With so many year 2000 tools out there, finding the right one is the challenge. Page 67

YEAR 2000 REMEDIES

If it sounds too good ...  

▶ Is Cobol crash course a quick fix?  

By Julia King

FORGET ABOUT GOING back to college or signing up for months of formal training. Three weeks and $350 is all it takes for a novice to learn Cobol, according to the creator of a new study-at-home course specifically designed to help ease the year 2000 skills crunch.

The extent to which the course can assist with year 2000 work is the subject of much debate. Someone with "zero experience with programming" could easily learn Cobol by the end of the course, said Mo Budlong, author of Teach Yourself Cobol course, page 95.

▶ Silver bullet pitched, dissed

By Thomas Foffman

A SMALL CALIFORNIA developer claims it can analyze all your Cobol source code, automatically insert four-digit fixes to two-digit date fields and convert millions of lines of customized code in a matter of weeks for 50 cents per line.

Industry experts place the average cost of converting date-sensitive code in the range of $1.10 to $1.60 per line. That would make MatriDigm Corp.'s pricing model very attractive "if they can truly do turnkey operations," said Bill Wachel, a senior manager at the Dallas office of The Green.

ED in Depth, page 70

DOD on red alert to fend off info attacks

By Gary H. Anthas  
WASHINGTON

INCREASINGLY worried about threats to the nation's information infrastructure, the U.S. Department of Defense is likely to establish a "red team" of security experts charged with attacking U.S. computer and communications systems to assess their security.

An unpublished report by the Defense Science Board's Task Force on Information Warfare, portions of which were obtained by Computerworld, recommends that the Pentagon spend $5 billion in additional funds over the next five years to find ways to reduce the vulnerability of U.S. systems to attacks from terrorists, unfriendly states — and the odd hacker.

In addition to the special security force, the board also recommends establishing a threat assessment and warning center at the National Security Agency and an attack assessment, emergency response and recovery capability at the Defense Information Systems Agency.

Security, page 16
Bad for business

When it comes to the computer industry, the government, as usual, just doesn’t get it. The Commerce Department — that same agency whose goodwill single-handedly destroyed the U.S. flat-panel display market — announced rules on encryption last week that were supposed to address user and industry concerns about overly zealous regulations. But the rules still require users to let the government snoop in their files. It’s a bad law, and it will cripple the ability of U.S. firms to conduct electronic commerce internationally.

The rules do offer some modest concessions. Encryption products would no longer be afforded the same export status as Uzi machine guns. They’d be treated more like exotic plants. But the requirement that users give encryption keys to a trusted third party undermines the whole value of encrypted communications. Who’s going to have access to the keys? The FBI? Maybe former Olympic Park bombing suspect Richard Jewell can offer a testimonial. Never has there been a worse time to expand its powers.

The proposal reflects a basic misunderstanding of the Internet. It’s a desperate effort to regulate something that inherently can’t be regulated. U.S. companies won’t be able to sell or use encryption products overseas if foreign partners know the Feds have a key.

The rules could permit a less-restrictive country to emerge as an international clearinghouse for encrypted communications. Anyone who wants to skirt the law can use one of several services. The systems were designed to fit inside FedEx’s 19-by-19-inch standard cardboard box. The orders are made over FedEx’s proprietary networks, but an Internet version is in the works for this year.

NO MIDDLEMEN

The deal means Monorail skirts middlemen who don’t have to keep inventory. Dave Hocker, a Monorail co-founder, declined to detail the savings, but said the company wouldn’t be in business without that kind of arrangement.

“We started the company with a business model rather than a product. The notion of using FedEx was integral,” Hocker said.

Monorail is eager to see FedEx move those services to the Internet. “We dream of the day when a dealer doesn’t have to call FedEx but can just send an E-mail,” Hocker said.

FedEx also claims to be the only delivery company to let customers prepare shipping documents and request pickup via the Internet. At FedEx’s Web site (www.fedex.com), customers can fill in shipping data on a HyperText Markup Language form and print it, along with a freshly generated bar code, on a local laser printer. They can then send electronic mail to a courier to schedule pickup.

THE FIFTH WAVE

BY RICH TENNANT

Couriers deliver new ‘net services

> Online packaging-tracking systems save companies money and open doors for their customers

By Thomas Hoffman

Internet services are also helping package carriers slash support costs. Having launched its interactive Web site in May 1995 (www.ups.com), UPS now handles 30,000 online tracking requests daily, said Rakesh Sapra, manager of interactive marketing at UPS. Because it costs the Atlanta-based carrier $1 for every tracking request handled through its toll-free voice service, UPS figures the Web service saves $4 million to $6 million per year in tracking costs alone, said Tom Hoffmann, Web site manager at UPS.

Rapid return

That’s a pretty good return on the $4 million that UPS has socked into its Sun Microsystem’s Web hardware, software and personnel since it launched its first static site three years ago.

Other UPS Web applications include a time-in-transit calculator and a drop-off locator, which lets users plug in a ZIP code to locate drop-off locations. But a smaller delivery firm, RPS, Inc. — formerly Roadway Package System — has plans to introduce “pre-alerts” on the Web for cash-on-delivery packages. RPS will notify customers via Internet regarding how much an incoming package will cost at delivery and when it will arrive, said Bram Johnson, vice president of marketing and strategic planning.

“We think the Internet is life — it’s a means of providing sophisticated services to small customers that we already provide to large customers,” says RPS’ Bram Johnson.

THE SIMPLE package-tracking systems save companies money and open doors for their customers

BY THOMAS HOFFMAN

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Don't call it a safety net

Most Web sites are vulnerable to attack
By Gary H. Anthes

NEARLY TWO-THIRDS of the most popular commercial and government Internet sites are wide open to abuse by hackers, according to a recent probe of major World Wide Web sites by security expert Dan Farmer.

Farmer's findings were borne out last week when one or more hackers penetrated the U.S. Air Force's main Web site — www.af.mil — and defaced the home page with bloody images and obscene pictures.

It was the third high-profile penetration of government Web sites in recent months. The other two were the U.S. Department of Justice and the Central Intelligence Agency.

Farmer, co-developer of the controversial Security Analysis Tool for Auditing Networks (SATAN), used SATAN to surreptitiously probe 1,734 Web sites for security flaws. These might include bugs and limitations in Unix utilities such as file transfer protocol, sendmail and the Network File System.

FINDING GAPS

SATAN is an "attack scanner," one of a handful of software packages that probe networks of Unix computers searching for security flaws. It reports back information about poorly configured network services and bugs in system or network utilities. It can be a valuable diagnostic tool, but its use is condemned by some who see it as just another hacker's aid.

Farmer said few sites appeared to detect the probes. "Only three sites contacted me to inquire what was going on when I performed the unauthorized survey," he said in a post to his Web site, www.trouble.org. "They were initially suspicious, fearing a failed attack, but they calmed down after I apologized for the infraction."

Farmer said he didn't exploit the security flaws to actually break in to the Web sites. "It seems obvious from these findings that security and system administration are very difficult to perform effectively and that the latest trend of securing a host or site are ill-understood," Farmer said in his report.

But Peter Tippeit, president of the National Computer Security Association (www.nca.com) in Carlsbad, Calif., disagreed with that bleak assessment. "It's not easy to break into a site if the basics are done well," he said.

Farmer and Tippeit are both right, said William H. Murray, a University professor who specializes in computer security. Commercial interests are devoting much effort to securing transactions over the 'net via encryption but often ignore security on the PCs that send and receive the encrypted data.

An Air Force spokesman said last week that the break-in is being investigated by several agencies. "No computer hacker moves without leaving footprints," he said. "We are going to find the person who did it."

"The Air Force has had some of the best security people, and they know their sites are targets," Spafford said. "So if they are getting hacked into, that should give second thoughts to people deciding to bet their company's future on the Web."

WEB SITES PROBED BY SATAN

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<tr>
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<td>51%</td>
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<td>62%</td>
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<td>70%</td>
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</tr>
<tr>
<td>Total</td>
<td>1,744</td>
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</tbody>
</table>

Source: Dan Farmer, independent consultant, Berkeley, Calif.

Encryption conundrum

Users: New regulations may hinder commerce
By Barb Cole

On December 8, the Department of Commerce published a request for comment (www.computerworld.com) explaining what the new regulations will mean for U.S. companies which export encryption products.

User groups, including the Business Software Alliance, also loudly contested the regulation, claiming it limits their members' ability to sell encrypted software in international markets.

THIRD PARTY AT ISSUE

User groups, including the Electronic Messaging Association (EMA), are also divided.

"We are disappointed [with the regulation] because it doesn't seem to reflect our suggestions," said Victor Parra, president and CEO of the Arlington, Va.-based EMA, which has more than 50 members. The EMA tried to convince the administration that the holder of the key should be an employee of the user company. The regulation describes that person as a trusted third-party agent.

"The user community doesn't think anybody in a third party [can be] a trusted agent," Parra said.

In addition, some companies could be forced to limit their encrypted E-mail and Internet commerce transactions to domestic firms because their international trading partners will be uneasy knowing that a third party holds the encryption key, users said.

The EMA also termed as unreasonable the requirement that companies turn over encryption keys within two hours of receiving a request.

Users seem chiefly concerned that the regulations may interfere with software makers' ability to deliver encryption software and could affect the price. "If the regulation isn't acceptable to the software industry, they won't comply, and we won't have the tools we need to communicate with global trading partners," said Darwin Sharp, electronic commerce adviser at Exxon Corp. in Houston.
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Fending off the 'query from hell'

By Craig Stedman

Information systems managers are discovering a hard truth about data warehouses: Building one is tough enough, but what's really difficult is keeping it humming once users start firing queries.

The problem, according to managers with warehousing experience, is that the pools of historical data demand constant vigilance and fine-tuning as business needs change and the volume of data and end users grows. Otherwise, summary tables, indexes and projects that are supposed to speed up query response can quickly become outdated.

When that happens, complex user-written queries can go off in unanticipated directions that bypass all the built-in performance boosters. That situation — known fondly as "the query from hell" — stifles throughput and leaves end users waiting in frustration for answers to their questions.

"We started off with the queries from hell, and we learned our lessons," said Charles Net- tles, director of technology at The Data Warehousing Institute in San Francisco. The pharmaceuticals distributor now monitors ad hoc querying closely and uses software routines to block long queries and reshuckle them as off-hours batch jobs, he said.

Common problem

The difficulty of keeping things from bogging down is "the most frequent complaint I hear" about data warehouses and their smaller data mart brethren, said Alan Paller, director of research and education at The Data Warehousing Institute in Bethesda, Md.

That degree of difficulty is driven upward by rapid growth in the number of end users who have access to a warehouse, Nettles said. At 121 warehousing sites surveyed by the institute in 1996, the average number of users jumped from 16 to the outset to 54 within six months. 99 after a year and 235 after two years, he said.

To avoid surprises, warehousing managers must keep close tabs on the business issues facing end users so that most queries can be predicted and planned for in advance. Nettles and others warn that this work is a constant job of reworking the guts of a warehouse as needs change.

To avoid some of the need for constant upkeep, the Texas Department of Public Safety's traffic law enforcement division in Austin wrote software that maps forward queries to appropriate indexes in its data warehouse. But Larry Joseph, a consultant who led the project, cautioned that doing so added a big upfront burden: Designing and building the 80-Gbyte ware-house required 7.5 person-years of work and took 30 months to complete.

On an ongoing basis, all the summarization, indexing and pruning can increase the time needed to feed new data into a warehouse, said Wayne Eckers- son, an analyst at Patricia Sey- bold Group in Boston. But ware- house managers face ever-smaller load windows [CW, Nov. 25].

Such complications can make maintaining a warehouse an ordeal, said Chris Courim, manager of systems development for business operations at MCI Communications Corp.'s mass-markets unit in Denver. He runs a 60-Gbyte data mart on Sybase, Inc.'s Sybase IQ database.

"You can schlep a lot of data into a data mart pretty easily."

"You can schlep a lot of data into a data mart pretty easily," Courim said. "But once users get in and have a chance to swim around, that can only generate more work. It's a living and breathing thing, and it kind of never dies."

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That degree of difficulty is driven upward by rapid growth in the number of end users who have access to a warehouse. Fuller said. At 155 warehousing sites surveyed by the institute in 1996, the average number of users jumped from 16 at the outset to 44 within six months, 99 after a year, and 55 after two years, he said.

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By Craig Stedman
FASTER DATA WAREHOUSING

Got mountains of data in a dozen different formats that you need to select, reformat, aggregate, and sort? SyncSort™ is optimized to do the job—fast. Use it with more specialized warehousing tools to slash your processing time.
To arrange a **free trial**, call us at (201) 930-8200. Or if you’d prefer more information first, we’ll send you a copy of "Six Data Warehouse Tasks Made Easier with SyncSort™."
Spyglass seeks peek at Microsoft books in royalties dispute

Audit to determine licensing payments to Spyglass for Internet Explorer browser software

By Justin Hibbard

SPYGLASS, INC. last week said it will audit Microsoft Corp.'s records to determine whether Microsoft has paid royalties it owes for distributing licensed Spyglass software used in Microsoft's Internet Explorer browser.

Spyglass officials said the company doesn't expect to recognize any revenue from Microsoft during the first fiscal quarter ended Dec. 31, 1996, except for the $400,000 minimum quarterly payment due under the companies' license agreement.

Analysts familiar with the agreement estimated that in addition to the $400,000 minimum payment, Microsoft is required to pay Spyglass an additional 40 to 90 cents in royalties for each unit shipped.

WAITING FOR REPORT
Spyglass officials said the company can't determine the amount of royalties Microsoft owes because Microsoft hasn't filed a royalty report stating the number of Internet Explorer browsers it has shipped.

Spyglass also announced that it expects to report revenue of about $4 million and a loss ranging from 10 to 13 cents per share for the quarter. Those figures fall below analysts' expectations.

"The shortfall is going to come directly from that license — the amount Microsoft was supposed to pay Spyglass could have earned a maximum of $1.5 million from Microsoft during the quarter, she said.

"The difference between $400,000 and $1.5 million is almost pocket change to Microsoft. So I'm not sure Microsoft understood the difference on Spyglass," Simon said.

But even if Microsoft had paid Spyglass $1.5 million, Spyglass' revenue for the quarter still would have missed Simon's forecast by $500,000.

NUMBERS IN DISPUTE
A spokeswoman for Microsoft said the company hasn't yet determined how many browsers it shipped last quarter. A Spyglass spokesman said Microsoft has provided a preliminary estimate, and Spyglass disputes the numbers.

The Microsoft spokeswoman said Microsoft has already paid "several million dollars" in advance royalties to Spyglass, and Microsoft believes it is "several million dollars ahead" on its royalty payments.

Officials at both companies weren't available to comment. More on the air

Netro isn't the only vendor looking to heat up the 38-GHz radio frequency band using microwave technologies.

Another start-up, WinStar Communications, Inc. in New York, has snapped up radio frequency licenses that will let the company offer microwave links at speeds of up to 45M bit/sec. in more than three dozen cities in the next few years.

WinStar, which already offers microwave services in New York, provides all the pieces of the system for users — the small, rooftop microwave dishes and the spectrum needed to create the wireless link.

Although many carriers have focused on lower frequencies because they support longer-distance links, few have entered the 38-GHz band because it supports links of up to five miles at best.

"That's obviously not enough reach to link far-flung offices, but it's an excellent approach to link campus networks in a metropolitan area or to bypass your local carrier to reach a long-distance network," said Daniel Bilere, president of TelChoice, Inc., a consulting and research firm in Verona, N.J.

Bell Atlantic Corp. was the first big-time carrier backer of WinStar. The two companies recently agreed to connect their networks in several of the states served by the regional Bell holding company.

WinStar's Wireless Fiber Service offers users speeds of 45M bit/sec. — usually only supported on fiber-optic cables — over the microwave links. The company holds 38-GHz licenses in 41 of the top 45 U.S. markets, covering more than 110 million people.

Upon completion of pending acquisitions, WinStar will have licenses in 46 of the top 50 markets, covering roughly 170 million people. — Bob Wallace

Start-up cooks up ATM over microwave

By Bob Wallace

A START-UP backed by Cisco Systems, Inc., AT&T Ventures and other companies this week will announce networking equipment that for the first time lets users send Asynchronous Transfer Mode (ATM) traffic over microwave radio links.

Computerworld has learned.

Netro Corp. in Santa Clara, Calif., has developed devices that enable users to connect sites up to five miles apart for high-speed data, video and voice transmission without the hassle of laying cable.

That is especially important in big cities, where it is often impossible to dig to install cable. Users need only install pizza-size microwave dishes atop their buildings and sign up with a radio frequency service provider for the bandwidth to form the wireless link.

ROADBLOCKS
But there are potential stumbling blocks as well. To establish a microwave link, users must have a direct line-of-sight path between locations, which can be difficult because trees and tall buildings often stand in the way. And there's the five-mile limitation.

ATM users are excited about Netro's efforts.

"This represents an important step in boosting use of ATM in the wide area because it uses long tried-and-true microwave technology," said Bill Horst, chief of the U.S. General Services Administration's communications branch in Philadelphia, which uses ATM.

"This will enable sites that don't have access to buried cable, or where burying cable is too expensive, to still be connected to ATM backbone networks. I'd expect ATM users to implement this approach quickly," Horst said.

Other ATM users were equally enthusiastic.

"I see this as having strong potential for users that have a fiber-optic backbone network but have a site two miles away that they need to tie in," said John Boyd, former chief technologist at Northeast Utilities, Inc. in Berlin, Conn., and now an executive at the company's Mode/1 Communications unit.

"It's much easier than wiring those few miles. And lots of ATM users have been looking for a more flexible approach."

About 500 to 1,000 large organizations use ATM, according to Tom Noile, president of CIMG Corp., a consulting and research firm in Voorhees, N.J.

One user concern is whether corporations that already use microwave systems for other purposes can affordably tweak them to support wireless ATM.

"It'd be far less attractive if users had to buy separate equipment just to support ATM," Horst said.

A Netro spokesman confirmed plans to introduce the company and products this week but wouldn't give details.

TRICKY TRANSMISSION
To date, ATM traffic has run over cable because wireless is a noisy medium that sometimes loses information during transmission and can be interrupted by rain or snow.

"If an ATM cell was dropped, the entire WAN link would be corrupted or lost," one source said. "What Netro has done is develop an error-correction scheme and [digital] technology that eliminates microwave's performance problems."

The Netro products use the 38-GHz radio frequency band, which is good and bad. It is good because the band is very lightly used, but it can be bad because the higher frequency means shorter transmission distances.

"Netro isn't the only vendor looking to heat up the 38-GHz radio frequency band using microwave technologies. Another start-up, WinStar Communications, Inc. in New York, has snapped up radio frequency licenses that will let the company offer microwave links at speeds of up to 45M bit/sec. in more than three dozen cities in the next few years."

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Spyglass also announced that it expects to report revenue of about $4 million and a loss ranging from 10 to 13 cents per share for the quarter. Those figures fall below analysts' expectations.

"The shortfall is going to come directly from that license — the amount Microsoft was supposed to pay Spyglass could have earned a maximum of $1.5 million from Microsoft during the quarter, she said.

"The difference between $400,000 and $1.5 million is almost pocket change to Microsoft. So I'm not sure Microsoft understood the difference on Spyglass," Simon said.

But even if Microsoft had paid Spyglass $1.5 million, Spyglass' revenue for the quarter still would have missed Simon's forecast by $500,000.

NUMBERS IN DISPUTE
A spokeswoman for Microsoft said the company hasn't yet determined how many browsers it shipped last quarter. A Spyglass spokesman said Microsoft has provided a preliminary estimate, and Spyglass disputes the numbers.

The Microsoft spokeswoman said Microsoft has already paid "several million dollars" in advance royalties to Spyglass, and Microsoft believes it is "several million dollars ahead" on its royalty payments.

Officials at both companies weren't available to comment.
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Lotus pressed for richer Web tools

By Barb Cole

ALTHOUGH THEY won't be as steamed as in years past, users will still have some bones to pick with Lotus Development Corp. at Lotusphere '97 later this month.

Users will be pushing Lotus for richer World Wide Web development tools and a clearer picture of the company's long-term client strategy.

But the mood at Lotusphere, which starts Jan. 23 in Orlando, Fla., is expected to be upbeat compared with last year's conference, which focused on the long-awaited migration from Notes Release 3 to Release 4.

SOFTWARE NEEDS
Lotus has created a lot of momentum around its Domino Web server. Now it must continue to improve the software so business partners and large companies can easily build Domino-based Web applications, users said.

"Domino [4.5] is a good Web development environment now, but it needs work," said Ken Norland, a consultant at Ernst & Young, which just completed its worldwide Notes rollout.

Overall, Lotus has done the job this year, said Michael McGhee, director of administrative computing at the University of Nevada in Las Vegas, which has a campuswide Notes license.

The chief issue for most users is that key features of Domino aren't supported by Web browsers. That means developers can't write one application to work for a mix of Notes clients and browsers. It also makes it hard to port existing Notes applications to the Web environment, users said.

"To create Web apps today around Domino, you need several sets of expertise," said David Marshall, a vice president at Patricia Seybold Group in Boston. the LotusScript development language, Hypertext Markup Language and possibly Java. Marshall said attendees will be looking for a sense of "how aggressive Lotus will be at filling in the pieces that Notes clients can do but browsers can't."

"The next step for Lotus is providing more Notes functions to the Web world," said Motti Goldberg, chief architect at US West Communications, Inc. in Denver, which has 15,000 Notes seats and is deploying Domino as the platform for a set of customer service applications.

Lotus officials are expected to talk more at the conference about plans to support Java and roll out a Java class library for accessing Domino back-end services.

Lotus officials said the company will add load balancing for Web browser clients in a future release of Domino Advanced Services, but they declined to specify when.

Encryption transition

The National Institute of Standards and Technology (NIST) in Gaithersburg, Md., last week published draft requirements for a federal encryption standard. Based on an advanced encryption algorithm, the standard would replace the Data Encryption Standard (DES) algorithm. Because of the huge installed base of DES-based hardware and software, NIST officials said, changing standards would require "a multyear transition."

Online data mart forum

The Data Warehousing Institute in Bethesda, Md., is setting up an online discussion forum for information systems managers who are building or running data warehouses and data marts for companies in the health care industry. Other industry-specific forums will follow shortly, the institute said. Institute members can subscribe by sending electronic mail to tdwi@clark.net.

A switch for Intel

Intel Corp. plans this week to enter the 10M/100M bit/sec. switch market, sources briefed by the vendor said. The switches, to cost about $600 per port, support existing 10M bit/sec. connections now and will support 100M bit/sec. links when needed. Bay Networks, Inc. recently detailed plans for a similar switch due in the first quarter at a price of $550 per port.

Sahara bought for $212M

Network switch provider Cascade Communications Corp. in Westford, Mass., last week bought privately held Sahara Networks, Inc. for $212.8 million. Sahara, in Wallingford, Conn., is a developer of high-speed broadband access products. With Sahara's products, Cascade will offer carriers the option of providing high-speed voice, video and data applications on public Asynchronous Transfer Mode networks.

Fast modems pass test

U.S. Robotics Corp.'s 56k bit/sec. modem, the Xa, is due to reach the market by the end of the month, the Skokie, Ill., company said last week. The modem has been tested in 87 area codes in the U.S. In a "high percentage" of those tests, the company recorded only one analog-to-digital conversion. Additional conversions reduce modem speed. U.S. Robotics declined to provide a specific percentage. U.S. Robotics, which is expected to be the first to market with the 56k bit/sec. modem, hasn't announced pricing.

HP ships PC servers

Hewlett-Packard Co. in Palo Alto, Calif., plans to announce a new low-end PC server aimed at small and midsize workgroups. The NetServer LD Pro will be Pentium Pro-based and features 32MB of system memory, hot-swapable disk drives and up to 27G of storage. The NetServer LD Pro Model 1 with a 180-MHz Pentium Pro processor and 32MB of Error Checking and Correcting RAM is expected to be priced starting at $5,399. It is shipping now.

Standardizing Java

In a move to standardize the Java language, a group of software companies will meet with the International Standards Organization (ISO) this week. Sun Microsystems, Inc. will host the meeting at its Cupertino, Calif., headquarters at the behest of the ISO, said Lisa Poulson, a spokeswoman for JavaSoft. The meeting is an early step in Sun's move to relinquish some control of its increasingly popular Java technology.

SHORT TAKE Bell Atlantic Nynex Mobile recently announced it has acquired the North Carolina Cellular Limited Partnership's Rural Service Area cellular business for an undisclosed amount.
Oracle7 Parallel Server: Almost 3 Times Faster than IBM DB2/Parallel Edition

The TPC-D is the industry standard benchmark for measuring query performance on large complex databases. On the fastest hardware that IBM makes, the RS/6000 SP, running against an identical 300 GB data warehouse, Oracle7 Parallel Server’s TPC-D performance was almost twice as fast with almost three times the throughput as IBM’s own DB2/Parallel Edition. What’s even more amazing, Oracle delivered this performance at nearly one-third the price.

Almost 3 to 1 Faster Multi-user Throughput

| Throughput Units (Query Throughput) |
|-------------------------------|------------------|
| **Oracle7**                    | **IBM DB2**      |
| 0                             | 364.0            |
| 100                           | 916.3            |

Almost 3 to 1 Cheaper Price Performance

<table>
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<th>Dollar Per Query Per Hour</th>
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<tr>
<td><strong>Oracle7</strong></td>
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<td><strong>IBM DB2</strong></td>
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Almost 2 to 1 Better Single User Response Time

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<th>Power Units (Query Processing Power)</th>
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<tr>
<td><strong>Oracle7</strong></td>
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Microsoft touts faster development, but users skeptical

By Sharon Gaudin

MICROSOFT CORP. is readying an integrated application development environment, but some corporate users are concerned it won’t be flexible and powerful enough to keep up with their changing needs.

Microsoft is expected to unveil the environment, which was designed to let programmers use multiple languages and tools to build applications, at its Developer Days conference March 19, Computerworld has learned. Sources close to the firm have confirmed the plans, but Microsoft officials declined comment.

Analysts and developers said the environment — code-named Boston — could speed application development. But corporate IS managers are more skeptical.

"Can that one environment do as good a job as the [environments] that are specialized for each language?" asked Chris Kwiecinski, a senior systems developer at Nabisco, Inc. in Parsippany, N.J. "The tools we have now are tuned to what they do. If you tune them down to a common denominator, it’s tough to have a great product."

Kwiecinski said any integrated environment worth buying would have to be flexible enough to accommodate languages as they come along. "We work in a dynamic environment," he said. "If some new language comes out that’s better than Java, how will that fit in? You put a lot of money into this environment, and you’ve got to be able to fit something new into it, or it’s not worth it."

ONE DEVELOPER FOR ALL?

Developers often use three or more languages and tools, each with its own environment, to build one complex application. That means a developer must know several languages or work within a team. Users and analysts are looking for an integrated environment that will allow one developer to do it all.

"There’s so many applications that we have here, nobody is going to come up with the one environment for us," said American Airlines' Joe Crawley, director of online services in Fort Worth, Texas. "It hasn’t happened yet, but it sounds like the Visual Age strategy. It’s a little different than Visual Age because you choose a specific Visual Age tool for each different language. There isn’t one for all the languages, like Microsoft is talking about. Developers generally love the idea of Visual Age so I imagine they’ll love this concept."

IBM’s Visual Age family of development tools is close to what Microsoft is working on, said Karen Boucher, an analyst at The Standish Group International, Inc. in Dennis, Mass.

"I haven’t seen Microsoft’s product, but it sounds like the Visual Age strategy," Boucher said. "It’s slightly different because you choose a specific Visual Age tool for each different language. There isn’t one for all the languages, like Microsoft is talking about. Developers generally love the idea of Visual Age so I imagine they’ll love this concept."

Not everyone is as skeptical, though. Paul Mahowald, vice president of retail development at Blockbuster Entertainment Corp. in Fort Lauderdale, Fla., said that if the environment comes out as expected, it would be a tremendous advantage to him.
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Upcoming Win 95 interface combines OS and browser

By April Jacobs

Users of Microsoft Corp.'s Windows 95 are enthusiastic about the new interface, code-named WinView and planned for the next version of the operating system.

Microsoft's WinView interface will include:

- A single browser and operating system interface
- A Web-enabled control panel for diagnosing PC problems

Microsoft will give users the option to move away from the current approach of having separate interfaces for typical office applications and Internet or intranet-based applications. In essence, WinView is a combination of an operating system and World Wide Web browser interface.

Web View, which will be beta-tested in new versions of Windows 95 due this quarter, will let users toggle between desktop and Web applications.

But WinView is just an option, so end users can choose a non-Web View screen as well, according to Microsoft officials.

The feature set will be a combination of the features available in Internet Explorer and Windows 9x.

Mike Lingenfelter, assistant vice president of information systems at Interswest Bank in Oak Harbor, Wash., said he would consider using the interface for more than 500 workstations he has running Windows 95 and NT.

He said the hybrid interface is attractive because his firm is looking at developing intranet-based applications.

WinView will also take the concept of "favorites," or bookmarks for frequently visited Web sites, and apply it to local network locations. Other features include the ability to embed hot links in documents and a "control panel" to help users locate PC-related problems.

Joel Diamond, technical director of Media, Pa.-based WUGNET, a Windows user group, said many of the new interface features will be useful.

The interface will give users new ways to create, manage and archive documents by allowing them to assign uniform resource locator addresses to each document, he said.

Upcoming Win 95 interface combines OS and browser

By Tim Ouellette

IBM's AS/400 may be known for its smooth integration of many applications, but users find that accessing the middle system from Windows 95 isn't smooth enough.

Users complain that IBM's 32-bit connection software, Client Access/400 for Windows 95, hasn't performed consistently or reliably. More than a dozen users have complained in interviews and Internet discussion groups.

In fact, one user in an AS/400 discussion group called Client Access an amateur attempt at a Windows 95 application.

IBM will give users the option to move away from the middle system interface that lets users administer an AS/400 from a Windows 95 or Windows NT workstation.

IBM officials said the company will deliver a refresh of the Windows 95 client later this quarter. It will include better SNA performance.

At the same time, IBM said it will do the following:

- Ship Project Unity, software that lets users administer an AS/400 from a Windows 95 or Windows NT workstation.
- Add native support for Novell Inc.'s IPX protocol in OS/400, so users can turn to networking options besides TCP/IP and SNA.

Telecommunications Reform

FCC to take closer look at online traffic

By Kim Girard

For now Internet service providers will keep the special privileges that allow them to avoid paying interstate access charges to local exchange carriers. But the federal Communications Commission does plan to scrutinize online traffic more carefully.

That's the latest word as the federal agency grapples with telecommunications reform.

The FCC is considering ways to deal with the explosion of Internet use and companies jostling for a piece of the local exchange market.

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Faster, Better

Robert Moskowitz, technical support specialist at Chrysler Corp. in Auburn Hills, Mich., said he hopes that if the FCC implements access charges for service providers, it creates "intense creativity to get the traffic off the telephone company's switches."

That would mean the possibility of faster and better service through new technologies such as wireless, he said.

In another move last month, the FCC also decided to review access charges that long-distance companies pay local telephone companies to use their lines.

Long-distance companies have been clamoring for months for relief from the fees -- between 2 and 4 cents per minute on both ends of a completed call -- claiming the cost is inflated.

Overall, long-distance companies pay local exchange carriers an estimated $13 billion in annual access fees.

Under the notice of inquiry, the FCC will investigate changing the local-distance access fee rate structure.

Some Payment Plans

National Internet service providers charging a $19.95 flat rate for unlimited access:

- WorldNet
- Prodigy Internet
- SpryNet

Online services charging a $19.95 flat rate for unlimited access:

- America Online
- The Microsoft Network
- Prodigy Classic

CompuServe charges $24.95 for 20 hours and $1.95 for each additional hour.

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SAP recasts R/3 for out-of-the-box use

By Randy Weston

SAP AG may have killed plans for a scaled-down version of its flagship R/3 product, but that doesn't mean it is giving up on smaller companies.

The German software giant two years ago scrapped plans to develop a "lite" version of R/3 for small to midsize companies because it couldn't decide which pieces of R/3 to eliminate.

Instead, SAP is re-engineering the R/3 application package to make it easier to configure and install. That will make R/3 more cost-effective, which SAP hopes will make it more attractive to midsize companies.

LOWER COST

"The highest cost of SAP is not in the product, but in consulting," said Adam Thier, an analyst at Meta Group, Inc. in Stamford, Conn. "Consultants and large companies want to focus around with R/3 configurations and with corporate business processes. But now people are saying, 'We can just use it out of the box and skip the consultant costs.'"

According to current estimates, firms that install R/3 spend between $3 and $5 on software licenses, Thier said. "They hesitate due to questions about their ability to manage the connections and security of when more than if," Morency said.

Another problem arises when users who have migrated their private SNA lines to a public frame-relay service, despite its wide-spread popularity, said John Morency, principal at The Registry, Inc., a network consultancy in Newton, Mass.

"Even IBM has cut over its global network to frame relay. For so many users, it's a question of when more than if," Morency said. "They hesitate due to questions about their ability to maintain transaction response times, manage the connections and secure optimal tariffs."

Frame-relay net tools: Ignore them at your peril

By Patrick Dryden

USERS MAY put off a helpful migration to frame-relay network connections or pay too much for the privilege if they aren't aware of a growing arsenal of monitoring tools and services.

The packet-switching technology provides a cost-effective way to carry diverse traffic — including SNA sessions — across a wide-area network because of its speed, reduced overhead and flexible subscription levels.

Not until this past year have vendors introduced or enhanced their WAN management tools with detailed support for frame-relay networks.

Integrators have stepped up their monitoring services to assist users who can't afford to learn these tools or keep frame-relay experts on staff. And just recently, carriers have begun adopting some of these tools and services themselves to better explain frame-relay usage to subscribers.

Danger Ahead

"The host monitor could show that everything is fine, yet our IP network could be in a heap," said Dave Klinzman, director of network services at Long's Drug Stores of California, Inc. in Walnut Creek, Calif. Klinzman turned to help a specialized network monitoring service, which now collects and interprets performance statistics taken every 15 minutes from the router in each of the 335 stores throughout the chain.

Some WAN planners still balk at migrating their private SNA lines to a public frame-relay service, despite its wide-spread popularity, said John Morency, principal at The Registry, Inc., a network consultancy in Newton, Mass.

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Another problem arises when novices implement the typical "ready, shoot, aim" approach to building frame-relay WANs, according to users and consultants.

Without the help of performance modeling and analysis tools or outside expertise, they first subscribe to a committed service level and later try to figure out how much capacity they really need.

Costly Mistakes

Unless users can closely examine the daily utilization of their frame-relay circuits, they wind up paying the recurring cost of their mistakes by not adjusting subscription levels or balancing loads as usage fluctuates.

Users who have migrated huge networks to frame-relay links "love it after they get over some glitches but are disgruntled and annoyed by their inability to track usage," said Jennifer Pigg, data communications vice president at The Yankee Group, a consultancy in Boston.

The bottom line, she said, is that they want to prove that they get what they purchase.

Users may still wind up "shooting in the dark" with the tools they receive because fine-tuning networks today is very, very difficult," said Steve Taylor, president of Distributed Networking Associates in Greensboro, N.C.

"The good news is that frame is so aggressively priced," Taylor said. "Users are extra for a slightly oversubscribed network might not matter too much.
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Security

CONTINUED FROM PAGE 1.

The report said the Pentagon should invest $580 million in security research and development in the next five years. Existing products don't meet requirements for large-scale distributed computing environments and generally don't protect against denial-of-service attacks, it said.

Members of the Defense Science Board refused to discuss the report, which is due for release later this month. One member said the report's 13 recommendations are likely to be implemented.

Last July, the White House established the President's Commission on Critical Infrastructure Protection to seek ways to protect the systems on which eight critical areas depend: telecommunications, electric power, oil and gas, banking and finance, transportation, water supplies, emergency services and government operations.

The notion of a friendly attack team draws heavily on disease prevention principles, one board member said. "We are putting together a cadre of people who will inoculate systems by attacking them," an administration official said. "This also has relevance ... for all of private industry.

The analogy to immunization suggests that when attacked, organizations and systems will react by developing defenses — in essence digital antibodies — against future attacks.

Unlike the so-called red teams employed in the past, the new team of experts will come under the direct control of the Secretary of Defense and won't consist of people from within the organizations being attacked. "You need people who do not play by the rules because attackers do not play by the rules," the source said.

"We are at higher risk than most countries because we have become more dependent on technology," said Toney Jennings, a former Air Force security specialist and now president of WheelGroup Corp. in San Antonio.

He said the idea of a red team is good as long as it reviews systems on a recurring basis. Jennings also warned against false conclusions that a system is 100% secure just because an attack team finds no faults.

But William H. Murray, an information security consultant at Deloitte & Touche, was less keen on the concept. "It is based on the assumption that we don't know what's wrong with our systems, but we know exactly what's wrong with them," he said. "Some things we don't fix because it's inconsistent with the application; some we don't fix because we get user resistance; and some we don't fix because we are lazy."

FUNDING FOR INFO WARFARE DEFENSE

<table>
<thead>
<tr>
<th>Area</th>
<th>Proposed funding</th>
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<tr>
<td>Establish warning center, response center and red team</td>
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<tr>
<td>Increase awareness for military, civilian agencies, commercial businesses and the public</td>
<td>$455M</td>
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<tr>
<td>Define threats and responses</td>
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<td>Improve security with available low-cost technology</td>
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<td>Establish strategy and architecture for responding to large-scale outages</td>
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<td>Invest in security research and development</td>
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Source: Defense Science Board, Washington D.C.
Intel chip to spice multimedia menu on PCs, notebooks

By Mindy Blodgett and April Jacobs

THE NEW Intel Corp. Pentium MMX processor announced this week will enable multimedia applications to zip across the screen and provide sharper color graphics.

The Pentium MMX chips will boost PC and notebook performance and support corporate uses such as videoconferencing, sales presentations and computer-based training, vendors said.

But the MMX systems may appeal more to the home PC user than to corporate users, at least in the beginning, industry observers said.

"You will see big benefits on performance for graphics and other multimedia applications," said Mike McGuire, an analyst at Dataquest in San Jose, Calif. "But we still aren't seeing a lot of multimedia applications in corporations, and we are unlikely to."

NEC'S VERSA NOTEBOOK

Processor: 150- and 166-MHz Pentium MMX chips
Screen: 13.3-in.
Price: About $5,500

The Pentium MMX chip has 57 instructions added to the standard Pentium instruction set and supports applications such as videoconferencing. It will offer speeds of 166 and 200 MHz for desktops and 150 and 166 MHz for laptops.

The MMX chips are expected to boost performance for both MMX- and non-MMX-enabled applications, said Frank Spindler, Pentium processor marketing manager at Santa Clara, Calif.-based Intel. That is because of enhancements to the chip's instruction set, including an on-board cache size increase from 16K to 32K bytes.

TOUGH SELL

But users said they may not be willing to pay extra for MMX machines.

Doug Moran, information systems analyst at CRSS Constructors, Inc. in Denver, said end users may be drawn to the graphics capabilities of the MMX, but the chip doesn't fill a need at his company.

"Unless they get into videoconferencing, which could happen at some point, we just don't desperately need this," Moran said. "And on notebooks, I would worry about the battery-life issues."


Specific vendor plans for the MMX include the following:

- Digital this week will announce MMX support for the HiNote VP 500 line of notebook computers (including selected models of the VP 500 line), as well as Celebris FX 200-MHz desktop computers. The chip will also be added to other notebook and desktop lines in March, Digital officials said. Pricing hasn't been determined.
- TI this week will introduce two notebooks that feature a 166-MHz Pentium MMX chip and an integrated 33.6K bpi/sec. modem. The models will sell for between $4,999 and $5,199 and will ship in February, TI officials said.
- NEC this month plans to announce a new minitower PC and three Versa series notebooks that use the MMX. The Versa notebooks will have 166-MHz processors and will cost around $5,500. Availability hasn't been determined.
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Surge in E-mail spurs backbone support

By Barb Cole

The strain of doing business on the Internet is forcing information systems departments to beef up sagging electronic-mail backbones.

The problem, according to users and analysts, is that today's E-mail backbones can't handle the volume of traffic triggered by Internet commerce, aren't secure and often lack an adequate directory.

"My guess is that we double our messaging bandwidth every six months and will continue to do so," said Warren Smith, director of IS at Dana Corp., a maker of engine parts in Lisle, Ill.

There is a move at Dana toward using the Internet for collaboration with the car companies it serves.

"Most mail backbones really aren't ready for [Internet commerce]," said Dan Blum, a principal at Rapport Communication in Atlanta.

A mail backbone acts like a traffic cop, linking mail packages, handling message translation and synchronizing directories. It typically includes software that routes E-mail as well as gateways and a directory of users.

As companies embrace Internet commerce, they are finding that those functions are not enough. To make their E-mail backbones more robust and reliable, they need to add disk space and routers to handle spikes in E-mail traffic, messaging firewalls and enterprisewide directories, according to Blum.

For example, although E-mail is already heavily in use within companies, at least 30% of all corporate E-mail traffic will be sent via the Internet to customers and outside parties within two years, predicts Forrester Research, Inc. in Cambridge, Mass.

This flood of E-mail will include correspondence to buyers regarding orders and individualized E-mail messages notifying customers of a sale or acknowledging a purchase. Online transactions alone could generate two to five mail messages each, according to Eric Brown, a senior analyst at Forrester.

"When someone places an order, there's a message; when they check the status of the order, there's a message; and it goes on," said Eric Vaughn, director of electronic commerce at Bell Atlantic Corp. in Silver Spring, Md.

Security is also a concern.

For many companies, the first step in preparing for Internet commerce is building a messaging backbone based on the Internet's Simple Mail Transfer Protocol. Another tactic is to deploy servers that work with multiple mail clients, including World Wide Web browsers, Vaughn said.

Several users said they are banking on a crop of more robust directories to help solve the security issues surrounding Internet commerce. Just as a directory can track a user's name and telephone number, it can also manage user access privileges.

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Software pirates’ booty topped $13B, study finds

46% of all software used in 1995 was obtained illegally

By Gary H. Anthes

GLOBAL LOSSES caused by software piracy totaled $13.2 billion in 1995, an amount that exceeded the combined revenues of the 10 largest PC software companies. In the Philippines, El Salvador, China, Russia and 18 other countries, more than 90% of the software in use has been copied illegally.

Despite an early lead in technology, will America end up playing second fiddle?

Those are among the key findings of a study conducted by the independent International Planning & Research and released recently by the Software Publishers Association (SPA) and the Business Software Alliance in Washington. The $13.2 billion loss was up 9% from $12.2 billion in 1994. But the percentage of all software obtained illegally dropped slightly — from 49% to 46% — according to the industry groups.

Software developers and distributors take a direct hit from software piracy, but users are also hurt because they pay higher prices to offset the losses, officials at the software companies said. In addition, they are deprived of the fruits of research and development that might be funded by these lost revenues.

"Software piracy . . . hinders growth and innovation," said Robert Holleyman, president of the Business Software Alliance. "The industry as a whole and, more importantly, its customers bear the burden of these losses."

Greg Wrenn, corporate counsel at Adobe Systems, Inc. in Mountain View, Calif., said the company would lower prices and invest more in R&D if piracy could be curbed, but he declined to say by how much.

Wrenn said larger companies can survive piracy, but many small firms can’t afford to forgo 30% to 50% of their revenue. "A lot of these companies are on the margin, and the loss to consumers is the innovation they bring," he said.

1995 WORLDWIDE SOFTWARE PIRACY

<table>
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<th>Region</th>
<th>Revenue lost*</th>
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<tr>
<td>Eastern Europe</td>
<td>$674M</td>
</tr>
<tr>
<td>North America</td>
<td>$3.3B</td>
</tr>
<tr>
<td>Latin America</td>
<td>$1B</td>
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<tr>
<td>Asia/Pacific</td>
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<tr>
<td>Middle East/Africa</td>
<td>$521M</td>
</tr>
<tr>
<td>Total</td>
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</tbody>
</table>

*Estimated retail value

Source: International Planning & Research, King of Prussia, Pa.

Software piracy rates ranged from 26% in the U.S. to 99% in Vietnam, the study said. It is relatively low in the U.S. partly because of a culture that respects intellectual property, said Ken Wasch, president of the SPA.

"And we have an effective enforcement mechanism here," Wasch added. "The only pirates who are safe are those who have no disgruntled employees." He said 95% of the 30 calls the SPA gets each day to report software piracy come from current or former employees of the companies being reported.

In December, an international treaty aimed at curbing piracy of digital materials was signed at a meeting of the 160-country World Intellectual Property Organization (CW, Dec. 9, 1996). Software publishers supported Clinton administration proposals to beef up copyright laws worldwide. But online service providers, telephone companies and others said the proposals went too far and exposed them to liability they can’t control.

At the 11th hour, the administration deleted language that would have made network managers liable for copyright infringement on their networks.
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Copyright trips up IS

CONTINUED FROM PAGE 1

regulations is a serious question, and everyone seems to have an answer. The Clinton administration has one, as do a host of other interested parties such as Internet providers and user groups. The catch? None of them are math.

"Confusion reigns," said Tom Smedinghoff, a lawyer at McBride Baker & Coles in Chicago. "Laws are unclear, but it's also unclear whether or to what degree they must be rewritten ..." The worry is that unless authors know their work is safe from online poaching, they won't upload valuable content. That could deter users — who may lose interest in surfing if they aren't finding much of interest — and further squelch the Internet's potential as an affordable outlet for high-quality information.

"We don't want [the Internet] to turn into television, where there's a lot of junk, and people don't get a lot of value out of it," said Diane Silver, vice president of IS at American President Lines in Oakland, Calif.

Some parties, including the Clinton administration, want to rewrite copyright laws to give content creators stronger protection. But others said the government wants to go too far, and products due this year could obviate the need for drastic legal measures (see story below).

U.S. SCARES PEOPLE

Delegates from 128 countries in the United Nations' World Intellectual Property Organization (WIPO) met last month in Geneva to revamp copyright rules. The last revision was made 26 years ago to accommodate photocopy technology. The U.S. arrived armed with ideas for regulations that worried Seth Greenstein, a Washington lawyer.

One U.S. proposal would have outlawed devices that circumvent copyright owners' protections, such as decryption software. Some legal scholars noted that a strict interpretation of such law could make it difficult to transfer out of tape recorders and VCRs.

"There is strong opposition to a lot of what the U.S. is saying," Greenstein said. "One hopes that the legislation remains dead as a doornail." In the end, the device proposal wasn't addressed by the conference attendees.

But the final WIPO Copyright Treaty did rule on an item of particular interest to IS managers: Copies of material made during uploading or downloading, such as in RAM, cache or routers, isn't a true copy for copyright purposes. But otherwise storing a work in electronic form is.

ONLY A GUIDELINE

But the WIPO work is merely a guideline. Individual member countries must now ratify the treaty and then revise domestic laws to comply.

Overall, the "glacial pace of lawmaking" is inadequate in the fast-moving Internet market, said Marc Pearl, a lawyer for the Information Technology Association of America (ITAA), a hardware and software trade group in Arlington, Va.

The ITAA recommends a three-pronged approach to fixing online copyright problems: tweaked laws, education and more technology.

A crop of new products for making digital watermarks and managing licenses can close some of the gaps in copyright law, Pearl said.

But what can IS professionals do to protect their companies and users from copyfit infringement? A heck of a lot more than they have been, the experts say.

Many Internet usage policies don't include a whiff of copyright talk, focusing instead on electronic mail and Web surfing etiquette (CW, July 1). Even programs to teach users about copyright law don't address people who use the Internet at work.

"I suppose it's an overlooked group," said Sara Ferguson, a project manager at the trade group Interactive Services Association in Silver Spring, Md. The group's Project Open campaign was designed to show home PC users how to handle copyrighted items.

IS should revise internal policies to stipulate that users must treat all material on the Internet as though it is copyrighted, Ferguson advised. "Just because you may not see a little 'c' in a circle doesn't mean the work doesn't belong to someone," she said.

Company guidelines should also include a rule that no software can be downloaded without permission from IS, added Jonathan Rosenoer, a lawyer in Kenfield, Calif. He runs a Web site about online legal issues (www.cyberlaw.com).

ASK COUNSEL

More important, IS shouldn't feel responsible for sticky legal questions. Rosenoer said, "If there's a problem, pick up the phone and call in-house counsel," he said.

One of the biggest unsolved problems is whether Internet service providers are responsible for what their customers do online.

In November 1995, a U.S. District Court in California ruled that an Internet provider could be partially liable for copyright infringement by its customers. The vendor supplied the phone lines, servers and other gear that make it possible to access the Internet, the court reasoned (CW, Dec. 4, 1995).

The case involved San Jose, Calif.-based Netcom, which was sued by the Church of Scientology when a Netcom user repeatedly posted copyrighted church works to a Usenet newsgroup. Some Internet companies and lawmakers consider the Netcom decision a guideline.
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- Netscape Suite Spot: LiveWire Pro Web Tools
- Building a Data Warehouse
- Using INFORMIX Online Workgroup Server to Build Windows NT Applications
- Migrating INFORMIX-4GL to INFORMIX-Neura

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- Dr. Michael Stonebraker and Mike Saranga, Informix’s database technology experts and industry analysts – Special Presentation on moving forward in the technology age.
- Phil White, Informix CEO – Special Presentation on the Informix business strategies that will shape 1997.

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Ascend acquisition
Looking to diversify beyond remote access, Ascend Communications, Inc. last week bought Stonybrook Services, Inc. in Bohemia, N.Y., for roughly $5 million. Stonybrook's products support real-time network management and archival historical data. The Stonybrook products will be enhanced to support Almeda, Calif.-based Ascend's entire product line.

CA loses appeal
Computer Associates International, Inc. lost a bid last week to appeal a court ruling that requires it to return the DataVault mainframe application development software to the original developers and pay more than $3 million. A New York Supreme Court judge ruled against Islandia, N.Y.-based CA, and then an appeals court upheld the ruling. CA tried to appeal the case to the state's highest appeals court but was rebuffed.

AT&T spins off NCR
AT&T Corp. in Basking Ridge, N.J., last week completed its spin-off of NCR Corp. with the distribution of more than 100 million shares of NCR common stock to AT&T stockholders. In Sept. 1992, AT&T announced it would separate into three publicly traded companies. The company spun off its majority interest in Lucent Technologies, Inc. in September and sold its majority position in AT&T Capital Corp. to investors in October. AT&T stockholders received sales of NCR stock for each outstanding share of AT&T stock.

MFS WorldCom
What WorldCom and MFS are bringing to the table

- Offers: WorldCom, a leading internet service provider.
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- Has interconnection agreements with three Baby Bells.

By Patrick Dryden

THE NEW YEAR is starting off rough for Computer Associates International, Inc.
The world's second-largest software company saw its stock price drop 27% on Dec. 27 after it warned analysts that sales for its third quarter wouldn't meet projections. CA officials said revenue would come in between $1 billion and $1.1 billion; analysts estimated revenue to be $1.1 billion to $1.2 billion.

CA blamed the $100 million shortfall on slow client/server software sales in Europe. The company now derives 40% of its revenue from client/server products, as it shifts its emphasis from mainframe software.

The trouble comes just as CA is preparing to launch this month a significantly overhauled version of its enterprise systems management software.

"I hope the rollout of Unicenter TNG gets things back on track," said Chris Mortenson, an investment analyst at Alex Brown & Sons, Inc. in New York. He said the third-quarter shortfall is "something they can correct."

The slip in revenue should be viewed as "a pothole on the road to supporting distributed computing environments," said Charles Phillips, managing director at Morgan Stanley & Co. in New York.

CA has pushed Unicenter software more smoothly here than in Europe, according to Phillips, because the European sales force has lacked equivalent understanding of client/server technology and resources, such as benchmark centers and reference sites.

CA needs to clarify what benefits Unicenter can deliver to users, said Paul Mason, an analyst at International Data Corp. in Framingham, Mass.

"Unicenter: TNG demos well and contains a rich set of functions, but CA just hasn't done a good job of explaining what it can do," he said.

Corrections are under way, according to analysts and CA officials.

Problems in Europe should be fixed before the end of June, according to Sanjay Kumar, chief operating officer and president of CA in Islandia, N.Y.

But contrast, European sales this quarter have been fine for archival Tivoli Systems, Inc., officials at the management software arm of IBM in Austin, Texas, said.

By Kim Girard

NO CAUSE FOR CONCERN
CA remains "extremely strong financially," so customers shouldn't be concerned, Mortenson said.

CA is cutting expenses to hit earnings projected for the quarter, Phillips said, but he doesn't "see any impact on research and development."

The heat will be on the sales force to get more aggressive, Phillips said, "so that's the reason your CA sales rep will be in your face more this year."

CA will report financial results on Jan. 21.

By Patrick Dryden

CA'S STOCK PRICES

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<th>Date</th>
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<td>1/2</td>
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By Patrick Dryden

WorldCom, MFS tie knot

WorldCom, MFS tie up

WorldCom Inc. and MFS Communications Co., have announced a merger that will mean a 51.6 billion telecommunications merger that will mean expanded one-stop shopping for corporate customers.

Shareholders from the two companies approved the MFS WorldCom union Dec. 23 and settled the deal last Tuesday. The agreement converts each share of MFS stock into 2.1 shares of WorldCom stock.

With the merger under its belt, MFS WorldCom will be poised to tout local, long-distance and international telephone service, Internet access and data services on one international fiber network.

"I would expect you'd see a quick rollout of services to their customer base," said Bob McNamara, managing director at Broadview Associates, a mergers and acquisitions advisor firm in Fort Lee, N.J.

WorldCom's image as "a scrappy, very competitive, low-cost service-oriented organization," appeals to Fortune 500 companies seeking alternatives to the big three carriers — MCI Communications Corp., AT&T Corp. and Sprint Corp., McNamara said.

MORE INVESTMENT
To succeed in the telecommunications wars, MFS WorldCom needs more investment capital, better penetration in major cities and may need to stake a big claim within the wireless market, McNamara said.

MFS owns fiber-optic network in 45 North American cities and boasts trans-Atlantic cable with capacity that rivals the bigger carriers.

But unlike AT&T, MCI and Sprint, MFS WorldCom lacks a strategic international partner.
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Title/Function

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33. Sys. Integrators/ VAR/Consulting Management

CORPORATE MANAGEMENT

11. President, Owner/Partner, General Mgr.
12. Vice President, Assistant Mgr.
13. Treasurer/Controller, Financial Office

DEPARTMENTAL MANAGEMENT

51. Sales & Mkt. Management
70. Medical, Legal, Accounting Mgmt.

OTHER PROFESSIONAL MANAGEMENT

60. Information Centers/ Libraries, Educators, Journalists, Students
90. Other Titles/Personnel

1. BUSINESS/INDUSTRY (Circle one)

13. Manufacturer (other than computer)
30. Finance/Insurance/Real Estate
31. Medical/Legal/Finance
36. Wholesale/ReSale
39. Government - State/Local/Local
49. Communications Systems/Public Utilities/Transportation
58. Information/Computer/Telecommunications/Software
65. Systems Integrators, VARs, Computer Service Bureau, Software Planning & Consulting Services

2. TITLE/FUNCTION (Circle one)

18. Chief Information Officer/VP President/Chief, VP IS/AIS/IDP Management
31. Director MIS Services, Information Center
58. Director Sys. Development, System Architecture

3. Do you use, evaluate, specify, recommend, purchase: (Circle all that apply)

Computer Systems
(a) Solaris  (b) Mac OS
(b) Netware  (c) Windows NT
(c) Linux  (d) Unix
(d) Apple, Development Products  (e) Yes No
(e) Internet software  (f) Yes No
(f) Internet browsers  (g) Yes No
(g) Web authoring/development tools  (h) Yes No

4. Which of the following products do you buy, specify, recommend or approve the purchase of? (Check all that apply)

(a) Internet software  (b) Internet browsers  (c) Web authoring/development tools

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Take a good look at the next PC you buy and make sure its floppy drive has the LS-120 advantage: hassle-free, high-capacity storage. Only the LS-120 can give you 120 MB of floppy capacity, higher performance, and the ability to read and write to the 1.44MB and 720K floppies you use all the time. LS-120 is the same simple floppy you already know how to use—just faster and roomier. It's brought to you by a consortium of global leaders which includes Imation (a new company including the former data storage business of 3M), Compaq, Panasonic, Mitsubishi, Maxell, OR-Technology, and Exabyte. It's the new standard. No matter how you look at it. Find out more at www.LS120.com or call us at 1-800-888-1889, ext. 4002.
No hystericshad enough of the year 2000 apocalypse yet? Well, brace yourselves; the hoopla is just now gathering steam.

This is the year that the century date-change problem — when 99 clicks over to 00 and unredeemed computer systems read it as 1900 — will leap beyond technology newspapers such as ours and into the mainstream press. Business magazines will put millennium mayhem stories on their covers on a regular basis as they realize this is an enormous global business problem and not merely a technology one.

Time and Newsweek will suddenly discover it and produce virtually identical covers screaming out the worst-case scenarios. Indeed, the entire IS profession could end up surrounded by year 2000 histronics.

Just when the public was feeling all warm and fuzzy about computers as the surfboard to the Web, it’ll be slapped in the face with horror stories about hopelessly fouled-up records and collapsing businesses. Already, religious fundamentalists are reminding people that powerful computers are considered the modern embodiment of “the beast of the apocalypse.”

As our software columnist, Frank Hayes, points out this week (see page 49), the time is ripe to put a good scare into the CEO and get cracking on your year 2000 plans. Straight talk is the order of the day.

“Puncture the myths: There’s no chip that will solve the problem, no magic bullet for a quick fix,” Hayes writes. “There’s no way out except an expensive, zero-benefit bug fix.”

The one thing Computerworld promises to do for you in the coming year is skip the apocalyptic hystericsh. We know you don’t need more warnings — you need more helpful suggestions, more resources, more ideas and more useful examples. Look for lots of practical, from-the-trenches stories about how your colleagues are coping — both in our weekly issue and on our @Computerworld Web site.

And when that beast appears at the door, show no fear. Just enroll the sucker in a class for Cobol programmers. That’ll teach him.
For once, the vendors may stop calling

Michael Cohn

ake it easy while reading this. Slip off your shoes. Because we're all moving a step slower.

We're suffering from an extra pound or 20 of turkey, stuffing and strange-looking casseroles made by stranger-looking relatives. And we're slowly getting up to speed for 1997, barely thinking about new budgets, new projects and leftover 1996 headaches.

But it's time to shake off the holiday cobwebs. While industry watchers scratch their heads, let me stick out my neck and make the year's hottest prediction: We're walking into the biggest nightmare in IS history. I call it the "feeding frenzy" crisis of 1997.

All right. I was only kind of sure the Jets would make the Super Bowl this year. But I'm really sure about this. Everyone is behind. Everyone is supposed to be building intranets, jumping into Java and getting that data warehouse up and running. Everyone is supposed to be finishing (or starting) that SAP/Baan/database project. And then there's that year 2000 project; I think yours is supposed to get going this month!

Face it, folks, we're toast. We're about to blow a fuse. Hit overload. Not that we haven't been there before, but this year is different. Everyone everywhere is in this mess. No longer can we stay on MV5/XA, get another year out of that PDP-11 or hope that our dumb terminals can pass for thin-client network computers if nobody looks too closely.

The demand for all these emerging technologies hasn't only caught up to us - it's bearing us to a bloody pulp. And to complicate matters, standing still is no longer an option, thanks to the year 2000 problem. Unless we want to commit millenicide, we have to start doing something. That means 1997 will be a bear. Everyone from Tucson to Tunis who can even spell PL/I will be coding, testing and billing at $50 per hour.

The feeding frenzy is about to commence. Not that it'll be all bad. Vendors will be invisible. No more nagging calls. But no more free lunches, either, because vendors will be swamped. They'll be up to their assessments in orders for software, services and even hardware. No kidding, hardware. Direct-access storage devices, tape, channels and mainframes — stuff we all thought was dead, but everyone will need to run those new applications and millennium-compliant releases.

So brandishing your brand-spanking-new 1997 budget (pea-size compared with your 1996 budget), you'll eagerly pick up the phone, but no one will answer. Everyone will be busy grinding out code, calling meetings, keeping programs up all day or keeping programmers up all night.

It's so bad that even the headhunters are worried. There aren't enough heads to go around. The demand is incredible. Everyone needs people. You need people. But your ads will go unanswered. And your people may head for the hills — only to return as contractors demanding $1,200 per day, private offices and 90 minutes for lunch.

This is IS. We've never been afraid of hard work. We'll get over this. We'll wake up one morning, look back and laugh. Sure, this is going to be tough. But if you're a sound, seasoned, survivor-of-two-decades IS manager, this will be just another year. Twelve months from now, you'll walk out of your office, stand before a sea of cubicles and proclaim victory. But by then, unfortunately, most of the cubicles will probably be empty.

Cohn should make a killing, thanks to 10 years of strong computer consulting experience (unless folks find out about the other fire, which really wasn't that hot).

And you thought 1996 was a mess

John Gantz

he weather forecast for IS professionals in 1997 is stormsy, sloppy and inclement. Why? Because there's a mismatch between the fast rate at which technology is complicating IS decisions and the slow rate at which robust tools come out to implement those decisions.

Let's start with an easy mess, the migration to Microsoft's Windows NT operating system. This year, we expect the number of NT licenses shipped to big companies to outpace the number of Windows 95 licenses. Pentium Pro chip prices will drop precipitously — thanks to Intel's pesky competitors — bringing the hardware costs of running NT within reason for many companies.

There's no magic formula for NT migration. Some companies migrate the whole company, some do it a department or application at a time, some do it helterskelter. Whatever the approach, the conversion to NT is a nontrivial exercise because of backward applications incompatibility, lack of plug-and-play capability, driver shortages and so on.

All right, that's one mess. How about groupware? Will yours be Lotus Notes, Microsoft Exchange or an intranet? Or, like many decentralized big companies, will you have a mix of all three and a few ringers besides?

This year, you'll probably need to make at least one multyear bet in the messaging/groupware category. Once it's made, you'll have about 18 months to find out if you still have a career. Good luck.

Those are the unglamorous things you'll be wrestling with this year, without much short-term reward. Now, let's talk about the wild frontier of internal and external Web sites. We predict a four-fold increase in Web pages this year, which suggests that Web technology will run amok in corporate America. You'll run out of sites on this platform here and that platform there. You'll have a hodgepodge of products from scores of vendors for site management, statistics, page creation, communication, transaction management and such.

By the end of the year, you'll be sitting on a slew of legacy, client/server, messaging, groupware, intranet and Internet systems that are — in terms of directories, registries and databases — largely incompatible.

Now, I know Microsoft and others are working on tools to integrate all this stuff, but I wouldn't expect useful versions to appear this year. We'll be doing a lot of waiting — waiting for NT 5.0, waiting for a follow-on to the next Exchange release, waiting for Internet Explorer 4.0 support in NT. And that's just the Microsoft product set.

So just like last year, this year will see an explosion of technologies and the Web-enabling of everything. It isn't going to be a year of refrenchment, consolidation and integration. That'll be 1998 or 1999 — if ever.

This has happened before. In the 1970s, we saw the profusion of shared-logic word processors, departmental minicomputers and the early LAN craze (before Ethernet became the standard, and the market settled down).

The problem will be finding a balance between working on the basic plumbing — such as Windows NT 4.0 and 4.5 and Windows 97 — and chasing the Internet and intranet rainbows for the future.

My advice? Practice your interpersonal skills. You're going to need them as you navigate through the year.
Checking the facts

I have participated in two IS projects for large multinational corporations that cost the companies 1.1% and 2.5% of yearly revenue, respectively. In addition, I don’t know how many times a year I read in Computerworld and elsewhere or hear from colleagues in the business about failed, incompetent product development or internal IS projects that easily wasted this much and more.

When you start to examine other features of the IT environment inside government, such as the onerous hardware and software sourcing procedures, frequently unrealistic budgetary constraints and the salaries of government workers, the IRS’ incompetence starts to turn into downright high achievement when compared with much of the private sector’s IT efforts.

Joseph Sadove
New York
sadovej@acm.org

Those pesky decimals

On page 4 of the Dec. 9 issue of Computerworld, the table titled “Putting ISDN to the test” seems to suffer a problem with decimal places. The time it would take to download a 2M-byte file (or approximately 20M bits of transmitted data) at 48K bits/sec. is 5 sec., not .05 sec.

Similar decimal errors appear in the other two calculations: Transmitting the file would take 13 sec. on a T1 line and approximately 335 sec. at 56K bits/sec. using ISDN.

I’d love to be able to download 2M bytes in a 20th of a second! At those speeds, network computers might become competitive.

Steven L. Long
Felton, Del.

Press has unjustified preference for NT

As with most of the trade press, you seem to have a preference for Windows NT as the panacea for IS. Given some of the revelations over the past few months, I have to wonder what, besides advertising dollars, is the attraction?

NT’s multiprocessor support has evaporated down to Alpha and Intel. After Microsoft dropped the Mips (RISC processor) earlier in the year, IBM has announced it will no longer support NT on the PowerPC. The operating system did IBM choose for high-performance computing on the PowerPC? Unix.

Jim Wojno
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Akron, Ohio
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COMMENTS

There's no place like home

DAVID MOSCHELLA

As there ever been a better time to be part of the U.S. information technology community? What industry has done more to drive the remarkable renewal of U.S. competitiveness, five straight years of economic growth and this unprecedented stock-market boom? The Internet has even restored our profession's sense of a higher mission, providing a clear path toward the once-foggy idea of a true information society.

However, we shouldn't forget that this exuberance mostly is an American phenomenon. With few exceptions, the major economies of Western Europe remain lethargic, while Japan is still struggling to overcome its steep recession of 1992 to 1994. In Tokyo, Munich and Paris, the economic benefits of a largely U.S.-controlled IT industry are very much open to debate.

FOLLOW THE GROWTH

Consider the following data from International Data Corp. From 1992 through 1996, U.S. customer spending on IT hardware, software and services has grown, on average, by 14% per year, compared with just 8% in Japan and 7% in Europe.

Consequently, the U.S. now accounts for 46% of the world's total IT spending, up from 37% in 1991. To the amazement of the IT forecast community, this share is higher than it has been in more than a decade.

Why has this happened? Certainly, macroeconomic forces have helped. Increases in technology spending are now closely correlated with overall economic growth — and growth has always occurred in cycles. Japan, as well as most of Europe, grew rapidly from 1988 to 1991, while the U.S. languished. During the last five years, the pattern has reversed. No doubt, business cycles will eventually shift again.

However, IT industry dynamics have also played a U.S. strength. Our market clearly benefits from its vast size, close proximity to the IT industry's leading vendors, relatively deregulated telecommunications industry, flexible workforce, entrepreneurial culture and even the ubiquity of the English language. Indeed, the strange thing is that there are so many positive factors that you can't tell which ones are most important.

ROOM FOR MORE

As if this weren't enough, the Internet is also generating powerful critical mass effects. As networks expand, the more compelling it becomes. Given that less than 20% of U.S. households are connected to the Internet, these "increasing returns" could last for another three to five years.

All of this leads to the following paradox. Probably the two most frequent forecasts for the 21st century are: 1) Asian economies will dominate, and 2) we will enter the Information Age.

Given the huge gaps in IT usage between the U.S. and Asia, both of these statements won't simultaneously be true any time soon. Determining which forecast is right provides a worthy subject for another day. Meanwhile, if you are committed to the IT business, the U.S. is still far and away the place to be.
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HP Computer Systems
Browsers not just for Web anymore

By April Jacobs and Sharon Gaudin

DESKTOP USERS familiar with seeing separate Internet browser and operating system interfaces may be seeing this one in the near future.

This melding of the World Wide Web browser and operating system interfaces is expected to allow users to toggle more easily between their desktop applications, such as word processing and electronic mail, and browser-related functions, such as Web surfing and intranet applications.

The major players in this field — Microsoft Corp., Netscape Communications Corp. and Sun Microsystems, Inc. — are plying competing strategies to bring applications and functions to users' eyes through their preferred views of the world, whether that view is from a PC or a stripped-down network computer.

The battle has evolved in just over a year. With Navigator, Netscape virtually unchallenged until Microsoft's mid-1995 introduction of its Internet Explorer browser, which is now bundled with Windows 95.

Meanwhile, Sun's Java programming language, which lets users pick up application functions over the Internet, has created a plethora of possibilities for using desktop browsers.

This recent history has formed the strategies of all three vendors. Microsoft is emphasizing its operating systems as an entry point to applications and browser interfaces, page 42.

STORAGE SYSTEMS

Switch/disk combo adds flexibility

By Matt Hamblen

A FLORIDA-BASED value-added reseller has packaged a special switch with IBM storage arrays to give users added hardware flexibility.

Champion Computer Corp. in Boca Raton, Fla., saw its sales explode last year, thanks in part to the disk array storage war between EMC Corp. in Hopkinton, Mass., and IBM's Storage Systems Division in San Jose, Calif.

Champion did it by packaging a switch with new IBM storage technology that connects to any Unix server, thereby providing more flexibility in storage and server choices, an analyst said.

Champion's monthly revenue was $100,000 last January, but it climbed to $20 million by December as users discovered that Champion was packaging the switch by Vicom Systems, Inc. in Palo Alto, Calif., with IBM's 7133 Serial Storage Architecture disk array, a Champion official said. Champion expects 1996 revenue to total $15 million.

Digital price cuts may make Alpha a viable NT platform

By Jaikeumar Vijayan

USERS CAN EXPECT to see at least one alternative to Intel Corp. platforms in the Windows NT space if Digital Equipment Corp. follows through on recent attempts to broaden the market appeal of its Alpha chips.

Digital recently rolled back prices on some of its chips by up to 52% in what analysts described as one of the company's most pragmatic efforts yet to promote the Alpha chip. With the cuts, Digital has reduced the price on some of its Alpha 21064 chips by nearly 60% over the past six months (see chart, page 42).

Combined with the recent introduction of its FX3a translation software, the one-two punch could be Digital's best shot yet at widening its base of Alpha users, analysts said. FX3a allows users to run x86 software without modifications on Alpha hardware.

The price cuts come as Internet service providers look to the Alpha as a potential platform for their own Web servers. "Alpha seems to be taking the performance edge over Intel, and its compatibility with Intel applications is pretty good, too," Krauthammer said.

"This is a good opportunity for Digital, but a lot is going to depend on the aggressiveness of their strategy" and ability to execute it, he said.

"Digital's decision to reduce prices to the extent they did means they are going gangbusters after the high-end commodity market," said Terry Shan...
Switch/disk combo (continued from page 41)
predicts the figure will soar to $250 million this year.

One customer tripled the data transfer rate with the test package Champion provided. "It's pretty amazing," said Robert Grinn, director of sales systems development at MCI Communications Corp. in Colorado Springs.

The Vicom device, which Champion packages under the name of Commander, is a circuit card connected to the IBM disk array and any SCSI-II FW server.

Grim tested IBM's biggest competitor in the field, EMC, but found EMC's offering didn't change the data transfer rate.

Tom Lahive, a storage analyst at International Data Corp. (IDC) in Framingham, Mass., said he sees EMC's offering as more expensive than IBM's with the Vicom device. "The big story is that storage is now detached from the server sale, which allows the IS guy to buy any brand of server. And they can also buy anytime they want after market if they need more storage later," Lahive said.

BACK IN THE FRAY

Lahive said Champion's merchandising of the Vicom device with IBM's disk array has helped put IBM back in the fight with EMC for an external disk market that reached $4.6 billion worldwide last year. According to IDC figures, EMC took $688 million of that total, and IBM was second with $567 million.

Vicom President Samuel Tam said his company's switch, also known as Serial Loop Interface Controller, is packaged with disk drives by 15 companies, of which Champion is the largest seller.

Power Computing
(continued from page 41)
Power Computing is also offering some new bundling deals and show specials. The company plans to bundle Macromedia, Inc.'s popular Director and Shockwave, a $500 value, show attendees can get $250 off any Power Computing system that costs more than $2,500. The company will also throw in a free modem.

Power Computing's 300-MHz machine is expected to cost $4,995. The other card — a dual 350-MHz model — is at least for now, just a technology demonstration, according to Bill Goins, Power Computing's marketing director.

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PJ Matarese, Senior Analyst, Philips Semiconductors

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Fast notebooks still in short supply

By Mindy Blodgett

LAPTOP VENDORS are expected to offer bigger screens, faster processors and multimedia chips this year. But what users really want is to get their hands on notebook models that are in short supply. But that isn't likely to happen soon, industry observers said.

Leslie Fiering, an analyst at Gartner Group, Inc. in Stamford, Conn., blamed the shortages on chip maker Intel Corp. By pushing laptop vendors to release machines with faster chips, Intel forced them to ramp up production in continuous, overlapping cycles without giving them enough time to correctly assess the market demand, Fiering said.

The result: Laptop vendors didn't foresee the unprecedented notebook demand last year, which has led to order backlogs spilling into 1997.

Notebook makers also shoved models out the door before ironing out design issues, which lead to buggy machines. "Notebooks take more time to design than desktops because you are cramming so much into much less real estate," Fiering said. "You have to make trade-offs in weight, cost, thermal envelope, durability."

Users also said they would like to see power management improvements and more durable external devices.

"I find it spend too much time dealing with broken dongles on modems and cables that break inside PC cards," said George Staton, information systems director at Commerce Bank in Cherry Hill, N.J. "These things should be much more rugged than they are."

But observers said 1997 laptops are more likely to match the following industry trends:

* Lighter and slimmer notebooks. Companies such as Digital Equipment Corp. and IBM PC Co. last year released lightweight computers that proved popular. Expect more of the same. Vendors will increasingly offer "slicing" or "stackables" — removable parts that allow users to add or subtract features.

Staton said his company plans to roll out a sales force automation system, and lighter laptops look more appealing. "Lighter is better," he said.

* Bigger displays, as laptop vendors migrate to 13- and 14-in. screens. The largest screens most vendors currently offer are 11.3 in. or 12.1 in.

"For sales presentations, bigger displays help," Staton said.

* Intel plans to release its Pentium MMX chips for notebooks this month. The chip will support multimedia applications such as videoconferencing on laptops.

The latest

Notebook users not willing to wait for 1997 models can find satisfaction with some releases announced just before the holidays:

New notebooks and price cuts include the following:

* Compaq Computer Corp. in Houston added two models to its entry-level Armada notebook family. Both feature a 120-MHz Pentium processor, 16M bytes of memory, a 1.08G-byte hard drive and a 10.4-in. screen display. The 1130 Armada has a dual-scan LCD screen, and the 1130T has an active matrix LCD screen. The models cost between $1,899 and $2,299.


* WinBook Corp. in Columbus, Ohio, unveiled the entry-level WinBook XP For. The WinBook XP Pro features a 12.1-in., dual-scan screen, a 133-MHz processor, a 1G-byte hard drive and lithium ion batteries. It starts at $2,699 with 16M bytes of RAM. WinBook also released additions to the WinBook FX line, which cost $2,699 to $4,399. The line features 133- to 150-MHz processors, 11.3- to 12.1-in. screens and between 16M and 32M bytes of memory.

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Mainframe, Web nuptial lauded

Microsoft, Proginet deal enhances access

By Laura DiDio

Users and analysts applauded a recent deal between Microsoft Corp. and Proginet Corp. to meld World Wide Web-based applications with mainframe-based data.

Observers said the pact will help Microsoft keep pace with system and other client/server applications with Windows NT-based applications. Host-Office also includes several other network-to-mainframe automation utilities for network managers.

Better integration

The HostOffice software, when combined with Microsoft's SNA Server package, enhances integration among Web-based applications that run on the Windows NT Server platform and applications and data on mainframes and midrange systems, said Mike Nash, Microsoft's director of marketing.

Microsoft acquired an undisclosed minority stake in Garden City, N.Y.-based Proginet.

The approach linking Web applications to mainframes is "definitely a must-do item, since everyone — vendors and users alike — [is] headed in this direction," said Tony Macaluso, director of information technology at Multicare Cos., a health care firm in Hackensack, N.J.

Multicare, which has 3,000 users at 165 locations nationwide, wants to deploy this type of technology to give its outside customers and alliance partners secure, monitored access to the company's corporate intranet.

"We're already in the process of using in-house and Internet Web-based technology to access our Oracle corporate databases running on Windows NT Server. Now that Microsoft is in the game, we'll look at their combined offering with Proginet as well," Macaluso said.

Dan Schuffert, a senior systems programmer at a Chicago paper manufacturer, said delivering Microsoft's SQL Server, page 48
to its SQL Server database reach out and touch multimedia data stored elsewhere is an interesting twist on the idea of object-enabling databases, according to users and industry analysts. But some said it also comes with potential flaws.

For object-based applications that need to access information in spreadsheets or other native file systems, Microsoft's leave-the-data-where-it-lies approach might be less disruptive than the database-centric strategies of vendors such as Informix Software, Inc. and Oracle Corp., several users said.

Rather than enduring the pain of moving everything to a central database, customers could rely on Microsoft's middleware to house SQL Server to the external objects. But therein lies the potential rub for some users who are concerned that the middleware could cause performance and SQL Server, page 50

Easing the mainframe data migration

By Tim Ouellette

Two new products are an attempt to simplify how users move data from their mainframe systems to the client/server world without altering the data.

Liant Software Corp.'s Relativity for MVS, due to ship this quarter, maps MVS VSAM data into a relational database that can then be accessed via popular Windows desktop applications — without having to reprogram the Cobol applications. Austin, Texas-based Liant has shipped previous versions of Relativity on other platforms.

The other package, Micro Tempus, Inc.'s TCS 2.2, acts as a traffic cop, moving data files among platforms and protocols while providing development tools, for example, to handle Mainframe.
Briefs

SAP mixes Sybase plan

SAP AG has rebuffed a Sybase, Inc. proposal that the companies work together to enable SAP's R/3 applications to run on Sybase's SQL Server database. Sybase said it will proceed alone with a plan to revamp SQL Server to handle R/3.

Software costs

An accounting rule proposed by the American Institute of Certified Public Accountants will let companies spread out the cost of software purchases over several years. The rule could give companies a reason to buy more expensive software, as some buy less expensive packages to avoid recording high expenses.

PL/1 to end millennium

Micro Focus, Inc. in Palo Alto, Calif., has been shipping a PL/1 language extension for its Resolve/2000 millennium programming tool. The software, available on Windows 3.x, Windows NT, and Windows 95, costs $1,500 per user.

Mainframe, Web nuptial lauded

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Observers said the pact will help Microsoft keep pace with System i. "Microsoft's move is a signal that the company is serious about integrating Web technology with its mainframe products," said Mike Nash, Microsoft's director of marketing.

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MICROSOFT SQL SERVER

Object links may sap speed

By Craig Stedman

Microsoft Corp.'s plan to let its SQL Server database reach out and touch multimedia data stored elsewhere is an interesting twist on the idea of object-enabling databases, according to users and industry analysts. But some said it also comes with potential flaws.

For object-based applications that need to access information in spreadsheets or other native file systems, Microsoft's leave-the-data-where-it-lies approach might be less disruptive than the database-centric strategies of vendors such as Informix Software, Inc. and Oracle Corp., several users said.

Rather than enduring the pain of moving everything to a central database, customers could rely on Microsoft's middleware to hook SQL Server to the external objects. But therein lies the potential rub for some users who are concerned that the middleware could cause performance and scalability problems.

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Mainframe migration

CONTINUED FROM PAGE 47

how clients access and use data that resides on a specific mainframe.

"For companies with a large investment in Cobol code, the expense of rewriting code to convert mainframe data to client/server format is tremendous," said Jim MacDonald, president of JA MacDonald Consulting in Dallas.

GOING NOWHERE

On a previous job at a company that was redesigning its mainframe bank processing application as an open system, MacDonald worked for more than three years without success.

"There is a whole lot of data still controlled by mainframe-based Cobol applications," said Evan Quinn, an analyst at International Data Corp. in Framingham, Mass. "But now interest in data warehousing shows a desire to get that data to specific areas for manipulation."

MacDonald sees Relativity as a migration tool to get from mainframe to client/server systems.

That is because client/server relational databases can handle ongoing banking transactions during the day. But then users can keep their Cobol applications at day's end to do the heavy lifting, such as batch posting the enormous number of daily banking activities.

Relativity for MVS lets one client application access legacy data over SNA or TCP/IP networks. Pricing starts at $37,000.

Microsoft, Proginet agreement

CONTINUED FROM PAGE 47

Users must move data from Cooper's mainframe-based SAP R/2 applications to 70 distributed servers for reporting purposes, Johnson added.

More important, TCS lets users move data across the wide-area network at a time convenient to the receiving end — taking into account when London or another foreign office is off-hours.

TCS 2.2, due this month, will allow data administrators to manage the TCS services from Java-based World Wide Web browsers, though users may be more concerned with getting the job done on their existing platforms first.

"We are looking at TCS for internal use now, but once we create our data warehouse, we may have users access data via Java," Johnson said.

EASY SHARING

"It means our customers and alliance partners can share information and access our databases without having to be a peer on our network. The browser technology becomes the client, and we still retain control over access to the data," Macaluso said.

Bob Sakakeeny, an analyst at Aberdeen Group, Inc. in Boston, said this type of offering will become commonplace with the next year. "Everyone is looking for ways to expand their Web use and make the Web work for them. This definitely provides a clear-cut advantage to businesses. Microsoft and Proginet are right on target though they've got plenty of competition," Sakakeeny said.

Under the terms of the Microsoft/Proginet deal, Proginet will provide all technical support for its HostOffice Suite. It has also developed a Web-based customer support system called Proginet Oasis, based on Microsoft's Internet technology.

Microsoft, Proginet agreement

"The browser technology becomes the client, and we still retain control over access to the data."

— Tony Macaluso,
Multicare

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Year 2000 scare tactics
FRANK HAYES

Does the Year 2000 problem scare you? I don't mean, "Does it make you concerned or give you pause?" I mean, "Does it scare you?" Does it make your stomach tighten and your hands shake? Does it shorten your breath and send adrenaline pounding through your veins?

And more to the point, does it scare your CEO? It isn't too late to solve your company's year 2000 problem. And if you're reading Computerworld, you do have a year 2000 problem, even if there isn't a mainframe in sight.

You've heard about all the old Cobol programs with two-digit year fields that have to be retrofitted to handle 99 clicking over to 00. But there are lots of other pieces to the year 2000 puzzle. You'll need to upgrade PCs, fix your client/server applications and coordinate changes with your business partners.

It's a big project, and you won't even know how big until you finish the planning stage. And that's a big project in itself because it requires reviewing every piece of computer hardware and software in your company — including some you don't even know about today.

But you can't do it in time without the full and active support of your CEO and top managers. And this is one time they won't want to sign on.

Why not? Because unlike client/server, intranets and all the other hot technology projects your department has pitched to upper managers over the years, this one has no return on investment. You can't project improved productivity or lower costs from a year 2000 project.

The only payback is that you get to stay in business.

Really. That's it. It will cost a lot of money, it's got an absolute deadline that can't be slipped, it's as unsexy a project as you'll ever have to do. And it offers nothing attractive whatsoever — except corporate survival.

So how do you get the big bosses to get behind a big, ugly, expensive, zero-return-on-investment project? There's only one way. You've got to scare the pants off them.

That doesn't require a Stephen King or Clive Barker. You don't have to dream up a terrifying monster lurking just ahead — you've already got that.

With luck, all you really need to do is marshal the facts — they're scary enough. Calculate the number of your machines and programs that have to be fixed and what the cost will be when they fail. Point out that your competitors are spending big bucks on their year 2000 fix, too.

Don't forget to mention that if your systems crash and your company burns because of the year 2000 bug, shareholder lawsuits will probably hold directors and upper managers personally responsible.

In other words, they can get sued, too.

Puncture the myths: There's no chip that will solve the problem, no magic bullet for a quick fix. There isn't enough time to combine this project with system enhancements or routine maintenance. There's no way out except an expensive, zero-benefit bug fix.

One last thing. When they ask, "How did this happen?" (and they will ask that), tell them the truth: Two-digit dates were the least expensive, most cost-effective way to store data. They were standard industry practice.

Now that's scary.

Hayes is Computerworld's staff columnist. His Internet address is frank_hayes@cw.com.

Middleware-speak
Level 8 Systems, Inc. is beta-testing its Falcon gateway, which lets Microsoft Corp.'s Falcon message-queueing middleware speak with IBM's MQSeries middleware and mainframe and Unix systems. The New York company is working with Microsoft and IBM to make sure communications are smooth between the two environments. The gateway is due when Microsoft is scheduled to ship Falcon, early this year.

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HEWLETT PACKARD
SQL Server interface
CONTINUED FROM PAGE 47

management headaches. James Xu, vice president of technology at Aristotle Publishing, Inc. in Washington, said relocating complex data such as images and text from desktop applications to a database would require "a huge investment." Storing objects locally also should give users at the company's remote offices in Georgia and California faster access to that particular data, he said. But managing scattered objects "could be a nightmare for me," Xu said. "If you put everything in a central [database], it can take care of all that for you."

Passing objects back and forth across a network also might eat up bandwidth, he said. Aristotle uses Microsoft's SQL Server to store a voter information database that it sells to elected officials and candidates. Microsoft's plan, which was outlined last month, is built around its new OLE DB data access interface. OLE DB support is being built into the next version of SQL Server, code-named Sphinx and due in the second half of this year. That will let SQL Server tap into external data sources that also have been tied to the OLE DB interface.

REACHING OUT
Microsoft is adding OLE DB support to its desktop applications and lobbying other software vendors to embrace the interface, which conforms with its OLE integration architecture for linking different applications together.

Meanwhile, SQL Server's limited support for storing text and basic binary objects will be enhanced in the Sphinx release.

"But we're not going to make a wholesale sort of switch to an object/relational database," said product manager Dan Basica.

OLE DB is a "politically correct" alternative to the database-centric approaches that Informix and Oracle are taking, said Wayne Eckerson, an analyst at Patricia Seybold Group in Boston. However, network bandwidth and reliability issues could make it "more suitable for less mission-critical applications," he added.

On the other hand, spreading data around would let users continue to work if the central database went down, said Larry Joseph, a consultant who built a distributed network using SQL Server at the Texas Department of Public Safety in Austin.

But keeping the dispersed objects synchronized "in a trick," Joseph added. The department is writing its own code to automate management steps that it hopes will be handled by OLE DB in the future, he said.

New products
TECA, INC. has announced Teca Custom Controls for the AS/400 Version 2.0, a set of OLE controls. According to the Portland, Ore., company, Teca Custom Controls can develop 32-bit client/server applications with no low-level coding.

Pricing starts at $495 for a package of six OLE controls.

Teca
(503) 761-9438
www.teca.com

MCAFEE NETWORK SECURITY & MANAGEMENT has announced SaberTools SMS, tools to enhance the functionality of Microsoft Corp.'s Systems Management Server.

According to the Santa Clara, Calif., company, SaberTools provides software metering, desktop menu management and automated generation of software distribution scripts.

Pricing starts at $30.70 per node for 100 nodes.

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NationsBank is saving a substantial amount of time by using Visio to map out and plan their data communications network. They're also using Visio's ActiveX capabilities and the company's intranet to share Visio drawings with network project personnel nationwide.

Visualize your business™
Briefs

Secure NT migration
Houston-based Mission Critical Software, Inc. recently shipped its systems management software to help large organizations distribute security tasks among administrators of NT servers. Enterprise Administrator creates a hierarchy that divides a network's large Windows NT domains into smaller territories that match organizational structure. In each territory, deputized Windows NT users can perform routine chores such as resetting passwords and granting access to resources. The tool augments Windows NT security by enforcing naming conventions and tracking user logins for audits. Enterprise Administrator costs $500 per managed domain plus $24 per user account defined in those domains.

Management module
Start-up MainControl, Inc. in Vienna, Va., has added a module to its MC/EMPower systems management suite. The tool, called Chronicle, automatically tracks modifications to all hardware and software regardless of operating system, protocol, or location on the network. Managers can run the tool by itself or along with other tools from MainControl.

PUBLIC NETWORKS
"The public switched telephone network is the wrong place to be doing data services. Period." — Robert Moskowitz, technical support specialist, Chrysler Corp., who advocates using wireless and other technology to relieve congestion on public telephone switches.

Vendors set to give LDAP directories a boost

Firms developing complement to specification

By Barb Case

The efforts of several key messaging vendors are expected to greatly improve the usability of directories based on Lightweight Directory Access Protocol (LDAP). Several messaging heavyweights are developing a specification, dubbed Lightweight Internet Personal Schema (LIPS), for retrieving information such as names and electronic-mail addresses across LDAP directories.

Easing the way

The combination of LDAP-complete directories and the LIPS spec could make it easier for companies to glean consistent information across the many directories they maintain as part of their network operating systems. E-mail packages and database applications.

LDAP has been hot since Netscape persuaded several companies to try it around the specification last year. But LDAP was actually created more than seven years ago at the University of Michigan, where more than 50,000 end users exploit an LDAP-based directory.

Kmart jumps on frame relay

By Thomas Hoffman

Kmart Corp. recently began installing frame-relay connections, which has developed Tag Switching, a rival scheme that lets bundles of voice and data traffic flow over one circuit. Kmart has resuscitated plans to migrate its satellite network to frame relay. That will allow the company to move data to its stores faster over TCP/IP rather than with IBM's SNA.

Frame-relay prices "have been dropping, and I'm delighted that I waited a year," said Donald Norman, chief information officer at Kmart.

Kmart installed its VSAT network in 1986. This means it has already completed its five-to-seven-year capital equipment expenditures for VSAT gear and can install the frame-relay equipment with little or no capital costs.

IP switching on hold

By Bob Wallace

GUESSING GAME

Analysts wouldn't guess when a standard for fast IP switching might be approved, though Ipsilon Networks, Inc. has been shipping its package since April.

"Could anyone want to implement one of these approaches until there's a standard that's backed?" asked John Scooggins, chief technical advisor at DelMarva Telecommunications, Inc., a unit of DelMarva Power & Light in Newark, Del. "It'd certainly be a very risky proposition. Do we have a plan to implement it? Absolutely not for the next 18 months, at which time we'll reexamine the situation."

The market is made up of two key players—start-up Ipsilon in Sunnyvale, Calif., with its IP Switching product and Cisco Systems, Inc. in San Jose, Calif., which has developed Tag Switching, a rival scheme that won't be generally available until the second half of this year. Fur began to fly as the two battled for industry support for their proposed approaches in the past few months.
The Ipsilon package costs around $45,000. The schemes could also involve special staff training.

The Internet Engineering Task Force (IETF) is assessing the competing approaches. While not a standards-setting body, the IETF makes recommendations that are often implemented in networking products. Analysts expect that Ipsilon's IP Switching and Cisco's Tag Switching will be implemented first by carriers and other service providers, not large users. "We don't plan to use them in the next 18 to 24 months," said Mark Maxwell, vice president of global systems management at Fuji Capital Markets Corp. in New York. In the meantime, he is implementing 100M-bit/sec. Fast Ethernet to boost network performance. "These approaches are most useful to [Internet service providers] and carriers as their networks are far more congested than user networks," said Eric Flahlin, senior director at CompuGroup, Inc., a consulting and research firm in Boston. "I don't think [the schemes] will have a significant impact in the industry for at least a year. I think the number of users even considering these is very small." But if Internet service providers and carriers implement the technology, which could mean fewer service outages and interruptions due strictly to heavy traffic volumes. Countless Internet providers rely on router-based networks.

Although many large users have no near-term plans for IP Switching or Tag Switching, they aren't ignoring it. "It's something we're looking at as a future technology," said someone who works on NASA's wide-area network in Huntsville, Ala. "We see Cisco IP Switching as more alluring as it goes beyond IP Switching and supports multiple protocols."

Fall said that is important since NASA's network supports IP, Novell, Inc.'s IPX, Xerox Corp.'s XNS, Apple Computer, Inc.'s AppleTalk and Digital Equipment Corp.'s DECnet.

### NEW PRODUCTS

**MICROSTAR LABORATORIES, INC.** has announced DAPcell software for use in distributed intelligent data acquisition and process control uses on industrial networks. According to the Bellevue, Wash., company, DAPcell boards and I/O products will be implemented in networking products. The Ipsilon package costs $3,995. Pricing starts at $995.

**Microstar Laboratories** (206) 453-2345 www.mstarlabs.com

**MTX INTERNATIONAL, INC.** has announced MTX Enterprise Accounting software for Microsoft Office. According to the Englewood, Colo., company, MTX Enterprise Accounting includes general ledger, accounts payable and accounts receivable software for Windows 95 or Windows NT 4.0. Pricing starts at $1,995.

**MTX International** (303) 770-9840 www.mtxl.com

**TEKRAM TECHNOLOGY CORP.** has announced Tekram Infranet, a wireless device that use infrared beams to replace cable connections among desktop and notebook computers, servers and printers. According to the Austin, Texas, company, the product line was designed to allow connections in LANs without ripping up flooring or tearing in to ceilings. Products include the IRnet IR-Gio, which combines a small network interface unit with an IRmate infrared adapter.

The IR-Gio costs $250. Other products start at $50.

**Tekram Technology** (512) 833-6550 www.tekram.com

**AMERICAN INTERNATIONAL FACSIMILE PRODUCTS, INC.** has announced WorkPak 2.0, software for high-volume faxing from the network. According to the Portland, Ore., company, WorkPak 2.0 provides departmental managers with electronic-mail-based fax integration with Notes and other major E-mail systems.

Pricing for one component of WorkPak 2.0, called NetLink Pro, is $5,995.

**American International Facsimile Products** (800) 600-4FX www.aifp.com

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**LDAP directories to get boost**

CONTINUED FROM PAGE 53

Specification to complement LDAP.

LDAP-compliant directories are still scarce today, but most messaging vendors have pledged support for the protocol. Zoomit and Netscape are among the vendors that have recently shipped LDAP-compliant directories.

Gauthier said despite the support for LDAP, interoperability wasn't assured prior to the LIPS effort. That is because although LDAP offers a common protocol for accessing directories, it doesn't ensure that the information will be in a consistent way in the directory or in a common format. So users could have difficulty locating the correct information from LDAP directories or call information in an unfamiliar format.

LIPS will probably include about 20 attributes — such as name, E-mail address and telephone number — that spell out how specific pieces of address information are stored in an LDAP directory. Then users will be able to retrieve this information in a consistent way across directories.

"This effort could prove very useful, especially for companies that do Internet commerce and need to connect their directories to other companies," said Alexis Bor, vice chairman of the Electronic Messaging Association's directory committee, and a former information systems staffer at The Boeing Co. in Seattle.

The NEC expects to submit LIPS to the Internet Engineering Task Force for consideration as an Internet standard. Work on the spec could be completed as early as this month, and products that support the spec are expected early this year.

The spec won't solve all the issues surrounding directory compatibility, vendors involved with the effort said. For example, it won't handle replication of data between directory servers, which lets users reduce the cost and administrative hassles of maintaining several directories by building a master, or meta, directory.

Few years because the company has a contractual agreement with a VSAT provider through 1999.

Norman wouldn't name the frame-relay vendor whose technology is being used in half of Kmart's distribution centers. That is because Kmart is bidding out a frame-relay contract for its stores for next year, Norman said.

Kmart expects to complete its rollout of frame relay to its remaining distribution centers in January.

Traffic on frame relay will be split 50% to 45% cheaper, said Tom Nolle, president of CIMI Corp., a strategic planning consultancy in Voorshees, N.J.

Today, frame relay is considered 10% to 20% less expensive than VSAT partly because customers don't have to worry about uplink costs, analysts said.

**HOLDING ON TO VSAT**

Kmart expects to retain VSAT voice and broadcast for the next 10% to 20% less expensive about uplink costs, analysts said. Kmart has a contractual agreement for the spec. According to the Portland, Ore., company, WorkPak 2.0 provides departmental managers with electronic-mail-based fax integration with Notes and other major E-mail systems.

Pricing for one component of WorkPak 2.0, called NetLink Pro, is $5,995.
Community intranet gets real-world test

By Gary H. Andres
Celebration, Fla.

E VERY DAY AT Scott Biehler's home, a PC dials up AT&T and transmits a record of everything the Biehler family has done on its PC, fax machine, telephone, cellular phone and pager during the previous 24 hours.

A rogue program planted by a hacker to spy on the Biehlers? No, it's part of a 300-family "living laboratory" set up by AT&T Corp. in Celebration, Fla., to learn how households use computer and communications equipment and services.

Celebration is being built by The Walt Disney Co. on 4,900 acres near the company's Magic Kingdom south of Orlando. Swamps and farmland just two years ago, Celebration was officially dedicated Nov. 18, Mickey Mouse's 68th birthday.

AT&T is just one of many organizations—including city planners, businesses, retail chains and schools—that are keeping a close watch on the trend-setting community.

Disney, for example, will use its Celebration panel to "develop a profile of consumer wants and needs to help us shape the next generation of technology," said Barbara Hisiger, director of the Celebration Project for AT&T.

The real-world test is turning up some surprising findings, Hisiger said. For example, some people with fax machines—provided free by AT&T — said they never thought they would use those devices at home but now claim they can't live without them, she said.

Community intranets, page 56

Technology lets Web sites get 'pushy'

Instead of waiting for visitors, sites send information directly to desktops

By Mitch Wagner

A NEW MEDIUM with the ungainly name of "push-oriented technology" has the promise to build a customer relationship with pages on the World Wide Web.

Currently, even the most sophisticated, multimillion-dollar sites sit meekly on the Web, just waiting for users to go to them. But push-oriented technology allows webmasters to make their sites more aggressive by beaming information directly to users' desktops.

"This is a suite of technologies that allow users to say, 'I want to receive information from you,' and then to receive it automatically," said Larry Loizzo, senior vice president and director of General Motors Corp.'s Cyberworks business unit in Detroit. "Up until now, users had to take action to go to a Web site."

Web hack attacks bring down servers, but businesses stay

By Mitch Wagner
and Kim Girard

Despite recent hacker attacks that knocked out World Wide Web servers in California and New York, businesses on the Internet remained committed to staying there.

They said they already knew doing business on the Internet is dangerous. "If you have a storefront, someone can come in with a gun and hold you up," said David Rae, CEO of Attitude Network Ltd. in Naples, Fla., which uses UUnet Technologies, Inc. as an Internet service provider.

"Certainly there's a risk of this happening from time to time, but I don't think it's an overpowering risk." The most recent high-profile hacker attacks involve a method known as "SYN flooding." An unknown hacker using the technique brought down the Web server at Internet service hack attacks, page 57
Trend to nix flat-rate service not expected

By Kim Girard

NETCOM ON-LINE Communication Services, Inc. may be dropping its flat-rate monthly pricing scheme, but don't expect other leading service providers to follow suit.

Netcom officials said the company couldn't sustain its services by charging $19.95 per month. The San Jose, Calif.-based provider plans to raise prices, though rates haven't been set, and will target customers who use the service entirely or partly for business.

The company will continue flat-rate pricing for current customers for an undetermined time.

Netcom's move probably isn't "a sign of a trend," said Ross Rubin, group director of Internet technologies at Jupiter Communications, a consultancy in New York. "Other [service providers] are prepared to go lower than [$19.95]." He said. They will do so through the subsidization of larger corporate clients, increased advertising and value-added service offerings, Rubin said.

Tom Earl, network manager at Coast to Coast Telecommunications, a Michigan-based telecommunications company that uses SecurID, said Netcom was the first online provider in its class to abandon flat-rate monthly pricing.

"The whole idea is to let people who work from home," said Biehler, who used to send electronic mail to the school, "do all this stuff because it's an intranet, so you don't have to make the information universally applicable to all your stores," he said. "It's a way to communicate with the local community."

Celebration School has just 200 students but boasts two T1 (1.544 M bit/sec.) lines connected to the Internet via the community intranet, and it will install a third one next year. By contrast, the 27 other schools that are part of the larger district that includes Celebration share one T1 line, said Scott Muri, the school's technology specialist.

How to wire a town

"Celebration is the New Generation Co. in La Jolla, Calif. Its store in Celebration is the first there to have a Web site, which it uses to tell residents about sales and other events.

New Generation — which is developing a larger site for the Internet, including a "virtual store" — is using the Celebration Community intranet as a pilot test for the larger site. said Greg Mickey, director of the company's support group.

"Celebration is a unique opportunity because it's an intranet, so you don't have to make the information universally applicable to all your stores," he said. "It's a way to communicate with the local community."

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Internet service providers

FROM PAGE 55

SAGE ENTERPRISES, INC. has announced that its SecureID and ACE/Server software products will operate with Raptor Systems, Inc.'s Eagle NT firewall.

According to the Bedford, Mass., company, network managers will be able to protect their Windows NT networks against unauthorized Internet access by easily integrating Eagle NT with the security products.

Prices for ACE/Server start at $3,450 and at $54 for SecureID. Security Dynamics Technologies (617) 687-2000 www.secureid.com

SAGE ENTERPRISES, INC. has announced PlanetAll, a Worldwide Wide Web site designed to help people build is association social and professional relationships.

According to the Cambridge, Mass., firm, PlanetAll provides members with contact information for friends and business associates. Registration is free.

Sage Enterprises
(617) 621-1577
www.planetall.com

Win 3.1

CONTINUED FROM PAGE 55

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Boston Edison Co. in Boston has about 2,200 seats running Windows for Workgroups 3.11, according to Wayne Lemmerhirt, manager of technical services at the utility.

About 300 users have been testing Navigator 2.0, Lemmerhirt said. But that is about to change.

"We've set a standard for going to Internet Explorer," Lemmerhirt said. "We liked the 3.0 version with the frames. It's a little closer to what Netscape is doing."

THE BOTTOM LINE

Lemmerhirt said he appreciates the added features in Internet Explorer 3.0, but he added that Boston Edison would have standardized on the 2.0 version even if 3.0 hadn't come out. "Price was really driving the decision," he said. "We like Netscape, but end users didn't want to pay for it."

The lack of immediate support for Java didn't concern Lemmerhirt. He said his company is leaning toward using ActiveX components rather than Java, and Internet Explorer 3.0 for Windows 3.1 supports ActiveX.

WE WANT JAVA

But Java support was paramount for Paul Mahowald, vice president of information systems at Blockbuster Entertainment Group in Fort Lauderdale, Fla. Mahowald wants to write all his company's applications in Java and distribute them over an intranet that is accessible from the public Internet.

"The whole idea is to let people work from home," Mahowald said. The majority of people in their house have Windows 3.1. I can't get people to change operating systems at home.

Mahowald's situation isn't an anomaly, said Randy Hancock, an analyst at Gemini Consulting, Inc.'s C4 Lab in Cambridge, Mass.

"Java is starting to make its appearance more and more." Hancock said. "There's more use of it in intranet applications where IS has more control over it. I would say [Java support in a Windows 3.1 browser] is quite important because there's still a lot of people who haven't migrated to Windows 95 or NT."

From the street, Celebration looks like it was designed by Norman Rockwell. It is a family-friendly thoroughfare to an earlier and simpler era. But inside the buildings are intranet servers, and underneath the streets runs a fiber-optic backbone that carries data, voice and cable TV.

"There are 1,100 community networks today," said Amy Westwood, manager of network development for The Celebration Co., a Disney subsidiary. "None of them are doing all this and having a community come out of the ground with all the connections available on Day One."

Biehler said his family moved to Celebration to escape the boredom of a tiny New Hampshire town. A former software salesman now retired with a disability, Biehler said the town's community network was also a draw. "The ability to communicate on the network with the school and the community was exciting to me," he said.

Biehler uses the intranet every day, to send electronic mail to the school, friends and local businesses. Biehler's 14-year-old son is on the intranet as well, where he has his own Web site complete with digitized movies he made at school.

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Another organization watching the
Web sites can now get ‘pushy’

CONTINUED FROM PAGE 55

Jose, Calif., since September.
Communications Technology Corp. in Madison, Ala., hopes to
use push-oriented media to replace
direct mail, according to
Cheryl Sanford, marketing
communications manager.
“It will enable us to distribute
information at a great savings,
automatically, and help us be
more accountable to be sure that
we are giving people what they
need,” Sanford said.
The best-known example of
push-oriented media is Point-
Cast, Inc.’s network, which
beams news over the Internet
from sources including CNN
and The New York Times. Since
autumn, more than a dozen
companies have come out with
push-oriented technology offer-
ings [CW, Dec. 16], including
Netscape Communications
Corp., and Microsoft Corp.
Current discussions of push-
oriented technology are general-
ly framed in terms of sending
information — including news,
marketing, advertising or cus-
tomer service details — via the
Internet. Or, on an intranet,
push-oriented technology in-
volves beaming corporate infor-
mation to employees.
But the potential is far greater,
experts say. Marimba, in Palo
Alto, Calif., is selling its Casta-
net product as a software distri-
bution mechanism. A company
will be able to distribute new
versions of client software elec-
tronically to its own employees
or corporate business partners
or even to hundreds of thou-
sands of consumers.
That will end the need for
floppy-disk mailings or sending
information systems staff scur-
rying around the country instal-
ling upgrades on employee desk-
tops, said Arthur van Hoff,
chief technical officer and
founder of Marimba.
HELP FOR SLOWDOWNS
Push-oriented media could
ameliorate bandwidth problems
and server slowdowns on the In-
ternet, van Hoff said. Users
would no longer need to get an
entire copy of each Web page ev-
ey time they visit. Instead, their
desktop software and the server
would consult each other, and
the server would send down only the updated informa-
tion needed.
“It’s immediate access. If the
information is trickling down to
your desktop all the time, you
don’t have to wait for it,” said
John McCarthy, an analyst at
Forrester Research, Inc. in Cam-
bridge, Mass.
NEWSOF, INC. has announced a
new version of Presto Personal
Page Mac 2.5, a WYSIWYG
World Wide Web editor with
drag-and-drop capabilities.
According to the Fremont,
Calif., company, users can cre-
ate links by dragging and drop-
ning files to a site.
Pricing starts at $39.95.
NewsSoft, Inc.
(800) 436-4395
www.tophat.com
EDLAS TECHNOLOGIES, INC. has
announced Synergy Weblet
Developer to allow nontechnical
programmers to design, test
and deploy interactive World
Wide Web content.
According to the Chicago
company, Synergy Weblet De-
developer is based on Tcl script-
ing language and will function
across platforms. Web applets
that are part of the package run
identically on Windows, Unix
and Macintosh systems.
Pricing is $59.95.
Edolas Technologies
(312) 377-8740
www.edolas.com
WILDCAT CANYON SOFTWARE has
announced Internet Music Kit,
an Internet software to create
and embed music onto any
World Wide Web page.
According to the Berkeley,
Calif., company, the product
works with original and previ-
ously published Musical Instru-
ment Digital Interface files for
any World Wide Web page.
Internet Music Kit is priced at
$49.
Wildcat Canyon Software
(510) 848-5330
www.wildcat.com
SYN-CHRONICITY
How the SYN attack works:
1. Attacker computer sends a message requesting
   the target computer to open an Internet session.
2. The target machine requests a response and
   leaves a channel open for up to 90 seconds.
3. In a normal Internet session, the original machine
   would reply at that point. Instead, the sending
   machine sends out more requests for Internet
   connections, up to 200 requests per minute.
4. Sending machine scrambles its Internet address
   so the signal can’t be traced.
5. The attack takes its name from the kind of signal
   used - a synchronization signal.

Hack attacks
CONTINUED FROM PAGE 55

“Just by pushing a button, you can
post information out to user
desktops. The software allows
developers to implement their
own protocols and send content
down only the updated informa-
tion,” said Eugene Spafford,
director of the Computer Aud-
iting and Technology Service at
Rutgers University. “This is a
major security risk — and the
risk is greater on the interna-
tional.”

Wildcat Canyon Software
(510) 848-5330
www.wildcat.com

“Hackers don’t have to wait for it,” said
Mitch Wagner, chief security officer at
Tibco Communications, Inc.

“I work with original and previ-
ously published Musical Instru-
ment Digital Interface files for
any World Wide Web page,” said
Spafford.

“Web-based push systems are
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Lanacom, Inc. in Toronto last month unveiled HeadLiner, a news
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Internet sites to assemble their own information. The
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www.headliner.com, with general availability scheduled for early
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INTERNET SECURITY

8:25 a.m. - he arrives at work and logs onto his PC. At 8:45 he unknowingly destroys:

- 350 critical files
- shutting down your entire inventory system.

8:51 a.m. - he goes for coffee.

Your company is crippled.

Have a nice day.

Over 80% of all security breaches, both accidental and deliberate, occur from within an organization. You can help prevent both internal and external breaches with CYBERSHIELD from Data General, combining the Internet, Intranet and firewall in one complete and integrated solution.

CYBERSHIELD joins Data General's DG/UX B2 Security Option with technology from BDM International and applications from Oracle and Open Market. And CYBERSHIELD runs on Intel Pentium Pro Processor-based AViON servers, such as the AV 4900.

Your company can run enterprise-wide applications and conduct transactions over the Internet and Intranet with the highest level of security currently available, just as major companies and government security agencies already do. Contact Data General and learn how you can keep accidents like this from happening.

And really do have a nice day.

Data General

www.dg.com
1-800-DATA GEN
TI deal aims to reduce migration risk

**By Thomas Hoffman and Patrick Dryden**

TO KEEP PACE with a semiconductor industry that is expected to double to $500 billion within five years, Texas Instruments, Inc. has hired Andersen Consulting to help it shift its core applications from mainframes to client/server computing.

TI's move appears straightforward. The 250 information systems staffers who support the company's $8 billion semiconductor group are predominately mainframe-oriented and lack the skills needed to install and monitor third-party applications such as SAP AG's R/3 business software, which TI plans to use for its core financial applications.

RISK TRANSFERRED

But the Dallas-based technology vendor gains in other respects. Under Andersen's Design, Build, Run program, TI will be able to capitalize the expenses of the five-year, $200 million outsourcing pact when the systems are accepted into production.

That way, the risk transfers to Andersen, and production-ready systems have to be accepted by the business units "before we get a clean bill of health from a contracting point-of-view," said David Rich, a partner in the Electronics and High Tech practice at the Chicago-based consultancy.

The performance-based deal "is key to how soon we can get these systems into our business," said Phil Coup, vice president of TI's semiconductor group, which represents more than 60% of the company's $13 billion revenue stream.

Because the typical PC customer upgrades his system every six months or so, TI needed to run its semiconductor unit's financial operations on a "more

Managers, workers play the pay rate game

**By Julia King**

**Location, project length contribute to salaries**

ARE YOU CHARGING enough for work as a Smalltalk developer, Oracle Corp. database designer or Java programmer? Are you paying too much?

The answers could be no more than a few clicks away on one of a growing number of Internet sites that list information systems workers' hourly rates and annual salaries (see chart).

But a word to the wise: Look beyond the dollar signs. Several other factors, notably geographical location and project duration, figure squarely into an IS worker's worth, even in today's booming job market.

"You may find someone with the same skills getting $120 an hour for an eight-hour assignment vs. $60 an hour for a seven-month assignment," said Janet Ruhl, whose Real Rate Survey home page (ourworld.compuserve.com/homepages/JaneRuhl) lists some 500 rates charged by IS contractors on jobs in the past three years.

As of Dec. 12, when the survey Pay rates, page 60

- Location, project length contribute to salaries
- Location, project length contribute to salaries

**A Connecticut Yankee steps into outsourcing's court**

**By Thomas Hoffman**

THE GOVERNOR OF CONNECTICUT wants to outsource the state's entire information technology infrastructure as part of an effort to run the state more like a private business.

Millions of dollars in cost savings would no doubt please Connecticut's taxpayers, but state union leaders who oppose Gov. John G. Rowland's recently announced IT outsourcing plan insist that up to 700 of the state's 1,000 information systems employees will lose their jobs. Having already lost thousands of jobs in the past decade because of the consolidation of the defense and insurance industries, Connecticut can ill-afford to make any missteps.

Union leaders are concerned that state IT employees either won't receive employment guarantees from the outsourcing vendor selected or will get temporary jobs at best. Those fears
**Connecticut**

**Continued from page 59**

persist even though the governor and Rock Regan, project director at the Office of Information and Technology in Hartford, said there are no plans to lay off any IS staffs.

Observers said Rowland and his top IT officials would be watching the state of Indiana to see the backlash an outsourcing plan can have.

Last year, Indiana tried to become a leader in a systems project, but a business project, Doane said. “They also don’t know that there’s never a clear and measurable moment when implementing SAP is over. Instead, it gets implemented to a degree, it is iterated and reiterated.”

These are among the topics Doane and Jim O’Keefe, also a director at Consulting Alliance, cover during a unique two-day, ISO 7500 SAP training course. The course was designed specifically for business executives and information systems managers looking to educate top managers about their role in SAP implementations.

Most other SAP training classes focus on technical and end-user issues, but the executive course concentrates on how the integrated software enables a company to change the way it does business.

**ESSENTIAL INFORMATION**

During so-called “sandbox” exercises, managers can change a front-end business process, such as how a company receives orders, then see how that change affects subsequent processes, such as manufacturing, shipping and billing.

“The training gives businesspeople information they need to know just how possible with SAP,” O’Keefe said.

Linda Lewis, an SAP manager at Du Pont Co. in Wilmington, Del., views executive training in SAP software as essential if Du Pont is to capitalize on the systems potential benefits.

Du Pont is looking to standardize on the integrated software throughout its worldwide operations. About 2,000 users are in production on various R/3 systems at the company, and this year it will have 30 R/3 projects under way.

“SAP projects are different than any other kind of project that businesspeople have had experience with,” Lewis said. With SAP, “the programming is already done. What you’re doing is configuring and figuring out how you want the business processes to run,” she said.

“The executive course is the one we took brings other companies’ experiences into the room, so businesspeople can hear what the impact is as you go through an SAP project,” Lewis said.

**Andersen**

**Continued from page 59**

flexible” client/server architecture to help it react more quickly to changes in the fast-paced industry, Coup said.

For example, it used to take TI up to nine months to code a mainframe program to support a new business entity. He said. Under a client/server architecture, applications can be generated within a few weeks.

Andersen's been using a pric- ing model “is putting them on the map” for longer outsourcing deals that otherwise would have gone to outsourcing kingpins such as Electronic Data Systems Corp., IBM or Computer Sciences Corp., said Allie Young, a senior analyst at Dataquest Worldwide Services Group in Westboro, Mass.

Coup declined to quantify TI’s expected cost savings.

Andersen, which officially began the work last week, will develop some unspecified applications itself and install SAP R/3 Version 4.0 to support TI's financial systems. TI will retain a handful of mainframe systems, such as its tax systems, for regulatory purposes.

**Pay rates**

**Continued from page 59**

In Connecticut, Inc.'s state and local government IT outsourcing group in Mountain View, Calif. Connecticut, meanwhile, spends roughly $900,000 per year on IS. Most of the systems are archaic and fail to form connections among the state's highly fragmented agencies.

For example, the Department of Social Services, which helps people get jobs, and the Department of Welfare, which assists many of the same people, don't share any data, Regan said.

We estimate that we’ve spent $5 billion on IT since 1990 and we don’t feel we’ve gotten payback,” said Regan, a boyhood pal of Rowland’s who joined the state in 1995 after a 12-year stint as an IT project manager at Sikorsky Aircraft in Stratford, Conn.

**COST SAVINGS**

Regan, whom sources expect the governor to name as the state’s chief information officer this month, said he wasn’t sure how much money the state stands to save until it sends out requests for proposals this month and receives responses back by early spring. An award is expected by July.

One of Connecticut’s biggest IT problems, Regan said, is that it has two separate agencies that oversee IT issues: the Bureau of Technical Services and the Office of Information and Technology.

That may explain why no one seems to know how many PCs the state owns.

The state also lacks ample LAN and server disaster recovery plans, doesn’t know in detail what IS skills are on staff and doesn’t have a centralized security system to protect confidential information, according to a study by KPMG Peat Marwick.

Perhaps Connecticut will fare better than Indiana. State officials such as Rowland and Regan are sensitive to the political ramifications of their outsourcing plans, said George Lorge mann, an analyst at The Yankee Group in Boston.

**Fla., company that recruits and places IS contractors. Like other firms, Interim pays IS contractors based on the location and duration of an assignment. But it also factors in a worker's years of experience, supply and demand within a geographic market and a contractor's personality and ability to fit within a client's culture.**

“If you put all five factors together and a person was at the high end in all five, their pay rate could be as much as 45% to 50% higher than if all five points were on low end,” he said.

**One of the most important things executives learn during training is that they can and must make radical changes in how they do business to get the software’s full benefits. Lewis said. “You learn that if it is an IS-driven project, it will not suc- ceed,” she said.”**
Managing

THE NEXT GENERATION

Yesterday's 20-something users think they know as much as you do about technology. Sometimes they're right.

How do you manage that sometimes lethal combination of expertise and chutzpah?

Continued from page 3

business performance and services.

"These are the guys you see climbing poles and digging ditches. Yet they know how to surf the Internet, and they're perfectly comfortable working with handheld computers," he says.

In case you haven't noticed, there are some new folks on the corporate block, and they're providing information systems with some formidable challenges.

We aren't talking about occasional power users who take an interest in technology above and beyond their paid jobs as accountants or sales representatives.

No, this is a whole generation of users who cut their baby teeth on 286 chips and learned their RAMs and ROMs before their ABCs.

They'll seize more of your support time. They'll gobble up your training budget. They'll also make your best technologists very nervous. Not only because it can be hard to keep ahead of them, technically speaking, but also because their confidence — some might say chutzpah — in technical matters can create havoc on the corporate network.

Still, IS managers say the knowledge and enthusiasm of these Young Turks can be harnessed to excellent effect.

ENLIST THEM AS STANDARD BEARS

Low Temares, chief information officer at the University of Miami in Coral Gables, Fl., echoes the words of many information technology managers when he says, "A little knowledge is a dangerous thing." Although certainly computer literate, users of the new generation tend not to know too much about networks,

The Next Generation, page 63
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THE NEXT GENERATION
CONTINUED FROM PAGE 61

specifically about the enterprise approach to managing computers. "They tend not to realize that what you do to one machine will affect everyone," Temares says.
The only solution, he says: education.
"We make a point to explain both the economic and the opportunity costs of having something go wrong because they deviate from our standards," he says.

Temares makes a point with Hurricane Andrew, which devastated the campus in 1992. After the storm, Temares' staff began getting calls from frantic departments that had built systems without help from the central IS staff. Because they didn't establish basic data backup and disaster-recovery procedures, "there were some departments that suffered significant losses," says Temares, who adds that "explaining the very high potential costs goes a long way toward convincing users to stay with the program."

Baumann has tapped the enthusiasm of the new generation by making its members early users of a new desktop architecture Cigna is rolling out. Previously, Cigna had standardized on WordPerfect, Lotus 1-2-3 and OS/2 on the server running Windows. Now, it's moving toward Windows 95 on the desktop, Windows NT on the server and Microsoft Office. The change will be difficult for old-timers, he says. But by placing the new configuration with youthful enthusiasts first — and encouraging them to act as evangelists — Baumann says, "they'll help enormously with this major transformation."

Still, there's probably only so much you can do. Mark Factor, vice president of IS at Au Bon Pain Co., a Boston-based chain of coffee shops, points out that "these new users tend to be explorers. They want to see what's behind every button. You might think you have standards to new employees — preferably when handing over initial hardware, passwords and network access.

PATIENCE, PATIENCE
Above all, expect that these savvy users will require more of your time. Sure, they keep up on the latest technological developments. But that means they have definite opinions, know enough to ask difficult questions and are less likely to be satisfied with easy answers.

"You really have to slow them down," Baumann says. His younger users are particularly eager to get the latest software releases. "They read the articles, they understand exactly what has been tweaked, what the performance advantages are," he says. The older generation usually dreads having to relinquish a familiar software package no matter what improvements are promised.

The solution? The thing you don't do is brush off these types of inquiries or patronize the questioner in any way. LaRosa says, "I explain that our computing devices, since they are attached to the network, must fit operations. For example, prepare a report on the financial ramifications of a network crash, lost data and so on. Some IT managers even warn that problems arising from non-standard hardware or software are the responsibility of the user and the user's departmental budget.

DON'T approach rules in a confrontational or antagonistic way. Building relationships is the only way to manage sophisticated users.

DON'T assume your IS staff knows more than the end user about a particular technology — especially one the user is immersed in daily.

DO provide succinct but thorough reasons for these standards to new employees — preferably when handing over initial hardware, passwords and network access.

DO explain the possible ramifications if standards are violated. For example, prepare a report on the financial ramifications of a network crash, lost data and so on. Some IT managers even warn that problems arising from non-standard hardware or software are the responsibility of the user and the user's departmental budget.

DON'T approach rules in a confrontational or antagonistic way. Building relationships is the only way to manage sophisticated users.

DON'T assume your IS staff knows more than the end user about a particular technology — especially one the user is immersed in daily.

DO invite users to participate in advanced training or IS seminars as appropriate.

DO encourage users to be involved in departmental installations or decisions.

DO encourage expert users to help their colleagues or volunteer for "train-the-trainer" type roles.

DON'T "punish" users who go off on their own. That will only result in a downward cycle of one-upmanship.

DO explore alternative training methods that will better fit individuals' needs and schedules.

DON'T discourage or mock users who come bearing clippings from magazines or newspapers and asking questions about IT products or decisions. Take the time to educate them on reasons for doing things the way you do.
What do you do when faced with

a senior technician who wants to

become a manager yet has zero

technical skills? What if that desire

turns into desperation?

Rory was a 42-year-old senior systems

programmer. He had been with the

company eight years and had steadily

gained more responsibility. He was the

type of manager without the requirement to

manage staff.

Each performance evaluation lauded

his technical skills, his initiative in learn-

ing new technologies and his problem-

solving abilities. On the other side, his

evaluations said his interpersonal skills

were severely lacking. He was abrupt

with peers, condescending to subordi-

nates and made little effort to conceal

his contempt for management. Yet Rory

very much wanted to be a manager be-

cause he felt he was as good as anyone in

that position and because he felt he was

owed the perks and recognition the job

would bring.

Management, wanting to retain an im-

portant technical resource, had tried giv-

ing him some project leader assign-

ments. To put it mildly, that wasn't suc-

cessful. In the last of those assignments,

Rory was named project leader, supervis-

ing three others. He was also required to

interface with a development team and an

external vendor. Rory's idea of super-

vision was to create enormously detailed

task lists. He would stay late every

evening to review subordinates' work and

send lengthy E-mail messages suggest-

ing improvements. He blamed any flaw

on the vendor and loudly criticized the

development team for its inadequacies.

Complaints flooded in.

As years went by, the dialogue at re-

views became more hostile, with Rory

completely unable to understand that a

manager had to communicate, encour-

age, motivate and support others. He be-

came bitter and depressed and withdrew

into himself even more. He was increas-

ingly irascible, and people avoided him if

possible. His manager, concerned about

Rory's attitude, considered soliciting his

counseling but feared the reaction.

When a career dream becomes a nightmare

by Leilani Allen

The book gets off to a slow start, with

wordy explanations of why IS profes-

sionals need to act like consultants and the different ways IS professionals can interact with users. But the pace picks up in the second half, as Ouellette offers concrete tips about how to handle each stage of a consulting en-
gagement.

Ouellette provides detailed advice about everything from running infor-
mation-gathering meetings to what to do if a prospective client starts telling
you about his divorce. (Answer: Try to change the subject. If you can't, polite-
ly end the meeting. Knowing intimate details about the client won't help

you and could hurt you.)

Ouellette also offers advice on how to handle chatterbox clients, conduct nego-
tiations and handle conflict. Although many of his suggestions could also be
found in other books on negotiation or conflict management, Ouellette does a

good job tying them together in a form IS managers can understand and use.

— Robert L. Schier

Leilani Allen's column deals with the kinds of people issues managers face every day but are reluct-
tant to discuss openly. Each column is based on a real-life situation. The names and cer-
tain circumstances are changed to protect confidentiality. Allen, a director at Tenex, a
management consulting firm in Burlington, Mass., invites readers to share experiences
with her via E-mail at lallen@tenex.com.

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Male IS professionals and their female managers are having a tricky time navigating the treacherous waters of political correctness.

In this age of feminism and shattered glass ceilings, our high-tech male counterparts are having a tricky time navigating the treacherous waters of political correctness. The results are wide-ranging: denial, hilarity, fear, common sense.

Let's deal with the denial. Several men tell me they don't believe gender bias exists in the workplace because they've never seen it. That's the whole point, guys: It isn't supposed to knock you over the way Holyfield did Tyson. In fairness, most of the men who express this viewpoint are reasonable and egalitarian — though not necessarily eagle-eyed.

Many organizations, especially large businesses, have strict rules and require that their employees take sexual harassment and sensitivity training classes. And they move fast to address even perceived instances of gender bias. That's been the case at Atlanta-based Kaiser Foundation Health Plan. Kaiser, by the way, employs mostly women — except in the IS department, which Gary Wilkerson, program administrator, describes as one of the few male bastions in the 90,000-person company. Wilkerson reports that because there are so many women and highly placed female executives, the men "are pretty well sensitized" and just deal with them naturally.

After some prodding, Wilkerson acknowledged that, yes, there have been cases of gender bias in hiring — in favor of female IS applicants. We'll pause to let the women cheer and the men to say, "Told you so." Back to Wilkerson: "For a while, whenever we filled a new IS position, we would joke, 'What's her name?'" Happily, Kaiser proved as fair for its male employees as it was for the women. After the men complained, the company instituted counseling, and "the situation resolved itself," Wilkerson says. Not all men have been as lucky.

One IS manager, who considers himself unbiased and is interested only in whether his network administrators and software engineers — male or female — can do the job, found himself the subject of a sexual harassment complaint. The allegation stemmed from a training session in which the IS manager, who requested anonymity, says he was training a female software engineer. While she sat at her workstation, he stood behind her and put his hand on her shoulder. Periodically, "When I was called down to human resources and told about my 'inappropriate' behavior, I was stunned," he says. Now, he says, "I keep my distance — literally. I stand three feet away with my hands in my pockets."

ON THE WRONG TRACK
Then there's the "daddy track." Although it's routine for businesses to offer maternity leave, paternity leave has been slower to catch on. A network administrator at a midsize organization says that when he applied for paternity leave at his Texas-based company, men and women laughed at him. "There was lots of talk about 'real men,' and someone suggested I move to Sweden," he says. Did he take the leave? "You bet I did, and I used the nine weeks to look for another job."

Still another hapless fellow found himself one of only two males in a small, privately held woman-owned business. The women, he says, were anti-male. "If you weren't Harvey Milquetoast, watch out," he says. Everywhere he turned, he says, there was some form of militant male-bashing, including explicit messages tacked to a refrigerator. This man, who says he'd never think of treating a woman the way the women treated him, left in short order.

These tales unfortunately prove that women can be just as guilty of discrimination as men. Discrimination, regardless of whether its reactionary, is still discrimination.

In answer to the question posed nearly a century ago by Sigmund Freud — "What does a woman want?" — in the workplace at least, we want the same opportunities, salaries and treatment that our male counterparts get. And we want those things served up with a healthy dose of respect. We'll do the same, thank you.

Laura DiDio is Computerworld's senior editor, LANs.
Imagine you work at a Fortune 500 company that has more than 100 million lines of code. Eliminating the year 2000 problem from just 100,000 lines of that code will take one programmer a full year. Now imagine how much work will go into cleaning up the 100 million lines of code, and you see why year 2000 project teams must prioritize their efforts so that at least the most important applications are fixed before the calendar strikes 2000.

Companies that don't move now to erase the year 2000 traps in their most important applications may face bankruptcy, lawsuits or go out of business, says Bruce Hall, research director at Gartner Group, Inc. in Stamford, Conn.

This isn't a scare tactic. Hall estimates that half of all organizations won't finish on time, and 30% of mission-critical applications won't be ready on time.

So choosing tools to battle year 2000 problems requires thought and consideration. To help companies make these mission-critical decisions, Computerworld looked into four key categories of tools: analysis, conversion, testing and integration. The vendors and tools listed within each category are examples cited by the various analysts interviewed. There are more than 40 vendors in this market, and new players continue to appear.

Computerworld consulted four experts to get advice on buying tools to prepare for 2000. In addition to Hall, we spoke with Leland Freeman, managing director of year 2000 services at Management Support Technology, a consultancy in Framingham, Mass.; Mike Egan, program director at Meta Group, Inc. in Burlingame, Calif.; and Dick Heiman, research manager for application development tools at International Data Corp. (IDC) in Framingham.

In addition to the products cited, companies may also consider outsourcing, which many vendors provide. But the analysts caution that even outsourcing isn't necessarily painless. There's no way to simply dump the problem into a service provider's lap and wait for a pain-free resolution; company involvement is unavoidable. "You just can't off-load the entire problem," Heiman says.

But if a company decides to go with a service provider for part or all of the process, it must act quickly. "The issue is going to be supply," Hall says. The supply of available help is dwindling fast.
ANALYSIS TOOLS

The first step in a year 2000 project is determining the severity and pervasiveness of the problem. Once this information is in hand, a manager gains a sense of how much the project will cost and how long it will take to complete.

Analysis tools, which search out the affected applications, assist companies with this initial phase. "The purpose of an analysis tool is to present that information and provide an impact report to generate an impact assessment," Freeman says. "The major objective of this phase is to understand the size and scope of the problem."

Within this phase, managers should prioritize their efforts. It's important to determine which programs will break first, the complexity of the programs and which programs will be easiest to fix, Freeman says.

When reviewing these tools for purchase, a company should look for "tools that will identify date usage, trace date and data flow through an application and present that information in some way, either a report or a graphical format," Hall says. "Ideally, you want it to identify for you where your problems are, where the issues are."

Heiman categorizes analysis tools into two major groups. The first group consists of basic engine analysis tools that have built-in extensions to look for date-related fields. The other class includes niche players, companies that specifically address the year 2000 problem. These tools have specialized fields to do date calculations, he says.

The analysts unanimously agree that Platinum Technology, Inc. is a good example of a vendor that has a solid analysis tool. The vendor markets and sells SystemVision 2000, a tool developed by Adpacs Corp.

Another recommended tool is Iosgon Corp.'s TicToc. It "basically goes out and assesses the number of lines of code and where you have date fields," Egan explains. The end result is an estimate of the number of date occurrences and how much it would cost to fix them.

CONVERSION TOOLS

Once a company finishes analyzing the problem, it must decide whether to fix the affected systems, consolidate them in an attempt to minimize the year 2000 problem or replace those systems with year 2000-compliant systems, Freeman says.

If a company decides to keep or consolidate the existing systems, the next step is to implement the most essential changes. This is where conversion tools help. "The first major consideration is the degree of automation [a particular tool offers]," Freeman says. "As time runs out, you won't find enough people to address the problem," so automation is an important consideration.

Freeman also recommends looking at throughput, or how quickly the tool performs the changes, as an additional time-saver.

Another important question to ask is whether the conversion tool interfaces with the analysis tool. If not, the work performed during analysis is less effective. "Typically, you want to leverage the two steps" by having the analysis tool feed its findings directly to the conversion tool, Hall says. He does say that "you can get a lot of value from an analysis tool and go in and change the information."

Conversion tools come in the form of scanners, parsers and conversion systems. There are also multilingual generators for companies that have a lot of obscure code, Egan says.

One conversion tool vendor is Peritus Software Services, Inc., which claims its product can fix a million lines of code in a weekend. But the hit rate is 80%, which means a company has to find which lines of code the tool missed, and then programmers must manually plug in new structures. Egan explains. But this is still a quick way to find all of the affected code, he says.

Egan also recommends looking at Viasoft, Inc. or Compuware Corp. "Compuware has been the leader in applications for testing, editing and debugging. It is the same thing for the year 2000. In that regard, they have the best reputation. Viasoft has a nice lineup of year 2000 tools," he says.

Here's a sample listing of analysis tools to address the year 2000 issue:

<table>
<thead>
<tr>
<th>Tool</th>
<th>Vendor</th>
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<tbody>
<tr>
<td>TicToc</td>
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<td>Isogon Corp.</td>
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<td>Phoenix</td>
<td>Viasoft, Inc.</td>
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Here's a list of exemplary conversion tools mentioned by a few of the analysts interviewed:

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<th>Tool</th>
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<tr>
<td>AutoEnhancer/2000</td>
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<td>Peritus Software Services, Inc.</td>
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<tr>
<td>Billerica, Mass.</td>
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<tr>
<td>(508) 270-0800</td>
<td>CA-Realil II Workbench</td>
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<tr>
<td><a href="http://www.peritus.com">www.peritus.com</a></td>
<td>CA-Realil II Workbench</td>
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<td>V/A/Alliance, V/A/Valid Date, V/A/Insight, V/A/SmartEditt, V/A/SmartTest, V/A/SmartTest-ICA, V/A/SmartDoc, V/A/Renault, Viasoft, Inc.</td>
<td>Computer Associates</td>
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<td>Phoenix</td>
<td>Xpediter+, Xpediter/ Xchange, File-Aid</td>
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<tr>
<td>(602) 840-4068</td>
<td>Conversion Expert</td>
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<td><a href="http://www.viasoft.com">www.viasoft.com</a></td>
<td>Compuware Corp.</td>
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<td>(630) 620-5000</td>
<td>(810) 737-7300</td>
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<tr>
<td>(630) 932-9154</td>
<td><a href="http://www.platinum.com">www.platinum.com</a></td>
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<tr>
<td>SystemVision Year 2000</td>
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<td>Platinum Technology, Inc.</td>
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<td>Micro Focus, Inc.</td>
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<td>Islandia, N.Y.</td>
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<td>(516) 342-5224</td>
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<td><a href="http://www.cal.com">www.cal.com</a></td>
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<td>Platinum Technology, Inc.</td>
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<tr>
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<tr>
<td>(630) 620-5000</td>
<td>(630) 990-1999</td>
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<td><a href="http://www.platinum.com">www.platinum.com</a></td>
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</table>
"You are what you read."

[Image of the form with questions and options selected]

Do you use, evaluate, specify, recommend or approve the purchase of? (Check all that apply.)
(a) Solaris
(b) Netware
(c) OS/2
(d) Windows
(e) Mac OS
(f) Linux
(g) Unix
(h) Novell

Do you use the Internet? Yes No

Please complete the questions below.

1. BUSINESS INDUSTRY (Circle one)
10. Manufacturer (other than computer)
20. Finance/Insurance/Real Estate
30. Medical/Law/Education
40. Wholesale/Retail Trade
50. Business Service (except DP)
60. Government - State/Local/Local
70. Manufacturing and Computer-Related Systems or Products
80. Systems Integrators, VARs, Computer Service Bureaus, Software Planning & Consulting Services
90. Other Titled Personnel

2. TITLE/FUNCTION (Circle one)
10. Chief Information Officer/Vice President, IS/MIS/DP
20. President, Owner/Partner, General Mgr.
30. Vice President, Asst. Vice President
40. Director, Manager, Supervisor, Professional Staff
50. Coordinator, Team Lead
60. Departmental Manager
70. Other Titled Personnel

3. Which of the following products do you use, evaluate, specify, recommend, or approve the purchase of? (Check all that apply.)
(a) Operating Systems
(b) Application Development
(c) Systems and Software Development
(d) Financial/Accounting Software
(e) Internet Browsers
(f) Web Authoring/Development Tools
(g) Other

4. Which of the following products do you use, evaluate, specify, recommend, or approve the purchase of? (Check all that apply.)
(a) Operating Systems
(b) Application Development
(c) Systems and Software Development
(d) Financial/Accounting Software
(e) Internet Browsers
(f) Web Authoring/Development Tools
(g) Other

5. Do you use the Internet? Yes No

Please complete the questions below.

1. BUSINESS INDUSTRY (Circle one)
10. Manufacturer (other than computer)
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(e) Internet Browsers
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(g) Other

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(b) Application Development
(c) Systems and Software Development
(d) Financial/Accounting Software
(e) Internet Browsers
(f) Web Authoring/Development Tools
(g) Other

5. Do you use the Internet? Yes No
TESTING TOOLS

Most analysts say testing will consume 30% to 50% of the project's resources in terms of money and time, but this is an area in which tools are lacking. "This is one of the weak spots; there isn't a lot out there," Egan says.

"Testing is the black hole of this project," Freeman says. He recommends companies keep watch for new products coming into the market.

Analysts predict testing tools will be a big growth area. "I think you will see a lot of new players in the next six to nine months," Hall says. He notes that most companies aren't at this stage in the process yet. "There is not a lot of demand yet," he says.

Freeman agrees and predicts that new testing products will appear to "address a specific need, a niche area.

But there are some strong products out there right now, and all four analysts recommend looking at Compuware. "The clear leader is Compuware," Hall says.

Heiman echoes Hall's thought but also recommends looking at testing tools already in use in mainframes. "If [a company] has no way to test, it has bigger problems than the year 2000," he says.

When looking at testing tools, Freeman suggests looking at what level of testing the tool provides. "Is it for unit testing, stress testing or regression testing?" he asks.

When looking at testing tools, Freeman suggests looking at what level of testing the tool provides. "Is it for unit testing, stress testing or regression testing?" he asks.

INTEGRATION TOOLS

Once a company finishes testing, it must integrate the revised systems with the existing systems. This last major stage is complicated. A company has two versions of the system: a production version and a year 2000 version. The challenge is integrating the year 2000 changes with the routine maintenance changes that every company makes and bringing both sets of changes online. "One of the considerations is how do you communicate between the old and the new; it requires bridges," Freeman says.

Freeman recommends looking at "tools that will help version management and version control. That means the ability to keep multiple versions of an application properly managed. Audit trail ability and documentation features are important considerations in this category."

Heiman also mentions the need for a version management tool. "One tool that stands out is Endevor from CA," he says.

Additional traits to look for are change-tracking and approvals, Hall says.

RESOURCES AND ADVICE

www.year2000.com
www.itza.com

Here are some general bits of advice:

- There are no elixirs. Some vendors claim to offer an end-to-end, one-stop solution, but analysts agree that there really is no such thing. "I don't believe a silver bullet will come along," Freeman says.

- Turn to whom you know first. If your company deals with a lot of old legacy applications in Cobol, it makes sense to get in touch with vendors you already use, says Dick Heiman, research manager for application development tools at IDC. "I would pick up the phone and talk to my account rep," he says.

- Consider using new vendors. In most cases, a company wouldn't evaluate a vendor that didn't have a proven track record, but that may not be the right approach for year 2000 jobs. "In doing that, some of the best technology would be eliminated for consideration," Freeman says.

- Get support from upper management. "Make sure there is senior sponsorship in place before leaping to a tools decision," says Bruce Hall, research director at Gartner Group.

- An overall bit of advice to carry with you while making this decision is "how good of a maintenance vendor is a company. The year 2000 happens to be a large maintenance problem," Hall says.

- Analysts agree that there are plenty of good tools out there, but without a comprehensive, organized approach, companies won't work through the year 2000 problem successfully. "This project absolutely has to be done with good project management techniques," Freeman says. "This is an area where I think more tools will appear."

Here are some vendors that offer testing tools:

- Xpediter+, QA-Hyperstation
- Compuware Corp.
- (810) 737-7300
- www.compuware.com

- CA-Endevor
- Islandia, N.Y.
- (516) 342-5224
- www.cal.com

- CA-Verifier
- CA-DataMacs/II
- CA-InterTest
- CA-InterTest/Batch
- Islandia, N.Y.
- (516) 342-5224
- www.cal.com

- The Relational Tools
- Princeton Softech, Inc.
- Princeton, N.J.
- (609) 497-0205
- www.princetonsoftech.com

- PCVS Version Manager
- Inter-solv, Inc.
- Rockville, Md.
- (301) 839-5000
- www.inter-solv.com

- Xpert
- MiraSoft, Inc.
- Boston
- (617) 825-9121
- www.mirasoft.com

The following analysts provided advice on buying tools to prepare for 2000 (pictured top to bottom): Dick Heiman, research manager for application development tools at IDC in Framingham, Mass.; Mike Egan, program director at Meta Group in Burlington, Calif.; Bruce Hall, research director at Gartner Group in Stamford, Conn.; Leland Freeman, managing director of year 2000 services at Management Support Technology in Framingham, Mass. (no photo)

END NOTE

In the coming months, Computerworld will offer case studies of companies using some of these tools to solve year 2000 problems. If you're interested in participating, please E-mail Computerworld writer Amy Malloy at amy_malloy@cw.com.
“I am a HAL 9000 computer, Production Number 3. I became operational at the HAL Plant in Urbana, Illinois, on Jan. 12, 1997.”
“We have thousands of expert systems that model professions. But we have very little that can compete with a 4-year-old child on the common-sense things.” - MARVIN MINSKY

CONTINUED FROM PAGE 1

Now that date is almost here. And HAL has become embedded in pop consciousness as a symbol of the promise and threat of computer technology. A loyal — even friendly and gentle — servant becomes a malevolent killer simply because of an error in programming.

But how believable is the central premise of the story: that a machine can think with the creative intelligence of a human being? In some ways, now that computers have become omnipresent and we see their limitations and essential dumbness, the vision seems further away than ever. But many believe that an artificial intelligence is inevitable. Will it happen?

Four experts said yes.

Marvin Minsky founded the MIT Artificial Intelligence Laboratory nearly 40 years ago and is now a professor at MIT's Media Laboratory in Cambridge, Mass.

Nicholas Negroponte heads up MIT's Media Laboratory, and his thinking about human-machine interaction is capitalized in his best-selling book, Being Digital.

Nathan Myhrvold is chief technology officer at Microsoft Corp. in Redmond, Wash.

James P. Hogan had a long career in the computer industry, including as a senior sales training consultant at Digital Equipment Corp. In 1979, he became a full-time fiction writer. His novels, including Code of the Lifemaker and Realtime Interrupt, often examine artificial intelligences in a science-fiction context.

We spoke to each separately and compiled a virtual roundtable from the interviews.

CW: How close are we to building a computer like HAL 9000?

MYHRVOLD: In terms of the functionality of running the space ship — waking people, keeping the thrusters going, collecting data, that kind of stuff — computers can absolutely do it today.

You really need the personality aspects for the dramatic element of the movie, but it's not fundamental to what HAL did. Actually, the computers we have today wouldn't lock Dave out of the ship and kill the other guy. Or go schizophrenic.

We don't have a manned ship to Jupiter. That's sort of a little detail.

HOGAN: We have hard, tangible evidence that intelligent thinking systems exist, in the form of 5 billion human beings. They are physical, electrochemical systems, and they think, they are intelligent. Is there any reason to propose that a system of comparable complexity that happens to come from different origins — to have been man-made in some way should be incapable of doing likewise? Absolutely no reason to think that at all.

But I'll be surprised if it happens in the next 50 years.

MINSKY: We have many thousands of expert systems that model professions. But we have very little that can compete with a 4-year-old child on the common-sense things that everyone knows how to do. Maybe the most notable ones are in the sensory area — being able to look around a room and see what's there. Or being able to listen to a situation and hear what's there.

The other thing is common-sense knowledge. Just knowing that things fall if you put them down unsupported. My favorite example is that you can pull things with a string, but you can't push them.

MYHRVOLD: We're still not in the domain where the computer exhibits general-purpose reasoning. In a specific domain like how to take an airliner and make it land, because that domain has been reduced to very specific feedback and control systems and software, computers can do that.

Speech recognition is very hard. We don't understand each other very well. One of the ways we understand each other is that we'll wait until the end of a sentence and then realize what was meant. If I start to say something and you don't understand, you'll look puzzled, and I might stop and reiterate.

Part of it has to do with the genuine ambiguity. For instance, "how to wreck the nice beach" — part of the seashore and "how to recognize speech." If you say it quickly, those two sentences are phonetically identical. You need a little bit of context.

CW: Your boss, Bill Gates, says he expects this problem to be solved within 10 years. Would you agree with that?

MYHRVOLD: I would. I would also — full disclosure — say that if you talked to many leading researchers in the field 10 years ago, they would have said the problem would be solved in 10 years. Ten years is a little like infinity in the computer business.

CW: Why would you want to build a machine that was capable of creative thought?

NEGROPONTE: Think back. Who were the best teachers you had as a kid? Why were they good teachers? They understood you. They were sympathetic at HAL is born, page 72
"Actually, the computers we have today wouldn’t lock Dave out of the ship and kill the other guy." - NATHAN MYHRVOLD

CONTINUED FROM PAGE 71

the right point. They were challenging at the right point. They recognized your facial expressions, your gestures, the puzzled look that you had.

What made the teacher good was the ability to deal with you. That’s what computers do so badly at.

CW: If and when these machines do get invented, will they be capable of competing with humans?

HOGAN: If we could develop machines as intelligent as people, why draw any boundaries there? What’s to keep them from becoming more intelligent?

A lot of the ways humans do things are fudges to overcome quite serious limitations that an engineering approach doesn’t have to be saddled with. For centuries, people were breaking their necks trying to fly — jumping off cliffs and buildings and all kinds of things. But the Wright brothers hit on an approach that is appropriate to engineering. Lo and behold, we’ve got a 747. We may be at the first step toward producing an intelligence that is to a human as a 747 is to a pigeon, and that gets quite sobering.

We’ve created this ability to manufacture enormously complex problems that outstrips our ability to solve them. Perhaps there are some departments we could use some help with — information earth-movers that can plow into these problems and find solutions.

MINSKY: There’d be lots of machines that are similar enough that they would compete. There would be a natural division. Just like there are lions and tigers, and they compete for the same antelopes.

CW: Can you anticipate a point where computers can do a lot of things involved with running a corporation better than people?

MYHRVOLD: Absolutely.

CW: What’s that going to do for our readers and for you and me?

MYHRVOLD: When it comes to thinking or intellectual activities — even paperwork activities — we still have a lot of humans involved. Over time, we’ll find that almost all those tasks will be done by smart programs instead of smart people.

That sounds very science-fictional and very threatening to people, but you could say, “Well, do you get around by foot? No, you use a car. Do you smelt steel by hand? No, you use a giant machine. Do you refine oil by hand? No, you’ve got a refinery.” It needn’t be as threatening as people make it out to be.

CW: If I were a clerk, I might feel pretty threatened by it.

MYHRVOLD: The answers are a) don’t hold your breath, and b) there’s probably something else the clerk is more interested in doing. At no time soon are we going to find humans utterly replaceable.

HOGAN: When people are thrown out of work because of $10 chips that do the job — well, obviously, you have to sympathize. But I can’t help asking: If a $10 chip could do the work, what was a human being spending a lifetime doing it for in the first place?

Wagner is Computerworld’s senior editor, Internet. He can be reached via E-mail at mitch_wagner@cw.com.

MINSKY ON SOUL

CW: Why do we want to build a machine like this, considering we have 5 billion humans, and growing, who are already capable of thought?

MINSKY: A flip answer is that all the humans are almost the same so it would be nice to have other creatures around with other abilities.

The second answer is, the only way to understand a topic is to build a theory of it, then build a model of your theory and see if it’s correct. Psychologists have lots of theories about things that happen in the mind, but we don’t know if any of those theories works well enough to be considered good.

The third is, if you could understand how to represent the important elements of the human personality, then eventually you could build a scanning machine and extract the essence of the person — the intellect, the theories, the ideas, the way of thinking — and put it in another piece of hardware that would last longer than human bodies.

You would actually build some kind of scanner that examines all your neurons and the connections between them and the chemicals around them. Then you’d build a database and make the database available to something that simulates the machinery.

CW: So you don’t think there is a soul there?

MINSKY: If there is a soul and it has no functional properties, then I don’t care. And if it has functional properties, then you can just write a program for it.
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There's still plenty of work and money for experienced SAP consultants. But for newcomers, opportunities could be running out.

SAPPED STRENGTH

By Leslie Goff / Warren Garabedian leveraged his interest in SAP and fluency in German to move into the client/server arena and wound up working for SAP America, Inc. itself. Chris Lee breathed new life into his consulting career when he began working on SAP implementations instead of MVS legacy systems.

Both benefited from an early association with SAP and say demand for experienced SAP consultants will remain robust for the next couple of years. But whether fledgling SAP consultants can still cash in on the market to the extent that early adopters have remains to be seen.

Garabedian says the supply of qualified SAP professionals is catching up to the demand, and the window of opportunity for beginners to rake in the big bucks will narrow over the next 2 years. Lee says existing demand may be peaking, but future versions of SAP will open up new markets in midsize enterprises. He says he sees new opportunity in third-party SAP training.

Computerworld spoke with Garabedian and Lee recently about the past, present and future of SAP consulting.

CW: What's in store for SAP consultants, market-wise? Has demand peaked?
GARABEDIAN: What I see happening, to a small extent, is that the supply is catching up with the demand in the private sector. For our customers, while it is still difficult, it's easier now to find SAP-competent consultants. Between SAP America, the big consulting partner firms and independent consultants, the gap is getting smaller.

CW: Has the time passed when IS professionals can cash in on SAP demand?
GARABEDIAN: There's still a window of opportunity to pick up your income. But if you're just starting out — and you figure it will be two years before you're really good — by then the window may be narrowing. But if you're already competent, you could still do really well for another couple of years as an independent consultant. And at SAP, you can do well for the next 20 years.

CW: What do the future employment opportunities look like at SAP America?
GARABEDIAN: We beefed up our consulting staff in two waves of training (in 1996), and we have another big session scheduled this month. With all of those combined, we will have increased our head count by 400 consultants. I think after this wave, we'll step back, take a breath and see how things look. So, I honestly don't know if we'll be hiring in the mass that we have been. As a company, we have to digest 400 new people.

But, as we increase SAP functionality — and we're getting into the Internet now with 25 new Internet business APIs — and we're getting more object-oriented, it's hard to say what our needs will be. I believe the Internet applications area will explode. Although it's hard

Sapped strength, page 76
to predict what the Internet will hold, that's probably where the next SAP opportunities are.

CW: How did you originally come by your SAP expertise?

GARABEDIAN: I had spent five years working for Nixdorf in Germany, so I was certainly aware of it. I was a systems analyst working on mainframe projects. When the company merged with Siemens, I started working on their mainframe-based billing, order entry, financials. We were doing all of our own development. But after the merger, they began moving toward a SAP R1 implementation.

At that point, someone remembered that I was in Germany and spoke fluent German. They needed resources, and I was familiar with the company’s requirements. I came home and went to all the SAP sales and distribution and logistics training. I had prepared some before that by getting Unix and Informix training in Germany.

CW: What was that like — being on the bandwagon so early?

GARABEDIAN: In the early days, there weren't a lot of experienced people around, and getting information when I needed it, on the job at a customer site, was difficult. We have more formal mechanisms in place now, but back then I would look in the system at the program code. The author's name is always listed, so if I had questions about how some code was written, I would call the developer directly. Since I spoke German, I had a foot in the door. It's not something everyone could have done, but I took advantage of having spent time over there.

CW: With all the hype about contract SAP positions, why did you choose to work at SAP America?

GARABEDIAN: My overall career plan had been to come up through the IS ranks. I started as an operator during college, came out of school into operations and then began a programming track: programmer, senior programmer/analyst, systems analyst, project manager. Eventually I wanted to become a CIO.

I never had to form a plan to target the SAP market because it just all happened so fast. Siemens/Nixdorf was not doing well in the States, so our R2 conversion project was put on hold. At the time, the SAP was rolling out R3. I went to their first demonstration of R3, at the Copley Plaza Hotel in Boston, and I was very impressed. It was client/server. It had all this integrated functionality, and the [graphical user interface] was amazing, especially at that point in time.

Then I went back to the office, to my 3270 terminal, and it was just too much of a shock. At that point, I knew I wanted to leap into the future.

So, I contacted my SAP rep, and I let him know I was very interested in working for SAP. He asked for my resume, and later SAP requested a letter from my manager saying it was OK for them to make me an offer. So, I went into his office, closed the door and I was thinking of leaving, and I wanted to join SAP. He said that seemed reasonable. The opportunities at Siemens were limited, and he didn't mind giving me written permission to pursue the SAP opportunity. It was a very rapid process because it was so early on — R3 was brand-new in the States, and SAP America was just getting up for a big push. We have a much more structured process now because we have so many people applying to work for us.

CW: How did you move up into your current position?

GARABEDIAN: I started with the company as a sales and distribution applications consultant and went to work for some manufacturing clients. After about 14 months, I became a project manager, which was basically a project manager. Your job is to distribute resources, maintain accounts, set up projects, get involved in presales activities. At this point, I was less involved with implementation.

Next, I became a consulting manager. In May 1995, during an implementation at NEC, I was managing 30 to 30 consultants working on multiple projects. When we reorganized during the first quarter of [last] year, I became director of Platinum Consulting.

CW: What have your SAP skills done for your career financially?

GARABEDIAN: I had set some goals out of college, like I wanted to hit the Social Security limit by 50, and six figures by 40, and so on. It would have taken me a lot longer to hit six figures if I hadn't switched to SAP. I just turned 40 [in July].

CW: What do you expect your SAP expertise to do for your future?

GARABEDIAN: I think this experience has given me exposure to a variety of different companies and businesses and that I've developed a much broader knowledge base of business and how companies work. At SAP, I can be involved in dozens of accounts in the course of a year and have a different business philosophy of each. It's like getting an on-the-job MBA.

CW: What compensation and benefits do your SAP skills command relative to what you made as an MSA consultant?

LEE: As an MSA consultant, I could pull in $45 to $60 an hour. With SAP, the range is $50 to $150 an hour, with most jobs coming in at about $100 an hour. And the average duration of assignments before was three to six months, and now it's one to two years.

THE INDEPENDENT VIEW

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LEE: My overall take on the current level of demand for SAP expertise?

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For at least five years, the market for personal digital assistants (PDA) or whatever else you call them—pen-based, palmtop or handheld computers—has been on the verge of taking off. But it hasn’t happened yet, and analysts have had to track a lackluster market instead.

The reason is that “manufacturers don’t understand how people use these devices,” says Ken Dulaney, vice president of mobile computing at Gartner Group, Inc. in San Jose, Calif. Vendors “are trying to optimize battery life and price, but they need to optimize functionality. That’s why the market is languishing.”

But it seems that manufacturers are finally beginning to get it. Handhelds are “not meant to replace laptop or desktop computers,” says Diana Hwang, senior industry analyst at International Data Corp. in Framingham, Mass. “They are not really designed for that. That’s changing, and vendors understand [these devices] are a supplement to the main device rather than the main device.”

Consequently, competition has increased and the market has become more segmented as it tries to cater to the needs of different classes of users. If users want only an organizer, they can buy something small that fits into a pocket such as Pilot from U.S. Robotics Corp., according to Phillip Redman, an analyst at The Yankee Group, Inc. in Boston.

If, on the other hand, they also want word processing, they will have to go with something a little bigger such as a Zaurus from Sharp Electronics Corp. or an HP 200LX from Hewlett-Packard Co., Redman says.

How the market is segmented still depends on whom you talk to. Mike McGuire, senior analyst for mobile computing at Dataquest in San Jose, says the handheld market is the sum of expandable organizers, such as Zaurus, and standard handhelds, such as Pilot and Apple Computer, Inc.’s Messagepad. The expandable organizers tend to use proprietary operating systems with tightly controlled third-party support.

If you need more memory, for example, you have to go to the device’s vendor. Standard handhelds use existing operating systems that can be licensed. Development tools for these are based on industry standards. Recently, Microsoft Corp. introduced Windows CE, a scaled-down version of Windows 95 that was designed specifically for handhelds.

Hwang says the handheld market can be divided into three segments: pen-based, the personal companion and the high-end organizer/PC companion. Pen-based handhelds include Envoy and Marco wireless communicators from Motorola, Inc. Personal companions include Pilot. And high-end organizers include HP 200LX, Zaurus and devices based on Windows CE.

Microsoft’s new operating system has garnered a healthy interest in this market, analysts say. The real importance of Windows CE is illustrated by the entry of new hardware players—Hitachi Ltd., NEC Corp., Compaq Computer Corp. and Philips Consumer Electronics Co.—into the market, McGuire says.

Perhaps most important, Windows CE will remove a barrier which was created by the use of proprietary operating systems—to the acceptance of portable devices, Redman says. As the market matures, it will move to a communications-centric paradigm, but now it is computing-centric. And the future, according to Redman, lies in communications—in having the capability to use handhelds for wired and wireless communications.

Mohan is a freelance writer in Los Altos, Calif.
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Industry Almanac

Scanning the 1997 horizon

Last year was intoxicating for technology stock investors. Although some pure-play Internet vendors and chip stocks took a pounding, much of the high-tech sector rose like champagne bubbles and runaway New Year's Eve balloons. Hoping to catch, or at least look for, some rising stars in 1997, Computerworld asked several Wall Street analysts which stocks they thought were worth watching in the new year.

Irwin Silverberg, an analyst at Burnham Securities, Inc. in New York, picked one of last year's downtrodden stocks as one to watch this year. Shares of Interleaf, Inc. (Nasdaq:LEAF), a developer of document management software, are priced "as if it's going bankrupt," Silverberg says. "But they're a long way from it. This is a sector in the early stages of development, and the leader, Documentum, is not any bigger than Interleaf."

A handful of other "angels with dirty faces" bear watching in 1997, says Michael Geran, an analyst at a division of Donaldson, Lufkin & Jenrette Securities Corp. in Jersey City, N.J. Digital Equipment Corp. (NYSE:DEC), Unisys Corp. (NYSE:UIS) and Data General Corp. (NYSE:DGN) are each possible candidates for turnarounds this year.

As the calendar turns another page, Bill Loomis, an analyst at Ferris, Baker Watts, Inc. in Baltimore, says this will be the year that year 2000 problems "turn into real cash" for companies that provide year 2000 cleanups. Keane, Inc. (AMEX:KEA), Computer Horizons Corp. (Nasdaq:CHRZ), Computer Task Group (NYSE:TSK) and Analysts International Corp. (Nasdaq:ANLY) are all in good position to win some of the contracts in the $50 million and higher range, Loomis says.

Large computer services' "mega-contracts" are always up for grabs, and this year investors should keep an eye on Electronic Data Systems Corp. (NYSE:EDS). "EDS may have been distracted in 1996 by their separation from [General Motors Corp.], but I think they'll come back swinging in '97," Loomis says.

In the Internet sector, Loomis says to watch Information Resources Engineering, Inc. (Nasdaq:IREC), a developer of encryption systems that already supplies the Federal Reserve and many of the country's largest banks with encryption technology. This should also be an interesting year for personal Internet news services Individual, Inc. (Nasdaq:INDV) and Desktop Data, Inc. (Nasdaq:DEP), which push customized news feeds to subscribing users — according to David Takata, an analyst at Gruntal & Co. in Beverly Hills, Calif. If you are about to bubble over with excitement over network computers, Takata says to raise a glass for device manufacturers Network Sime (Nasdaq:RNDY), Gaia. "Finally, cae? eae Cea Copyright Nordby International Inc., Boulder, Colorado

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When in Stocks

**Gainers**

- Data Race Inc. (H)
- Pinnacle Microsystems Inc. (L)
- ProCore Corp.
- Intel Corp.
- Creative Technology Ltd.
- CompaQ Computer Corp.
- Intel Corp.
- Dell Computer Corp.
- Syntex Corp.
- Iomega Corp.

**Losers**

- BDM International Inc.
- Keane Inc. (H)
- Creative Technology Ltd.
- Dataram Corp. (H)
- InterData Inc. (L)
- BDM International Inc.
- Keane Inc. (H)
- Data Race Inc. (H)
- Boole and Babbage Inc.
- Motorola Inc.
- Gateway 2000 Inc.
- Bell Atlantic Corp.
- US Robotics Corp.
- Xylan Corp. (L)
- IO3COM Corp.
- Netscape Communications Corp.

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**Notes**

- (H) = New annual high reached in period
- (L) = New annual low reached in period

**Key:** (N) = New annual high reached in period; (L) = New annual low reached in period

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Year 2000 boot camp

By Julia King

OMAHA BUSINESSES have come up with a novel way to combat the shortage of year 2000 information systems professionals—a Cobol boot camp.

It was designed to rapidly transform teachers, retail clerks and other nontechnical twenty- and thirtysomethings into a fresh source of programmers for year 2000 work. It also promises to save local companies a bundle in year 2000-contractor costs.

"Our theory is that there's a lot of underemployed college graduates in the market who have the potential to do technical work and would be interested," said Jim Schmidt, a senior vice president at the IS unit of First National Bank of Omaha.

Companies are primarily looking in and around Omaha for the new Cobol recruits, but they are also casting a wider net by advertising the accelerated program and hundreds of other time training in programming logic, CICS, assembler and other mainframe skills.

After that, students work full-time at a starting salary of $50,000 annually and continue their studies part-time, at the expense of their new employer, for the next 17 months.

Projects range from reprogramming embedded software in trackside signaling equipment to mainframe and server applications for possible year 2000 glitches. Union Pacific already has hired several contractors for year 2000 work. By hiring students, 15 director Jim Fox said he expects to cut year 2000 labor costs by up to 30% annually.

To keep people on board once the year 2000 work is completed, several companies, including Union Pacific, agree to provide Cobol recruits with additional training in newer systems and technologies.

Cobol crash course

CONTINUED FROM PAGE 1

Cobol in 21 Days and president of King Computer Services, Inc., a consultancy in Tujunga, Calif.

Not surprisingly, other programming experts are skeptical.

"It is very possible for a programming neophyte to learn Cobol in three weeks, they said. But it is questionable whether that same person would be ready to go help fix real-life year 2000 programming problems.

"What you need to do year 2000 work isn't just Cobol," said Janet Ruhl, a former IBM software engineer and author of two books on becoming a computer consultant.

Ruhl said year 2000 work also requires knowledge of the IBM mainframe software suite, including VSM and MVS, and a company's unique internal mainframe editor system. "There's a whole lot of stuff that has nothing to do with Cobol," she said.

Sheldon Glasser, a 35-year IBM programming veteran and president of R. Dunn Consulting, a computer consultancy in Newmarket, Ontario, suggested that companies assign the 21-day Cobol graduates to maintenance work. That would free up experienced programmers to work on more complex year 2000 problems.

"The smart thing to do is hire a bunch of younger or older programmers, teach them Cobol and have them do some of the simpler stuff," Glasser said. This includes linking mainframe programs, such as payroll systems, to employee benefits or other newer systems, he said.

Budlong's "Cobol, Just in Time" course includes his book, a Cobol compiler and software utilities that let students per-

form error checking on Cobol programs they write on their own PC. Also included is a follow-up phone and tips and an additional study guide," he said.

Students can buy the book separately for $50. Since the book's publication in 1994, more than 9,000 copies have been sold. A second printing of 10,000 copies is under way, Budlong said. The course, which includes daily lesson plans and quizzes, is based on the book and was launched two months ago.

DOWN AND DIRTY

Colleen Lerian read Budlong's book while working as a sales clerk at Sports Chalet, a chain of sporting goods stores based in La Canada, Calif. At the time, she was also taking programming classes at night.

"It's down-and-dirty and teaches you what you need to know in the workplace. A lot of things they teach at the community college don't apply to the workplace," she said. For example, pseudo coding, the practice of sketching out a computer program in English first, was given a lot of attention in classes, she said. Budlong explains what it is and quickly moves on.

Today, Lerian works as a full-time Cobol programmer at Sports Chalet. She moved into the position after completing Budlong's at-home Cobol course and working as a data-entry clerk at the company.

"The idea was for students to pair a seasoned IS staffer with inexperienced year 2000 problems. The training, which will be offered through Creighton Institute for Information Technology and Management, which was formed earlier this year specifically to train professionals in IS skills required by Omaha's big companies.

"The idea was for students and the companies to share the risk of education," said Mike Echols, a former General Electric Co. executive and Creighton's executive director.

"It's seven months of real intense work, but the individual knows what the economic return on his investment is," Echols said.

Union Pacific's strategy is to pair a seasoned IS staffer with each hired student. They would work on six different year 2000 projects already under way.

Life in Omaha

In the Cold War days, Omaha's extensive and ultratop-secret communications infrastructure served the U.S.' mighty Strategic Air Command.

Today, its primary users are dozens of telecommunications and financial services firms, which, among other things, process more than half of the nation's credit-card transactions.

That all translates into an abundance of IS job opportunities.

For starters, there are no traffic jams. And with unemployment at 2.4%, even burger flippers can earn $7 to $8 per hour, according to locals.

On the sports front, there are no major league teams, which is why Omaha is home to a lot of Denver Broncos and Minnesota Vikings fans.

"But there is a symphony, a lot of theater productions and a tremendous sense of community pride," said Chief Information Officer Donald Lambert, who moved to Omaha from Minneapolis six and a half years ago to head up IS at Guarantee Life Insurance Co. — Julia King

[Image: Union Pacific's Jim Fox says he expects to cut year 2000 labor costs by up to 30%]
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COMMENTARY

Arm the firewall, here comes a 14-year-old boy
Steve Ulfelder

Well, at least the frogs are safe.

Everybody knows there is nothing meaner, more sadistic, uglier or less happy than a 14-year-old boy. When I was 14, the preferred activity was to torment frogs with firecrackers. Or, in a pinch, BB guns, tennis racquets — you name it. The only limit was the frog population, which dwindled perilously when too many bored, nasty boys gathered. An optimist may think the frogs smartened up and found some better hiding places.

Frogs must be living to a ripe old age these days because the modern 14-year-old boy has the World Wide Web on which to play.

Witness the recent hacks on government Web pages. In August, the U.S. Justice Department’s home page was attacked. “Antigovernment diatribes, a swastika, a nude photo and other graffiti,” we wrote, were posted on the site. In September, it was the CIA’s turn. Vandals busted into the CIA home page, renamed it the “Central Stupidity Agency” and dropped in links to music and sex sites. These hackers reportedly ranged in age from 15 to 20. Spiritually, though, they were surely 14.

The U.S. Air Force is the latest victim in this game of Virtual Ring-and-Run. Its site was recently defaced with the now-familiar devices: Snickering messages, dirty pictures, weirdo links.

Of course, the hackers may be neither 14 nor boys. But they sure act like it. These raids are frequently called protests against the Communications Decency Act. I’m not buying it. This isn’t Patrick Henry addressing Congress; this is Beavis addressing Butt-head (note that the latter two freedom fighters made their debut in Frog Baseball, which is what many boys play when they run out of firecrackers).

Remember when you were 14? I do. I protested everything — and nothing. I was furious at all the sociopolitical injustice in the world. I was equally furious that I had to tuck in my shirt. The whirling, smutty destructiveness of the real hacks rings a bell. It lacks focus and purpose; it mixes legitimate points, half-baked rebellion and crude stupidity. It looks to me like the work of clever boys, not antigovernment terrorists.

And that’s not necessarily good news for an IS department struggling to keep its site secure. Protesters, even terrorists, usually respond rationally to preventive strikes and countermeasures. It’s reasonable to assume that if you make their job sufficiently difficult, they will go elsewhere to do their damage.

But have you ever tried to keep a 14-year-old boy outside a place he wanted to get into, or inside a place he wanted to get out of? It’s nearly impossible. He is addled and hormone-crazed and angry at the world, and any effort to talk some sense into him merely increases his rage.

Users keep hoping the Internet will become what its creators hoped it would be: rational, measured, democratic with a small “D.” But once in a while, a nasty group of boys reminds the world that the net is really just one big frog pond. And the more prominent a site is, the more it looks like a slow old frog. After all, if the CIA can’t secure its own home page, what are your chances?

Ulfelder is Computerworld’s senior editor. In Depth. His Internet address is steve_ulfelder@cwn.com.

Too much trust is a bad thing
Charles Babcock

Features and functions are being added pell-mell to Internet browsers. But in one case, user empowerment has clearly outstripped IS’ ability to maintain proper internal security.

The ability to recognize and accept digital certificates will be added to Netscape’s Navigator and Microsoft’s Internet Explorer early this year.

Digital certificates are a way to identify a sender and authorize a recipient — and only the intended user — to receive. The certificate is a kind of wrapper for a public key. If the certificate is recognized by the browser, it trusts the sender and activates the user’s private key, which unlocks the message.

So far, so good. Digital certificates are a step toward business use of the Internet, and both Microsoft and Netscape are adding the capability as quickly as possible to push their browsers to the forefront of electronic commerce. But not all the infrastructure is in place to guarantee the certificates will be used as intended. Within an organization, there’s no problem because IS can control the issuance of certificates. But the main goal of moving to digital certificates is to encourage transactions with the outside world, and outside agents are going to authorize businesses on the ‘net to start issuing certificates. I, for one, remain unconvinced that IS is going to know everything; it needs to know about the public key holders — but users’ browsers will trust and accept their certificates anyway.

At this stage, hardly anyone other than VeriSign, the established credit transaction company, is issuing certificates to businesses. A bank wishing to allow its customers to do business over the Internet gets a unique digital signature from VeriSign and then uses it in transactions with customers. A customer browser, upon receiving the bank’s certificate or public key, then uses its private key to unlock the message for the user.

There is confidence that VeriSign knows its customers, knows they’re in the business they say they’re in and has some sort of monitoring of the uses of public keys.

But like everything else on the Internet, this practice is going to expand geometrically as browser empowerment makes electronic commerce a competitive issue. Additional agents will spring up issuing digital certificates for a fee, and they will either have to invest heavily in investigating every request for a public key, or they will make an applicant jump through a series of hoops, issue the key and pray their procedures are adequate.

A sophisticated party could pose as a legitimate business to the certificate issuer and function in an entirely different manner once it gains a public key. The opportunity for theft, fraud and unauthorized solicitation of funds is immense.

Why does this danger exist in a supposed step toward more secure transactions? Because the browsers are being equipped with root keys so they can recognize the existing certificates on Internet browsers and enable their users to engage in a transaction.

The transaction is secure today, when we know a lot about the handful of parties that have been issued certificates. The danger springs up tomorrow, when more certificate-issuing authorities come into existence and many more parties have public keys.

Right now, fewer than 20 public keys exist. If that number shoots into the thousands in the next two years, the browsers will recognize all of them, too, and IS will have to ponder whether it knows any longer whom it is trusting.

Babcock is Computerworld’s technical editor. His Internet address is charles_babcock@cwn.com.
Keystroke cops

Cuth a hacker? Michael R. Anderson, a forensic computer consultant and former investigator at the Internal Revenue Service, offered the following tips for handling computer evidence in the November 1996 issue of Government Technology.

- Don't run any programs on the computer in question without taking precautions, such as a bit-stream backup, because the computer may be rigged to destroy data. Even the simple DIR (directory) command can be rigged to reformat the hard drive.
- Don't let the owner help you operate the PC. It's like asking a thug to unload the gun found under his car seat. One defendant bragged that he was able to encrypt relevant files "right under the noses of the cops."
- Don't infect the computer evidence with a virus. That really destroys your credibility in court.
- Don't transport computer evidence in the trunk of a police car. It can be ruined by summer heat or the magnetic field created by an operating police radio.

Human factors

Researchers at Carnegie Mellon University in Pittsburgh have developed software that monitors users' keystrokes and mouse clicks to spot flaws in a system's user interface. Called MetriStation, it uses statistical control and cognitive science techniques to produce a list of events that trouble users. "Even if a system's hardware and software underpinnings are completely reliable, errors at the user interface can cripple or destroy a mission," said Roy A. Maxion, a senior systems scientist.

CD-ROM users could learn something about storage from rural America. Hunt Manufacturing in Philadelphia has updated its MediaMate line of computer accessories by introducing the CD Silo. The vertical CD-ROM safely and efficiently by eliminating the use of jewel cases and freeing up desk space. It costs $16.95.

Give your hands a break by using foot pedals for those pesky Ctrl, Alt and Shift keys or mouse clicks. The Step On it keyboard control pedals are offered by Bilbo Innovations in Sunnyvale, Calif.
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