuring that used equipment is reliable. Buyers must see to it that the purchase agreement that a dealer is committed to uphold contains necessary safeguards concerning reliability and maintainability.

Buyers of used IBM equipment can get help here from the 1956 consent decree that opened up the computer market to competition, including competition from dealers of used equipment. Provisions of the decree require IBM to provide certificates of maintainability on equipment that IBM has maintained. The certificate, known as a Maintenance Acceptability Qualification (MAQ) letter, is to be available for issue with the equipment when it is sold.

Other computer makers, such as Digital Equipment Corp., Unisys Corp. and AT&T, use similar instruments to ensure the buyer that the equipment will be kept running under a qualified maintenance plan.

In the event that equipment has not been maintained by its vendor, the vendor may charge a new owner to inspect the equipment — and perhaps do repairs — before he will issue an MAQ or equivalent certificate. Charges for the test inspection and any necessary repairs must be figured into the cost of a purchase.

Coming to terms
There are alternatives to securing transfer of the manufacturer's maintenance, such as arranging for maintenance by another party, the CDLA's Livornese notes.

"Either way, he says, the eligibility for maintenance should be spelled out in the purchase agreement. "You need a guarantee that the equipment will be accepted for maintenance by somebody, We strongly advocate that our members provide that. The buyer should ask for it in the contract."

As another alternative, a buyer might be willing to pay a lower price for equipment not covered by a maintenance certificate if he has his own in-house maintenance staff. The need for in-house maintenance, too, should be investigated in advance and taken into account in the purchase contract — before the buyer finds that the used equipment that was going to save him a lot of money does nothing but cost maintenance dollars.

An assurance of maintenance does not mean the equipment will run properly when it is turned on, but it does help ensure that the equipment will be fixed if it does not work.

The buyer should work out other potential glitches that he might hold the dealer directly accountable for, such as a failure of the equipment to work at all. Again, such warranty issues should be taken into account during negotiations. "Get all worked out up front and in writing," the NACD's Davis says. "You need the opportunity to know it works."

Gabel is a free-lance writer and former data center manager based in Newport, N.Y.

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The BoCoEx Index
Closing prices report for the week ending July 29, 1988

<table>
<thead>
<tr>
<th>Product</th>
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<th>Recent high</th>
<th>Recent low</th>
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<td>$1,550</td>
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An IDG Communications Publication
Computerworld Stock Trading Summary

Closing prices Wednesday, August 3, 1988

**Communications and Network Services**

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<thead>
<tr>
<th>Company</th>
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<th>Change</th>
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<td>O AT&amp;T Corp.</td>
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<td>P Analog Devices Co.</td>
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<td>T BellSouth Inc.</td>
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<td>S Amaturo Corp.</td>
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**Software & DP Services**

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<tr>
<td>V Alliance Computer Syst.</td>
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**To and fro**

Early gains fade away as summer doldrums hit market

The lazy hazy days of August wave their spell on Wall Street last week as computer issues downsized and the Dow Jones industrial average wandered up, then headed back down late in the week to erase earlier gains. Microsoft Corp., was among the hardest hit, its issues sinking after analysts expressed concern that the software giant's profit level will continue to shrink. Microsoft stock finished Thursday's close at $45, down four points from a week earlier.

In other action for the four days of trading, Digital Equipment Corp. fell 2% points to 103%; AMDahl Corp. dropped 2.5% points to 9774 despite stepping up its price war with IBM, with the announcement of price cuts on its mainframes; IBM slipped 1% points to 124%; NCR Corp. was off one point to 58%; and Hewlett-Packard Co. fell one point to 58%. Gainers included Sun Microsystems, Inc., which rose 1% points to 38%, after releasing a soaring earnings report; 3Com Corp., up 1% points to 38%, and Lotus Development Corp., up 1% points to 21%; Novell, Inc., up 1% of a point to 26%; Control Data Corp., up 1% of a point to 33%; and Ashton-Tate Corp., up 1% to 23%.
Hackers
FROM PAGE 1
available for not conducting an investigation. [U.S. Department of Justice] officials said that it was probably just a kid, and there would be no prosecution even if we did find him," he said.

The Justice Department and the Federal Bureau of Investigation would not comment on the case.

"I wrote an autopsy of the case," Christy said. "I call it an autopsy because the victim died and the murderer got his gun back."

Computer security experts and computer law specialists say that the laws involving theft of data or simply breaking into a system and browsing data need to be more clearly defined.

More than law
But they all agree that it is not just an issue of law. In fact, Christy listed a dozen laws that the agencies knew were being violated. "The best laws in the world are not going to do any good. It is not a legal problem," said Peter Neumann, a computer security expert at SRI International in Menlo Park, Calif.

"You need laws, ethics, values, and the probability and better computer systems," Neumann said. "This person was targeting military organizations and looking for key words you'd associate with someone doing espionage. Here was somebody whose interests were not [limited to] playing games," Stoll said. Stoll and dozens of volunteers mounted a 20-day attack on a server of about 450 sensitive computers, using computer network configuration tools and Lawrence Berkeley Laboratory — primarily Advanced Research Projects Agency Network, Milnet and Internet services. Hess "successfully" broke into

Christy said communications between law enforcement by this time also included the U.S. Department of Energy, Lawrence Berkeley Laboratory's "Firewall" National Computer Security Center; and all countries involved in the trace was a VMS-based server. We instead of altering information, he printed out as much information as he could into his home system.

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A lesson learned
"He read an autopsy of the case," Christy said. "We put together a network of people in the FBI who are interested in it, but they're not in high places. Other agencies, like the Department of Justice, are just starting to understand it."

While such an enforcement network would be helpful, the network would depend on the intent to defraud the government be proved.

Another reason that laws and enforcement agencies cannot depend on the network would be helpful, the network would depend on the intent to defraud the government be proved.

"There are lots of patterns where people come in and do something nasty and get right out again," Neumann said. "You'd have a hell of a time getting a conviction there." Untied until laws, enforcement and social policy catch up with the Internet. Stoll then baited a trap by creating fake directories he thought Hess would take time to peruse. He named one of them Hess "SDI Network." Hess "spent two hours copying this information into his home computer. In two hours, we were able to finish the trace, and we were able to determine precisely who he was," Stoll said.

Apple--DEC
FROM PAGE 1

to address user complaints about incompatible implementations, superficial access and loss-than-smooth connectivity. Users have been asking Apple to take the lead in these areas.

Optimistic outlook
Although the DEC/Apple alliance has been greeted skepticaly by the industry, Roy Davis, an operations manager at Hughes Aircraft Co., in Long Beach, Calif., said he is optimistic. "I think it's very important to a company like ours that Apple and DEC will provide the basic infrastructure in the useful way. The sooner they get it together, the better for the industry," Davis said.

Davis' installation includes about 7,000 Macintoshes and hundreds of VAXs.

"I'm interested in the ability to move graphics and text between systems as well as being able to manage all his Appletalk networks from one centrally located VAX.

In the announcement this week, analysts said the companies will present the following:

• Appletalk for VMS, which will provide Mac programmers with a Mac interface to VAX communications without having to learn DEC system peculiarities. Companies using the Macintosh as a VAX front end have previously had to develop their own programs to facilitate that configuration.

• Specifications that will allow Appletalk File Protocol (AFP)-based applications to utilize a VAX system as a network server.

"This implementation of AFP Server on a VAX VMS system allows the user to make use of larger VAX disk resources," the vendors claimed in a program summary distributed to analysts. They also said the AFP Server will support VMS security mechanisms and provide a growth path from a Mac-based server to a VMS-based server.

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Apple will provide file exchange tools for Mac users with access to distributed SQL and VAX-based applications. The Macintosh, Green said that although his students like the new features of Mac-based applications, "they would have to be aware of their role in making it ready missed a July ship date, and further delays could hurt its relationships with hungry users and a skeptical Wall Street.

"(The database expert claimed that) Dbase IV is being slowed because Ashton-Tate developers will not leave well enough alone. Ashton-Tate seems to be spending too much time on the finer points of implementing useful features such as interactive editing and browsing of files, said David Kalman, editor-in-chief of Data Based Adviser, a database magazine in San Diego.

"Test and test again"
"Every time they decide to do something new, they extend the testing cycle and as a result, they extend the shipping date," Kalman said. Kalman, who put Dbase IV beta code through a regimen of tests, noted that a delayed ship date is less troubling than releasing a problematic application.

Adam Green, a Dbase author and lecturer, said Ashton-Tate will have to ship some form of Dbase IV by the end of next month to get the product in customers' hands after two years without a Dbase upgrade.

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BY JULIE PITTA
CWF STAFF

AUGUST 8, 1988

MOUNTAIN VIEW, Calif.—More than three months after its introduction, Sun Micro-

accessory chips has slowed shipments, according to sources close to the company. Most shipments of 386I workstations have gone to OEMS and third-party software developers, few of which are from the MS-DOS world. Sun officials said they are working to get the system end users for beta testing.

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Third-generation languages

One of the more graphic characteristics about the use of computer technology is the widely varying use of languages relative to size and brand of hardware platform, according to figures compiled by Computer Intelligence.

In many cases, the predominating language on a certain class of machines reflects the community in which a line of machines first became well established. For instance, Cobol predominates at 81% of IBM mainframe sites, reflecting its usefulness as a general-purpose business language and the mainframe’s dominance as a general-purpose business processor.

In contrast, Cobol is used at only 14% of Digital Equipment Corp. VAX sites. The VAX and its predecessor, the PDP series, got their start in the scientific and engineering community, in which the language of choice has always been Fortran.

In a similar vein, IBM’s midrange machines have always been popular with the small-business community and frequently function as the central processor for a quasi-independent unit of a larger corporation. With limited MIS staffs, these organizations overwhelmingly prefer the easy-to-learn RPG-II and III languages, according to Computer Intelligence.

As a result, RPG-II and III are the primary languages at 92% of IBM System/34, 36 and 38 sites. These machines show the narrowest range of language use. Cobol, which might be used for more complicated business applications at these sites, is the runner-up, being the primary language at only 7% of the sites.

The VAX shows the widest range of language use. The C language, for example, is little used on the mainframe. IBM does not offer a C compiler yet for the mainframe, although third-party suppliers do. But C trails behind Fortran and Cobol on the VAX, predominating at 13% of the sites.

DEC’s proprietary language, Dibol, a Cobol look-alike, has enjoyed slender success on VAXs, similar to IBM’s proprietary language, PL/I. Dibol is the primary language at only 3% of VAX sites, and PL/I is used at 5% of mainframe sites. These differences could be further enhanced when considering personal computer languages. Basic, C and Pascal would play larger roles on that platform than on other machines.

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