Banyan to push more open Vines

Ambitious plans aim to counter similar Novell tack

By Elisabeth Horwitt

Banyan Systems, Inc. will deliver throughout 1994 on last year's promises to make its Vines network operating system and service platforms more open and scalable as well as easier to use and administer, a company executive said last week.

Meeting these commitments is crucial if Banyan is to keep a technological jump or two in front of archrival Novell, Inc. The network operating system giant's 1994 plans include enhancements to its NetWare Directory Services to bring them more on par with Banyan's StreetTalk global directory and a port of NetWare to RISC-based Unix platforms [CW, Dec. 6 and Dec. 27].

Smother for users

Banyan's 1994 deliveries will include porting Vines to different Unix platforms, offering graphical user interfaces for its Vines administration tools and providing more consistency across various Vines platforms in the way users initiate basic services such as log-on and messaging, according to Bill Johnson, Banyan's vice president of corporate business development.

For example, starting this quarter, Banyan will start shipping promised implementations on Hewlett-Packard Co., IBM and Sun Microsystems.

By Stuart J. Johnston and Ed Scannell

32-bit operating systems

Cold wind blows thru Chicago

By Michael Fitzgerald

Intel Corp. last week outlined an aggressive product and pricing push for 1994 that includes a new processor and lower prices on Pentium systems by year's end. This push means significantly faster PCs at current price points, challenging RISC PC vendors and perhaps encouraging a move to Intel's new code-named Cairo.

These predictions are based in part on Microsoft's past delivery record, the learning curve required to develop for a new graphical user interface, the lack of 32-bit development tools for Windows 4.0 and briefings from Microsoft.

For example, while Microsoft officials have said that many commercial developers are expected to join the company on stage for the official rollout, they concede that a number will probably ship their applications 30 to 90 days after Chicago's shipment.

"They'll want to test [their applications] with the final code, which they'll receive] probably 30 days before we launch," said Doug Henrich, director of Microsoft's development group.

Pentium price drop to $2,500 by year's end could keep chip rivals at bay

By Michael Fitzgerald and Ed Scannell

Intel's microprocessor products division, many analysts already see cracks in the company's plans. They predict everything from late delivery of important 32-bit applications to a schedule slip for the system.

If Microsoft's schedule slips past the end of 1994 and major developers ship their applications 90 days after that, it could be the spring or summer of 1995 before users start to feel the true impact of Chicago. That is about the same timetable scheduled for Microsoft's first major upgrade of Windows NT, which...
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HP bets on Taligent
Cash infusion, technology exchange may aid object-oriented developer

By Melinda-Carol Ballou

HP bets on Taligent stake in Taligent, Inc. and use the larger object-oriented development wars.

"From the user's point of view, they don't know what Taligent is going to look like, but every partner [Taligent] can add given them credibility," said Brent Williams, an analyst at International Data Corp., a consulting firm with offices in Mountain View, Calif. Even with HP's infusion, there is a lot of work cut out. The company faces opposition from Sun Microsystems, Inc., which recently announced an alliance with Next Computer, Inc. [CW, Nov. 29]; and from Novell, Inc. with its AppWare environment; and Microsoft Corp. with its Microsoft Foundation Classes (MFC), distributed Object Linking and Embedding (OLE) and Cairo.

Taligent officials claim that its Application Frameworks, which will begin shipping in stages during the first half of 1994, will enable developers to more easily create, reuse and maintain code [CW, Nov. 8]. For instance, while MFC offers class libraries to ease Windows development and OLE offers interfaces to enable developers to share data, OLE is arcane and difficult to use, many developers said.

"We have over 100 frameworks, each with its own class libraries, and because of their comprehensive design, a developer will get the functionality of other frameworks — such as real-time, two- or three-dimensional graphics, compound documents or international text and line layout — without having to create it separately," said Scratton Scelvas, vice president of development. Using Taligent, developers will also be able to "write an application once, and it will be able to run across multiple operating systems from Intel to RISC to PowerPC," said Joe Guglielmi, Taligent chairman and chief executive officer.

But talk is cheap. Taligent's technology is not commercially available yet, and MFC and OLE are already well-established in the market, with about 135 independent software vendors committed to shipping OLE-compliant products by June.

At Taligent
CEO Joe Guglielmi retains Taligent will offer developer flexibility to create it separately," said Scratton Scelvas, vice president of development. Just as with PowerPC, Microsoft will incorporate both. Taligent will also standardize application programming interfaces (API) for its Application Frameworks and establish a licensing and certification program with X/Open Co. to make the APIs available to third parties.

Under terms of the HP agreement, which had been expected [CW, Aug. 16], Taligent will issue new shares of its stock to HP. Financial terms were not disclosed. HP will also take a seat on Taligent's board of directors. Taligent chairman and chief executive officer.

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HP and IBM last year announced a deal to integrate DOMF with IBM's System Object Model (SOM) and distribute SOM. Taligent will incorporate both. Taligent will also standardize application programming interfaces (API) for its Application Frameworks and establish a licensing and certification program with X/Open Co. to make the APIs available to third parties.

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Common language race is on

There's a new competitive front emerging in PC applications. Vendors such as Borland, Microsoft and Lotus are scrambling to supply developers and skilled end users with common scripting languages, which are easy to use and cut across application suites.

The first supplier to implement a common language and give object handling and multiple operating system capability will likely up the ante in PC application competition.

Up till now, most power users customized their report writing or executed routine command sequences by writing a macro. A common scripting language extends this capability across a vendor's application suite rather than forcing a user to learn a variety of macro statements.

But there are likely to be different degrees of vendor commitment. Microsoft officials said in June that they wanted to make Visual Basic their scripting language, and Visual Basic is included in Excel 5.0. But so far, Microsoft has hedged on whether it will license a development-worthy version, Visual Basic for Applications.

Dee Dee Walsh, Visual Basic product manager in Redmond, Wash., suggests that this is not likely in the next 18 months. "We're just too overwhelmed to consider licensing Visual Basic for Applications to other parties," she says. "We're not closed to it, but with our current work load [shipping Visual Basic], we can't handle it."

If Microsoft did so, it is conceivable that competitors or even customers would produce auxiliary applications. It's hard to view such a development as unfavorable, even to Microsoft, given the vitality that would surround its product line, but so far Redmond officials are making no promises.

Lotus committed itself to providing a common scripting language in its applications in September and has made LotusScript a part of Improv. LotusScript will find its way into other applications as new versions come out in 1994, says John Landry, senior vice president for development.

The need to learn multiple macro statements will disappear as script vendors vie to provide common scripting languages.

Layered approach

To get the job done, Novell created a "generic" software layer that all the SMP hardware vendors can support. The layer runs under the UnixWare 2.0 operating system, Traher said. That is exactly what SOC did with its MPX 3.0 SMP software, analysts said, noting that few standards have emerged to design such software for SMP systems and I/O subsystems.

UnixWare 2.0's SMP support was delayed following Unix System Laboratories, Inc.'s (USL) decision to devote more resources to the desktop version of UnixWare 1.0, said Paul McKeeuin, a Unix analyst at Gartner Group, Inc. in Santa Clara, Calif. After Novell bought USL last year, developers had to repair UnixWare 1.0 performance bugs, analysts and early UnixWare users said.

"It's at least a year late," said Brian Anderson, director of information systems at Trans Oceans Container in San Bruno, Calif., who has used Notes' ability to store and share objects across a group. Visual Basic users will be able to install machine-specific SMP code with on-screen installation prompts, Traher said.

Workstations

SGI beats HP to punch with Indy

By Jean S. Bozeman

Silicon Graphics, Inc. (SGI) last week revealed souped-up versions of its six-month-old Indy workstation family, making its move just two weeks before rival Hewlett-Packard Co. is expected to announce its own low-end entries [CW, Dec. 20].

Available in March, the new Indys were designed around 150-MHz MIPS R4400 chips that reportedly boost performance by at least 50%. The systems come with up to 64MB of memory and up to 16GB of disk and are priced at $15,495 [CW, Dec. 27, 1993/Jan. 3, 1994].

The enhanced Indys fill out a low-cost line UnixWare's evolving NetWare integration than in SMP support. At River Downs, a Cincinnati racetrack, a NetWare server and UnixWare 1.0 server sit side by side supporting 80 users. "It's a little network-sensitive, so I don't want to change things" by adding SMP, said Bob Hall, computer systems manager, who runs business applications under UnixWare 1.0.

At the University of Texas' M. D. Anderson Cancer Center in Houston, one UnixWare 1.0 server hosts a Unix Corp. relational database for 70 users. Network analyst Charles Tilbury said the site, which has 100 NetWare file servers, is looking for enhanced NetWare connectivity and more support for PC devices in UnixWare 2.0, rather than SMP support. "I want the users to access their network without caring whether they are accessing Unix or NetWare files," he said.

started in July with a $4,995 diskless model that hosts multimedia applications. There are now eight versions ranging in cost from $5,995 to $22,995.

Analysts also said the Indy machines are the first in a wave of low-end units expected from several vendors by March. "[The vendors] are targeting the low end of the workstation business, which overlaps with the high end of the PC business, to gain more [sales] volume," said Dominic Ricchetelli, who directs workstation research at Dataquest, Inc. in San Jose, Calif.

At least one early Indy user was pleased with the R4400 addition, although upgrade kits will not be available for about six months, SGI said. Osteonics Corp. in Allendale, N.J., recently purchased 25 Indy workstations to handle three-dimensional design and manufacture of medical implants, such as hip replacements. As packaged with computer-aided design software, Osteonics' SGI systems were priced in the midrange of all workstation systems evaluated, said Brian Hutchinson, the firm's vice president of finance.
Digital software frameworks crystallize

By Craig Stedman

Digital Equipment Corp. is expected next month to provide more concrete product information for the six software frameworks it is developing as part of its emerging client/server strategy. Included will be plans for incorporating object technology into all of the frameworks, industry sources said.

Digital is briefing analysts on the plans this week and will unveil them to customers on Feb. 8, the sources indicated. The fleshing out of the frameworks concept is viewed as the key part of the announcement, which will also feature new low-end workstations and a variety of layered software.

The frameworks were set up last summer to tie together third-party and custom applications in client/server environments. According to industry sources, they will support the Common Object Model (COM) specification Digital is developing with Microsoft Corp.

The COM specification, detailed in late November, will allow distributed applications written to Microsoft's Object Linking and Embedding (OLE) 2.0 interface to work with Digital's ObjectBroker software, an implementation of the Object Management Group's Common Object Request Broker Architecture.

In addition to the COM support, Digital is likely to build ObjectBroker into the frameworks to enable different applications to share objects, the sources said. The object capabilities are expected to be added throughout this year.

William Strecker, Digital's chief technology officer, said in late December that definition of the framework plans "will be completed in the next couple of months." Company officials declined to comment on the matter last week.

Lynn Berg, a Gartner Group, Inc. analyst in Stamford, Conn., who has criticized Digital for lacking a coherent software strategy, said the frameworks are beginning to take shape and "look like they have some substance behind them." "Other vendors will be talking about object technology, too, but Digital could very well get a jump on the rest of the industry if it can execute its strategy," she added.

Raymond Sasso, chief information officer at J. R. Simplot Co. in Boise, Idaho, noted that users "haven't seen anything behind the movie set thus far." But he said the frameworks are "a very appealing concept" and would be even more interesting with object capabilities.

However, Tim Bird, director of information services at Paws, Inc. in Munice, Ind., said Digital needs to become "more steady on the software path" before the frameworks would interest him.

"Until Digital stays on something a long time, I'm not all that impressed," Bird said. "They've been too mercurial."
Apple, Microsoft collaborate

The AppleSoft Division of Apple Computer, Inc. and Microsoft Corp. have signed an agreement designed to ensure access between and interoperability of their messaging and directory services, along with support for Common Mail Calls programmatic calls on both platforms. The pact also seeks to provide customers with the software needed to share information across the two platforms, including a suite of Messaging Application Program Interface (MAPI) service providers and Apple Open Collaboration Environment-based gateways. Microsoft also agreed to support the AOCE in its key Macintosh applications.

Novell DOS, NetWare versions pending

A Novell, Inc. spokeswoman confirmed that it plans to announce availability of an AppleOpen Systems supplement to its Personal version of Microsoft's NetWare and Novell DOS 7.0. Users will be able to buy Personal NetWare immediately; Novell DOS should follow in about three weeks. Single-user versions of either package will cost $895, and a five-user version of Personal NetWare will cost $395, according to the spokeswoman (see related story page 24).

First Ohio Bancorp CIO leaves

William E. Eager has left First Bancorporation of Ohio to become chief information officer at Community Mutual Insurance Co. He will manage a 400-person staff and administer a $30 million information systems budget at the Cincinnati-based health insurance company. He was previously executive vice president at First Bancorporation. No successor has yet been named at the bank.

Amdahl, Fujitsu join development forces

Amdahl Corp. and Fujitsu Ltd. last week announced what many had already assumed: The two will jointly develop the companies' next generations of mainframes, due in 1996. Amdahl's version of the CMOS-based machine will be IBM-compatible, while Fujitsu's will run its proprietary operating system.

An offer they could not refuse

NCR Corp. announced that roughly 2,400 of its 5,500 U.S. employees have accepted an early retirement offer. The offer is part of a plan announced by NCR last October to eliminate 10% of its 31,000 worldwide jobs by March. Approximately 25,000 NCR employees are eligible for a voluntary separation package made available last week with a Jan. 31 application deadline. NCR officials said they may have to resort to layoffs if not enough employees opt out.

Bolt, Beraneck taps ex-IBM exec

Networking vendor Bolt, Beraneck and Newman, Inc. (BBN) has named former IBM marketing executive Nate A. Davis as president and chief executive officer. Stephen Levy, who previously held those titles, remains chairman of the board. Conrades should shore up BBN's well-respected technology with some marketing know-how, observers said.

SHORT TAKES

Continuing its push for users in commercial sites, Sun Microsystems, Inc. is expected to announce today that it is shipping the first 20-way Multiprocessor version of the SPARC2000. ... Digital Equipment Corp. continued to tap into the ranks of IBM executives, naming Vicenzo Damiani corporate vice president and president of its Geneva-based European operations. ... OpenVision, a vendor of Unix system management tools, has named Geoff Squire president and CEO of its international division. Squire was most recently head of Oracle Corp.'s overseas group.
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report that Microsoft will not achieve volume shipments of Windows 4.0 until the first quarter of 1995, sometime in 1994.

"It boggles my mind that so many people trust them on this when they've been burned so many times before," said Matt Cain, program director of workgroup computing strategies at Meta Group, pointing to previous schedule slides for Windows 3.0, 3.1 and Windows NT.

Even if Microsoft does meet its year-end ship date, many analysts and developers still predict a lag between user availability of Windows 4.0 and Chicago-specific applications — true 32-bit multitasking, multithreading applications — from vendors other than Microsoft.

Applications lag
The issue is important when you consider it in light of the fate of other operating systems that suffered a considerable lag between their launch and the arrival of operating-specific applications.

Third-party developers "tell us it will be a lot like Windows 3.0, where they will have applications right after the Chicago announcement or shortly after. But if they do not have 32-bit Windows applications available, it will obviously slow the acceptance rate of Chicago," said Brian Moura, assistant city manager for the city of San Carlos, Calif.

Agreeing that "developers can't make all their plans based on Microsoft's announcements," Lyle Griffin, vice president of advanced technology at Micrographx, Inc. in Richardson, Texas, said talk of Chicago applications coming out in the second half of 1995 is probably not far off. Even so, he said his company is well under way with development for Chicago.

"Our assumption always has been [that Chicago will ship by] Fall/Comdex, which means you would not have major independent software vendor action until mid-1995 at the earliest," said Bill Bluestein, senior analyst at Forrester Research, Inc. in Cambridge, Mass.

This is attributed in part to the fact that development for Chicago's application programming interfaces is not trivial. Most major developers will take as long as six months after Chicago actually ships to deliver finished applications, analysts said.

Microsoft officials stated that they expect many applications will be ready when Chicago ships. Despite previous overoptimistic delivery expectations, they said they still believe they can meet their year-end shipping schedule. "Developers should have less trouble doing 32-bit applications than [they did] two or three years ago because there are many more developers that have experience with the Windows programming model," one Microsoft spokesperson said.

"Nontrivial" pursuit?
Some developers remain unconvinced, partly because of their belief that the planned changes for the product's user interface alone gives developers a steep learning curve.

"If this interface is radically different, the amount of added work for developers will be significantly more. We are expecting it to be nontrivial," said Richard Rabin, chairman at Alpha Software Corp. in Burlington, Mass.

In fact, because Chicago's new object-oriented user shell is not finished yet, Microsoft officials would not give a blanket endorsement of developers' programs will not need some rework in order to run, although they offered assurances that any rewriting would be minimal.

But analysts remain skeptical. "Remember that [Windows 4.0's] GUI is not done, and that is about 75% of the application code," Bluestein said.

"I expect 50% (of the major players) will have their applications ready when we ship Chicago," he said.

Among the most vocal naysayers is Westport, Conn., research firm Meta Group, Inc. It predicted in a December report that Microsoft will not achieve volume shipments of Windows 4.0 until the first quarter of 1995, sometime in 1994.
Chase Manhattan is a worldwide financial services corporation providing both retail and wholesale services. It remains one of the largest banks in the country, with an established asset base of nearly $100 billion. Joe Garry is a Vice-President in the Corporate Technology and Information Services area. It’s his task to control maintenance and development costs while increasing developer productivity.

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PowerPC wary
Apple must provide upgrades and supply

By James Daly
SAN FRANCISCO

While Macintosh users are enthusiastic about the potential of the upcoming PowerPC-based models, they remain nervous about whether Apple Computer, Inc. can pull off the tricky transition with a minimum of problems.

In mid-March, Apple is expected to announce at least three new models based on the speedy PowerPC 601 chip, which is a collaborative effort of Apple, IBM and Motorola, Inc. The new machines are expected to range from a 60-MHz entry that sells for about $2,000 to an 80-MHz machine costing about $4,000.

A popular phrase bandied about at last week's MacWorld Expo was "investment protection," or the ability to run old applications on the new machines. No problem, said Entry Systems Group product manager Bruce Gee.

The new PowerPC chips will have a 68LC040 emulator running in their read-only memory, thus allowing old applications to run on the new system with a minimum of fuss, Gee said.

"That sounds great and it looks wonderful on paper, but until I see the rubber hit the road I'm going to be a bit of a skeptic," said Karl Kaste, manager of commercial operations at Genentech, Inc. in South San Francisco. But Kaste still has high hopes for the PowerPC. For the past six months he has bought only the Macintosh models that Apple says will be upgradable to the PowerPC (see chart above).

MacWorld highlights

MacWorld show highlights included the following:

* Apple buttressed its commitment to PowerPC by unveiling plans for a series of upgrade boards that will bring current Macintosh customers to PowerPC-based models, they remain nervous about whether Apple Computer, Inc. can pull off the tricky transition with a minimum of problems.

* An additional 37 third-party developers revealed plans to ship native PowerPC versions of their applications, bringing the total to 61. David Nagel, who heads the AppleSoft system software division, said he expects to have at least 100 native PowerPC Macintosh applications within 30 days of launch.

* Apple unveiled enhancements to its high-end Workgroup Server 95 product line that gives users an average of 25 times higher performance when using Apple's latest file server architecture.

* Price/Performance difference between them and the mainstream RISC vendors is not so great as to lure many system buyers to RISC," said Michael Slater, publisher of the "Microprocessor Report" in Sebastopol, Calif.

Besides Chicago, IBM's OS/2 2.x offers Pentium support, specifically Pentium's virtual mode extensions, which allow DOS applications to run up to 10% faster. However, IBM is currently weighing how much more Pentium support it should include in the next point release of the product, expected in the third quarter.

"We are testing out the other advantages of Pentium to see what it buys users. But we aren't sure that some of them will ever really add up to what much," said James Schoeck, a programmer in IBM's architectures planning group.

On the hardware side, analysts say the component-driven nature of system price drops does not necessarily signal a return to 1992's competition-inspired price wars.

Users said they would be more inclined to shift hardware purchasing to more powerful systems.

"What [the price drops] mean for us is price/performance characteristics. Pentium pricing would only reinforce that. We added that users with systems at home, many of whom are using 80286-based systems that cannot run the Windows-based programs they use in the office, might also upgrade to 33/66-MHz DX2 systems if prices drop the way Intel predicts.

Brian Moura, assistant city manager and head of administrative services for the city of San Carlos, Calif., said lower prices could make him consider buying Pentiums, where "there is no reason to buy Pentium based on the present price/performance characteristics."

The DX4, based on the 1486 architecture, fills the gap in performance between Pentium and the 33/66-MHz DX2. Actually a clock multiplier that runs at 33 MHz externally and 100 MHz internally, the DX4 looks to become Intel's high-end processor until Pentium volume increases (CW, July 19).

Geyer said the DX4 will run 40% to 50% faster than the 33/66-MHz DX2, hence the name. He acknowledged that Intel will do an OverDrive version of the DX4 but said that other rumor peddled processor speeds for the DX4, while possible, are not planned.

Chip activity

Intel lowered prices on several processors last year, and will also increase its number of plants producing Pentium from three to five in 1994, in preparation for Pentium making up 15% of the overall market. As of second-quarter 1994, a 66-MHz Pentium processor will cost $670 each in units of 1,000, down 14% from first-quarter pricing, while a 60-MHz Pentium will cost $675, down 15% from the first quarter.

Meanwhile, a 33-MHz Intel 486DX2 will cost $360, down 18% from its first-quarter price. Intel cut prices on its 25/50-MHz DX2, 33-MHz 486DX, 33-MHz 486SX and 25-MHz 486SX from 2.5% to 7.1%.
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By Thomas Hoffman

When Minolta Corp. entered a five-year data center outsourcing agreement with PKS Information Services, Inc. in Omaha last August, the Ramsey, N.J., business equipment supplier ran into an unexpected snag. It was hit with a six-figure surcharge from one of its software vendors to transfer its inventory control and order processing software.

The hefty surcharge surprised both Minolta and industry software analysts, who said development vendors rarely sort to such fees. However, the reason for outsourcing a characteristically charged surcharge is obvious, according to Minolta’s disgruntled Chief Information Officer Gary Gould: American Software, Inc. in Atlanta, the developer in question, was not among the five vendors considered for the outsourcing contract. American Software, Gould charged, is trying to penalize Minolta for the slight.

“I think it’s retribution [on the part of American Software] for not being able to bid on the outsourcing deal,” Gould said. James McGuone, American Software’s corporate secretary, said the company wrote a new agreement to enable PKS to run the software originally licensed to Minolta. “This is a common practice in the software industry for both application and systems software,” McGuone said.

First time ever

Yet Robert Szalay, vice president of marketing at PKS, said American Software’s licensing relocation surcharge represents the first time in all of PKS’ outsourcing relationships that an application software vendor sought compensation for relocating software. “We’ve got over 300 application packages running here for multiple, Ore., since last April, and we’ve never seen this happen before,” Szalay said.

Under the outsourcing agreement, slated to take effect this week, PKS assumes responsibility for the transfer costs for Minolta’s systems software licenses but not for any application software licenses that are transferred for use by PKS, according to Szalay. Although unhappy about it, Minolta paid the surcharge, which Gould estimated at slightly more than $100,000, in late December.

The situation is akin to issues being raised in pending litigation between Electronic Data Systems Corp. and Compu- nities. The situation is akin to issues being raised in pending litigation between Electronic Data Systems Corp. and Compu- nities. The situation is akin to issues being raised in pending litigation between Electronic Data Systems Corp. and Compu- nities. The situation is akin to issues being raised in pending litigation between Electronic Data Systems Corp. and Compu-

IS eyes fax savings

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panies save big bucks on phone-line charges by routing fax traffic over internal networks because roughly half of corporate fax traffic is sent intracomp- any, according to analysts. For instance, Inotool, Inc., a communications software vendor in New York, esti- mates that its $75,000 fax sys- tem saves $280,000 annually for users who send 10,000 fax- es per week. That amount in- cludes savings in phone-line charges and “soft” costs such as employees’ time.

Also, companies are looking to consolidate fax traffic from multiple dial-up lines to private T1 lines or public dial-up lines during reduced-cost hours. “When certain docu- ments don’t have to be there right away, we send them at night when rates are cheaper,” said Tony Travaglini, an infrastructure technologist at Pepsi’s Somers, N.Y., office.

Pepsi has been using a departmental LAN fax server from American International Facsimile Products in North Andover, Massachusetts to send two-page documents to departments that are located in its purchase order department. That is possible because the fax software allows Travaglini to set parameters for batch processing of nonurgent transmissions at appointed times, he explained.

Additionally, centralized fax monitoring lets compa- nies track usage and costs. A less tangible advantage comes in the form of productivity gains: Users can send faxes from their desktop computer queue rather than walk to a fax machine and wait for the fax. Some systems include sort routing for the delivery of incoming fax- es as well.

It’s convenient

“We don’t have any matrices; it’s just more convenient. I know, because if the fax server goes down, people scream,” said Albert da Cunha, MIS director at Visa In- ternational’s risk management group. “It’s a risk management of a LAN fax server system.”

Although the main chal- lenges are organizational, storage and network usage raise technical issues. Be- cause fax image files are huge and traffic is heavy, net- work storage devices can be swamped.

However, early implementors of departmental and enterprise-wide fax systems said the technical issues are not overwhelming.

“We’ve found that fax traffic is fairly evenly distributed throughout the day, so the networks don’t get overwhelmed,” said Michael Horan, technical support manager at Golden Wire & Cable Co. in Richmond, Ind.
Banyan Vines

CONTINUED FROM PAGE 1

teems, Inc. Unix platforms.

In addition, Banyan is in a "technology assessment phase" of choosing an open Unix kernel for native Vines, Johnson indicated. Candidates include offerings from Sun and Novell's Unix Systems Group. Development time frames have not been set, he said.

Native Vines currently runs on a proprietary version of Unix Systems Group's Unix System V Release 3.2, severely limiting the range of hardware platforms it can run on, as well as the network cards, programming tools and peripherals it supports, several users said.

"Native Vines is a closed, proprietary Unix that supports only what Banyan certifies," said Steven Wong, a network analyst at New York law firm Cleary Gottlieb Steen & Hamilton. This causes problems in areas such as backup, where native Vines offerings are unsatisfactory, he added. "With open Vines, you [would] have available everything out there that supports Unix."

Also in the works for this year is an update — to Version 5.5 — of Banyan's Santa Cruz Operation (SCO) Unix implementation of Vines.

Cleary Gottlieb is eager to receive the upgrade, which "will allow us to make use of more memory, more disk capacity and larger servers" than does the current SCO Vines Version 4.11.5, Wong said.

Widespread availability

The introductions are key to Banyan's competitive strategy of divorcing its global network services from the proprietary Vines and making them available across a variety of systems and network operating system platforms, said Ed Laubach, a consultant at consulting and software development firm Datech Network Systems, Inc. "Banyan is committed to moving [its enterprise network services] to open platforms. That's where their future lies."

Another major product direction for Banyan this year aims to provide users with a "single system image" that guarantees access to the same basic set of services, via the same commands and icons, independent of the underlying platform, Johnson said.

Banyan began this work by filling in the gaps in individual platforms' service offerings, for example, adding PC print-and-file services to SCO Unix and a global directory to NetWare 3.12. This year, the vendor will work to ensure that "the user doesn't have to be aware of what type of server is providing the service in terms of the commands used to log on to the network, select a service or send a message," Johnson said.

In addition, a major new Vines release slated for the second quarter will have a Windows-based, embedded GUI for administering enterprise server installations, Johnson said. Users have been complaining for some time that Banyan's native interfaces to its administration tools are awkward and cumbersome to operate [CW, Oct. 4].

"We absolutely want GUI for administration tools," said John Good, director of information technology at Turner Corp. in New York. "It's frustrating to work in Windows for everything except Vines administrative work."

Another major Vines release update for SCO Unix; standard Unix kernel for native Vines by year-end 1994 or later.

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Computerworld | January 10, 1994 15
CA motion denied; jury trial to ensue

U.S. District Judge John R. Bartels has denied Computer Associates International, Inc.'s motion to waive a jury trial in a breach of contract lawsuit filed by Reliability Research, Inc. against CA [CW, Nov. 22]. The lawsuit, filed in 1981, claims that CA breached a licensing agreement between Reliability Research and University Computing Co., which CA acquired in 1987. Reliability Research claims that CA owes it millions of dollars in international revenue from the sale of nearly 90 CA programs, including CA-Unicenter. The jury trial is expected to begin in Brooklyn, N.Y., at the end of this month. CA had no comment on the judge's decision. However, a CA spokesman said the company stands by its position that the case is without merit and "looks forward to having this matter definitively resolved in court."

Gateway revs up service programs

Under attack for service shortcomings, Gateway 2000, Inc. has expanded its Gateway Online Information Network by adding a new toll-free number for upgrading software drivers and giving users who buy a motherboard a copy of ColSession Host. CoSession Host is a Triton Technologies product that lets Gateway support personnel remotely diagnose problems with customer PCs. Gateway will also offer CoSession Remote, a remote-access software package, for $29.95, more than 70% off its usual price.

Iomega restructures, cuts positions

Iomega Corp. in Boy, Utah, last week said it had restructured its operations to reduce operating expenses, eliminating 50 positions corporatelywide in the process. The cuts represent approximately 9% of Iomega's work force and take effect across the board.

PowerPC development tools debut

At Macworld last week, Apple Computer, Inc. introduced a series of products designed to ease porting to and application building for PowerPC-based PCs and servers. Announced was the $399 Macintosh on RISC Software Developer's Kit, a $150 self-paced training course called "Programmer's Introduction" and a native PowerPC development environment called CodeWarrior that will sell for $399.

Apertus acquires Systems Strategies

Apertus Technologies, Inc. has acquired Systems Strategies, Inc., formerly a subsidiary of AGS Computers, Inc., for approximately $14 million. The deal will allow Apertus to meld its products, which link IBM computers to those of Systems Strategies, which in turn connect IBM machines to Unix platforms.

SHORT TAKES

Borland International, Inc. said it has elected Metaphor Computer Systems, Inc. founder and Xerox PARC alumnus David Liddle to its board. Liddle is co-founder and president of Interval Research, Inc. Digital Equipment Corp. hired Eilen Kokos as vice president of product marketing for emerging markets such as multimedia, . . . . G. Glenn Henry, longtime Dell Computer Corp. technology officer, was most recently Dell's chief technology officer, resigned to become PC division director at Mips Technology, Inc. At Mips, Henry will work to help PC makers develop PCs based on Mips' RISC technology. . . . Data General Corp. said Informix Systems, Inc.'s Informix-Online Dynamic Server 6.0 database will be available on its Avion server line later this quarter. . . . Zeos International, Inc. in Minneapolis announced plans to purchase mail-order competitor ComputerAdd Corp. [CW, Nov. 8]. Details of the deal were not disclosed.

Midrange systems

AS/400 preps for RISC

Package changes allow minicomputers to get PowerPC upgrade

By Craig Stedman

IBM plans to make its next batch of AS/400 machines RISC-ready by putting them in new cabinets that support processor board upgrades to the PowerPC-based versions slated for introduction in 1995. The RISC-ready models are due out in the second quarter.

The changes will be most noticeable on higher-end machines, which are being switched from the 9406 rack-mount package to a regular frame enclosure the size of a small file cabinet.

The high-end enclosure will be just "a little bit bigger" than the 9404 cabinet now used in the middle of the line, noted Glenn Van Benschoten, director of systems product management at IBM's AS/400 Division.

Regular upgrade pricing

Because of the system packaging changes, existing AS/400 boxes will have to be replaced in order to move to the 1994 models, which would be the G Series in IBM's usual lettering sequence. However Van Benschoten reiterated that IBM plans to price the exchanges as regular upgrades rather than new system purchases, even if the only feature retained from the current machines is the serial number.

Kevin Beam, director of research at Reliability Ratings, Inc., a Needham, Mass., market research company, said upgrades may be "technically difficult" because of the need to reconfigure the systems. But he added that as long as IBM follows through on its pricing promises, cost should not be a major concern for users unless they still have the original AS/400 B models dating to 1988. IBM's pricing usually "starts to punish you" the longer you wait to upgrade, Beam noted.

James Bailey, senior vice president of data processing at Massachussetts Financial Services in Boston, said pricing incentives will be necessary "to help people get over the mental hurdle of making the jump" to the new AS/400 cabinets when they could switch systems almost as easily.

Money saver

The reduced footprints promised at the high end of the line are particularly appealing, Finoli added.
"If a box is smaller and uses less power, that saves us money every day," he said. However, he noted that Dominion Textile has not de-
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**Desktop upsizing**

**PC DBMS next stage of client/server fight**

By Michael Vizard

A battle over who can best leverage the move to client/server is about to erupt between the two leading suppliers of dBase-compatible databases — Borland International, Inc. and Microsoft Corp. In the latter part of the second quarter, Borland plans to deliver an overdue dBase IV for Windows that will be positioned as a front end to SQL databases in order to take advantage of an expected upsizing trend. Similarly, Microsoft is expected to include direct links between FoxPro and SQL databases in FoxPro 3.0, and Computer Associates International, Inc. is expected to pursue a similar course with its Clipper database.

"For the past five years, downsizing has been the most important issue. We believe that upsizing will become the most important factor starting in the second half of 1994," said Borland chairman Philippe Kahn.

One driving factor behind this trend is the number of XBase-compatible database systems that are running out of capacity. Thus far, most of the moves to client/server computing models have been based on departments downsizing from minicomputers and mainframes to servers running XBase databases.

But the next wave of client/server upsizing will create substantially more difficult technical challenges as organizations move to tie their existing PC database resources into an enterprise-wide computing architecture anchored by distributed SQL databases, which require more database administration than PC databases such as dBase and Microsoft's FoxPro.

"There's extremely little enterprise-wide client/server today because it's very complicated and requires new skill sets. The prices of the SQL databases are coming down, but a lot of people are still put off by the complexity," said Rich Finkelstein, president of Performance Computing, Inc., a consulting firm in Chicago.

**Technical hurdles**

Finkelstein noted that while most customers will want to leverage their existing investments in XBase databases by using them as front ends to SQL databases, they may find that the technical hurdles will make offerings such as Borland's Paradox or Microsoft's Access databases more attractive. This is because these databases share the same record-oriented relational database architecture as SQL databases.

"Borland and Microsoft are probably telling customers what they want to hear. But right now we rarely contemplate XBase databases.

Finkelstein said he expects to see them being used to build quick-and-dirty applications," Kahn said.

But Kahn maintains that a huge installed base and customer attachment to the dBase programming language will give XBase databases a big role to play in client/server computing.

"People will want to leverage their hardware and software infrastructure," Kahn said.

And some users said they are looking forward to client/server computing using XBase databases.

"We've become a big believer in NT and tying it all together in a client/server architecture," said Craig Church, president of Buena Vista Software, Inc., an independent software developer based in Palo Alto, Calif.

As a developer of accounting applications for FoxPro, Church said he expects to tie FoxPro to an SQL Server from Microsoft.

"We were skeptical when Microsoft first acquired FoxPro, but FoxPro for Windows is now a stable and useful product that runs cross-platform. This may be an illusion, but it is harder to sell Borland than Microsoft to corporate accounts moving to client/server because Microsoft has a relationship with Sybase for SQL Server," Church said.
When independent researchers road-tested KnowledgeWare's® ObjectView, they developed applications that ran faster than those developed with either PowerBuilder or SQL Windows. But rapid development is just as important as application performance. ObjectView lets you speed through development with advanced workgroup capabilities, accommodating development groups of all sizes with shared information access. And a unique library of reusable "smart" objects to further boost developer productivity and ensure application standards.

As you might expect, with ObjectView's amazing speed comes equally impressive functionality and ease of use. For instance, creating comprehensive custom reports is easier than ever, thanks to the new Personal SQL with enhanced report writing and querying capabilities. And ObjectView's open architecture paves the way to integration with a wide range of development and CASE tools, including our own Application Development Workbench®.

To make sure you get off to smooth and quick starts, you can count on KnowledgeWare's award-winning, expert training and consulting services. Find out for yourself why ObjectView is the high-performance development tool that will take you down the road to client/server faster. Call today for a free demo diskette and test drive ObjectView for yourself.
Since Lante Corporation created a sales toolbox using Microsoft Office and Visual Basic, sales have increased 128%.

Wonderware Corp. created a Microsoft Windows-based control system at one-fourth the cost of a typical configuration.

Gateway Group, Inc. helped integrate Microsoft SQL Server into an image-based billing system, dramatically improving productivity.

Microsoft Office and WinResources Computing, Inc. made changing menus faster and easier for this popular restaurant chain.

MDL Information Systems, Inc. and MDL Corporation, Inc., and Microsoft Office provided productivity tools allowing research scientists to better analyze data.

This securities firm looked to Micro Modeling Associates and Microsoft Office to expedite the delivery of investment research to clients.

MTX International, Inc. and Stanford Business Systems joined this supermarket's accounting and point of sale system with Microsoft Access.

Platinum Software and Paradigm Technologies implemented a Windows NT-based client/server architecture, cutting costs 63%.

This law firm now spends less time on paperwork thanks to Quickstart Technologies' use of Microsoft Office and the Windows NT family.
These days, businesses are in a state of constant technological transition. You're upsizing, downsizing, or just trying to get your eclectic collection of hardware and software to work together.

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How? Simply, every Microsoft Solution Provider (and there are thousands) have people with real-world experience in integration, consulting, development, technical training, and support. Talented teams who understand that a health care provider has different business issues than a bank.

Many have Microsoft Certified Professionals on staff. People who have proven their technical expertise by passing rigorous certification exams on Microsoft products.

Microsoft Solution Providers also know that companies are working in mixed computing environments. So they're well versed in solving multiplatform problems.

For case histories on the solutions represented here, or for a referral to a Microsoft Solution Provider, call (800) 426-9400, Dept. KZ7.
Legent, Software AG ramp up services

By Gary H. Anthes

Legent Corp., plans this year to double its professional services staff, after tripling its ranks last year, to address heightening needs by systems management customers for training and consulting.

While still a relatively modest part of its business — $11 million last year on total revenue of $442 million — professional services is one of its fastest-growing business segments, the Herndon, Va., company said.

Just a few miles away in Reston, Va., Software AG of North America, Inc. is reporting a similar boom in demand for professional services, as customers increasingly view software vendors as partners in the struggle against increased competition, shrinking budgets and growing systems complexity. The company now derives more than 25% of its $120 million in annual revenue from professional services.

Both vendors have awakened to a market long cultivated by the likes of Computer Associates International, Inc., Lotus Development Corp. and Microsoft Corp.

Legent and Software AG say users want to deal with a small number of well-established vendors, and they no longer feel comfortable buying software off the shelf like soap flakes. "Customers are looking for software vendors to be much more [like] integrators than in the past," said Jonathan Church, director of central services at Software AG.

"More and more customers — especially those moving to client/server computing — are saying they want their software suppliers to do soup to nuts on the application," agreed John Logan, executive vice president at Aberdeen Group, a Boston consultancy.

Logan said Germany-based Software AG's U.S. operation is coming to the professional services game relatively late; its overseas units have been strong in consulting and application development for years. He said Software AG, as well as most major software vendors, finds it difficult to train employees quickly enough.

Legent offers pure management consulting on issues of long-range planning, outsourcing, data center consolidations, major hardware and software upgrades and the like. It also offers presale and postsale consulting and training associated with the installation and use of particular products.

Worth the cost

When Fortis Benefits Insurance Co. in Woodbury, Minn., paid $150,000 for Legent's Endever product for software management, it opted for an additional $10,000 worth of training and consulting.

Mary Bauer, data center manager, said the deal was a good investment. She said it would have taken three to four times as long to get Endeavor installed without the consulting services.

William Maguire, information systems program manager at the U.S. Postal Service, said Legen analyzed a myriad of cost and performance data from two mainframe centers and came back with reports showing they were spending more in certain areas than comparable centers. The Postal Service has since given renewed attention to automating its security operations, he said.

Maguire also said the Legent analysis, provided at a "significant discount" off the list price of $50,000 per data center, let the Postal Service compare what it was paying for some 400 software products with what its peers were paying.

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Because you have users in a variety of locations, A2B supports coax boards and the most popular LAN gateways, including NetWare for SAA and LAT as well as EICON's X.25 gateway.

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Simware is committed to helping you get the most out of all our products, even beyond the sale. That's why every aspect of A2B is designed to be user-friendly and low-maintenance. And why Simware's support is second to none. Call or fax today, and find out how easy it can be to combine the strength of your PC with the power of your mainframe, whether you're local or remote.

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Call or fax now! For a free A2B demo disk, fax your business card to (613) 727-3533 or call 1-800-267-9991 ext. 721.

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Last month the Software Support Professionals Association in San Francisco gave an award for excellence for most improved service to Software AG of North America. It was based on "the most dramatic increase in the quality of support," as indicated in a customer satisfaction survey.

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Largest such U.S. site in 20 years sports fiber-optic, unified network

By Ellis Booker

At 11:59 p.m. on March 8, Stapleton International Airport in Colorado will close its hangars for good, while 20 miles away, the new Denver International Airport will begin operations.

The largest U.S. airport since the opening of the Dallas/Fort Worth Airport 20 years ago, Denver’s new, $3.1 billion facility will sport a state-of-the-art campus network that will benefit both the airlines and the flying public.

In a major technical advance over Stapleton — built in the late 1920s — and other U.S. airports, the voice network owned and operated by the city and county of Denver. This network infrastructure, according to airport and airline officials, sets the stage for future video and multimedia applications.

“It’ll let us put up a variety of advanced applications that our research people have developed and prepare us for applications in the future that will require that kind of bandwidth,” said Bob Restivo, director of computer operations and technical support at Chicago-based United Airlines. United will have a major hub operation at the airport.

For instance, United plans to transmit video from the jetway directly onto workstations used by its gate personnel so that it can more accurately note the status of incoming and outgoing flights.

Plans for moving equipment and personnel on March 8 from Stapleton to Denver International — a massive event affectionately known as Push Night — began a year ago.

Central network

Planning the airport’s new networks began even earlier.

“Designing the telecommunications infrastructure began four years ago,” said David Smith, telecommunications manager at Stapleton and the new airport.

“We had very little fiber at Stapleton... and we didn’t have a backbone, so the LANs didn’t communicate,” said Smith, one of 14 staffers in Denver International’s MIS department. By comparison, the new airport’s cabling contractor, US West, has already deployed some 3,300 miles of fiber at the facility.

Plans to centrally maintain the airport’s network infrastructure will also greatly simplify network maintenance at the sprawling airport. Centralized network management will be handled by Hewlett-Packard Co.’s OpenView on Sun Microsystems, Inc. SparcStations.

OpenView will monitor the backbone network, which will be composed of the Fiber Distributed Data Interface (FDDI) rings and 20 to 30 Fibermux Corp. concentrators and Wellfleet Communications Inc. routers. The concentrators and routers will comprise intelligent nodes, from which will hang Ethernet and Token Ring LANs operated by the tenants.

According to Smith, if the tenants put in the correct network interface card, the airport might be able to use OpenView to look at all the way down into the workstation and potentially offer service and maintenance of the LANs. Thus, Smith’s group will take over responsibility for building wiring up to the 10,000 or so wall plates.

At Stapleton, each tenant was responsible for its own premises wiring — a scenario that could result in chaos when a carrier went out of business.

“When Frontier Airlines went out of business several years ago, we never knew their networking plan,” Smith notes. “So no one could use their [miles of cabling and conduit].”

In addition to the FDDI network for digital data, there will be two other separate fiber networks at Denver’s latest airport: one for video and one for voice.

A second fiber network will support 750 or so video security cameras at Denver; a third fiber network will use the 2.4G bit/sec. Synchronous Optical Network protocol for linking private branch exchanges to an on-premises AT&T SES digital switch operated by US West.

Raft of radar

Denver International Airport will house 17 airlines and potentially 20,000 workers over 24 square miles

and data networks at Denver International will be based almost exclusively on fiber optics.

Denver officials were reluctant to divulge the total cost of the network infrastructure but said the initial contract with wiring contractor US West was for $25 million.

Video and multimedia applications

The literally hundreds of LANs and thousands of computers and electronics belonging to the city of Denver, the Federal Aviation Administration and the airlines will be networked across a 100M bit/sec. fiber backbone.

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Data centers in triplicate

There will be three data centers at the airport: the administration system, which ran on an IBM 370 mainframe at Stapleton and will run on an IBM ES/9000 mainframe at Denver International; the large three-part maintenance group responsible for the airfield, equipment fleet and the airport buildings running on a large AS/400; and IBM System/36 for the operations department.

Cable planning

The LANs themselves will use twisted-pair cabling because fiber-to-the-desktop was deemed too expensive. However, clearly anticipating a demand for greater bandwidth in the future, Denver built its new airport with Category 5 twisted-pair, which will run at 100M bit/sec. when electronics for it are available.

In addition, the airport will lease two other services to its airline tenants: flight information and baggage monitors. These applications will fetch relevant data from each airline’s information systems. “It’s cheaper for us to run the whole thing, and it’s a lot easier on our flying passengers, since they get continuity from one concourse to the next,” Smith said.
3Com to unveil 24-port stackable hub

By Stephen P. Klett Jr.

3Com Corp., in Santa Clara, Calif., said it will ship this week its first 24-port stackable hub for Ethernet networks at price points 18% to 38% below those of its competitors.

An extension to 3Com's family of LinkBuilder FMS 12-port hubs, the hub will cost $103 per managed port and $71 per unmanaged port, the company said. Up to four hubs can be stacked and linked by a hub expansion cable to form one logical repeater that provides up to 96 ports.

Equivalent to competitors

Analysts said the hub's features — specifically, port density and manageability — were equivalent to competing products from companies such as Cabletron, Systems, Inc., SynOptics Communications, Inc. and Networth, Inc., but cost roughly $20 less per port.

"3Com's port density is not unique, but its pricing is," said Mary Petrosky, an analyst at The Burton Group in San Mateo, Calif. "Users can probably count on everyone being close to them within a quarter," she said.

While stackables are not as intelligent as the more expensive chassis-based hubs, their pricing makes them an attractive option for users who are new to networking, analysts said. That is because these hubs provide a basic connection for users seeking to link up LANs. Such is the case for beta site Montgomery County in Dayton, Ohio, which is in the process of installing 18 of the new 3Com hubs to connect seven justice departments spread throughout five buildings, according to Nancy Long, a network manager for the county.

"We're not sure where our network is going in terms of imaging, for example, so we didn't want to spend a lot of money on something and then have to replace it," she said. "Stackable hubs gave us the most flexibility at a better price," she added, referring to their ease of reconfiguration.

This combination of flexibility and price should make 1994 a hot year for stackable sales, which analysts expect to as much as triple while chassis-based hub sales plateau.

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DB2/6000 is designed to drop easily into your network with minimum downtime. It's very simple to set up - drop it in, set up the connections and you're ready to run. And, for example, it's easy to configure DOS, OS/2, Windows or AIX clients to access DB2/6000.

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And if providing top service under normal circumstances is data-intensive, imagine the challenges when anything resembling a disaster strikes (like the California fires, for example, or Hurricane Andrew).

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The IBM System/390®
Adobe earnings up

Acquisitions pick up

Adobe Systems, Inc. in million, compared with $43.6 million for the same period a year ago. Fiscal 1993 net income includes a nonoperating gain of $3.9 million on sale of common stock held as an investment.

Acquisitions pick up

Merger and acquisition activity is on the rise in the industry, with a series of recent announcements. Networking vendor Attachmate Corp. said it purchased for an undisclosed amount KEA Systems Ltd., a privately held maker of connectivity software. Computer Sciences Corp. has acquired ARC Professional Services Group, an information services group that mainly supports government clients. Software service provider Keane, Inc. in Boston said it has completed its purchase from Nynex Worldwide Services Group, Inc. of a number of firms, including AGS Information Services and at least four other related businesses. Tucson, Ariz.-based Artisoft, Inc. said it has purchased for $9.9 million certain inventory and assets — the products' brand name and $7 million in inventory — of Anthem Electronics, Inc.'s Eagle Technology business unit, a maker of network devices. Automatic Data Processing, Inc. said it intends to buy the assets of TriStar Market Data, Inc., a provider of financial services software. ASA International Ltd., a maker of vertical market applications, said it intends to purchase Automation Partners, Inc., a supplier of computer products to the legal market.

SHORT TAKE

Radio Shack has signed an agreement to open its first store in Russia.

Symantec buys DataEase unit

By Michael Fitzgerald

Symantec Corp.'s year-end purchase of certain technologies from relational database maker DataEase International, Inc. is part of an overall move by Symantec to diversify beyond its roots in the utility market, analysts said.

Symantec paid $7.5 million — $1 million in cash and $6.5 million in stock — for DataEase subsidiary Rapid Enterprises, Inc. two weeks ago.

Symantec, which has been developing software with Rapid Enterprises since last April, received DataEase's Prism technology, which provides a way to exchange data across multiple platforms, according to a DataEase spokesman. Symantec also bought a series of drivers that give DataEase access to data residing on servers that support Open Database Connectivity, Distributed Relational Database Architecture, Enterprise Data Access/SQL and AS/400, he said.

DataEase will continue to market its database, he added.

Symantec officials refused to disclose what they purchased. Rapid Enterprises, however, was building a fourth-generation development tool that could provide Symantec with the building blocks for a client/server application development language, observers said.

The purchase could help Symantec further expand beyond the utility market, according to Andrew M. Seybold, editor-in-chief of "The Outlook on Professional Computing."

"Symantec may be positioning itself to be a services player in languages," Seybold said.

Diversification is critical, he continued, adding that operating systems installed away at the utility market.

"We've recognized, and customers are telling us, that re-engineering and employing client/server architecture are huge emerging markets," explained Ted Schlein, Symantec vice president and general manager of enterprise systems.

DataEase founder Arun Gupta will join Symantec as principal architect of the enterprise tools division.

The partnerships:

Symantec and Rapid! Enterprise started working together in April 1993. To get cash, DataEase sold Rapid Enterprise to Symantec. Among the technologies Symantec now owns or jointly owns with DataEase are Prism client/server development technology and several cross-platform SQL tools.

Development tools

Angoss eyes unified office suite

By Derek Slater

Angoss Software Corp., which spent most of 1993 gobbled up technology companies and products, has kicked off the new year in the same mode. Last week, the company acquired a range of cross-platform development tools and database performance enhancement products.

These offerings, acquired from San Mateo, Calif.-based Trifon, Inc., join an increasing crowd of Angoss product lineup that at first blush appears a very odd mix. However, the gamut of office automation software, query tools and development aids is actually helping to form the foundation of the company's vision.

Following its year-long acquisition spree, the Toronto-based company now offers an integrated suite of office applications, a rapid application development (RAD) tool, an artificial intelligence-based query tool and a PC voice-recognition product in addition to the Trifon tools and utilities.

The unifying vision behind this assortment is a plan to build office automation software with built-in intelligence capable of learning how best to support the individual user, according to Lyne Stethem, Angoss president and founder.

The linchpin in Angoss' strategy is the SmartWare line of integrated applications purchased from Informix Software, Inc. for roughly $15 million in 1992. SmartWare gives users spreadsheet, database and communications functions as well as a programming language. Angoss built a second product, the Angoss RAD tool, using SmartWare's database and programming capabilities.

Tight integration between Angoss RAD and SmartWare allows users to quickly build applications to automate office procedures, Stethem said. Last summer, Angoss also purchased KnowledgeSeeker, an artificial intelligence-based data analysis product, and launched a co-marketing and development pact with Dragon Systems, Inc., a Newton, Mass., voice-recognition vendor.

That agreement will allow SmartWare users to initiate database queries with voice commands.

Angoss has its work cut out because SmartWare and its ancillary products will fight for sales in arenas where the big boys play. On the applications side, suites from Microsoft Corp. and Lotus Development Corp. are continually improving their level of integration, while vendors such as Progress Software Corp. compete on the development side.

Andrew Blum, a financial analyst in Yornton Heights, N.Y., noted that combining the SmartWare suite with quick development has won Angoss a loyal following of developers and resellers. That is the same strategy that Progress Software used successfully while competing against much larger foes, such as Oracle Corp.

However, by providing development tools that end users can work with, SmartWare can relieve IS of some of the development burden.

Angoss is betting on two other key factors: First, SmartWare has a large installed base of more than 500,000 users; and second, the combination of SmartWare with a RAD tool and an artificial intelligence query tool is practical and unique, according to Stethem.
IBM COBOL POWERbench for RISC System/6000® combines a comprehensive set of development tools with a COBOL compiler to make your mission critical, commercial application development more efficient, more productive.

New COBOL POWERbench™ from IBM Software Solutions combines the Micro Focus COBOL™ compiler with an integrated suite of development tools to help simplify coding, debugging and optimizing your applications.

COBOL POWERbench is a complete development environment, designed to help you quickly and easily learn the skills necessary to proficiently develop COBOL applications in a UNIX™ environment. The compiler supports 11 different COBOL dialects, so you can preserve existing applications - most of which will run with minimal coding changes.

All in all, COBOL POWERbench allows you to transfer existing mainframe applications, knowledge and skills to a UNIX Client/Server environment.

To receive literature, or to have an IBM Marketing Representative contact you, please call 1-800-346-4699 ext. 262 or fax 1-800-426-8649 (North America) or contact your local IBM office.
Thomas Watson Jr.: Great thoughts

“A role model, a leader, a man of absolute integrity. Mr. Watson set a magnificent example for all of us who were privileged to work for him.” — H. Ross Perot

“Tom Watson was a remarkable man who transformed IBM into a computing industry giant that made possible the computer age. He will be remembered for his adventurous spirit, sense of fair play and the vigor of his friendship.” — Louis Gerstner, Chairman, IBM

“Tom Watson delivered IBM into the computer era. It was his leadership and persistence that shifted them from a tabulating company to the world’s largest computer company.” — DuWayne Peterson, Former chief information officer at Merrill Lynch

“He is clearly at the top of the computer industry and company creators' list. He provided a vision and dream for computing as a leader at a time of technology turmoil.” — Gordon Bell, PDP-11, VAX architect

“Tom Watson was a true giant who impacted positively everybody who knew him. Rare today is the individual who combines his business acumen, concern for the consequences of new technology on society and a deep respect for the individual and molds this into effective actions.” — Erich Bloch, IBM fellow and former director, National Science Foundation

“Wherever he is today, Watson would appreciate being remembered for his charitable efforts, particularly in higher education and medical research.” — Ben Rosen, venture capitalist, Compaq chairman

“He really created the industry we've known for the past 30 years. He put in place and directed IBM into subsequent dominance.” — Maz Hopper, Chairman, AMR Corp., Sable Technology Group

“Powerful, tough, aggressive, yet having integrity, class, confidence and a controlled, understated demeanor. He was willing to take a risk, to build a juggernaut, and once it was running at flank speed, he was steady at the helm.” — Steve McClelland, author and analyst at Merrill Lynch

“When people talk about the values at IBM or management methods that so many American companies emulated from the ‘60s through the ‘80s, they are really talking about Tom Watson Jr. By making IBM so respected and feared, he also did more than anyone else to shape the U.S. computer industry. On top of everything else, Watson was thoroughly charming. A true giant. A great man.” — Paul Carroll, author of Big Blues and Wall Street Journal reporter

Compiled by Erin Callaway

1914 to 1994

Voice recognition: noise pollution?

Regarding Esther Dyson's column on voice recognition, "Say it, point to it or type it" [CW, Nov 15], PCs with voice recognition will have a number of drawbacks.

Heavy use of voice commands will increase already high noise levels and add to distractions.

Imagine walking through an office and hearing random voices saying or shouting, "Add a window!" "No, sum it the other way!" or "Boldface!"

A new method of employee observation by management might be to tip toe near an employee's cubicle, and if appropriate commands are not heard at intervals, to assume the employee is sloughing off.

A great source of pranks will be people walking by cubicles and shouting out commands to other employees' PCs.

Bob Mathony
Yonkers, N.Y.

The benefits of CNE certification


Sure, many people in the computer industry have a Certified NetWare Engineer (CNE) certification, but if the CNE certification were not in demand or deemed of value, it would have been long gone. Instead, it is now going into its fifth year.

I do agree that a company should not hire someone simply because he has a CNE certification. But how will a company know whether the applicant is at least in the ballpark if some conditions are not used?

Certainly a CNE/Enterprise Certified NetWare Engineer (ECNE) certification is a good indication that the candidate has a certain NetWare background.

As a Certified NetWare Instructor for a number of years, I have seen many "paper CNEs" certified when they should not have been. However, this situation is being reviewed at the moment, and the testing procedures are being improved on.

The statement "The demand for courses pressured Novell to contract the training to Novell Authorized Education Centers" is utterly untrue. The Novell Authorized Education Centers channel was in place long before the CNE program came about. It was not well known because it catered mostly to the Novell resellers.

I also have yet to come across a Request For Quotation that asks about Novell certification. Any vendor that quotes a system knows in advance whether its hardware will work with NetWare.

I feel that Mr. Hertz's article is inaccurate and that your publishing it without verifying all the facts has done injustice to the CNE/ECNE program.

Peter Kuo, Ph.D.
NetWare Instructor ECNE
Richmond Hill, Ontario, Canada

Work invades the home environment

Obsessive work is what Ellis Booker is writing about in his column, "Work escapes the office." [CW, Nov. 29] Not only can you take your work home, but you can also take it on the subway, to a cookout — wherever you think best.

Yes, but home doesn’t go to the office, does it? Home stays put.

It's just that home activities are now cut back and interrupted while you punch your laptop, tap your voice mail, etc.

I can now see that voice mail and the modem-equipped laptop are only going to help me escape my home pleasures and responsibilities.

Ross Pavlac
Evanston, Ill.
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Other

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Other
Viewpoint

The Deming legacy

Ellis Booker

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Edwards Deming, who died last month at 93, was neither a computer expert nor a titan of the information systems industry. But his theories about total quality management and continual improvement did have a profound impact on the computer and electronics industries — first in Japan in the 1950s and 1960s and relatively in the U.S. in the 1980s.

It was Deming who recognized that it was simply cheap and easy to produce quality goods. Rather than correct defects, companies that accept cheap customer complaints may be realizing that defects annoy customers and may cause them to stay away — he quantified the losses, proving with hard numbers that the cost of repair, retooling and rejects was higher than the cost of "getting it right the first time."

Deming contended that any process, no matter how complex, could be analyzed, measured and improved. He warned strongly against rewards or punishing workers on the basis of results they are not, in reality, able to control.

On the whole, IS organizations were not quick to latch onto Deming's ideas and to "get on the quality bandwagon," says James Weath erbe, director of the MIS Research Center at the University of Minnesota in Minneapolis and director of the Center for Cycle-time Research at Memphis State University. This began to change in the late 1980s, he says. The results have been better quality software and a growing focus on the needs of the end user.

Bose, for instance, has been moving from "activity-based" metrics (such as how many hours were spent on fixing a network) to "outcome-based" metrics (network uptime). The financial strategy will be so-called "product out" thinking, in which quality is defined in terms of what each customer deems important.

Unfortunately, Deming and his ideas are still not as well known as they should be. Only one U.S. company, Florida Power & Light Co., has ever won a Deming Prize, an annual award for process improvement and managerial excellence established by the Japanese in 1951.

And although those in the IS field ought to be particularly receptive to the benefits of his ideas, many IS executives still know little or nothing about Deming's philosophy of using measurement and statistics as weapons against chaos and error.

In a world where management theories blow across the landscape like so many dust storms, Deming's ideas are still as relevant as they were 50 years ago.

Booker is Computerworld's Chicago bureau chief.

Controlling the keys to the kingdom

Michael Schrage

O

riganally, this was going to be a column about the social impact of "ubiquitous encryption" — what happens to electronic mail and information sharing in an organization when data encryption is as cheap and easy as tapping an icon.

Then I figured, encryption was just a technical excuse to explore the broader topic of computer security. Shudder people with locks, keys, safe deposit boxes and The Club and their behavior is going to change. Looked at that way, the issue becomes: How will proliferating network protocols for electronic mail and information sharing be analogous to voice mail — you can no longer lie for you or say you didn't get the message. So when someone logs on to the calendar, should he be surprised if he finds personal schedules filled with faux meetings and fake organizational data. They're about the protection and distribution of organizational power. It's about "who." The organization is begging for real ones. The organization is begging for real ones.

But "who." The organization is begging for real ones.

"Network security isn't about protection; it's about politics and the pecking order."

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Vendors turn to InterGroup for VisualWare system

By Stuart J. Johnston

Microsoft Corp.'s announcement last summer that it will not license its Visual Basic Applications (VBA) Edition to other developers left independent software vendors in a quandary. Many worried aloud about how they could continue to compete with the software titan, and some even invoked accusations of unfair competition.

Now, however, a tiny start-up, InterGroup Technologies, Inc. in Bellevue, Wash., is offering developers another option that it says will give them all the advantages of VBA without the time and money required to develop their own VBA competitors. Without such an option, users who want the kind of cross-application macro language and live development environment and a choice of Basic-based scripting languages that can be incorporated into their applications with a minimum amount of work, said Tom McKenna, company president.

Version 1.1, which is due out in the first quarter, will add support for Visual Basic custom controls, easily addable tools that are developed by third parties. Version 2.0, due in the second quarter, will add support for Object Linking and Embedding (OLE) 2.0 "container" objects, McKenna said. Microsoft and most

Windows developers view OLE 2.0 as key to the success of future workgroup computing in that it allows users to easily link and interchange data among off-the-shelf applications.

To provide the glue among OLE-enabled applications, Microsoft has developed two versions of Visual Basic, itself a commercial language development system that developers can purchase to write Windows applications.

However, last summer the company also announced VBA, which it considers proprietary and which will be available only within Microsoft's own applications.

This leaves developers, especially smaller ones, facing the prospect of developing macro languages for their own applications that will tie into OLE 2.0 and can interact with Visual Basic and VBA code.

Relief for developers

That is where InterGroup's VisualWare comes in. VisualWare provides a GUI-builder environment, development tools and Windows interface objects as well as on-line help.

InterGroup has negotiated deals to offer several scripting language options. These include the Softbridge Basic Language from Cambridge, Mass.-based Softbridge Microsystems, Inc. and Sun Microsystems.

Client/server

Power-packed PCs in offering

By Michael Fitzgerald

The growth of the client/server market will drive a need for much more powerful configured desktops, according to a new study.

Forrester Research, Inc. predicts that "super clients," a new class of desktop-based PCs, will develop as businesses continue to push mission-critical applications down to the desktop. These PCs, based on at least a 486-level processor, will also feature more RAM and hard disk space to handle the amount of information they will process.

William Bluestein, a Forrester analyst, said super clients will become necessary because client/server computing will demand a higher level of reliability and security than today's desktop computing, "so you'll need a 32-bit operating system to start, and that will push memory requirements up."

More PC purchases

Bluestein added that linking multiple applications with potentially diverse database management systems will require more memory and processing capability.

Bluestein said the need for such super clients will spurn a boom in corporate PC purchasing as companies move toward more distributed computing.

One major user agreed in principle with the study.

"Much of the installed base here is still some of the older technology, and to go to more enhanced client/server environments with more distributed processing, higher desktop power will be required," said Vaughan Hovey, director of information processing services at Eastman Kodak Co. in Rochester, N.Y.

Hovey said it was unclear, however, whether Kodak will buy more PCs than usual to meet its client/server needs.

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Franco Vitaliano

Coming full circle

It's a new year and, therefore, a good time to reflect on where we are headed.

Unfortunately, in some cases, the drift seems mostly circular.

Consider this puzzler: In this supposed era of full-color, full-motion, CD-quality, multimedia digital convergence, why is it that handwritten ASCII text — which is basically what the Internet is — is suddenly such a techno-wonder?

It seems like there's a not-yet-disconnect somewhere. In fact, in 1994 there is a high probability that the multimedia computer will turn out to be just another mechanism that proliferates painfully handwritten memos.

Not gonna happen

And, long as we're talking about dead-end reasoning, I'd be willing to bet that some serious, well-intentioned information systems professionals will waste the better part of the year telling themselves (and upper management) that, given a little time, NT will be just as enterprise-able and well-connect ed as Unix. (Right now it runs Windows and MS-DOS about as well as Unix does PC Insignia.)

Big PC makers got bigger in 1993

By Michael Fitzgerald

The U.S. PC market grew like a proverbial weed in 1993, up 25.8% over 1992's robust totals, according to year-end projections from International Data Corp. (IDC).

Some 14.8 million PCs were sold in the U.S. market, compared with 11.8 million in 1992. Worldwide, PC hardware unit shipments rose 18.5%, from 30.4 million to 36.1 million units, IDC projected. Both U.S. and worldwide numbers were up from projections from early 1993.

Richard Zwetchkenbaum, an analyst at IDC, said a stronger-than-expected worldwide economy and vendors' aggressive moves into new markets fueled the unexpected growth.

"There was strong demand from all quarters, including the home market and the U.S. government with its Desktop IV contract kick ing," Zwetchkenbaum said.

IDC projects that growth will slow in 1994, with worldwide sales up 12.4% to 40.6 million units and U.S. sales up 10% to 16.3 million units. Color notebooks and subnotebooks will spur this growth, as will new 32-bit applications.

Notable in IDC's findings were the following:

- The market continued to consolidate, with the Top 10 vendors controlling 64.1% of the market, up from 52.9% in 1992.
- Compaq Computer Corp. topped the growth charts with a 95.8% unit gain worldwide, 100% in the U.S.
- Overall worldwide No. 1 IBM PC Co. reclaimed its No. 1 position in the U.S., nudging out Apple Computer, Inc. by 25,000 units.
- Commodore Business Systems, Inc. was the only vendor in the Top 10 to see unit growth drop, falling 35% to less than 1 million units, as the company slumped from No. 4 to No. 8 worldwide.
These days, the complexity of managing multiple databases has database administrators running in circles. But now you can take a giant step toward bringing all that complexity under control.

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The DataHub product family from IBM Software Solutions offers a powerful new way to handle systems management across IBM relational databases — DB2™; SQL/DS™ on VM/ESA™; OS/400™ database manager, OS/2™ Database Manager and DB2/2™; And coming soon, support for DB2/6000™.

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Vendors such as PLATINUM technology, Candle, LEGENT, Bridge, InfoTel and PROGRAMART are staying afoot with DataHub's direction, letting you integrate a variety of database management tools. You can also develop your own application-based tools for DataHub's platform of common services.

So take the next step — call 1 800 860-2047, ext. DH1 in the U.S. or 1 800 465-1234, ext. 665 in Canada; or fax us at 404 240-7301 (U.S. only); or contact your IBM representative, and see how DataHub can help you set a new pace in managing database systems in your company.
Job Search may open Uncle Sam's doors

Database holds thousands of listings for federal government positions

By Gary H. Anthes WASHINGTON

Anyone looking for a job in the federal government might enlist the help of Job Search Express, a PC-based software package from Sak Consulting in Reston, Va.

The software comes with a database of more than 2,000 government job openings in 1,100 specialties, ranging from "able seaman" to "zoologist." Because the database is local — data diskettes cost $10 and downloads from Sak's bulletin board cost $5 — users pay no connect or usage charge.

The $29.95 package allows users to search for job openings based on job type, pay range and/or geographic preference. Items that meet the user-specific criteria may be sent to a screen or printer. In addition, a form may be printed for ordering database updates.

Sak updates its database twice a week by downloading data from about 10 federal electronic bulletin boards around the country, said President Scott Keen. Sak is seeking additional sources for its job data and may add information about state and local government openings, he said.

Rapid response

A reporter trying Job Search Express found the software extremely easy to use; no documentation was needed. Pressing the F1 key at any point brings context-sensitive help and F2 displays "pick lists" — tables of job and pay codes, for example — to choose from when building job search queries.

Most queries tried on an Intel Corp. 1486-based PC returned results in less than a second.

However, as slick as the software is, limitations in the data may mean that not all users will find their dream jobs using Job Search Express. A query seeking openings for secretaries in the Washington area turned up only 15 items at places such as the National Endowment for the Arts, the Smithsonian Institution, the National Park Service and the U.S. Department of State — surely a tiny fraction of the openings for secretaries here.

And a search for computer-related jobs using the code for "information specialist" as the search criterion turned up several cryptic notices of openings for "correctional assistants." A search using the code specified for "computer specialist" found 19 openings, but they contained no job descriptions indicating whether the agency was seeking a programmer, analyst or chief information officer. Salary ranges were indicated, however.

Other searches found keywords that were nothing more than generic notices from the federal Office of Personnel Management stating that job seekers should directly contact the agency for which they wish to work.

Keen said Job Search should be viewed as a tool for generating job leads. He said in most cases users will want to telephone the numbers given with leads retrieved from the database and request that detailed job descriptions be sent to them by mail or fax.

Poet Software Corp. has announced Poet 2.1, an object database system.

According to the Santa Clara, Calif., company, the product provides functionality and performance improvements and features the Poet Professional Edition for Microsoft Corp.'s Windows for Workgroups, as well as Windows offering. A 32-bit implementation for Microsoft's Windows NT is also available.

Poet 2.1 features additional database language syntax that allows a database designer to specify complex and compound indexes, an improved query optimizer, faster index management and faster low-level file I/O.

Pricing starts at $499.

Poet Software

(408) 745-3403

Zebraf Express has introduced Zebra Express, an accounting system for Windows.

According to the Tampa, Fla., company, the product is a complete multituser, eight-module system that includes Accounts Payable, Accounts Receivable, Fixed Assets, Inventory and Purchase Orders.

Zebra Express offers consolidated and multidivision reporting from the General Ledger module, automatic calculation and tracking of sales commissions from the Accounts Receivable module, check printing individually and in batches from the Accounts Payable module and multiple inventory classifications in the Inventory Control module.

Zebra Express will be available for $99 until the end of March. The suggested list price is $795.

Zebra Express

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Manzanita Software has added Order Entry and Inventory Control modules to its line of BusinessWorks for Windows accounting software products.
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"File-AID enabled us to develop an end-user test facility in only one month for a new $9.5 million financial application."
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"XPEDITER helped solve a major program problem in 20 minutes. Using our old debugger, it would have taken 4 hours to find."
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Our products and services are aimed point blank where application programmers spend at least 70% of their time—testing and maintaining software. Your end result is reliably built applications, quality tested, in far less time.

It's what you'd expect from the programming productivity experts.
ForeFront challenges Notes with VNS

Real-time capabilities cited as major difference
By Michael Vizard

As Lotus Development Corp. gears up to deliver its first Unix implementation of Notes early this quarter, the industry's leading player in the groupware arena may soon find itself confronting some unexpected competition from the ForeFront Group, Inc. in Houston.

Currently, the major technical difference between Notes, which uses store-and-forward replication technology, and ForeFront's Virtual Notebook System (VNS) is the real-time capabilities of VNS. As such, VNS can be used both as a repository for documents such as Notes and to provide users with the ability to share documents at the same time, according to Alex-Martin, principal at Intersections Consulting Group in Los Gatos, Calif.

"To really spark innovation, you have to have a visual representation of what you are talking about on the screen. There's a limit to what you can understand over the telephone," added Roger Turner, concurrent engineering manager at the Composites Automation Consortium in Burbank, Calif.

In the past, Lotus executives have said real time is not a major requirement for most groupware applications. However, Lotus is working on adding real-time capabilities to Notes in order to support videoconferencing.

"Notes transformation" Meanwhile, Lotus has done more extensive work in terms of turning Notes into a platform for application development. "I don't see VNS as a platform for application development," Martin said.

In addition, according to Lotus, VNS is essentially one large repository that sits on the network and cannot be customized. Notes, on the other hand, is a better metaphor for letting individuals create databases locally, the vendor said.

Turner said he evaluated Notes to support an engineering team of eight people working at eight different companies in four time zones, but he opted for VNS because Notes lacks real-time capabilities.

"Notes has a lot of credibility. It just didn't suit our needs," he said.

Managing data

According to Peripheral Strategies, Inc. in Santa Barbara, Calif., companies spent an average of $557,000 to manage their data last year, not including the cost of hardware expansion.

Phone company to test competing groupware

By Michael Vizard

As part of a long-range plan to promote collaborative computing at an organization that stretches across five states, Southwestern Bell Telephone Co. plans to try out a real-time groupware offering that spans both PC and Unix platforms.

The Virtual Notebook System (VNS) from the ForeFront Group, Inc. in Houston is based on a real-time object database for storing documents that can be layered on top of either a SQL database or the ndbm database bundled in Unix. VNS makes use of a notebook metaphor as its user interface (see photo).

Southwestern Bell is in the early stages of trying to foster teamwork across an organization that is aligned horizontally, with specific team responsibility for complete business processes. Unfortunately, the need to organize and distribute information quickly to disparate team members has become a costly matter, said Russ Fisher, area manager for customer service in the information systems department at Southwestern Bell.

While streamlining an organization speeds the flow of information, an increase in the number of meetings and endless conference calls serves to increase the cost of information, Fisher said.

"The need to collaborate based on teams and processes is becoming apparent as we move to become a horizontal corporation. It's become apparent that we needed something above electronic mail," he said.

Southwestern Bell decided to test VNS because it needed to find a solution that would support real-time collaborative computing across multiple client platforms using Unix and a PC/Window server.

"When we looked at other products such as Lotus' Notes, they weren't available on Unix or TCP/IP at the time. And Notes is very proprietary," Fisher said.

Database synchronization

VNS differs from Notes in that it uses bidirectional replication technology to keep Notes databases synchronized among multiple users, who communicate by storing and forwarding documents via e-mail.

In the VNS architecture, only one database resides on a server; it can be accessed in real time or asynchronously by systems running VNS client software that runs in native mode on Windows, OS/2.

Legato promises cross-platform storage manager

By Stephen P. Kleist Jr.

Legato Systems, Inc. said it will ship archival and hierarchical storage management (HSM) software by year's end as part of a data management services strategy aimed at providing a cross-platform software package for client/server networks.

NetWorker Archive and NetWorker HSM will be add-on modules to Legato's NetWorker backup and recovery software for Unix and Novell, Inc.'s NetWare environments. According to Legato, the software family will be independent of operating systems, hardware devices and media.

New flexibility

Industry observers said the product suite will give users a new level of flexibility over HSM systems from vendors such as Conner Peripherals, Inc. and Palindrome Corp., which are more proprietary in nature. For example, the software will run on users' current storage servers and backup devices so an additional hardware investment will not be required, they said.

"We don't think people are going to buy file migration and archival in a big way. They're not going to want to spend $15,000," said Louis C. Cole, president and chief executive officer at Legato. "Our approach will allow them to start small."

While exact pricing was not available, Legato said NetWorker Archive and HSM will follow the same pricing model as NetWorker.

"Customers that paid, say, $6,000 on NetWorker for data management can expect to pay $6,000 for HSM," Cole said.

NetWorker Archive writes multiple copies of backed-up data to separate media, which allows users to delete files and free up space on their servers or hard disks. A version for Unix is slated to ship in the third quarter, and a version for NetWare is scheduled for the first quarter of 1995.

NetWorker HSM provides migration and data staging from hard disk to tape based on rules set by the systems administrator. It is slated to ship in the fourth quarter for both Unix and NetWare.

Attractive approach

Several analysts have said Legato's modular approach may make its product more attractive to users wary of early software release dates and turned off by the hefty price tags typically associated with HSM systems.

Information systems "managers are resistant to implementing release 1.x of anything," said Bob Abraham, vice president at Fream Associates, Inc. in Santa Barbara, Calif. "They are especially resistant to adding something as unproven and complicated as an HSM system to their network."

However, he said Legato's modularity and hardware independence may help users take the HSM plunge by allowing them to get into the technology slowly at a reasonable cost.

Legato's data management services architecture consists of the following components:

• Storage management engine: Software that segregates archive and backup data, maintains catalogs of managed data and media library catalogs; storage management applications function independent of network protocols.

• Applications layer: Consists of backup and recovery, archival and HSM modules.

• User interface: Provides a common view of storage management data residing on the network.
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IBM hits the electronic forms scene

By Michael Vizard

As large-scale implementations of electronic mail on PC LANs become more stable, the industry’s larger vendors have begun shifting their focus to marketing applications that rely on mail as a delivery vehicle.

For example, IBM is about to ship an electronic forms and work-flow software package called FormTalk that will make use of IBM’s object-oriented WorkPlace Shell on OS/2. Meanwhile, Lotus Development Corp. is expected to deliver Lotus Forms for Notes in the first quarter, and both WordPerfect Corp. and Microsoft Corp. jumped into this market last summer.

In addition to these companies, smaller ones such as Delrina Corp. in Toronto and JetForm Corp. in Walhalla, Mass., have already established themselves as suppliers of electronic forms and work-flow software on multiple platforms.

“People are starting to realize that you can use electronic mail for more than just sending messages. They now have the infrastructure in place to build these kinds of applications,” said David Ferris, president of Ferris Networks, Inc. in San Francisco.

IBM expects to differentiate itself from other suppliers in this market by delivering a FormTalk offering that is intended to enable end users to easily design their own forms, according to IBM brand manager Paul Clandillon.

Users create forms

To accomplish this, users can manipulate icons using the WorkPlace Shell in OS/2 to create forms and to design the actual work-flow paths for a form. In contrast, Clandillon said, electronic forms packages for Windows require developers to create the forms and design the work-flow paths. “We don’t require that users have programming skills to create a form,” he said.

However, Clandillon said IBM plans to market a Windows version of FormTalk in 1994, which will require it to make compromises because Windows does not provide an object-oriented shell similar to the WorkPlace Shell.

FormTalk will use the administration services of any mail system that complies with the Vendor Independent Messaging specification. It will be available for general release in 90 to 90 days, priced less than $150 per user.

Server boosts upcoming

By Stephen P. Klett Jr.

Analysts said first-quarter 1994 will be a hectic period for server vendors as they scramble to release products to compete with Compaq Computer Corp.’s ProLiant.

“From a cost, feature and ease-of-use standpoint, Compaq has shaken things up quite a bit with ProLiant,” said Randall Giusto, an analyst at WorkGroup Technologies, Inc., a consultancy in Hampton, N.H. Giusto said users can expect to see several major vendors come out with two- and four-processor systems at aggressive price points to compete with ProLiant.

“End users can expect servers from most vendors at the same price points as their current lines with at least a [two-fold] increase in performance,” he said. “Users will start to see features reserved for high-end machines — such as multiple processors and fault tolerance — appear in the lower end, more basic machines, such as Compaq has done with ProLiant,” said Tom Kucharvy, president of Summit Strategies, Inc. in Boston.

“NetFrame and TriCored supply the same capabilities but at much higher prices,” he said.

The most notable server developments analysts said they expect during the next year include the following:

• First quarter: Digital Equipment Corp. will come out with systems replacing its
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Southwestern Bell

CONTINUED FROM PAGE 41

a Macintosh client or any X Window System client. Access to a particular database, which can handle a wide variety of multimedia data types, is coordinated using standard database-locking procedures.

Southwestern Bell has 25 users using VNS to do project management, but Fisher said he expects that number to increase as the firm moves to adopt a more horizontal organizational structure.

"VNS is a very open, very unstructured environment. We can see things into the VNS library or cut and paste data from a Profs message directly into the VNS server," Fisher said.

Fisher said that thus far he has been able to create an environment that allows users to open multiple documents on the VNS server and cut and paste across those documents. Users can also easily cut and paste data between any application and the VNS server.

That latter capability is particularly important in the context of VNS' real-time capability, which Southwestern Bell uses to provide users with document conferencing capabilities.

"As you move to a horizontal organization, you'll see a lot more electronic mail and phone calls across the organization. VNS allows us to cut down on the amount of travel that has to be done across the different cities in the states we cover," Fisher said.

In the long term, Fisher said, he expects to incorporate VNS directly into the firm's Asynchronous Transfer Mode and frame-relay networks to use VNS in conjunction with real-time video and audio applications. At the same time, the ForeFront Group is beta testing a version of VNS that supports Microsoft Corp.'s Object Linking and Embedding (OLE) 2.0 technology. The ability to use VNS as an OLE 2.0 container is expected to arrive by the end of this quarter.

"VNS is easy to use, and I can train someone to use it in about three hours. There are not a lot of tool bars and icons," Fisher said.

VNS

CONTINUED FROM PAGE 41

At the core of VNS is a Real-Time Object Manager (RTOM) that manages an object database for storing documents. Linked to RTOM is a set of application programming interfaces written in C that allow client applications to call data from the RTOM server.

RTOM was originally developed at Baylor College of Medicine in Houston based on research done by Dr. G. Anthony Gorry, who is now vice president of graduate studies, research and information systems at Rice University in Houston. Today, VNS has been adopted by a range of companies, including MCI Communications Corp., British Petroleum Co., Shell Oil Co., The Dun & Bradstreet Corp., 3M Co., Lockheed Corp., McCormick & Co. and the University of Chicago.

VNS supports all major Unix platforms, with support for Microsoft Corp.'s Windows NT and Novell, Inc.'s NetWare forthcoming. Pricing for VNS is $875 per Window System clients are priced at $795. A VNS server license costs $6,000.

In contrast, Notes has a lower price of $485 for both clients and servers. It currently runs on OS/2 servers, with support for Solaris 1.1 servers from Sun Microsystems, Inc. due shortly. Support for Novell's NetWare Loadable Module architecture is due next month, while implementations on other Unix platforms and Windows NT are due in the first half of the year.

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Buy an Ecosys FS-1500A 10-page-per-minute printer between now and March 31, 1994, and you’ll print free for a year — with two free toner refills (in addition to the one packed with your printer) direct from Kyocera.* Just ask your Kyocera representative for details, or call 1-800-2-ECOSYS.

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Whether you consider the 10-ppm Ecosys FS-1500A or 18-ppm FS-3500A, Cartridge-Free page printing is inherently more economical than any disposable cartridge based solution — even if you recycle — because there are no cartridges or cartridge parts to waste. For a free cost-savings calculator wheel to figure your likely Ecosys savings, or to reach the Kyocera representative nearest you, call 1-800-2-ECOSYS.

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* Offer terms based on InfoTec study showing typical annual print volume in 7-10 ppm category at 16,400 pages at 5% coverage; three Ecotone refills provide approximately 21,000 pages.

Comparisons based on InfoTec standards of 7% average page coverage and 30,500 pages per month "high-volume" printing, cartridge list prices as of 9/93, yields from manufacturer information. Specifications and prices subject to change without notice.

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Workgroup Productivity Corp. has announced Note-able Tools for Notes 3.0. According to the Oak Brook, Ill., company, the product provides corporations with the guidelines they need to implement and develop Notes on a corporate-wide basis.

Applications such as the Methodology and Standards Guidelines, Implementation and Roll-out Guidelines, Design Element Repository, Design Element Encyclopedia, Extended Formula Catalog and Application Quality Assurance Certification are included.

Note-able Tools costs $4,995 per domain and $295 per developer.

ICL has introduced Version 3.0 of its TeamOffice groupware product set.

According to the Irvine, Calif., company, the most significant enhancement to Version 3.0 is TeamFlow, a workflow application that integrates seamlessly with Windows applications, TeamMail and other TeamOffice modules.

Version 3.0 also offers Microsoft Corp.'s Windows NT support, forum support for X.400 addresses for senders external to TeamOffice, a Windows interface for asynchronous dial-up client connection and support for Windows for Workgroups' Microsoft Mail client using a TeamOffice back end.

TeamOffice Version 3.0 costs $495 per user for a 10-user starter license.

Sapiens International Corp. N.V. has announced that Version 1.2 of Sapiens Vision, an object-oriented tool for rapid development of client/server applications, is available for IBM's AIX Version 3.2, Digital Equipment Corp.'s OpenVMS Version 5.1 or higher and UltraVax Version 4.2 and Sun Microsystems, Inc.'s SunOS 4.1.x.

According to the Cary, N.C., company, Sapiens Vision 1.2 allows users to create applications that can be developed on and ported to any platform supported by Vision without requiring conversion or recompiling. Users are able to build client/server applications with the provided graphical user interface, client processing and server. Enhancements include 100%-improved SQL performance from within SmartGL, the ability to open Windows 49% faster and help buttons that let users access context-sensitive, on-line help for specific messages and fourth-generation language syntax.

In addition, the development environment and entire Sapiens Vision applications can be launched with start-up files. Sapiens Vision is priced at $8,000 per developer.

Intergraph Corp. has introduced EMS 3, an Engineering Modeling System (EMS) family of computer-aided design, engineering and manufacturing software products. According to the Huntsville, Ala., company, EMS 3 provides high-performance, variational solid modeling with a range of integrated product development applications.

EMS 3 has the ability to automatically convert nonvariational geometry to fully constrained variational profiles. It also provides mechanical computer-aided engineering software that offers simulation tools for finite element analysis, mechanical systems analysis and plastics injection-flow analysis as well as tools for numerical control programming and fabrication. Pricing for design seats of EMS3 starts at $9,000.

Sapiens International Corp. N.V. has announced that Version 1.2 of Sapiens Vision, an object-oriented tool for rapid development of client/server applications, is available for IBM's AIX Version 3.2, Digital Equipment Corp.'s OpenVMS Version 5.1 or higher and Ultrix Version 4.2 and Sun Microsystems, Inc.'s SunOS 4.1.x. According to the Cary, N.C., company, Sapiens Vision 1.2 allows users to create applications that can be developed on and ported to any platform supported by Vision without requiring conversion or recompiling. Users are able to build client/server applications with the provided graphical user interface, client processing and server. Enhancements include 100%-improved SQL performance from within SmartGL, the ability to open Windows 49% faster and help buttons that let users access context-sensitive, on-line help for specific messages and fourth-generation language syntax. In addition, the development environment and entire Sapiens Vision applications can be launched with start-up files. Sapiens Vision is priced at $8,000 per developer.

Intergraph Corp. has introduced EMS 3, an Engineering Modeling System (EMS) family of computer-aided design, engineering and manufacturing software products. According to the Huntsville, Ala., company, EMS 3 provides high-performance, variational solid modeling with a range of integrated product development applications. EMS 3 has the ability to automatically convert nonvariational geometry to fully constrained variational profiles. It also provides mechanical computer-aided engineering software that offers simulation tools for finite element analysis, mechanical systems analysis and plastics injection-flow analysis as well as tools for numerical control programming and fabrication. Pricing for design seats of EMS3 starts at $9,000.
Until today the prospect of integrating a branch office into your corporate network has always seemed hopelessly far off. There are now unparalleled connectivity solutions that bring your branches and headquarters much closer together.

Eicon Technology, a world leader in PC-based connectivity, offers a family of internetworking and host access products for linking remote offices along with some of the best 3270, 5250 and APPC emulations for use on your favorite PC platform. Eicon's new InterConnect Server extends your Cisco, Wellfleet or IBM backbone network across the enterprise. It fuses traditional router and gateway technologies by integrating LAN interconnection for Novell NetWare and TCP/IP networks, access to any host, as well as conversion and concentration of non-LAN communications—all supported by comprehensive SNMP network management.

So, if you are interested in connecting your branch offices—whether they are in San Francisco, New York, or anywhere else in the world—call 1-800-80-EICON for the Branch Office Connectivity booklet.
NetLabs takes off Company readies distributed platform

By Lynda Raadosevich

*NetLabs, Inc., which landed SunConnect as a technology partner last month and NCR Corp. as a partner earlier last year, is looking more like a force to watch in the network management world, according to users and analysts.*

At the heart of the recent deals is NetLabs' distributed object-oriented network management platform. Dimons 3G. It is software that gives an operator access to alarms and statistics generated by "agent" software in devices on the network. The service is compliant with the Simple Network Management Protocol, Common Object Request Broker, and IBM.

If there is an object-oriented distributed model means network operators can get information on any object from anywhere in the network.

Analysts agreed that Dimons 3G's distributed technology is between nine months and two years more advanced than platforms from market leaders Sun Microsystems, Inc., Hewlett-Packard Co. and IBM.

"They are the first to market, but we'll see how it compares when the others catch up," said James Herman, vice president of Northeast Consulting Resources, Inc. in Boston.

Almost there

Actually, Dimons 3G is not on the market yet. End users can obtain the product (called Overlord when NetLabs announced it last February) through value-added resellers and systems integrators. That is because it still requires a great degree of configuration.

However, NetLabs will offer by midyear an "out-of-the-box" ready version, complete with preset alarms, preloaded management processes and access-controlled security options, according to Buonauro. That release coincides with SunConnect plans to release a distributed platform based on NetLabs' technology.

Both will share a common high-level, object-oriented application programming interface. What will differentiate the product lines is that Dimons 3G is not tied to a specific hardware platform. Now it is available only on Sun OS and Solaris-based workstations, but NetLabs plans to port it to NCR and Siemens/Nixdorf Information Systems, Inc. hardware within 12 months, Buonauro said.

After releasing the midyear version, NetLabs will focus on speeding up performance and increasing the number of users that can simultaneously access the system. This will require the installation of a "server" software.

NetLabs' 18- to 24-month goal is to enable end users to look into the network through a Windows interface to see how it is behaving. If a messaging server will be down for three hours, users should see that and plan accordingly. The goal is to reduce support costs by letting end users "be part of the management solution," Buonauro said.

University tears down its information walls

By Elisabeth Horwitt

The University of Michigan is tying together its heterogeneous client/server installation using services based on DCE, Distributed File System and X.500 directory protocols that will run across the university's client/server environment. The services include naming, directory, file storage, network access, remote dial-in, electronic mail, security, authentication and file storage.

Cost not key

The project is not expected to realize any cost savings. Rather, "we have to bring down some of those walls of noninteroperable technology that today involve manually rekeying batch file transfers, tapes and drives," Gauthier said. "We want to take the data that already exists in computers and turn it into information for our users so that they can get the job done, whether they are an administrator or a student."

The architecture will also allow anyone to plug into any services available on any platform and in any department in the university, Gauthier said.

This will potentially offer greater cost efficiencies by enabling, for example, the billing and accounting department to provide its services through a server it maintains in its own area, Gauthier said. Currently, information technology must maintain billing and accounting services on the mainframe.

In addition, the DCE architecture will support the delivery of University, page 55

Peersanche

By David Michael Bernard

Peer-to-peer smears

"That is a peer-to-peer network."

The networking profession could not conjure up a more derogatory description for a network operating system. The mere suggestion that a system design involves peer-to-peer networking is enough to elicit "They are too slow."

"They are not secure."

"They do not integrate with other systems."

"They smell."

In short, the consensus is that peer-to-peer networks lack critical features and/or capabilities that exist in full-blown systems such as NetWare or LAN Manager: Systems such as NetWare provide network managers with much-desired centralized security and network management. Resource sharing is focused around the use of a file server. Node resources cannot be shared—only server resources can be shared.

Disappearing differences

What then is a peer-to-peer network? Webster's defines peer as "one that is of equal standing with another." The original peer-to-peer networks were true to this meaning—a network where all nodes have the ability to access one another's resources. There was a distinct difference between "peer-to-peer" and client/server—the absence of a server. This is not the case anymore.

We are beginning to witness a convergence of feature sets between peer-to-peer and client/server. Client/server network vendors are incorporating peer-to-peer functionality into their flagship product lines. When users share printers on a Novell LAN using RPRINTER, they are sharing node resources and are, therefore, using peer-to-peer functionality. Control-burn.
Niche gateways draw new customers

By Thomas Hoffman

While sections of the nation’s information superhighway are still being paved, some entrepreneurs have opened service roads and private toll booths to help their organizations draw prospective riders and revenue.

For example, Coopers & Lybrand, a New York-based Big Six accounting and professional services firm, launched an electronic tax information service last May to corporate tax directors and chief financial officers called the Tax News Network (TNN). TNN, which bundles electronic versions of “must-read” daily tax periodicals such as Tax melt and Commerce Clearinghouse, has already drawn 450 subscribers from 200 Fortune 500 companies, including Johnson & Johnson, AT&T, Merck & Co. and Goldman Sachs & Co., according to Andrew B. Zimmerman, national information industry partner at Coopers & Lybrand.

TNN subscribers, who can be connected to the network through PC modems or LAN gateways, can choose from four information channels on the DOS-based system: federal tax law, state and local tax law, international law and employee benefits. In addition to daily news summaries of developments in each tax field, TNN provides electronic access to a range of third-party and Coopers & Lybrand newsletters, as well as on-line access to Coopers & Lybrand tax experts.

**Profit not part of plan**

Although TNN’s $50 monthly fee has thus far generated hundreds of thousands of dollars in new revenue, Zimmerman said the service was not targeted as a profit-making vehicle for the accounting firm.

“The real incentive is to get current clients to do business with us and to get nonclients interested in our services,” Zimmerman said. Indeed, one-third of TNN’s noncustomers are noncustomers, and with daily access to its tax experts, the odds of Coopers & Lybrand landing business with new customers increase.

TNN was developed using base platform technologies from Reach Networks, Inc., a $3 million, privately held New York-based firm that develops simplified DOS- and Windows-based front-end communications packages. That approach has helped Reach clients such as Coopers & Lybrand land novice PC users as TNN subscribers.

“The corporate tax crowd is not technologically oriented,” said William P. Kane, Reach’s chairman and chief financial officer. “We knew that most of these people had PCs, but we hadn’t realized how PC-illiterate they were.”

Reach is developing a Windows-based version of TNN, slated for release this month, Kane said.

Reach’s David Johnson: Counsel Connect has gained 3,000 users from 65 top law firms

Reach also helped customize a niche-oriented network for another nontechnical industry group, American Lawyer Media. Counsel Connect, which began last April, was designed to act as an electronic meeting place for lawyers at the nation’s Top 100 law firms and major corporate legal counsel at Fortune 500 companies.

The network, priced at $9 per month per user (not including connect time charges), was designed as a forum for lawyers to generate topic discussions on specific legal issues such as intellectual property. But perhaps the most important attribute of the network is that it allows corporate legal counsel to interact with and procure services from major law firms that specialize in particular legal jargons, such as age discrimination litigation.

**Telecom mergers**

The recent wave of mergers that has swept the U.S. telecommunications scene will continue for several years, according to a report from Insight Research Corp. in Livingston, N.J. The report projects 10% compound annual growth in the new segments of the telecommunications market—cable TV, cellular radio, wideband and wireless services—through 1998, compared with 3% in traditional telephone services. That growth in new services is driving regional telephone companies to acquire or pair with organizations such as cable TV providers.

Motorola denies tumor claim

Motorola, Inc. issued a press statement last week saying an employee’s recent lawsuit is groundless and that various studies have found that Motorola employees are healthy and less cancerous than U.S. averages.

MCI promotes lite

MCI Communications Corp. is offering a simplified “lite” version of its DOS-based MCI Express Mail free to new MCI Mail subscribers.

**Frame relay gets green light**

The Frame Relay Forum agreed on a technology that should improve frame relay’s performance as a wide-area transport mechanism in multiprotocol networks. The agreement standardizes the way frame relay transports or encapsulates the various protocols in a field, shielding the network from interpretation until they get to the terminating router or bridge.

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University

CONTINUED FROM PAGE 51

of specialized services "that one particular department may do best," such as the development of multimedia presentations, Gauthier said. The task facing the project team is not an easy one, given how heterogeneous that environment is now, Gauthier said.

It comprises three key network operating system platforms: Banyan Systems, Inc.'s Vines, Novell, Inc.'s NetWare and Apple Computer, Inc.'s Appleshare. Numerous E-mail packages are also in use.

The university has concluded that DCE is the "only game in town" for providing common communications, security and directory services across disparate client/server platforms, Gauthier said. Rather than wait passively for vendors to meet its needs, however, the university, along with other members of the academic and scientific community, has been actively pressuring its key network operating system and E-mail suppliers to bring their products up to DCE and X.500 compliance, Gauthier said. The pressure is partly verbal; more practically, however, academic institutions such as the University of Michigan are developing their own DCE and X.500 integration mechanisms and then offering them as prototypes to the vendors.

For example, the university is participating in a project with Apple to develop a gateway that enables a DCE client to transparently access files on a NetWare server, both organizations confirmed.

Make way for Max

In addition, an internal university developer has come up with Max500, which gives a Macintosh user direct access to an X.500 directory with a browse tool. It is based on "Lightweight Directory Access Protocol," a client/server architecture developed by an Internet Engineering Task Force working group, to provide a less memory- and CPU-intensive way for clients to access an X.500 service over a TCP/IP link.

Since accessing an X.500 service natively from a workstation is "like sipping from a fire hose," such a front end is needed to enable an application to sample X.500 information "a sip at a time," Gauthier said.

One main advantage of X.500-based directory services is the potential for interoperability with other organizations' directories for the purpose of sharing resources and interacting with other users, Gauthier said.

The university has come up with some "real exciting applications that can ride on X.500," including the sending of electronic documents with electronic signatures, Gauthier said. Such signatures ensure "that the document is indeed from the designated sender and unchanged" in transit.

However, it is impossible for workgroups using different electronic forms packages to authenticate one another's signatures. X.500 could fix that problem by providing a public key to translate across those environments, Gauthier said.

The university already has an X.500 network up and running on Sun Microsystems, Inc. SPARC 4/470 SunOS boxes and linked with other X.500-based organizational and service directories on the Internet, Gauthier said. The University of Michigan's own directory has almost 100,000 object entries, which can be users or groups of users.

Enterprise Networking

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The Root Group, Inc. has announced PC-Rshell, a distributed management tool that lets remote shells run on the PC. The company says the tool creates a true peer-to-peer, multiprocessor networking environment. The product provides a system administrator that can initiate incremental backups, software updates, virus scans and audits for software, hardware, memory and network configurations from the host on any platform to any PC or random group of PCs on the network.

Pricing begins at $99 until Feb. 28 and then jumps to $290 after that date.

> The Root Group
(303) 447-8093

Optical Data Systems, Inc. has introduced the Ethernet "Hub-of-Hub" module 12 or 24 10Base-T copper user ports and four 10Base-F optical fiber user ports. It allows any Ethernet port to be software switched among multiple Ethernet segments.

Users receive access to a number of per-user basis capabilities that include statistics, host table statistics, history, packet capture and traffic matrix. The 1004-SBTFL costs $89, $149, $249, $499, $849, $1,249, $1,999 and $2,999.

> Optical Data Systems
(214) 234-6400

Digital Communications Associates, Inc. has announced Irma WorkStation for Windows (IWW) 2.2, PC-to-host software.

According to the Alpharetta, Ga., company, the software supports Microsoft Corp.'s Windows Open System Architecture (WOSA), Windows High Level Language Application Programming Inter- face (WinHLLAPI) standard.

The product includes QuickLinks, a productivity tool that lets users link host-based information to other Windows applications via Dynamic Data Exchange, and QuickViews, a tool that lets users create custom views of multiple sessions on a screen.

IWW 2.2 costs $495.

> Digital Communications Associates
(404) 442-1600

Synergetics, Inc. has announced LANplex 6004 intelligent switching hub.

According to the North Billerica, Mass., company, LANplex 6004 provides switched Ethernet connections, intra-networking, routing, a multigigabit backplane and an upgrade path to switched Fiber Distributed Data Interface as well as Asynchronous Transfer Mode in a compact design geared for high-speed departmental or divisional networks.

The hub offers dedicated switched 10M bit/sec. Ethernet connections to shared LAN segments, individual workstations or high-performance servers on client/server "production networks."

It features a 3.2G bit/sec. interconnect and intraframework routing capabilities, enabling users to optimize the use of existing servers, maximize network performance and decrease the operating costs of client/server computing.

Entry-level pricing for the LANplex 6004 is $16,000.

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Users scout for right object DBMS fit

**CASE STUDY**

Volkswagen GmbH

**CHALLENGE:** Create a customer-service, order-processing and warranty tracking system that includes images and blueprints.

**TECHNOLOGY:** Pure object-oriented system from Versant.

Renaissance Technology Corp.

**CHALLENGE:** Perform complex math for forecasting stock market shifts in real time but maintain access to existing data stored in a Progress relational system.

**TECHNOLOGY:** Hybrid object relational database from Unisql.

Renaissance Technology Corp.

**CHALLENGE:** Create a hybrid approach.

**TECHNOLOGY:** Mixed object-relational technology.

Safer Sun

**CASE STUDY**

Renaissance managers mandated the information systems department use Sun Microsystems, Inc. workstations and servers, even though IBM RISC/6000s tested better in benchmark runs, because the company was unsure of the stability of IBM's AIX operating system, Renaissance's Joe Trubisz said.

Using object technology, the query can be done in a single statement, Trubisz said. "You point and click and don't have to worry about setting up some screwball query across 25 different tables," he explained.

But he did not want to go with a pure object-oriented database, mainly because doing so would involve "practically throwing out" existing legacy data. Plus, the primary stock history firm from which Renaissance gets much of its data uses relational technology. "We needed to hold on to relational ties," Trubisz said.

The company tried out several databases — object and relational — before plunking down $40,000 for a site license for databases and tools from Unisql, Inc. that combine the technologies.

A pure object-oriented database was out of the question because it lacks a means to let users access relational data, Trubisz said. At the same time, existing applications that rely on the SQL of a relational system cannot be easily ported to an object database. "Where does your SQL investment go? Down the drain," he said.

He noted, however, that despite many handy features inherent in object technology, a major sticking point is its limited ability to support parallel processing hardware. "That, more than anything else right now, would potentially keep us on a relational database if we had to choose," Trubisz said.

Computerworld January 10, 1994 57

No matter what type of network you have – Ethernet or Token Ring, NetWare\textsuperscript{TM}, Unix\textsuperscript{®}, OSF/1\textsuperscript{®}, Windows NT\textsuperscript{TM} or Open VMS\textsuperscript{TM} – one family of printers towers above all the rest. Network printers from Digital. A complete family that truly has been designed to handle anything. From our affordable Adobe PostScript\textsuperscript{TM} Level 2 desktop printers to the high-performance power of our PrintServer systems, there's a Digital printer that's built for your network.

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The systems management arena could graduate from infancy to toddler stage in 1994 — if vendor plans for integrating products pan out. Product integration, vendor consolidation and the creation of standard interfaces are allowing products such as routers and PCs to work together cohesively for the first time.

Most products today offer only piecemeal management of systems and network components. That is not enough for central information systems, which will begin in earnest the search for a cohesive view of disparate enterprise platforms in 1994, users and analysts said.

They noted that this is necessary because systems administrators in far-flung departments who have often been handed the job on top of other unrelated duties are looking to hand the function back to central IS “so they can concentrate on their real jobs,” said John Cox, automated operations project leader at the Tennessee Valley Authority in Chattanooga.

But for IS groups to get a consolidated grip, product mergers and broad-based efforts such as the Open Software Foundation’s (OSF) Distributed Management Environment (DME) have to become a reality. “Futures don’t cut it,” Cox said.

The results

Budding relationships in this area slated to produce results this year include the bundling of VisiSoft, Inc.’s VisiNet network and systems management software into Microsoft Corp.’s Hermes desktop management system. Also, database system vendor partnerships — including Oracle Corp. with Epoch Systems, Inc., Legato, Inc. and Legent Corp., and Sybase, Inc. with Tivoli Systems, Inc. and Epoch — should begin producing integrated database and systems management products in mid-1994 [CW, Nov. 29].

DME, however, is not expected to be a strong contender this year. While its integrator, the OSF, finally shipped the five-application DME 1.0 in fourth-quarter 1993, delivery of the underlying framework that ties the applications together has been delayed until 1995 [CW, Nov 15].

Product availability notwithstanding, Cox said, the user community must decide what it really wants in the way of systems management.

Services are emerging to help users with this decision, including the Management of Distributed Environments service from Andersen Consulting, a framework for helping users understand what needs to be done, why management tasks need to be performed and how systems management changes in a distributed environment.

One conclusion most companies have already drawn is that “each end-user department doesn’t want to replicate systems software expertise,” said Tim Boudreau, associate partner at Ernst & Young’s New Age Architectures Group in Chicago. To avoid this, he predicted, some companies will deploy nontraditional systems management tools, such as collaboration-oriented groupware, to provide distributed help desk and problem management functions.

Boudreau said he expects eventual systems management/groupware vendor alliances but that it is not likely to happen this year.
Volkswagen

CONTINUED FROM PAGE 57

of the databases really was doing all that we'd like," Bayrhammer said.

The problem with the Ingres relational database was that although it handled accounting data and simple queries pretty well, it bogged down during complicated queries that required several joins.

This was partly because there were more than 700 tables to manage, many of which contained images or other unstructured material, he explained.

Meanwhile, the Versant and Object Design object-oriented systems handled complex queries more quickly, but the databases lacked certain relational database features that are often taken for granted, such as some security mechanisms and the ability to handle several gigabytes worth of data.

The problem with the Ingres relational database was that although it handled accounting data and simple queries pretty well, it bogged down during complicated queries that required several joins.

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At the introduction of SynOptics' new LattisSphere System, control returns to your domain.

The LattisSphere System is our complete family of intelligent hubs and management products, delivering an entirely new level of network control. With the addition of the new Lattis System 5000™ intelligent hub and the latest release of Optivity™ management software, the LattisSphere System gives you a complete top-to-bottom solution for managing your network.

The LattisSphere System brings hardware and software together for a whole new level of network control.
Managers share 1994 resolutions

By Johanna Ambrosio

For the most part, information systems managers are planning 1994 projects that will quickly benefit business end users. Three areas of focus are data mining, end-user tools and rapid application development.

Albert Collins, vice president at Home Box Office, Inc. in New York, said data mining is at the top of his list. "We are working with the business users as consultants, trying to determine if they know what kind of information exists and how to get to it. Are they using the right tools?"

Another area of development this year, he said, will be to complete the implementation of an Oracle Corp. database management system and to look into an object-oriented database for future development.

"We are working with the Teradata database management system and the Teradata Group in Newton, Mass. "We are working with the Teradata database management system and the Teradata Group in Newton, Mass. "We are working with the Teradata database management system and the Teradata Group in Newton, Mass.

The Telesector Resource Group is responsible for the operation and backup of the two companies' Digital Equipment Corp. VMS systems. Within the past 18 months, the department moved from using magnetic tape to collecting data from many systems to using an automated optical disc library from Eastman Kodak Co.

The Kodak library, Model 560, was purchased from American Digital Systems, Inc. in Sudbury, Mass. It can read up to 60G bytes and stores up to 60G bytes.

At the same time, Telesector centralized its recovery storage.

"We decided to centralize our methodology and get the labor out of it," said Jack Sullivan, senior systems specialist at Telesector.

"We didn't want a different backup scheme on every single server," he said.

The Kodak system saved the company $25,000 in the first year because it obviated the need to hire additional operators to monitor the backup process.

Another savings is time, according to Sullivan, who reported that the optical backup takes four hours — less than half the time operators needed to copy data onto magnetic tape.

Sullivan said the new approach also requires far less operator intervention. The control software for the automated systems, called Branches, comes from Acorn Software, inc. and runs on Digital VAX/VMS platforms.

New procedure

With the new backup approach, three sets of optical discs are used, stored and reused in rotation. Data is copied onto optical discs once a week, and the discs are sent off-site for two weeks. Discs are returned for reuse after two weeks, once the data they contain has become obsolete.

"This is a different backup schedule than we had for the magnetic tape, since we can hold much more data on each disc," said Ed Macgillivray, tech support/VMS support at Telesector.

One optical disc per system is required today, compared with 10 magnetic tapes before, Macgillivray said.

Automated backup to optical is a corporate standard at Nynex, although that standard is an AT&T Unix-based product called Automatic Backup and Recovery System (ABARS). The reason ABARS is not used at Telesector, Macgillivray explained, is that it has had trouble working with the VAX platforms for which the group is principally responsible.

Large Systems

Xpe improves interoperability across heterogeneous environments

By Gary H. Anthes

The introduction of client/server products by Legent Corp., which began in earnest in 1993, will reach flood tide in the year 1994. Xpe, a client/server architecture consisting of systems management products, middleware, application programming interfaces and development tool kits, is intended to enable Legent's systems management products to interoperate across heterogeneous environments. With Xpe, users will be able to set up interconnected servers for network management, software distribution, resource management, backup and recovery, operations management and other functions (see chart).

"They are really doing their homework and putting R&D dollars into integration and testing," said Kevin O'Neill, vice president of research and consulting at Business Research Group in Newton, Mass. "There will be a lot of meat on the story as the year progresses, and it will hold to some fairly close scrutiny by ... user accounts."

Spring surprise

A crown jewel of Xpe, to be unveiled in the spring, is an as-yet-unnamed "engineering console," said Robert Yellin, chief technology officer at the Herndon, Va., systems management software company. It is intended to be a "window into Xpe," a diagnostic and control station for Legent systems management servers.

The engineering console will be able to get information from Xpe software agents in each systems management server, from application servers and from desktop machines. It will combine and display that information at a single workstation, enabling a person to see and analyze all system resources on the network from one point. "It looks down like an angel," Yellin said.

According to Yellin, the approach means that when a user installs the first systems management product — for performance management, for example — the Xpe infrastructure is established, and the Xpe agents are in place to support subsequent products such as those for software distribution or user administration.

"It's a good idea but a significant challenge to pull off," O'Neill said. "That they have shown they understand the value of such an entity — to manage these complex distributed applications — speaks well of them."

The console will run on the major Unix platforms, Windows, Windows NT and OS/2.

Legent will also roll out enhanced versions of many of its existing products, offering support for or connectivity to an expanded list of environments.

For example, the help desk product will be able to get trouble tickets from virtually anywhere.

Nynex unit opts for optical disc storage

By Ellis Booker

A shift to optical storage has brought savings in time and payroll for a minicomputer support unit at Nynex Corp. subsidiaries New England Telephone and New York Telephone.

The Telesector Resource Group is responsible for the operation and backup of the two companies' Digital Equipment Corp. VMS systems. Within the past 18 months, the department moved from using magnetic tape to collecting data from many systems to using an automated optical disc library from Eastman Kodak Co.

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Apple sows seeds of transition with OpenDoc

By James Daly

Apple's sowing of seeds for the transition to its OpenDoc software architecture is gaining more and more momentum. The initial intent was to provide a software interface to the Macintosh platform that would allow developers to write applications that could run on both Macs and PowerPC systems. This OpenDoc architecture was designed to simplify the task of working with software applications from various vendors. For example, many applications may have similar functions but may implement them differently. A text-editing capability can be implemented in six different ways on as many different platforms. OpenDoc, on the other hand, breaks data-sharing into a more uniform component. Therefore, users will be able to create one document using their own section of software components provided by various application developers.

Once OpenDoc parts are generally available from software developers, systems integrators and in-house developers will be able to create custom solutions quickly and easily for their clients, said Piersol.

With a little help...

Apple has also rounded up its friends to push the OpenDoc design. IBM has announced plans to implement OpenDoc for OS/2 and Unix platforms, and WordPerfect and Novell, Inc. have announced plans to provide the OpenDoc implementation for Windows-based systems. In October, Apple, Microsoft, IBM, Mips Technologies, Inc. and Xerox Corp. announced an effort to create an Object Linking and Embedding 2.0 (OLE 2.0) interface for Windows NT that is expected to provide a uniform software interface for Windows applications.

Symbiotics fills need for OLE-linking middleware

By Michael Vizard

Symbiotics plans to deliver in the first quarter an implementation of its Object Linking and Embedding (OLE) 2.0 interface which will provide Microsoft Corp. with a big advantage over its Unix competitors: It has developed a runtime kernel that will allow developers to create an OLE-like environment that will run on Unix.

Dynamic support

Once installed, NMF provides a layer of middleware over which data encapsulated in objects can be exchanged. In addition, NMF already supports Dynamic Data Exchange (DDE) protocols and can use the DDE interface to run after DDE and OLE applications, according to Symbiotics Chairman Robert Plassay.

Information Architects, Inc. in Needham Heights, Mass., intends to use NMF in a set of application platforms that are designed for building hospitals and health maintenance organizations. As part of that effort, the company will build a portable Unix application to access clinical data and images stored on separate remote servers.

“We need to separate the code from the network so that we can access the servers remotely, so we've embedded an OLE server in the PC application,” said Bernard P. Wess Jr., chief executive officer at Information Architects.

“With images we need a separate server that is optimized for those types of applications,” he said.

NMF with OLE 2.0 support has been licensed by Artisoft, Inc., and IBM uses Symbiotics’ DDE implementation in OS/2.

Development tools

Little company could give Microsoft a Texas-size boost

By Ed Scannell

Allen Hustler, director of technology at Consensys, said the company has received more than 300 inquiries from computer manufacturers and software developers because of Microsoft’s announcement last week that it will support the Windows NT operating system.

“With Novell sending off mixed messages about its plans and Sun Microsystems Inc. off doing its own thing, some [users] are thinking they should bite the bullet and go with Bill Gates. Our plan is to help those people make that transition,” said Vas Rajevski, director of sales at Consensys.

Getting corporate and third-party developers to switch to Windows NT will eliminate much of the traditional headaches they encounter in setting up Unix, particularly with networks, Consensys officials said.

“Networking under Unix is just a bitch, pure and simple. Under Windows NT, in many cases, the servers remotely, so we’ve embedded an OLE server in the PC application,” said Bernard P. Wess Jr., chief executive officer at Information Architects.

“With images we need a separate server that is optimized for those types of applications,” he said.

NMF with OLE 2.0 support has been licensed by Artisoft, Inc., and IBM uses Symbiotics’ DDE implementation in OS/2.

"All this mysticism surrounding Unix will force people to take a serious look at NT." — Vas Rajevski, Consensys

COMPUTERWORLD JANUARY 10, 1994 63
Progress introduces application developm
These days, everybody and their brother is offering client/server development software with GUI capabilities. GUI, that is, and not much else. Now, introducing Progress Version 7. The client/server development software with an unprecedented mix of graphical capability and depth. And the only GUI development tools powerful enough to take you from pilot projects to even the toughest mission-critical, client/server applications.

Version 7 also lets you create GUI or character-based applications for client/server, host-terminal or mixed configurations. And the applications are portable across a wide range of databases, network environments, operating systems and hardware platforms. Plus, your applications are scalable, portable and reconfigurable without recoding. The result? Increased flexibility to help simplify the move to client/server. And, an investment in applications and systems that stays protected over time. So call the telephone number below to witness Progress Version 7 in action. At which point, we'll promptly bury the competition.

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**Application Development**

**Object technology**

**Booming object market holds promise for Unix**

By Jean S. Bozeman

Unix workstations have long been object technology platforms, but the emergence of multimedia and increased vendor support for object languages and class libraries will accelerate the trend. The overall object-oriented market now totals about $450 million and is heading for $1.5 billion by 1996, according to Meta Group, Inc. in Westport, Conn.

"More people are willing to try it, partly because there are more products to try," one West Coast information systems manager noted. Until now, workstations have handled object development easily because they have been more powerful than PCs and have high-resolution displays to show complex relationships among objects.

But, as PCs begin to enter the Unix workstation price/performance range, those lines will blur, predicted Julie Rodwin, a principal at R. M. Fichera Associates in Groton, Mass.

**Smalltalk alternative**

For long-time Unix programmers, the transition to objects can be relatively easy despite a learning curve of several months, analysts said. "It's a natural extension for programmers to go from C to C++," said Bill Martorelli, a Meta Group software analyst. However, many workstation users, especially those interested in using objects for commercial applications or simulation, use Smalltalk, users said.

"We use it for simulation and for developing multimedia applications," said Tom Soon, a research project manager at Pacific Bell in San Ramon, Calif. What began in the laboratories several years ago is now spreading to development groups tackling complex applications, Soon said.

Saving money is an important consideration that causes some sites to develop objects on 486-based PCs for deployment on more costly Unix workstations, developers said. At Hughes Enterprise Information Systems, Hughes Aircraft Co.'s information systems unit in Long Beach, Calif., 35 of 200 programmers use PureObject's Unite.

**Object-oriented development with Unix workstations**

- Driven by distributed applications and multimedia applications.
- Variety of object tools and languages supported.
- More power and speed than desktop PCs to build complex applications.
- Vendor support: Sun's Project Distributed Objects Everywhere with Next Computing, Inc.'s NextStep class libraries, future Sun and Hewlett-Packard Co. support for NextStep and IBM's partnership with Object Design, Inc.
- Common development environments: Smalltalk, C++ and Objective C.

**Unite**

CONTINUED FROM PAGE 63

you just point and click and you can be on a network," Rajevski said. "All this mysticism surrounding Unix will force many people to take a serious look at [Windows NT]," Rajevski said.

At least one Unix user in a large information systems shop strongly agrees with Rajevski.

"If you are just adding a hard drive or tape backup to a Unix-based system, it doesn't hurt to be directly related to God. You need help at that level to get this stuff to work together," he said.

**Long wait ahead**

Just in terms of installing and configuring software in complex combinations, users largely agree that Windows NT's "point-and-click" approach could make their computing lives easier.

But they also said the span of corporate users with different flavors of Unix is so great that it will be a very long time before products such as Unite can glue the important Unix fragments together.

"The product sounds like a very nice idea that can fill some niches. The question is how many companies will fall into that [Unix System V Release 4] niche in such a fragmented market," said Hughes IS consultant Jim Godwin. But the benefits are clear: Software maintenance costs are reduced; programmer productivity is up; and up to 60% of code can be reused, Godwin said.

Place, Inc.'s VisualWorks application builder on 486 PCs.

Object code written with the cross-platform application builder is quickly ported to Unix and Macintosh machines.

"We can't control the hardware our customers use, so we build the software once and deploy it on many platforms," said Hughes IS consultant Jim Godwin. But the benefits are clear: Software maintenance costs are reduced; programmer productivity is up; and up to 60% of code can be reused, Godwin said.

Consensys developed Unite using Microsoft's Win32 compiler to recompile Unix source code, which ensures strict compatibility with Unix applications, company officials said.

"When you buy this you are getting guaranteed Unix compatibility," Rajevski said.

Available now, the base product of Unite costs $395, and the development version costs $495. A package containing both costs $695.
Application Development

**Digitalalk, Inc.** has announced the Parts Assembly and Reuse Tool Set (PARTS) Workbench for Win32, a 32-bit visual development environment for Microsoft Corp.'s Windows 3.1 and Windows NT.

According to the Los Angeles company, PARTS Workbench is a visual, object-oriented client/server technology that enables very rapid application construction from prefabricated software components.

The product comprises a workbench and a catalog of more than 60 prebuilt visual and nonvisual components.

Users can create applications in three steps: dragging and dropping parts from the catalog into the workbench, visually wiring parts together and running the application.

PARTS Workbench for Win32 costs $1,985 but is available at an introductory price of $995 through 1994.

**Micro Focus Publishing** has introduced Micro Focus Workbench Navigator, a learning tool designed for Micro Focus' Cobol Workbench application development environment.

According to the Palo Alto, Calif., company, the product runs as a graphical user interface application under Windows or OS/2 and is written in Micro Focus Cobol.

Features include pull-down menus with "hints and tips" and "common problems and solutions" for Workbench components including editing and debugging tools; search and retrieval tools; a notetaking system for adding personal comments and ideas to the on-line resources already available; and step-by-step instructions for configuring the Workbench environment and components.

A single copy of Workbench Navigator costs $149. The product is available through Micro Focus Publishing for $74.50 through Jan. 31.

**Bristol Technology, Inc.** has introduced Xprinter 2.2, an X Window System printing library.

According to the Ridgefield, Conn., company, the product allows PostScript and Printer Control Language (PCL) printing through the Xlib application programming interface.

Xprinter 2.2 also enables developers to add PostScript, PCL 5 and PCL 4 support to their applications without having to learn either printer language.

Xprinter 2.2 is available for $1,900.

**Brio Technology, Inc.** has announced DataEdit Version 2.0, a rapid client/server application development tool.

According to the Mountain View, Calif., company, the product lets Macintosh and Windows users build forms-based applications for networked SQL databases.

Features include automatic version control, cross-platform deployment and intuitive forms building for instant development.

DataEdit is a front-end client for relational databases and supports a variety of popular SQL databases.

The developer version costs $996; the client version costs $199.

**Cadre Technologies, Inc.** has announced the availability of its Teamwork family of software development automation products on Sun Microsystems, Inc.'s Solaris for x86-based and voice response systems.

According to the Providence, R.I., company, Teamwork tools were designed to help developers accurately model, define, analyze and document product requirements and specifications to generate consistent design and code.

Pricing starts at $8,500.

**Brooktrout Technology, Inc.** has introduced the Brooktrout Prompt Development Tool Kit, which allows users to create, edit and save voice files for use in voice and integrated fax and voice response systems.

According to the Needham, Mass., company, the product includes Microsoft Corp.'s Windows Sound System and Brooktrout's Prompt Conversion utilities.

The Sound System lets users create and edit prompts and convert them into the appropriate file format by using the conversion utilities.

The product costs $485.

**Software Research** has announced STW/Advisor, a complement to Software TestWorks, its family of testing tools.

According to the San Francisco company, STW/Advisor was designed to provide insight for the developer, tester and manager of source code.

STW/Advisor comprises an X Window-based metric analysis product, Metric System, which provides all of the commonly accepted software metrics for programs written in C, C++, Ada and Fortran; a C static analyzer, Static, for syntax and semantic analysis; and Tigen, a test data generator.

STW/Advisor prices start at $5,000.

**Product short**

**EMS Professional Shareware** has introduced an updated version of the Win-Util Library CD-ROM. Thirty-four puable domain and shareware products have been added. The library features 738 utilities and houses an assortment of files that include benchmarking, configuration, database, diagnostic, memory management and security.

Cost: $29.50 on CD-ROM or $90.50 on diskette. EMS Professional Shareware, Olney, Md. (301) 924-3594.
RAIDION LT and LS Series disk array subsystems are designed for use with either Novell NetWare 3.11/4.0 or IBM OS/2.

**MIRROR.** RAIDION can be configured with 2 modules to provide mirrored fault tolerance up to 3GB.

**RAID 5.** Adding one module to a mirrored array and installing RAIDWARE™ will double the user capacity and convert the mirrored array to RAID 5. Under Novell NetWare, RAIDION can be expanded to 32 modules – per single array – with a capacity of 93GB. Under OS/2, the maximum configuration is 28 modules.

**RELIABLE.** RAIDION can be configured with an on-line spare option that activates automatically upon a drive failure, ensuring continued fault-tolerant operation without human intervention. Hot-Swap and Hot Replacement features allow RAIDION to be serviced while your network remains in operation.

**ECONOMICAL.** An LT Series three module 2 GB array is just $7,545. An LS Series Raid 5 array with a capacity of 6 GB lists for just $16,980. That's less than $3.00 per MB. It's no wonder Byte Magazine said: "RAIDION's low price alone makes it worth considering." August, 1992.

**AWARD WINNING.** In a benchmark comparison of disk arrays, Corporate Computing said: "Raidion was our overall winner with an impressive combination of high performance, low cost, and unparalleled expandability." May, 1993.

For the name of your authorized RAIDION distributor and a free brochure call 1-800-395-3748.

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Tom Davenport, a luminary at Ernst & Young's Center for Information Strategy and Technology in Boston, gives more than 300 talks a year on business process re-engineering, the booming field he helped popularize.

But Davenport, who has taught at MIT and Boston University, continues to branch into new areas. Lately, the author of Process Innovation: Re-engineering Work through Information Technology (Harvard Business School Press, 1993) has been focusing on what he terms "information ecology" and "information behavior."

This spring Davenport will publish articles on those topics in the Sloan Management Review (Winter 1994) and Harvard Business Review (March/April, 1994).

His basic message: The information systems profession must continue to evolve. That means IS professionals must focus more on the information those systems provide to their organizations.

Joseph Maglitta, Computerworld's senior editor of corporate strategies, recently spoke with Davenport about his latest work.

**Q:** Your upcoming Harvard Business Review article is titled "Saving IT's Soul." Is the technology profession really in need of saving?

**A:** I think you could argue that we are. It's as if we're at middle age and we've misspent our youth, and our midlife crisis is that people don't think the stuff we offer is terribly valuable.

**Q:** Why?

**A:** We've made promise after promise that "Yeah, when the new technology comes we'll solve this information problem." Yet if you did a nationwide survey of managers and asked, "Do you get the information you need?", the vast majority would say, "No." There have been some Conference Board surveys like that. I think managers are more and more suspicious of computer-based solutions to information problems.

**Q:** What's the problem?

**A:** Our whole approach to information management has been dominated by the engineering design/architectural kind of model. Typically, most architecture only addresses the technology component, not the human side.

**Q:** And the consequence?

**A:** Inside Pacific Bell's Eric Firdman says it's like we've been training your IS group to think bringing water to the horse for 40 years without knowing whether the horse was thirsty or how to encourage him to drink.

Davenport, page 72
All it takes is the right printers. Printers designed with the AS/400® computer in mind.

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GET THE MOST OUT OF YOUR AS/400.
CONTINUED FROM PAGE 69

Davenport

The evidence is fairly strong that managers care very little of the information they care about computers. Even engineers and scientists get most of their technical information from talking to other engineers and scientists. How can we start to facilitate those kinds of behaviors instead of just throwing technology at the problem? How can we stop assuming that because we build it, engineers and scientists are going to get the information they need?

Q: And the answer is?
A: IS should be doing human-centered information management.

Q: How?
A: You focus on information of a variety of types, not just the stuff that happens in computers.

We advocate trying to do some innovative management of multiple information types [e.g., video, data and voice] through multimedia and all the other new technologies.

Q: You use the term “information ecology.” What does that mean?
A: The ecological view is kind of an orientation to behavior (see chart below). It recognizes that there are living, breathing, thinking people who are involved in this information environment. How they use the information, whether they use the information, how they share it, whether they share it is very important. We’ve never really focused much in that area, as an IS community or as a society in general.

Q: How did the notion evolve?
A: We looked at very large and sophisticated companies: American Airlines, Union Pacific, Pacific Bell, IBM, Hewlett-Packard, etc. and asked them, “Do you have an information architecture? Have you have had one in the past? Was it successful?”

We did one survey of IS managers and found only one who said, “Yes, we have an information architecture that we’re happy with.” So we said, “There’s something wrong here.”

There is a lot of research that says information architectures and approaches like IBM’s [Business Systems Planning] and strategic data modeling, at least at the enterprise level, don’t work. So we started thinking metaphorically. Ecology sort of is.

Q: Does that mean that architecture doesn’t work any more?
A: It’s only workable at a narrow level. If you want to build a payroll system, it’s fairly useful.

But if you are trying to manage the organization’s entire set of information assets, it’s just not workable.

It’s like the difference between city planning, which has never succeeded in creating a vibrant city — go to Brasilia and see how well that turned out — versus designing a building, where it works fine.

Q: What’s the strength of an ecological perspective?
A: There’s a holistic aspect: Everything is related. Doing an information plan by itself doesn’t make a whole lot of sense if it’s going to be influenced by the process plan, the business strategy or the organization structure.

There’s a certain humility about it. We can’t plan all these things at once five or 10 years out, so we do a little bit and we see what happens and we do a little bit more and we see the complexity of all this.

Q: Why have flexibility and usability and human issues become a big issue now?
A: They should have always been an issue. We’re a very technologically utopian kind of culture; we tend to assume that technology is going to solve our problems. Plus, there’s a pretty strong vendor community out there saying, “Buy this stuff and it will help you out.” There’s a very strong press for the technology, too.

Q: So IS has focused on technology to its own peril?
A: I don’t think you can be an effective manager without caring about information. But you can be a fairly effective manager without caring a whole lot about information technology. Obviously, the two are related — and I’m certainly no Luddite — but I think we’ve really neglected the information side.

Q: For several years, IS people have been hammered on to look to these kinds of “soft” issues. What are they still missing about all this?
A: IS professionals approach every interaction with their customers with the implicit assumption that a computer-based application system is going to be built as a result of this information need. You don’t find very many IS people who say, “The information you need is really in an...
Three technologies will make or break your IS future:

- Client/Server Computing
- 32-bit Operating Systems & Applications
- Imaging/Work Flow Technology
Your candid assessment starts here — status reports from top practitioners. Computerworld moderators navigate a frank and forthright interchange about these three technology uprisings. Esther Dyson, Charlie Babcock and John Gantz lead practitioners from Kmart, Connecticut Mutual Life, the Royal Bank of Canada, and more.

The Practitioner’s Forum

Client/Server Computing

Esther Dyson
Publisher of Release 1.0

Moderator

She is Editor and publisher of the influential newsletters Release 1.0 and Tel-EAST. Release 1.0, widely respected and quoted for over 10 years, focuses on new developments in software and software design, applications, networking and the transforming of new technologies into commercial solutions. Dyson promises a frank and forthright review of the client/server uprising.

David M. Carlson
Kmart Corporation, International Headquarters

As Senior Vice President in Corporate IS, Carlson has been noted for creating a vision for automation and technology. The company’s retail automation program saves Kmart approximately $200 million annually through UPC symbol scanning, on-line credit authority and automated layaway. Carlson’s work has been recognized in awards by SM and Computerworld.

L. John Severson
The Trans Company

As VP, IT and Change Agent, he initiated and has provided leadership for a massive re-engineering effort, called Business Transformation. He is responsible for the design and construction of the client/server infrastructure which will enable and support transformed business processes. He has provided IT leadership, pioneering in such areas as end-user computing, telecommuting and outsourcing.

Ray W. Comblin
CIO for Oracle Corporation

As Senior Vice President, he is responsible for defining and implementing Oracle’s internal information systems and support services. Prior to joining Oracle, Camblin worked at Wells Fargo where he managed technological and operational support for more than $20 billion of business transactions daily. In 1989, he received “Information Systems Visionary Award” for his work in client/server technology.

32 Bit Operating Systems & Apps

John Gantz
International Data Corporation

Moderator

As Senior Vice President at IDC, Gantz oversees research in desktop automation and workgroup and office computing. His coverage also includes PC hardware, software, and pricing, as well as open systems, PC channel support, and LAN-based computing. Gantz brings 20 years of research authority and commander to a closer look at how 32-bit technology will perform in the trenches.

George Oliver
The Royal Bank of Canada

As Manager of Information Delivery Technology, Oliver has spearheaded the Royal Bank’s Information Delivery Technology Group which oversees PC, LAN, Security, Self Service and Office Technology products. With this group as the technology catalyst, the Royal Bank has evolved its delivery systems from a central-site computing focus into a distributed cooperative enterprise of mainframes, LANs and PCs.

David A. Pensak
E.I. DuPont Nemours, Inc.

As Principal Consultant, Advanced Computer Technology and Corporate Advisor, he has had responsibility for planning and managing projects in computer science and technology. He has chaired or served on corporate committees on Open Systems, Data Security, Workstation Selection, Software Auditing, Technology Planning Expert Systems and Electronic Conferencing.

Imaging/Work Flow Technology

Charles Babcock
Technical Editor, Computerworld

Moderator

Babcock reports on the pivotal technologies that are shaping IS in the 90’s. In addition to extensive coverage of user and vendor sites, he writes a weekly column on major technology trends and directions. Babcock has served as mid-Atlantic news correspondent, senior software editor and assistant news editor. Working out of the West Coast News Bureau, he brings an astute perspective to his assessment of imaging/work flow technology.

Ronald L. Beker
Connecticut Mutual Life Insurance

In the past five years as Vice President, IS Planning and Operations, he has held executive management responsibility for corporate-level technology services, including information architecture, corporate business applications, mainframe computing, database services, network services, PCs and client/server computing. He has played a leading role in deploying image workstations and client/server technology.

Michael R. Owens
Corporate Administrator, State of Delaware

As Corporate Administrator, he is responsible for direction and supervision of all day-to-day operations of the Delaware Division of Corporations, including administration of a $4.7 million budget. Delaware is home to over 214,000 corporations, including over 50% of the Fortune 500. When completed, the Open Image project will allow images to be remotely scanned and transferred right into the work flow, processed, and refiled to the originating law firm.
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How IS beat the outsourcers at Amoco

By Ellis Booker

After months of evaluating bids from several vendors, Bill Lucas, supervisor of planning systems at Amoco Co.'s Engineering and Facilities Services unit, picked his "preferred vendor."
The winner was the in-house information systems team at Amoco's research center in Naperville, Ill. But the real competition wasn't outsiders — it was old attitudes.

More and more, internal IS departments are asked to be head-to-head against outsiders. It's part of a general trend in both business and government to slough off noncore competencies to outsiders, forcing the internal staff to work more efficiently.

The process causes an IS organization to sit back and ask "what value do we bring" beyond what an outsourcer can provide, according to Mike Wilson, manager of the research center's information and computer services department.

Amoco's IS organization was under pressure to become more business-minded. Wilson says he saw the bidding process as a possible catalyst for cultural change. "Our goal was to change the [IS department's] mind-set, to get us thinking more like a vendor," he explains.

The part of the process that seems to have had the biggest impact on IS attitudes was the financial commitments IS made in its bid, he adds.

Reaching for STARS

The contract Wilson's team fought for and won was the right to build an application known as Service Tracking and Request System (STARS). Using client/server, Unix and relational database technology, STARS will replace a decade-old mainframe system used to manage "job orders" for the physical facilities and grounds at the research center — a sprawling, 178-acre, 20-building campus in Naperville.

The STARS bid began in the middle of 1992. After analyzing the existing mainframe-based system used by the facilities group, Amoco determined that the mainframe couldn't be upgraded to handle greater job-order demands, and a new application had to be built from scratch. Because this involved a new application on a new platform, the immediate reaction was to go to an outsider source. Rather than look only to outsiders, however, Wilson decided to give Wilson's department a chance to bid, Lucas says.

Wilson and his supervisor of computer facilities and operations, Mark Ramsey, were also eager for their department to get a shot at the $200,000 to $300,000 project. Wilson had already watched Amoco's Canadian operation outsource its facilities group, and he was looking for an opportunity to go up against external competition and use the process to change his organization's culture.

Risk and demands

The decision by Wilson and Ramsey to respond to the request for proposal (RFP) called for IS to take on risks it had never assumed before.

For starters, the RFP insisted on a "fixed-price" bid. In the past, the internal IS team had always charged "time and materials" to the business units on a "time and materials" basis. This aspect, according to Ramsey, was the biggest mind-set change.

"We'll monitor our costs very carefully and stringently adhere to our project management procedures," he says, adding that some automated tool for capturing these will probably be needed.

This is the first time, too, we've ever had to offer a warranty," Ramsey says. (His team eventually decided on a 90-day warranty, with system enhancements charged on a time and materials basis.)

A second risk was that the RFP called for developing a STARS prototype. But the IS group had to do this work without charging its time (about 100 man-hours) back to any Amoco department.

"If we didn't get the bid, we couldn't bill back the hours," Ramsey notes.

Ramsey says he believes the advantages to IS working this way are twofold. First, fixed-price bids give IS a way to make a profit, provided it accurately predicts the development costs for a project's life cycle. Second, such bids provide a way for IS to discover its worth in the eyes of the organization, its customer.

An ancillary plus, Ramsey says, is that his group will retain distribution rights to the application code it writes and could "remarket" an application to other in-house units or even external customers.

"It's not inconceivable that down the road we could find a broker to market [our code] on the outside," he says. IS could not only function as a vendor inside the walls of the organization but also become one in actually.

While Amoco's sweeping review of IS outsourcing could have been a real weapon for the IS department, it was a real weapon for the IS department. Wilson and Ramsey were eager for their department to be business-minded from now on — or risk financial problems for the department.

Davenport

CONTINUED FROM PAGE 72

start to do some limited actions that get people to talk to each other.

Q: Seems like a dangerous role.

A: If everybody is interested in information, and everybody knows how to use a computer, and everybody knows how to create object-oriented programs, what's left for IS?

I think you can take two routes: the business information industry, high value-added route or the low-level plumbing route. Yes, maybe the bulk of the IS profession will become plumbers. I suspect for the most part these people will go to plumbing companies, as they do now.

I know which choice I would prefer, and which is going to get the highest salaries and most prestige.

Davenport
Executive Track

Julie G. St. John has been named senior vice president of transaction processing and management systems, and Michael J. Williams has been named senior vice president of customer applications and technology integration at the Federal National Mortgage Association in Washington.

Wilma Horne has been named vice president of information systems at Ethicon, Inc., a subsidiary of Johnson & Johnson Co. in Somerville, N.J. She reports to Chief Financial Officer Ronald Fulop. Prior to joining Ethicon, Horne was director and chief information officer at the Port Authority of New York and New Jersey.

Xyplex, Inc. in Boxboro, Mass., has announced that Brian W. Hebert has been named manager of IS applications and Peter J. Marino has been named manager of IS operations in the corporate MIS group based in the Littleton, Mass., facility. Prior to joining Xyplex, Hebert was employed at Sybase, Inc. and Computervision. Marino was previously at National Computer Systems, Intermetrics, Aveo, Computervision and Sugarman Brothers.

Curtis Burns Foods in Rochester, N.Y., has announced the promotion of Robert E. McMahon to corporate vice president of MIS. McMahon was elected to the position by the Curtis Burns board of directors. He was previously vice president of MIS at Comstock Michigan Fruit Division, a division of Curtis Burns.

Robert A. Zawacki has been promoted to emeritus professor of management and international business and will take early retirement from the University of Colorado at Colorado Springs to join KPMG Peat Marwick as distinguished scholar in residence. He will continue to lecture, conduct research and consult on the human and organizational side of information technology worldwide. He is known for his book, Motivating and Managing Computer Personnel (Wiley Interscience, New York, 1979).

Recognition International, Inc. in Dallas has appointed Lucie Fjeldstad to its board of directors. Fjeldstad was previously responsible for the leadership of multimedia activities at IBM. She is also on the boards of PPG Industries, Inc., KeyCorp and Entergy Corp. and is chairman of the Board of Regents at Santa Clara University in California and a trustee at Syracuse University in New York.

Renato Crocetti, corporate vice president of information and technology at Automatic Data Processing, Inc. in Roseland, N.J., has been elected a member of the Conference Board's Council of Information Management Executives.

Metropolitan Life Insurance Co. has appointed Paula Loring Simon as general manager of its Scranton (Pa.) Information Systems Center and vice president of the company. Before joining Met Life, Simon was a vice president at Dow Jones Telerate. She is also a former president and trustee of the Society of Women Engineers and has served on the Information Systems Advisory Council of the American Management Association.

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Management

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Building Enterprise Architectures. Washington, Feb. 8-10 — Contact: Technology Transfer Institute, Santa Monica, Calif. (310) 394-6300.

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The PC Magazine Technical Excellence Award recognizes those who have taken technology to the next level. This year, Microsoft Windows NT Advanced Server won for networking software.

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Microsoft

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On the occasion of the Mac's 10th birthday, we brought together the brains behind the machine — eight of its original developers and gurus — to muse on what the PC industry's next big hit might be. With the same creative fervor they used to build a revolutionary computer, these wizards take on interactive TV, personal digital assistants, Microsoft and one another.

BY JAMES DALY

Ten years ago this month, Apple Computer, Inc. President Steve Jobs reached into a canvas bag at the company's annual stockholders' meeting and pulled out the future.

"Hello," said the synthesized speech of the freshly liberated PC as Jobs set it on the table. "I am the Macintosh. It sure is great to get out of that bag."

Ten million Macintoshs later, the oddly shaped PC is still thought of as the product that brought plain people, uninterested in the particulars of technology, into the information age. Apple's "insanely great" computer, as Jobs called it, featured an innovative use of screen icons, simple-to-use software and a handheld mouse that set it apart from the dense DOS commands of the stalwart IBM PC.

Mac turns 10, page 82
Mac turns 10

CONTINUED FROM PAGE 81

Its arrival was heralded by a $400,000 commercial, run during the 1984 Super Bowl, that cast IBM as an Orwellian despot and the Macintosh as a liberator.

It was, they simply said, "the machine for the rest of us."

On the eve of the Macintosh's 10th anniversary, Computerworld senior correspondent James Daly tracked down some of the Key players in the creation of the Macintosh, many of whom are still pushing the boundaries of personal computing. Some are focusing their energies on other endeavors. (A spokesperson for Jobs, chief executive officer at Next Computer, Inc., said that Jobs "doesn't want to talk about the Macintosh anymore. He's focusing all his energies on Next right now"). But most were enthusiastic to get back together.

The two-hour meeting took place at Apple's new research and development facility in Cupertino, Calif. A late autumn rain had just moved through. It had been years since some of the participants had seen each other, but they still enjoyed a goofy dorm room camaraderie reminiscent of the Macintosh development days when they kept a pirate flag on their wall, worked in a building alongside a gas station (lovingly called Texaco Towers) and vowed to "put a dent in the universe."

Participating in the discussions were Andy Hertzfeld, Bill Atkinson, Jef Raskin, Steve Capps, Larry Kenyon, Donn Denman, Bud Tribble and Chris Espinosa (see page 83 for descriptions). After hugs, handshakes and a quick catch-up on their lives, we reflected upon the work they'd done and considered the possibilities for the future.

CW: If you were going to design an insanely great machine today, what would it look like?

CAPPS: It wouldn't be a desktop computer. I can tell you that.

HERTZFELD: It's an exciting time to be in computers because it feels a lot like 1976. At that time, no one knew the form PCs would take, but everyone knew it was going to happen. The information superhighway is just a metaphor for something that no one can identify.

The basic components — the chips — are good enough and cheap enough to get computers everywhere in people's lives. That was the theme of the Mac — getting the computers closer to people.

ATKINSON: Or even on your person. Everywhere. In Orson Scott Card's [book] Speaker for the Dead, the computer was a little crystal that went in your ear and could listen to everything in the room and kind of whisper to you. It wasn't thought of as a computer. It was a computer-derived friend in a network.

RASKIN: It's an analogy back to the Macintosh. Designing something from the human being out, rather than the way it was designed before, starting with hardware and then trying to create something wonderful.

KENYON: [It's about] optimizing the user's time rather than optimizing the computer's time.

CW: How far away are we from these technologies?

ESPINOSA: My litmus test is when something first appears in a New Yorker cartoon. I saw one recently of a dog tapping away at a computer, and it said, "On the Internet, no one knows you're a dog." (Laughs)

KENYON: Some of the technologies are available today, but the hard thing to call is when you are going to reach critical mass. All these things are possible in isolation, but it's not really magic until you get something on the market.

TRIBBLE: We're getting there. The ubiquity of the technology is what creates the explosion. Computers have become cheap enough to put on your desk, and the tools to get on and off the network are becoming ubiquitous. Computers are living in your TV. They're living in your phone.

CAPPS: We have a lot of CPU cycles for the user. Now we have to figure out how to use them.

ESPINOSA: What's amazing about the last 10 years is not how far we've progressed, but how far we've regressed. We've increased the fundamental computing power 100 times, and the range of present applications is amazing. But the way people are experiencing computing power is still through the workplace, in a heavily regimented and controlled MIS mentality, and through networks that are extremely complicated. We've gotten down to a lowest common denominator of two or three dominant applications and a lot of other stuff that no one understands.

ATKINSON: The telephone was easier to use when it first came out because you turned the crank and said, "Can I talk to Betty?" and you got her. Now you have to learn all these digits and digits.

CW: We've complicated things, rather than simplified them.

DENMAN: Anything that is easy to use will have more and more features added until it becomes slightly more complex than people can tolerate. Then the manufacturers will back off.

MAC VS. THE 'DVEEBBS'

BY STEVEN LEVY

If one had had any motivation to shoot down the Mac in 1984, he or she could not have asked for a bigger target. For one thing, the Mac was out of the box and barely coherent — was deeply processed, barely coherent — was deeply processed, barely coherent — was deeply processed, barely coherent — was deeply processed. The previous paradigm of computing was associating in the MIS community with theInsetionary computer. The computer was a little crystal that went in your ear and could listen to everything in the room and kind of whisper to you. It wasn't thought of as a computer. It was a computer-derived friend in a network.

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CW: We've complicated things, rather than simplified them.

DENMAN: Anything that is easy to use will have more and more features added until it becomes slightly more complex than people can tolerate. Then the manufacturers will back off.
CW: We've hit on an interesting point here in digital networks, sift through all the noise and stances. It sounds like we're talking about the need for intelligent agents that scan all these digital networks, to see how much chaff there really is. And one how it's become the CB radio of the 1990s. You next CB radio and how we can make it useful.

DENMAN: Speech recognition is incredibly exciting because that's the way we communicate. HERTZFELD: But it's hard to see how speech recognition could be the defining technology for a computer because you can't use it in many circumstances. If I had to talk to my computer in this meeting, I couldn't use it very well.

KENYON: I think an interface technology that tries to imitate a human is very tricky. A mouse or a keyboard is not trying to imitate a human. The problem with voice recognition or handwriting recognition is that it's very easy to come out on the low end of the curve.

ESPINOSA: Human interface issues are only limited by the applications. The problem is that we've gotten into this application model where the application is God. If you look at Microsoft Word, it has 40MB bytes, and it has hundreds of features that no one will ever use.

DENMAN: The big question is: What are computer users used for, and what do we want them to be used for?

CW: So, can a Macintosh — something that brings the industry a whole leap forward all at once — be invented today?

ALL: Sure.

ESPINOSA: But not as a PC. When the Mac was introduced there weren't 100 million PCs. To-day, I don't think you can have a small company brings the industry a whole leap forward all at once — be invented today?

CW: And, you once said the Macintosh was a machine with a rebel heart. Is it still possible to create a machine with a rebel heart?

HERTZFELD: Sure, it just comes from the personalities of the designers and what they are trying to accomplish. We weren't trying to appeal to the core of the mainstream with the Mac but more the artist and the creative people on the fringes. Many people [are] like that and still have just as much a need.

CAPPS: The biggest representation of this mentality is the Internet. It's so great that something that big is not centrally controlled and not for profit.

TRIBBLE: The revolution in applying communications to technology is going to be similar to the social dislocations that happened with the telephone. The telephone didn't catch on overnight. It was used in the office, never at home. Only after decades did it become socially acceptable. And remember that one telephone is not an interesting invention, but two phones are an interesting invention.

CW: But isn't it nice to see the democratization of the computer?

CAPPS: You mean the capitalization, with a capital C. What we need to do is keep the Barry Dillers out of it for a while before it turns into QVC. That's going to happen.

ESPINOSA: I think the political repercussions of the ubiquitous computer are very interesting. The 1982 election was the first significant shift in the use of media since the Kennedy/Nixon debates. Clinton used call-in radio and call-in television. The fabric of society is going to change. The White House is on-line. Think about it.

We rested on our laurels way too soon with the Mac. Had we kept the same fervor for a couple more years, the computing world would be a lot different.

STEVE CAPPS

CW: What technologies in the future will we not want to use? Take brain implants, for instance. I'm not sure if I want a chip in my brain.

RASKIN: I will not want to browse 500 channels, I know that.

DENMAN: I want the computer to remember the channels for me and tell me what would be interesting to watch. I want it to listen to what I'm watching and what I'm not watching and think about what I might want to watch and program that way.

HERTZFELD: Interactive is really a paradigm shift. It's not just TV with choices.

RASKIN: But people don't want to interact. People are inherently lazy. They want to select.

HERTZFELD: Yet look at videos. You can watch them free on TV, rent them or buy them. These are just levels of choices. I think interactive TV is just another choice.

ESPINOSA: I think the old mechanisms about where the money flows and why won't work.

John Dvorak contrasted the Mac with the new version of IBM's computer, the AT, and called [the AT] "a man's computer designed by men for men."

An [industry] pundit in 1984 encapsulated the Mac's problem: "In spite of its impressive capabilities, the Mac simply doesn't have the look and feel of a business computer."

Apple failed by making Macintosh too subtle, too elegant, too easy to use... and, in spite of its protests, too much fun. Incoherence, ugliness and a steep learning curve were indicators that a machine was powerful. Pain meant gain.

What really terrified Apple's directors was the alleged gulf between the people who designed Macintosh — people like Andy Hertzfeld and Burrell Smith and Bill Atkinson, who probably didn't even own suits — and the Brooks Brothers data processing managers who fondly remembered punch cards. The latter were the people who happened to control the purchases of computers in Fortune 1,000 corporations.

Poor Apple. It thought that the Macintosh interface would take the world by storm. When the revolution failed to materialize, its minions were stumped. "I used to think that you couldn't get large numbers of people to really accept personal computers until you had what we delivered — consistent user interface, direct manipulation, modeless-ness. WYSIWYG and so on. That you couldn't sell [a brain-dead system like] DOS to a lot of people. Yet DOS outsold the Macintosh!" complained [Apple executive] Larry Tesler, years later.

"What I didn't understand was that most people didn't get to make their own decisions. The mistake we made was assuming that these individuals [in MIS positions] would have in mind the ease of the people who would use them. I never believed that they would go by other criteria. I couldn't believe they would spend weeks training people to use a system that they hated."

As the Macintosh struggled through 1984, the man who would help save it was traveling around the country with a small stack of the new Sony floppy disks. His name was Paul Brainerd.

His disks held an Alpha version of PageMaker, a program his newly formed company [Aldus Corp.] was developing for the Macintosh.

PageMaker allowed you to venture into Mac's virtual reality; manipulate columns of texts and pictures to create beautiful page layouts and emerge from the information seascape with a finished publication in hand.

On July 15, 1985, Aldus sent out the finished version of PageMaker. The Macintosh finally had its VisiCalc, an application program worth buying a computer for.

Mac's "dweebs," page 85

The Macintosh was introduced to the world in a TV commercial directed by Ridley Scott of "Blade Runner" and "Alien." FAME, THE MESSAGE OF WHICH WAS TO POINT OUT THE MONOPOLY.

THE MACINTOSH WAS INTRODUCED TO THE WORLD IN A TV COMMERCIAL DIRECTED BY RIDLEY SCOTT OF "BLADE RUNNER" AND "ALIEN." FAME, THE MESSAGE OF WHICH WAS TO POINT OUT THE MONOPOLY.

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WHO'S WHO in our Mac roundtable

Bill Atkinson THEN: Wrote QuickDraw, MacPaint and Hypercard. NOW: Chief technology officer at General Magic.

Biên Espinosa THEN: Supervised the writing of manuals and technical documentation. NOW: Works on the Apple/IBM relationship and runs the project offices for Teligent and Kalenda.

Andy Hertzfeld THEN: Wrote most of the Macintosh tool box. NOW: A vice president and programmer at General Magic.

Larry Kenyon THEN: Worked on the file system, drivers and boot code. NOW: Programmer in Apple's Newton group.

Jeff Raskin THEN: Credited with having started the Macintosh project in the sense of creating a computer that featured a small footprint, low price and bit-mapped display. NOW: Human interface design consultant and writer.

But Tribble THEN: Manager of software engineering. NOW: Vice president at SunSoft, a Sun Microsystems, Inc. software subsidiary.
## Computerworld Editorial (January-June, 1994)

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Mac turns 10

CONTINUED FROM PAGE 83

anymore when there is a lot of high-bandwidth point-to-point digital and everyone has the power to process all the movies, all the pictures, all the sounds they’ve got with high-quality fidelity. It’s going to be very weird. And the big corporations are having a hell of a time figuring out how they’re going to tap in and keep control and get money.

TRIBBLE: What you’ll see happen is technology for billing and transactions at the one-hundredth of a cent level. It’s the environment. It’ll be like the phone company, making a little money off millions of transactions.

KENYON: What about the future of interactive person to person? Are we still going to write letters or notes back and forth?

ESPINOZA: My question is what do a bunch of well-off white Californians know about this anyway?

HERTZFELD: We’re in a position to shape this. Whether we do a good job or not has a lot to do with the future.

ESPINOZA: My big concern is that we in the industry as whole are totally out of touch with real people’s behavior.

HERTZFELD: I don’t believe that at all. I don’t believe I could design anything if I felt that way. As soon as you start designing for the customer as an alien, you design a bad product. Because you’re scared of them... scared of offending them, and you don’t know what they like. But if you think of the customer as yourself and people like you, then you have a prayer. One of the secrets of the Mac is that we all felt we were making something that we really, really wanted — bad.

CW: Did the Mac turn out to be everything you hoped for?

HERTZFELD: The most poignant thing about the way things worked out is that Windows, with its inferior copy of the Macintosh [Interface], has captured at least six times as many users. It’s cliché now, but it’s really to license software freely. If Apple had done that even five years after the Mac shipped, it could have made the difference.

CAPPS: But Apple would be a lot poorer than it is now.

HERTZFELD: And so would we.

ESPINOZA: I think a lot of people underestimated the goodness of having the hardware and software wedded together. Microsoft and IBM also freely licensed a lot of the complications and confusion. It seems that the biggest impact we had was on the design of Microsoft Windows. I was reading an article about the elements of Windows — that it lets you control these radio buttons. We invented these and [Microsoft] copied it exactly.

CAPPS: They not only had the gall to copy the software, but they copied the manuals.

KENYON: You would see the pattern. Brainard’s liaison at Apple asked him to prepare a marketing report on the concept of desktop publishing. This 20-page white paper went directly to John Sculley. In the months that followed, Apple paid close attention to Aldus, and when PageMaker shipped, Apple contributed to its marketing costs — everything from cross-country press tours to advertisements in The Wall Street Journal. “Apple was desperate to differentiate Macintosh from the IBM PC,” Brainard recalls. “Desktop publishing was their only viable option.”

There’s a huge design space out there, and I just wish Microsoft had done its share of exploring. You invent something great, and Microsoft comes and takes it away.

LARRY KENYON

Insanely Great: The Life and Times of the Macintosh

CONTINUED FROM PAGE 83

Several months before PageMaker shipped, Apple began viewing the concept of desktop publishing in a different light — as something that could bolster the flagging sales of Macintosh itself. Brainard’s liaison at Apple asked him to prepare a marketing report on the concept of desktop publishing. This 20-page white paper went directly to John Sculley. In the months that followed, Apple paid close attention to Aldus, and when PageMaker shipped, Apple contributed to its marketing costs — everything from cross-country press tours to advertisements in The Wall Street Journal. “Apple was desperate to differentiate Macintosh from the IBM PC,” Brainard recalls. “Desktop publishing was their only viable option.”

It worked. Brainard recalls visiting potential corporate buyers who at first would sneer when he pulled the Macintosh out of the case. “That’s a toy,” they would say. Then he would run PageMaker, and it would become clear that the toy was a tool, at least as far as producing visually attractive documents was concerned. To appease the in-house publication people — who by then were salivating with anticipation — the company would reluctantly agree to buy a [tiny] Macintoshes and LaserWriters. And a strange thing happened. The anti-Macintosh arguments of the management information services dweebs slowly began to lose currency. The superiority of the Macintosh system would win converts. The workers in the publishing division would discover that spreadsheets and word processors on Macintosh operated with the same intuitive charm as PageMaker and benefitted from the consistency built into Macintosh from the start.

Colleagues from marketing, from publicity, from the executive suites — often people who normally loathed computers — would wander over and get a feel for this computer, try out the mouse and become seduced themselves. They would recommend that the company augment its desktop publishing Macintoshes with Macs devoted to more conventional applications. “You would see the pattern,” Brainard recalls. “A large corporation would buy PageMaker and a couple of Macs to do these tasks. That’s when you can always come back. That’s when you can always come back and ask for more Macs. The year after that, 300.”

The company belatedly arrived at a name for the pro-Macintosh niche. It was as good a description as any for the way desktop publishing saved Macintosh’s skin.

WILD AND CRAZY

Guys (front row, l. to r.): Hertzfeld, Raskin, Espinosa.

(back row, l. to r.): Kenyon, Demann, Capps, Atkinson, Tribble.
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A different story

By Robert W. Harbison

Attention LAN administrators: If you’re implementing and managing Novell, Inc.’s latest incarnation of NetWare, you need to be aware of a number of elements that were not required in previous versions.

While it is virtually impossible to cover every difference here, there are a few major points that will help make your transition to NetWare 4.x easier.

NetWare 4.x has a global architectural design, unlike previous versions of the NetWare network operating system, which are based on a file server-centric architecture. For those versions, this means the file server is the center and single most important element of the LAN. Each server contains the total view of its resources in a file structure known as the bindery and is basically ignorant of other servers on the same or different LAN segments.

This server-centric architecture requires administrators to manage much of the information on each file server’s bindery. For instance, to connect to resources controlled by other servers, NetWare 3.x administrators must duplicate users’ names and log-ins onto additional file servers.

On the other hand, NetWare Version 4.x employs a global database of network resources. Known as the NetWare Directory Service (NDS), this database allows file servers to be viewed as network resources in the same manner that printers, disks and communications resources are viewed. Users need only to log onto the NDS database to access any file server, printer or other defined resource.

A lot to know

The result is that the new breed of network administrators must understand the company’s organizational structure, the physical networkwide configuration and the physical and logical relationship of resources, and they must have some knowledge of the communications channels between the resources’ physical locations.

With users having enterprise-wide capabilities, both communications and security will also become a daily task for the LAN administrator.

For instance, an understanding of communications comes in handy when assessing the impact of printing a report to a printer located across the country. Security issues will also continue to grow as users expand their reach beyond the file server-centric world.

Serious study will be required for NetWare Version 4.x’s management tools, which pack more power than those in Version 3.x. The more difficult tools are those that give access rights to individual resources such as “Inherited Rights Filters,” referred to as the “Inherited Rights Mask” in NetWare Version 3.0, and “Access Control Lists.”

The biggest hurdle here is that there are more layers of trustee rights control to dig through when troubleshooting problems. Multiple log-in scripts at the organization and organizational unit levels, as well as additional user and profile log-ins, for instance, can cause very complicated log-in scripts and effective rights.

Harbison, owner of Network Integration Consultants in Santa Rosa, Calif., is an independent network consultant specializing in the design and implementation of LANs, wide-area networks and multiprotocol connectivity.

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WHAT MAINFRAMERS CAN TEACH YOU

By David Baum

A common warning being broadcast to mainframe programmers is "Learn new skills or perish." Mainframe markets are turning soft, while client/server developers and PC network administrators are in high demand.

Despite this shift, there is plenty that PC people can learn from mainframers, particularly on the network front.

Mainframer administrators understand the importance of data integrity, validation and security, says Lloyd Bell, vice president of information systems at BankAmerica Corp. in Portland, Ore. "They have worked with robust network management tools and can apply those skills to the management of networks of PCs."

In fact, experts say there are three main areas to learn from:

NETWORK ADMINISTRATION

Many people maintaining LANs haven't been exposed to the methodical troubleshooting procedures used for the corporate network backbone in a mainframe setting, says Kent Failing, president of Computer Design Professionals in Atlanta. "In the mainframe world, there is usually just one network protocol, one vendor and one operating system," Failing says. "PC LANs, however, tend to have administrators at different locations interpreting things differently."

At one work site, Failing says, the corporate-level data was stored in an Oracle Corp. Oracle database on several Unix servers, and departmental data was maintained in a decentralized setting of about 50 PC LANs also running Oracle.

"All the log-ons and passwords between the departmental LANs and the corporate database got incredibly convoluted," Failing says. "And there was no central documentation describing the overall network configuration."

Problems arose when developers attempted to write programs that used networked resources. "Without organizational planning, there is often little rhyme or reason to how servers are named, what queues are available and so forth," Failing explains.

"It takes more effort and coordination to work in a decentralized setting, but it pays off when it comes to software distribution, maintenance chores and security efforts," says Greg Painter, project engineer at TRW, Inc. in Ogden, Utah.

DATA ADMINISTRATION

Data backup and recovery gets tricky in a LAN environment because databases can exist on multiple servers with different backup regimens.

Failing's suggestion is to centralize the servers where they can be controlled by a professional systems administration staff. "If you want your own data backed up regularly, have them put it out on the server, or instruct them in the basics of data management on their own hard drives," he says.

Establishing corporate data models for client/server developers is also essential. "This is overwhelming us," says Tom Runkle, the state of North Carolina's deputy state controller for information resource management. "We find it very difficult to coordinate data from many different departments and agencies."

Without a well-coordinated modeling effort, Runkle says, there might be 10 different customer databases in a single organization instead of just one.

Nigel Smith, a systems analyst at Shell Oil Co. in Houston, says one solution is to point users to a corporate repository where the integrated views of the business are defined rather than tell them they can't create their own databases.

Runkle agrees. "You can have the best technicians in the world for client/server - the best database designers, screen designers and LAN administrators - but if you don't get the data administration side taken care of, you'll never make it," he says.

SECURITY

Security and management tools needed to safeguard important information are more mature on mainframes and can be controlled by a single individual or small group. In a distributed LAN environment, however, sharing the resources often tends to make access more difficult.

"Just because you decentralize the computers doesn't mean you decentralize all the security administration," says Cheryl Currid, president of Currid & Co., a consultancy in Houston.

Sensitive data should be maintained on systems with the best security mechanisms. A consistent method for user authorization and password assignments should also be set up, as should auditing mechanisms to track access to important network resources.

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**SURVEY CONDUCTED BETWEEN AUGUST '93 AND SEPTEMBER '93; ASKED FOR HEAD-COUNT CHANGES DURING THE PAST YEAR**

**REGIONAL GROWTH ANALYSIS**

<table>
<thead>
<tr>
<th>Region</th>
<th>Growth Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Northeast</td>
<td>11.7%</td>
</tr>
<tr>
<td>Midwest</td>
<td>8.5%</td>
</tr>
<tr>
<td>South</td>
<td>7.2%</td>
</tr>
<tr>
<td>West</td>
<td>7.1%</td>
</tr>
<tr>
<td>Northwest</td>
<td>6.1%</td>
</tr>
<tr>
<td>Southwest</td>
<td>5.6%</td>
</tr>
<tr>
<td>Central</td>
<td>4.2%</td>
</tr>
<tr>
<td>Pacific</td>
<td>4.1%</td>
</tr>
<tr>
<td>Others</td>
<td>4.0%</td>
</tr>
<tr>
<td>Average</td>
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**CORPTECH**, A DIRECTORY PUBLISHER IN WOBURN, MASS., TRACKS THE U.S.'S 35,000 TECHNOLOGY MANUFACTURERS. THIS SURVEY RELATES TO THE 25,252 TRACKED FIRMS WITH FEWER THAN 1,000 EMPLOYEES.
BUYING ON-LINE SERVICES

Flat rates won’t leave you flat out

By Joe Panepinto

The advice for companies looking for on-line information systems and electronic database services is simple—if you can get a flat rate, take it; if you can’t, be careful.

According to Steve Sieck, an analyst at Link Resources Corp. in New York, information brokers are rapidly developing flat-rate, unlimited-use pricing schedules. This puts an end to crystal-ball forecasting by companies for on-line information demands.

Costs for these services are often difficult to predict because some include monthly and/or yearly service fees. Charges for on-line time can also vary by modem bit/sec, rates, read rates for viewing, downloading and printing, which vary according to the information source, and per-message charges. Others, such as the Dow Jones NewsRetrieval service, have different on-line and read rates for different times of the day.

“The whole market is in transition from [one that is] serving a dispersed number of specialized users in the library, marketing or legal department to a more enterprise-based one,” Sieck says. “Many of the players have been moving toward offering flat-rate options and volume discounts.”

For example, Clarinet Communications Corp. in Cupertino, Calif., offers a flat rate for its ClariNews service, which includes wire service stories from United Press International and syndicated feature stories from other news gathering organizations, based on the number of users. Clarinet delivers the information to an on-site server that can then be set up as an open-access news group. The price is $53 per month for a single user, but it rapidly declines on a user-based discounting schedule until it settles at roughly $1 per user for 1,000 users.

Flat-rate fees not only help an end-user organization plan budgets but can also prevent unexpected increases in on-line costs as users feel their way around unfamiliar systems. The Dow Jones NewsRetrieval service suggests that companies that plan to use its services between 60 and 90 minutes per month during prime time (6 a.m. to 6 p.m.) should go with its corporate option: a $75 membership fee per account (up to five users per account) and a 33% discount on standard on-line charges.

Other on-line services have also adjusted their rate structures to meet the new demands of end-user companies.

PUSHY PAYS OFF

For companies that need more than worth of on-line services per month, it is worthwhile to try for a . Many on-line service providers simply don’t advertise their flat-rate pricing schedules; however, many will negotiate one if you’re persistent.

DataTimes in Oklahoma City offers flat-rate pricing packages for its on-line services of 121 newspapers and thousands of magazines and other sources, starting at $500 per month. For less frequent users, the normal usage-based pricing structure is still an option: a $75-per-month service fee plus 55 cents per minute to search a single source and a 76-cents-per-screen read/print/download fee.

Targeting Corporate Users

The big consumer market providers of on-line services are also starting to target corporate users with special pricing. Companies can have up to five users for each America On-Line account ($8.95 per month, including five hours of free time and $3.95 for every hour over that).

CompuServe, which provides access to a number of IS support forums, offers business account rates. There is a $19.95 onetime setup fee ($25 of which is credited toward on-line charges) and a $10 per account monthly minimum. The price includes unlimited connect time and free access to some nonbasic services.

Panepinto is a freelance writer in Amherst, Mass.

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Faneuil Systems of Chicago, formerly known as GIS Information Systems, has been providing outsourcing and remote computing services to a growing base of customers throughout the U.S. for over a decade. Positioning itself as "Your Best Choice for Mainframe Computer Services," this medium-sized provider is unique in that it supports all IBM mainframe architecture operating systems, yet can afford to do business with all sized companies - from the very smallest to those with large international operations. In order to successfully target organizations with specific mainframe requirements, Luis Navarro, Vice President of Sales, advertises in Computerworld’s Marketplace Pages every week.

"In a broad sense, our target audience includes anyone with a mainframe on the floor. More specifically, Faneuil Systems targets two categories of potential customers: organizations looking to outsource their corporate data centers while transitioning to smaller platforms - and companies needing outside services to drive their mainframe-based applications. In either case, Computerworld’s Marketplace Pages put us in touch with organizations that have specific mainframe criteria and are a good fit for our environment.

"It’s my impression that Computerworld is the leading publication within the IS industry. Over the years its readers have come to expect the classified section to contain advertisements from providers of specific IS services - like Faneuil Systems. It’s no surprise, then, that we experience a higher rate of closure with leads generated by Computerworld’s Marketplace Pages than with leads from any other source."

"In our business, with thousands and thousands of data centers out there, the quantity of leads is far less important than the quality of leads. Because we consistently get very qualified prospects, we advertise in Computerworld’s Marketplace Pages exclusively.

"And Computerworld’s Marketplace Pages do more than generate high quality leads. It’s also where we establish credibility over time by building name recognition and corporate visibility. Here, the credibility of Computerworld goes a long way in establishing our reputation as a solid industry player. This is extremely important, as our customers want to know that we’re here today - and will be here in the future as well.

"We’re also extremely pleased with the return on our advertising investment in Computerworld’s Marketplace Pages. Qualified prospects are clearly getting the message about our strong entrepreneurial spirit, high level of service and support for a wide variety of software products, and total flexibility in tailoring mainframe services to individual customer requirements. Until I’m convinced that we can get better results elsewhere, Faneuil Systems will continue running weekly advertisements in the primary classified resource for IS - Computerworld’s Marketplace Pages."

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Friday Stock Ticker

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<td>313</td>
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Losers

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<td>-2.0</td>
<td>323</td>
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The Regional Bell Operating Companies took the chin last week with MCI Communications Corp. announcing plans to buy into local phone service.

Continued success

A few tech stocks have managed stellar performances for two years running. The Hopkinton, Mass., storage manufacturer pumped its share value up by 180% in 1993 — almost exactly like the previous year. DSC Communications Corp. (DIGI) shed about 65% of its price in 1992 and matched that in 1993.

Dell Computer Corp. (DELL) went in the other direction: After appreciating 180% in 1992, the personal computer company shed about 65% of its price in 1992. Dell Computer Corp. (DELL) went in the other direction: After appreciating 180% in 1992, the personal computer company

— Derek Slater

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Large Systems

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Key: (H) = New Annual High Reached in Period (L) = New Annual Low Reached in Period

Open an Issue

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Overview

Wysiwyg

What was your MOST embarrassing moment involving a computer?

"When my secretary accidently attached a major reorganization memo to another announcement that went to all 800 employees worldwide. The reorganization memo was a draft I was experimenting with and was not ready for release for at least a month."

—Rick Crandall, CEO/President, Comshare, Inc.

"When I proposed to my wife at a Major League Baseball game over the computerized scoreboard. Her name was spelled wrong."

—Mark Lambright, President Lucid Corp.

"My most embarrassing moment was when I joined Madge and downloaded E-mail, then required Information Services to learn how to read the messages."

—Marc Jones, President Madge Networks, Inc.

The 5th Wave by Rich Tennant

Settlement confirmed?

Paced with the unsettling prospect of publicly hanging out their laundry, the feuding members of the erstwhile $125 million confirm reservation project were close to settling their acrimonious differences out of court last week. In fact, AMR said it settled with Marriott early last month and had recently reached agreement with Hilton Hotels and Budget Rent A Car. All three settlements involve undisclosed payments by AMR, confirm's developer, to the travel industry partners, sources said. The travel partners alleged that AMR covered up technical problems long before they surfaced. Budget sought $100 million, and Marriott sought $64 million. AMR had claimed the partners had withheld funds and made poor staffing assignments.

Turnin' up the volume

Sun is expected to jump into this winter's round of low-end workstation announcements with a powered-up SPARCclassic LX workstation and an enhanced SPARC 10 Unix server (see story page 6). Industry analysts said they believe Sun will double the LX's performance with a microSPARC II chip running in the range of 80 to 90 MHz, and a new SPARC 10 will host a SuperSPARC chip running at 90 to 110 MHz. But before that, Sun may come out with a "fast" twisted-pair Ethernet controller said to support up to 100 Mbit/sec. The option will support high-bandwidth multimedia and video applications without forcing sites to rewire with fiber, analysts said.

Copycats

IBM is apparently joining its sibling rivals Novell and Banyan (see story page 1) in the great migration of network operating systems onto RISC-based Unix platforms. IBM is expected today to announce intentions to put its LAN Server on AIX. While the OS/2-based LAN Server did not have the resource capacity problems NetWare is having on DOS, IBM will be responding to a growing user clamor for the range and depth of network cards, programming tools and the like to be found on the so-called "open" Unix platforms.

CD-ROM wasn't built a day

Novell's CD-ROM NetWare Loadable Module (NLM) is apparently not all it's cracked up to be and then some, according to two user sources. One source said the CD-ROM NLM is prone to "stupid problems, like the operating system tries to write to the CD." The other user said loading software on a variety of server hardware configurations "causes server utilization to go to 100%; then the server rolls over and dies." A Novell source said the company is aware of, and will repair at an undisclosed time, some "admittedly annoying cosmetic flaws" that may be responsible for the first user's problems. Novell has not heard of any "huge problems" such as server crashes, the insider said.

Unisys users unite

Unisys user group members of Use, Inc. (former Sperry Corp. users) and Cube (former Burroughs Corp. users) overwhelmingly approved the merger of the two organizations into a single U.S. Unisys user group, called Unite. The first official Unite conference will be held April in Nashville.

Sources at Apple say astronomer Carl Sagan was so upset that Apple engineers had used his moniker as the code name for a 66-MHz PowerPC in development that he called up the Cupertino, Calif., company and gave them an earful. Ever the gentlemen (and women), the techies backed down. The new name of the project, BHA, stands for Butt-Head Astronomer. Sagan, as well as code names Cold Fusion and PDM, were originally chosen by Apple engineers, who consider them the three biggest hoaxes of all time (PDM stands for Piltdown Man, trumpeted as the oldest human remains when found), according to an engineer who recently left Apple. Phone, fax or CompuServe News Editor Alan Alper with news tips at (800) 343-6474, (508) 875-8931 or 76537,2413, respectively. Or try Computerworld's 24-hour voice-mail tip line at (508) 520-8555.
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