Novell engineering AppWare comeback

By Laura DiDio

Seeking to erase two years of stumbling and false starts, Novell, Inc. will attempt to resurrect its maligned AppWare strategy at its annual developers conference in Salt Lake City this week.

At Brainshare, Novell will kick off an AppWare renaissance that recasts the architecture as a "focused, well-defined set of tools that will enable power users to develop desktop applications that explicitly leverage NetWare 4.1's network services," said Joe Firmage, Novell's vice president of strategic planning for the NetWare Systems Group.

This latest AppWare initiative is a retrenchment. Novell's original intent was to promote AppWare as the foundation on which all cross-platform development would be based.

In 1993, AppWare consisted of two agendas, noted Leo Spiegel, chief technology officer at LAN Foundation, a low-level application company. One was AppWare Foundation, a low-level application company.

IS lacks 'net strategy

By Ellis Booker

On April 5, Marty Rood will name the lucky winner of a 1995 Nissan Sentra.

What makes this car contest unique is the dollar signs, the technology activist says.

"If you fail to grab a leadership role, IS shops are doing," said Goldsmith, author of "Doing Business on the Net." "Their proper role is to be aware of the new technologies and what competing IS companies, it is the marketing/communications IS lacks, page 14

Coexistence approach wins

By Rosemary Cafasso

Judging by the dollar signs, the multibillion-dollar client/server applications market is a runaway success.

But users are not raceing to make wholesale changes with this technology, according to IS professionals at several large companies.

Beyond nagging issues of reliability and robustness, which tend to slow migration plans, many user companies are drafting near-term coexistence strategies between mainframes and client/server systems.

Du Pont Co. and FedEx Corp., for example, are strong proponents of coexistence approaches, even though such environments can be more complicated to manage.

Typically, coexistence calls for information systems shops to perform additional work in data synchronization, interface programming and application integration.

Revenue for client/server-enabled applications totaled an estimated $6 billion last year, nearly double the $3 billion total, according to International Data Corp. in Framingham, Mass.

Coexistence, page 117

Informix fights also-ran image

By Kim S. Nash

Late last year, MCI Communications Corp. brought in databases and tools from Informix Software, Inc. for a giant data warehousing project.

"We tried making it work with Sybase at first, but this is just too much data, too massive," said Jim Folks, vice president of information technology at MCI's consumer markets group in Arlington, Va.

Informix's OnLine 7.1 database outperformed Sybase's System 10 in parallel query processing and data loading and indexing, Folks said.

While Sybase has won its share of data warehousing contracts, the MCI deal reflects newfound strength at Informix.

Informix, page 22

Back to basics

Supermarket chain shelves object plans, outsources IS

By Julia King

Two years after an auspicious technology launch, debt-laden Kash 'n' Karry Food Stores, Inc. is pulling the plug on its highly ambitious, but apparently unfaffordable, object-oriented software plans.

Last week, new executives at the recently reorganized $1 billion grocery chain also disclosed plans to outsource all information systems operations, including development of a new mainframe-based procurement system and store-based point-of-sale systems, to GSI Co.

"Just too far out on the leading edge, and we learned a lot from it. But we have to remember we're in retail," said Jim Folks, vice president of information technology at MCI's consumer markets group in Arlington, Va.

Informix, page 22
Microsoft has prepared a planning guide for users getting ready to deploy Windows 95, and IBM plans a series of enhancements to make ® Digital is on the right track with its reorganization, but the company isn't entirely out of the woods yet. News, page 6
IBM plans a series of enhancements to make its disk operating system management software more useful in shops that are investing in other hardware platforms. News, page 8
Microsoft's delay in shipping Exchange may cost the company some users. News, page 12
As Windows 95's final beta begins to ship, Microsoft appears ready to break a key barrier to Windows NT on fault-tolerant systems. News, page 12
ATM devices, "fast" Ethernet switches and remote-access products top the list of introductions due at the Networld/Interop show. News, page 12
CompuServe acquires Internet access software maker Spry, Inc. News, page 14
X/Open plans to create specifications for networked services, including naming, security and directory services. News, page 15
Many CEOs are bursting with curiosity about IS. But Bill Laberis maintains they just need to feel more secure about exploring it. Editorial, page 38
Dysfunctional IS staffers come in all varieties, Thornton A. May says. Viewpoint, page 39
In the relationship between testers and coders, a case can be made either way for collaboration or competition, Michael Schrage maintains. Viewpoint, page 39
Intel's chip rivals prepare challenges to Pentium, but it is the P6 that will give Intel the performance edge for the next few years. Desktop Computing, page 41
IBM attempts to counter the potential Windows 95 juggernaut by readying OS/2 Warp Connect. Desktop Computing, page 41
Sun is stretching its Solaris operating system at both ends — providing new support in its Solaris 2.4 release for Intel machines as well as improved support for high-end SPARC servers. Workgroup Computing, page 47
Vendors take action to protect users from the malevolent use of attack scanners, which look for security holes in networks. Enterprise Networking, page 57
A redesign of Lease Plan U.S.A.'s corporate fleet operations is expected to save the firm $2.8 million over five years with the help of an IBM AS/400-based imaging system. Large Systems, page 67
Closer Look: The key to object-oriented success has little to do with tool kits. Instead, choosing a language and a methodology with care will satisfy the fundamentals and ensure a smoother ride, early adopters say. Application Development, page 73
Gordon Bell previews a future in which plug- ing into a worldwide network is as easy as getting a dial tone. In Depth, page 88
Tools for testing IS skills are few and far between. Hiring managers rely on a job candidate's experience and internally developed tests to determine technical proficiency. Careers, page 84
Telecommunications companies will provide more and more computer services. Charles Babcock says. Commentary, page 118

What's Inside
March 20, 1995

How do you measure up?
How does your IS department compare with the Computerworld Premier 100? Fill out the Premier 100 survey and we'll send you a free report showing how your operation compares with Premier 100 averages. Consolidated information from the surveys we collect may be published in a future Premier 100 issue. Send a request on company letterhead to Paul Gillis, Editor, Computerworld, 375 Cochituate Road, Framingham, Mass. 01701 or E-mail to survey@cw.com.

Executive Briefing
After a headlong rush into object-oriented applications, Kash n' Karry Food Stores has given in to a shortage of cash, placing new object development on hold and re-embracing mainframe-based applications. The grocery store chain also revealed plans to outsource all IS operations, including development of new procurement and point-of-sale systems. Page 1
Elsewhere in the object development world, this week's Object World show will feature the launch of visual tools from Cadre Technologies and IBM. Page 16. And users advise focusing on languages and methodologies when launching an object-based project. Page 73
Don't let the size of the market fool you. Client/server is a success but not an outright winner in enterprise computing strategies. Large companies say they are moving slowly to client/server technology, keeping their hand in legacy applications by developing coexistence plans for client/server systems and mainframes. Page 1
Marketeteers have begun descending on the Internet, where they are already learning volumes about what works and what doesn't in cyberspace. Page 1. Meanwhile, First Union Corp. is racing forward with a service that will provide its 10 million customers with electronic shopping and banking via the Internet. Page 14
Information warfare is a clear and present danger. Electromagnetic pulse transformer bombs, van Eck phreaking and other cyber weapons could cost an unprepared company millions. In this month's Leadership Series article, "Prepare Yourself for Information Warfare," M. E. Kabay discusses what IS managers need to know to plan a defense. This special insert follows page 48.

The 5th Wave by Rich Tennant
"Now when someone rings my doorbell, the current goes to a generator that discharges the audio impulses and sends the image to the PC where it's converted to a Pict file. The image is then animated, compressed and sent via high-speed modem to an automated phone service that sends an e-mail message back to tell me someone was at my door 40 minutes ago."
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All it can do is sort ASCII.
its system sort isn't one of them.
UNIX has its advantages, but

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FUNCTIONS

PERFORMANCE
Migration, training top Win 95 concerns

Users wonder: Will operating system curb desktop costs?

By William Brandel

Faced with rising costs associated with desktop management, users last week said they remain highly skeptical of Microsoft Corp.'s contention that Windows 95 will lower their desktop costs. All but one of a half-dozen users contacted last week by Computerworld said they do not believe their desktop management costs will go down — with or without Windows 95.

"Windows 95 may give you more centralized administration support, but it will also bring other complexities with it," said Marty Graham, LAN administrator at Bearings, Inc. in Cleveland. "The [Windows] problem is that we have a lot of software, which is now going to have to be installed and supported, and that's going to create additional complexity we haven't dealt with before." Graham said the company is preparing to phase in Windows 95 gradually, and he and other users said they project costs to increase.

A recent report by International Data Corp. (IDC) in Framingham, Mass., backs up such skepticism. By the end of 1996, users will spend more than $400 million for training and support for Windows 95 migrations, IDC analysis estimated.

Yet these costs do not include the amount that information systems departments will pay to internally support and train users, the analysts said. As such, users can collectively expect a $1 billion-plus training price tag with the initial migration to Windows 95.

For its part, Microsoft officials adamantly deny that Windows 95 migrations will be costly or difficult for users. Backing up Microsoft's claims is a recent report published by Forrester Research, Inc. in Cambridge, Mass. The report contends that the $8,170 annual support cost per desktop that users pay today will be cut in half by 1998. That reduction will come, in large part, from reduced administration costs under Windows 95, according to Forrester.

The research firm based its conclusions on new features in Windows 95, such as the system registry on which new asset management and the electronic software distribution utilities will be based. Forrester estimated that users will need only one administrator per 100 desktops compared with one for every 50 machines today.

"By using the registry, that should save us some money," said Wilson Nabarro, PC coordinator at Pacific Energy Corp. in Commerce, Calif. "But it also might bring some complexity that we haven't dealt with before." Forrester analyst John Hurd, assistant deputy director for MIS at the Ohio Department of Human Services in Columbus, said the registry would "collectively bring a number of changes that users won't have to deal with before." Foremost among these complexities will be supporting more applications per desktop, which will take advantage of more features in the operating system. IDC estimates users will run 15 or more applications on Windows 95 compared with fewer than 12 applications on Windows 3.1 desktops and seven on DOS.

These applications will take greater advantage of multimedia and networking features. That, in turn, will require more planning and support and, frequently, more system resources.

In addition, all the major software vendors plan to soup up the networking features in their applications suites. For example, Microsoft announced last week that it would include a group scheduler in the Windows 95 version of its Office suite. Meanwhile, WordPerfect, the Novell, Inc. Applications Group, and Lotus Development Corp. plan to enhance their suites' networking capabilities.

"Obviously, putting the networking features in suites will add to the amount of planning and preparation you will have to do [before implementing Windows 95]," said John Hurd, assistant deputy director for MIS at the Ohio Department of Human Services in Columbus.

Jurist defends ruling

By Mitch Betts

WASHINGTON

In an unusual bid to sway the appeals court, U.S. District Court Judge Stanley Sporkin last week defended his Feb. 14 ruling in the contentious Microsoft Corp. antitrust case, which is now expected to take a year or more to resolve.

Sporkin said he refused to rubber-stamp the U.S. Department of Justice's antitrust settlement with Microsoft Corp. on its antitrust issues. Sporkin rejected the July 1994 settlement, which focuses on Windows licensing policies, leaving both Microsoft and the Justice Department to appeal the ruling.

The judge's 12-page decision, meant to "set the record straight," was part of an otherwise routine order canceling a status meeting. Several antitrust experts have predicted that the higher court will find fault with Sporkin's ruling, but that may not produce fast approval of the decree. The appeals court is likely to remand the case to Sporkin with specific instructions on how to review it, predicted George Reed-Dellinger, an analyst at NatWest Washington Advisors, a Washington research unit of NatWest Securities Corp.

"The guidelines are likely to be so narrow that Judge Sporkin will have little choice but to approve the decree," he said. But Sporkin "could make life difficult for Microsoft by demanding certain modifications and conditions."
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DEC future brightens

Revenue growth expected; user confidence grows

By Neal Weinberg

Digital Equipment Corp. is not out of the woods yet, but there is a growing sense among analysts and analysts that the embattled company’s reorganization is working.

In the slash-and-burn phase of the turnaround, Chief Executive Officer Robert Palmer cut the workforce in half, sold off chunks of the business, tossed out matrix management and created separate business units.

The cost reduction moves—essential complete except for about 5,000 additional layoffs, which will bring the head count down to 30,000—brought Digital a tiny profit of $18.9 million in the quarter ended Dec. 31, 1994. But analysts say Digital’s earnings are still a long way from normal.

In the traditionally weak months of January and February, Digital’s revenues and profits are often weak, but this year, the company is having problems mediating its internal woes.

Problems with Digital support also remain, said Greg Casto, president of the Information Technology Industry Association.

“Tt allows us to do seamless communication between different vendors’ platforms, said Faye Allen, group marketing manager for network integration software at Digital. ManageWorks runs on LANs from Novell, Inc., IBM and Microsoft Corp.

“ManageWorks represents a new line of products built to compete on the open market rather than run on Digital systems first and then be adapted for other vendors’ platforms, said Faye Allen, group marketing manager for network integration software at Digital. ManageWorks runs on LANs from Novell, Inc., IBM and Microsoft Corp.

Digital plans to market the $995 Magic Slate, which is digital. This means dual-mode features include the following:

- More competition in both the local and long-distance markets. For instance, AT&T’s $2 billion investment combined with McCaw’s existing cellular network, could enable AT&T to offer local service in most major metropolitan areas.

News

Wireless auction may be high-stakes gamble

By Michael Fitzgerald

Forget Las Vegas. For real high-stakes poker, Washington, D.C., is the place to go. Or so it seems after 18 bidders anted up more than $7 billion to close out three months of wireless auctions last week.

The successful licensees are expected to yield competition for the existing cellular phone providers and provide a way for cellular carriers to offer national networks to customers.

Yet it may turn out to be an expensive gamble for the firms that spent so much to secure licenses in the broadband personal communications services (PCS) spectrum because many observers think it could take another $7 billion to build out the new networks. That could mean that some license winners will end up money losers.

Slic of a limited pie

“The FCC has created a situation where a lot of vendors are fighting over a finite number of customers,” said Dick Shaffer, editor of the New York-based newsletter “ComputerLetter.” He also predicted that the advent of PCS will create more competition for wireless communications, which is “bought to cut prices” for end users. Price discounts could spur more people to buy cellular phones and other devices.

Users may also be losers in this wireless game. Some observers maintain that the low prices will lead to a confusing technological muddle in the market.

“I think this is bad for consumers,” said Alan Reiter, editor of “Mobile Data Report,” a newsletter in Alexandria, Va. He said that by not creating any nationwide licenses, the Federal Communications Commission made it very difficult to achieve economies of scale, made vendors’ platforms less likely and limited the ability of vendors to provide well-integrated services.

Vendors will have plenty of time to address these issues. For instance, it will be 1997 before initial broadband PCS service is available from AT&T Corp.’s McCaw Cellular Communications, Inc. unit, according to a spokesman.

More money

The costs that license holders have to consider in addition to upfront license fees include the following:

- The cost of buying real estate to put up new towers.
- Payments to move existing users to other slices of spectrum.
- Developing new devices that will function at both the 1.8-GHz PCS frequency and the 800 MHz cellular frequency.

Users may also find vendors reluctant to let their networks interoperate with those of other carriers. For starters, the cellular network today is analog, and PCS will be digital. This means dual-mode analog/digital phones and modems must be developed.

Meanwhile, most of the nation’s cellular carriers are looking to convert their analog networks to one of two digital technologies — Time Division Multiple Access and Code Division Multiple Access. Phones and peripherals may have to accommodate these as well.

Despite the naysayers, the auctions may still yield some intriguing developments for corporate users, including the following:

- The biggest bidder was WirelessCo, L.P., a consortium comprised of Sprint Corp.; cable carrier Comcast Corp.; multimedia mogul Cox Enterprises, Inc.; and cable carrier Tele-Communications, Inc.
- WirelessCo has the potential to be the largest wireless player and could have a leg up on the cable/computer convergence some have predicted.
- More competition in both the local and long-distance markets. For instance, AT&T’s $2 billion investment combined with McCaw’s existing cellular network, could enable AT&T to offer local service in most major metropolitan areas.

Digital manages many LANs

By Neal Weinberg

Digital Equipment Corp. will offer relief for administrators juggling multiple LANs with a Windows-based platform that can manage network operating systems from different vendors.

“It allows us to do seamless communications between networks,” said Tom Foley, executive vice president of Bay State Computer Group in Boston, which has been testing the software, called ManageWorks, to be released this week.

ManageWorks brings the kind of control over the long run users of information systems managers had over mainframes to the LAN environment, said Scott Grooman, executive vice president of technical services at Alpha Network Technologies, Inc., a Digital reseller in Gaithersburg, Md. “It’s desperately needed,” Grooman said.

ManageWorks represents a new line of products built to compete on the open market rather than run on Digital systems first and then be adapted for other vendors’ platforms, said Faye Allen, group marketing manager for network integration software at Digital. ManageWorks runs on LANs from Novell, Inc., IBM and Microsoft Corp.

Digital plans to market the $995 ManageWorks through resellers. It is positioning it at sites with 100 to 500 users.
DEVELOPER PRODUCTIVITY COMPARISON

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Oracle
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4 lines of code

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IBM storage software heads for other platforms

By Craig Stedman

Trying to expand the distance it can see beyond its own nose, IBM is planning a series of enhancements to its market-leading distributed storage management software. The changes will enable the product to be used more widely in shops with non-IBM hardware.

First up is a late-April shipment of Adater Distributed Storage Manager (ADSM) server releases for Unix systems from Hewlett-Packard Co. and Sun Microsystems. Those will be the first outside platforms to get server-level support for ADSM, which manages network backup and archiving services. Frequently used data from disk drives to less-expensive tape and optical storage devices.

A Windows NT server is due to follow late this year or early next, and IBM confirmed last week that it will expand the distributed nature of ADSM next year by enabling data to be migrated between multiple tiers of servers.

Closer to delivery is Version 2 of ADSM, which should ship in June with a new space management feature that automates the scrubbing of client disk drives after data has been backed up to a server, IBM officials said.

Offering support

IBM already supports HP, Sun and various other Unix platforms as ADSM clients, and it cuts a much wider enterprise swath than competing storage management vendors do, said Paul Mason, an analyst at International Data Corp. in Framingham, Mass. Nevertheless, users "basically had to be IBM-centric shops to be interested" in ADSM because of the lack of other servers, he added.

The plan to embrace HP and Sun boxes as servers is just in time for Peter Ray, lead technical specialist at Valero Energy Corp. in San Antonio. Valero expects to replace IBM, HP or Sun as its Unix vendor of choice in the next couple months. Having the flexibility to use ADSM on any of those platforms is important to the diversified energy company, Ray said.

For now, Valero runs ADSM on a trio of OS/2 servers that "were sitting around idle," Ray said. However, those systems are "pretty well maxed out" by the current workload of backing up 40 LANs and 10 database servers, he said. As a result, Valero is looking at upgrading ADSM to a more robust Unix machine.

Support for non-IBM hardware "adds another dimension" to ADSM, said Gretchen Thiele, lead analyst for centralized technical services in the information technology business unit at IBM in St. Paul, Minn. IBM has both HP and Sun systems set up as clients of its mainframe-based ADSM server, and it wants to be able to configure those as servers in their own right, she added.

That capability will become especially interesting when IBM follows through next year on its promise to enable data to be passed between multiple ADSM servers, Thiele said. Customers could then set up a hierarchy of central and departmental ADSM servers, giving end users "the advantage of being locally connected and still being able to back up to a server in a glass house."

Support for server hierarchies would let companies "give local departments more autonomy and authority" over storage management, Ray agreed. "It gets the enterprise people out of the game of doing day-to-day backups and restores and allows them to focus on the key corporate date."

Legent Corp. already offers server-to-server backup capabilities in its Enterprise Storage Manager software but only for connecting OS/2 systems to mainframes, said Rob Enderle, a senior industry analyst at Dataquest, Inc. in San Jose, Calif. Tiering storage servers would help distributed shops avoid network overloads that may occur if all data is backed up to a central site, he added.

IBM targets PC outsourcing

IBM has launched an outsourcing program for large shops seeking outside help managing and upgrading their PCs. The NetWorkStation Management offering was beta-tested in the past year by about 30 customers, including McDonnell Douglas Corp. in St. Louis and BP Chemicals in the UK, according to IBM. For an unspecified monthly fee, IBM will take over tracking of PC assets, installation of new models, help desk support, remote network management and Internet access. Both IBM and non-IBM PCs can be covered by the outsourcing service, the company said.

CA plans new database version

Computer Associates International, Inc. plans to announce the next version of its CA-Impact relational DBMS in next month. The as-yet-unnamed product, the bulk of which will enter beta testing in the fourth quarter, will include several new features. For example, FastPath will provide users with dual access paths to data as a means of improving database base performance.

Apple readies new Mac OS version

Apple Computer, Inc. is readying updated versions of the Mac OS and its QuickDraw graphics engine that reportedly boost performance by optimizing components for PowerPC-based Power Macintosh systems. The Macintosh System 7.5 Update 1.0 will offer faster file sharing, support for Drag and Drop to the Launcher, PowerTalk 1.1.1 and improved memory handling. Similarly, QuickDraw GX 1.1 will provide better font management and more printing options.

Microsoft bundles scheduler

Microsoft Corp. announced last week that its Task Scheduler, its scheduling and remote execution product, will be incorporated into the Windows 95 version of the Office applications suite. Users will be able to schedule appointments and tasks through Microsoft Mail and import and export files from other applications into the contact manager. Meanwhile, Microsoft last week delivered a final beta version of the SQL Server 6.0 database to several thousand corporate users.

NextGen systems to support PCI

Systems based on NextGen, Inc.'s low-cost Pentium-class chips will now support Peripheral Component Interconnect (PCI) technology. The Milpitas, Calif.-based manufacturer last week entered into an agreement with VLSI Technology, Inc. in San Jose, Calif. VLSI will provide PCI bus and Industry Standard Architecture bus chip sets for NextGen's NX/6000 processor family of fifth-generation performance x86-compatible processors.

Microsoft bundles scheduler

Microsoft Corp. announced last week that its Task Scheduler, its scheduling and remote execution product, will be incorporated into the Windows 95 version of the Office applications suite. Users will be able to schedule appointments and tasks through Microsoft Mail and import and export files from other applications into the contact manager. Meanwhile, Microsoft last week delivered a final beta version of the SQL Server 6.0 database to several thousand corporate users.

Short Takes

Later this month, most of IBM's desktop and mobile systems will come standard with IBM's Select-a-system, a program that lets users choose an operating system (OS/2 Warp or DOS/Windows) simply by clicking on an icon. Users can also switch back and forth between the two environments. . . . Tivoli Systems, Inc., a maker of distributed systems management software in Austin, Texas, last week announced an initial public offering at $14 a share; by Friday, the stock had shot up to $37. . . . Novell, Inc. last week announced Norton Administrator for Networks 2.0. The new, more scalable version of its desktop PC management program supports centralized management of PC LANs distributed across wide-area networks.
Introducing the Intel 100Mbps Fast Ethernet adapter. A powerful addition to your fastest PCs.
Ship dates for Microsoft Corp.'s Exchange server are slipping. Again. Although Microsoft officials in Europe have confirmed that Exchange will not ship until at least December, U.S. officials are calling that "pessimistic."

"Our official position is that Exchange is a 1995 product, so it will ship this year," said John Frederiksen, a Microsoft product manager in Redmond, Wash. "Anyone saying mid-December is being pessimistic," he said.

"They've been kidding the public about shipping Exchange in midyear," said Matt Cain, program director at Meta Group, Inc. in Stamford, Conn. "Anyone doing beta knows there's more work to be done."

Indeed, Frederiksen acknowledged that the "real showstoppers" — bugs — would come with the second beta. He declined to provide the delivery date.

"We are not jumping into Exchange," said James Ross Jackson, a staff member in the information services unit at Textron Financial Corp. in Atlanta. His company plans to move to Windows NT in the next quarter, and only after that will it look at Exchange. "I wouldn't look for it before the summer of next year," he said. If it is released before then, it will be followed by a lot of patches, he added.

Mark Buchholz, systems officer at State Street Bank & Trust in Boston, which uses a raft of mail products including Mail, is busy rolling out Hewlett-Packard Co.'s OpenMail for backbone purposes. "Exchange will be what HP [OpenMail] is today in a couple of years. Microsoft is not here today. It will be a long time," he said.

Walter Kuleck, managing director of Technology Enterprises, Inc. in Cleveland, agreed, saying Exchange will not be ready for prime time when it does ship. "Folks who want Exchange capabilities will go to Notes," he said. He cited a client that was looking at both products and recently chose the one now on the market — Notes. Technology Enterprises is a Mail user.

Another area where Notes will emerge stronger than Exchange in the initial release is location management. This essentially allows a remote user to set up parameters, such as the order in which to replicate databases, phone numbers or credit-card numbers.

While Microsoft is not willing to publicly analyze the cause for delay in shipment, officials in Europe said some of it may be attributed to compatibility issues related to host-based legacy mail systems. Frederiksen confirmed that a large team is working on related migration and interoperability issues.
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High speeds hit Interop roadway

By Laura D'Itri and Patrick Dryden

Next week's Network/Interop '95 show in Las Vegas will showcase a cornucopia of product introductions from 600 vendors, notably in the 25M bit/sec. Asynchronous Transfer Mode (ATM) device, 100M bit/sec. "fast" Ethernet switch and remote-access device markets.

The anticipated 60,000-plus attendees can expect a plethora of low-speed 25M bit/sec. ATM offerings to boost power and extend users' investment in their installed LANs. The availability of 25M bit/sec. speeds follows closely on the heels of the ATM Forum's recent approval of the Desktop ATM25 Alliance specification for low-speed ATM devices.

These 25M bit/sec. ATM low-speed switched networks can use existing Ethernet and Token Ring wiring without outstripping the capabilities of the slower buses and processors of installed PCs.

Users perusing the aisles will get to view dueling "fast" Ethernet products from two rival camps: the 100Base-T/Ethernet Alliance and the 100VG AnyLAN Forum. The Fast Ethernet Alliance will feature 30 100Base-T products from 15 vendors, all interoperating.

It's everywhere you look

The Internet will be hotter than ever at the show. Vendors will introduce new or enhanced Internet access server devices and firewall software that will restrict unauthorized access to corporate networks via the Internet. Other vendors hawking their wares include the following:

- 3Com Corp. in Santa Clara, Calif., will unveil several client Integrated Services Digital Network (ISDN) products, including an Ethernet/Fiber Distributed Data Interface switching module (EFSM) and Token Ring switching modules (TRSM) for its high-end LANplex 600 data center switch. The EFSM is a 16-bit Ethernet and two-port FDDI switching module. The TRSM is an eight-port Token Ring, one-port FDDI module.

- Com will also unveil an ISDN-to-dual-port asynchronous interface device that links communications servers and routers to a Basic Rate Interface line and supports central site migration to ISDN. It will list for $979.

- Lantronix Inc., also in Santa Clara, will introduce the high-speed EtherBridge, equipped with one 10Base-T port, one wide-area network port providing full 10M bit/sec. full-duplex speed Ethernet throughput and Simple Network Management Protocol capabilities. Due this summer, it lists for $3,700.

Conferences galore

In addition to the product blitz from approximately 600 vendors, attendees will find a beefed-up conference schedule offering hands-on experience in a number of hot markets. The following are the five featured conferences:

- The IBM OS/2 Seminar Series '95 will feature the OS/2 Warp City Application Software Pavilion and will include 21 workshops.

- The Network Analysis Forum '95 is aimed at honing the skills of network managers via a hands-on analysis lab and one-day tutorials.

- The Network Users Conference sponsored by Novell, Inc. will feature a 36-course agenda.

- The Engineering Conference is targeted at software and hardware engineers and network architects who want to learn more about internetworking, network management and high-speed networking.

- The Executive Conference, sponsored by The Yankee Group, a Boston consultancy, is a two-day conference for chief executive officers and other high-level executives. It consists of 11 advanced sessions that provide case studies of the networking and systems strategy of Fortune 1,000 companies.

Windows 95 will not be the only new Microsoft Corp. operating system to ship in late summer. Tandem Computers, Inc. recently announced it will begin shipping a version of Windows NT Server for its fault-tolerant system.

The final beta of Windows 95, called M8 for "Milestone No. 8," went to manufacturing last week and is already on the way to 50,000 beta testers, said Yusuf Mehdli, a product manager at Microsoft's Personal Systems division.

The M8 beta will be at the end of the month by Microsoft's Preview program, which will release as many as 400,000 prerelease copies to users. Each of those copies, which will cost $32, will allow users to install Windows 95 on five machines. This means that up to 2 million units may already be installed before the product ships in August.

First to market

Despite the spotlight on Windows 95, the Tandem announcement received its share of attention. While Microsoft has had significant success in the lower end of the corporate computing market during NT's first year and a half, the company has not attracted enterprise customers because NT does not smoothly support machines with more than four processors.

Both Digital Equipment Corp. and AT&T Corp. have promised clustering for their versions of NT, but Tandem is the first vendor in the critical fault-tolerant computing market to declare it will have a version. By September, Tandem will begin shipping its first multiprocessor, fault-tolerant NT systems based on MIPS Technologies, Inc.'s R4400 RISC processor, said Roy Graham, director and general manager of Tandem's new NT business unit. Within two years, Tandem will also offer clustering capabilities that will enable users to build large NT-based multiprocessor systems for mission-critical computing, Graham added.

Such clustered configurations could support, for example, 25 four-processor machines functioning as a single system, Graham said.

Tandem's move means that NT is on its way to making some headway in what traditionally have been two of Unix's unassailable advantages, said Bob Endler, an analyst at Dataquest, Inc. in San Jose, Calif.

Faul tolerance and clustering "are the areas where Unix prides itself, and when NT adds those things, it completely removes those advantages [in terms of] commercial business computing," Endler said. Combining those features with NT's hardware independence, "you get an easily managed environment without any of the problems [of Unix]," he said.

"I think this is a great idea," said Colin Carpi, president of Chartwell Advisory Services, Inc. in Penn Valley, Pa. "If [Tandem] can get fault tolerance without recompiling [applications], they've got a very attractive offering." Carpi's company is building a public personal financial services network.

By adding Windows NT to its operating system offerings, Tandem will be required to introduce a new line of servers based on its current Himalaya line. The new machines will be switchable between so-called symmetrical multiprocessing and Tandem's "loosely coupled" multiprocessing, Graham said.

PowerPC: Pick your operating system

By Jaikumar Vijayan

Motorola, Inc. plans to demonstrate six different operating systems testing on networked PowerPC hardware at next week's Network/Interop show.

A source at Motorola said the company will demonstrate versions of Sun Microsystems, Inc.'s Solaris, Microsoft Corp.'s Windows NT 3.51, Novell, Inc.'s NetWare, Apple Computer, Inc.'s Mac OS and IBM's AIX and OS/2 for the PowerPC. They will run on networked PowerStack systems and Big Bend evaluation systems from Motorola as well as Power Macintosh desktops from Apple.

"It is meant to serve as a demonstration of the interoperability of the platform," the source said.

For users, the porting of an increasing number of major operating systems to the PowerPC indicates growing industry support for the platform. This will result in greater availability of application software, although not anytime soon, said Dean McCarron, an analyst at Mercury Research, Inc. in Scottsdale, Ariz.

For instance, at Network/Interop, one of a few. major announcements was the introduction of extensive non-Mac OS applications will be demonstrated, the source would say only that the date fell within IBM's projected spring 1996 date for general availability of the products.

The new IBM desktops, which will be based on the PowerPC 601 and 604 processors, will feature standard 16MB of RAM, a 540-Mbyte hard drive, a Peripheral Component Interconnect local bus, integrated CD-ROM and business audio and high-end graphics capabilities. The pricing for the new systems will reflect that of similar systems already announced, such as Milpitas, Calif.-based Tandem Computer and the recently introduced IBM 603e processor, which will feature most of the same capabilities. Pricing here is also expected to mirror the current market trend, which is about $5,000.

The new note- books, which will most likely be based on the recently introduced 100-MHz 603e processor, will feature most of the same capabilities. Pricing here is also expected to mirror the current market trend, which is about $5,000.

The systems will be available initially with Windows NT 3.51 and AIX pre-installed. IBM's OS/2, reported to be one of the major reasons behind the delay in announcing PowerPC hardware, will ship in August, the IBM source said. OS/2 for PowerPC is currently in beta testing.

IBM readies new OS/2 versions. See page 41.
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First Union banks on
electronic shopping

By Thomas Hoffman

First Union Corp., the nation's ninth-largest bank, has unveiled an Internet-based electronic marketplace that will let its 10 million customers shop and bank over the World Wide Web.

First Union's venture with Cambridge, Mass.-based Open Market, Inc. is not the first Internet-based electronic shopping channel. But the service, called Community/Commerce, is being viewed as one of the most secure approaches to on-line transactions to date.

Open Market's WebServer and Secure WebServer products rely on two emerging security standards designed to encrypt data between PCs and Web servers. The standards are Secure Socket Layer from Netscape Communications Corp. and Secure Hypertext Transport Protocol, which the World Wide Web Consortium is backing.

Furthermore, the Charlotte, N.C., bank is reviewing several authentication guidelines that will prevent customers from having to pass their credit-card and/or checking account numbers over the Internet each time they purchase an item, said Jonathan Guerster, director of financial services at Open Market.

First-time buyers will have to provide their account information to First Union, which will store the data on Open Market's WebServer and Secure WebServer.

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The great equalizer
First Union is not alone in its security efforts. Last month, Wells Fargo Bank began authorizing and processing credit-card payments for Virtual Vineyards, an Internet-based business that sells wines over the Internet. Cardinal Bancshares, Inc. in Lexington, Ky., is working with Secureware, Inc. in Atlanta to develop graphical user interfaces for an Internet banking service it expects to provide this summer.

"When combined with the elimination of interstate banking barriers, electronic banking will become the great equalizer," said Richard Crone, senior manager of financial services at KPMG Peat Marwick in Los Angeles. This will place large banks, small banks and even nonbanks "on the same playing field," he said.

IS lacks Internet strategy
CONTINUED FROM PAGE 1

department that pushes the Internet gateway project rather than the IT team. They've been relegated to the role of a support," he explained.

Meanwhile, marketers are making their own rules and mixing innovative, interactive techniques with tried-and-true promotional gimmicks.

"A lot of ideas proven in the past are real winners for promoting on the Internet," said Rood, chief executive officer of Dealer Internet Services Corp. in Seattle.

For Rood and other Internet businesspeople, the primary goal seems to be bringing users to their Web sites repeatedly in hopes of turning these visitors into repeat shoppers. Studies have so far shown that most people cruising the Internet rarely buy anything they just cruise for information and entertainment.

"Most companies at this stage are there to get some experience and don't expect to make this a revenue producer," said Richard Watson, an associate management professor at the University of Georgia in Athens.

Changes abound
Late last year, Watson conducted a survey of 900 Internet sites. One of his most important conclusions was that marketing people will have to change from "sending messages out" to deploying more interactive Web sites.

Within a month, Pool said, CompuServe will begin offering a "one button" download feature from within WinCim, the Windows client for the CompuServe network. Users will be able to download a Winsock TCP/IP stack and a version of Spy's Web browser.

For Rood and other companies who want to sell: the combination of constantly updated content and other interfaces that encourage users to navigate through information.

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U.S. businesses do not seem convinced that the Internet channel is worth an investment, even before they learn the best uses for this infrastructure. According to a survey of 1,000 chief financial officers sponsored by RHI Consulting in Menlo Park, Calif., 46% said this year alone PC Forum in Phoenix, Adobe Systems, Inc. CEO John Warnock said the Internet was about changing economies and exchanging the means of communicating with customers.

"The Internet is almost a pure laissez-faire, competitive environment," he said.
X/Open plans Microsoft/Unix bridge

By Jean S. Bozman

The Unix industry felt the ominous rumble of Microsoft Corp.'s marketing power last week as the thunder accompanying the heavy rains here at UniForum 1995.

Most attendees at the Unix industry's largest trade show already use a combination of Unix servers and Windows desktops. And many of the 60-plus users from large corporations who attended off-site X/Open Co. meetings last week said Microsoft's ramp-up of Windows NT servers is creating interoperability headaches in their information systems shops.

Although Unix vendors introduced their long-overdue unified Unix desktop here, the battle with Microsoft for the desktop has long been conceded.

"The reality is that you're going to have heterogeneous desktop environments," said Geoff Coupe, manager of open standards at Shell Petroleum International in The Hague. Coupe heads X/Open's desktop user group.

Drawing up blueprints

To bridge the Microsoft and Unix environments, X/Open is planning specifications for networked services, including naming, security and directory services, that would come to market by next year, said Mike Lambert, X/Open's chief technical officer.

These networked services will be layered over operating systems. But they will sit below the application level, where Microsoft's object request brokers will compete with those from Sun Microsystems, Inc., Hewlett-Packard Co. and IBM.

"The key thing we have to do is define how these open多vendor [Unix] volume markets will be integrated with other volume markets such as Windows, Macintosh and OS/2," Lambert said.

Enterprise distributed applications will require that any server—such as NT, Unix or Novell, Inc.'s NetWare—deliver electronic-mail, security and directory services to other servers as well as to clients. Yet few standards, other than the Open Software Foundation's Distributed Computing Environment and the Object Management Group's Common Object Request Broker Architecture 2.0, define how such services are delivered.

Users said there is a growing need for universal delivery of network services. Several added that Microsoft leaves the task of providing Windows-to-Unix links to third-party software companies and systems partners.

But Alain E. Robert, deputy chief information officer at Elf Aquitaine, one of France's largest oil companies, said users in large corporations will demand that Microsoft provide server interoperability.

"I see Microsoft supporting open systems more," said Robert, who chairs X/Open's User Council. "Maybe not because Microsoft wants to, but because the buyers want them to support open systems. For Elif, mission-critical applications will not go to a proprietary system." Elf has hundreds of Unix servers and 25,000 Windows-based PCs.

Bob Kruger, Microsoft's director of technology markets and standards, said he is open to the idea of supporting X/Open interoperability standards.

"Both sides have to firm up their ideas," said Kruger, who is Microsoft's representative on the X/Open Independent Software Vendor Council.

Open network services would enable delivery of Microsoft's Cairo objects and Object Linking and Embedding messages to widely installed Unix servers.

"If Microsoft wants to have an enterprise computing strategy, they have to interoperate with what is already there," said Nina Lytton, president of Open Systems Advisors in Boston.

Sun stretches Solaris at high and low ends. See page 47.

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Sun stretches Solaris at high and low ends. See page 47.
Taligent ships CommonPoint beta

By Lisa Picarille

Components. Objects. Plug and Play. Reusable code. Taligent, Inc. intends to provide the attendees of this week's Object World show in Boston with more than the recommended daily allowance of buzzwords.

After three years and more than an estimated $50 million, Taligent will outline its progress on and announce shipment of the final beta release of its CommonPoint application system to its high-profile clients. Apple Computer, Inc. and Hewlett-Packard Co. are among the clients.

CommonPoint is Taligent's operating-system-independent environment of object-oriented frameworks that streamlines and accelerates application development. It offers both common system functionality — networking and data access — and common application capabilities — two- and three-dimensional graphics and multimedia.

The beta release of CommonPoint includes more than 100 frameworks, according to Straughton Clavos, Taligent's vice president of worldwide marketing and sales. These frameworks reportedly will also enable corporate and third-party developers to more quickly create portable enterprise-wide applications.

For users, this translates into software that is not application-centered, crosses boundaries between applications and fosters a more free-flowing method of interacting with network resources.

"CommonPoint is the first big thing that has the potential to win the component wars because it is complete in its functionality and not just another GUI builder," said Randall Flint, president of Sundial Systems Corp., a Seal Beach, Calif., CommonPoint beta tester and developer of time management software.

All that and more

The final CommonPoint 1.0 reference release, due this summer, will include the CommonPoint application programming interfaces that enable IBM and HP to optimize the frameworks to run on their specific operating systems. Analysts estimate that there will be a total of 80 to 90 days following the CommonPoint reference release.

But because CommonPoint requires a 32-bit host, frameworks for the Macintosh will not be available until mid-1996 when Apple ships System 8, code-named Copland, said Hugh Bishop, manager of emerging technology research at Aberdeen Group in Boston.

This week Taligent is also expected to ship CPConstructor, a tool for building graphical user interfaces and front ends.

Despite early praise from industry observers and beta testers, some users are adopting a wait-and-see attitude.

"I think Opentool, Taligent and Object Linking and Embedding are going for the same space, and it's not clear which approach is better," said Mike Bailey, an IS network manager responsible for 140 Macintoshes at Lockheed Martin's Missile Systems division in Sunnyvale, Calif.

Languages, methodology are key to object-oriented development. See page 73.

Survey finds computer fraud often an inside job

By Julia King

Companies frequently need to look no further than their own information systems organization for likely perpetrators of computer fraud and sabotage.

So concludes a recent survey of more than 300 programmers, analysts and other IS professionals from nine Ohio-based manufacturing and service companies. Conducted by Susan Harrington, a professor of IS at Ohio State University in Columbus, the survey found the following:

• 14% of IS employees would illegally copy software for their own use or for a friend.
• 7% of IS workers would adjust a bank account system to avoid incurring a service charge.
• 10% of IS workers would change data in a program to write a virus to output a message: "Have a nice day!"

Even though the percentages of workers who would commit such abuses are low, they are significant "because there is an incremental aspect to crime," Harrington said last week. "It becomes a little more addictive as the challenge of it increases.

To prevent such abuses, both Kabay and Harrington recommend that companies aggressively launch much stronger education and training programs that instruct workers on the real consequences of what they think are superficial pranks.

"In many cases, management itself has not grasped the true value of the information resource and therefore has skimped on awareness and training programs," Kabay said.

The bottom line, he said, is "that there is no such thing as a harmless, effectives intrusion into a production computer system."
Will the cars on the drawing board today meet consumer demands of tomorrow? That's the question facing J.D. Power and Associates. The answers are coming from the SAS System.

“We produce a monthly forecast of car and truck sales for about 300 different vehicles,” says Jon Rosenthal, Manager of Automotive Forecasting for J.D. Power and Associates. “Each vehicle is forecasted by month for five years beyond the current year. Right now I'm forecasting through the year 2000.”

The SAS System Fits Our Business

“The SAS System is the fuel behind those forecasts...our software of choice for analyzing sales, economic, and auto industry data and then reporting what we've learned,” adds Rosenthal. “Before the SAS System, much of the forecasting was done by hand. To make our forecasts credible, we had to have a credible system. One that made it easy to build applications and put them to work across our computing environments. We've got minis, Macs, desktop publishing, and a lot of spreadsheets. The SAS System fits the way we do business.”

The Bottom Line is Information

Now that the forecasting model is up and running, Rosenthal and his staff are using the SAS System to build an interactive database. “The Power Information Network will allow an auto dealer or manufacturer to go online and get market information,” Rosenthal explains. “When released, subscribers will be able to select from a long menu of reports and data. The versatility of the SAS System is crucial in developing the reports.”

“The bottom line is this: applications are being developed with the SAS System that will deliver the most up-to-date information to those who make decisions for the automotive industry,” says Rosenthal. “If manufacturers and dealers can get their hands on accurate market information and predictions, they have a much better chance of meeting customers' needs down the road.”

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Search engines accelerate Internet browsing

By Ellis Booker

Heard above the rushing sound of half a million people joining the Internet each month is the rising lament, "Where the &%#$ do I find ...?"

While browser tools such as Mosaic have brought unprecedented numbers of new users to the Internet, the lack of anything resembling a central index means many of them are promptly lost once they get there. Even when Internet surfers hit the right server, another difficulty is figuring out how to search for and find a particular item.

All of this poses a problem for users but presents an opportunity for service providers (see story this page). In response, several firms are repositioning their full-text search engines to make unmanaged content more manageable.

This week, Fulcrum Technologies, Inc. in Ottawa is expected to unveil Surfboard, a search and retrieval server engine based on Fulcrum's SearchServer but optimized for the Internet.

"In my nightmare, I'm trapped inside a huge document titled 'Files My Staff Can't Get To Because The MIS Manager Bought The Wrong Data Storage System. One That Doesn't Give The Entire Company Continuous Access To Information.' Circling me are flowers with the face of the MIS Manager. I scream at them to let me out, but they just say, "I don't hear anybody talking. Do you hear anybody talking?"

Client applications such as Mosaic take users to servers that may already be equipped with search facilities. The client application then acts as the interface to the full-text search application.

Surfboard databases can be accessed by major Internet World-Wide Web browsers as well as other standard Internet clients. The product is said to support all major document formats, from HyperText Markup Language, Internet News and electronic mail to major wordprocessor formats and ASCII text.

Surfboard is scheduled to ship in May at a starting price of $15,000.

Jay Batson, a senior analyst in the Network Strategy Service at Forrester Research, Inc. in Cambridge, Mass., said virtually every vendor with a LAN-based, full-text search engine either has announced or is planning an Internet server product.

Still, Batson said he wonders whether these relatively expensive full-text search engines will address a large market. "Not all information lends itself to that sort of [interface]," he said, suggesting that instead of full-text search, content providers may want to redesign their systems around other navigational approaches such as interactive forms.

Last week, Encyclopaedia Britannica, Inc. in Chicago and Wide Area Information Servers, Inc. in Menlo Park, Calif., announced plans to jointly market an enhanced version of the Wide Area Information System search engine developed by Encyclopaedia Britannica's Advanced Technology Group. Finally, Verity, Inc. in Mountain View, Calif., will join the fray on April 15 with the announcement of Topic Information Server for the World-Wide Web. The server-based search engine, which will include native support for Adobe Systems, Inc.'s Acrobat indexes, is expected to have a base price of $7,995.

Yahoo, a searchable inventory of more than 30,000 entries, is emerging as one of the Internet's most popular destinations.

The year-old Yahoo was created by David Filo and Jerry Yang, both Stanford University electrical engineering students who now operate the resource out of the Mountain View, Calif., offices of Netscape Communications Corp.

Clicking the Net Search button on the Netscape Navigator tool bar brings users to the Yahoo directory (http://www.yahoo.com). The server is receiving roughly 2 million hits per day, which means it perhaps 200,000 users.

Others want to create fee-based directory tools such as the InfoSeek Search online subscription-based service, which was introduced last month at a price of $8.95 per month.

Ellis Booker
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AT&T GIS eases remote office automation

Virtual Workplace offers one-stop shopping but restricts users to one vendor

By Neal Weinberg and Michael Fitzgerald

One-stop shopping might be heaven to some consumers, but for corporate notebook buyers it smacks of being tied to a single vendor.

This could be a problem for AT&T Global Information Solutions, which leveraged ties to parent company AT&T Corp., to develop Virtual Workplace — an innovative mobile marketing program announced two weeks ago.

The idea is to provide the hardware, software, training and services that companies need to help set up the complex systems required to automate a field staff.

To participate in the Virtual Workplace program, users dial a number to reach an authorized reseller who puts together a package consisting primarily of AT&T products.

The offerings include the following:
- Notebooks and mobile accessories such as printers and portable CD-ROM players.
- Platforms such as fax/modems and cellular phones.
- Services such as remote voice mail and electronic messaging.
- Client/server software, including Excelenet, Inc.'s RemoteWare, Brock Control Systems, Inc.'s TakeControl sales force automation package and Adaptive Strategies' MobileSync.
- Support services for remote users who have trouble with the equipment.

The products are distributed through resellers, including MicroAge, Inc., and Inacom Corp. While analysts said AT&T GIS has gone a step beyond its competition in offering a more comprehensive combination of products and services, it might not help the company in the market.

"This is a wonderful sales idea, but their notebooks just haven't caught on in the market and just simply saying, 'isn't this a great service program?' doesn't make it with the corporate buyer," said Michael McGuire, an analyst at Dataquest, Inc. in San Jose, Calif.

At least one user agreed.

"I never feel comfortable getting too locked into one vendor," said Jim Meneeley, programming manager at Progressive Insurance Co. in Mayfield Village, Ohio.

High level of integration

On the plus side, "no vendor has really stepped up to the level of integration AT&T GIS is shooting for," said Chris Goodhue, a research director at Gartner Group, Inc. in Stamford, Conn.

Still, the program could appeal to users with new mobile projects. For instance, when Boston-based ITTSheraton Corp. decided to double its sales staff from 35 to 70 and fan people out across the country, AT&T GIS set up the system, including notebooks, cellular phones, training and services [CW, Jan. 16]. Previously, ITT Sheraton's sales force was largely unautomated.

Giving users that kind of complete package does set AT&T GIS' effort apart, said Bruce Stephen, an analyst at International Data Corp. in Framingham, Mass. However, the company must overcome uncertainty from customers as well as competition from a multitude of companies that use rival long-distance phone service, hardware or software that AT&T does not support, he added.

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News

Brainshare conference

Novell to recharge core business

By Laura DiDio
SALT LAKE CITY

Renewed momentum will be the name of the game at the Novell, Inc. Brainshare developers conference here this week.

Novell will use the conference to demonstrate that the company is back on track with its core network operating system business. In the past two years, the Orem, Utah, company has acquired at least 20 companies, and some users claim that has caused it to lose focus and delay some NetWare 4.x enhancements.

The cornucopia of technology enhancements expected at the conference is intended to quell such criticisms and underscore Novell's continued commitment to its NetWare network operating system. For example, new features will include several long-awaited capabilities for NetWare 4.1, including symmetric multi-processing (SMP), an Advanced Client Services application programming interface, a Netscape browser for the Internet and AT&T Corp. NetWare Connect services. Novell President and Chief Executive Officer Robert Frankenberg in an interview last week.

SMP, due out this spring, will provide large users with a "stunning increase in performance," Frankenberg said. The Advanced Client Services will provide a customizable, interactive graphical interface to the network.

Frankenberg said these features will ship this year but did not say when.

Most important, the announcements and demonstrations are intended to win the confidence of users and developers.

AppWare

CONTINUED FROM PAGE 1

tion programming interface operating system for cross-platform connectivity, the other was Visual AppBuilder, a fifth-generation language (5GL) object-oriented programming environment, Spiegel said.

Novell killed AppWare Foundation last fall after it failed to garner widespread support from independent software vendors (ISV). It was the right decision, Spiegel said. "There was no way they could go head to head with Microsoft."

Meanwhile, the rest of the initiative — Visual AppBuilder and Application Loadable Modules (ALM) — has continued to evolve, Firmaigne said.

This chunk of AppWare, he said, will let power users quickly develop customized applications, a capability that will be crucial as users implement true distributed client/server networks. But Novell has not detailed this capability. Without AppWare Foundation, Visual AppBuilder is just a graphical 5GL tool for linking applications.

Programmers have several options, Spiegel said: They can use development tools such as Microsoft Corp.'s Win32 API or the multivendor OpenDoc framework supported by Apple Computer Inc., Novell and others, or they can use existing development tools to jumpstart their own cross-platform application development efforts. Firmaigne declined to provide specifics but promised that ALMs and the Visual AppBuilder tool will be demonstrated at Brainshare. They will allow users to construct applications using graphics and objects rather than traditional lines of code.

"It's alive, it's dead, it's alive again. I don't have a sense of what Visual AppBuilder is, and I don't know if the developers [do either]," said Lee Doyle, an analyst at International Data Corp. in Framingham, Mass. "The real problem with AppWare is that Novell now has to undo the damage caused by a year of uncertainty. Many developers are clearly unhappy about being whipped by Novell."

Indeed, reviving AppWare will be a Herculean task. Because NetWare Loadable Modules are difficult to develop, Novell has not been able to win a wide base of application developers.

And given AppWare's history, users and analysts are skeptical that Visual AppBuilder can deliver a cohesive application development plan.

"We've wanted to see an applications strategy from Novell since last year," said Steve Austin, MIS manager at Helicopter Support, Inc. in Orange, Conn. "It's frustrating and disappointing that it's taken them so long."

And if "Novell doesn't have applications, or database servers, or anything, someone else will. The door is definitely open for [Microsoft's Windows] NT Server to gain a foothold here," Austin said.

Tom Kucharvy, president of Summit Strategies, Inc. in Boston, reacted to the news of the upcoming AppWare initiative with an emphatic "Oh, no! Not again.

"It's too late for Novell to establish NetWare as a viable applications server platform via AppWare. They tried to out-Microsoft Microsoft and simply failed to deliver on their AppWare API promises two years ago," Kucharvy said.

Even so, not everyone was downbeat on AppWare's prospects of success.

"I'm still bullish on AppWare," Spiegel said. "It's extremely easy and very object-oriented. The key to AppWare's success rests with the ALMs and Novell's ability to get a lot of upside to write to it. Novell will have to deliver and deliver fast."

Senior editor William Brandel contributed to this report.

Frankenberg sets goals for Year 2

Super NOS, product enhancements will roll out

By Laura DiDio

A year after taking over the top spot at Novell, Inc. from founder Ray Noorda, Robert Frankenberg is forging ahead with his vision of "pervasive computing."

The vision includes extending NetWare's dominance beyond mere file and print services and into the realm of distributed client/server computing.

In an interview last week, Frankenberg said he spent his first year at Novell "eliminating a number of the product initiatives that caused us to lose focus — like Novell DOS, the Brievre Database and the AppWare Foundation." (See story page 1.)

On the horizon

With the major streamlining efforts behind it, Novell is ready to face its next set of hurdles. These include the following:

- Delivering components for the as yet unshipped Super NOS, the combined NetWare and Unix platform.
- Gaining interoperability with Microsoft Corp. product suites, such as requesters for Windows NT and Windows 95.
- Bolstering the capabilities of NetWare Directory Services.

Frankenberg also claimed that several key performance advantages in NetWare will blunt the advantages of Windows NT Server. "NT Server still doesn't have some of the baseline capabilities of NetWare 4.1 like 'lights out' operating — the ability to run and manage a system remotely or the ability to do remote archiving without having the tape drives manned," he said.

Novell will also unveil telephony capabilities integrated with NetWare this year. These capabilities will let users route calls and redistribute them.

Do the following recent Novell initiatives make the company more or less able to meet your organization's client/server and enterprise network computing needs?

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<td>Overall</td>
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Remote connectivity and/or wireless

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NetWare Directory Services

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<td>Overall</td>
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Informix readies new products
Pure object-oriented database to ship in fourth quarter

By Kim S. Nash

Informix is expected to be the first of the major relational database makers to ship a pure object-oriented database. The company plans to deliver an object database as a repository embedded in its leading OnLine database.

Phil White says he would like SE users to migrate to OnLine

In the fourth quarter, Informix readies new products — an object-oriented database aimed mainly at developers and some niche applications that embed the database into their applications. This leaves owners of the 400,000 to 500,000 SE licenses.

"We will want to see current corporate SE users migrate to OnLine and save SE for the client," White said.

SE will not receive replication, parallel and other sophisticated features contained in OnLine, he confirmed. During the next year, in fact, the low-end database will go even lower: SE will be Informix's single-user database aimed mainly at developers, he said.

Informix does not report sales figures for its different product lines, but "SE growth is doing relatively flat," acknowledged Howard Graham, Informix's chief financial officer, to a group of financial analysts last week. "You have to be careful about doing in a hurry," Hugie said. "I like the plan they have." SAP AG plans to release a version of its hot R/3 accounting suite on the Informix database. "The perception of Informix is that it is outside the mainstream of client/server," Finkelstein said.

But Informix wants to turn that notion on its head, said Informix Chief Executive Officer Phil White. Baan International, Inc. recently signed on, along with Platinum Software Corp., to do Informix ports. In fact, Informix plans to release Informix-based accounting applications ahead of packages based on Sybase's System 10 this year.

Meanwhile, New Era has turned heads at American Express Co., Claros Corp., McWav Cellular Communications, Inc. and other large user sites that had previously bypassed Informix. However, relatively weak third-party support has discouraged some potential customers, said Rich Finkelstein, an analyst at Performance Computing in Chicago.

Most independent software vendors that make report writers, manufacturing applications, systems management utilities and the like port their packages to OnLine. But then Sybase, Finkelstein said. Informix is a distant third, and some suppliers never bother with an Informix port at all.

Informix has been an aftermarket for top applications software companies, White acknowledged. "But we're starting to win them over," he said (see story top right).

To win corporate hearts, White has taken to calling on potential customers in person to convey exactly what his firm can do for them. In the market where the leaders play technology leapfrog every nine to 12 months, the touchy-feely stuff counts, said Jeff Hugie, director of data architecture at the travelers check division of American Express.

"You can do an evaluation [of products] now, and three months later, it's invalid," Hugie said. "I like the personal approach, and I guess Informix does too." Feature-for-feature equality is not good enough for a come-from behind player, said Ron Grills, chief information officer at Home Depot in Atlanta. "Informix can't grow with technology that just does what all the other guys do. It has to surpass them in almost every way," he said.

Late last year, the 230-store, fax-supply chain signed a multimillion contract with Informix after contemplating a switch to Sybase or Oracle, Griffin said. "Informix's direction is consistent with ours," he said, referring to the vendor's plans to support massively parallel machines this year (see story top left).

But not too long ago, some OnLine users wondered whether Informix was going anywhere at all. In 1991, Informix decided to gut its OnLine 5.0 relational database and start anew with a better architecture. The move angered some customers who thought Informix simply slapped together OnLine 6.0 hastily and exploited its real engineering talent into the 7.0 generation. In fact, even today, more Informix customers run newer than older.

But OnLine 7.1, which shipped last year, is regarded as perhaps the best parallel processing database out there, according to Gartner Group, Inc. and other consulting firms. Oracle addresses parallelism differently than Informix; Sybase has promised strong parallel features for its forthcoming System 11 database, which is due to start beta testing this year.

"Informix had the better architecture by far," said Howard Fischer, senior project manager for database services at Sears Merchandise Group in Hoffman Estates, Ill. The unit handles information systems functions for the retailer. Sears has started migrating inventory, logistics, customer services and other large mainframe applications to OnLine running on IBM RS/6000 servers.

For a looking at a downsizing standard, Sears piloted Informix OnLine against Oracle in mid-1994. Sears was impressed with OnLine, but not too long ago, some OnLine users wondered whether Informix was going anywhere at all. In 1991, Informix decided to gut its OnLine 5.0 relational database and start anew with a better architecture. The move angered some customers who thought Informix simply slapped together OnLine 6.0 hastily and exploited its real engineering talent into the 7.0 generation. In fact, even today, more Informix customers run newer than older.

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Meanwhile, two high-profile deals that Informix wrangled last year have said off. SAP AG shipped a version of its hot R/3 accounting suite on the Informix database. "The perception of Informix is that it is outside the mainstream of client/server," Finkelstein said.

But Informix wants to turn that notion on its head, said Informix Chief Executive Officer Phil White. Baan International, Inc. recently signed on, along with Platinum Software Corp., to do Informix ports. In fact, Informix plans to release Informix-based accounting applications ahead of packages based on Sybase's System 10 this year.

Meanwhile, New Era has turned heads at American Express Co., Claros Corp., McWav Cellular Communications, Inc. and other large user sites that had previously bypassed Informix. However, relatively weak third-party support has discouraged some potential customers, said Rich Finkelstein, an analyst at Performance Computing in Chicago.

Most independent software vendors that make report writers, manufacturing applications, systems management utilities and the like port their packages to OnLine. But then Sybase, Finkelstein said. Informix is a distant third, and some suppliers never bother with an Informix port at all.

Informix has been an aftermarket for top applications software companies, White acknowledged. "But we're starting to win them over," he said (see story top right).

To win corporate hearts, White has taken to calling on potential customers in person to convey exactly what his firm can do for them. In the market where the leaders play technology leapfrog every nine to 12 months, the touchy-feely stuff counts, said Jeff Hugie, director of data architecture at the travelers check division of American Express.

"You can do an evaluation [of products] now, and three months later, it's invalid," Hugie said. "I like the personal approach, and I guess Informix does too." Feature-for-feature equality is not good enough for a come-from behind player, said Ron Grills, chief information officer at Home Depot in Atlanta. "Informix can't grow with technology that just does what all the other guys do. It has to surpass them in almost every way," he said.

Late last year, the 230-store, fax-supply chain signed a multimillion contract with Informix after contemplating a switch to Sybase or Oracle, Griffin said. "Informix's direction is consistent with ours," he said, referring to the vendor's plans to support massively parallel machines this year (see story top left).

But not too long ago, some OnLine users wondered whether Informix was going anywhere at all. In 1991, Informix decided to gut its OnLine 5.0 relational database and start anew with a better architecture. The move angered some customers who thought Informix simply slapped together OnLine 6.0 hastily and exploited its real engineering talent into the 7.0 generation. In fact, even today, more Informix customers run newer than older.

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For a looking at a downsizing standard, Sears piloted Informix OnLine against Oracle in mid-1994. Sears was impressed with OnLine, but a few personal visits from White clinched the deal, said Bob Check, director of development support at Sears Merchandise Group.
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Ruling puts ball in Borland's court

Attention turns to fixing up company

By William Brandel

Something finally went right for Borland International, Inc. this year.

Two weeks ago, the U.S. Court of Appeals for the First Circuit reversed a lower court decision that determined Quattro and Quattro Pro—spreadsheet products developed and formerly marketed by Borland— infringed on Lotus Development Corp.'s copyright of the 1-2-3 spreadsheet.

But that victory will not help Borland regain market dominance in databases. Nor will it change application buying patterns in the market. The win also will not suddenly make Borland profitable, despite removing the specter of a possible $100 million payment of damages to Lotus.

However, for the folks at Borland, the ruling was like having a time bomb removed from the bottom of a car that was already in need of repair.

"What we're seeing is that a cloud of uncertainty over Borland has been removed from our base business," said David Watkins, vice president of marketing and support at Borland.

He said the ruling will make Borland's business partners more confident in the company's ability to remain in business.

Novell, Inc., which bought Quattro Pro and uses it along with Paradox in its PerfectOffice application suite, had no comment on the ruling.

Wild ride

Borland has now capped off one of the most tumultuous 12-month periods entailed by any vendor in computer industry history. In the past year, the company has done the following:

- Laid off 650 of its 2,300 workers.
- Seen the leadership of the company change hands three times.
- Lost more than $70 million on estimated revenue of $246.6 million (see chart).
- Sold off a major line of business—the Quattro Pro spreadsheet.
- Revamped its business focus away from applications and users to tools and developers.

"This ruling is a huge positive for Borland," said Michael Wallace, an analyst at UBS Securities, Inc., an investment bank in New York. "Now they won't suddenly get a ruling that will break the company. In other words, they can just worry about fixing up the business."

And there is much fixing to do. Wallace said he expects Borland to pull in $220 million in revenue, 11% less than the estimated $247 million in revenue for the fiscal year ending March 31, 1995. Sales of flagship products dBase and Paradox have not lived up to expectations. And although Borland's new Delphi client/server development tool is expected to pull in $50 million in revenue for fiscal 1996, according to Wallace, the tool alone cannot save the company. What will remains unclear.

Meanwhile, the company's cash position is weakened as well. It now has almost $60 million in cash, down from the $84 million it held at the end of its third quarter, which closed Dec. 31, 1994.

Lotus' serve

It is unclear whether Lotus will try to pursue Borland further in court. A Lotus spokesman said no decision has been made.

That decision will be based on principle or economics, said Karen Casset, a software copyright lawyer and board member of the Computer Law Association in Fairfax, Va. She estimated Borland and Lotus have spent millions of dollars pursuing the 4-year-old lawsuit, and a Supreme Court battle could take years. By then, Borland could be acquired, out of business or unable to pay damages due to liquidation.

"Lotus should just forget about it and move on," said Michael Wallace, an analyst at UBS Securities.

—William Brandel

D&B Software taps Scherb to steer tech helm

By Rosemary Cufasso

Continuing the corporate revamp it began last year, Dun & Bradstreet Software last week named Jeff Scherb, a former information systems executive at Turner Broadcasting System, Inc., as chief technology officer.

The post had been vacant since John Landry, now a senior vice president at Lotus Development Corp. in Cambridge, Mass., left D&B Software more than three years ago.

Industry analysts said the addition of Scherb should boost the Atlanta-based software company, which is struggling to gain ground in the client/server applications arena. Scherb's charter is to focus exclusively on client/server technologies. The company also has 10,000 mainframe customers.

D&B Software, which sells the Smartstream suite of applications, has been outgunned and outfaced by rivals such as SAP America, Inc. and Oracle Corp. D&B Software appointed Doug MacIntyre as chief executive officer last year to help give the company a better focus.

"Since Landry left, it was hard to tell who was steering the technology ship," said Ed Black, an analyst at Aberdeen Group in Boston.

D&B Software has essentially executed its original client/server plan, but it has taken longer than expected and now it is time to bring on new technology leadership, Black added.

Scherb was a vice president of systems development for worldwide information technology services at Turner. Prior to that, he was a vice president at the former Cullinet Software, Inc., now a part of Computer Associates International, Inc.

One more on the list

The chief technology officer's arrival at D&B Software is the latest in a series of executive appointments quietly made by MacIntyre since he joined the company as CEO in July 1994.

In an interview last week, Scherb said his short-term objective is to tune up the development organization before taking a more active, public role.
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Captains courageous

Imagine a CEO, maybe yours, rolling up his sleeves and getting his hands filthy dirty with computer technology, plainly—if not proudly—displaying his ignorance of the most rudimentary PC functions.

Now imagine him doing this in full view of dozens of other CEOs, all hunting and pecking their way to some greater understanding of the machines and technology for which American CEOs will shell out $200 billion this year.

That was the scene two weeks ago at a CEO boot camp—the fifth such session hosted by Computer Associates International. About 50 CEOs shelled out $6,000 apiece to let their hair down in a most uncharacteristic way.

The greater goal of the retreat was not computer literacy but breaking down long-standing communication barriers between CEOs and the information systems leaders of their organizations.

To me, the fact that these CEOs, and the 200 who had attended before them, came into an arcane environment of keyboards and IS shop talk in proof of their desire to connect to you and your world. To many of them, this world remains a distant, mysterious place they’d much rather avoid.

One executive told me, “I just want to be able to talk to these IS people and not feel stupid. I’ve never been an engineer, but I can talk to my engineering group just fine. The computer people have always been different.”

Over lunch and drinks, they discussed their frustrations about getting straight answers on how new systems expenditures would benefit the business and its customers. They also talked about their failure to clearly articulate business goals and the corporate mission to IS. There’s a strong desire to change, to bridge the communication gap once and for all.

Mostly, I sensed a curiosity and fascination about information technology. The CEOs sat at rapt attention for 90 minutes—before dinner—as cult figure Jaron Lanier wrestled with his 2-foot-long dreadlocks while he guided them through the future of virtual reality. And they had a ball playing with their laptops (which were take-home items, by the way).

They paid a lot and traveled a long way for this experience. Why? Is it because they needed the security of others like themselves not to feel stupid or ashamed? How could a vendor make your boss feel secure about exploring it.

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The types of problems discussed in the article point to a history of management problems. These problems can be dealt with in many ways, including quality management techniques, re-engineering or simply, solid management and leadership. The solution to poor management is to replace it with good management—not to shake the entire populace.

Association must keep up with times

Regarding “Associations fight declining memberships,” [CW, Feb. 6], I believe associations were late to understand the changing technical environment and were filled with bureaucracy and “good ol’ boy” networks.

As a member of the Data Processing Management Association for more than 10 years, I truly believe association membership is beneficial for the interaction it fosters. There are many great people and ideas I would have missed had I not been a member.

Associations have to understand that most new members will come not from the “big iron” environment, but from the service environment—not necessarily “techies” but people interested in learning how technology is used by others and how it could help them.

Alez M. Kelso
President
CRT, Inc.
Rochester, N.Y.
The burden of IS’s dysfunctional staffers

Thornton A. May

Most of the 4 million individuals employed in information technology organizations are well-intentioned, hard-working professionals. A recent census of technology management indicates that approximately 95% care about their users, their organizations and their personal skill sets, and they routinely go the extra mile.

The remaining 7% represents the dysfunctional — those who have an enormous negative impact on the organization’s ability to deliver value. The census indicates that dysfunctional information technology professionals come in five basic shapes.

Ankle biters. Ankles are the take the joy and creativity out of computing. They are negative people who spend their workday hours in a deathwatch over new initiatives. They complain about the old systems and the new systems; they don’t support their colleagues; and they are abusive to end users. Quick to explain why things won’t work, ankle biters avoid any and all forms of personal accountability. Most ankle biters are beyond saving. Management’s best and only recourse is to eliminate them.

Noise makers. Noise makers are more a nuisance than anything else. They can be saved. Their problem is not attitude, it’s consistency, focus and delivery. Insatiable readers, they surf the world in search of technology sound bites. They like hearing themselves talk. Yet when all is said and done, they haven’t implemented anything.

Groupless. Groupless are smart, hard-working individuals whose only failing is that they are vendor bigots. They spend their time in the clutches of one particular vendor, speaking at that vendor’s user forums and testifying in trade publications as to that vendor’s prowess. Management has two options: keep groupies focused on their vendor of choice or try to break the addiction.

Nomads. These individuals like their self-worth to the number of frequent-flier miles they generate. On average, nomads attend a conference a month. They are incorruptible name droppers (i.e., “I saw Bill Gates at Comdex”).

To compete or to collaborate? That is the question.

Shakespeare ain’t it, but the quality trade-offs associated with software development are enough to make brooding Hamlets out of the most decisive managers. When does it make more sense to have their people collaborate to create value? When do competition and rivalry yield better results?

We all know the classic development cliche: “Fast, good or cheap — pick any two.” The challenge is in designing an organization that consistently delivers at least those two valuable elements; and if it’s really good, it also provides that rare three out of three. How do you get there? One common denominator is that the best development organizations rigorously manage relationships between the folks who code and the folks who test.

Ah, but what kind of relationships should they manage? Development organizations seem split to the point of schizophrenia about how best to manage the coder/tester dichotomy.

Some organizations seem to manage competition and rivalry between coders and testers. The tester’s role is to flush out flaws and hurt them right back at whence they came. There is a battle between coders and testers. It may be a friendly conflict; it may be hostile. But make no mistake: These organizations believe the best way to manage code quality is to ensure that coders and testers don’t get too cozy. Competition is valued over collaboration. Indeed, some organizations go so far as to financially reward and publicly recognize testers who track and document the most bugs. The tester’s triumph is the coder’s disgrace. A missed bug is the tester’s torment. You might guess that coders and testers in these organizations don’t do lunch.

Each approach has its own compelling logic. The fact is, collaborative coding and testing leads to cooperative development, but an awful lot of side deals are surreptitiously made. Coders frequently ask testers not to disclose a bug with the rationale “until I’ve had a chance to fix it.” Testers make suggestions — which they make great pretenses of being busy, and generate absolutely no tangible output other than enormous expense bills. Viewed by operations as dilettantes and overhead, these are the first heads to roll in downsizing initiatives.

Turfwoks. These are perhaps the most dangerous of the dysfunctional beasts in the information technology forest. They practice an obsessive form of Emersonian self-reliance, seeking to establish a given rule set as their own. There are two kinds of Turfwoks. One is a very smart, not terribly social and frequently misunderstood individual who deep down wants to do the right thing. These individuals can be saved by being teamed with high-energy, positive achievers on a time-driven project.

The second type of Turfwork should be banned from the organization. This person excels at saying every externally initiated project is a waste of time. These are the hidden bullies who seek to maximize their power bases.

Contemporary CIOs live or die on credibility. Much of that credibility is based on their ability to form consensus and launch high-profile, high-payback and short time frame initiatives. The dysfunctional behavioral types lurking in the shadows pose a very real threat to the CIO’s career. The very integrity of information technology depends on its ability to police itself.

May is vice president of research and education at Cambridge Technology Partners in Cambridge, Mass.
It's a pretty revealing test! You take people who use Microsoft® Excel and you sit them down to work with Microsoft's database and Lotus® Approach®. You ask them to do the kinds of things you want to do with a database — like track customer orders and report on sales data. You ask them to find specific customer information and analyze the results. And when they are all done they pick Lotus Approach as the easiest, fastest and best — eight out of ten times.

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With the threat of Microsoft Corp.'s Windows 95 operating system looming on the August horizon, IBM is putting on a full-court press to get multiple flavors of its OS/2 operating system out the door.

IBM is attempting to counter the potential Windows 95 juggernaut by releasing OS/2 Warp Connect, a LAN version of the operating system, for a spring rollout. And this summer IBM is expected to ship a version of OS/2 that runs natively on PowerPC RISC-based systems. OS/2 Warp Connect will offer users peer-to-peer networking capabilities, hooks to most servers, remote access and enhanced TCP/IP support for dial-up LAN connections to the Internet. Lotus Development Corp.'s Notes Express, a collection of communications and collaboration applications, will be bundled with OS/2 Warp Connect.

IBM showed off OS/2 for the PowerPC earlier this month at CeBIT; a computer trade show in Hanover, Germany. A handful of independent software vendors, including Computer Associates International, Inc., Metaware, Inc., Pinnacle Technology, Inc. and Stardock Systems, demonstrated versions of their applications and developer's tools running under the PowerPC version of OS/2. Microsoft expects to ship a version of NT running on the OS/2 Warp, page 42.

Pentium rivals line up

By Jaiakumar Vijayan

As Intel Corp.'s chip rivals prepare major midyear announcements of processors expected to match Pentium performance, users can expect further Pentium price cuts and a flurry of products based on non-Intel chips.

By June or July, Advanced Micro Devices, Inc. and Cyrix Corp. are expected to start limited production of their next-generation K5 and M1 chips, respectively. Volume is expected to ramp up in the third quarter, and systems based on the chips are expected well before year's end. Meanwhile, Milpitas, Calif.-based NeXT, Inc., which has shipped Pentium-class processors for several months now, last week previewed a new and smaller version of its Nc586 chip, which is expected later this year. The company claimed that so far more than 100 customers from around the world have signed on for its processors. Although none of these chips are expected to ship at anywhere near the volumes of Pentium chips, they could gain market credibility as major vendors begin to endorse them, analysts said.

"There's going to be a lot of alternatives in the Pentium market this year," said Linley Gwennap, editor of "The Microprocessor Report," an industry newsletter in Sebastapol, Calif.

While Gwennap says Intel will continue to dominate at the high end, "there are going to be some pretty hot non-Intel systems at the lower end.

For instance, PC market leader Compaq Computer Corp., which already uses AMD chips in its low-end PCs, said it is qualifying AMD's 100-MHz DX4 chip for use in its mainstream corporate line. Similarly, the K5 chip is likely to find a major customer in Compaq.

Last week, Compaq Chief Executive Eckhard Pfeiffer once again emphasized that the company is looking to multiple vendors, including Cyrix and NeXT, for its chip requirements. Pentium, page 42.

Move to touch screens avoids cultural trade-off

By Thomas Hoffman

One of the greatest challenges financial exchanges have faced in the move to automation is how not to upset the cultural heritage of the trading pits.

Some floor brokers at a variety of futures and options exchanges have argued defiantly against the deployment of handheld systems for order execution. They say these systems threaten the traditional open outcry market where market makers and brokers execute trades via hand and verbal signals.

The Chicago Board Options Exchange (CBOE) seems to have struck a balance between its rich tradition and computerization. Starting last summer, CBOE, the world's largest options marketplace, has rolled out 18 touch-screen systems to floor brokers in an effort to speed order processing while protecting the open outcry market.

Working with Technology Solutions Co., a Chicago consulting firm and systems integrator, CBOE has cut the time it takes for a broker to execute an order in the trading pits from 20 minutes to less than 2 minutes, significantly due to a $4 million project called the public automated routing system (PAR), which was designed to allow brokers to enter customer orders on touch-screen PCs from Triintech Systems, Inc. in Stamford, Conn.

Once a broker logs on to a Triintech PC and places an order, the information is routed over a TCP/IP Ethernet LAN to an IBM RS/6000 server. The data then passes over an LN/2 gateway to an Andahl Corp. 1400E mainframe, where the orders are processed and sent to the originating brokerage and customer for confirmation.

Technology Solutions wrote the Windows-based software for 486-based touch-screen PCs, but CBOE built a pilot application using Microsoft Corp.'s Visu-
IBM, Toshiba blaze trail with notebooks

Desktop Computing

By Michael Fitzgerald

Desktop features and high-end capabilities distinguish releases

By Michael Fitzgerald

“IBM's ThinkPad 701C, employs innovative technologies to address shortcomings in screens and keyboards — the two main areas of user complaints about subnotebooks. If users take to the product — and early indications are that they will — it will mean the dawn of a new era for the lightweight but compromised products, which spent much of last year languishing in the market.”

Though IBM will have difficulty meeting demand for at least the next two months, “this product is so good we can give them some slack on the supply issue,” said Ken Dalange, an analyst at Gartner Group, Inc. in Santa Clara, Calif.

A selection of the features that should make Butterfly the monarch of the notebook realm include:

- A 16-bit active-matrix color screen, equal in size to the biggest screen on the market.
- An expandable keyboard that extends beyond the edges of the product, thus allowing a full-size keyboard in a subnotebook-size package.
- Built-in speakerphone and answering machine.
- Built-in 14.4-Kbit/sec. modem and infrared.
- A color screen and includes up to a 540-M-byte hard drive.
- The two products signal the twin paths notebook development will follow this year: IBM's 701C shows off the technical innovation users can expect at the top of the market; Toshiba's Satellite shows declining prices and features that are moving from the high end of the market into the high-volume category.

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The new Satellites also abandon Toshiba's former FCMGIC design, which placed a PC card slot on the top side of the system. Toshiba now has a design — similar to most on the market — in which two Type II cards or one expandable keyboard that opens up to a full-size keyboard.
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Creating a data warehouse is like building a new home on unchartered territory... you don't know what you're getting into until you start digging the foundation. But you can greatly increase your chances for success by following a few basic rules.

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Why attempt to restage and restructure data until you learn how it's going to be utilized by end users? Information Builders' EDASQL middleware technology offers your users transparent access to virtually any database on any computer platform. Once they have access to the data, you can analyze how they use it and pinpoint any potential problems. And with our EDASQL SmartMode™ system, you can monitor all database activities so you can develop your most important resources first, design systems that make sense, and enjoy immediate benefits. Best of all, EDASQL can extend data access beyond your warehouse database, transforming your entire enterprise into a "Virtual Data Warehouse."

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RULE #4: START ASKING QUESTIONS AND YOU'LL START GETTING ANSWERS!
If a data warehouse strategy is in your future, contact your local Information Builders branch office or call us. We'll answer your questions, register you for our FREE Data Warehouse seminar, or set up an appointment for a consultation and evaluation. 1-800-969-INFO. In Canada call 416-364-2760.
Phantech Software, Inc. has announced InfoRecall Pro, information management software for Windows. According to the Toronto company, InfoRecall Pro provides hypertext functions that let users cross-reference any word or record for instant access. Features include word counting, spell checking, data stamping, undeleting and multiple record importing and exporting. Windows applications can be added and launched from InfoRecall Pro’s System Menu without switching to the Windows program manager. InfoRecall Pro costs $199.

Nico Mak Computing, Inc. has announced WinZip Self-Extractor, a companion utility to Nico Mak’s WinZip. According to the Bristol, Conn., company, WinZip Self-Extractor creates Windows self-extracting ZIP files that can contain multiple compressed files. Users can specify default directory for the unzip operation and specify a command to execute when the unzip operation is completed. WinZip Self-Extractor costs $49.

Reply Corp. has announced a 32-bit motherboard upgrade option to its series of PowerBoard System Upgrades for IBM PS/2 systems. According to the San Jose, Calif., company, users of IBM’s proprietary Micro Channel-based PS/2 Model 60/65/80 systems have a choice of Intel Corp.’s 1486 processors including the 100-MHz DX4 chip and Pentium OverDrive processor. The upgrade comes with integrated 64-bit local-bus video 64M-byte memory and local enhanced integrated drive electronics support. Prices start at $1,195.

Envelope Manager Software has announced Dazzle Plus 2.5. According to the Palo Alto, Calif., company, Dazzle Plus 2.5 lets personal information manager (PIM) users design and print envelopes, labels and cards that can include graphics, text, bar codes and rubber stamps. The product integrates with PIMs such as Symantec Corp.’s Act, Modatech Systems, Inc.’s Maximizer and Jensen-Jones, Inc.’s Commerce. A Dial-a-Zip feature looks up ZIP codes and standardizes addresses from PIMs via modem. Dazzle Plus 2.5 costs $79.

Genio USA has introduced CrypEdit 4.0, encryption editing software. According to the North Bend, Wash., company, CrypEdit 4.0 provides a secure environment to edit, view and print multiple encrypted or plain text files. It lets users uuencode or uudecode, compress or expand, and encrypt or decrypt DOS-compatible files. The product uses pseudo-one-time pad encryption that requires two passwords. Users can split up a uuencoded file into as many as 100 parts and reconstruct a split file. Speed- and size-optimized file compression is included. CrypEdit 4.0 costs $30.


Genio USA
(206) 831-5591

Waterloo Maple Software
(519) 747-2373

Envelope Manager Software
(415) 321-2640

Reply Corp.
(408) 942-4904

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Macintosh: the computer that stands out. At the heart of Power Macintosh beats the revolutionary RISC-based PowerPC microprocessor. It's so fast, in fact, that in tests performed by Ingram Labs, the Power Macintosh 8100/110 was on average 45% faster overall than the fastest Pentium PC tested."Providing the kind of horsepower that recently moved PC Week to write, "The speed of the PowerPC processor, coupled with Windows compatibility, is a compelling reason for some customers to move from a PC to a Macintosh platform."

Real people can do real things. Hundreds of native applications are available for the Power Macintosh, programs that bring both familiar and new capabilities to your users. Since Apple has always been a leader in the development of sound, graphics and video, advanced technologies such as multimedia, videoconferencing and 3-D graphics are simply easier to do on a Macintosh. So companies adopting Power Macintosh computers for real benefits today will also find they have a competitive edge tomorrow; translated into lower training and support costs as well as the ability to execute in-house those jobs that once had to be farmed out.

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For 1200 dpi printing, there's really only one choice. There are, however, several options.

The new Optra family from Lexmark.

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For 1200 dpi printing, there's really only one choice. There are, however, several options.

The new Optra family from Lexmark.
Sun Microsystems, Inc. is stretching its Solaris operating system across the computing spectrum. Extensions of the basic Unix kernel are recasting Solaris as a broader operating system for large organizations. While many users do not question Solaris' scalability, some are cautious about bumps in the road as Sun reaches to support even more features in the next Solaris release, due in the third quarter.

The current release, Solaris 2.4, shipped last fall and was the first Solaris release in which SunSoft, Inc. combined support for Intel Corp. microprocessors and Sun SPARC chips. At the same time, Solaris 2.4 improved support for high-end SPARC servers, with performance boosts of 40% or more. And earlier this month, SunSoft addressed the low-end, character-based PC server market with its new Solaris 2.4 Base Server and Network Server releases.

But some users are concerned that short of introducing microkernel-based technology, Solaris could be taking on too many tasks this year. "Things are becoming so complex, by the nature of client/server systems, that there's a much greater domino effect if there's any unreliability," said David Pensak, a principal consultant for advanced computing technology at E. I. DuPont de Nemours, Inc. in Wilmington, Del. "Before, it was just one machine that got impacted."

The same kind of growing complexity can be found in most rival Unix operating systems, he said, noting that Solaris was not yet shown all the Solaris products it is holding in its portfolio, including those that will broaden the Solaris user base. Solaris 2.5 will debut at the Solaris Developer Conference in San Francisco this spring, followed by beta testing in the summer and fall. That timetable was provided in late January by former SunSoft President Ed Zander, who is now president of Sun Microsystems Computer Co. "I think we're doing very well," said Janpieter Scheerder, general manager of the Solaris products group, earlier this month. However, Scheerder noted that the task of coordinating independent software and hardware vendor support will take several more months. — Jean S. Bozman

Lotus improves network management with NotesView

By William Brundel

At the end of the month, Lotus Development Corp. will deliver the first version of NotesView, a comprehensive Notes network management platform that users are anxiously waiting for.

NotesView is designed to collect system, database, replication, mail and network information from Notes servers. The NotesView console graphically displays this activity for Notes network managers, who can then analyze the network traffic. In its inaugural rendition, NotesView will run on Hewlett-Packard Co.'s Simple Network Management Protocol-based OpenView for Windows.

Notes users have asked for a comprehensive management tool since Notes began proliferating their sites. NotesView is a step forward from the limited, text-based management tools that are now included in Notes.

Beta users of the product said it lives up to its billing. "It is very helpful in troubleshooting the network," said Howard Gersh, a senior systems analyst at Nyugen Corp. in New York. "It saves you time by presenting you the information in graphical form. Before, you had to look at most of this information in text form."

Mark Melvin, a consultant at Information Evolution in New York, said, "It gives the user more flexibility in managing the Notes network." Melvin is currently evaluating NotesView for a major investment firm in New York.

Melvin said network administrators can set up rules and thresholds for monitoring Notes, which hitherto was not possible in any format. NotesView also gives administrators the ability to monitor replication across the network, a key issue in managing Notes servers.

Close, but no cigar

However, beta users said the product is not perfect. Melvin said NotesView in its current beta form is a memory hog. Melvin manages 230 Notes servers at his site, and when he tries to map his servers with NotesView on a system loaded with 32M bytes of RAM, it freezes, he said. "We have to run this with 64M bytes of memory," Melvin said. "That definitely rules out the portable laptop as a Notes management tool."

Not all Notes users are clamoring for NotesView. For example, Equitable Variable Life Insurance Co. in New York has not yet determined whether it needs NotesView, a company spokeswoman said. Another Notes site, Waters Corp. in Milford, Mass., said, it does not need the product.

While currently imperfect, NotesView is a step in the right direction, said Matt Cain, an analyst at Meta Group, Inc., a consultancy in Stamford, Conn. To gain broad appeal from companies with enterprise-wide networks, Cambridge, Mass.-based Lotus must embrace all industry network management platforms, such as HP/UX, IBM's NetView or Sun Microsystems Inc.'s SunNet Manager, if it is to succeed, he said. "As it stands now, users have to choose whether they want to learn to run OpenView or HP/UX or whether they want to manage their Notes environment," Cain said.

NotesView's current lack of scalability and portability is an issue with users. "We are a NetView-for-AIX shop," Gersh said. "We don't use HP OpenView and would like to see it ported to NetView. As it stands now, we have to learn OpenView and support another network management platform, too."

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THE DANGERS ARE REAL, THE COSTS ARE STEEP,
INFORMATION
AND AN ATTACK COULD BE CATASTROPHIC.
WARFARE

By M. E. Kabay, Ph.D.

TECHNOLOGY has provided both weapon and target throughout history. When warriors mounted horses, their steeds were at once a threat to opponents and vulnerable to attack. A single horseman could dominate a battlefield of foot soldiers, but the enemy had only to stop the horse to stop the horseman. And to imperil a nation of horsemen, the enemy had only to poison the herds' water supply. The computer is the defining technology at the end of the 20th century. Computers are pervasive, necessary and vulnerable to attack. They are linked in networks spanning both corporate and national boundaries. But although connectivity opens possibilities for electronic commerce, it also opens opportunities for electronic crime, espionage and outright warfare.

Attacks on data confidentiality and possession as well as on the integrity, authenticity, availability and use of such data can cause untold damage. No one is immune: Individuals, corporations, government departments and agencies, nations and supranational bodies such as the United Nations and NATO are all vulnerable. We need to create legal, organizational and cultural defenses against information warfare at all of these levels. Information systems managers, in particular, must familiarize themselves with this threat and begin to implement systems that will minimize their organization's vulnerability to electronic warfare.

LEVELS OF INFORMATION WARFARE
In his recent book, Information Warfare: Chaos on the Electronic Superhighway, security expert Winn Schwartau defined three levels of information warfare in which criminal activity is pervasive: interpersonal, intercorporate and international or intertrading block. IS leaders need to be well versed in all three areas.

Interpersonal information warfare targets an individual. Recent cases include impersonation and slander in cyberspace, appropriation of credit records for fraud and theft, harassment and loss of privacy.

Schwartau nearly had his reputation ruined a few months ago when someone used his log-on to a popular San Francisco network, The Well, to send out nasty attacks on a criminal hacker.

Similarly, a university professor at Texas A&M University required police protection
Illustrations by David Flaherty

after someone stole his electronic identity and sent out thousands of obscene and hateful mail messages attacking various ethnic groups.

In cases of fraud and theft, victims are helpless once their social security numbers and credit records are stolen. Thieves can rack up thousands of dollars' worth of debt on stolen credit-card numbers, leaving t

Loss of privacy can be equally devastating. In one Florida case, computers with medical records on 8,000 carriers of HIV, the virus that causes AIDS, were stolen. Criminal hackers have also harassed people by manipulating their phone services. In one example, a phone phreak, as these hackers are called, transferred all of the phone charges from a local hospital to a residential phone line.

**Intercorporate information warfare** can ruin companies and other private organizations through industrial espionage, theft and disruption of services. For example, criminals have been known use binoculars to watch phone booths at airports and train stations to steal callers' calling card codes. The theft of telephone services is estimated at $8 billion in North America alone. Another horror is "van Eck phreaking." Wim van Eck, an electronics research scientist in the Netherlands, demonstrated in the mid-1980s that it is possible to re

No one is going to bother to attack a failing, incompetent, inefficient corporation. The likeliest target has to be the successful, effective, efficient competitor.

construct the words on a computer VDT from a distance using inexpensive equipment by decoding the radio frequency emissions from the monitor. With such techniques, an industrial spy can glean information from countless terminals and workstations without the risk and inconvenience of physically tapping communications channels.

Computer criminals can disrupt day-to-day business through what is commonly called "denial of service." Denial of service attacks can harm individuals and organizations by saturating a necessary resource. Examples of this include loading 800 numbers with unwanted calls, fax attacks, unwanted bulletin board file uploads and mail bombing runs (in which individuals or groups deliberately overload electronic-mail systems with a huge volume of E-mail).

Other corporate attacks include leaking confidential information. Both the airline and the automotive industries have been victims of such attacks. American Airlines and Northwest Airlines, for example, are embroiled in a bitter court battle over the alleged theft of spill tables, which contain precise information on the number of no-shows expected for commercial flights. In Europe, General Motors Corp.'s Opel division lost one of its executives to rival Volkswagen AG in 1993; Opel claimed that Volkswagen arranged to steal valuable corporate data, including information about new models.

On the industrial espionage front, firms have hired moles in rival companies to send out closely held information via E-mail. Borland International, Inc. and Symantec Corp. are involved in a court case in which a Borland executive allegedly agreed to work for Symantec and then sent sensitive Borland documents with competitive analysis data to his future employers via the Internet.

**International or intertrading block information warfare** has the potential to disrupt international markets, international businesses and government-to-government relations. Terrorist organizations and nations are aware of the low cost and minimal risk of attacks on information infrastructures, as opposed to physical attacks. The World Trade Center bombing, for example, caused more economic loss through interference with business communications and information processing than it did by physical damage to the building.

On a global scale, an aggressive country could acquire a significant competitive advantage over a trading partner by corrupting widely used company software or inserting logic bombs into microcode for new micro-
Your competition is coming up with new products as if they lived in their customers' minds.

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processors. The collapse of the Soviet bloc has made thousands of skilled programmers available for such subversion.

The proliferation of electromagnetic weapons is another area of concern for both corporations and international markets. High Energy Radio Frequency (HERF) guns and ElectroMagnetic Pulse Transformer (EMPT) bombs are already easy to build from off-the-shelf components, and they are fairly inexpensive. The effects of even hand-built HERF or EMPT weapons can damage microprocessors at ranges of hundreds of meters. A van equipped with suitable electronics could cruise down Wall Street and disrupt — or even wipe out — the information processing capability of thousands of computers without being detected by the local police.

**COMBATTING COMPLACENCY**

Even though IS managers have heard many of these information warfare horror stories, few are taking steps to protect their corporate assets. As in conventional warfare, inaction is tantamount to surrender.

IS managers need to recognize the changing face of threats to the information infrastructure. Where once they were content to recognize acts of God as threats, they must increasingly pay attention to acts of people. Errors and omissions are still a major problem for information technology security; so are dishonest and disgruntled employees. However, deliberate attacks are increasingly tempting to criminals, dishonest competitors and terrorists, and the more visible and successful the potential victim, the greater the odds of his becoming a target. No one will bother attacking a failing, incompetent, inefficient corporation; the likeliest target has to be the successful, effective, efficient competitor.

Too often, corporate managers don't view security as a real problem if no damage has been done to their company yet. Such thinking is irresponsible and could lead to personal liability. Corporate stakeholders should not tolerate corporate executives who fail to exercise due care and diligence in carrying out responsibilities, including the security of company data. Companies must take security threats seriously.

**FIGHTING BACK**

IS managers must take action to combat computer crime. Here are a few specific steps to consider:

- Convene a task force on information technology security with members from every sector of your organization. Define the mission of this task force to include evaluating threats and vulnerabilities to deliberate attack on your information systems.
- Analyze your information resources from an enemy's point of view. Examine how much effort it would reasonably take a disgruntled employee, an unscrupulous competitor or a hostile government or cartel to steal control of company information.
- Work out scenarios involving deliberate sabotage of your information systems and study their vulnerability to such attacks.
- Evaluate the consequences of denying service attacks, rumor-mongering on the Internet and interference with your phone- and voice-mail systems.
- Examine the implications of eavesdropping, illicit surveillance and van Eck phreaking.
- Having established a range of plausible targets, examine the mechanisms your company has available to thwart possible attacks, and evaluate their expense. Begin your counterwarfare preparations by guarding against inexpensive attacks that have the biggest potential for harm to your organization.
- Prepare contingency plans for reasonable types of attacks. Create a Computer Emergency Response Team (CERT) to handle virus incidents, analyze errors and omissions that can cause damage to your systems and investigate penetration of your security screens.
- Implement written security policies.

**SEVEN THREATS FROM CYBERSPACE**

The recent National Computer Security Association's Second International Conference on Information Warfare focused on the likelihood and nature of deliberate attacks in cyberspace. Here are some of the most threatening types of attacks companies should protect themselves against:

- Data theft by employees who copy proprietary data onto diskettes.
- Penetration of computers using standard passwords that a systems manager should have changed.
- Industrial espionage by criminals eavesdropping on wireless communications or sniffing LANs and Internet connections.
- Deliberate, unauthorized modification of production software by criminals who have sought employment to defraud their employer.
- Theft of employees' identities to make outrageous statements on the Internet, ruining those employees' reputations.
- Rumor-mongering on the Internet or on commercial networks designed to depress stock values or interfere with sales.
- Denial of service attacks.
with the support and commitment of upper management and the members of the information security task force. Have employees read, understand, and agree to uphold their security responsibilities.

- Make security a part of your corporate culture rather than paying lip service to password policies and backup plans.

SECURING CYBERSPACE

Even though no one will ever be able to provide probability figures for information warfare attacks on a specific organization, a database of information warfare incidents would provide a basis for rational decision-making among organizational leaders. Corporate management should encourage companies to report all computer emergencies to a central agency. The CERT Coordination Center at Carnegie Mellon University in Pittsburgh would be an excellent repository of such information. The center already safeguards victim confidentiality. A mechanism for collating statistics and reporting them periodically or on demand would greatly benefit decision-makers.

Failing the voluntary cooperation of business, academia and government, we may need to institute mandatory reporting based on models that already exist for public health (Centers for Disease Control), the securities industry (Securities Exchange Commission), workplace accidents (Occupational Safety and Health Administration) and the broadcasting and telephony control (Federal Communications Commission).

We must also provide an interoperable means of identification and authentication for communicating in cyberspace.

Nonrepudiation — the assurance that a message ostensibly sent by a specific person really came from that person — must be an integral part of public and private electronic discourse. Without a way to drive home the consequences of irresponsibility on the Internet, we will suffer greater interference by vandals. The signal-to-noise ratio, which is already quite low in many sectors of cyberspace, will only worsen if anonymity and pseudonymity are allowed to become the norm.

WHO HAS JURISDICTION?

We need to resolve the problem of jurisdiction at both the national and the international levels. Trying to catch information technology abusers by relying on state laws is difficult because jurisdiction is usually defined in terms of geography. What is the geography of cyberspace? There are three functions in communications: origination, transmission and reception.

If a criminal in Des Moines, Iowa, logs on to a computer in New York to steal information that's on a computer in San Francisco, under which jurisdiction does the violation fall? If the criminal is physically in Australia and targets a victim in France using U.S. computer systems, who should prosecute? Efforts are already in place to hammer out the cyberspace equivalent of the Law of the Sea; a number of legal and computing experts have begun working quietly to develop agreements on jurisdiction in cyberspace. IS management should support and get involved in these efforts as they emerge.

Another valuable contribution to the evolving field of information technology security is the Generally Accepted System Security Principles (GSSP) initiative, which is supported by many professional organizations and is spearheaded by the Information Systems Security Association. The GSSP, when complete, will provide a basis for communicating the consensus of security experts around the world regarding principles and practices for protecting information technology.

Battling computer crime requires companies to fight on many fronts at once: on the personal, company, national and international levels. Only a concerted effort will prove successful in the long run. Leadership, however, must come from the corporate IS community, and it must come soon.

ABOUT THE AUTHOR

M. E. Kamu, Ph.D., a management consultant at LGS Group, Inc., is the Montreal-based director of education at the National Computer Security Association, an organization based in Carlisle, Pa. Kamu can be reached on the Internet at 75300.3232@compuserve.com or by telephone at (514) 695-4968. For NCSA information, send an E-mail request to 74774.13326@compuserve.com or call (717) 258-1816.

March 20, 1995
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IBM to ship Workgroup mail server

By Surruchi Mohan

Hoping to woo the substantial base of AS/400 users to workgroup mail strategy, IBM will ship Workgroup mail server for OS/2 and OS/400 by the end of the second quarter.

"This server addition joins IBM's already existing front end, the UltraMail client for OS/2," she said.

This release will be important to the large number of AS/400 sites using IBM mail and office software, noted Amy Wohl, editor of "TrendsLetter," a monthly newsletter in Norberta, Pa. "Enhancements are necessary to keep them happy and new customers interested," she said.

For many users, though, IBM is too late. Bill Cook, manager of software development at Mtel Corp. in Jackson, Miss., said, "Three or four years ago, we would have included it in our business operations. They got a late start on it."

"IBM's Workgroup mail server does not appeal to Mtel because the company has developed in-house software based on IBM's OfficeVision application programming interfaces, and all business applications are integrated with the OfficeVision product," Cook said. Miel uses OS/400 as well as Lotus Development Corp.'s CC-Mail, with a gateway linking the two platforms, he said.

Too late for some users

Ken Presser, manager of technology support at Sara Lee Intimates in Winston-Salem, N.C., said a couple of years ago, IBM's offering may have been more attractive. "We looked at an AS/400 product, but it didn't do what we needed it to do — interface to the PC mail product we already had," Presser said. "Sara Lee does not send any electronic mail on the AS/400. But for those who rely heavily on the AS/400 for mail, this announcement is good news."

Novik, director of information management at Coram Healthare Corp. in Miami, said he is excited that IBM is finally offering workgroup support on the AS/400. Right now, the company has two AS/400s running OV/400 for mail that support 60 facilities throughout the U.S. Coram Healthare also has Microsoft Corp.'s Mail connected to OV/400 via a gateway.

"OV/400 is adequate right now," but Novik said the company wants a workgroup product for the AS/400 so staffs can send attachments with E-mail and share document data.

IBM's Workgroup mail server will support multiple clients, including Microsoft Mail, CC/Mail and any Messaging Application Programming Interface-based client, said Ralph Piokask, program manager at IBM Workgroup Strategies in Sommers, N.Y.

Initially, IBM will ship the mail component for the AS/400; calendaring and scheduling will follow in the next quarter, and document management and workflow will be released shortly after that.

Solaris

CONTINUED FROM PAGE 47

e that provides cancer-care clinics throughout the Canadian province of Alberta. The Edmonton site has 17 Sun workstations, 500 Windows PCs and 3 Windows NT servers.

"We are very happy with both Solaris and NT, but we really cannot ignore some of the things NT is offering us in terms of lowering our overall operating costs," Frider said.

The portability of Solaris code onto Intel PCs appeals to many Sun users. Some large Sun sites said last week that they anticipated moving Solaris 2.4 to Intel machines as soon as possible. One proposed use: Solaris-on-Intel as a low-cost development platform for enterprise applications. But even as Solaris 2.4 ships on new Sun machines, most large-site users want to know more about the upcoming Solaris 2.5.

Enhancements expected

Solaris 2.5 will take on even more tasks. It promises support for IBM's PowerPC platform and fixes for some of the more glaring Solaris 2.4 peripheral-support bugs. It also includes SunSoft's Project Distributed Objects Environment programming framework.

At the same time, Sun will tune the operating system to run on the UltraSPARC RISC chip, Sun's first 64-bit chip. "It'll be everything but the kitchen sink when they get done," said one longtime user of SunOS, the operating system that preceded Solaris.

Several Sun users said they believe Sun is putting enough resources into software-testing programs to ensure that the Solaris 2.5 release is stable. For example, Pensak said, beta testing may last as long as six months. "My understanding is that they're working very hard on 2.5 to make very sure that when it comes out it's very, very solid," he said.

But users logging on to the Internet in February reported some problems with Solaris 2.4, including Network File System performance, the binary-compatibility option for migrating SunOS applications, peripherals support and occasional problems linking to Unix servers. Users contacted by Computerworld this month said there are still bugs but not an intolerably high number.

"This release is where IBM is going on the Alpha," said Eric-Jaeger, technology marketing manager at SunSoft, denied that there are any major problems with Solaris 2.4. He said Solaris 2.4 running on Intel's 1-MHz Pentium chip performs "in the lower end of the SPARC range," confirming user reports.

"In the works


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Alternative suppliers

Aspen Systems bases product line on Digital's 64-bit Alpha chip

By Neal Weinberg

Aspen Systems, Inc. has gone out on a limb, becoming the first company to base its entire product line on Digital Equipment Corp.'s Alpha chip.

Nine months ago, Aspen in Wheat Ridge, Colo., released its first souped-up workstations and servers powered by Digital's 64-bit chip and running Microsoft Corp.'s Windows NT.

The next step for Aspen is this month's scheduled unveiling of Alpha chips running Digital's OpenVMS operating system.

"No risk, no reward," said Aspen president Steven L. Spring. He said tying his 2-year-old company's fate to Digital's Alpha technology was a gamble he was willing to take.

Spring said OpenVMS was "an easy decision" that gives Aspen an entry into Digital's huge VAX/VMS base, which is estimated at 10 million users. And it provides opportunities in new markets for customers looking for a proven, robust, application-rich operating system on a fast, 64-bit platform, he said.

"This is great news for users," said Chris Christiansen, an analyst at International Data Corp. in Framingham, Mass. The existence of an alternative supplier for Alpha-based products means customers have more leverage in negotiating prices.

Foundation Imaging, Inc., which does computer graphics and animation for network television, uses three 275-MHz Alpha workstations as proved support for a busy graphic lab. He said the machines "blow away anything available on the market."

Bryant said there were a couple of bugs in the beginning, but the technical support has been good. In January, the Fremont, Calif., company added a third machine to the two it purchased last November.

Brett Dolezech, a project manager at Network-1 Software & Technology, Inc. in Grand Prairie, Texas, is loading his company's dial-in security software onto an Aspen box running OpenVMS. He said Aspen offered "the best bang for the buck," and that it made perfect sense because his company's software was written to run on OpenVMS.

Network-1 markets Net1 Access Plus, a "black box" security system that is being targeted at Digital and non-Digital shops. The issue of whether OpenVMS is proprietary or open does not really matter, Dolezech said. Once the product is installed, "you plug it in, and it works," he said.

In the works

Digital has been trying to license OpenVMS to other vendors for some time, and although Aspen was the first to ship a product, a Digital executive said additional deals are in the works.

The VMS operating system was introduced in the late 1970s, and Digital changed the name to OpenVMS in 1982. Since then, the company has been adding standard software components to improve the system's interoperability.

Spring said Aspen is targeting its products in niche areas, such as three-dimensional modeling and animation.

Aspen said it is not simply producing Alpha clones. The company has added some wrinkles, including a scaled-down 64-bit path instead of 64 bit for faster access to cache memory. In one sense, Aspen competes with Digital, but in another, they are partners. "Obviously, our success is their success and vice versa," Spring said.

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IBM beefs up technical support for PC server users

By Jaikumar Vijayan

IBM is backing its recently announced line of PC servers with a 90-day technical support program aimed at easing the server installation and configuration process [CW, March 13].

The company last week announced its new PC Server Start Up program under which users can get multivendor telephone support and guidance for the setup and installation of a PC server system. By placing a single call to an IBM technical support line, users will have access to installation information and assistance from a number of participating vendors.

Apart from basic support charges, there is no cost for the additional support.

IBM so far has lined up several major network companies and software vendors for its initiative. Those vendors include Banyan Systems, Inc., BusLogic, Inc., Madge Networks, Inc., Microsoft Corp. and Novell, Inc.

According to Angelica Horaitis, director of worldwide marketing of IBM’s PC servers, the program is the company’s attempt to provide “one-stop support for IBM customers.”

“With just one call to IBM’s HelpCenter, users can get their problems resolved immediately,” she said.

**Added benefits**

In addition to support from the IBM HelpCenter, buyers of the new PC server product line also receive IBM’s ServerGuide, a CD-ROM containing systems management tools and network operating system installation aids.

“There are a lot of complexities involved in implementing shared-resources computing that are not apparent part of the purchase,” especially for those users moving into it from a stand-alone PC environment, said Peter Burris, an analyst at International Data Corp. in Framingham, Mass.

According to Burris, the 90-day support period should take care of most installation and configuration hassles.

“Most of the problems involved with these issues are much more likely to be raised and resolved in this period,” he said.

**Briefs**

**Sun, Ancor sign pact**

Sun Microsystems Computer Corp. said last week it signed an agreement with Ancor Communications, Inc. in Minnetonka, Minn., to develop and market a fiber-channel attachment for RAID storage.

**McAfee proposes framework**

McAfee Associates, Inc. in Santa Clara, Calif., last week said it has proposed to the Desktop Management Task Force a framework to ensure interoperability among network management applications running in the Pre-Boot Environment, which McAfee defines as the “power-on” period before a booting desktop computer loads its operating system. The proposed framework is based on McAfee’s LANOpen client/server management architecture.

**Wang aids Korean agency**

Wang Laboratories, Inc. in Lowell, Mass., has signed a $1.2 million deal to provide imaging software, professional services and related hardware to the Korea High Speed Rail Construction Agency. The system will manage information and documentation for the design and construction of South Korea’s $13.4 billion high-speed railroad, which is slated to be operational by 2002.

**Microsoft, Mesa ink deal**

Microsoft Corp. in Redmond, Wash., and The Mesa Group, Inc. in Newton, Mass., last week announced a channel agreement that combines Mesa Conference+, a discussion database, with Microsoft Mail for PC LANs. The bundled products will be available from Tech Data and Merisel.

**Group creates OLE standard**

A consortium of computer-aided design (CAD) software vendors has agreed on a standard that lets users link and embed technical graphics into two- and three-dimensional documents. The Design & Modeling Applications Council’s standard was developed by Intergraph Corp. and extends Microsoft’s Object Linking and Embedding (OLE) specification in an effort to move CAD and geographic information systems into the corporate computing mainstream. The standard is located on Microsoft’s FTP server at ftp.microsoft.com.

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Managers need not live chaotic lives

Stan Schatt's Feb. 20 column made reference to the good old days of Ozzie and Harriet, when the lifestyle was well-ordered and harmonious. He said the Ozzie-and-Harriet lifestyle was reflected in the IS workplace of the 1960s, the glass house data center — where the motto was a place for everything and everything in its place, and the world was peaceful and tranquil. He compared those days with the 1990s, where the lifestyle is more like that of the Simpsons and the IS manager's life is in chaos because of networks, client/server and other new technologies. But that's not so — unless you allow it to be.

True, keeping up with product information in the old days was easier than it is today, but it really wasn't quite as simple as Schatt portrayed. A few magic words can make it much simpler than the technologists would like you to think. The magic words include planning, management, leadership, judgment and professionalism.

A manager who acts professionally and uses good judgment will plan before jumping into any project. The manager will use the knowledge of the technical people to help make the decisions required to support the business and move it ahead. The technical people will not make decisions in a vacuum. The manager will not allow the organization to be jerked around by vendors who thrive on product churn and love multivendor environments that let them point fingers instead of resolving issues.

Lynn, the network manager in Schatt's article, will not need to dress casually (there will be no need to lower our standards) because the file servers will not be taken apart or tinkered with, especially while the business is running. She may not have a one-vendor shop, but she should have a shop with a prime contractor who is her single point of contact for which she or someone under her command is the vendor manager. The manager will require that the system management disciplines such as change management and problem management be used. By using these disciplines, problem prevention, not problem solving, will become the norm.

When a phone line is needed, Lynn or her manager will call the company's network provider, whom the company will have chosen after studying the availability and price/performance of several vendors. By using the systems management discipline of capacity planning, she will know well in advance when that additional line, that additional file server, those additional desktops and so on are needed.

Lynn's office will not look like a used computer parts store. She will not be under pressure to test and then install various software and/or components. She will be able to return her phone calls because they will be from people who have business opportunities to which she can contribute ideas and solutions. She will be sought after because of her contributions to the business through her technical skills.

Signs of success

In evaluating operations and business processes, I have found that the competence of an organization is usually inversely proportional to the number of Post-It notes hanging on the walls and PC monitors. I also begin to worry when there are more technical journals in the manager's office than business publications. What I like to see hanging on the walls, in a formal, conspicuous place, are charts and graphs that show numbers of transactions (going up), numbers of outages (going down), mean time between failures (very long), mean time to repair (very short), unit costs (going down) and the Top 10 users of my services (names and departments) — in other words, total quality information, the kind upper management can understand.

Many years ago people believed, and we helped them believe, that IS was black magic. It may have been black magic then, but it isn't now. We manage a business and lead good people to make sound business decisions where technology can help. In any case, I do not want my children or my grandchildren to be like the Simpsons, and I don't want my business to be run by people who are like the Simpsons. It doesn't have to be that way.

Holiday is a consultant and contractor in Cincinnati. His electronic-mail address is gvb43@prodigy.com.
Netpower, Inc. has announced the FASTseries SMP Server for Microsoft Corp.’s Windows NT.

According to the Sunnyvale, Calif., company, the symmetrical multiprocessor (SMP) server will equal the performance of Unix SMP servers. The server runs Microsoft’s BackOffice application suite, which includes Microsoft’s SQL Server. It uses a proprietary chip that allows two Mips Technologies, Inc. R4400 64-bit RISC processors.

Prices range from $13,985 for a 150-MHz uniprocessor to $23,085 for a 200-MHz dual-processor system.

Digital Tools, Inc. has announced AutoPlan Enterprise, a family of Unix automated project management products. According to the Cupertino, Calif., company, AutoPlan Enterprise has added AutoPlan Client for Windows. Extension for Microsoft Corp.’s Project, Exchange and Graphics Plus to its base AutoTeam and AutoPlan Enterprise Toolkit products.

AutoPlan Client for Windows lets PC users work seamlessly with other users on Unix platforms. Extension for Project provides two-way data exchange between Project and AutoPlan, and Exchange provides two-way project data or calendar pool data exchange between AutoPlan and Sybase, Inc. or Oracle Corp. databases.

Prices for each product range from $495 to $10,000.

Brooktrout Technology, Inc. has announced Quadrudax, a fax and voice processing system administered from a Windows application.

According to the Needham, Mass., company, Quadrudax sends and receives faxes, records and plays back voice prompts and messages, detects and interprets Touch-Tone signals and provides adaptive call progress.

The product comes with a fax-on-demand application and requires no user programming or assembly. Prices start at $2,995.

Brooktrout Technology
(617) 449-4100

CN net Technology, Inc. has announced CNet100TX, a “fast” Ethernet adapter designed for use with multimedia or graphics workstations and Pentium- or RISC-based network servers.

According to the San Jose, Calif., firm, the full-duplex Peripheral Component Interconnect bus CN100TX supports both 10M and 100Mb/sec. networks and requires no user configuration.

The product includes driver software for network operating systems running at 10M to 100Mb/sec.

CN100TX costs $259.

V-Systems, Inc. has announced VSI-Fax for Windows, client fax software for its VSI-Fax Unix server software.

According to the San Juan Capistrano, Calif., company, VSI-Fax for Windows installs like a print driver, so users can fax right away.

The product includes driver software and requires no user configuration.

Prices range from $80 to $200 per user.

> V-Systems
(714) 489-8778

Andyne Computing Ltd. has announced Pablo for Windows, decision-support software.

According to the Kingston, Ontario, company, Pablo lets users view and manipulate summary data residing in corporate relational databases. Data can come from multiple sources to the same desktop user document.

The product uses multidimensional data structures that let users analyze data and produce complex charts, charts and reports that incorporate the resulting analysis.

Pablo costs $695.

> Andyne Computing
(613) 548-4355

Product short

Data Fellows, Inc. has introduced Vineyard 1.1.3, an international version of its workgroup visual information management software. All objects are represented as icons that can be connected using graphical links. Cost: from $198 to $395 per user. Data Fellows, Mountain View, Calif. (415) 684-7150.

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Vendors restrict use of scanning software

By Gary H. Antedes

"Attack scanners," software designed to probe networks of Unix computers looking for security holes, got a tarnished reputation recently when the Internet community learned of the imminent and widespread release of one such tool that is particularly powerful.

However, most vendors of attack scanners say they take pains to limit use of their products to legitimate users.

An attack scanner known as Security Analysis Tool for Auditing Networks (SATAN) is scheduled to become available on the Internet to any and all takers next month via anonymous file transfer protocol. Some security experts have complained that SATAN will be used more by those on the outside to hack into corporate networks than by network administrators [CW, March 6].

Know your buyer

Belcore, which developed an attack scanner called Pingware in the wake of the notorious 1988 Internet worm, carefully screens would-be Pingware buyers, said John Guargno, director of network and information security. "We limit who it is sold to," he said. "If a company calls about it, we contact their security organization and let them know we are pursuing a sale into their company."

Milkyway Networks Corp. in Ottawa will use a different approach for its Nebula scanner, scheduled for introduction this fall. According to Milkyway President Hung Vu, buyers will be required to provide the IP addresses for their hosts. Then, after verifying those IP addresses with the appropriate IP address registration body, Milkyway will embed the addresses in the software so it cannot access other hosts.

Internet Security Systems, Inc. in Norcross, Ga., follows a similar approach for its Internet Security Scanner.

Management Analysts, Inc. in Hudson, Ohio, recently introduced a network scanning service using freeware from an Internet World-Wide Web site. A user anywhere can enter any IP address and the scanner will probe that IP host. However, the results are sent by electronic mail only to the "postmaster" at the scanned site, not back to the person requesting the scan. The results of the scan include the name and IP address of the site requesting the scan.

Nevertheless, the service has alarmed some systems administrators who received scan reports they were not expecting.

"Somebody got one of his password files in a scan report and sent me E-mail saying, 'What the hell is this?'" said Frederick Cohen, president of Management Analysts. "They found out a student had requested it, and they chatted with the student, and he agreed that it was perhaps overzealous."

"I started getting complaints from all over the world," Cohen added. As a result, the service can now be invoked only by someone with a secret key, which Cohen provides only to those who can prove they are legitimate system administrators.

Cohen said his service is based on a collection of public domain software including a demonstration version of Internet Security Systems' scanner. "And when it comes out, we'll stick SATAN in there," he said.

Inherent dangers

According to Michel Kabay, director of education at the National Computer Security Association in Carlisle, Pa., an attack scanner that lacks controls to limit its use is a danger to the user community.

"In general, vulnerability scanners must be written so that they cannot run in ordinary user mode," he said. "Any tool that scans hosts looking for vulnerabilities should be impossible to run the program unless you have 'root' capability."

Eugene Schultz, deputy program manager for the International Information Integrity Institute at SRI International in Menlo Park, Calif., said SATAN should not be posted publicly on the Internet. He said SATAN's authors -- a security specialist at Silicon Graphics, Inc. and another at a university in the Netherlands -- should distribute SATAN only via a trusted channel such as the National Security Agency or the National Institute of Standards and Technology. "If they would distribute the tool properly, it could be a great thing," he said.

But Kabay was skeptical of that approach. "The criminal underground is not subject to rational controls unless we are at the starting point of distribution, in which case you'll delay them by a few months," he said. "But let there be no doubt -- it is highly unlikely that such tools will remain in the domain of legitimate users for very long."

Airline awaits more reliable handhelds, wireless networks

Portables could serve as extension to Sabre reservation system for American Airlines

By Michael Fitzgerald

If technology could fly, AMR Corp. could have been the one to make it happen. AMR's Sabre on-line reservation system is a legendary example of how information technology can better a company, and now AMR wants to find a way to use handhelds and wireless computing.

Bruce Kimball, mobile computing manager in the Sabre group, said easily portable wireless access could open up interesting possibilities for AMR's American Airlines subsidiary.

For instance, teams of agents with handhelds linked to Sabre via wireless communications could meet planes that have been canceled or delayed and re-schedule passengers more quickly than they can now. Or American could expand services and reduce costs in crowded airports, such as London's Heathrow.

At Heathrow, American pays $100,000 per reservation agent space, and even if the airline wanted to add more agents, Heathrow has no room for it to expand. So mobile terminals that connect to Sabre would give the airline a way to move customers through lines quickly at peak times.

Handhelds could also be valuable in helping to handle cargo at international terminals.

American has been testing these applications at select airports and recently rolled out another pilot. However, these pilot projects do not involve handheld computers. Instead, they use either an IBM PC Co. ThinkPad notebook with an external radio modem from Pacific Communications Sciences, Inc. or Gateway 2000, Inc.'s Handbook subnotebook with an external Sierra Wireless, Inc. radio modem.

No choice

One reason for using notebooks is that a rugged handheld with the capabilities American wants does not exist in the market.

"The things there lack reliability, and we're still trying to figure out what the real cost is," Kimball said. "We're not sure when we'll roll [the network] out [commercially], but we have to have a very, very reliable product."

Also, Kimball said reservation agents testing these systems surprised American by saying they wanted a keyboard. "We thought they'd want a keypad, but they wanted the keyboard," Kimball said.

Another issue was the speed of the wireless network. American initially tested RAM Mobile Data USA LP's Mobile Network, but found it transmitted in six to 20 seconds, which was too slow.

American has been testing the Cellular Digital Packet Data (CDPD) protocol and has found it can send and return queries in two to seven seconds, which meets American's needs.

Of course, CDPD is not a finished network yet and will not be for some time. Even when it is, Kimball said it -- like all the wireless networks, including the seemingly ubiquitous paging networks -- will not offer full coverage in airports.

The airline will continue to develop a wireless Sabre connection, though its scheduled departure time remains uncertain.
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**Buyers' Satisfaction Scorecard:** Market-leading peer-to-peer LAN management packages.

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**Editorial contacts (508) 879-0700**

**Management Features:** Allan Alter, **Close Look:** James Connolly, **CW Guide Articles:** Michael Sullivan-Trainor, **Buyers' Satisfaction Scorecard:** Michael Sullivan-Trainor, **Firing Line:** Kevin Burden, **Re-engineering the Workplace:** Joe Maglitta, **Client/Server Journal:** Alan Alper

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How do we know? Maybe it had something to do with intuition.
Research proves what you’ve known all along: only 20% of the lifetime cost of your company’s PCs is the initial cost. The other 80% comes from all the things you do to manage them—such as configuring, servicing, upgrading and just keeping track of who’s got what. Isn’t it time someone found a way to change that?

Asset Management 101. The new Compaq Deskpro is the first PC that’s as concerned about cutting costs as you are. It starts with the Intelligent Manageability we mentioned a page ago: a Compaq-designed combination of hardware and software that gives you a new level of control over your networked PCs.

Until now, the only way to take stock of your PC assets was to physically visit each of your computers. At every stop, you’d have to examine the computer, take serial numbers, check software, open it up and take a look inside. A process that could literally take days.

With the new Deskpro, all of that changes. Working closely with the leading LAN management companies, we built in features that can easily be tapped by their new software tools.

And the result is stunning: Now, as network manager, you can look into a Deskpro PC anywhere on the network and get the facts you need. You can retrieve hardware specifications, including make, model and serial number for the PC, hard drive and monitor, and revision numbers for the system board and ROM. You can also identify system software and drivers.

It’s not only good knowledge to have. It makes the process of maintaining and updating PCs vastly more simple.

Fire prevention. When people decide to stop working for you, they usually have the courtesy to give notice. PCs, however, seem to enjoy the element of surprise.

Again, Deskpro will be changing things. With Intelligent Manageability, it alerts the user to key potential problems before they can turn into real ones.

Every time you power up the Deskpro, its IntelliSafe hard drive takes a very close look at itself. If any of its performance parameters has fallen below acceptable standards, the user is notified. So instead of responding to a disruptive emergency, you have ample time to take corrective action—replacing the drive at no cost under the Compaq Pre-Failure Warranty.

In addition, our Environmental Fault Protection is constantly monitoring the internal temperature of your Deskpro to make sure it isn’t working under conditions which might imperil your valuable data.

Networking is in our blood. Since setting up a PC on a network has turned into one of the most time-consuming pastimes in corporate America, the new Deskpro was built to streamline the process.

Right out of the box, it’s configured for your

Introducing the latest line of Deskpro computers
network, with a 32-bit PCI Ethernet NIC or an IBM Token Ring adapter already installed. The drivers are optimized and industry-standard connectors are in place. With its simple configuration tools, Deskpro also reduces the frustrations of setting up desktop network software.

_Under the hood._ What makes Intelligent Manageability so appealing, of course, is the fact that it's built into an enormously powerful and efficient computer.

With Deskpro, you can choose your processor, from a DX2/50MHz to the most powerful Pentium. And every model delivers the enhanced performance made possible by Compaq's new TriFlex/PCI architecture. In fact, in our latest crop of Deskpro computers, higher performance is something you can literally see and hear.

Thanks to PCI local bus graphics, you get crisp, responsive graphics even in everyday applications. (Select 586-class Deskpro models are available with higher-performance VRAM graphics.)

In multimedia models, you get the speed of our new QuadSpeed CD-ROM and CD-quality digital sound enabled by built-in Enhanced Business Audio. (Open and accessible. Needs change, goals change and people change. Fortunately, so can a Deskpro computer.

You can open it up without any special tools. The system board slides out, making it a simple matter to upgrade the processor or add extra memory. The PCI expansion slots are easily accessed. And the drive cage swings out to make hard drive upgrades painless.

Plus, the Deskpro system board utilizes Flash ROM technology, allowing you to make future upgrades at the basic board level simply by running a software utility. With the process of upgrading PCs reduced to mere minutes, you can spend your time on more lucrative pursuits.

(Future dividends. And then there are the benefits you'll be reaping down the road. Since all Deskpro models are designed with built-in power management features that meet stringent EPA requirements, you'll be able to monitor the health of all your networked Deskpro PCs—including the ones in your outpost six time zones away—without ever leaving your desk.

You'll be able to configure Deskpro so if IntelliSafe hard drive failure becomes a possibility, it will send a distress call across the network. Or automatically safeguard its data on a tape backup. You'll even be able to arrange for remote notification of potential problems with network interface cards or internal PC temperatures.

But then, what do you expect from a computer that takes care of itself?
The original premise was simple:
make a powerful, yet affordable,
computer that doesn't come
with all the headaches
normally associated with the word "value." And in
creating the latest Compaq ProLinea, we built on that
premise—by taking the original apart. We examined it
from the inside out, looking for ways to improve it.
Looking to see what new technologies we could add.

Introducing the new Compaq ProLinea

THE LATEST PROLINEA HAS AN

IMPRESSIVE SAVE FEATURE: IT'LL SAVE YOU MONEY,
SAVE YOU TIME, AND SAVE YOUR SANITY.

In the end, we came up with more than a few
improvements. Making ProLinea even harder to
distinguish from more expensive machines. The fastest
Features that make it easy to live with on the day you
install it, as well as for years to come.

It all raises ProLinea to a completely new level.
(Of course you'll still find the price within reach.)

And that should certainly put your mind at ease.
Traditionally, the phrase “better value” means someone has cut corners to give you a better price. At Compaq, we like to take a different approach.

The result is the new Compaq ProLinea: a family of computers that not only offers affordable prices, it pushes technology many steps forward. Twelve, to be exact:

| Number One. | Our first improvement is something you’ll notice before you even buy a ProLinea. You get to choose exactly the processor you want—from very fast (486 DX2/50MHz) to blindingly fast (Pentium/100MHz). This way, you don’t have to buy more performance than you need. And it’s designed so you can upgrade whenever you want. |
| Number Two. | You may be familiar with the new standard bus architecture called PCI. Basically, it improves upon the previous technology by expanding the data path to 32 bits and radically speeding the flow of information to expansion cards and display. If your uses are more demanding, select 586-class models are now available with higher-performance VRAM graphics. |
| Number Three. | The PCI architecture also boosts the performance of the graphics subsystem. Now, even if you’re working with general productivity applications like word processors and spreadsheets, you can enjoy a crisp, responsive high-resolution (along with Enhanced Business Audio). This gives you faster access to the rich, vast references available to businesses on CD-ROM today, from national directories to archives of business publications. |
| Number Four. | Forgive the acronyms, but there’s also a PCI local bus IDE interface. This not only pays off in improved disk performance, it supports up to four storage devices. So whenever your needs demand it, you can easily add another hard drive, a tape backup or a CD-ROM drive. |
| Number Five. | While we’re on the subject of CD-ROM, multimedia ProLinea models now come with our new QuadSpeed drive possible. You can choose a configuration with a disk capacity of 270MB, 420MB or 720MB. Any of which should put you comfortably ahead of your burgeoning files. |
| Number Six. | However large a hard drive may be, there are those who take it as a personal challenge to fill it up. With the new ProLinea computers, however, we’re determined to make that as difficult as |
| Number Seven. | ProLinea comes with 8MB or 16MB of memory and, depending on the model, you can expand it to 136MB or 192MB—enough to take advantage of new 32-bit operating systems, run several programs at once and work with spreadsheets the size of Madison Square Garden. |
| Number Eight. | ProLinea is filled with features designed to make your life easier. It’s not

**LIKE MOST PC BUYERS, YOU’RE “BETTER VALUE,” SO WE’VE CLEVERLY**
only pre-loaded with an extensive online help system and automated setup software, it now offers redesigned documentation to help you quickly pinpoint information. It's also optimized to run new operating systems, such as Windows 95, which will make your future computing easier still. Every model supports the Plug-and-Play standard that will bring a new simplicity to the process of adding expansion cards. (If you plug in a new network interface card, for example, ProLinea will sense the change in your setup and automatically reconfigure its software to support it.)

**Number Ten.** The new ProLinea computers have been designed so you can get inside without any special tools. The system board slides out to accept extra memory or a processor upgrade. The hard drive cage swings out so you can swap disks without having to reach into inaccessible, finger-bruising areas. And when you snap in a new Compaq hard drive, you won't have to configure any enigmatic jumpers. When you connect the cables, the settings have the good sense to take care of themselves.

**Number Eleven.** The ProLinea system board now utilizes Flash ROM technology. That means basic system ROM can be updated without major PC surgery. If future updates are needed, installing them will be as simple as running a software utility and clicking a few buttons on the screen.

**Number Twelve.** What about the environment? Using a ProLinea won't by itself repair the ozone layer, but at least it's a step in the right direction. For the sake of the atmosphere—and everyone who breathes it—our manufacturing process is now completely CFC-free. And every model is Energy Star-compliant, which means less wasted energy for the planet and less wasted money on your power bill.

These are the improvements that define our approach to value. (It's a lot more rewarding than cutting corners.) In fact, the new family of ProLinea PCs does an excellent job of expressing a core belief at Compaq: That is, the smartest way to build better value is to build a better computer.

**PROBABLY SICK OF HEARING**

**DISGUISED IT AS 12 IMPROVEMENTS.**

*Introducing the latest line of ProLinea computers*
As with all Compaq PCs, Deskpro and ProLinea

are covered by our free 3-year limited warranty. For more

information on our full line of Compaq desktop PCs, call us at

1-800-345-1518 or visit our Web site at www.compaq.com.

In Canada, we can be reached at 1-800-367-1616.
Microsoft Network shown; more info coming in July

A semiregular column with items of interest and amusement from the Internet.

Microsoft executives, while mum on the subject of pricing, gave a live demo of the Microsoft Network working with Windows 95 to a packed room at the annual PC Forum two weeks ago in Phoenix. The demo included a look at the link between the Microsoft Network and "shortcuts," a general-purpose feature in Windows 95. With shortcuts, users will be able to drag objects from the Microsoft Network to the Windows 95 desktop. Shortcuts also can be e-mailed to Microsoft Network subscribers. Russell Siegelman, manager of Online Services at Microsoft, promised a fuller explanation of Microsoft Network APIs at a developer/conference in July.

Internet access companies such as BBN Internet Services Corp. in Cambridge, Mass., are scrambling to gain market share before the Microsoft Network goes on-line in August. BBN recently announced it is going national and changing its name to BBN Planet Corp. The former regional Internet access provider will now offer connections at 500 locations nationwide with new 28.8 kilobits/sec. service in the Northeast, Southeast and Silicon Valley. The company also unveiled InteNet Advantage, a mixture of connectivity, security, training and consulting services geared to the corporate customer.

Meanwhile, UUNET Technologies Inc., last week expanded its dial-up access offerings with volume discounts of 25% to 40% for business customers with 100 or more users. About half of UUNET's customers now subscribe to its standard Alternate Dial service for $50 per month (15 hours free, additional hours $2.25 per hour). UUNET, in which Microsoft holds an equity stake, is currently building the TCP/IP network for the Microsoft Network. The company said it will have nodes in 80 cities by spring and 150 cities by year's end. These nodes will support both 28.8 kilobits/sec. and 64 kilobits/sec. ISDN access.

New sites
• Must be tax season. The IRS says it will now accept your tax return electronically via the on-line service of Computers and Americas Online. Meanwhile, Americas On-line says it has put IRS information, the "Trying to Be a Young Tax Guide" and other tax advice on-line for its subscribers. If that is not enough, you can get information and advice from the "Tax Wizard" at Hargrave & Hargrave in Los Angeles via a new World-Wide Web site at http://taxwizard.com. If you are really masochistic, you can find the entire U.S. Internal Revenue Code, in ASCII, at the U.S. House of Representatives. Just tunnel over to gopher.hamilton1.house.gov. (But be careful. You might meet a Newt in there.)
  • An extension to Network+ Interop '95 Las Vegas, N+1 Online, opened its doors March 13. The site, featuring exhibiting and conference information and interactive events, is available two weeks before, one week during and two weeks after the March 27-31 show in Las Vegas. The site can be reached at http://www.sxbox.com.
  • Not a new site but a good one. On April 1, The WELL celebrates its 10th anniversary. The archives of The Whole Earth "Electronic Link, which today claims more than 11,000 subscribers, provide a wealth of information about how to create a diverse and self-sustaining virtual community. Touch its Web presence at http://www.well.com.

Just for fun
• Do you fit the definition of a "geek"? Check with Webster's Dictionary at http://c.gp.cs.cmu.edu:5103/prog/webster. The site includes hypertext hot-linked definitions.

Tips and tricks
• Notes lovers will want to watch for Lotus NotesWeb Publisher. A server application, NotesWeb Publisher automatically converts Notes documents and views into HyperText Markup Language documents. The product will be released on Windows NT in the second quarter, according to sources. A second release, expected before the end of the year, will support Web forms and other server platforms. NotesWeb Publisher will sell for $7,500.

Please keep us posted with your views, news and questions about items published in this space. Contact us electronically at ellis@cnet.com.

—Ellis Booker, Gary H. Anthes and Mitch Bettis

Mesdng spec readied

By Suresh Mohan

Message management will take a leap closer to reality via the Electronic Messaging Association (EMA) publishes the Message Management Specification this spring.

The specification will address message tracking and dynamic monitoring. Both issues have been major concerns at large organizations that have many disparate systems trying to communicate with one another.

Message tracking, as the name signifies, allows the network administrator to trace the path of a message even if it goes across multiple platforms. Dynamic monitoring allows an administrator to see the operational status of every component on the network.

"Monitoring is critical. Lots of sites don't have it," said Ron Bens, manager of technology staff at US West Communications, Inc. in Denver. "We had to build our own monitoring system" for the 10 messaging platforms that US West employs, he added.

Meeting users' needs

Some users said the vendors have finally grasped the message. "The vendors have heard our needs," said Darwin Sharp, electronic commerce advisor at Excon Computing Services Co. in Houston. They seem committed to providing users with the functionality necessary to run an efficient messaging system, he added.

One user at a large organization said that not only will vendors implement the standard, but most will probably do more than the standard calls for.

Safer electronic publishing pledged

By Ellis Booker

Folio Corp. used the annual PC Forum in Phoenix two weeks ago as the stage to announce its Information Marketplace, a delivery system for secure, copy-protected electronic content. Publishers have been wary of cyberspace because of the seeming inability to protect intellectual property rights on-line, according to Curt Allen, executive vice president of Folio in Provo, Utah.

"Our goal is to make publishing on WANs as attractive as publishing on CD-ROM," he said.

Folio's solution involves several components. Key elements include the following:
• The Folio Infobase Technology, a popular format for CD-ROM publishing, for delivering content over low-bandwidth, client/server networks. Folio Infobase is an encoding and search engine that encodes content. Folio will be able to take all the publications that work with it already and put this content on electronic networks.
• The Folio Infobase Web Server, a $6,995 server available in the second quarter, for publishing Infobase files without modification on the World-Wide Web.
• The Folio Open Messaging application protocol (OMAP), a $2,200 per-user license, for advertising, selling, and managing the Infobase applications. The user, who did not wish to be identified, said it is important for all vendors to include agents in their software. Agents are key because they enable users to gather and present information to the network administrator.

Corporations such as Hewlett-Packard Co. and IBM will also have to upgrade their management platforms to accommodate all the information they receive from agents.

The overwhelming cry at the EMA membership meetings has been for message tracking. There has to be a way to establish ownership when dealing with multiple vendors, Sharp said. The only alternative is to focus on one service provider.

"We have fairly intensive internal messaging, but we can't get that reliability outside the company," he said.

Realistically, products will start rolling out within 12 months of the specification being published, said Sara Radi casti, president of The Radi casti Group in Palo Alto, Calif. In 12 to 18 months, she predicted, it will become a de facto standard.

Ben Horowitz, product manager for communications management at Lotus Development Corp. in Mountain View, Calif., said Lotus was not ready to commit to a date for when it will implement the EMA standard in its products.

Despite this, most observers agreed the most important thing is that the EMA is finally on the verge of publishing a specification that works across different technologies from different vendors. "This is a solid first step," Sharp said.

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NOBODY IN THEIR RIGHT WANTS TO USE YOUR PRODUCT.

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An open, graphical client-server system developed using Microsoft Office, Microsoft BackOffice, and Microsoft development tools:

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Nobody really wants to use an air bag. But everyone seems to want one in their car. NEC America's Oregon Plant found this out when orders for their air bag deployment circuit boards increased dramatically. How did they keep up with demand? They increased capacity 70 percent by fully automating the data collection system for quality control and part tracking on their production line. With the help of a distributed computing system using Microsoft® products, including Microsoft Windows NT™ Server, part of the BackOffice family. With the new system, circuit board verification time has decreased from 30 seconds to just two. This allows verifications to be performed automatically at multiple points along the production line, instead of only at the end. So rework is minimized. "With this cost-effective solution, we've gotten a tremendous boost in production capacity," explains Steve Deremer, senior systems analyst at NEC America, "while maintaining the same level of quality." The system, based on Windows NT and SQL Server™, has proven extremely easy to install and administer. It's also easy to access. A user-friendly reporting front end, created with Microsoft Visual Basic® and Microsoft Access, allows users to generate their own reports in minutes. So IS people have more time to do their own jobs. Like creating new applications. To get more information on how Microsoft can help you gain a business advantage using computers, call (800) 437-3119, Dept. GKR. Or contact us at "GO BIZSOLN" on CompuServe®.
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Preventing Watcom SQL, the industrial strength database server that makes widespread deployment of PC client/server applications both simple and inexpensive. Watcom SQL's advanced technology offers you unparalleled performance and flexibility, making it ideal for single user, workgroup and departmental applications — from branch office systems to mobile field force automation.

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**High Performance Right Out of the Box.** The high speed query optimizer of Watcom SQL is the key to its impressive performance. Not only does it tune each query individually, it delivers high performance without expert attention. Better still, it comes as standard equipment in every box.

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I'm a(n):  ☐ Application builder  ☐ Application user  ☐ Reseller/VAR  ☐ Consultant

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- Other (please specify)

I plan to purchase development tools in:  ☐ 0-3 months  ☐ 3-6 months  ☐ 6-12 months  ☐ 12+ months
Here are some of the reasons why Forest & Trees is still the best information access and analysis tool you can buy.

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- Fully-functional report writer
- Multilevel drill down on graphs, data, and pictures
- Alarms to highlight exception data

Direct access to over 25 data sources
- From PC to server to mainframe databases
- Multidimensional databases
- PC file structures
- Financial and marketing applications
- Data warehouses
- Client/server support

Dialog-based development makes it easy to develop and maintain
- No scripting or coding

Graphical navigation makes applications flexible, intuitive and easy to use
- Bitmaps, buttons, hotspots and triggers save time and training costs

Find out why Forest & Trees ranks #1 in buyer satisfaction.
Rad Network Devices, Inc. has announced R-dapter, a Simple Network Management Protocol router adapter. According to the Costa Mesa, Calif., company, R-dapter connects remote LANs to the enterprise via servers without requiring WAN cards and remote routing software. The adapter has one Ethernet port, one WAN interface and a second port for automatic dial backup. When plugged directly into the second LAN interface port on a remote server, the product transmits traffic from the server across the WAN to the second R-dapter LAN server. Prices start at $785.


BlueLine Software, Inc. has announced Vital Signs VisionNet 4.0, a performance management software. According to the Minneapolis firm, Vital Signs VisionNet 4.0 provides an integrated view of network performance from LANs to multiple-host systems. The product uses software agents to collect performance metrics from LANs, Unix systems, Simple Network Management Protocol devices and SNA systems. A performance database and report writer are included. Prices range from $10,000 to $65,000, depending on the platform.

Blueline Software (612) 542-1072

Product short

BlueLine Software, Inc. has announced Vital Signs VisionNet 4.0, a performance management software. According to the Minneapolis firm, Vital Signs VisionNet 4.0 provides an integrated view of network performance from LANs to multiple-host systems. The product uses software agents to collect performance metrics from LANs, Unix systems, Simple Network Management Protocol devices and SNA systems. A performance database and report writer are included. Prices range from $10,000 to $65,000, depending on the platform.
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Leasing firm reaps re-engineering rewards

By Thomas Hoffman

Business process re-engineering is get-
ting a bad rap these days. Even some of
the field's gurus are running around say-
ing how the concept has been misunder-
stood and mishandled in many in-
stances.

But Lease Plan U.S.A., an Atlanta-
based leasing and fleet management
firm, has proved that business process
re-engineering can work. Since Lease
Plan began re-engineering its corporate
fleet operations in 1993, the firm has
automated most manual steps while elimi-
nating seven. Productivity has also sky-
rocketed from 329 cars per employee
each month to 450 and counting.

Furthermore, a $850,000 investment in
IBM's AS/400-based imaging technology
is expected to net Lease Plan $2.8 million
in cost savings during a five-year period.

The savings is primarily due to the eight
additional staffers the company did not
have to hire to keep pace with its growing
volumes.

Much of Lease Plan's success can be
attributed to its ground-up re-engineer-
ing approach. "We broke down every in-
cremental piece of our business, where
every piece of paper went and inter-
viewed each departmental employee to
determine how we could do it better," said
David Dahm, senior vice president of
finance at Lease Plan, which leases 55,000
cars, trucks and pieces of con-
tact equipment to

corporate clients such as Sher-
win-Williams Co. in Cleve-
land and Nestle S.A. in Swit-
zerland.

The old way
Before the re-engineering
effort, Lease Plan would
print vehicle order con-
firmations and then mail or
fax them to clients. "When
IBM [consulting group]
came in and did the initial
assessment, we found that
fully one-half of our client ser-
vice time was spent waiting at the fax
machine," said David Bush, senior vice
president of information technology at
Lease Plan. "Not until IBM came in with
an assessment did we have someone
question our workflows, and that [find-
ing] really opened our eyes," Dahm said.

So early last year, Lease Plan followed
IBM's recommendation and began in-
stalling an imaging system. Lease Plan's
IBM ImagePlus system, which went on-line last Sep-
tember, operates on an IBM
AS/400 Model F45 machine
and feeds a network of IBM
ValuePoint client worksta-
tions running OS/2.

Meanwhile, Lease Plan's
fax machines are gathering
cowebks now that the firm's customer
services representatives are using digital
fax software from UK-based
CMA Ettworth to streamline the
transmission of custom-
er paperwork. The digital
fax system has gone a long
way toward improving
Lease Plan's employee pro-
ductivity: The firm generates 30 to
600,000 new documents each year, Bush
said.

The other imaging vendors that bid on
the project declined to provide a detailed
front-end design of the system, a factor
that weighed heavily in Bush's decision-
making. Other vendors "claimed their products were good enough and could be
tailored on the back end," Bush said. "I
wasn't comfortable with spending
$600,000-plus and not knowing what I
was getting," he added.

Lease Plan's re-engineering gains are
also evident in its improved customer
services. "I see it in terms of the docu-
mentation they can get to me immediate-
ly," said Claudia Toth, fleet manager at
Picker International, Inc., a Cleveland-
based manufacturer of diagnostic imag-
ing equipment. Beyond that, Toth said
the firm has been more proactive than
Picker's other longtime lessor, which she
deprecated to name.

For example, Lease Plan uses a com-
puterized matching system that enables
clients to find the most convenient loca-
tion to pick up a car or have it serviced.
Picker's other car lessor "has never
made (any) kinds of suggestions to us,"
Toth said. Picker's contract with Lease
Plan has swelled from 15 to 130 vehicles
in the past two years because of Lease
Plan's solid service, he added.

CAD/CAM platform

Mercedes picks Computervision
for joint development project

By Neal Weinberg

The search took two years, spanned three continents
and included eight vendors.

In the end, Bharat Balasubramanian and his team at
Mercedes-Benz AG chose Computervision, Inc. in Bed-
ford, Mass., to provide the computer-aided design and
manufacturing (CAD/CAM) platform that the German
car and truck maker hopes to ride into the
next century.

Mercedes has com-
mittted 50 engineers to
develop applications
based on Computervi-
sion's object-oriented
Pelorus architecture. If
the joint development
work bears fruit, Mer-
cedes could eventually
replace its estimated
2,200 to 3,000 seats
of IBM's Catia design
software with a Pelorus-
based system, accord-
ing to Charles Foundyller, president of Daratech, Inc., a
consulting firm in Cambridge, Mass.

Mercedes is looking for a next-generation CAD/CAM
system that will allow it to unify internal design opera-
tions, which are currently split between the company's

temporary Syrko system and the Catia commercial de-
sign software, Foundyller said.

And Mercedes wants to wield its internal process with
subcontractors worldwide because the company now
outsources more and more of its design work.

Essentially, Mercedes wants to "build a better ham-
er" using Pelorus as the application develop-
environment, Foundyller said.

The goal is to speed
up the time it takes to
bring a new model car
or truck to market, add-
ed David Burdick, an
analyst at Gartner
Group, Inc. in Santa Cla-
ra, Calif.

Judging others
Balasubramanian, vice
president of Mercedes
CAD/CAM Competence
Center, Documentation
and Standards, said he
spent a year visiting all
the top automakers in
the U.S., Japan and Europe to identify the best practices
of each company. Then he hit all the major CAD/CAM
vendors in the U.S. and Europe.

Companies were judged on their technology, vision
and cultural fit. "It's a big step for any company — shift-
ing from one platform to another," Balasubramanian
said. Mercedes selected Computervision because it
cored the highest on pure technology and in the "soft
areas" of vision and corporate culture, he added.

Pelorus is an object-oriented,
event-driven development platform created for window-
-based design automation applications, according to Gi-
anela D. Wilson, an analyst at International Data Corp.
in Framingham, Mass. And it supports open industry
standards.

The joint development proj-
et will not be a major money-
maker for Computervision.
"The real gold mine" will be selling to Mercedes' subcon-
tractors, who hold an addi-
tional 3,000 design seats, Bur-
dick said.

Another spin-off benefit for
Computervision will be own-
ing the underlying applica-
tions, which it can also sell to
other automobile companies,
said Sheila B. Ennis, an analyst at Hambrecht & Quist
in San Francisco.

And Pelorus is not limited to the automobile industry.
Merlyn Leslie, computer-aided engineering support
manager at Andersen Corp. in Bayport, Minn., said he
took a quick look at Pelorus. "Andersen is the company
that makes Andersen windows."

"It's a breakthrough as far as that type of tech-
nology," Leslie said. He said he was particularly im-
pressed with the intuitive nature of the Pelorus design
system.
Stanford steers digital library project

Demonstration targets financial transactions

Researchers at Stanford University recently showed off a prototype intelligent agent technology that forms part of a $24.4 million digital library research project. The four-year Stanford effort is designed to access very different kinds of digital information, creating a virtual library from disparate sources.

The agent technology accesses three kinds of network resources and handles electronic payment.

Researchers demonstrated the system to funding representatives that visited the campus last month. "The funders did a site visit, and we demonstrated a way for clients and services to exchange money for goods in a convenient way," said Andreas Paepcke, a senior research scientist and project manager at Stanford. The demonstration showed a user querying three external databases.

The distributed application runs on a mix of Hewlett-Packard Co. and IBM Unix workstations as well as on PC systems. It accesses two Knight-Ridder Information Services Dialog Service, which provides a computer magazines database; WebCrawler, a service on the World-Wide Web that indexes key words; and Inspec, a computer literature citations database.

At the center of Stanford's work is a technology called the Information Bus, intelligent middleware that provides a common communications link between diverse services. Special programs, called protocol machines, will be developed to access specific digital libraries.

These programs will act as brokers between the Information Bus and various digital resources. Client interfaces will be developed that connect the end user to the Information Bus.

What lies ahead

"Our vision is of many, many autonomous publication-related services such as searching, copy detection or indexing, which are independently owned and run," Paepcke said. "The question becomes: How can the digital services work with each other, and how can clients exchange information between them?"

Paepcke added.

The Stanford project is also attempting to find ways to reconcile different kinds of digital money — to become a distributed clearinghouse for financial transactions.

"One of the main foci is the 'glue' that enables these services to be enacted. Another is that you will only realize this vision if services can make money," Paepcke said.

The Stanford project is one of six digital library projects begun in October last year. The projects are a result of a joint initiative by the National Science Foundation, the Department of Defense's Advanced Research Projects Agency and NASA.

Parsons is a correspondent at IDG News Service's Boston bureau.
Boole & Babbage Storage Division has announced Stage3 for Windows NT Server, a native backup operating system for Microsoft Corp.'s Windows NT.

According to the Conyers, Ga., company, Stage3 for Windows NT Server backs up servers using industry-standard local backup software.

Stage3 appears to users as a virtual tape device that transports data via Microsoft's SNA Server or the mainframe. Prices range from $12,000 to $18,000 for the CPU component of Stage3 for Windows NT Server. The Windows NT component costs $2,900.

StorageTek Distributed Systems Division, Inc. has announced the Northfield Model 480 and 400 9638 disk subsystems.

According to the Lisle, Ill., company, Model 480 features 4G-byte head disk assemblies (HDA) and 4M bytes of Fast Write cache. Model 440 has 2G-byte HDAs and has optional 4M-byte Fast Write cache. Both models feature 16M bytes of read cache that is upgradable to 64M bytes. Prices start at $44,625 for Model 480 and $32,690 for Model 440.

Clovis, Inc. has announced the MultiStor-R, a RAID storage system. According to the Littleton, Mass., firm, MultiStor-R lets users choose from RAID Levels 0, 3 and 5 and select a different RAID level to run concurrently on each of the four available arrays of seven drives. The system supports five to seven internal drives and is expandable to 28 drives and 112G-byte capacity. Prices start at $12,160 for a 5G-byte system.

Scopus Technology, Inc. has announced Scopus 3.5, customer-support software.

According to the Emeryville, Calif., company, Scopus 3.5 automates customer service, help desk, quality assurance, sales and marketing functions. It also adds support for Sybase, Inc.'s System 10, enhanced collaborative capabilities and improved memory management. Prices range from $3,000 to $5,000 per concurrent user.

Altai, Inc. has announced Zeke Enterprise Scheduling 4.2 for MVS.

According to the Arlington, Texas, company, Zeke Enterprise Scheduling 4.2 centralizes all system activities and manages them as if they were run locally. A Poly-Zeke function lets multiple copies of the software execute on a single MVS system to distribute scheduling to various sections of the organization. A ScheduleView facility has added support for Rexx Execs execution. Prices start at $65,000.

Hyperion Software Corp. has announced Hyperion Financials 1.0, client/server accounting software.

According to the Stamford, Conn., company, Hyperion Financials 1.0 features a clean-slate design that lets users customize their work environments. Modules include Ledger, Reporting, Admin and Tools. The software is optimized for each major database platform and includes drill-down, query-by-example, unlimited viewing and graphical report-writing features. Prices start at $100,000.

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Once you add up the facts, you can see nothing stacks up to SuperStack from 3Com. To get more information about SuperStack and high performance scalable networking, call us at 1-800-NET-3Com. If you want to build a network your way, you'll definitely like what you hear.
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REMIND YOU OF DEPLOYING APPLICATIONS ACROSS YOUR ORGANIZATION?
The objects of their desires

"I would like to see more integrated repository systems, as there are on Smalltalk systems, on C++. I'd like to see more multiparallel C++ compilers."

—JASON LIEBLICH, CS FIRST BOSTON

"It will be nice to see object-oriented tools that support actual code generation."

—JACK RABREN, GE CAPITAL MORTGAGE

"Smalltalk vendors are starting to address more platforms, and I want to continue to see more of that. They're strong on the client side but not on the server side, and that forces us to have a 'fat client,' which we're trying to get away from in client/server."

—JEFF HEADLEY, FIRST UNION NATIONAL BANK

"We'd like to see more development tools in the distributed object arena."

—JASON DURAN, FIDELITY MANAGEMENT AND RESEARCH CO.

## Language, other basics key to object success

By Elizabeth Heichler

When adopting object-oriented development, don't bother agonizing over which tool kit to buy because a tool kit alone won't guarantee success. Getting off on the right foot means starting with the fundamentals and choosing the right language and methodology, early adopters say.

Selecting a language is a profound decision that will shape the development group's style. As for methodologies, corporate information systems developers working successfully with objects agree that it is not so important which methodology they use, but that they stick with it throughout the project.

"Unfortunately, a lot of people adopt [object] tools, get in trouble and then go look for a methodology," said John Rymer, an industry analyst at Patricia Seybold Group, Inc. in Boston. The likely result of using object-oriented languages and tools without enforcing a development discipline is not being able to reuse objects — a key object-oriented benefit.

Object-oriented development requires planning and following rules, Rymer and other experts agreed.

### A different approach

"The failure of object orientation has to do with the same reasons any IS project fails: inadequate training and poor management," said Jim Adamczyk, an Andersen Consulting partner involved in the

When is object-oriented development on the organization's radar? It is a standard now. 22%

By the end of 1995 24%

By the end of 1996 24%

Can't predict, but expected to be a standard someday 19%

Never 3%

BASE: 103 RESPONDENTS; 8% DID NOT KNOW THEIR DEVELOPMENT PLANS. DOES NOT EQUAL 100% DUE TO ROUNDING

Source: Computerworld Database Division, Framingham, Mass.

"Unfortunately, a lot of people adopt [object] tools, get in trouble and then go look for a methodology," said John Rymer, an industry analyst at Patricia Seybold Group, Inc. in Boston. The likely result of using object-oriented languages and tools without enforcing a development discipline is not being able to reuse objects — a key object-oriented benefit.

Code consultancies' object-oriented development effort, Project Engine. "You need to pursue a complete approach that includes people, process and technology."

Language choices usually come down to C++ vs. dynamic languages such as Smalltalk or Next for application development, he said. And, indeed, C++ has delivered better performance, but it comes with its own set of challenges, Liebliech said. There are inconsistencies in C++ implementations.

For example, some vendors' compilers will not accept the use of C++ features such as templates, while others will. Also, the ability to combine different class libraries — essentially collections of object code components that can be plugged into applications — "has not begun to be addressed," he said.

No Smalltalk problems

GE Capital Mortgage in Raleigh, N.C., is also using C++ heavily — to develop financial applications — but for a different reason. "That's where we're able to hire and retain staff. It's a seller's market in Smalltalk," explained methodologist Jack Rabren. GE Capital Mortgage has not had any performance problems with Smalltalk, and Rabren's experience is that the bottleneck is objects.

## Object moves at Sprint

Two years into its move to object orientation, Sprint Corp. has reduced development time and increased the amount of code it can reuse.

When Sprint set out on its object-oriented odyssey, its goals were to build a set of object code components that could be used across a variety of different applications and help provide a consistent look and feel across the business, according to Liz LaValley, assistant vice president of business systems development at the telecommunications services company.

The move to objects has also helped Sprint roll out new services more quickly.

LaValley said. Its Sprint Sense flat-rate calling plan, launched in January, was "rolled out in three weeks," she said.

Sprint's development cycle had been 40 weeks, but it has gradually decreased during the past couple of years as developers have been able to reuse more code.

Sprint chose the Fusion methodology from Hewlett-Packard Co. to provide some discipline for its object-oriented move, explained John Strand, director of technology planning and integration at Sprint's Network Design and Engineering Group in Overland Park, Kan.

The network management applications being built by Strand's group are large and must be distributed, and he is finding that tools to support distributed object-oriented design are still fairly weak.

Another problem area, Strand said, is the lack of "open, published" interfaces to object-oriented development tools. "That is hampering us, so we're pushing vendors to provide us with interfaces to their systems so we can integrate them into our environment," he said.

Strand's group is primarily using C++ but has also begun using Smalltalk to build graphical user interfaces. He would like to see better integration between the two languages. "And we'd all like to get fully automatic code generation, but that's still a ways away," he added.

—Elizabeth Heichler
Oracle Corp. unveiled a process modeling product last week along with new pricing and packaging options for some of its application development tools.

The move is part of an effort to better compete with Powersoft's PowerBuilder. Oracle officials said Powersoft is a unit of Sybase, Inc. In fact, Oracle's two new bundles of Cooperative Development Environment (CDE) 2 tools now offer features that most other client/server development tools do not, said Mark Hanner, an analyst at Meta Group, Inc. based here.

CDE 2 is a catchall term for several types of tools, including code generators, computer-aided software engineering (CASE) products and PC-based data mining utilities. Larry Ellison, Oracle's president and chief executive officer, unveiled the bundles — dubbed Developer/2000 and Designer/2000 — at Coda '95, Oracle's developer conference, held here (see chart).

Designer/2000, formerly known as CDE 2 CASE, includes a new graphical utility for modeling business processes and several other diagrammers is slated to ship next month. Designer/2000 offers modeling capabilities not found in other client/server development tools, Hanner said. The ability to map out business processes and then generate applications from those models is old hat to mainframe developers using traditional CASE tools, Hanner said. But "the design stuff has been missing in client/server," he added.

**2000 bundles**
Oracle has announced new pricing and packaging for its tools

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Object success

CONTINUED FROM PAGE 73

often elsewhere, such as in the network or server.

Because both languages have their pluses and minuses, it is crucial to analyze your organization's skill set before you choose an object-oriented language, Rymer advised. If you have moved to C, then C++ has obvious applicability. But if you run a Cobol shop or use fourth-generation languages (4GL) heavily, then the move to C++ can be very painful, he warned, and programmers with those skills may have an easier time with Smalltalk.

In addition, Smalltalk forces programmers to write strictly object-oriented code, whereas programmers can use C++ and still write procedural code, according to Rymer and others experienced in the field. Thus, developers new to object-oriented code are automatically disciplined by using Smalltalk. But C++ developers can easily wind up with "spaghetti and meatballs" code — where the spaghetti is procedural C, garnished with the occasional meatball or C++ object, Rymer said.

"That is where methodologies come in. By providing a framework for disciplined development, they keep developers out of the spaghetti and meatballs mishmash and on the straight and narrow path of true object-oriented design."

The right fit
"The methodologies are all by and large pretty good," said Jeff Headley, systems architect at First Union National Bank in Charlotte, N.C. He advised spending some time reading up on the main object-oriented methodologies, which include Shlaer-Mellor, Rumbaugh/Object Modeling Technique, Booch, Martin/Odell, Jacobson and Coad-Yourdon. It is important to select one that fits the culture and programming style of the organization, he added.

Joe DeFeo, executive associate at Arlington, Va.-based consulting and services firm CACI, Inc., said his group evaluated quite a few of the popular methods and primarily uses Rumbaugh in the object-oriented arena. DeFeo said his group found that Shlaer-Mellor was oriented more toward real-time systems, while Coad-Yourdon seemed to be stronger on analysis than on design and implementation.

An increasingly popular approach is to use a hybrid of the popular methodologies, bringing in elements from other models as needed. Rabren said GE Capital Mortgage's methodology is based mostly on Rumbaugh, with some concepts from Jacobson.

In fact, vendors such as Cadre Technologies, Inc., Intersolv, Inc. and Interactive Development Environments, Inc. are now working on a unified method that they say will incorporate the best elements of the object-oriented analysis and design methodologies.

A commitment move
But do not overanalyze the methodology decision, object-oriented veterans agree. The key to getting started, said Steve Clamett, vice president of Sabre Decision Technologies in Dallas, is to "make the commitment. Get your people trained, pick a methodology and start with a project that is low-risk. And once you've got a core group of people exposed to object-oriented, populate your other development teams with them."
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Microsoft revamps source code system

By Stuart J. Johnston

Microsoft Corp. is shipping SourceSafe Version 3.1, a source code control system for DOS, Windows, Windows NT and Macintosh.

Microsoft acquired SourceSafe last year when it purchased One Tree Software, Inc. in Raleigh, N.C., and is now reintroducing the package with a few additions. These include file conversion utilities for other source code control systems and a standard Windows installation utility.

Basically, SourceSafe provides an administrative control mechanism that creates a "lending library" for group programming projects.

Like other source code control systems, SourceSafe's main function allows developers to check source code modules out of the system in a manner that is somewhat similar to the way readers check books out of a library.

When the developer who has "checked out" a source code file is finished working on it, he checks the file back into the system. As long as a specific source code file is checked out, a second or third developer cannot check out that file. Users, however, can opt to set up SourceSafe differently and override this feature.

One of the features that makes SourceSafe different from other source code control systems is that most other systems manage code files only at the file level, said Dave Gold, vice president of Raleigh Group International, Inc., a value-added reseller in Raleigh, N.C. SourceSafe enables developers to manage code at the project level, meaning an administrator can specify which code files are used in a particular program and manage them as a group.

SourceSafe is also the only package that provides support for DOS, Windows, Windows NT and Macintosh in the same package, Gold said.

Mainsoft Corp. will release a Unix version of SourceSafe in the coming months, Microsoft said.

SourceSafe also tracks changes to a source code module in each programming session. Instead of storing each version of a file, which can quickly grow to require massive amounts of disk space, the source code control system stores only changes to the basic file.

Additionally, many source code control systems, including SourceSafe, allow the same source code module to be shared among several programs. This helps developers reuse general-purpose and object-oriented code modules.

SourceSafe 3.1 adds file conversion utilities for developers who used Microsoft's internally developed Delta source code control system, which the company stopped shipping at the end of last year. Microsoft will upgrade Delta users for the cost of shipping and handling and will continue to provide technical support for Delta through the end of this year, the company said.

Version 3.1 also includes a conversion utility for users of Intersolv, Inc.'s PVCS source code control system. SourceSafe costs $499 for a single-user license.

Key functions of Microsoft's recently acquired SourceSafe include the following:

- **Team coordination**: Assures that only one programmer at a time can modify a source file.
- **Version tracking**: Archives, tracks and retrieves multiple versions of code files.
- **Cross-platform development**: Eases porting to multiple platforms using a single code base.
- **Reusable code**: Aids in tracking programs that use the same modules.

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Progress Software Corp. has announced PowerPak Pro 1.0, a suite of Microsoft Corp. Visual Basic development tools. According to the Bedford, Mass., company, PowerPak Pro 1.0 combines commercially available Visual Basic tools in one bundle, all supported by Progress instead of each separate vendor.

Development tools include Progress' QuickPak, VSView and VSVBX from Videoeosoft and Spyworks-VB from Desaware. Progress' QuickPak Pro provides database access and manages the results of large-scale queries. Starbase Corp.'s Version/DB provides source code management.

To manage resources and component versions, the product includes XRef from Progress, VersionStamper-VB from Desaware and VBCompress Pro from Whippeware.

PowerPak Pro 1.0 costs $795.

Cognos, Inc. has announced Axiant 2.0, a client/server application development software.

According to the Burlington, Mass., company, Axiant 2.0 lets developers deploy applications across different processors and over different topologies. The product creates a deployment repository and document. Axiant 2.0 also incorporates Cognos' Impromptu and PowerPlay reporting and analysis tools. Prices start at $2,095.

Magec Software has announced MAGEC (Mask and Application Generator and Environment Controller) 3.0, a cross-platform graphical user interface development software.

According to the Dallas company, MAGEC 3.0 adds a developer's menu that provides a graphic depiction of the tasks needed to develop applications and guides the user through the process.

On-line tutorials and application programming interface support for communicating with other applications is included.

Prices range from $2,000 on the PC to $125,000 on the mainframe.

MAGEC Software
(214) 498-3000

ALI Technologies, Inc. has announced ALI Design Analyzer 1.1, a design utility for Notes.

According to the Needham, Mass., company, ALI Design Analyzer 1.1 lets users view the design elements of a Notes database and shows the dependencies of other Notes resources when database replication identifications and server databases are encountered.

The product exports the design elements to a separate Notes database. Beginner and expert database templates are included.

ALI Design Analyzer 1.1 costs $895.

DEK Software International has announced Virtual Media Hypertext Development Kit (HDK) 2.5, Windows hypertext authoring software developed by Virtual Media Technology Ltd. in North Sydney, Australia.

According to the Cherry Hill, N.J., firm, Virtual Media HDK 2.5 lets users create Windows context-sensitive help systems and user manuals.

The product generates source code by converting documents into hypertext systems. Features include full text indexing, special pop-up glossaries, 256-bit color, animation, audio and watermark bit maps.

Virtual Media HDK 2.5 costs $895.

Virtual Media Technology Ltd.
(609) 424-6565

Blue Sky Software Corp. has announced RoboHelp 3.0, a help authoring tool for Windows.

According to the San Diego company, RoboHelp 3.0 comes with a WinHelp Video Kit that lets users capture on-screen actions and create video product demonstrations and tutorials that can be integrated into the help file.

The product lets users display special Microsoft Corp. Word 6.0 features in Windows Help, such as smart quotes, bullet lists and hanging indents.

RoboHelp 3.0 costs $495.

Expersoft Corp. has announced XShell 3.5, a distributed object management environment.

According to the San Diego firm, XShell 3.5 has added an XShell Replicated Namespace module, an XShell Simple Network Management Protocol (SNMP) Agent and an XShell Interface Definition Language compiler.

The product also supports integration with Rogue Wave Software's Tools++.class library and Microsoft Corp.'s Foundation Classes.

XShell Replicated Namespace costs $500 per managed XShell module, and XShell SNMP Agent costs $2,500 per developer's tool kit and $250 per managed node.

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What happened?

Simple. You got hit with the political and organizational realities of managing a project within a living, breathing business.

Good project scope management skills are becoming recognized as the heart of any successful project. As defined by Webster's, scope is "extent of treatment, activity or influence: range of operation." As defined by the Project Management Institute, scope management means "ensuring that the project does all the work required — and only the work required — to successfully achieve the purpose of the project."

As experts point out, it's possible to do everything by the book only to find things written between the lines that you somehow missed.

"There are the technical issues of controlling projects, where you've got these very bona fide models and methodologies and tools to help you. Then you have your softer political and organizational issues, which turn out to be equally important," says Joan Knutson, president and founder of Project Management Mentors, Inc., a project management training and consulting company in San Francisco.

With each step you take, Knutson says, no matter how technically accurate you try to be, "you've got the potential for serious generalizations and misunderstandings that can impact the success of your project."
CONTINUED FROM PAGE 81

Indeed, a recent survey of 150 corporate IS managers by the Center for Project Management, a consultancy in San Ramon, Calif., shows that half of all IS projects become runaways — project managers overshoot their budgets and timetables while failing to deliver fully on their goals. Then there are the really unfortunate IS project managers, the 25% who end up with projects so out of control that the projects are killed outright — but not before dragging on for a very costly average of 18 to 24 months of design and development work.

“Beware of ‘scope on a rope.’ It’ll be sure to hang you in the end.”
— Gopal Kapur, president, Center for Project Management, on the dangers of a seemingly friendly, open-ended invitation to embark upon a new IS project

The term “scope creep” has been used to describe cases in which significant systems changes are made after project requirements supposedly have been defined and actual development has already begun. Many IS project managers, however, make the mistake of characterizing as scope creep any additional demands made by naive or aggressive users. In fact, the reasons for runaway projects are much more complex and insidious.

Take heart: There are solutions that can minimize the “soft” dangers associated with scope creep. But you probably won’t find them on a flowchart or in your PC-based project management software documentation.

“Finding the right project management or estimation tools gets you only 10% there,” says Arik Paran, vice president of customer support services at Cadence Design Systems Inc. in San Jose, Calif. Knutson agrees. While tools that map especially if the original “concept person” is too busy to discuss details.

“Here is where your real project management work begins,” says Jeff Koroknay, program manager for global project management at Honeywell Inc. in Clearwater, Fla. Koroknay is putting together project management guidelines to be used throughout Honeywell’s IS operations. “You must pin your user down — immediately. Otherwise, you’ll waste a good deal of time second-guessing right from the start of the project. That’s a red flag,” he says.

An end user who seems genial and accommodating is all the more reason to beware, says Gopal Kapur, president of the Center for Project Management. “Beware of ‘scope on a rope,’” he says of the dangers of a seemingly friendly open-ended invitation to embark upon a new IS project. “It’ll be sure to hang you in the end.

Almost inevitably, Kapur says, there comes a time when that user will say, ‘I didn’t mean that.’”

Even if the senior “concept” manager hands off responsibility to an active user, he or she may treat very carefully consultants and IS project managers warn. After all, the users may not understand their manager’s idea, and they might want as much trouble getting time on their calendar as the IS manager.

Which is why Diana L. Garrett, IS program manager at Intel Corp. in Santa Clara, Calif., always insists on senior management involvement in the user process. “This is not just about talking to users,” she says. “It’s about talking to the right users.” Garrett says she won’t proceed with a project until she is assured that a senior manager — indeed, the one who must take ultimate financial responsibility for the success of the project — is actively involved. Forget involvement by proxy, she says; the stakes are too high.

This also solves another common user-involvement problem: a too-democratic approach to defining the scope of the project entails is fraught with danger —

Myth #1: As long as users are involved, you’re assured of delivering an IS project grounded in the realities of their business needs.

Reality: All user involvement is not created equal.

All too often “user involvement” takes the form of a vaguely stated idea from a senior manager in the user community. Moving from this fuzzy concept stage to a more concrete realization of what the project entails is fraught with danger —

Myth #2: The primary purpose of a “scope statement” is to state clearly what the project will do.

Reality: A complete scope statement will also make clear the project will not attempt to do.

Myth #3: Once you have defined the scope of the project, hold firm. Any deviation from the original plan is a sign your project is getting out of control.

Reality: It is inevitable that scope will change. Plan on it.

In fact, a bigger problem for IS is when schedules and cost estimates are set too early — before enough details about a project are known — and then considered written in stone by senior management.

Instead, IS should plan on a fluid and iterative approach to defining scope. Early estimates should be reconsidered and revised as project parameters become clearer. IS managers should not be afraid to go to the project sponsor and present newly acquired evidence that the budget or schedule is unrealistic.

“Scope management is, by definition, a process of discovery,” Tuman says. As a project progresses, a good manager will quickly and efficiently uncover the things that weren’t identified earlier and deal with them effectively.

“You’ve yet to see a project where even a fully researched and well-documented scope statement didn’t change as we went forward,” says Andy Cables, project manager of business systems at Shell Oil Co. in Houston.

In effect, good scope management is good change management: You’ve put a clear time frame to the inevitable surprises and discoveries that unfold.

At some point, of course, a formal “scope document” attempt to nail down the project’s schedule, budget and functionality. After that comes the change-management process and the power to

Scope grope, page 84

ON THE ROAD TO RUIN?
The majority of IS projects become runaways or fail outright, so it is critical that managers understand how to manage changes in a project’s scope.

50% of finished projects are over budget by 60% to 190% and contain less than 70% of originally promised functionality.

25% of projects are canceled due to scope increase.

Less than 15% of IS project managers have created a change-management plan to deal with scope changes.

25% of projects are completed on time, within budget and to a client’s satisfaction.

Less than 11% of IS project managers know the critical paths of their projects.

SCOPE GROPE

Management

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Source: 1994 survey of 150 IS project managers, Center for Project Management, San Ramon, Calif.
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grant formal approval to any additional scope changes. Typically, that involves a change-management committee, usually made up of senior managers from the user and technology communities. Any proposed change is presented to this committee, which then decides if an additional feature or activity will be added to the previously defined scope.

But beware of solidifying the scope too early in the process, Kapur warns.

In the Center for Project Management's 24-step project management methodology, for example, a "desired scope" is tentatively laid out in Step 1; a "possible scope" is presented in Step 12; a "detailed scope" containing actual schedules and deliverables is set in Step 13; and a "reconfirmed scope" is finalized in Step 29, when final cost estimates are set.

"And of course, the scope must be reviewed continually during ongoing progress reviews — what we call our iterative Step 22, which comprises the change-management portion of our methodology," Kapur says.

Myth #4:
The main job of a change-management committee is to arbitrate user requests for additional features or functionality beyond the original project charter.

Reality:
Scope problems go well beyond additional user demands.

"If you fail behind your schedule, that's a scope change. If you're over budget, that's a scope change," says Ray Ju, a senior project manager at Wells Fargo Bank in San Francisco.

Ju likes to use the "triple constraint" model to visualize change management. Think of your overall project scope as a triangle: One side represents the project goals (the features and functions), another side represents the timetable and the third side represents the needed resources, such as cash outlays, labor and equipment.

"It's fairly easy to see that when your user requirements change — when they request additional features, for example — that either the schedule or the cost or management committee is debating a particular change," Ju says.

Jim Willbern, president of The Willbern Group, a project management consultancy in Little Rock, Ark., recalls being brought in to arbitrate an outsourced Canadian IS project. A substantial scope change was being discussed by the customer's steering committee. The prescribed change-management process was working in the sense that it had been triggered by a proposed change in scope, but in the meantime, the IS contractor was continuing work per the original contract terms.

"The scope changed. They were having trouble agreeing on a solution, and the contractor kept going to the eventual tune of a $25 million overrun," Willbern recalls.

It is therefore critical to define what should be happening while the change-management committee discusses changes in the project. Willbern says.

Myth #5:
Holding regular and frequent briefings for senior managers will ensure they are kept up to date on the realities of the project and that you maintain their goodwill and support.

Reality:
It's hard to be sure they're really listening.

Kapur says CEOs often don't realize how much pressure they put on project managers. "One thing project managers need to do is learn to push back," he says.

A good project management process, Knutson says, will "give you the ammunition to push back when you have to. When you get poked politically in the wrong place, you have the data at your disposal to make a business case."

Myth #6:
If schedules or budgets slip slightly, you have a good chance of catching up later. There's no need to ring alarm bells unnecessarily.

Reality:
Bad news is never welcome, but it goes down easier earlier than later.

"A slip is a slip is a slip," Garrett says. "Don't ever count on catching up later. It's not going to happen."

Ju shares that view: "Before there's smoke, there's fire. Projects don't fail overnight," he says. Project managers must therefore look for early warning signs and be candid with their superiors about the implications of even minor setbacks.

"It's your responsibility to report the facts. Your customer can decide what action, if any, to take about it," Ju says.

And don't hesitate to call daily meetings for projects in which schedules are slipping and deliverables are missed, thus ensuring that customers aren't handed any unpleasant surprises, Ju advises.

But here arise cultural issues that can make it difficult to do with project management methodology. Willbern warns.

"You might well belong to an organization in which bad news gets you killed," he says.

The fear engendered by this shoot-the-messenger culture can seep to the lowest levels of your project team. You might well have trouble getting accurate status reports from subordinates who still hope they can catch up and avoid punishment.

"If that's the case, then you have a serious problem that no amount of project management theory can solve," Willbern says.

Myth #7:
The bigger the project, the more problems you will encounter. If in doubt, always break a larger project into multiple smaller ones.

Reality:
There can be substantial economies of scale resulting from enlarging the scope of an IS project.

"The problems with managing larger IS projects have been fairly well documented," says Chris Kemmer, the Douglass Drane associate professor of information technology and management at MIT's Sloan School of Management in Cambridge, Mass.

But what is less well understood, he says, is that you might actually want to make some software projects larger in order to increase overall IS productivity and be able to take advantage of certain technology cost efficiencies.

This is common practice in IS maintenance projects where it is fairly standard to "batch up" small requests for systems changes and enhancements until you have enough to justify a new release.

"The reason is obvious: It's going to cost you so much every time to go into an existing system, make a change, test it and roll it out to your users; therefore it makes sense to accumulate changes and spread those fixed costs across more activities," Kemmer says.

"It's against prevailing wisdom, but our research shows that companies should explore the possibility that larger things are sometimes better," Kemmer says.
The U.S. Securities and Exchange Commission has appointed Michael E. Bartell associate executive director of information technology. He will oversee the use of all automated systems and processes. Prior to his appointment, Bar- tell was director of the U.S. Senate Computer Center, providing a full range of automation services to more than 120 Senate offices in Washington and 390 state offices. Before that, he served in various computer-related positions at the U.S. departments of Commerce and Treasury.

General Medical Corp., a medical supplies, equipment, and services distributor in Richmond, Va., has appointed Frank Massey vice president of information systems. Massey’s appointment marks his return to General Medical, having worked there from 1980 to 1987 as director of MIS. In his new appointment, Massey will be responsible for all of General Medical’s computer systems, including one mainframe in the corporate facility and approximately 10 network systems in the field. He will head an IT department that provides computer services to 3,000 corporate and field employees and 30,000 external customers. Prior to his appointment, Massey was senior vice president of MIS at Medphaps Corp. in Atlanta, a leading provider of business management services for physicians and hospitals. Before that, he held the same position at Investors Savings Bank in Millburn, N.J.

The National Association of State Information Resource Executives announced that association member Don Heilman of Kansas was appointed acting director of the Division of Information Systems and Communications for the state of Kansas. He replaces Jean Turn- er who recently resigned. The associa- tion also announced that member Rich- ard A. Walsh of Pennsylvania has resigned as special associate to the gov- ernor for telecommunications and tech- nology systems. A replacement has not been named.

Since joining the Institute for Advanced Computer Studies, Kraus has focused on research related to cooperation and interaction among negotiation agents, which led to the development of a strategic model of computer systems negotiation designed to achieve mutual benefits. She is a leading authority on how to automate the process of negotiation by computers and a leading re- searcher in the areas of multiagent planning, deductive databases and non- monotonic reasoning.
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Unflagging technology activist Gordon Bell previews a future in which plugging into a worldwide network is as easy as getting a dial tone.
Times Square. Midnight. 1999. A thunderous roar fills the air as the crowd celebrates the new millennium. Few in that New York crowd may be aware, however, that a lot more than just their calendars will change. In the year 2000, a momentous leap forward in computing will begin as pieces of a ubiquitous environment of scalable networks and platforms start to appear.

How sweeping a computer evolution the year 2000 ushers in will depend on the speed of technological advancement, our own willingness to adopt standards and the vagaries of vendors.

There will be plenty to ooh and ahh about when we greet the new millennium: increased reliance on standard platforms, operating systems and Asynchronous Transfer Mode (ATM) networks; new “mainframes” made of stacks of linked PCs running Microsoft Corp. Windows NT and SQL-based databases all connected to a high bandwidth switch; some consolidation of the flavors of Unix; and, perhaps most important, a worldwide dial tone of sorts that will encompass telephone, videophone, videofax and computers and that will let anyone communicate with anyone else anywhere in the world.

It all boils down to what I call SNAP — or scalable networks and platforms — a term coined by me and Jim Gray, a professor at the University of California at Berkeley.

From a systems architect standpoint, scalable networks and platforms will enable users to have only one system — a worldwide network — that will equate to a second-generation Internet, or Internet II. In this internetwork, systems will offer peak speeds of more than 1 billion instructions per second.

For Internet II to happen, users must get wide-scale, fully symmetric 256 Mbit/sec communications (at least) at the price of Integrated Services Digital Network (ISDN). T1 lines may be the answer, if the telecommunications providers make T1 available on an interim basis for the same price as ISDN. For about $106 billion, telecommunications companies can build Internet II so it goes to every phone jack worldwide.

Full realization of scalable networks and platforms can happen within 10 years if the telecommunications companies cooperate. (The communications industry, while having the most technology, always seems to end up underperforming my already low expectations.) Specifically, the following technology pieces need to converge:

**DRIVER: NT platforms**
**Time frame: Before 2000**

My operating system of choice for the nodes on this worldwide network is Gordon Bell, page 92
Everyone is getting recognition using your killer custom app. Isn’t it time you got some of your own?
Apple Computer has always been committed to providing people with power. The power to be your best. That is why Apple and Computerworld, in association with MacIS, will pay tribute to developers whose ideas and software have helped others perform at their very best.

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The Apple Enterprise Awards is a global competition designed to honor developers of innovative custom solutions that best employ Apple technologies. Your submission will be judged on how you've delivered an effective custom solution in your organization.

Winners will be announced at an awards ceremony during PC Expo in New York, June 19-22, 1995. Winning solutions will be displayed in the Apple Enterprise Awards booth at the show, and featured in a special supplement in Computerworld.

So call 1-800-396-6877 today to receive your entry kit. The deadline for entries is April 3, 1995. Hurry, because it's not every day that you get a chance to be recognized.

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Announcing the first annual Apple Enterprise Awards

Deadline for entries is April 3, 1995

Apple Enterprise Awards
Computerworld's Corporate Application Contest

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Unix must converge to permit applications to be distributed arbitrarily among client and server from any vendor. Once Windows NT begins to take market share from Unix, Unix consolidation will begin.

To help ensure openness, user companies might consider the Bell Rule of Two, which is, "Don't buy software unless it runs on two platforms, and then maintain applications on both platforms."

Again, the PC is the only platform that allows for one platform to run several operating systems for Windows applications. While supporting applications on more than one platform may cost a bit more initially, it will save money over the system's life and will help push standards.

**DRIVER: Scalable computers**

**Time frame: 2000**

(If you're an optimist)

Scalable computers can grow virtually without bounds and bottlenecks. Process or large multiprocessors. Scalable computers will enable every computer to be part of a cluster; in that way, companies can put together large systems by adding together many small ones. Ideally, the scalable computer should scale up to several thousand processor nodes. These computers connect to a high-bandwidth switch.

Multiple microprocessor NT servers operating as scalable clusters can provide the power of a mainframe without the high cost. We're already seeing some of that today through Microsoft's Tiger scalable server demonstration, which is essentially a roomful of PCs connected to an ATM switch.

In a scalable network and protocol environment, nodes act and are managed as distributed workstations and are also managed as a shared-memory multiprocessor.

Individual low-cost, high-powered PCs, such as Compaq Computer Corp.'s ProLiant, combined with Windows NT, a SQL-based databases and a single communications network will form the heart of the scalable computer. You can say good-bye to mainframes, proprietary minicomputers, servers and workstations.

The wait times associated with networked computers will not be an issue thanks to scalable switches that allow network bandwidth to be automatically increased or decreased to support the internode traffic. Lower latency, less overhead, increased reliability and constant cost are also keys to making this work.

Two standard switch candidates that can be used to build clusters are Tandem Computers, Inc.'s NTex, which is due this summer, and a souped-up Myrinet from Myricom Corp., which would encompass Tandem's fault tolerance. There would no longer be the need for proprietary switches from different vendors.

**DRIVER: True client/server**

**Time frame: 2000**

In this vision of scalable networks and platforms, the role of clients and servers also changes. Today, you essentially have a client-centric version of computing brought about by workstations and PCs or a server-centric version, which is really just a more difficult to manage version of mainframe computing with a graphical front end.

With scalable networks and platforms, you can expect multiple transactions among a number of computers, all of which do their own thing.

You get a glimpse of what will be possible by looking at the workings of the Internet. A client views something on a server and then either goes off on a parallel search of other databases or makes a transaction, such as paying for an item. In such an environment, you get workers that communicate with others and computers that act as agents and carry out compound tasks.

While only pieces of SNAP will materialize by 2000, think about this vision when you're unhooking that bottle of Asti Spumanti at Broadway and 7th Avenue.

**WILD CARDS**

Every vision has a blur factor.

With scalable networks and platforms, the following are several potential problem spots:

Telecommunications companies. The single biggest impediment to this vision of the new-world computing environment is the telecommunications industry. These folks are more worried about acquiring other businesses they perceive as a threat, such as cable TV or mobile communications businesses, than concentrating on improving the computer as an information provider-receiver.

Telephone companies are interested in cable TV because of the power and money implicit in it. They can control and bill for information delivered to couch potatoes. Essentially, telecommunications companies are following the old mainframe model of information delivery in which a large mainframe running SNA feeds data to the people sitting at 3270 terminals—a centralized model all the way.

Those of us who have had a taste of the Internet and can see its potential ought to insist that telecom companies provide fully symmetric high-bandwidth communications to the home. This is especially important for people expected to work at home, performing the same kind of work in their house that they do at the office.

Computer vendor community. Platform vendors don't want to hear talk of standard platforms and operating systems. It goes against everything they learned in Business 101. By locking users into proprietary solutions, they harness a stable base of customers and maintain their margins.

The nature of scalable networks and platforms, though, is that all of the nodes need to be standardized. They need to interoperate and support a common applications environment. The standards in this environment will force vendors to change their business— or get out of business.

To survive, the vendors should be concentrating on differentiators that do not lock in buyers. They can attract customers by looking at unique items such as earthquake readiness or systems that respond well to the changing size requirements of an organization.

-Gordon Bell
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Deadline for entries May 5, 1995!
by the poor hiring manager. There is an abundance of skills assessment software that tests proficiency in a variety of applications. However, few products gauge technical competency at the information systems level. Right now, there’s not a lot [of tools], but eventually you will see more types of certification and other tests," says Ellen Hersh, analyst of training and education services research at International Data Corp. in Framingham, Mass. "It's still a little ahead of its time."

More often, they rely on interviews and references for peace of mind. "We also don’t have to use our resources to sit down and discuss the nitty-gritty of program code," she says. However, conducting tests on all qualified candidates can be pricey. For example, it costs $300 per month to lease a test from Bookman Consulting or roughly $250 per single test.

But if you’re committed to the idea and plan to use a skills assessment package, be sure you get accurate results. "Before we ever bought a testing product, we validated it internally," says Renee Southard, manager of human resources at Keane, Inc., a Boston-based consultancy. The company administered Techcheck to workers with known technical proficiency, and the results closely correlated to Keane’s assessment of their skill levels.

As far as testing is concerned, analysts predict most companies will keep using their own verbal or proprietary assessment tests for the moment. Eventually, user companies will market the testing instruments they have already developed internally, Hersh says.

Continued on next page

Ryan is a freelance writer in Pascoag, R.I.
The interview is important — but is it enough?

Even for basic software applications, companies rely on an applicant’s word about skill level. The primary methods for evaluating software proficiency include:

- Interview only: 47%
- Reference checking: 26%
- Taking a test: 8%
- Other: 19%

Bookman Consulting, Inc.
New York
(212) 819-1955

Teckchek is an expert systems-based tool that includes proficiency tests for more than 70 products, some of which are highly specific. For example, there are eight versions of the Cobol test but for languages that are generic and portable, such as C, there is only one version.

The tests keep score by weighting each question’s complexity. All test takers start at a middle level, and as they progress, the questions become easier or more difficult based on the takers’ ability.

As an expert system, Teckchek weights questions and answers several ways. For example, a multiple choice question might ask: “Which of the following states are in the U.S.?” New York, South Dakota, Washington, D.C., Puerto Rico and Tokyo are then listed as possible answers. To get full credit, the test taker must answer New York and South Dakota. If he selects Washington, D.C., or omits one of the other states, credit is cut from his score. If he selects Tokyo, he loses more points than if he selects Washington, D.C. “We don’t tell you how many answers to pick, but the [wrong] answer of Tokyo would outweigh your correct answer of New York,” says Harvey Bookman, president of Bookman Consulting.

Bookman contracts with programming experts in 15 states who work on developing and reviewing the tests, which are continuously updated. Vendors are also often asked to review tests that specifically relate to their products, he adds.

Test questions, which must be answered in 45 to 60 minutes, are based on several factors: practical experience, technical understanding and necessary knowledge. Other questions relate to complex code to assess how deeply the test taker can think and whether he has actually used the product.

Scores, ranging from 0 to 40, are based on the level and complexity of questions and answers. For example, a score of 23 indicates a user is fully proficient, Bookman says. “There are a lot of egos in programming. Everyone thinks he’s great, but the average mark is 16 to 17.”

Bensus, Inc.
San Francisco
(415) 902-1104

Skills Management System: Does not test skills. Rather, it adds in creating development and training plans to help workers build skills. Can also maintain database of employee skill levels.

Price: Depends on number of licenses; from $2,000 to $70,000 for a multidepartment license.

Computer Training & Support Corp.
Livonia, Mich.
(800) 884-2872

Skills Assessment Tests:
- Assesses skill levels on a variety of applications. Evaluates training required, success of training programs and ensures proper placement of employees for software training. Allows multiple users to take tests simultaneously.

Price: From $199 to $255 for single-user licenses; $30 per test for network versions; $785 for training administrator versions.

Individual Software, Inc.
Pleasanton, Calif.
(800) 822-3022

Skill Assessment Software:
- Assesses skill level for word processing, spreadsheets, database, electronic-mail and graphics applications. Software can be used to determine training requirements or measure course content retention. It is also integrated into the company’s computer-based training software.

Price: From $89.95 for single-user license; up to $2,375 for network version of training suite package.

Know It All
Philadelphia
(800) 903-6964

Prove It! Testing Software:
- Helps verify software proficiency for most popular software applications. Tests feature 25 questions and can be completed in 15 minutes. Results are automatically scored and printed.

Price: $399 for individual tests; pricing varies for packages and starter kits.

Park City Group
Park City, Utah
(801) 645-2105

ActionForce: Incorporates computer-based training and testing for new employees; provides security measures that prevent employees from memorizing test programs. One module facilitates hiring people who perform with honesty, high sales and service productivity and longevity.

Price: Varies based on number of user sites and hardware.

SHL Key Systems, Inc.
Columbia, Md.
(410) 290-2250

Assesses knowledge of operating systems, spreadsheets, word processing, databases, desktop publishing and especially expert systems software such as Microsoft Corp.’s Mail 2.0. Used to assess appropriate training levels and determine course content retention.

Price: Modules start at $850; up to $2,495 for network version for one to five users; site licenses available from $6,000 to $32,000-plus.

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As the nation’s largest full-service provider of procurement, maintenance and support services, ComputerLand has opportunities for experienced professionals to lead the way in our North Carolina offices. We are currently seeking:

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- Systems Engineers
- Network Engineers/CNE LAN Administrators
- Data Comm Technicians
- Installation Technicians
- Desktop Support Specialists
- Help Desk Analysts
- Sales/Marketing Representatives

We offer excellent compensation and paid benefits. Please indicate your preference for our Raleigh, Greensboro, Winston-Salem, or Charlotte location.

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Dept. CW
P.O. Box 1403
RTP, NC 27709
Fax: (919) 460-5273

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CONSULTANTS Immediate Interviews MAINFRAME

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SOFTWARE DEVELOPMENT
Foster City, CA

Candidates should have a BS, MS, or Ph.D. in Computer Science or a related discipline and 5-7 years software development experience encompassing several of the following disciplines:

- C++ (MS Visual C++ preferred)
- Networking
- Distributed Computing
- SQL/Relational

Software Engineers are advised to have Unix, Windows, outline and relational database experience. Perform object-oriented analysis and design as well as systems analysis and design for prototyping and system conversion. Develop and implement database applications and an object-oriented model. Experience with C++, Unix, Windows, Object-Oriented Analysis and Design, and Computer Science as well as two years experience as a Software Engineer is required. Prior experience must include work as a team member and as a software engineer designing C++, Unix, Windows, Object-Oriented Analysis and Design, and Computer Science. Experience in building and installing large-scale software systems is preferred.

SOFTWARE INSTRUCTORS
Waltham, MA

Candidates should have extensive teaching experience in a corporate setting along with a thorough understanding of computer application programs. Specific experience with databases/networking, material, management/planning and/or financial applications would be beneficial. Experience utilizing C++, IPMD, Kernel, and UNIX is required. Prior experience must include work as a team member and as a software engineer designing C++, Unix, Windows, Object-Oriented Analysis and Design, and Computer Science. Experience in building and installing large-scale software systems is preferred.

SYSTEMS
Positions available throughout the U.S.

Our R/3 System utilizes relational database technology and runs on UNIX and other Open Systems with support for front-end running MS Windows, OS2, and MVS. We seek "hands-on" professionals with experience in the following:

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- UNIX System Administration
- Systems Analysis
- Networking

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Computerworld's Total Audience by Job Function

<table>
<thead>
<tr>
<th>Function</th>
<th>Total Audience</th>
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<tbody>
<tr>
<td>Information systems management &amp; staff</td>
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<tr>
<td>Readers in user departments &amp; areas</td>
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<tr>
<td>Sales/marketing &amp; product management</td>
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<td>Engineering management</td>
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<td>Corporate management</td>
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<tr>
<td>Other</td>
<td>22,744</td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>585,423</strong></td>
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Computer Careers

CONSULTANTS

What is the most positive aspect of your job?

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Fax 804-486-0816 (Dept. 195D)

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SOFTWARE ENGINEERING - design, developing, & supporting applications software for clients, including some related exp. using each of the following: UNIX, COBOL, MVS, and DB2. Requires a minimum of 3 yrs. exp. Send resumes to: 7310 Woodward, Detroit, MI 48202 & include Ref #. Employer Paid Ad.

S/A - Unix - C/C++ - RDBMS $60K

Tandem S/A - P/R $50K

MVS, and MicroFocus COBOL. Requires a minimum of 3 yrs. exp. in the job offered or two yrs. related exp. for a leading automobile manufacturer; redesign existing programs after acquisition of a major competitor. Requires a minimum of 3 yrs. exp. in the job offered or two yrs. related exp. for a leading automobile manufacturer; redesign existing programs after acquisition of a major competitor.

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**Case Programmer/Analyst**

**Qualifications:** Bachelor's degree, effective written and oral communication skills, and five years of experience in information technology services, including demonstrated proficiency with basic and advanced systems administration for Netware, and at least four years of successful micro systems and Novell-based LAN systems background.

**Primary Duties:** Install, maintain, custom document the LAN system, and serve as liaison in resolving LAN-related hardware/software performance issues, perform order close deadlines with minimal supervision.

We offer an attractive salary plus outstanding benefits such as health/dental/life insurance, on-site child care, fitness center, parking, smoke-free work environment and much more.

If you meet the indicated requirements and are firmly committed to excellence, please send your resume to: Marilyn A. Thomas, Assistant Personnel Director, The State Teachers Retirement System of Ohio, 275 East Broad Street, Columbus, OH 43215-1730.

The State Teachers Retirement System of Ohio

**Computer Programmer/Analyst**

**Language:**

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**Front-End Tools:**

- Visual Basic, PowerBuilder, Visual C++

**Languages:**

- C/C++, XWindows/Motif.; Regs

**Consulting:**

- Sonal database, installing database for real-time, on-line, determining feasibility, costilig and data transfer into ORACLE; determining database for DMS, including equipment and environment reconfiguration, staffing, and testing.

**Qualifications:** Bachelor's degree, strong project management skills and six years of experience in information technology services, including demonstrated proficiency with basic and advanced systems administration for Netware, and at least four years of successful micro systems and Novell-based LAN systems background.

**Primary Duties:** Install, maintain, custom document the LAN system, and serve as liaison in resolving LAN-related hardware/software performance issues, perform order close deadlines with minimal supervision.

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CTG - Northeast Region Sourcing Center
6700 Quaker Bridge Rd., East Syracuse, NY 13057-9114
Phone: 800-272-5622
Fax: 800-586-5274.

For information about opportunities nationwide, contact the Regional Sourcing Manager nearest you:

**New York City/New Jersey**
- Oracle V7 DBA - HPX Sys.
  - PowerBuilder, CICS, DB2, MS
  - Visual Basic, C, C++, Smalltalk

**Boston**
- Oracle, Forms
  - PowerBuilder

**Buffalo**
- Lotus Notes Admin., Novell

**Danbury**
- PowerBuilder, Sybase

**Hartford**
- Lotus Notes, PowerBuilder, DB2

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Nationally, the NACC consists of 550 member firms in 34 regional chapters. Each member of the At-Large Chapter has established themselves through individual and ethical business practices. By being a member in the NACC, we are committed to promoting and maintaining these principles. We welcome the opportunity to establish business relationships with consultants, client companies and service organizations who embrace the business principles set forth by the NACC. Companies adopting this advertisement include:

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- Programing
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- Raman
- RBS
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- Techsource
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- YS
- Z

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Copies of your resume will be circulated promptly to all of the 55 listed NACC member companies. Any company that is interested will contact you individually for further discussions.

WHO WILL NOT RECEIVE YOUR RESUME?

Under NACC's ethics code, no member company may show your resume to its clients without your express permission; your confidentiality is protected. Please note some of the technical requirements on the side panel and if you feel you are qualified, please send one copy of your resume to:

NACC Dept. CW 200
Member Services
589 Fifth Avenue, Room 701
New York, NY 10017-3663
email: msci@nacc.org

Computer Careers
**Programmer Analyst (2 positions)**

Form: 513995

Lots, Inc. is seeking a Programmer Analyst to design, develop, and implement computerized business applications to meet the needs of our clients. The candidate must have a minimum of 3 years of related experience in application development and be familiar with IBM mid-range systems. The ideal candidate will have knowledge of COBOL, CICS, and DB2 and be experienced in the development of client/server applications. The position offers a competitive salary and benefits package, including comprehensive health and dental insurance, a 401(k) plan, and opportunities for professional growth.

**Software Consultant—Software Engineering**

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**Systems Engineer**

San Francisco, CA

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**Mechanical Engineer**

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**Software Developer**

San Diego, CA

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**Computer Scientist**

Dallas, TX

Our client, a leading technology company, is seeking a Computer Scientist to design, develop, and implement software solutions using Object-oriented programming techniques. The candidate must have experience in software development using languages such as Java, C++, and Python. The position offers a competitive salary and benefits package, including comprehensive health and dental insurance, a 401(k) plan, and opportunities for professional growth.

**Software Engineer**

Chicago, IL

Our client, a leading technology company, is seeking a Software Engineer to design, develop, and implement software solutions using Object-oriented programming techniques. The candidate must have experience in software development using languages such as Java, C++, and Python. The position offers a competitive salary and benefits package, including comprehensive health and dental insurance, a 401(k) plan, and opportunities for professional growth.

**Data Analyst**

Miami, FL

Our client, a leading technology company, is seeking a Data Analyst to design, develop, and implement software solutions using Object-oriented programming techniques. The candidate must have experience in software development using languages such as Java, C++, and Python. The position offers a competitive salary and benefits package, including comprehensive health and dental insurance, a 401(k) plan, and opportunities for professional growth.

**Senior Software Developer**

San Francisco, CA

Our client, a leading technology company, is seeking a Senior Software Developer to design, develop, and implement software solutions using Object-oriented programming techniques. The candidate must have experience in software development using languages such as Java, C++, and Python. The position offers a competitive salary and benefits package, including comprehensive health and dental insurance, a 401(k) plan, and opportunities for professional growth.
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We're seeking people with experience in the Telecommunications Industry with a Bachelor's degree or 6+ years of consulting experience, and extensive management consulting project management experience. Experience includes business process redesign, business process modeling, data dictionary validation, and leading re-engineered processes with IT and change management is also required. You should also have experience in business strategy formulation, business process planning, modeling, testing, and the application of information systems and technology for competitive advantage. Solid experience in the Telecommunications Industry, wireless or wireline, is essential. You must have excellent communication and interpersonal skills. Positions are available in FairFax, VA and require extensive travel.

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At American Management Systems, we look at people not only as the skills they currently possess, but also for how they'll fit into the AMS picture for years to come. We invest in our employees by offering state-of-the-art training courses, constantly searching out new and exciting opportunities to stretch their abilities, and encouraging the development of a solid, thriving career.

Current positions within our Telecommunications Industry Group offer candidates the opportunity to contribute their expertise in today's advanced technology industry — TELECOM MUNICICATIONS! Our clients are leading telecommunications firms who are shaping the future, they have turned to us for our software and systems expertise. That's where you come in.

We have immediate opportunities available in Fairfax, VA, New Haven, CT, Birmingham, AL, and Western Europe. All positions may require domestic and international short and long term travel.

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SMAITZ APPLICATION PROGRAMMERS: We are seeking programmers to join our large client's staff of developers and programmers. You must be a motivated self-starter and be interested in learning, and excellent communication skills. Positions are available in New Haven, CT and Fairfax, VA.

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"What should you keep in mind when buying client/server development tools?"

**BILL SCHWARTZ**
Senior analyst, Roseville Telephone Co., Roseville, Calif. Uses: Bachman Information Systems, Inc.'s Ellipse

"Always try it before you buy it. We took 14 months to decide on a tool, and the time was well worth it. [Products] ranged from very cheap to very expensive, but they all roughly did the same things. We established a lab with different databases, different hardware platforms for the clients and servers and several different development tools. We looked for weaknesses in the product.

"We didn't have to spend as much setting up the lab as you would think because the vendors were cooperative about loaning products. Even if they didn't, you're going to spend millions on client/server, and you have to get it right."

**DURAN GRAHAM**
Manager of micro development and support, administrative information services, Columbia University, New York. Uses: ParcPlace Systems, Inc.'s VisualWorks, eying Microsoft Corp.'s upcoming Visual FoxPro.

"Pick your tools after you've explored your issues. One consideration is a vendor's training and support. Another is where you want your organization to be. We needed an object-oriented tool because we need to be in that environment in a university setting. Also, consider your staff. There will always be staff transitions, but you don't want to introduce unnecessary complexity. We chose the tool [that] would be the most accessible based on our unique skills.

"Establish tactical and strategic solutions. For instance, we started using [a screen scraper] to put a happy face on complex instruction and computing applications. That was a tactical solution to an immediate problem. It gave us access to a primitive client/server-type of environment and helped us gain consensus that this was a direction in which we wanted to go. A strategic issue would be one that takes advantage of the campus Fiber Distributed Data Interface backbone and provides interoperability of data servers, application servers and so forth."

**MARVIN WICHER**

"We chose the product that we thought would be easiest to use. The other issue was that you want to keep costs down. We think we found a solution that will help us distribute our software more cost-efficiently. For instance, we wanted to know how little we could charge for a runtime license. With [PowerBuilder], we can produce a runtime version at minimal cost."

**ROBERT SPECKE**
Executive vice president and chief information officer, Chevy Chase Bank, Chevy Chase, Md. Uses: Micro Focus, Inc.'s Workbench.

"Your client/server foundation is as important as the tools themselves. We looked first at our infrastructure from 20,000 feet. We have three server platforms—OS/2, Unix and MVS—strong middleware and a sound network. We know where 70% of our applications are going to reside. Once we had the infrastructure in place, we had to choose an architecture for application development. We chose the Open Software Foundation's Distributed Computing Environment, which makes use of remote procedure calls and remote messaging, so we had to make sure the tool we chose dealt with those concepts.

"Then we needed the tools for change control, problem management, configuration management and software distribution. We must have all these tools in place for global service and manage as much of it as we can centrally so that we won't have costs all over the place."

**CHUCK LEWIS**

"The most important items in client/server applications are design and architecture. Design means you can break elements of the applications into layers or tiers, and you can clearly document those layers in a design tool. Architecture means you can construct the layers in ways that make it easy to change the layers. You should look for tools that help you do these things.

"You need tools that help you record design decisions so they can then be viewed and studied by the people who have to construct the code and implement the design. Look for tools that record analysis decisions so the designers can study the requirements and figure out how to design them for client/server.

"You also need tools to construct the application that will produce code with reusable layers [such as] the data access layer, the connectivity layer, the end and validate layer and the actual visual screen. Then a construction team can take those layers and decide where they should reside — on the client or the server. You can build any part of the application with any of the tools, such as the client code in Visual Basic and the server code in C, but make sure you can marry them."

**LARRY HANECH**

"In general, we recommend looking at five things. Compatibility: Is it compatible with multiple environments? Is it compatible with your existing databases and other products? Scalability: Will you be able to continue using the tool as you grow into larger environments? Will it let you create applications that grow as you grow? Simplicity: Can you train new people to use it quickly? Affordability: The cost of the software tool is the last thing you should consider. You should ask if it is affordable in terms of the computer resources it uses? What does it cost to distribute the applications? What are the runtime costs? What kind of memory overhead does it require? Durability: How long has the vendor been around? How much money has it invested in the product, [and is it] well supported?"

Compiled by Leslie Goff, a freelance writer in New York.
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New York, NY 10128
Phone: (212) 233-1935 Fax: (212) 233-2573
Specializes in workgroup automation & customization with all flavors of Windows, including Windows 95 (Win, Excel, Access, Mail), MS BASICs (VB, WordBasic, VBA).

Computerworld March 20, 1995 112
A pair of technology stocks has been cashing in on the Internet's burgeoning growth, one by providing online services and the other by supplying hardware to Internet providers.

Netcom On-Line Communication Services, Inc. (NETC) operates a proprietary network that hooks into the Internet. By using Netcom's local Points of Presence (POP), users can access the Internet via a local telephone call. Currently, about 5000 POPs are available, with 130 expected nationwide by the end of the year.

The stock's growth will be driven by new subscribers, said Gregory Curhan, an analyst at Volpe, Weily & Co. in San Francisco, who rates Netcom a strong buy (see chart). He estimates there will be 220,000 Netcom subscribers by December, though there will not be a shortage of competition.

"On-line services are still more expensive than Internet access companies, which have a price advantage. But online services have more customers right now," Curhan said.

Ascend Communications, Inc. (ANSD), whose MAX server is in place at most Internet providers, supplies the backbone software that gives users local phone call Internet access. These servers have more customers right now," Curhan said.

Since its initial public offering listing of 13 March, Ascend shares leaped to 61 1/2 last week. "It's a no-ask price," said Charles Ronson, an analyst at Balestra Capital in New York. "On the other hand, it's a class company with top products. And if earnings don't deviate, there's no reason why they can't support it." — Tim Ouellie

### March 17 Stock Ticker

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Source: Volpe, Weily & Co., San Francisco

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## Net worth

The projected Netcom stock price, much like stock prices for paging and cellular telephone companies, is based on the number of subscribers. The price is estimated to increase by $1.35 for every 10,000 new subscribers.

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Want to enlighten your employees and dramatically improve customer service? You can do both with computer telephony integration solutions from Siemens Rolm. We can unite your computer and phone system and provide a total information delivery tool. A system that automatically handles demand spikes, staffing cycles or language barriers. And gets customer calls and information to the right employees. So every department is updated, informed and ready to make smart decisions with every call. Our CTI solutions at the host, LAN and desktop level bring voice and information technology together to benefit every single department in your company. Call us for an interactive demo disk on ROLM call center solutions. It includes a cost-justification model that will shed some light on how much can be saved by implementing our CTI solutions.

FOR MORE INFORMATION, GIVE US A CALL AT 1-800-ROLM-123, EXT. 36.
**Supermarket chain shelves object plans**

CONTINUED FROM PAGE 1

Kash ’n’ Karry will continue to use a 2-year-old object-based warehousing application and another object-based promotional pricing system already in production. Both systems run on Sun Microsystems, Inc. SPARC workstations and servers, which sources said will be turned over to GSI as part of the outsourcing deal.

Beyond these systems, however, “we’re not adding any new [object-based] systems or really focusing on them,” Mathys said.

Instead, Kash ’n’ Karry will work with GSI to roll out a new mainframe-based procurement system and store-based POS systems to replace 20-year-old proprietary technology developed when Kash ’n’ Karry was still part of Lucky Stores, Inc., another grocery chain.

Kash ’n’ Karry now has 132 stores.

**Initiative thrust aside**

Earlier this year, Kash ’n’ Karry had been evaluating a procurement package from IBM-owned Worldwide Chain Store Systems, Inc. in Chicago, according to Ben nie Van Overbeke, Kash ’n’ Karry’s former chief information officer.

Like the others, Van Over beke characterized Kash ’n’ Karry’s decision to arrest object development as “basically financial.”

It is a decision other IS executives in the industry can well understand.

“Object [technology] is certainly something we’re interested in, but we haven’t been able to get there yet. I don’t know very many grocery chains that have,” said Bob Bruy, vice president of IS at Furr’s Supermarkets, Inc., a 73-store chain in Albuquerque, N.M.

“Most grocery chains are struggling just to get applications out the door,” he added. Still others, Furr said, opt to outsource complex projects for much lower costs, but to raise cash by selling equipment.

**Lease Plan U.S.A. re-engineers its business.** See page 67.

**Reliability key**

Cinda Hallman, vice president of global IS at Du Pont, said she expects the company to continue using SAP AG’s R/2 mainframe applications suite indefinitely to support its core operations. Du Pont is also installing SAP’s client/server offering, R/3, where it makes sense to have a more interactive, graphical system.

“We anticipate that, for the foreseeable future, we will be using R/2 and R/3,” Hallman said. “We believe that with our volume of transactions we need something like R/2 that is more reliable, more proven and predictable.”

**Speaking in K n’K tongues**

Kash ’n’ Karry adopted object technology to gain business advantage through the use of flexible systems based on reusable code.

A team of talented IS staffers mastered the K n’K Language, a customized set of C++ object-oriented code, to build Unix applications that ran on Sun servers and workstations. A Sun SPARC server application development package from tiny Oberon Software stopped short in 1994 when Oberon’s Japanese investors ordered a changeover from Unix to Windows technology.

The biggest object-oriented production application is running in a return-process-
Telecommunications fighters for IS

Between now and 2000, telecommunications companies and computer companies are going to be moving on to similar turf and, in many cases, competing for the same turf. It may prove surprising how adept the telephone companies become at providing some common computer services. Thus, competition means the IS manager will face choices, and some will lower his costs and simplify his life.

Today, an early adopter of Lotus' Notes can install the application throughout a company, train users and support many workgroups' efforts to create and edit shared documents.

Tomorrow, a Notes user will be able to do the same thing within a company and with far-flung subsidiaries, outside suppliers, partners and consultants. But in the future, Development in the application and train and support these remote users, the IS manager will be able to sit back and let AT&T download the application from servers on its long-distance network and consultants. But in the future, internal network and application services will be purchased off servers on an external network rather than installed internally and maintained by contractors.

In some ways, the telephone companies, with their strengths in complex network monitoring and billing systems, are in a better position to supply mass computer services than computer companies. IBM, AT&T, Digital and Sun want to place advanced equipment in door. But in the future, internal network and application services will be purchased off servers on an external network rather than installed internally and maintained by contractors.

What if the LAN was available like the dial tone on your phone? You’ve noticed that the phone system works during a power outage. What if you could have been guaranteed that kind of reliability for your LAN at a lower price from a telecommunications supplier?

Telecommunications suppliers are likely to become software services suppliers because much of the analog phone network has been converted to digital switches. Digitized data, including complex graphics and video, now move around the long-distance network as easily as voice, although the last mile to the customer is often lacking full digital capacity.

Pacific Bell is planning on bringing integrated services Digital Network (ISDN) capability to 7,400 public schools and libraries in California as a demonstration project of what full digital network services can do. In Seattle, Microsoft is asking its local service providers to make ISDN available to the company and to the neighborhoods of its employees. Such an arrangement would promote work-at-home and other decentralized work arrangements.

In effect, the digitization of the telephone network promises to continue the wave of outsourcing that saw Kodak, Xerox, Bethlehem Steel, General Electric, Pacific Gas & Electric and Delta move much of their IS functions out the door. But in the future, internal network and application services will be purchased off servers on an external network rather than installed internally and maintained by contractors.

Make that burrito an object to go

Bigger than life. Multidimensional. Instantaneous. The final battle garb. Gordon Mayer, president of rival Geoworks, said the company will soon announce Version 3.0 of Geos, its handheld operating system. Meanwhile, as General Magic's partners met last week in California to discuss ways to establish the software as a “de facto standard” in the handheld market, its rivals were donning their battle garb. Gordon Mayer, president of rival Geoworks, said the company will soon announce Version 3.0 of Geos, its handheld operating system.

Mister nice guys

Ever think you’d like the looks of Computer Associates, IBM, Lotus, Microsoft, Novell and Sybase pleading to work together for the betterment of IS-kind? The firms plan to do just that March 29 when they announce a consortium called NICOS, or New Information Industry Cooperative Endeavor. NICOS’s charter is interoperability — to improve communication among the members’ databases, tools, operating systems and systems management software, a Sybase spokeswoman said. But Sybase hasn’t set a very good example: Oracle wasn’t invited to play.
Only AS/400 Advanced Server lets you run client/server applications 50% faster than HP® UNIX® and Compaq®/NT® PC LAN systems.

(If only all your investments could pay off so quickly.)

(If it isn’t as fast, it isn’t AS/400.)

*Source: Performance Benchmark for Client/Server Application Environments, Fall Comdex 1994.
Battery life shines in Dell's Latitude

By Michael Fitzgerald and Paul Gillin

We spent several months on the road and at home using Dell Computer Corp.'s Latitude XP color notebook and developed a strong affection for the machine.

The Latitude XP is the Charles Lindbergh of its class. It makes the trip with power to spare. What's more, the lithium ion battery charges up in a jiffy.

The keyboard is solid and usable, and the price is outstanding for a notebook of this class.

Overall, Dell did a good job with the small details. For instance, the battery status gauge, an icon that tells you how much battery life is left, is always on display at the bottom of the screen.

Once again, Dell's Latitude notebooks are making headlines. Thanks to battery life that's got the critics working overtime.

The Latitude XP gives you extended hours of power by combining lithium ion battery technology with our exclusive power management software. While our value-model Latitude has a removable diskette drive which can accommodate a second NiMH battery.

And Dell's engineering makes this extra time comfortable. With details such as a centered trackball, an ergonomic palm rest, and a high-resolution screen.

Call us and ask how your business can work directly with a Dell National Account Team. Or ask us to arrange a 30-day, money-back trial of the Dell Latitude. You'll get a notebook that lasts.

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