Game not over: In fact it’s just begun. We offer our annual roundup of computer fun and games. 103

I owe Iomega: Readers gripe about the added cost of getting Windows 95 tools for Zip drives. 52

Exchange gets a retreat

- Microsoft now bets on modular groupware to rival Notes

By Jason Pentin and Jessica Davis

As the ship date for Microsoft Exchange looms, Microsoft Corp. is quietly attempting to move the goalposts of the groupware game.

Company officials last week said they made a mistake by trying to compete with Lotus Development Corp.’s Notes using an all-in-one Microsoft Exchange offering.

Instead, Microsoft is now cobbled together a modular groupware strategy that combines forthcoming collaborative computing features in Microsoft Office with back-end services provided by Exchange, SQL Server, and the Internet Information Server for Windows NT, which went into beta testing last week.

“The focus for the creation of collaborative data is now on Office,” said Greg Lobdell, Exchange product manager.

Developers get first crack at Network OLE

By Mike Racicuti

Microsoft Corp.’s ambitious plan to make its OLE object technology a core element of a comprehensive client/server computing strategy will inch toward reality late this year with the delivery of the first tangible pieces of that initiative.

The company is set to begin early test releases of both OLE DB and OLE Transactions, two pieces of a set of OLE interfaces for the enterprise that were introduced in May, according to officials.

In its first move to make this Enterprise OLE strategy a reality, Microsoft plans to ship an evaluation Software Development Kit for OLE DB to a handful of beta testers by the end of this year, said Greg Nelson, Microsoft product manager for the OLE DB and Open Data-base Connectivity (ODBC)
Big battery life in a Pentium processor notebook, four hours and forty minutes to be exact, as proven in the independent VeriTest "Cross-Country"™ test.

Our smart Lithium Ion battery has an embedded microprocessor that allows each individual cell to recharge quickly and to full capacity.

Superior power management via an exclusive Dell design that optimizes power consumption based on individual component needs.

Less power consumption thanks to the use of Intel's LM Pentium chip which was designed specifically for use in notebooks.

Our XPI is based on the same proven design that won the Industrial Design Excellence Award. Plus, it's the only notebook to receive a "Best Overall" in PC Computing's "Torture Test" competition.

Its removable hard drive makes it easy to upgrade and service your notebook no matter where you happen to be.

Next-business-day, out-in-the-field service and support, standard with every notebook, so you can keep going as long as our batteries. A Dell exclusive.

(800) 822-3790
http://www.us.dell.com/
Keycode #98078
DELL LATITUDE
Dependable Notebooks
With Superior Battery Life

GIVE THEM THIS MUCH BATTERY LIFE IN A PENTIUM PROCESSOR NOTEBOOK.
1991 alliance
IBM, Apple give up on Kaleida teamwork

By Tom Quinlan and Jason Pontin
IBM and Apple Computer Inc. continue to distance themselves from each other as the companies last week announced that Kalei-
dai Labs Inc. would be closed down. In the first week of December, the
deconstruction of the Apple/IBM alliance will continue with Tali- gent Inc. announcing a new business plan that sources indicated would in
essence transfer control of the company to IBM's software division. The
joint development of the PowerOpen Unix environment was aban-
donned earlier by the two companies, leaving the PowerPC chip as the
only real legacy of the 4-year-old Alliance/IBM alliance.
Kaleida's ScriptX technology will be given to both Apple and IBM, with
Apple taking responsibility for further developing the multimedia
authoring environment. The companies said that IBM will continue to
contribute money to that development effort and that ScriptX will remain
compatible across both platforms, but the idea of creating a joint multimedia stan-
dard for the industry is largely dead, sources said.
"Apple will take over ScriptX and use it as an Internet authoring tool," one
source said, "it should strengthen
Apple's multimedia offerings."
In much the same way, IBM will
take control of Taligent's Common-
Point object-based development
environment, integrating it into
IBM's cross-platform object strategy,
which includes OpenDoc.
At Comdex, IBM officials essen-
tially outlined Taligent's new role as
an IBM-led subsidiary. John Silitz,
president of object technology mar-
teting, said decisions about Tali-
gent's development efforts would now be decided by IBM's Personal
Software Products division.
"We haven't done as good a job
of coordinating our OpenDoc and
CommonPoint development as we
could have," said Anthony Brown,
manager of object management
technology marketing.
"And we haven't explained as well
as we should have just how well they
work together now," he added.
Instead of Taligent being jointly
owned by Apple, IBM, and Hewlett-
Packard Co., IBM will take over
almost all the funding of the com-
pany, sources said.
Observers said the decision to
consolidate the various joint com-
panies would actually help Apple and
IBM.
"What happens now is that the
finger pointing stops and they get
back to work," said Richard Deber-
ty, founder of Envisioneering Inc.,
a market research and testing facility
in Seaford, N.Y. "They no longer
have someone else to blame when
something doesn't get done."
However, the move would seem
to leave HP out in the cold.
"It's hard to say what happens to
them," one source said. "They might
get some right of first refusal for Tal-
igent's technology.
"HP could not be reached for com-
ment by press time.
Martin LaMonica contributed to
this story.

FROM THE NEWS DESK • JAI SINGH
Notes hunt still on despite uncertainties
It's hard to get a handle on groupware. Just ask
Microsoft Corp. The software powerhouse
recognizes that although few can say what Notes actu-
ally is, most equate the term groupware with Notes. That being the case, Microsoft has
been trying to come up with a Notes killer for the past three years.
But how does one come up with a Notes antidote when there is no clear-cut definition of groupware?
Here are some of the terms I’ve seen associated with groupware: E-mail, group scheduling and calendaring,
bulletin boards, data access, forms routing, conferencing, document management, and workflow. Add to this the more gritty technologies such as videoconferencing, elec-
tronic whiteboards, PC-telephony integration, and you’re really talking about out-of-the-box thinking.
In short, there are few if any
boundaries.
Notes obviously takes the all-in-one approach. It has most of
the features mentioned above. Exchange was sup-
posed to have taken a similar approach. But because it couldn’t
even execute on some features and func-
tionalities, Microsoft has decided to
take on a building-block approach.
(See story page 1.) It will combine its
Office suite with the Exchange
“super messaging system” to pull
the groupware rabbit out of the hat.
But wait. This sounds vaguely
familiar. Here’s a passage from an
InfoWorld story in October 1992:
"At a strategy briefing here, Micro-
soft Corp. announced that Windows for
Workgroups will form a foundation
for corporate users to build their
own groupware system. Those sys-
tems will be built on top of existing
Microsoft applications using a set
of add-ons toolkit shipping in the
next nine months.
Complicating matters further is
the Internet. One can add group-
ware to the Internet's rapidly
growing repertoire. Some
Fortune 500 companies are experi-
encing with Internet technologies
to serve their groupware needs. Pundits
have already started ques-
tioning the very existence of
Notes. How will the Microsoft
groupware strategy fare in this envi-
ronment?
Be that as it may, Microsoft,
instead of building a Notes-like product, is now focused on
a "Notes-like" strategy. Whether this
deepak application-centric strate-
gy will stick is a big question mark.
Write me at jai_singh@info-
world.com or CompuServe 74203,
3552.

MICROSOFT TO DETAIL SQL SERVER 6.5 FEATURES
Microsoft Corp. will detail features of its
SQL Server update at next month's DBExpo show
in New York, said sources briefed by the company.
SQL Server 6.5, code-named Hydra, is set to ship in
the second quarter of next year. The new version
will include bit-mapped indexing, borrowed from
Microsoft's Rushmore technology, to support faster
queries in data warehousing applications; hetero-
genous data replication to mainframe data
sources and Sybase Inc. and Oracle Corp. databases;
Simple Network Management Protocol support to
send alerts to network management consoles; and a series of
engine enhancements to improve performance and support for
larger databases. Pricing has not been set.

ORACLE OFFICE OPENS TO MORE CLIENTS
Oracle will finally make good on its promise to deliver a version
of Oracle Office that supports non-Oracle clients, it was reported
in a recent Oracle Corp. press release. This new version of
Oracle Office will support the Open Document Manage-
ment API, MAPi, OLE, and Hypertext Markup Language.

AT&T-NOVELL WAN SERVICE TO DEBUT
AT&T and Novell Inc. will launch a new service, AT&T-NOVELL
Connect Services, in the next 90 days. The service, which also
will be available to Novell customers, will allow users to have a
dedicated fractional T1 line or frame relay for network access. Dial-
up and ISDN support are due in 1996. Pricing is not yet available.

SONICSOFT TO ANNOUNCE PC-NFS PRO 2.0
SonicSoft Inc. on Dec. 4 will announce the availability of PC-NFS Pro
2.0, a new version of its PC-to-NFS connectivity software.
Enhancements will include Win95 support and improved e-mail and
administration, officials said. SonicSoft plans to bundle NetScape
Communications Corp.'s Navigator browser with the upgrade.

BRIEFLY NOTED • A SCEND COMMUNICATIONS INC. will
announce next week the Max 1800 remote access switch, which
supports eight ISDN BRI access lines and comes bundled with
MaxLink software. The switch will ship next month with prices
starting at $6,400. • NOVELL is emphatically denying a published report that states the company is up for sale. • OSITECH COMMUNI-
CATIONS INC. announced last week a new PC Card that com-
prises an Ethernet adapter and 28.8Kbps fax/modem and comes
bundled with a 1-pound double-speed CD-ROM drive. The Ace of
Diamonds will ship in March for $949 for a 10BaseT connection.
• SYBASE INC. last week announced that its Database Gateway for
Windows environment will support access from PeopleSoft Inc.'s PeopleSoft S.O application. The gateway is priced from $75,000. • THE LINKSYS
GROUP INC. will announce this week its EtherFast 10/100 switching
hub for a price of $1,999. • Market research company DATA-
QUEST INC. has reduced by one-third its forecast of Windows 95
shipments for 1995, saying sales were slower than expected.
• INFOMIX SOFTWARE INC. last week inked a deal with middle-
ware maker MOBILEWARE CORP. that will result in communica-
tions tools for accessing Infomix databases from laptops and other
mobile systems by the first half of 1996.
Bob Metcalfe is in a snit over the telco monopolies, page 50
Introducing the ViewSonic 17PS.

The first 17" monitor with an Ultra Fine 0.25mm dot pitch.

The ultimate in sharpness... precisely what you need!
Client/server development woes eased at DB/Expo

By Mike Ricciuti

**DATABASE AND TOOLS software vendors plan to unleash a slew of new products at next month's DB/Expo trade show in New York aimed at easing development of distributed client/server applications.**

Information Builders Inc. (IBI) will announce new partnerships that will add messaging, wireless communications, and a meta data repository to its EDA/SQI middleware. The revamped EDA/SQI is due to ship next April as Version 4.0. IBI is expected to ink deals with Tivoli Systems Inc. to link EDA/SQI to Tivoli's TME management console, with Visigenic Software Inc. for client Open Database Connectivity driver support on Macintosh and Unix clients, and with several unnamed vendors for a meta data repository to ease data warehousing design, messaging, and wireless communications tools.

Red Brick Systems Inc. will announce and ship Release 4.0 of the Red Brick Warehouse VPT data warehousing software, the company said. A key feature is the addition of bit-mapped indexing technology for faster access to data. Pricing starts at $37,500.

Informix Software Inc. will formally introduce its Online Workgroup Server, a slimmed-down version of the company's Online Dynamic Server database. Online Workgroup Server, running on Windows NT and Unix platforms, is tailored for workgroups of as many as 30 users, company officials said. No pricing has been set.

Sybase Inc. will announce SQL Anywhere, its revamped workgroup database based on the former Watcom SQL database, and SQL Remote, a mobile messaging add-on for SQL Anywhere based on technology acquired earlier this year, company officials said. SQL Anywhere will include support for the Transact SQL dialect along with peer-to-peer replication capabilities. The company may also announce the shipment of Sybase MFP, its massively parallel processing database server, on additional platforms, sources said. Sybase has promised delivery of Sybase MFP on Hewlett-Packard Co. and Sun Microsystems Inc. hardware by year's end.

Oracle Corp. is expected to detail Bandwagon, its server suite set to debut on Dec. 13. (See "Oracle gets on Bandwagon," Oct. 9, page 1.) Bandwagon, tentatively named BusinessSuite, is slated to ship in 1996. It includes systems management tools, database and Web server technology, and a new messaging server, code-named Pegasus, that includes text search tools, E-mail, and other messaging tools, company officials said.

Chip confusion overwhelms vendors

By Bob Francis

**INTEL CORP. MAY HAVE FEWER TAKERS than expected when it introduces its 150-MHz Pentium next January.**

Several companies said they may bypass the 150-MHz chip in favor of the 166-MHz version that is due to be announced at the same time. However, according to Dell Computer Corp., the company doesn't have any plans to offer the chip on its low-end, high-performance Dimension line.

The Austin, Texas-based company will still offer the chip on its OptiPlex line, which is geared for corporate customers, sources said.

Similarly, Gateway 2000 Inc. did not display a 150-MHz Pentium system at last week's Comdex show, and officials there indicated the company was studying whether to offer the chip at all.

Several product managers at a variety of system vendors said Intel is offering a confusing number of chips right now, including Pentium and Pentium Pro processors with the same clock speeds.

In addition, the prices of the two chips — between $600 and $700 for the 150-MHz chip and around $700 for the 166-MHz chip — are close enough that offering two separate products may not be warranted.

"The feeling is that 90 percent of the customers will pay the difference and go for the 166-MHz system anyway," said one product manager who wished to remain unidentified.

Resellers are also not too thrilled at having so many options.

"We're carrying systems from 75 to 133 [Mhz] now, and they all are popular. With new Pentiums and Pentium Pros, it's just going to confuse the issue," said a reseller based in the Northeast.

Dell joins Internet parade with Web server

By Deborah DeVoe

**DELL COMPUTER CORP. PLANS TO LEVERAGE ITS SKILLS in the creation and maintenance of World Wide Web sites by introducing its PowerEdge Web Server.**

The company made the announcement at Comdex last week, joining the growing number of Pentium server plans to offer servers and disk arrays in the product line, and adding a new Internet-related value to the server.

In recent weeks a number of companies, including Digital Equipment Corp., Apple Computer Inc., Sun Microsystems Inc., and Silicon Graphics Inc., have introduced similar Web servers based on RISC chips.

Due to ship by the beginning of December, Dell's Web server is based on the Intel 333-MHz Pentium processor called PowerEdge EL server.

The server is based on Intel Corp.'s 333-MHz Pentium processor and comes with Windows NT, which will help provide a level of security for the server.

The PowerEdge Web Server will come bundled with Netscape Communications Corp.'s Communications Server software and SoftQuad Inc's Hot Metal Light software for developing and editing Web Home pages.

Future Web servers from Dell are expected to offer other Internet products, including Microsoft Corp.'s upcoming Internet server software, now code-named Gibraltar, officials said.

The PowerEdge Web Server is priced starting at $6,500 for a single-processor system with 32MB of RAM, a 1-gigabyte hard drive, 256KB of Level 2 cache, a 3Com Corp. Ethernet card, and a 68-pin CD-ROM drive.

Intel-based systems have been slow to gain a foothold in the Internet server market so far.

According to market research data, most Internet servers are currently based on Unix systems, with the Macintosh platform at No. 2.

Java brews trouble for Microsoft

By Nick Wingfield and Martin LaMonica

**FACED WITH THE GROWING popula-

rity of Sun Microsystems Inc.'s Java programming language, Microsoft Corp. has bolstered efforts to establish Visual Basic (VB) and Visual C++ as development environments for the Internet.**

On Dec. 7, Microsoft will hold an Internet strategy briefing that will include an "Internet vision" speech by Chairman Bill Gates. A credible competitive Internet strategy has become imperative for Microsoft, which last week saw its stock fall after being caught off guard by the growing interest in the World Wide Web and Java.

Microsoft's strategy hinges on establishing OLE custom controls (OCXes) and OLE Automation objects created by third parties using VB 4.0 and Visual C++, as alternatives to Java applets. Both execute Internet client functions such as incorporating real-time updates into existing, performing calculations in networked applications.

"Microsoft sees the Internet as a platform for distributed OLE components," said Jerry Michelak, managing editor of Release 10.0, based in New York. "I'm not sure they can do that. They have all of these legacy garbage they have to bail with them where they go."

Microsoft plans to set itself up as a certifying authority for OCXes, which it says will guarantee the security of OCX-based applications without limiting their functionality. Microsoft may also run into difficulties as it tries to leverage its dominance at the desktop to control the development of Internet applications.

The company plans to ship future versions of Windows 95 with the Blackbird viewer, the software necessary to run Internet-based OCXes, the company said.

Microsoft maintains that applications created with Blackbird will be cross-platform, pointing to OLE support on the Macintosh and partnerships with third parties such as Bristol Technology Inc. and Software AG to port OLE to Unix. The company also said it may license Blackbird to vendors such as Netscape Communications Corp.

But a developer said he would be wary of any effort to make the Internet proprietary.

"If Microsoft [Internet products] tied us into the Microsoft Network and its desktop products, I wouldn't want to work with it," said Stefan

IBM ADDS TO ITS TOOLKIT STABLE

IBM demonstrated at Comdex last week a toolkit that lets developers create Internet applets in a variety of programming languages, including C++, OpenDoc, and Java.

The company is also close to signing a licensing agreement with Sun Microsystems Inc. that would let IBM link OpenDoc to class libraries written in Java, according to sources close to IBM.

The prototype software, called CyberPart, is being developed as a companion product to IBM's Web products. But an Internet version of Blackbird will not ship until the second half of 1996, by which time Java may be well established as an Internet development environment.

Microsoft may also run into difficulties as it tries to leverage its dominance at the desktop to control the development of Internet applications. The company plans to ship future versions of Windows 95 with the Blackbird viewer, the software necessary to run Internet-based OCXes, the company said.

Microsoft maintains that applications created with Blackbird will be cross-platform, pointing to OLE support on the Macintosh and partnerships with third parties such as Bristol Technology Inc. and Software AG to port OLE to Unix. The company also said it may license Blackbird to vendors such as Netscape Communications Corp.

But a developer said he would be wary of any effort to make the Internet proprietary.

"If Microsoft [Internet products] tied us into the Microsoft Network and its desktop products, I wouldn't want to work with it," said Stefan Francis, senior managing editor of the communications and applications research division at IBM. Pricing is not set.

Fielding-Isaacs, principal at Art and Technology W3 Development Ltd., in San Francisco. "The question is, will the Microsoft browser accept the Internet and Java or forge its own path? Because there are a lot of people running Java."

Some observers said Microsoft may even be forced to license Java.

"Microsoft is being walked into a corner," said Kathy Hare, senior analyst at Dataquest Inc.'s On-line Strategies group. "But if Microsoft doesn't license Java, they create space for the competition. But if they do [license Java], they cannibalize themselves because they lose some control over the direction of the desktop."
At 200 MB Per Minute, We're Setting The Pace.

The CY-ASP is the fastest digital data storage solution on the market, able to store up to 70 GB at speeds of up to 200 MB per minute, unattended.

But there's more.
The fastest subsystem is also the most flexible, giving you a choice of four recording modes plus offline copy and verify functions.

In Single Mode the drives operate independently.

In Cascade Mode data automatically writes to the next tape once the previous tape is full.

In Mirroring Mode the same data writes to multiple tapes simultaneously.

In Stripping Mode data writes to two or more tapes at once, maximizing throughput.

Consider it a data storage management tool, a solution that will help you solve the problems you encounter every day: the need for higher capacity and speed, the need to make duplicate tapes for off-site storage and data exchange, the need for real-time status information, and the need to save resources and boost productivity on every level.

Of course, we also know that a storage solution is only as good as the data you get back. With a bit error rate of less than 1 in 10^15 bits read, the CY-ASP gives you the highest data integrity.

Based on proven 8mm helical scan technology, each drive supports our switch-selectable data compression option. And each drive features a 2-line, 40-column backlit display that gives complete status information.

Backed by a two year warranty that includes expert service and support from our in-house engineering group, the CY-ASP is setting the pace in performance, flexibility and value.

Other configurations are available, ranging from a 2.5 GB subsystem to an intelligent, automated 3 TB tape library. And they're all compatible with the widest range of computer systems and networks.

When you're ready for a data storage solution that means business, call for complete information.

(804) 833-9000

CYBERNETICS
Tera One • Yorktown, Virginia 23693 • Fax (804) 833-9300
IBM goes after Internet with PC terminal line

By Ed Scannell

Although Oracle Corp. and Sun Microsystems Inc. officials have enthusiastically talked about the commercial prospects of low-cost, network-oriented computing devices, IBM could wind up being the first to deliver such a system.

In a Comdex keynote address last week, IBM Chairman Lou Gerstner, said his company is completing designs on what he described as an InterPersonal Computer (IPC) that could be delivered to selected corporate customers as early as the beginning of next year.

"A lot of people are looking for [Internet-based] network-centric computing to pay off in the consumer space first," Gerstner said. "But we are seeing it take off first in businesses and large institutions."

IBM intends to sell the IPC to corporate accounts on a special bid basis only.

Besides a Pentium chip, the IPC would have a keyboard, monitor, and a generous amount of memory in order to download server-based applications and corporate data.

The unit will make a floppy drive and will have a hard drive much smaller than those typically used on notebook systems today.

By contrast, Oracle President Larry Ellison's $500 Internet computer would connect to either TVs or PC terminals, so it would be suited to both the office and the home. The IPC is likely to carry a base price closer to $1,000.

And prices could be higher if users decide to add more sophisticated features such as MPEG for downloading videos or high-speed communications boards.

The system is also being positioned as a low-cost alternative to 3270 dumb terminals. Besides offering local processing power, the IPC would be compatible with network-based asset management.

Although corporate users expressed interest in the IPC, some wondered what its price-performance advantages would be.

"If I can buy a reasonably configured Pentium system next year for about $3,000, what inherent advantages will the IPC have?" asked John Handy, senior technical consultant with a large utility company based in Gaithersburg, Md.

Novell to bundle GroupWise with NetWare

By Jessica Davis

Novell Inc. has pushed back the ship date of its GroupWise XTD messaging server from April 1996 until "late spring" 1996, a company official confirmed last week at Comdex.

But when it ships its client/server messaging upgrade, Novell plans to aggressively leverage the installed base of NetWare servers, bundling the two products together.

The goal is to make GroupWise part of every NetWare 4.1 sale," said Stewart Nelson, vice president and general manager of Novell's groupware division. "GroupWise is an extension of NetWare 4.1. I would expect some bundling of GroupWise and NetWare."

The bundling plan is in preparation for a head-to-head battle with Microsoft Corp.'s network OS and messaging combination — Windows NT and the Exchange Server.

"The Exchange Server is due to ship early this third quarter," said Nelson.

Analysts' reactions were mixed over whether the Novell NetWare/GroupWise strategy will win the company more market share.

"Novell's strategy revolves around how Microsoft has raised expectations for its Exchange server," said David Marsh of the Patricia Seybold Group Inc., in Boston. "Novell wants to build on the perception that Microsoft is not delivering those things. Novell's positioning has to do with the fact that they handle personal work in a network very well."

But going up against Microsoft's formidable product combination may be a mistake for Novell, said Bob Flanagan of the Yankee Group Inc., in Boston. "It gives Microsoft significant opportunities to show users where there are holes in the Novell offer," he said.

Novell will wait for Microsoft to release information about Exchange server pricing before releasing any information about its own messaging/groupware upgrade, GroupWare XTD, Nelson said.

"Meanwhile, Bennett Anderson, Novell's director of server development, said that engineering on GroupWare XTD is on schedule and will probably be finished well in advance of the new "late spring" release date."

"Engineering, though, is only about one-fifth of the picture," Anderson said.

Dual-headed Notes/Internet browser

Lotus grooms Notes for Internet glory

By Jessica Davis

Lotus Development Corp. plans to turn Notes into the fourth killer application on the Internet after E-mail, the World Wide Web, and Usenet newsgroups.

The Cambridge, Mass.-based software vendor is developing a "dual-headed Notes/Internet browser" which will be available on the Internet in the first half of 1996.

The dual-headed browser client software will work both as a Web browser and as a Notes client, enabling users outside corporate Notes environments to access Web sites and Notes servers.

"The positioning of Notes as part of a suite of Internet applications makes sense," said David Marshak of the Patricia Seybold Group Inc., in Boston. "People will be using Web browsers to get into Notes."

The dual-headed client is distinct from the integrated Web browser — the InterNotes Web Navigator that will be included in Notes. Release 4.0. Lotus' server software will work in conjunction with the InterNotes Web server to provide users with Web browsing abilities, as complete or as limited as the Notes administrator designates, from within Notes.

"We went with the server core first because administrators wanted control over users' use of the Web," said Scott Prather, product manager for Notes Messaging and the InterNotes product line.

"The direction we will go with [the dual-headed browser] is client access," Prather said.

Those outside the corporate environment using conventional Web browsers can already connect to Notes networks running the InterNotes Web Publisher. With the release of Notes, Release 4.0, those outside the corporation will be able to access designated areas of Notes databases anonymously using conventional Web browsers. Administrators will set access parameters for anonymous users.

The dual-headed browser client offers outside users the additional functionality available with a Notes client, and it will also offer the optional anonymous connections to Notes servers.

Amid the proliferation of Web technology, some analysts have begun to question the continuing value of Notes as a collaborative groupware application. Lotus hopes to counter this perception by making Notes a subset of the Internet.

Notes 4.0 will include the InterNotes Web Navigator and the InterNotes Web Publisher.

Pricing for the dual-headed client has not been set, though Lotus is considering making it available free of charge.

Interface API lets users consolidate workflow

By Pardha Vadlamudi

THE WORKFLOW MANAGEMENT Coalition, an organization of workflow system vendors and users, this week will unveil an API that allows users to consolidate workflow data from different systems.

With the release of the Interface 2 Client Application API, developers will be able to write a common interface for workflow applications, allowing users to compile data or other information from different workflow systems into one comprehensive list instead of accessing multiple interfaces for each system.

"We are interested in this because over time we're going to support multiple workflow management systems," said Mark Tucker, a senior business analyst for National Life of Vermont, in Montpelier, Vt.

"Not all workflow management systems have the same capabilities. We'll be able to write a common interface instead of supporting different workflow systems."

Analysts said the workflow API standard will be a boon to workflow developers.

"In order to make the workflow engine more flexible and more robust, the engine must be able to seamlessly talk with applications," said David Yockelson, an analyst with Meta Group Inc., in Stamford, Conn.

"The vendors [will be] encoding to a standard API, and systems won't be judged on pure workflow ability, but their ability to link to applications," Yockelson said.

In the next year, the Workflow Management Coalition plans to release four more Interface APIs in addition to the Client Application API, including Process Definition, Invoked Applications, Product Interoperability, and Administration and Monitoring Tools APIs.

The Workflow Management Coalition also includes Action Technologies Inc., Fujitsu, IBM, SAP AG, and Xsoft.

Meanwhile, Microsoft Corp. is working on an unrelated API that is a workflow extension to its Messaging API standard.

Sources said some members of the Workflow Management Coalition were briefed by Microsoft last week on the company's efforts to integrate its messaging capabilities with workflow.

Microsoft's API is expected to be released early next year, according to sources.

For the record

The maker of the Java development language was misidentified in the Nov. 6 Case Study, "Eastman Kodak brews up a hot Web site" (page 71).

Sun Microsystems Inc. is the developer of Java.

In our Nov. 6 product review of Insignia Solutions Inc.'s Soft-Windows 2.0 (page 128), we failed to give credit to the InfoWorld Test Center staff who performed the benchmarks. They were technical analyst Anne Kaliczak and test developer Jeff Senna.
"When I say jump, I want my computer company to say, 'How high?'"

So you want a company that delivers more than just hardware and software? Presenting IBM HelpWare®, service and support that's just a call away. Phone our PC Support Line at 1800 772-2227, 24 hours a day, 7 days a week. We'll be there. And if on-site service is necessary, our warranty assures you that we'll be there within two business days. It's like having your own IS department. Minus the demands for vacations and raises. The IBM PC 300. Just one more reason why there is a difference."

For info, orders or a dealer near you, call 1 800 426-7161. Or visit our web site: www.pc.ibm.com/desktop/
100Base-T
With their steaming hot technology, 100VG products have jolted the 100Mbit networking world. Outshipping 100Base-T hub ports by a hundred percent, according to Dell'Oro Group.*

HP is setting the high-speed standard with 100VG Hubs and 10/100VG Selectable LAN Adapters. They'll improve network performance. And keep your company wired for years to come.

For faxed information on HP 100VG, give us a buzz: 1-800-450-3547.

It's outselling regular 2-to-1.
Color LCDs to ease notebook pricing

Active matrix screens are more plentiful, cheaper

By Brooke Cutler

Active matrix LCD prices are helping to drive down the prices of notebook PCs to unprecedented levels.

Color active matrix screens measuring 10.4 inches diagonally, traditionally one of the priciest components in high-end notebooks, are now finding their way into machines that are dropping close to the $2,000 level, industry observers said.

"At this time last year [10.4-inch active matrix LCDs] were priced over $1,000. Now they're coming in as low as $350," said an official at a large Japanese LCD manufacturer.

This trend is driving these high-quality displays into value line notebooks, said Bruce Stephens, an analyst at International Data Corp., in Framingham, Mass.

For example, Dell Computer Corp. is now selling for $2,299 a Latitude LX 4100T with a 10.4-inch active matrix screen capable of supporting 64,000 colors.

The Latitude uses an 100-MHz Intel DX4 processor and includes 128KB of cache and a 420MB hard disk drive.

IBM has introduced a new 365 ThinkPad with a 10.4-inch active matrix LCD that's priced below $2,500, an unheard of price six months ago.

Other first-tier manufacturers are working on 75-MHz Pentium systems with 10.4-inch active matrix displays that may fall into the $2,000 to $2,200 range and will ship in the first quarter of next year as an industry observer. (See "Portable market primed for pricing slowdown," Oct. 30, page 6.)

"With prices for 10.4 [active matrix] coming in this low, there may be no need for dual-scan [passive matrix displays]," added one industry source.

However, while computer screens are rapidly dropping in price and becoming more available, shortages of other components are keeping portable supplies low.

Several portable manufacturers have identified a lack of high-speed CD-ROM drives, high-capacity 2.5-inch hard drives, and DRAM as the reason notebook—particularly high-end systems—are in short supply.

As these components become more plentiful, portable users will have access to virtually the same technology as desktop users, and at competitive prices. That will include larger, higher resolution screens, faster peripherals, and improved connectivity.

Management vendors to adopt Web browser

By Mark Leon

Seagate Technology Inc. has embarked on a project that will make use of World Wide Web browsers to provide a common front end to its network and systems management tools.

Seagate hopes to support a Web browser as a front end to AssetManager, its asset management application, by the first quarter.

Seagate plans to build browser support into the disparate network and systems management tools acquired over the past 18 months.

"It's one of the four interfaces we are committed to supporting," said Bob Quillian, director of marketing at Seagate. The other three interfaces are Windows NT, Windows 95, Windows NT, and Unix.

However, other vendors such as IBM and Hewlett-Packard Co. are being more cautious.

"Everyone's talking about the Web," said Mark Simpson, vice president of technology for Apple.

"We are cheap and might make a good poor-man's view of the network.

But the same security issues that make corporations nervous about doing business on the Internet are relevant to network management. Administrators, for example, don't want Web surfers reconfiguring routers. This would not be a problem for sites where a browser is employed locally and doesn't actually connect to the Internet.

"You could deploy a browser internally and avoid the security issues," said Rob Enderle, analyst with the Giga Information Group, in Santa Clara, Calif.

Vendors could still put their own stamp on these interfaces with Hypertext Markup Language (HTML), and it could cut down on time to market because they don't have to use so many resources on developing graphical client ends.

"It's an interesting concept," said Todd Kimble, HP's marketing manager for OpenView for Windows.

"We have talked about it. If the Internet is capable of doing what they say, a browser would be better than a nice GUI. It would be the window to all management applications."

Sun Microsystems Inc., meanwhile, is making a big play for a piece of the Internet with its Java software, and last spring the company introduced AutoClient, a systems management application that downloads chunks of code over LANs.

"With the technology in Java and AutoClient, Sun may be in a good position to take advantage of browser-based network management," Enderle said.

Novell boosts links between Macintoshes and NetWare

By Paul Krill

Novell Inc.'s new client software connects Macintosh desktops to NetWare servers via Novell's latest SPX protocol, eliminating the need to support AppleTalk.

Announced last week at Comdex, the 32-bit NetWare Client for MacOS, available free from on-line line manager, in Provo, Utah.

The client has a network service access utility, called NetWare Directory Browser, like Apple Computer Inc.'s Chooser. Although the Chooser is limited to viewing a single resource at a time, such as a printer or server, NetWare Directory Browser provides a view of all objects in the NetWare Directory Services directory, such as cues, servers, printers, and databases.

Novell has added a remote console utility, enabling an administrator to take control of a NetWare server from a Macintosh.

One beta user was pleased with the client. "Not having to use AppleTalk is a benefit because we're having problems routing AppleTalk," said James Drews, an IS official at the University of Wisconsin, in Madison.

Users can download the client from NetWare on CompuServe or from the World Wide Web at http://netware.novell.com.
Sounds pretty scary, doesn't it? But if you stapled it with technology made by Motorola, you can still feel secure. We'll help you handle the transition from analog to digital. With high speed modems that will connect at the highest speed possible. (We drove the standard.) Frame Relay Access Devices that let you use as much bandwidth as you need, when you need it. And digital modems for ISDN that let you zip along the Internet. And because it's made by Motorola, you won't have to cross your fingers every time you staple. For details, call 1 800 766-4883.
That's Ms. Hot Shot to you. When they said you couldn't have a CD-ROM drive and MPEG video in a notebook, you replied coolly: Yes, I can.
Introducing the Complete High-Speed Solution From Hayes.

Hayes now gives you the complete solution for high-speed communications. Introducing the Hayes Century 8 & 16 Rack Systems. Now you can get the proven award-winning performance of Hayes OPTIMA 288 modems in a convenient rack system.

Independent industry testing continues to prove that Hayes OPTIMA modems are the fastest you can get. It’s no wonder Hayes OPTIMA has captured so many industry awards for technology, performance and preference.

In addition to the performance features of OPTIMA, the Hayes Century 16 gives you a 19-inch rack with central site capability. The Hayes Century 8, with its small footprint, makes it well-suited for setting up modem pools at branch offices.

For more information on our complete solution for your business, call Hayes Fax Response at 800-HAYES-FX and select Document 974. Or call 800-374-8388, Ext.700 for our Complete Solution Special Offer.

Complete Solution Special Offer
Buy a Century Rack System, OPTIMA 288 Business Modem and an OPTIMA 288 PC Card Modem and SAVE 50% ON THE TOTAL PACKAGE.

Hayes OPTIMA Modems Give You The Advantage!
- Award-Winning 230, 400 bps
- Fast ROM
- Dial-back and Password Security
- Caller ID**
- Remote Configuration
- Preassembled/Preconfigured/Pretested
- Voicemail and Fax-On-Demand***
- Distinctive Ring
- Hot Swappable
- Ping and Play

** Available on OPTIMA 288 Business Modem and Century only
*** Available on OPTIMA 288 Business Modem only

OPTIMA Even Beats 33.6 Modems!

Hayes Century 8
Hayes Century 16

OPTIMA 288

- U.S. Robotics Courier V. Everything (32Kbps connection)
- AT&T Campsie 32/256 (33.6Kbps connection)
- Hayes OPTIMA 288
- Hayes OPTIMA 288

Call 800-374-8388 Ext.700

Hayes Worldwide Web Site: http://www.hayes.com
Hayes Online: 770-446-6336
Hayes Microcomputer Products, Inc., P.O. Box 105203, Atlanta, GA 30348

©1995 Hayes Microcomputer Products, Inc. The Hayes icon and the Hayes logo are registered trademarks, and Increasing the Speed of Business, OPTIMA and Century are trademarks of Hayes Microcomputer Products, Inc.
WITH CD-ROM, THERE ARE NO BOUNDARIES TO INTERACTIVE INFORMATION.

YOU HAVE ACCESS TO THE WORLD ON THE INTERNET.

YOUR IDEAS ARE PART OF THE BIGGER PICTURE WITH A LARGER DISPLAY.

BROADCAST QUALITY VIDEO LETS YOUR PRESENTATIONS GO AS FAR AS YOUR IMAGINATION.

START WITH THIS BOX AND YOU CAN THINK OUTSIDE ANY OTHER.

*2nd HDD and 2nd battery are both optional. Copyright © 1995 Zenith Data Systems Corporation. Zenith Data Systems is a Bull Company. Systems Corporation, Intel Inside logo and Pentium logo are registered trademarks of Intel Corporation. Windows is a registered trademark.
Introducing the Z-NOTE® GT, an advanced performance notebook PC, optimized for multimedia.

With endless features and the power of Pentium® processors, the Z-NOTE GT gives your company the tool to do anything you can imagine. Sales presentations fly with hardware MPEG support which allows for 30 frames per second, full-motion video playback. Graphs and charts pop in high-resolution color on oversized 11.3” SVGA displays (select models). And the power comes from where you need it with our ingenious SmartBay which lets you swap CD-ROM for FDD for optional 2nd HDD for optional 2nd battery. All told, the Z-NOTE GT is the multimedia solution for your company. Because you've never seen a notebook computer that can take you so far.

**Specifications**

- 75 or 90MHz Pentium processor
- PCI Bus architecture
- 8-40MB RAM
- 810MB/1.3GB HDD
- Video graphics accelerator
- Swappable CD-ROM/FDD/optional 2nd HDD/optional 2nd battery
- 10.4” and 11.3” TFT SVGA and 11.3” DSTN SVGA displays
- Extended battery life with NiMH or Lithium Ion
- Designed for Windows 95
- NTSC/PAL video out for TV connect
- 1 Type II and 1 Type III PC Card slots
- Optional hardware MPEG support

1-800-289-1284 Ext. 5745
http://www.zds.com

*NOTE* is a registered trademark of Zenith Data Systems Corporation. SmartBay and ‘Make The Connection’ are trademarks of Zenith Data Microsoft in the U.S. and other countries. Specifications are subject to change.
**IBM to expand 2210 Nways family**

By Luc Hatlestad

**IBM will announce in early December additions to its 2210 Nways family of multicontrolive routers that will offer users twice the data throughput of its existing lower-end routers and improved WAN connectivity.**

Four new models will ship before the end of the year: dual-port Token Ring and Ethernet models; a Token Ring and Ethernet model; and a model with one Token Ring port.

All four models will have four WAN interfaces and a universal port to plug in adapters for Asynchronous Transfer Mode (ATM) backbones or ISDN connections.

The four 2210 models are designed as concentrators that connect five or six remote offices into a network. IBM officials said:

"Where users have existing models, they can keep them where they are and leave well alone," said Sid Strauss, senior planner for IBM's router products division.

"They can put the new models in areas where they need more capacity."

Strauss said the universal slot can be used to connect a switched workgroup via ATM to a backbone router, or as a backup mechanism for an ISDN line. ATM and ISDN adapters for the new routers will ship by early next year, he reiterated.

IBM will also announce in December Release 3 of its routing connectivity software. The software will run on existing 2210 models and support Systems Network Architecture and TCP/IP connections such as DataLink Switching and Synchronous Data Link Control.

The new software will also enable existing 2210 model routers, which feature built-in ISDN support for lines in a single family of products.

The routers will be available in December across North America. The new 2210 routers support the Routing Information Protocol and Open Shortest Path First, as well as AppleTalk, DECnet, IPX, and IP protocols.

Pricing for the new 2210 routers is not yet available.

---

**PowerPC Platform unveiled, one new license**

By Tom Quintan and Terho Uimonen

**The standard reference platform for the PowerPC architecture announced at Comdex by IBM, Apple Computer Inc., and Motorola was greeted by mixed vendor enthusiasm.**

The Common Hardware Reference Platform, or the PowerPC Platform as it's now known, is due to arrive in late 1996.

No one found fault with the specification itself, which supports the Macintosh OS, OS/2, Solaris, Windows NT, and AIX, but enough product specifics were missing to make some potential PowerPC licensees cautious.

"The PowerPC Platform is an absolutely essential step, and we're very happy they finally announced it," noted one vendor interested in developing a Macintosh clone based on the design. "But there's so much more that hasn't been dealt with. Apple hasn't given any details about its licensing program, fees, or the support being offered. Japan and Europe are happy, but we're not committed yet."

The new specification serves as a blueprint for I/O interfaces, bus standards, and various other system functions, which are based on widely available industry-standard components that will enable system vendors to build cost-effective solutions, the companies said.

Although Apple still needs to clarify some key issues for vendors, the company is expected to be the biggest beneficiary of the unified PowerPC Platform, analysts said.

"It replaces Apple's proprietary platform with a standard platform, and I think that will be the key enabler for more widespread licensing of Macintosh," said Michael Slater, publisher of the newsletter Microprocessor Report, based in Sebastopol, Calif.

One new Mac licensee was announced along with the specification, Umax Data Systems Inc., a Taiwan-based maker of scanners and graphics software products. However, the list was somewhat shorter than Apple had hoped for, sources familiar with the announcement said.

---

**Dynamics C/S+ on the way for Windows NT**

By Ilan Greenberg

**Great Plains Software Inc. last week joined the coterie of client/server accounting vendors backing Microsoft Corp.'s SQL Server 6.0 database server when it sent its Dynamics C/S+ for SQL Server 6.0 into beta testing.**

Due for final release next April, the upgrade will let system administrators control whether application processing for specific tasks takes place on a client or server. In addition, the software provides integration with Microsoft's Messaging API messaging standard so that users can use E-mail to implement workflow routing.

The three modules now in beta testers' hands are the reporting, system manager, and general ledger modules. Receivable management, payables management, multicurrency, and an advanced third-party report writer called FRX are also set to enter beta testing. At the beginning of the year, the modules support Windows 3.x and Windows 95 clients connected to Windows NT servers.

The company has not set pricing for the 32-bit Windows version, but current releases of the Dynamics C/S+ line for other platforms cost $2,000 to $6,000 per module.

Dynamics C/S+ for SQL Server is aimed at enterprises with about $25 million to $250 million in revenue, exactly the market slice that is increasingly turning to Windows NT and SQL Server for its client/server solution, according to International Data Corp., a research company in Framingham, Mass.

Great Plains competes with Platinum Software Corp. and Solomon Software. Dynamic C/S+ software is also targeting its market segment and recently unveiled versions of their accounting lines designed to exploit Microsoft's BackOffice suite of server software. (See "Client/server vendors hide from SAP in workgroup, vertical niches," Nov. 13, page 6.)

---

**IBM maps out future for OS/2 Warp client and server**

By Jason Pontin and Ed Scannell

**IBM sketched out the future of both the client and server editions of OS/2 Warp at Comdex last week and reiterated the company's commitment to the platform.**

John W. Thompson, the newly anointed head of IBM's Personal Systems Products division, announced some features of the next version of the Warp client version, code-named Merlin, and outlined plans for IBM's Warp Server series, now known as Project Eagle, which is designed to compete with Microsoft Corp.'s BackOffice server suite.

Merlin, due to ship in the first half of 1996, will feature a new user interface that IBM hopes will be easier to use and more network-aware, with icons that provide easy desktop access to network sites.

Merlin will also have improved multimedia capabilities, new plug-and-play features, an installation utility called the Upgrade Advisor, and OpenDoc run-time support to let users run applications with OpenDoc components. The first OpenDoc software developer's kit for OS/2 Warp is due to ship next month.

Merlin will also ship with an OpenDoc applet called SpokenDoc that will provide speech recognition capabilities, according to sources familiar with the company's plans.

For enterprise users, IBM will add support for C2 security features and improved I/O queue performance.

Project Eagle will consist of six or seven cross-platform application and communication and processing servers, Thompson said. The first is due in the first half of 1996, and a new server is expected to ship each quarter.

Sources said a World Wide Web server and transaction-processing server are likely to be the first releases, followed quickly by a DB2 database server.

The Warp Server OS, also due in the first half of 1996, will be only one of several platforms on which Project Eagle servers will run. Thompson added. He also announced Dynamic IP, new TCP/IP software for OS/2 Warp Server, and a Warp Server-Lotus Notes bundle that gives Warp Server users point-and-click installation of Notes.
Lotus Organizer 2.1.

Because Wednesdays’ no good for Bob.

There’s some kind of cosmic waffle rule that applies to business meetings: if you reschedule once, you will have to reschedule a dozen times. Because if it isn’t Bob, it’s Joan, or Gayle or Jorge. And meanwhile, the perceived importance of any meeting is inversely proportional to the number of times it is pushed back. It’s been proved.

And that’s why there’s the new Organizer™ 2.1 with group scheduling.

Organizer makes setting up a meeting easy. You choose your attendees from a point and click list. You see their availability. Once you’ve selected a time and location and posted your invitation, Organizer makes it easy for your invitees to accept, decline or send a delegate. Organizer works in conjunction with cc:Mail™ or Notes;™ for users in workgroups or across entire organizations.

Of course, Organizer is famous as a personal information manager—and now it goes a step further, adding group scheduling that’s easy to install, use and support. Check out the new Organizer. For a free copy of our helpful booklet, Managing Meeting Mania, or for more information, call 1-800-872-3387, ext. B306. Or explore Lotus on the World Wide Web at www.lotus.com.

*In Canada call 1-800-GO-LOTUS. ©1995 Lotus Development Corporation, 35 Cambridge Parkway, Cambridge, MA 02142. All rights reserved.
Lotus and Working Together are registered trademarks and Organizer, Notes and cc:Mail are trademarks of Lotus Development Corporation.
We HEAR
(NO MATTER HOW)

Remote Access Servers • Async and Sync Communication Boards • Terminal Servers • ISDN Network Interface Cards
Just how cold does it get in Eden Prairie? Well, it's quite common for the temperature in the Minnesota hometown of Digi International to reach a bone-chilling -20°F during winter. Despite that, the folks at Digi take great pride in describing the people who've made Digi International synonymous with consummate support.

Around here there's even an expression for it; they call it "Minnesota nice." And, simply stated, our people are filled with it.

It all starts with products that integrate seamlessly into your networking environment. We back-up those products with a five-year-warranty and support that's free of expense and hassle. Our technical specialists understand how Digi's products fit into your enterprise—and they'll help you make them work, regardless of the operating system or other vendors you use.

You see, we believe connectivity works best when your users don’t have to think about it. So whenever you or they have a problem, we'll be there—without excuses or finger-pointing.

That explains why even our competitors call us for answers to tough questions. We invite you to do the same.

So call us at 1-800-437-7238 for the facts about our complete family of remote and network access products (and all the support that goes with them).

Because, when you're a Digi customer, you'll never be left out in the cold.
OLE
Continued from page 1

Sources familiar with the company's plans said Microsoft will also soon begin beta testing OLE Ac-
tions, a set of interfaces to support transaction processing via OLE components. Sources said the beta test may run concurrently with the 6.5 release of Microsoft SQL Server, code-
named Hydra, which is set to ship in the second quarter of 1996.
Microsoft is also coming closer to delivery of its Network OLE dist-
ibuted object technology as part of a maintenance release for the
next upgrade of Windows NT, tenta-

tively called NT 4.0 and due in the
first half of next year, company of-
ficials said last week.
The company now is hoping to
deliver Network OLE in one of the
quarterly service packs for NT 4.0, said Collins Hemingway, director of
industry marketing for Microsoft's business systems division.
Sources familiar with the company's plans anticipate that the ser-
vice pack will be released only a couple of months after NT 4.0. This
schedule is several months ahead of the original plan, which called for
delivery of Network OLE as part of the Cairo upgrade of NT in 1997.

The three pieces together will form the bulk of the Enterprise OLE
architecture to build
dworkgroup functions, such as the ability of sev-
eral users at different sites to edit a document simu-
taneously across the Inter-
net, directly into desktop applications.
To help users focus on
projects rather than applica-
tions, the company also plans to extend its binder technology, originally un-
veiled in Office 95 for
Windows 95 in August.
The enhanced binders will act as
containers that can house an
assortment of file formats, such as
text, maps, animation, and sound
and movie clips, in a single docu-
ment. A scheduling engine will also
let users embed pop-up deadline
reminders and other project man-
agement aids inside documents.
Microsoft also outlined a plan to
offer vertical applications for spe-
cific industries or corporate depart-
ments. Company officials wouldn't
give any introduction dates but said
one of the first to appear will be a
data analysis tool for financial man-
agers that will be based on Excel's
computational engine.

Delphi
Continued from page 1
by year's end. PowerBuilder, on
the market for more than four years,
will hit 150,000 seats by year's end,
according to International Data
Corp.(IDC), in Framingham, Mass.
Delphi will still be hard-pressed to
make a dent in Visual Basic's
Knit Products, in Winston-Salem,
N.C. "It has the ease of Visual Basic
with the power of C."

Delphi Client/Server will include
an integrated version of Intersolv
Inc.'s PVCS configuration manage-
ment tool, as well as Borland's 32-bit
Reportsmith SQL and its InterBase
4.0 database for Windows NT.
Officials would not provide pric-
ing but said users of Delphi's five-
developer Team Solution bundle
under maintenance contracts — priced
at $15,000 — will be able to
get a free upgrade. Borland will ship
a 32-bit upgrade to the single-user Desktop
version of Delphi at the
same time.
Beta testers said they
liked Delphi Client/Server;
the repository structure, which allows
developers to break
down an application into multiple
tiers supporting GUI components,
business logic, and database access.
Such modules will have Delphi
components, OLE Automation
objects, and OLE custom controls.
Users said Delphi's stratified de-
velopment approach also paves
the way for the deployment of an app-
lication with a three-tier architecture.

Delphi Client/Server adds support for CASE
tool repositories in its data dictionary.

Unlike PowerBuilder 5.0, due in the first half of next year, Delphi
Client/Server will not include direct
support for three-tier application
development. Instead, Borland
plans to team with vendors of on-
line transaction processing moni-
tors and object request brokers and
later release Delphi with OLE to add
this capability, said Zack Ulrucker,
Delphi product manager.
The company is also adding sev-
eral utilities to ease connections to
SQL database servers.
"SQL Mouse doesn't bite. Now, 1

never will," Barry said. "We also
never need to worry about the
reporting functions and the
reporting tools."

"In the future, you'll see OLE
becoming a database tool as well,"
said Barry, whose company is
working on a beta version of OLE
to add the capability.

Delphi Client/Server will have a
data dictionary for defining corpo-
rate database standards and stor-
ing third-party CASE tool repository
data, as well as a utility, SQL
Explorer, for manipulating meta
data.

The upgrade will include in-
facilities to connect to Sybase's
S-Designor, Popkin Software & Sys-
tems Inc.'s System Architect, LBMS
Inc's System Engineer, and Corpo-
rate System Advisors Inc.'s Silhver.
FINALLY, SOMEONE AROUND THE OFFICE YOU CAN TELL WHAT TO DO. IMAGINE THE POSSIBILITIES.

Let's start with the simple stuff. "Find file." Zap. There it is.

Now try something a bit more advanced. Change a column of twenty numbers to twenty new numbers—just by reading them aloud. Done. And your fingers never touched the keyboard.

The AST® Bravo MS with AST-VoiceCommand® software could make all your work easier. Not that a 133 MHz Pentium® processor doesn't help speed things along already.

You'll also be able to work more creatively with 16-bit stereo sound and 64-bit graphics. More securely with built-in virus protection for Windows® 95.

Now imagine this. It's all very affordable. When our customers asked for "Help," we heard them. So call us at 800-876-4AST.

"Quit."

75-133 MHz Intel Pentium processors; 256 KB standard cache; 8 MB or 16 MB RAM expandable to 128 MB; up to 1.6 GB hard drive; accelerated PCI 64-bit local-bus graphics; AST-CommandCenter®; 4X IDE CD-ROM configurations available.

©1995 AST Research, Inc. AST is a registered trademark of AST Research, Inc. AST Computer, the AST logo, AST-VoiceCommand and AST-CommandCenter are trademarks of AST Research, Inc. Intel Inside and Pentium are registered trademarks of Intel Corporation. All other computer and/or product names may be trademarks or registered trademarks of their respective owners.
When we go to work, we work on thinking about switching. When we talk about switching. When we eat dinner, we talk about our future, we talk about switching. When we go on and on about switching. When
Switching. When we eat breakfast, we
get customers to lunch, we talk about
talk about switching. When we talk
about switching. When we talk to our friends,
we go to bed, we dream about switching.

Going out on the town isn’t exactly our strong
suit. After all, we’ve spent every minute of every
day for the last five years creating switches for
every part of a network.

And our obsession has paid off. Our break-
through ASIC technology has enabled us to
develop products for virtually every switching
need, whether backbone or workgroup; Ethernet
or Token Ring; even FDDI, Fast Ethernet and
ATM. The LinkSwitch™ 1000, with Fast Ethernet
switching starting at $199* per port and the powerful
LANplex* 2500, with throughput up to 565K
packets per second (pps), are just two examples.

And everything is covered by 3Com’s® com-
prehensive Transcend® network management. The
result? We’re the worldwide market leader in
backbone switching.

For help with all your switching needs,
call 1-800-NET-3Com and we’ll send you the
Obsessed With Switching kit which includes our
Pocket Guide to Switching. For information on the
hottest clubs in town, you’re on your own.

Should you come to us for switching?
Yes.

Should you come to us for a wild time on
Friday night?
Probably not.
Now, in the time it takes for an ordinary business lunch, you can do the extraordinary. Without expert DBA or systems knowledge, you can turn a brand new, unconfigured server into a fully tuned and optimized database system. Hardware, operating system and Oracle7 database – all installed, configured and tuned on a Compaq ProLiant or Compaq ProSignia server.

All you need is Compaq SmartStart for Oracle7. Jointly developed by Oracle and Compaq, it’s the pretested, pretuned, preconfigured integration tool that saves you hours, days, even weeks of time.

SmartStart’s point-and-click interface lets you choose between Oracle7 for Windows NT, NetWare 4.1 or SCO UNIX. Just answer simple questions to optimize your application for Compaq’s high-performance TriFlex Architecture and SMP capabilities.

Oracle7 scales smoothly from one to four processors and fully supports Compaq’s Online Recovery Server – the high availability solution to keep your business up and running.

For multi-server deployments, duplicate your server by sending a SmartStart-configured diskette instead of your best system manager. Imagine the savings in time and travel costs.

To learn more about Compaq Servers and receive a free Compaq SmartStart demo disk, call the world’s leading server and database companies at our joint number: 1-800-633-0728, ext. 4798.

Do it now. Let Compaq and Oracle point you toward faster, easier ways to manage your business.
AMD targets Pentium with Am5x86

By Brooke Crothers
ADVANCED MICRO DEVICES INC. (AMD) has begun shipping a low-end Pentium-class processor, challenging Intel Corp. for the first time in the Pentium space.

The Am5x86 runs at 133 MHz and offers speeds on par with a 75-MHz Pentium, AMD said.

AMD was also demonstrating a 166-MHz Am5x86 at Comdex last week, but the company has not decided whether it will commercialize that version of the processor. AMD is using the Am5x86 chip as a cost-effective upgrade for 66-MHz 486DX2 and 100-MHz IntelDX4 systems. The company plans to ship the chip in volume next month.

AMD is using Pentium- and Pentium-Pro-class production technology in its processor, which allows the chip to run at high speeds while drawing relatively little power — making it also suitable for notebook PCs, the company said.

The chip has a 486 core but includes enhancements such as a 16KByte write-back cache, which allows system vendors to implement designs without a pricey Level 2 cache. A write-back design is also faster than the write-through design used in most 486 processors.

As with all high-end 486 processors and Pentiums, the Am5x86 has a built-in floating point unit. The "Windows compatible chip" will be priced at $93 each in 1,000-unit quantities. OEM customers for AMD's current 8x6-compatible chips include AST Research Inc. AMD recently announced plans to acquire processor manufacturer NexGen Inc.

Also at Comdex, Kingston Technology Co. demonstrated a chip upgrade product based on the 133-MHz Am5x86. AMD, in Sunnyvale, Calif., can be reached at (800) 222-9323.

Vendors rush Win95 apps to meet user demand

By Ilan Greenberg
SOFTWARE VENDORS found that native Windows 95 applications were more rigorous last week at Comdex than ever — even to users who aren't yet buying 32-bit software.

"My perception is that if a vendor is on the ball, they're on Windows 95 now," said Mark Zeiss, product consultant with Andersen Consulting Inc., in Chicago. "It doesn't matter whether they actually want to buy the application to run on Windows 95 now. If they're not supporting it, I have the perception they're not as responsive as they should be."

Many vendors agreed that users expect them to have native Windows 95 applications.

"If you don't have Windows 95 applications at the show, you're out of luck. People expect it, even if they don't need it," said Norman Krueger, director of corporate communications at Accent Worldwide Inc., a Newport Beach, Calif.-based developer of multilingual applications.

For its part, Accent announced Internet With an Accent, a $129 suite of applications that includes a viewer, a stand-alone browser, a HyperText Markup Language authoring tool, and other Internet tools to let users publish on the World Wide Web in 30 languages.

Vendors demonstrated at least 80 applications bearing the "Designed for Windows 95" logo, not counting games and educational software, according to a list provided by Microsoft Corp. Several others were announced, including Navision Software US Inc.'s PC&CL. Navision Financials 1.0, a client/server accounting and business management system, and Jandel Scientific's SigmaPlot, a graphics application for creating scientific graphs and plots.

Two of the largest application companies, however, have not developed complete line of Windows 95 upgrades. Lotus Development Corp. is now shipping Word Pro for Windows 95 but doesn't plan to release Approach for Windows 95 until December. The company has said, however, that the 32-bit version will support LotusScript (a Lotus derivative of Basic used by developers for customization), a revamped user interface, and new query tools. Pricing has not been set.

Novell Inc. had planned to ship its PerfectOffice suite for Windows 95 by year's end, but the company has pulled the plug on the project because of lack of interest and not having a market for the products.

Lotus, in Cambridge, Mass., is at (617) 577-8500.

Mike Ricciati contributed to this report.

Autodesk sets hopes high for Win95 release of AutoCAD

By Pardha Vadlamudi

AUTODESK INC. is still trying to recover from the slow adoption rate of its installed base to upgrade to AutoCAD, Release 13, and criticisms of the upgrade's performance, is looking ahead to the soon-to-be-available fourth maintenance release of the CAD drawing package.

Autodesk is now beta testing the C4 maintenance release, a native Windows 95 version of Release 13 that the company expects to ship at the end of this month on a single CD-ROM along with the DOS, Windows 3.1, and Windows NT versions.

Some AutoCAD users expect the release to resolve nearly a year of confusion in the AutoCAD installed base over whether or not to upgrade to the much promoted but initially flawed Release 13.

"There were some bugs, but no software is bug free," said [a] beta tester David Harrington, associate CADD manager at Walter P. Moore and Associates Inc., a structural engineering company in Tampa, Fla. "I'm looking for the adoption rate to increase because it benefits the end-user community to have one cohesive version to work on."

"In any case, it's better than nothing," said a beta tester at MIT, who asked not to be identified.

Others agreed. "Release 13 has been criticized for being slow, but they put a lot of work into this one [C4]," said beta tester Charles Pinkham, AutoCAD coordinator at MIT, a company specializing in microwave satellite equipment in Hauppauge, N.Y. 'It seems to like the Windows environment better than the C3 patch, and the regeneration is much faster and the graphics are better.'"

The Whip driver, a Windows graphics driver designed to increase the rendering performance of Release 13 on Windows 3.1, Windows 95, and Windows NT, was released as part of the C3 maintenance upgrade in July.

Autodesk hopes a successful release of a native Windows 95 version will reverse the declining AutoCAD unit shipments reported by CAD industry analysts.

The number of AutoCAD units shipped this quarter is down to 55,000, compared to 61,000 during the previous quarter, according to Thomas Hale, an analyst with Dataquest Inc., a research company in San Jose, Calif.

Autodesk'sWindows unit reported that this number also still includes many units of AutoCAD, Release 12, the previous version of the San Rafael, Calif.-based company's flagship.

"Less than 20 percent of the installed base has upgraded to [Release 13]," Hale said.

Autodesk in fact reported last week that revenue for the third quarter, which ended Oct. 31, will come in at $127 million to $128 million, a drop from the $140 million reported for the second quarter.
**Microsoft addresses FoxPro-Win95 glitches**

By Mike Rizzuti

Complaints from users about incompatibilities between Microsoft Corp.'s FoxPro 2.6 developers' database and Windows 95 operating system have promptly the Redmond, Wash. company to post a list of possible work-arounds for other problems:

- The default FoxPro icon is always displayed in the Windows 95 Task Bar and in the Task Bar.
- Icons specified for a screen within an application are not displayed or are displayed improperly.

Other users have posted on-line messages listing more incompatibilities and complaints that FoxPro 2.6 and applications developed with it perform poorly under Win95.

Despite Microsoft's response to some specific incompatibilities, users are more concerned by the impression that Microsoft is pushing them to adopt a new version of the tool released last summer, Visual FoxPro 3.0 — as well as the Windows 95 OS — before they are ready to move.

"Microsoft would obviously like us to move to Visual FoxPro as soon as possible, but my existing applications still need to run under Windows 95," said a developer, who requested anonymity. A low-cost upgrade from Version 2.6 to Version 3.0 will eventually prompt most developers to upgrade, but migrating existing applications, or completely re-engineering applications, will take time, the developer added. Microsoft can be reached at (206) 882-8080.

---

**ShapeLink edits geographic data in ArcView**

By Pandu Vadlamudi

NUMERA SOFTWARE INC. last week unveiled a tool for editing spatial data within its CAD software.

The tool is the first product to result from a partnership announced last month with geographic information systems (GIS) major Esri, and Stanford University's Geographic Information Systems Research Institute Inc. (ESRI).

The goal of the partnership was to integrate ESRI's ArcView mapping software with NUMERA's Visual CADD software. The first tool, developed by Numera ShapeLink, allows users to edit geographic components contained in ESRI's ArcView.

Working in ArcView, Numera ShapeLink lets users select the components to be edited and launch Visual CADD 2.0, a Windows 95 version of Numero's two-dimensional design and drafting program. This tool lets users convert CADD data and then automatically read the ESRI file and, once the data has been updated, places it back in the original ArcView file.

Numero ShapeLink will ship in December as a free add-on for ArcView users.

The integration of technology between Numero and ESRI follows Autodesk Inc.'s acquisition of GIS provider Automated Methods Ltd. in August. Based on technology from the acquisition, Autodesk next year plans to deliver a GIS Lite mapping, editing and management system for internal data and a full GIS package for analyzing that data. Both will be built on top of Autodesk's AutoCAD software.

Numera, in Seattle, is at (206) 622-2233, ESRI, in Redlands, Calif., is at (909) 793-2853.
Free speech.

As the PC and telecommunications industries converge, Intel technologies are at the center of a communications revolution.

Intel's CEO Andy Grove delivered the keynote speech at Telecom 1995. His speech, "Smart Connections to the World," is a sneak preview of what's to come. In it, you'll find out why PCs are rapidly becoming the world's most ubiquitous consumer device, outselling televisions worldwide.

See how "Smart Connections"—PCs connected to ISDN lines, Ethernet, cable, and all sorts of wireless connections—are changing how we work, learn, and play. From real-time video and document conferencing to interactive gaming over the Internet, PCs are ushering in a new era of worldwide communication.

For the latest facts on PCs and communication, call or e-mail us for your free video copy of "Smart Connections to the World."
Maybe You Don’t Need More People.

Maybe You Don’t Need More Time.

Maybe You Just Need More Memory.

For more information call us at

(800) 533-8710

or look for us on the Net:

http://www.kingston.com

These days, you can sum up the human condition like this: too much work, not enough time. Computers, of course, are supposed to ease the burden. But now, with all the new memory-hungry software out there, many computer systems aren't up to the task. Fortunately, there's a simple solution: add more memory. Recently, an independent study revealed that by adding just four megabytes of memory, the average manager became 26% more productive. The average number cruncher improved by 12%.

So, why Kingston memory? Because Kingston makes memory for almost every PC, server, printer, and workstation known to man. Our memory is designed to meet, or even exceed, the specifications set by leading computer manufacturers. We test every cell on every chip on every module. (On a 16 megabyte module, that's 128 million cells.) If you ever need help, our service and support will quickly shoulder the load. Is it any wonder Fortune 1000 companies use Kingston memory more than any other brand?
The new HP LaserJet 5Si MX network printer answers your users' questions so you won't have to.

Don't spend your day fielding questions about network printers. Instead, take a look at the HP LaserJet 5Si MX. With enhanced user software, inquiries such as "Is the printer out of toner? Out of paper?" or "Is it busy with another job?" all get answered immediately. Right from your users' desktops. Any print job—from the very simple to the very complex—can be tracked, managed, cancelled, or sent to a different printer quickly and easily. And the best thing is that you'll never hear about it. So take the intelligently simple approach to network printing. It may just free enough of your time for other important matters, starting with lunch.

HP Network Printers
Just what you had in mind.
Desktop mechanical CAD

Solid modeling tools debut at Autofact

By Pardhu Vadlamudi

A SLEW of newly introduced PC-based solutions in the mechanical CAD market may soon be a boon for users who want to do high-end workstation-level solid modeling on their desktops.

"There is a whole new crop of midrange solutions," said David Weisberg, publisher and editor of the Engineering Automation Report, in Englewood, Colo. "We're on the verge of a significant growth phase in the mechanical space, where there is solids technology on every engineer's desktop."

Several of the new desktop mechanical design systems were demonstrated last week's Autofact show in Chicago.

Autodesk

Continued from page 25

although an increase of nearly $20 million over the third quarter last year.

The company is also hoping to boost revenue by branching into new markets, such as the mechanical CAD market. (See related story above.)

Autodesk shipped Release 13 of the Windows NT version of AutoCAD, an upgrade that adds full support for Windows NT. The company said it was better than AutoCAD Release 12, the previous version of the software.

The new release includes several new features, including full support for Windows NT's Image File System (IFS) and new tools for interactive 3-D modeling.

"We've got a lot of features that are available only in Windows NT," said Brad Davis, Autodesk's vice president of marketing.

The company also said it had shipped nearly 300,000 copies of AutoCAD Release 12 since it was released in November.

Last November, and the company has since shipped three maintenance releases.

Company officials, at the recent Autodesk University conference and exhibition in San Francisco, said the initial release of Release 13 last fall needed more improvements that the company has addressed through subsequent maintenance releases.

Autodesk can be reached at (415) 507-5000.

Autodesk

SolidWorks Corp., in Concord, Mass., released SolidWorks 95, a solid modeling system for Windows 95 and Windows NT priced at $3,995. The software supports OLE 2.0 and offers a Feature Manager, which lets users compile a list of features as they work on a model.

Intergraph Corp., in Huntsville, Ala., demonstrated its Solid Edge mechanical assembly and parts modeling package. Solid Edge, priced at $5,995 and expected to ship by the end of the year, is based on Intergraph's OLE for Design and Modeling Applications. Extensions to OLE for helping users integrate data from other OLE 2.0-supported applications.

Autodesk Inc., in San Rafael, Calif., featured its $6,250 Mechanical Desktop, a suite of existing applications that combines integrated surface modeling with solid modeling. The suite, expected to ship early next year, includes AutoCAD, Release 13; AutoCAD Designer, Release 2, for solid modeling; AutoSurf, Release 3, for surface modeling; and the AutoCAD IGES Translator for sharing data across file formats from other CAD/CAM applications. Autodesk also released its API for the Mechanical Desktop.

SolidWorks can be contacted at (508) 371-2910. Intergraph can be reached at (800) 546-5550. Autodesk can be reached at (415) 507-5000.

WINDOW MANAGER • BRIAN LIVINGSTON

View the contents of any folder or drive with one click of the mouse

During the past two weeks, I've described some of the many tricks you can accomplish with a set of Windows 95 utilities called PowerToys, available free from Microsoft Corp.'s Internet site. (See "Tweak Windows 95's desktop to your heart's content with PowerToys," Nov. 6, page 35, and "Tips the season: A handful of toys will give you control over Windows 95," Nov. 13, page 38. For information on how to get back issues, see Reader Services, page 98.)

This week, we'll look at a few of the most handy features you can use after you've installed these tools.

I've already explained TweakUI, a Control Panel applet that lets you remove some "default" icons from your Desktop, replace the "shortcuts" applets or shortcuts, and do other nifty tricks.

I've also described FlexiCD, a new audio control program; Cabfile Viewer, which lets you view and manipulate the individual files within Microsoft's compressed .CAB files; and Explore From Here, a right-button menu item that opens a new Explorer window focused on a particular folder as though it were the "root" of its own subfolder structure.

Here are the rest of PowerToys' powers:

• Shortcut Target Menu gives you the ability to find the properties for a shortcut's "target" (the object that a shortcut represents) by merely right-clicking the shortcut. The context menu that pops up when you right-click a shortcut will include the complete context menu of that shortcut's target — an executable file, for example.

• XMousse.EXE is a way to change Windows 95's behavior to make it more like X Windows, a graphical interface for Unix-based workstations. Specifically, any window that your mouse comes to rest on will become the topmost window automatically; you don't have to click a partially obscured window to bring it to the top. To turn this feature off, use the Control Panel.

• Round Clock is a variation on the CLOCK.EXE typically found in Windows. You run the new CLOCK.EXE to run the typical Windows Clock, but in a round window rather than square. Select Analog on the main menu and then No Title, and suddenly your clock is floating in space in a perfectly round shape. This illustrates a feature of Windows 95 known as region windows. Win32 developers may want to check out the new CLOCK.EXE for ideas on implementing this feature.

CLOCK.EXE does not come with INSTALL.INF file like the other tools in the PowerToys set. You simply run CLOCK.EXE, place it in the StartUp group, and create a shortcut to it or whatever you like.

• Fast Folder Contents is one of the most useful PowerToys, once you get used to the fact that this capability is available to you in any Explorer window, on the Desktop, and so forth.

The Contents capability is visible whenever you right-click a folder or other "container," such as a disk drive.

You should see on the context menu a new item entitled, naturally, Contents. Clicking this item results in a cascading submenu showing all the items the next level down — subfolders, files, and so on. Choosing an item results in a new window showing what's inside that item (files within a subfolder, for example).

This technique is especially powerful when used with a whole hard drive. Right-drag your C: drive icon from your Explorer window to a blank spot on your Desktop, then click Create Shortcut Here. You can now right-click that C: drive and see a complete listing of all files and subfolders on that drive.

To get Microsoft's PowerToys, first create a PowerToy folder on your hard drive. Then set your Internet browser to http://www.windows.microsoft.com/windows/software/powertoys.htm. Click "Download the set," then click Save As and specify your new PowerToy folder as the destination.

Run POWERTOY.EXE once to extract it, then right-click the resulting INSTALL.INF file (or the INF file of individual components, such as CONTENTS.INF) and click Install. Finally, read through the TWEEKUI.HTM file to learn of any quirks before proceeding.

Brian Livingston is the coauthor of the new Windows 95 Secrets and author of three other Windows books (IDG Books). Send tips to Brian_Livingston@infoworld.com or fax: (206) 282-1248.

For an interactive CD-ROM kit that will answer a lot of your questions, call 1-800-527-3753, Ext. 1008.

Call now or contact us at http://www.hp.com/info/1008 and we'll send you an interactive CD-ROM plus additional information about the HP LaserJet 5Si MX. The CD-ROM employs 3-D animation and sound to present an interactive demonstration of the software, features, and other options in this incredible machine. And while you're looking, bear in mind that the HP LaserJet 5Si MX and 5Si are both priced lower than their predecessors. Which leaves just one last question to be answered, "What are you waiting for?"

• 24 ppm printing
• 12MB of memory (4MB in the 5Si)
• 3 standard input sources
• Broad paper handling capabilities
• 100,000 pages/month duty cycle

HP Network Printers Just what you had in mind.

©1995 Hewlett-Packard Company PE1979
It's pretty clear who's in charge here, at least from where you're standing. And the LTE 5000* could help you stay there.

It's a Pentium® powered notebook featuring interchangeable devices — and the remarkable ability to invoke superhuman powers upon its user. Its unique, front-loading MultiBay makes it completely modular, so you can show up at any meeting with a notebook customized for the agenda. Choose from a second hard drive (up to 1.35 gigabytes), a CD-ROM drive, a second battery, or a floppy drive to create the notebook that's right for the task at hand. An expansion base also features two additional MultiBays (and looks great on a giant glass desk). Interested? Call 1-800-345-1518 (select PaqFax) or visit our Web site at www.compaq.com.

THE COMPAQ LTE 5000. THE ULTIMATE N
ebook For Whoever You Happen To Be.

That's Ms. Hot Shot to you.

When they said you couldn't have a CD-ROM drive and MPEG video in a notebook, you replied coolly: Yes, I can.
Sounds pretty scary, doesn’t it? But if you stapled it with technology made by Motorola, you can still feel secure. We’ll help you handle the transition from analog to digital. With high speed modems that will connect at the highest speed possible. (We drove the standard.) Frame Relay Access Devices that let you use as much bandwidth as you need, when you need it. And digital modems for ISDN that let you zip along the Internet. And because it’s made by Motorola, you won’t have to cross your fingers every time you staple. For details, call 1 800 766-4883.
Vendors plan support for Pentium Pro SMP

By Bob Francis

INTEL CORP.'S plans to use the Pentium Pro as the basis for an assault on the high-end server market moved forward earlier this month when the chip company and its partners showed their wares to IS managers in New York.

Intel plans to supply server motherboards to a variety of server vendors early next year in an attempt to bring price-performance and commodity aspects of the desktop PC to the server environment.

However, those plans have hit a variety of snags, such as problems with Intel's server chip set, which have delayed most systems until late in the first quarter of next year.

Not every company involved in developing servers is convinced that Intel's solution will be able to challenge larger systems immediately.

"We don't think most users are going to be ready for the four-way SMP [symmetric multiprocessing] market until the third quarter of next year," said Terry Klein, vice president of the advanced systems group at Dell Computer Corp.

Dell demonstrated a four-way symmetric multiprocessing system at the Intel event.

"We wanted to demonstrate our commitment to the high end of the market," said Larry Evans, the new vice president of Dell's server division.

Users aren't expecting the technology to pay off in the short term. "As a first step this isn't bad, but there's a long way to go with software and other tools before these systems make an impact as servers," said an IS manager at a New York bank.

Some hardware vendors also think hardware design still has a ways to go.

"Symmetric multiprocessing is hard enough," said George White, president of Corollary Corp. "When you talk about linking multiple four-way systems into massive designs, you're talking about a tremendous level of complexity."

Although companies such as Sequent Computer Systems Inc. have talked about linking hundreds of processors together using a high-speed interconnect — in this case the nonuniform memory architecture, or NUMA, technology promoted by Intel — and a series of 4-processor SMP systems, White doesn't believe that architecture is a long-term solution.

"The issue is scalability and how much performance you get from additional processors," White said.

Corollary makes a competing architecture, the C-Bus II, that can support as many as eight processors.

Unisys commits to Intel design with Pentium Pro servers

By Deborah DeVoe

UNISYS CORP. announced this month its Pentium Pro-based line of servers. Due to ship in the first quarter of next year, the servers range from a price-performance model to a rack-mounted system.

The servers comply with Intel Corp.'s SMP 1.1 specification and come with VisiNet server management software. Supported operating systems include NeXTstep, SunOS 4.0, NT, SCO Unix, and UnixWare, officials said.

Processor options will include the 150-, 166-, 180- and 200-MHz Pentium Pro, which come with 256KB of Level 2 cache; $12KB of Level 2 cache will be an option when Intel makes it available, officials said.

The SFR is a rack-mounted server that can accommodate as many as 16 processors by way of four 4-processor boards. The server will come standard with 64MB of error correcting code (ECC) memory and can support as much as 1 gigabyte of ECC memory.

The system also includes a redundant array of independent drives (RAID) subsystem. Entry-level pricing will start at $19,000.

Unisys also introduced two PCI-based quad-processor systems, the SME and the fault-tolerant SRE.

The servers will have eight PCI and eight EISA slots.

The SFE also comes standard with 64MB of ECC memory and features a dual power supply, a RAID subsystem, and a touch-screen LCD panel for monitoring the server. The SME comes standard with 64MB of memory and a Fast and Wide SCSI controller.

Single-processor versions start at $17,000 for the SFE and $20,000 for the SME. Unisys will also offer a dual-processor server, the midtier SDF.

It comes with 32MB of ECC memory and supports as much as 512MB of ECC memory. Pricing starts at $6,200.

DATABASE VENDORS RESTART FIGHT OVER BENCHMARKS

By Mike Ricciuti

By Mike Ricciuti

DATABASE MAKERS are resuming an age-old feud over performance benchmarks, even though most users seem to have largely stopped paying attention.

This summer, database market leader Oracle Corp. resumed benchmarking its Oracle database after a hiatus of several years. Oracle's move has led to a chorus of claims, including Siebel Systems, Informix Software Inc., and Microsoft Corp., to tout their own audited benchmark results and to resume ad campaigns touting those results.

But despite the spotlight shining on the benchmarks, many users don't think the numbers can be used for making purchasing decisions.

"The benchmarks might point you in a general direction and may even point to a potential performance problem," said Kevin Kuehn, former director of IT at Swiss Bank Corp., in Chicago, and now associate president of Perot Systems Corp. working at Swiss Bank. "But we won't make buying decisions based on them.

Instead, Swiss Bank and other companies realize their own benchmarks using a test bed that simulates specific applications used or planned for future development. Oracle, Sybase, Informix, and Microsoft are all releasing Trans-
To launch Windows used 4 networks, 85 magazines, 100 radio stations and, ahem, one server.
TO POWER THE
ON-LINE LAUNCH OF WINDOWS® 95,
MICROSOFT CHOSE THE
DIGITAL PRIORIS® HX 590DP SERVER.

Failure was not an option on August 24. Microsoft's official launch date for Windows® 95 marked the biggest new product introduction in industry history, not to mention one of the great all-out media blitzes. On this day, a minor glitch would have made headlines. So when all eyes turned to Microsoft—Microsoft turned to Digital.

For the on-line launch of Windows® 95, Microsoft plugged in the Digital Prioris Internet server—ten of them, in fact. A decade of Microsoft/Digital teamwork was behind the decision. So was the simple realization that, for a job that meant handling almost two million hits the first day, the Prioris HX 590DP was simply the best server around. After all, its fault tolerant features do include drive arrays, ECC memory, redundant cooling systems and power supplies. Put simply, Microsoft chose Digital for the same reasons you should. Reliability. Power. And no slip-ups. Call 1-800 DIGITAL for your nearest reseller or visit our Web Site at www.pc.digital.com.
Canon offers workgroup solution with LAN Fax Server

Canon U.S.A. Inc. introduced last week at Comdex its Pentium-based LAN Fax Server System.

Due to ship in January of next year, the system enables faxing over IPX-based networks. It can support as many as 10 fax lines by using two four-line PureData fax boards and attaching two Canon fax machines.

The system is based on Alcom Corp. fax software, though it can be used with other Communicating Applications Specification-compatible fax software. The base system has support for 50 users and four fax board lines, as well as a 14.4Kbps fax/modem that transmits a page in 6 seconds.

The enhanced system supports an unlimited number of users per server and runs on Windows 3.1 and DOS.

The Ethernet version of the LAN Fax Server costs $4,495, and the Token Ring version is priced at $4,795.

Enhancements include the capability to route inbound faxes over most E-mail systems.

Canon, in Lake Success, N.Y., can be reached at (800) 828-4040.

— Deborah DeVoe

A WORKGROUP FAX SERVER from Canon starts at $4,495 and supports as many as 50 users.

OLAP tools ease access to data warehouses

By Mike Ricciuti

Two on-line analytical processing (OLAP) tool makers, Dimensional Insight Inc. and Information Advantage Inc., last week aimed to simplify how users access information stored in data warehouses.

As more IS shops begin to build larger decision-support databases, OLAP tool makers need to help users do quick and accurate analysis of increasingly large data sets, analysts said.

To support analysis against these larger data sets, Dimensional Insight last week announced a new module for its CrossTarget data analysis package, which extracts data from relational and legacy data sources and places it into a proprietary multidimensional database.

The new add-on module, DiveMaster, presents a group of separate CrossTarget databases as a single virtual data store, so users can analyze larger amounts of information.

The company also upgraded its Diver front-end tool. Diver 4.0 lets users add new categories of data on the fly and now supports exception reporting. DiveMaster and Diver 4.0 will ship next month in Windows and Macintosh versions. DiveMaster costs $3,500 per site for existing users. Diver 4.0 costs $7,500 for a 10-user license.

Information Advantage is also concentrating on providing tools for data warehouses.

Last week the company released DecisionSuite 3.0, an upgrade that features an easy-to-use graphical interface and agent technology to alert users to changes in the data. DecisionSuite 3.0 works directly against relational databases. Pricing starts at $29,995.

The suite also works with several optional client modules for data analysis. InfoAlert, priced from $45 per user, exports data generated by agents to spreadsheets and other PC tools. NewsLine lets users add filters and perform calculations on data; it is priced from $145 per user. Analysts, priced from $895 per user, performs ad hoc and OLAP analysis and creates triggers, alerts, and agents. Workbench, a data administration tool, is priced from $2,995 per user.

Dimensional Insight, in Burlington, Mass., is at (617) 229-9111. Information Advantage, in Edina, Minn., is at (612) 820-0702.

DECISIONSUITE 3.0's NewsLine lets users drill and pivot to access data warehouses.
Pentium Pro

Continued from page 35

in a Windows NT-based system. The C-Bus II has been licensed by companies such as IBM, Chen Systems Corp., NEC Corp. in Japan, and Data General Corp.

"Right now, there are memory issues with using high-speed interconnects to build systems with hundreds of processors," said Steve Chen, founder of Chen Systems. Analysts did credit Intel with devising a broad strategy that is garnering support from both small and large system manufacturers.

"Intel's done well at getting everyone on board," said Jim Garden, server analyst with Workgroup Computing Inc., a research group based in Hampton, N.H.

Among the major PC server vendors, Hewlett-Packard Co. is already committed to using Intel Pentium Pro server boards. IBM and Compaq Computer Corp. will introduce interim servers using Intel server boards in the first quarter and will add boards with its own designs later next year. AST Research Inc. is planning its own motherboards and expects to ship systems early next year. Oracle Corp. demonstrated Oracle7 Parallel Server running on a Compaq server under UnixWare. Oracle expects to have Parallel Server available for UnixWare by midyear.

IBM previews networking plans

- 200-MHz Pentium Pro server packs four processors

By Ed Scannell

IBM Gave Corporate customers a glimpse of its future network architecture when it showed off an early version of its first 200-MHz Pentium Pro server configured with four processors.

At a Pentium Pro kickoff event sponsored by Intel Corp. earlier this month, IBM demonstrated its system with 1 gigabyte (GB) of RAM and four 2.25GB hard drives.

Designed for corporate accounts looking to link dozens of users, or for heavy transaction processing, the system was shown running a beta version of OS/2 Warp Server and Lotus Notes along with IBM's Netfinity asset management software.

"We think a server using the Pentium Pro chips has enough power for financial institutions to run heavy workloads, or for users like large retailers with distributed client/server applications," said Michael Coleman, general manager of IBM's PC Server group.

The new machines are also ideal platforms to host IBM's forthcoming Project Eagle bundles, a series of server applications that will reside on several IBM hardware platforms including those by Intel, Coleman said.

The first bundle, which figures to compete directly with Microsoft Corp.'s BackOffice server application suite, are still expected in the first half of next year.

At the Intel announcement, IBM officials also demonstrated Windows NT Server 3.51 running on the upcoming systems. Although it is their hope that corporate users will buy OS/2 Warp Server, company officials said they would also provide and support NT if it happens to solve a customer's particular enterprise problem.

"We will position both operating systems equally, depending on what business problems users are trying to solve," Coleman said.

Either operating system should benefit from the Pentium Pro's 64-bit architecture in terms of speed and performance.

Earlier this month IBM released results based on its own internal testing that showed performance gains of as much as 121 percent for the 150-MHz version of the Pentium Pro compared with a 133-MHz Pentium.

"With Intel's focus on 32-bit applications and the fact there are more 32-bit applications for Windows than other 32-bit (software) platforms, we think we are well positioned in the Pentium Pro market," said Wally Casey, director of marketing for IBM's Personal Software Products division.

IBM declined to give a specific ship date or pricing for the new Pentium Pro-based servers, but the company intends to ship the systems in the first half of next year.

IBM, whose headquarters are in Armonk, N.Y., is at (800) 426-3968.
Ah, the joys of networking.
Keeping up with standards.
Dealing with multiple protocols.
Connecting various OS's.
Enforcing high security.
Pity the person who has to make it all work.

Oh, it's you, isn't it?

Can your network do this?

"Connect everything to everything." You probably have one of the simplest job descriptions in your company. And at the same time, you also have one of the most impossible jobs to do.

The fact is, with the complex maze of components and systems you have to deal with, it takes much more than the latest and hottest technology to unify a network. It takes vision. And that's something you're not very likely to get from a narrowly focused manufacturer.

The good news is, IBM has been dealing with the ins and outs of interconnectivity since the first networks were born. So we can help you connect existing platforms and operating systems with just about any kind of hardware and software solution out there. We can also make sure you're ready to exploit new standards like ATM, which represents the high-bandwidth future of networking.

We not only understand the trend to switch-based networks—we're leading the industry by integrating high-speed switching
technology into our full line of network products. This Switched Virtual Networking strategy is part of our Nways family of switching products, as well as our workgroup hubs, concentrators and wireless LAN technology. It's also part of our line of adapter cards that can integrate computers of any breed into your network.

No question, the days of single vendor solutions are long gone. But it can certainly be helpful to have one partner who brings a depth of experience and a wide range of product offerings, to make sure that your diverse network continues to perform at the highest level.

So give us a call today at 1 800 IBM-3333; ext. DA 108. We'll show you how we've helped companies all over the world gain a true competitive advantage by building a smarter, more efficient network. Or visit our web site at http://www.raleigh.ibm.com/netad.html to find out more. After all, you have a world of technology to deal with. And we can help you bring it all together.
Is there an easy and inexpensive way to connect two Novell LANS in separate buildings a half-mile apart in an urban area? Our administrators have priced T1 lines, and they are very expensive. Would wireless make sense? An asynchronous bridge using standard voice lines?

Jim Underwood

If the two locations already share a PBX or Centrex system, the best solution for low-bandwidth applications is an asynchronous bridge using two modems. But if you have to pay by the minute for telephone connections, or you need more bandwidth than modems can provide (you will if you're sharing files), your best bet may be a wireless bridge. Optical wireless bridges use lasers or infrared beams to carry data, whereas spread spectrum radio bridges operate in special unlicensed UHF (900 MHz) and microwave (2.4 gigahertz) bands. Your choice will depend on climate and terrain.

Wireless bridges are available from many vendors. I've worked with optical bridges from Laser Communications Inc. (1771) 394-8634, as well as radio bridges from Persoft Inc. (1668) 273-6000, and Proxim Inc. (1800) 229-1630, to name a few vendors.

Today's wireless bridges are popular ways of linking scattered buildings (such as schools) without expensive cabling.

We have inherited an older PC with a DTK motherboard. I need to run the BIOS setup utility to disable the shadow RAM, but someone password-protected the CMOS settings and left no record of the password. How can we configure the machine?

Dave Connelly

The easiest way to get past a BIOS password utility is to intentionally corrupt the CMOS RAM. Unplug the machine and remove the CMOS battery for several minutes. If the password is kept in CMOS, the BIOS will detect an invalid CMOS checksum and turn off password protection.

Remember to write down the parameters of the hard disk (and its numerical type, if known), because you will need to enter them again when you later restore the CMOS settings.

I'm considering buying a laptop that does not have a Level 2 cache but does have something called synchronous DRAM. The salesman says that a cache is not needed with this type of DRAM. Is this true?

Debra Cochran

Synchronous DRAM is faster than ordinary or Extended Data Output RAM but does not make up for the absence of a secondary cache. Expect a substantial performance penalty (10 percent to 15 percent) relative to a system with the same processor and a well-designed Level 2 cache. Also, because synchronous DRAM chips are uncommon, expect to pay top dollar for RAM upgrades.

From time to time, we have 1MB and 4MB SIMMs left after upgrading a machine's memory. Is there an easy way to determine the access time (in nanoseconds, 79 nanoseconds, and so on) of the various SIMMs so we'll know what machines they can be used in?

Frank Barrows

In most cases, the speed of a memory chip can be found at the end of the part number. For instance, the chips on a Korean-made 4MB SIMM I picked up at random are marked "GoldStar GM71C4100A[60]." This indicates an access time of 60 nanoseconds. If the last digits of the part number don't seem to fall into the usual range of access times, you might check with a local chip distributor.
"WHAT REPORT? I NEVER GOT ANY *!X#@*#!X REPORT!"

Well, maybe the boss really didn't get your report. But chances are, it's sitting on his desk under a mountain of memos, letters, and other paperwork. Why? Because you may be using the latest hardware and software tools to create your reports, but you're still distributing reports the way people did a hundred years ago... hard copy, interoffice mail. There's got to be a better way...

FOCUS INTRODUCES REPORT SERVER FOR WORKGROUPS

FOCUS makes it simple to create even the most comprehensive reports. And now we've made report distribution simple, as well. How? By adding a sensational report server so you can automatically distribute your reports to anyone on your network, using today's most popular E-Mail systems. FOCUS Report Server for Workgroups lets you predefine distribution schedules and rules... "All reports that show below-quota sales performance go to appropriate regional managers every Tuesday at 9 AM." You can even "burst reports" so specific managers receive only the parts of a report that are relevant to their job function.

ENTERPRISE REPORTING SYSTEMS WITHOUT EQUAL

FOCUS Report Server for Workgroups is just one more reason why the FOCUS family of desktop products are unequaled for true enterprise-level reporting and decision support... but it's just the beginning. FOCUS allows even novice users to create sophisticated reports with multiple subtotals in year-to-year comparisons, rankings, "what if" scenarios, one-pass "if-then" calculations, conditional fields, you name it. FOCUS offers direct interfaces to all popular server databases. And with our advanced middleware technology, you can access and join files located in virtually any database using your choice of communications protocols. No other reporting tool provides a better front-end to your data warehouse.

TAKE A FREE TEST DRIVE!

Take FOCUS for a FREE test drive. For more information, a free demo disk or 60-day free trial of FOCUS Reporter for Windows, contact your local Information Builders sales office or call 1-800-969-INFO.

CALL 800-969-INFO
In Canada Call 416-364-2760

Information Builders

FOCUS is a trademark of Information Builders, Inc., NY, NY 212-736-4433 E-mail: info@ibi.com WWW: http://www.ibi.com
When It Comes To Fast Windows Development, One Chart Is

The word is out on Symantec C++ Version 7. PC Magazine: “This programming package is not only the fastest C-based applications-development environment we’ve seen, it offers unprecedented tools for creating and maintaining code, eases the transition to 32-bit programming, and addresses several weaknesses found in Microsoft Visual C++.” PC Week calls it “A+ tools for C++ design”. And InfoWorld confirms it’s a “Hot Pick”. You’ll pick Symantec C++ too, if you want the fastest way to develop for Windows 95, Windows NT 3.51, Windows 3.1 and DOS.

**The NetBuild Revolution.** Build applications faster than you’ve ever imagined with new NetBuild™. It lets you automatically distribute the build process over

in background and allows you to go anywhere in your program instantly — even before compiling. It also lets you graphically view your class hierarchy and add new classes simply by dragging and dropping. You can also modify any class’s inheritance hierarchy graphically. And you have the ability to automatically locate any class implementation, plus much more!
High Compatibility.
Symantec C++ is highly compatible with Microsoft C/C++, and shares most of the same formats, object model, and naming conventions. You can seamlessly mix Symantec and Microsoft DLLs and executables. Furthermore, Symantec C++ automatically migrates all your Borland and Microsoft project files.

To ease your transition, we also provide a white paper and migration utility on our web site that allows you to move your OWL applications to Symantec C++.


Written in assembly language for unmatched performance.

For building great Windows resources easily, we’ve added ResourceStudio™ — which supports the widest range of Windows resources including Windows 95 controls.

PC Magazine’s benchmark is proof that Symantec C++ is the fastest C++ out there. So what are you waiting for? To find out more, call the toll-free number below. Or contact us on the World Wide Web:
where would the most powerful
development tool be without the recycling
genius of edwin hoogerbeets?

If Edwin Hoogerbeets were a developer, he'd be a proud man. Because new Microsoft® Visual C++ 4.0" is based on the very principle he lives by: Never create from scratch.

Who is Edwin Hoogerbeets? A recycling genius who sees every used object as an opportunity for creative brilliance. The same way a developer might if he or she used new Visual C++ 4.0. No other development tool offers such reusability, allowing you to deliver more robust applications in less time.

Now you can recycle just about anything—but you don't have to be a genius to do it. The new Component Gallery allows you to store and reuse your own C++ components and OLE controls, as well as 3rd-party components. And, MFC 4.0 gives you more than 150 classes and 120,000 lines of code you don't have to write or test.

The new Developer Studio makes reuse intuitive. With ClassView, you can view the relationships between classes. You'll even have one-click access to the MSDN Development Library, Microsoft Visual Test, Fortran PowerStation, and Microsoft Visual SourceSafe™ version control system. And of course, expanded C++ language support, including namespaces and RTTI, gives you added flexibility.

Now that you have a better idea of what's possible when you recycle, start with a Visual C++ Subscription, which includes the Visual C++ development system 4.0, plus three additional Subscription Releases shipped automatically.

For more information about the Visual C++ 4.0 Subscription, or to get your free Developer Roadmap CD, call (800) 719-5577, Dept. VWT. You can also get information at http://www.microsoft.com/visualc or by calling one of the resellers listed below. Who knows? You just might become the next Edwin Hoogerbeets.

Component Gallery. Quick access to OLE controls and reusable C++ components.

MFC 4.0 Library. Adds latest support for Windows '95 controls.

C++-based Server Support. Built-in Jet database engine and ODBC support to access enterprise data.

Custom AppWizard. Now create your own AppWizard for your unique application needs.

Multiple Platform Support. Target Intel®, RISC®, and Macintosh® platforms with a single codebase.

Egghead
(800) 741-4395

Softmart
(800) 328-1319

Stream
(800) 835-0625

CDW
(800) 858-4CDW (4239)

©1995 Microsoft Corporation. All rights reserved. Microsoft and Windows are registered trademarks and Visual C++, Visual SourceSafe, and Where do you want to go today? are trademarks of Microsoft Corporation. *Available separately.
Cisco routing card to serve remote sites

By Luc Hatlestad
Cisco Systems Inc. announced last week a small-office routing system that will let users incorporate routing capabilities within Windows NT servers at remote sites.

The CiscoPro CPA 1120 is a routing card that can be installed in Windows NT servers and supports Cisco's Interior Gateway Routing Protocol (IGRP) and Internetwork Operating System routing software.

But analysts said the product is expensive for what it offers. Cisco officials said prices for the CPA 1120 would start at about $2,000.

"What does $2,000 get you?" asked Frank Dzubeck, president of Communications Network Architects Inc., in Washington.

"Cisco says it gets you IGRP, but IGRP doesn't add any functionality at the edge of a network," Dzubeck said.

IGRP improves the robustness of LAN routing applications by enabling traffic to be sent by multiple routes, but its strength is lost at the edge of the network, where most connections are point to point, Dzubeck said.

Another analyst said the CPA 1120 would only appeal to users who have mostly Cisco equipment on their networks.

"It may be attractive to a Cisco shop, but if you're just looking for a router card, the CPA 1120's technology isn't unique, and the price point is not very competitive," said Lyn Nye, president of NetResults, a consultancy in Portland, Ore.

The CPA 1120 will enter beta testing this month and is expected to be available in the first quarter of 1996. Future releases of the product will include support for other routing protocols and for Frame Relay, ISDN, and X.25.

Cisco Systems, located in San Jose, Calif., can be reached at (408) 526-4000.

---

PIPELINE page 44

Selectek Corp. has announced the AirLAN Router 200 series for Ethernet and Token Ring routers capable of supporting wireless routing and bridging of LANs, much as the cables apart at T1 speeds. Available in January, the product will be priced at $7,999 for Ethernet and $8,999 for Token Ring. (619) 450-1220.

IBM last week announced it has added support for Windows 95 and Windows NT to its WaveRunner line of ISDN modems, which enable users to access on-line services and the Internet and carry out high-speed file transfers. The Windows software will be available in the first quarter of 1996. Pricing was not announced. (800) 426-2255; FTP: ftp.raleigh.ibm.com/pub/standards/wavewrun

CONNECTWARE INC. has announced two additions to its suite of ISDN products: the TeleStack ISDN concentrator, which supports as many as eight ISDN Basic Rate Interface connections and a 16-port T-LAN interface, and the EtherConnect Transporter, which connects desktop PCs to ISDN lines in a remote office or home environment while also connecting a telephone, fax machine, or answering machine to the same ISDN line. The TeleStack will be available in December for $9,950. The EtherConnect Transporter is available now; prices start at $1,150. (800) 357-0858; E-mail: virtual@connectware.com

ARTISOFT INC. last week announced the T-Runner II Ethernet hub/concentrator or the NodeRunner Pro UTP and Pro Combo Ethernet adapters. The eight-port T-Runner costs $229 and the 16-port version costs $459. The UTP adapter costs $99 and the Combo costs $109. The hubs will ship this month; the adapters will ship in December. (520) 670-7100; World Wide Web: http://www.artisoft.com

---

By Mark Leon
The Santa Cruz Operation Inc. (SCO) has announced three programs to give its users better Windows integration

SCO Advanced File and Print Server runs on SCO's OpenServer Unix server and emulates a Windows NT server, allowing Windows applications to share data with the Unix server.

Analysts say the program will be useful to existing SCO Unix users.

"It's mainly for folks who already have a big investment in SCO Unix," said James Gaskin, a consultant with Gaskin Computer Services, in Mesquite, Texas. "Otherwise, why not just buy an NT server?"

---

By Paul Krill
Netpro computing Inc. is shipping a tool for monitoring and troubleshooting Novell NetWare Directory Services (NDS) network directory.

DS Expert is a Windows-based user interface for each administrative PC. A DS Expert beta tester said the product helped him determine that a server was not receiving NDS database replicas. DS Expert saved time in diagnosis, said the user. 

Andy Von Der Bruegge, computer information systems specialist at the Missouri Department of Health, in Jefferson City, Mo.

DS Expert Starter Kit, with Windows interface software, two agents, and the tree monitor, costs $1,299. Additional agents cost $499.

Netpro, in Scottsdale, Ariz., can be reached at (602) 998-5008.
**Networks**

**PIPELINE**

Continued from page 43

ANNOUNCED

BANNAV SYSTEMS INC., in Westminster, Mass, facing a second consecutive unprofitable quarter, has announced layoffs of about 10 percent of its workforce, or about 90 employees. The company also has reorganized into two divisions: Enterprise Networking and Internet Business.

NOVELL INC.'s Nested NetWare embedded systems technology will be included in the Stellar One Corp. Stellar 1000 line of TV set-top boxes. NestNet in NetWare can be used for applications such as high-quality digital audio and video, on-line information services, and control of intelligent home appliances. Seattle-based Stellar will use NestedNetWare in set-top boxes late in 1996. (206) 467-9571.

EXTENDED SYSTEMS INC. has announced plans to enable its ExtendNet family of print servers to be supported in Novell's NetWare Directory Services (NDS) via a DLL. The DLL, available free on the World Wide Web, snapins to the NDS NWAdmin administration utility, enabling administrators to set up user access to the print servers through the server directory. http://www.extendsys.com; (208) 322-7800.

INTERCON SYSTEMS CORP., in Herndon, Va., has released an upgrade to its network file system software for the Macintosh, NFS Share 1.4, that features an AppleShare-like user interface and displays files from other platforms in a Macintosh format. NFS Share 1.4 is available through Dec. 31 for a promotional price of $249 per node. (703) 709-5500.

**SHIPING**

DAYNA COMMUNICATIONS INC. shipped last week its 12-port HUB-1 T1/2 Base Fast Ethernet hub and 10/100 Base-T PCI and NuBus network interface cards. The hub costs $1,799, the PCI card is priced at $225, and the NuBus card costs $325. (801) 269-7200; E-mail: skimbali@dayna.com

**BINDVIEW JOINS NETWARE, NT**

By Mark Leon

BINDVIEW DEVELOPMENT CORP. is planning to broaden the capabilities of its BindView asset and configuration management software starting next year to enable users to manage mixed NetWare and Windows NT networks.

The company plans to develop Microsoft Corp. Windows NT agents for BindView, which will be available early next year, to enable users to track, manage, configuration management, security auditing, and disk space management on Windows NT networks from Novell Inc. NetWare servers. Later in 1996, BindView will provide Windows NT server-based management in BindView comparable to that available for NetWare.

BindView currently supports NetWare Directory Services (NDS). To achieve similar functionality for Windows NT, the software will be enhanced to support the NT Domain Registry. By the end of 1996, users will be able to manage NetWare and NT servers from the same console, company officials said.

Eventually, BindView will add an object-oriented C++ API layer that will allow BindView applications to handle different objects — such as NDS, NT Server Domain data, Open Database Connectivity databases, and Desktop Management Interface Management Information Format files — consistently.

BindView users said they like the strategy.

"If they use the NDS structure as a model and can make it fly, there should be a product like this that can touch it," said Ken King, network administrator at Providence Memorial Hospital, in El Paso, Texas. "Microsoft's object technology is not very good." Analysts agreed it is the right move but said the company has a lot of work to do.

"There is a big push, since Novell dumped UnixWare and gave up on application servers, to integrate NetWare with NT," said James Gaskin, at Gaskin Computer Services, based in Mesquite, Texas.

"It is a logical step for them, but not an easy one. It's completely different from what they have been doing."

**VENDORS FOLLOW V.34 FAX/MODEM CRAZE**

By Deborah DeVore

THE STREAM of v.34 fax/modems shipping continued at full Comdex last week.

Motorola Computer Group introduced the V.34 Precinct 33.6 desktop fax/modem and the Lifestyle 28.8 PCMCIA, a PC Card fax/modem. The Premier modem supports data rates of 33.6Kbps, the company said. It ships in December for a street price of $349. The Lifestyle 28.8 PCMCIA is a 16-bit Type II PC Card capable of data rates as high as 28.8Kbps and is shipping for a $280 street price.

New Media Corp. announced this month the LANSurfer, a cellular-ready PC Card 28.8Kbps fax/modem and Ethernet adapter that ships in February 1996 for less than $500.

A PC Card fax/modem announced last week by Provo, Utah-based Angia Communications Inc., features support for ISDN Basic Rate Interface and analog communications. The Safelock ISDN Plus Fax/Modem is V.34 compliant and has NT-1 adaptation. It is in February and will cost $799.

Angia also announced SafeSend, a telephone line adapter that lets PC Card fax/modems communicate over digital PBX lines. Users set a manual switch to match the voltage of the PBX system. SafeSend is due to ship Jan. 1 for $129 and will be compatible with PC Card Safelock fax/modems from Angia manufactured after Dec. 1 of this year.

Supra Corp. is shipping the SupraExpress 288, a V.34 fax/modem for the Macintosh. Supporting data speeds of 28.8Kbps and fax speeds of 14.4Kbps, the modem includes Supra's Facsimilite fax software. It has an estimated street price of less than $200.

Camarillo, Calif.-based Logicode Technology Inc. announced last week the quicktel V.34 digital simultaneous voice and data fax/modem that will use Rockwell Analog's 28000 ports. An internal modem will ship at the end of this month for $299. An external version will ship by Jan. 1 for $399.

Motorola, in Huntsville, Ala., is at (800) 221-4380. New Media is at (800) 453-0550. Angia can be reached at (800) 877-9159. Supra, in Vancouver, Wash., is at (360) 604-1400. Logicode is at (800) 735-6442.

**MCAFEE'S SERVERSTOR OFFERS HSM CAPABILITIES ON NETWARE**

By Mark Leon

MCAFEE ASSOCIATES INC. has upgraded its management software to include hierarchical storage management (HSM) capabilities.

ServerStor 2.0, which ships by year's end for NetWare 3.x and 4.x servers, adds HSM and fault-tolerant server software to the server backup functionality available in the previous ServerStor 1.5.

ServerStor 1.5 ships in the recently released Saber LAN Workstation (SLW) 5.5 suite, and officials said the company may include ServerStor 2.0 in the next release of SLW.

The new HSM capability is available via a NetWare Loadable Module that migrates files to hard drive, tape, or optical storage. It supports tape libraries as well as single media drives, and allows users to set migration parameters based on file age and activity, and disk utilization.

Mcafee licensed the HSM technology from Avail Systems Inc., in Boulder, Colo.

"Avail is a good choice since they just do HSM and do it better than some other companies who have tried to implement HSM as a backup add-on," said Larry Terrill, director of technical services with Marc Group, a research company in Irving, Texas.

The fault-tolerant server software, called High Availability Server, creates a stand-in server by polling multiple NetWare servers at regular intervals. All file changes, along with copies of any files written during a failover, are saved by the stand-in server for eventual recovery.

Mcafee plans to release a Windows NT version of ServerStor in the first quarter of 1996.

ServerStor 2.0 ships in December priced at $75.90 per node for 1,000 nodes.

Mcafee can be reached in Santa Clara, Calif; at (408) 989-3832.

**PRODUCT SPOTLIGHT**

AUDITTRACK 2.5 REPORTS INTRUDERS

A Technology Corp. has launched AuditTrack 2.5, a network auditing software that detects and reports unauthorized activities in NetWare 3.x and 4.x environments. The upgrade includes reporting and scheduling features to monitor failed log-ins, deletion of files, and security changes across mixed OS platforms. AuditTrack 2.5’s support automates data collection from multiple servers in the form of graphics or reports. In addition, data can be exported into spreadsheet and database applications. AuditTrack 2.5 has a Windows management console for reporting, audit creation, archiving, reviewing, and graphing data. It monitors activity on Windows, DOS, Macintosh, Unix, and OS/2 clients. Pricing is $595 for a 25-user server and $4,995 for a 1,000-user server. On Technology, in Cambridge, Mass., can be reached at (800) 767-6683; World Wide Web: http://www.on.com.
Ever stood at an airport pay phone, downloading your E-mail between flights? Or tried to access a Web page with a lot of graphics or animation? You need some serious baud.

Introducing Xircom’s new CreditCard Modem 28.8. The 28.8 baud V.34 modem card that makes your 14.4 baud modem look like it’s got a wait problem. And like they always say, time is money. So if you buy the CreditCard Modem 28.8 now, we’ll give you a $50 rebate. Outrageous?

That’s just the beginning. Buying a Xircom CreditCard Modem 28.8 is like buying a lifetime in the fast lane. Because one day, you know there will be a modem with a hotter baud. And you know you’ll want it. And when you do, you can trade in your current modem and get a major discount on a new one.

Of course, there are lots of other great things about Xircom’s CreditCard Modem 28.8. Like digital line protection to keep your modem from getting fried if you accidentally connect it to a PBX. Flash ROM so you can upgrade your modem card with the latest software releases. Headache-free installation. Great customer support. Guaranteed compatibility with more notebooks.

And when you buy a PC card from Xircom, you’re in good company. Because Xircom’s mobile networking users outnumber everyone else five to one.

So get your CreditCard Modem 28.8 today. The $50 rebate doesn’t last forever. And if you can’t find it on your own, call us at 1-800-438-4526 ext. 53E and we’ll put you on the fast track to the fastest modem money can buy.

Xircom
The Mobile Networking Experts.
LAN TALK - PAUL MERENBLOOM

Moving your LAN to TCP/IP? Wait just one bit more

Last week, I shared with you a series of problems that arose from the evolution rather than the planned growth of our network. We had used Microsoft Corp.'s default Windows for Workgroups NetBEUI protocol, and the results scaled up to a great big network slowdown.

The obvious solution was to seek out a protocol that supported larger packet sizes and was designed to be more efficient. The logical conclusion: TCP/IP. This language of the Internet, geeks, and Unix hackers has come a long way, even making it into mainstream organizations, including Big Blue. But before jumping headlong into an all-TCP/IP environment, stop for a second and consider what you may be getting into.

Although I am a great proponent of Internet Protocol (IP) and can attest first-hand to the merits of speed, flexibility, resiliency, and so on that TCP/IP offers, I can also testify to many long nights spent tracing back addresses, failed domain name server hosts, and fouled routing tables that effectively stop network traffic in a heartbeat.

Comparing protocols, Novell Inc.'s IPX and Microsoft NetBEUI's ease of use and flexibility have terrific advantages in small to mid-size LANs. Scale them up, though, and you get a few new problems, including packet size, questionable use of bandwidth, and, in some cases, scalability issues.

Even bumping up the packet size, running IPX (without Burst Mode) over a WAN link can result in response time slower than molasses in a Minnesota winter! I'm not complaining; I'm simply pointing out that these protocols weren't designed for WAN and enterprise applications.

On the plus side, NetBEUI and Novell's IPX don't require us to prelabel or hard-code address each network-connected workstation that offers a simple plug-and-play approach to connecting PCs to a LAN. Local networks are easier to set up and operate using source-route bridging or server-based routing (as in the case of IPX).

With volumes of traffic growing exponentially during the past year or two, the inefficiencies of these protocols are leading to network failures and slowdowns in many local, campus, and enterprise networks.

So, TCP/IP with 4KB packets and a streamlined transport and acknowledgement system is a perfect fit. Even IBM and Novell have openly endorsed TCP/IP.

Still, the speed has costs.

First, you need to implement an IP stack for each machine. Second, you must be sure to have a routing infrastructure that can manage the IP-based traffic. Third, you need to ensure that your routing system is set up to support multiple path routing of the IP traffic. Protocols such as IPX can find their way home automatically, but IP must have explicit directions. Fourth, what about the IP stack itself? Do you use Microsoft's product? You might consider products from FTP Software, Inc., NetManage Inc. or Walker Richer and Quinn Inc.

Also, shifting from IPX or NetBEUI can also throw a wrinkle into your remote-access approach. Although many of the newer remote-access/remote-node products support IP for transport, older systems or earlier implementations of Remote Access Service or Novell's Asynchronous Communications Server tend to be protocol-centric. Also, some applications that work well over native protocols don't know how to work with IP.

These issues are not deal killers; in fact, it's pretty clear that in the long term, IP wins. Just be prudent in planning your switch-over and keep the users happy.

Paul Merenbloom is vice president, technology research at Piper Jaffray, in Minneapolis. Send comments to him at pmerenb@mcmail.com.

The QMS 1660E Laser Print System • $5,999*
1200x1200dpi • 11" x 17" Full bleed • 16ppm

Perfect for matching your biggest ideas. the QMS 1660E laser print system offers big sheet performance with the speed and resolution to match. Give your documents a better look with 1200x1200dpi and 11" x 17" full bleed coverage. Now you can combine exceptionally fast document throughput with seamless connectivity to virtually any network environment, including standard Ethernet. Pull your head out of the sand and pick up the phone. Discover the new breed of QMS today.
Now may be the time to give up on WordPerfect. (Obviously, Novell thinks so.)

TRY LOTUS

SMARTSUITE

FEATURING

WORD PRO

RISK-FREE

FOR 90 DAYS.

ONLY $199.

Recently, WordPerfect® users got some bad news. And they realized their word processing application may not be so perfect anymore. Novell® is looking to sell WordPerfect and PerfectOffice. Which means this is the perfect time to buy Lotus SmartSuite™, featuring the critically acclaimed Lotus Word Pro®, Lotus 1-2-3®, Lotus Freelance Graphics®, Lotus Approach®, and Lotus Organizer.™ Five leading desktop applications, fully integrated, designed to make individuals and teams more productive, including a free* upgrade license to the Windows® 95 version. Supported by a company that's here today, here tomorrow.

And for a limited time, you can buy Lotus SmartSuite risk-free for only $199. Try it for 90 days, and if you don't like it for any reason, we'll refund your money. And for those who take advantage of this promotion, we'll even dedicate a special help line to answer your questions. (If you have any. With Lotus Word Pro’s transparent file filter capabilities, you can transfer your WordPerfect files hassle-free.)

Why take a chance with WordPerfect or PerfectOffice? You can have Lotus SmartSuite risk-free. Call 1-800-TRADE-UP, ext. B449 for information. Or visit our home page at www.lotus.com to discover the 96 reasons for choosing SmartSuite.

"Plays Well With Others" 

OS/2™ Warp Connect offers you an easy and inexpensive way to share information, printers, modems, and other resources with your co-workers. Built-in LAN support allows companies, workgroups, and mobile users simultaneous access to the network, improving productivity. Warp Connect streamlines teamwork, helping your company work well together.

"Put That Down...You Don't Know Where It's Been!" AntiVirus offers protection, detection, and disinfection. With IBM AntiVirus, you get "install and forget" detection of over 2000 known viruses, as well as the ability to analyze and detect new and undocumented viruses.

"Don't Take Things That Aren't Yours" NetSP Secure network Gateway for AIX™ is a network security "firewall" program that acts as a barrier between your network and the Internet. NetSP prevents unauthorized exchanges of information and it saves your network from compromise or attack. (Because some people don't play nicely.)

"Share Things With Others" IBM’s Internet Connection Servers provide a solid foundation for your Internet home pages. You get all you need to put your home pages on the Internet and open your business up to new opportunities. Available on OS/2™ or AIX™.

Special Offer: Buy Internet Connection Server and get Ford Road Mailing Green (Internet) Edition FREE!

"Shown Creativity" Hyperwize lets you get creative with the information presented on your Internet site. You get drag and drop linking of text, graphics, audio, and video. And you can start OS/2™ programs from within your document. Create lists, tables and other text elements without typing Information Presentation Facility (IPF) script tags (all tags are done for you!).

"Keep your room clean and organized" DB2™ World Wide Web Connection lets you collect data from the World Wide Web and store it in your DB2™ database and allows others to view the data you want them to see directly from your DB2™ database. While others may keep a messy room with their toys scattered all over the place, you can think of DB2™ as your personal toy box.

Now's the time to build your own Web site! Don't be the only kid on the block without one!

IBM 100% Rebate Offer: 
Buy Internet Connection Server Upgrade for Warp or AIX™ and get a 100% rebate plus an extra dollar. Now that's secure upgrading! Call now for details!

Your Single Source for OS/2™ Solutions. 
Hot off the press! Ask for our new catalog.

Orders: 1-800-776-8284
Inquiries: 919-878-9700
FAX: 919-878-7479
Web Site: http://www.indelible-blue.com/lib

NEW!! IBM Authorized Software Advantage 
Call for info on this great program for corporate discounts!
E-mail tools will cause Internet surveys to spread

- Returned E-mail surveys automatically update market research databases

By Nick Wingfield

Although the World Wide Web has become a popular medium for gathering market research data, E-mail remains a virtual bastion of privacy. That may change soon with the commercialization of the Internet and the emergence of software tools that simplify the creation and management of surveys via E-mail.

One such tool, Decisive Survey, from Decision Technology Corp., will ship at the end of November. Running on Windows 3.1 and Windows 95, it will let users create and analyze E-mail surveys, simplifying data gathering for human resources, customer service, and other applications.

But E-mail surveys follow the direct-mail model and will irk users who object to unsolicited messages, said Nate Zelnick, editor of Internet Business Report, in New York.

"As long as it's discreet, I might not find [E-mail surveys] annoying," Zelnick said. "But I don't pu much faith in the discretion of Internet marketers. The hatred of E-mail marketing is widespread. You consume time and Bandwidth."

Still, vendors are forging ahead with tools to help companies get closer to the needs of customers. Decisive Survey has a forms-based design tool for surveys, as well as facilities for exporting survey data to databases and statistical analysis software.

Used in conjunction with mail software compliant with the Vendor Independent Messaging and Messaging API standards, Decisive Survey extracts data from E-mail surveys as they are returned.

Users said connectivity to other applications is a critical element for managing survey data. "In times past, we've sent out a text document that would act as a template, but someone would have to key it into the database," said Bonnie Martin, marketing associate at Ernst and Young, in San Francisco. "Decisive Survey lifts responses out of the survey into a database."

After recipients return a survey, Decisive Survey automatically tabulates and graphs responses, producing two-dimensional and 3-D bar charts, pie charts, and column and line charts. Responses can be exported to statistical analysis packages.

The product supports common question types, including Choose One, Choose All that Apply, Fill in the Blank, and Rating. More than a dozen samples are included, covering customer service, human resources, and seminar evaluations.


IBM, Microsoft, AT&T announce Internet strategies

By Nick Wingfield

Last week at fall Comdex in Las Vegas, Microsoft Corp. and IBM said they are placing heavy bets on network-centric computing by investing in Internet-aware applications and hardware devices.

Meanwhile, AT&T said it plans to begin tests of a World Wide Web Internet commerce service.

In his keynote speech last week, the vice president of the desktop, IBM Chairman and CEO Louis Gerstner said IBM is building an Internet access terminal that will ship in early 1996.

To further acceptance of the Internet among merchants, AT&T last week announced it will begin trials of its AT&T Easy World Wide Web Services later this year.

The service will provide businesses with hosting services and development tools, including Vermeer Technologies Inc.'s FrontPage Web design tool. AT&T will begin trials in December. The company's Electronic Commerce Solutions Transaction Platform will begin market trials in April 1996 and will be rolled out commercially next October.

Also announced at Comdex last week:

- Performance Technology Inc. announced the availability of Instant Internet 3.0, an Internet gateway for NetWare networks. The new version of the hardware/software product will be priced between $3,495 and $5,095. It features built-in support for 64Kbps ISDN connections. Version 3.0 also adds support for 32-bit Windows applications.

The company's Home page is at http://www.perftech.com/

- Quarterdeck Corp. announced the December availability of WebTalk, a $50 Internet phone for Windows 3.1 and Windows 95, which supports full-duplex conversations over 14.4Kbps connections. The software requires a sound card that supports full-duplex capabilities. A free beta version is available on the company's Home page at http://www.quarterdeck.com.

THE WEB HOTLIST

   AST provides information on its range of desktop, portable, and server computers. The Support Information area contains software and technical bulletin and offers access to downloadable BIOS upgrades, drivers, and utilities.

2. Hummingbird http://www.hummingbird.com
   Hummingbird Communications Ltd provides information on its PC-to-Uni and network integration software. Stock about Columbus, a Windows-based suite designed to provide access to the Internet and enterprise intranets.

   EarthWeb provides a registry, a directory, and resources for developers and users of the Java programming language. Included are links to dozens of applets that will run under HotJava-compatible browsers.

   Caligari Corp., in Mountain View, Calif., specializes in software for Interactive on-line 3-D environments. Visit the Inner Circle for software files and patches, or download Fountain, a Virtual Reality Modeling Language authoring tool.

5. Read Warrior Outpost http://warrior.com
   Read Warrior International Inc provides assistance software for users of portable computers. Visit the Modem and Global Connectivity Center read a monthly newsletter, or get information on hard drive and memory upgrades.
Hey, Congress: It's the local telco monopolies that need to be broken up

Congress is probably still musing around with the optimistically named but fatally flawed Telecommunications Competition and Deregulation Act of 1995. A joint committee is probably still pretending to agonize over minor differences between House Bill 1555 and Senate Bill 652, both of which miss the point entirely. The reconciliation is probably still dominated as usual by lawyers lobbying on behalf of organized special interests, in this case the huge local telephone monopolies. I've been finding out, alas, that more than a few of my Republican buddies are slimy politicians, too.

So now I'm agreeing with AT&T, which is arguing that turning the local telcos loose to provide long-distance telephone service is not our current top priority. And we're both agreeing with Democrats and around the White House. This tells you how much of a shit I'm in.

To relieve my snit, I walked across the bridge to a small, quiet conference at MIT. There I ran into Internet pioneer Bob Kahn. We talked about a new book his Corporation for National Research Initiatives (CNRI) just published in its series on the history of infrastructures. CNRI's first book was Emerging Infrastructure: The Growth of Railroads. CNRI's new, second history is Natural Monopoly and Universal Service, Telephones and Telegraphs in the U.S. Communications Infrastructure, 1837-1940.

What impact might Natural Monopoly have on the current shenanigans in Washington over telecommunications reform? Kahn says CNRI is planning to publish 20 books of infrastructure history, and so it's too soon for the series to help much in shaping national information infrastructure. But I'm desperate.

CNRI's telephone history shows how competition was important in the transition from telegraph to telephone. I think the book shows how to accelerate the transition from telephone to interactive home video, World Wide Web appliances, and other cool stuff like that. We won't see any of this anytime soon if it's left to the complacent, bumbling local telephone monopolies.

Although state public utilities commissions and the Federal Communications Commission were chosen in 1934 to be The New Deal's regulatory regime for telecommunications, competitive models have worked before and after. For example, the Bell Co. formed AT&T in 1885 to provide long-distance telephone service.

The book says, "What drove AT&T's research and development in long-distance telephone technology in the late 1880s was the coming expiration of key patents in 1894, when AT&T foresaw intense competition that did, indeed, occur. Between 1894 and 1907, Independent Telephone companies proliferated to meet customer demand that AT&T had ignored."

Quite a bit later, in the 1960s, the first major step in telco de-monopolization was taken with the decision to allow you to buy non-AT&T customer premises equipment such as, say, Hayes modems. That worked. In the 1970s, the provision of long-distance telephone service was monopsonized. That worked. Now it's time to demopolize local telephone service. How else to light a fire under the companies we're expecting to pave the Information Superhighway?

Why is it a priority of the pending legislation to let the local monopolies into long distance, which is already competitive? Why is it a priority to encourage even greater concentrations of market power through telecommunications mergers? Congress, stop listening to monopolist lobbyists and start listening to, er, well, me. It's the demonopolization of local telcos, stupid.

The current legislation has been hijacked by the local telco monopolies in a lobbying coalition called The Alliance for Competitive Communication. Thanks to them, about the only competitive thing left in the Telecommunications Act of 1995 or 1996 is that, at last report, it allows cable TV companies to offer voice in competition with telco. Amen.

Anyway, whether or not there is a 1995 act, I'm preparing for the Telecommunications Demopolonization Act of 1997. By then a few more CNRI infrastructure histories and hopefully the rest of the wheeling and dealing Washington elite will be out.

For your copy of Natural Monopoly, contact CNRI. Search for it on the Web at http://www.excite.com or directly at http://www.cnri.reston.va.us, or send it for $30 to Corporation for National Research Initiatives, 1895 Preston White Dr., Suite 100, Reston, VA 20191.

Bob Metcalfe invented Ethernet in 1973 and founded 3Com Corp. in 1979. He receives E-mail at bob_metcalfe@infoworld.com via the Internet.

Web databases

WebTrack updates customer databases

By Ilan Greenberg

Sales Automation ISV Aurum Software Inc. went into the customer support arena last week with the introduction of a new Internet module called WebTrak.

WebTrak, designed to integrate with World Wide Web server software from Netscape Communications Corp. and Oracle Corp., as well as Aurum's SalesTrak and TeleTrak sales automation applications, allows companies to integrate their sales, marketing, and customer support efforts over the Internet.

Using WebTrak, companies can put their Web Customer Interface Forms on their Home pages and use them to build a customer database. New customer information is automatically copied to a company's customer records database. WebTrak can also be used to trigger sales tasks, such as sending product software and documents over the Internet. The software also helps users manage sales leads derived from the Home page.

But one analyst who recently completed a study on what companies want from Web sites pointed out that Aurum may not be creating Internet applications users want.

"The bottom line is that what most organizations are looking for in a Web site, they won't find here," said Wendy Close, a senior research analyst with Gartner Group Inc., in Stamford, Conn. "They don't want a sales rep calling them. What they do want is customer support problem resolution. They also want interactive selling systems -- the ability to get on the Web and type in all of your needs and get back a configured solution based on your needs. We think there are better solutions for the Web than what Aurum is doing," Close said. "Clients want to get information, not just buy things. Most companies doing Web stuff haven't even surveyed their users to see what they want on the Web. It would've been better to put in a tool that answers questions into a help desk application rather than a sales application on the Web."

WebTrak, priced from $750 to $10,000, will ship next month and run on any Unix Web server. Aurum, in Santa Clara, Calif., is at (408) 986-8100 and http://www.aurum.com
The fastest, most intelligent, most convenient ways to get custom price quotes from leading systems manufacturers.

Please fax this form to: 402-293-0794

<table>
<thead>
<tr>
<th>1. Are these evaluation units?</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**SYSTEMS VENDORS:**
- Advanced Logic Research
- Compaq
- Dell Computers
- Gateway
- Zenith Data Systems

<table>
<thead>
<tr>
<th>2. When will you be purchasing these products?</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Within the next week</td>
<td>15 - 30 days</td>
<td></td>
</tr>
<tr>
<td>7 - 14 days</td>
<td>31 - 60 days</td>
<td></td>
</tr>
</tbody>
</table>

**2. When will you be purchasing these products?**

**3. This is a quote for:**

**4. How many units are you planning on purchasing?**

**5. What CPU do you want installed?**

**6. How much RAM do you want installed?**

**7. How many hard drives do you want installed?**

**8. What capacity hard drives do you want installed?**

**9. What type of video do you want installed?**

(A) SVGA
(B) VGA
(C) MonoVGA
(D) Active Matrix VGA
(E) Passive Matrix VGA
(F) Other

**10. What additional drives do you want installed?**

(A) 1.2 FD
(B) CD ROM
(C) Tape Backup
(D) SCSI
(E) Other

**11. What operating systems do you want installed?**

(A) MSDOS
(B) Windows
(C) Windows 95
(D) Windows NT
(E) OS/2 Warp
(F) NetWare 3x
(G) NetWare 4x
(H) UNIX

Please fill in all the information requested. **IMPORTANT:** Include your fax number so detailed information can be returned to you as fast as possible. Vendors will respond to your request directly. If the name/address on the label is not yours, please fill in the information below:

- **NAME:**
- **TITLE:**
- **COMPANY NAME:**
- **DIVISION/MAIL STOP:**
- **ADDRESS:**
- **CITY:**
- **STATE:**
- **ZIP:**
- **PHONE:**
- **FAX:**
- **E-MAIL ADDRESS:**

You don't have to bother figuring out exactly whom to call or when or how. And you don't have to wait. Very smart. You get the quotes you want from top systems manufacturers, fast, through InfoQuote's electronic service. Manufacturers will respond directly to you with your quotation.

With the InfoQuote Program, you can request custom pricing information through InfoWorld's electronic service. With all requests, be sure you include the 10-digit code from your InfoWorld mailing label.
Zip drive tools were one of many hidden costs of upgrading to Windows 95. In all those articles that appeared earlier this year detailing the "hidden costs" of upgrading to Windows 95, there may have been a few small charges nobody mentioned.

One hidden cost Gripe Line callers have complained about is the $29.95 they paid Iomega Corp., for the Win95 software tools for its popular Zip drive.

"Even though I purchased the drive after Win95 was released, and although the salesperson who made the sale told me it worked with Win95, only minimum functionality is available for the price of the drive," wrote one reader. "Iomega ships Zip Tools for Win 3.1 with the drive, but they wrote that program so it would recognize and refuse to run on Win95, telling you to order Iomega's software upgrade.

The driver that ships on the Win95 CD gives Zip users a drive letter and the ability to copy files to and from the removable media, but none of the special Zip or Win95 features.

"You can't use the guest feature that lets you temporarily install on a remote computer. You can't use the software write-protect features, and the transfer rate is slow," wrote another user. "You really don't get the product you thought you were buying — not if you're using Win95."

For $29.95, you're not getting all that much money, even on a $200 drive, so all the grippers I talked to had reluctantly bought the Win95 Zip tools, but the principle of the thing galled them.

"Imagine what it would be like if all the peripheral vendors started charging for their Win95 drivers," said another reader. "Sure, if I get my Zip drives months and months ago, I would spend the money for an upgrade just like any other software package, but I didn't get them until well after Win95 was out."

Now, if Iomega were willing to sell the Zip drive on the understanding that it's not fully Win95 compatible, no one would have a beef. But, of course, Iomega isn't going to do that. According to an Iomega spokesman, the company will begin including the Win95 tools with the Zip drive about the time this is published.

"We understand it's an inconvenience, and registered users who purchased the software upgrade are receiving a coupon good for $30 on additional disks or other purchases," the spokesman said. Those who did not receive the coupon (none of Zip customers I talked to had) can call Iomega service to request it, he added.

I get the feeling Iomega has realized that the few extra bucks they've been getting on the Win95 software isn't worth the risk of alienating customers on what has become a major product. Another company that appears to have changed its mind on a Win95 upgrade issue, at least in one small respect, is Symantec.

Shortly after Win95 shipped, the Gripe Line received a message from an IS manager in an unusual situation. His company was a longtime Norton customer and had a 100-workstation site license for Norton Desktop for Windows. As part of the license deal, the company had purchased "upgrade insurance" at the cost of about $20 per workstation, guaranteeing them free upgrades on any new releases of the product through this year.

Come Aug. 24, however, he was faced with a problem. There is no Norton Desktop for Windows 95, because Symantec is selling the Win95 versions of the Desktop utilities separately.

"When they told me we'd just get Norton Navigator for Win95, I felt cheated, since we wanted the antivirus and backup utilities just as much," the IS manager said.

Because he had paid for upgrade insurance on the whole Desktop package, I could certainly understand why he felt that way. And when I asked Symantec officials about it, they could, too. Symantec now says Desktop customers with upgrade insurance will receive all the Win95 utilities and should by now have received a letter notifying them of that fact. If you're in that situation, let me know if you get your letter and upgrade, because my IS manager is still waiting for his. We already know about the hidden costs; let's make sure everybody knows about the hidden fees, too.

Ed Foster's Gripe Line examines issues raised by readers concerning product quality, customer service, and sales practices. InfoWorld readers can leave gripes by messaging gripe@infoworld.com, or by calling (800) 227-8365, ext. 710.

TO THE EDITOR

Our column this week starts out with more of your mail on the Mac vs. PC debate. And another reader presents a thoughtful response to Stewart Alsop's recent column saying Notes is not really an applications platform. (See Distributed Thinking, Oct. 30, page 114.) But among the most interesting letters you've sent recently are those responding to a recent Peer to Peer by Robert Lewis (Oct. 23, page 66)

News

Apple has been coasting for 11 years.

It earned our loyalty by having produced something "insanely great." That apple is gone, long gone.

Gary Robinson
First Software Inc.

Kin wagon Stewart Alsop just fell off, but I have a 485-page book of third-party support, applications, and training on Lotus Notes.

To downplay the importance of the operating system to our systems and replace it with an interface as simple as Notes is a tremendous advantage.

There is a reason why companies such as Weyerhaeuser, Intel, US West, AT&T, IBM, Associated Grocers, and many others are building heavily on a Notes infrastructure. They see the value of simplicity combined with power, flexibility, and scalability that Notes provides their development teams and their users.

Personally, I think Alsop's view of Lotus Notes is without credibility. Maybe he should sketch or write about things he knows something about.

Ray Ellis
Washington Utilities and Transportation Commission
Olympia, Wash.

A different note on Notes

As an applications developer who has watched the PC software industry develop over the past 18 years, I want to offer my perspective on Lotus Notes as an applications platform.

1. I trust my development environment to a company that delivers me a tool that has cross-platform functionality, facilitates structured and unstructured data, is compatible with legacy relational data, and allows me to develop applications in a time frame that satisfies my clients. Lotus/IBM provides this for me in Notes.

2. Who cares what the original catalyst was for developing the environment? Notes is very powerful and enables me to build almost any type of application, remote or connected. And quickly its beauty is its simplicity — not only of the user interface, but of development tools and concepts. One can be immediately productive on a large scale.

3. Isn't Windows a proprietary system? The Notes API seems to be at least as open as the Windows API. Access to Notes data and functionality are just an API call away in most languages.

If you are a visual programmer, no problem. VB/EXE abound that open up Notes functionality to the whole world of small-time programmers. I don't know what pumped...
FROM THE EDITOR IN CHIEF • SANDY REED

Comdex season is about researching new products for all kinds of users

This is my favorite time of the year, and it has nothing to do with turkey or football. 'Tis the Comdex season I look forward to, that time of year filled with new, newer, and newest products. This is the quarter in which most IS managers spend big chunks of their technology budgets, so we know we were able to meet using season during the show week itself to get a long-term view of what to expect from vendors and their products in coming months. Staffers from reviewers and testing and the features department also went to Las Vegas for first-hand looks at the new products and technologies. Although we're very serious about keeping you up-to-date on client/server technologies, we recognize that IS managers also make decisions about nonenterprise issues, more personal issues such as which games are worth spending your own money on or which program is best at encouraging your kids to read the classics. For our annual overview of the best in fun and games, turn to page 103.

Sandy Reed is editor in chief of InfoWorld and welcomes your thoughts on the Comdex experience. Send E-mail to sandy_reed@infoworld.com.

12 YEARS AGO IN INFOWORLD

Windows debut was grand, but guess who didn't show?

Microsoft releases graphical OS

Nov 21, 1985

A leading software company has opened a second front in the developing window wars. Less than two weeks after VisiCorp started shipping its long-awaited Visi On integrated software package, arch-rival Microsoft has fired an answering volley by introducing a lower-cost window manager.

On Nov. 10, in New York, Microsoft announced Win- dows, a window manager and graphical-device interface designed to integrate applications running on the IBM Personal Computer and IBM PC-compatible computers.

Microsoft's announcement came less than six months after its introduction of the original Windows system for mainframes. Windows is designed to run on Windows, a window manager and graphical-device interface designed to integrate applications running on the IBM Personal Computer and IBM PC-compatible computers.

The product also received blessings from manufacturers that plan to introduce IBM PC-compatible machines, including Apple, Radio Shack, and Minder.

One corporation is conspicuously absent from the list of supporting hardware manufacturers — IBM itself. Because Microsoft developed the OS (MS-DOS) that IBM has blessed for its personal computer, whether IBM plans to support Windows is a touchy subject for Microsoft. Company officials had no comment on IBM's plans to adopt Windows but said that it will be available on the IBM PC when the program is shipped. Windows will be priced between $100 and $250.
introducing

**network**

**STORAGE BACKUP**

with **intelligence**

like this.

Only better.
HiLANder
Backup Storage Hub

It goes beyond ordinary backup to automatically organize and manage your data.

Meet HiLANder, the fully-integrated system that centrally manages and fully automates network backup for LAN servers and clients. And those are just its top-of-mind capabilities. Add HiLANder's archiving, file migration and hierarchical storage management techniques that push the power of intelligence by knowing when and how to optimize your storage resources—and we're talking cerebral. HiLANder provides seamless data backup, easily manages LAN backup at network speeds, is scalable to 384GB, redundant to the point of fail-safe and extroverted enough to mingle with future servers. Smart stuff, huh.

Want more? Call 1-800-910-2820, ext. 303. Or access the Web at http://www.hdshq.com/

Hitachi Data Systems

SUPPLYING THE DEMANDING
We've made Token Ring switches you can believe in. What's more...
What if we told you that martians were alive and well and living in New Jersey? Well, you might believe us. Really. Because after all, when you're making high-performance, cost-effective Token Ring switches a reality, people do tend to believe you.

3Com's LinkSwitch 2000 TR* featuring breakthrough ASIC technology, offers the performance of switching at an affordable price. Plus, it allows you to connect to high-speed technologies like FDDI and ATM.

But the switch is just the start. 3Com® is committed to providing solutions for Token Ring and SNA networks. Our product offering includes 100% IBM-compatible TokenLink III adapters, new high-performance TokenLink Velocity PCI adapters, stackable and chassis-based hubs, and central and remote routers that support Boundary Routing® system architecture and DLSw, to name a few.

Call 3Com today at 1-800-NET-3Com to find out how we can make these Token Ring products, and maybe even the Loch Ness monster, a reality for you.
The World's Largest Conference and Exposition Featuring, the Internet, the Web, Messaging and Electronic Commerce

EMAIL WORLD AND INTERNET EXPO

10 COMPREHENSIVE CONFERENCES

- Your Company and the Internet
- How to deploy Email in your Company
- Collaborative Computing and Groupware
- Living In the Web: User Perspectives
- Working with the Web: Corporate Communications
- Weaving in Information Space: Developing Web Applications
- Who Is Reading your Mail: Security & Privacy
- Head to Head: Choosing the Right Product
- Everything A Manager Needs to Know About the Internet
- How to Market Using the Internet and the World Wide Web

Plus... The EMAIL and INTERNET Exposition, Featuring over 300 Exhibits Dedicated to the Internet, the Web and Electronic Messaging

For More Information
Please Access DCI's Home Page at http://www.DCleXpo.com/ or Call Us at 508-470-3880 Today.

Sponsored by:

DCI

EMAIL WORLD AND INTERNET EXPO

NOVEMBER 28-30, 1995
BOSTON, MA

KEY PRESENTERS:

Event Chairs: Einar Stefferud,
First Virtual Holdings Incorporated
Jay C. Weber, Enterprise Integration Technologies

Marc Andreessen, Netscape Communications
Jay Tenenbaum, Enterprise Integration Technologies
Gary Bolles, Inter@ctive Week
John Sidgmore, UUNET
Dave Crocker, Brandenburg Consulting
Gail Grant, Open Market
Dave Taylor, Intuitive Systems
Abel Weinrib, Intel
Nick Arnett, Verity
Jeff Schiller, MIT
Philip Zimmerman, Cryptographer

Co-Sponsors:
broken down, cleaned up, combined with other data, and placed on the shelf or stacked on pallets until a user strolls up and drops one particular package of data into a shopping cart.

Although the concept may sound simple, implementation of a data warehouse is highly complex. And for that reason, companies building such structures often end up with something quite unlike the pristine model described above.

Instead, they get a data outhouse: a data warehouse hastily built using dirty, incomplete, outdated data that is misaligned with the business' needs, suggests Harry Zimmer, chief technology officer at AT&T Global Information Solutions. Or maybe a data shack, when lack of funding and management commitment coupled with poorly defined user requirements produce a structure that will soon collapse under its own weight. Or possibly a data jailhouse, where no one gets data out alive.

The challenge of building a sturdy warehouse, as opposed to one of these ugly alternatives, is — to put it mildly — formidable. Consultants report that building a data warehouse takes two to three years and costs $2 million to $3 million.

And before even getting to that point, IS needs to ask a wide range of questions about its warehouse building plans. For example, exactly what is in those warehouses, and how do users get to and use the data?

Data warehousing is a hot concept, but making it a cold reality involves lots of tools and planning

There's also a need for tools to manage the data warehouse, handle replication and synchronization of multiple data warehouses, develop applications that use the data warehouse, and more. Data modeling tools, the first group on the list, enable warehouse developers to get a handle on what the data is, what it means,
think of us as a

smörgasbord

in an industry full of

SACK LUNCHES.
Gateway’s standard desktop P5-133 Professional includes a 133MHz Intel® Pentium® processor with 1.6GB hard drive, and 16MB RAM for incredible processing capabilities, 15” monitor, along with a 6X CD-ROM drive, and Microsoft® Windows® 95 and MS Office 95, or Windows for Workgroups™ 3.11 and MS Office. $2799

The best place to buy a PC.


Because as a Gateway 2000® corporate customer you’re getting a top-rated corporate team that will cater to your every whim. Choose from Gateway’s value-laden desktop and portable configurations. Or special order a system to fit your exact specifications. (There are over 15 million ways we can custom configure your Gateway computer!) A great corporate perk:

You can take advantage of our Customer Integration Services (CIS) Program.

And all Gateway desktops include the unbeatable Gateway Gold™ service and support program 800-846-2069 with toll-free technical support 24 hours a day, seven days a week; industry-leading response times; next business day on-site service pending parts availability; extended on-site hours; scheduled on-site service; and express replacement parts delivery.

You’ll love being a Gateway customer! In fact, a Computer Intelligence InfoCorp study™ reported us ranking number one in Windows®-based PC brand loyalty, with 80% of our customers buying another Gateway system when they purchased another PC!

Belly up to our buffet. Call Gateway 2000 today.

*To most locations and when our tech determines necessary.
**Computer Intelligence InfoCorp’s Consumer Technology Index study released on July 11, 1995.
It's about openness. Freedom. And not discriminating on the basis of operating system. It's the StorageWorks™ RAID Array 410 Subsystem. And it connects beautifully with UNIX® systems from Sun, IBM, HP and Digital. Once attached, it works at unbeatable speeds: up to 4,700 I/O per second. It also gives you tremendous freedom to expand, with as many as 42 drives on a single controller. Most of all, it gives you security: drives, fans and power supplies offer hot-swap spares, meaning a distant memory. The 410 protects with multi-platform standard disk drives. And with our attractive pricing, your investment digital™ will quickly pay for itself. Tested 100% for compatibility, the RAID Array 410 is the safest storage you'll ever love. Want to know more? Groovy. Call us at 1-800-786-7967. IT CAME BACK AS A STORAGE UNIT

**RAID ARRAY 410 SUBSYSTEM**
- Supported RAID levels: 0, 0+1, 1, 3, 5
- Office cabinet capacity: 1 to 24 drives
- Disk capacity: 1GB to 100GB per office cabinet
- Maximum I/O rate: 4,700 I/O per sec. dual controller
- Maximum transfer rate: 20MB per sec.
- Read/Writeback cache: 32MB
- Maximum drives per controller: 42
- Built-in diagnostics

**Specifications**
- Supported RAID levels: 0, 0+1, 1, 3, 5
- Office cabinet capacity: 1 to 24 drives
- Disk capacity: 1GB to 100GB per office cabinet
- Maximum I/O rate: 4,700 I/O per sec. dual controller
- Maximum transfer rate: 20MB per sec.
- Read/Writeback cache: 32MB
- Maximum drives per controller: 42
- Built-in diagnostics

**Features**
- Support for industry-standard disk drives.
Build A Better Server With Adaptec.

This is what you’ve been waiting for. The new Adaptec® AHA®-3985 and AHA-3985W PCI RAID adapters. Supporting RAID levels 5, 1, 0, and 0/1, they have all the functionality of microprocessor-based RAID controllers at half the price.

By building on our PCI leadership, we’ve developed an innovative, less expensive architecture. Unlike conventional RAID controllers, Adaptec PCI RAID adapters have a unique PCI-to-PCI bridge and onboard RAID coprocessor that reduces the need for costly microprocessors, memory controllers and cache RAM. Designed specifically for the PCI bus, Adaptec PCI RAID adapters provide a direct data path between SCSI devices and host memory which eliminate double buffering of data.

What makes us even hotter is our Hot Swap and Hot Spare features for real-time data recovery beyond backup. And, Adaptec CI/O® software lets you remotely monitor SCSI array status from any Windows®-based networked client.

For the Adaptec RAID IOware® Guide and a free Adaptec CI/O demo disk, call 1-800-804-8886 ext. 1133.* It’ll be easy to see why you won’t have to raid the corporate coffers to get into RAID.

Adaptec PCI RAID adapters. Affordable, real-time data recovery beyond backup.

*In the U.S. and Canada only. Supplies are limited. Other restrictions may apply. For information by fax, call 1-408-945-2570, ext. 1133, request document no. 34660. Visit our World Wide Web home page at http://www.adaptec.com ©1995 Adaptec, Inc. All rights reserved. Adaptec, the Adaptec logo, IOware, the IOware logo, CI/O and AHA are trademarks of Adaptec, Inc. which may be registered in some jurisdictions. Adaptec CI/O software and documentation are based on HP OpenView software from Hewlett-Packard Company. All other trademarks used belong to their respective owners.
how it relates to other data, and who uses it. Data modeling tools typically are associated with CASE or advanced application development, but they have a role in the data warehouse, too.

"We used Visual Analyst Workbench [from Visible Systems Corp.] to create entity relationship maps so we could establish data relationships," says Loretta Wallace, senior business analyst at the Canadian Grain Commission, in Winnipeg, Manitoba. "Then we discussed the maps with the users to make sure this was the information they wanted."

The data modeling represented the first phase in building a data warehouse on a Digital Equipment Corp. Rdb database, running on a Digital VAX system, that can be accessed by PC-based users through Business Objects Inc.'s BusinessObjects.

A repository (the second category) stores information about the data; where it resides, how it is accessed, its format, its type, and other relevant information. Ideally, the repository will be used by a wide range of tools, from the data modeling tools to the end-user access tools.

"We use Visible Systems’ [product] as the data dictionary for meta data," says Vernon Chin, database administrator at Tokio Marine Management, a property and casualty insurance company based in New York. The company is in the early stages of building a data warehouse based on a comprehensive data model it constructed, and it has begun identifying and evaluating the next tools. These other tools, however, all define the same meta data for themselves.

For this reason, IS finds itself having to integrate the various proprietary versions of meta data or manage multiple versions. Universally usable meta data, unfortunately, is not available at this point. (A new industry group, the Metadata Council, has formed to address this problem. See related story, this page.)

"It would be great if the tools shared the meta data, but they don’t. We’re facing a situation where we will have to maintain multiple sets of meta data," Chin says.

Most users, however, haven’t delved into the meta data issue deeply enough to recognize it as a problem.

"We’ve just started to look at the meta data issue," says Mark Zozulia, manager of information resource management at Moon Inc., a leading faucet manufacturer located in North Olmsted, Ohio. "There is some talk about how we manage it, but we haven’t addressed it yet." Moon has completed the first phase of its data warehouse, which currently provides access to sales data.

**THE METADATA COUNCIL**

Meta data — data about data — is the glue that ties the data warehouse together and makes it work. It is the information about the data: what it is, where it is, what it means, and how it is accessed and updated.

Almost every component of the data warehouse uses meta data. Data modeling tools use it to create relationships between data. Data extraction and transport tools use it to find the right data, transform it, and insert it in the right place in the data warehouse.

Tools that scrub, standardize, and merge the data can’t work their magic without meta data. And it is only through the semantic layer, built with meta data, that end-user access tools can hide the complexities of the data so users can access it and work with it naturally. But there is a problem with meta data.

"All meta data implementations are proprietary to the particular tool that uses it," says Karen Rubenstrunk, director of application development strategies at Meta Group Inc., in Westport, Conn. "As the data warehouse grows, the meta data synchronization problem grows."

In response, a number of vendors, prodded by the Meta Group, have joined to form the Meta Data Council for the purpose of creating a vendor-independent API for meta data, defined and maintained by the industry. With such standards, meta data would be defined once and shared by different tools.

Founded by Arbor Software Corp., Business-Objects Inc., Cognos Corp., Evolutionary Technology Inc., Platinum Technology Inc., and Texas Instruments Inc., the Metadata Council has already been joined by other vendors. A white paper outlining the proposed process and the meta data interchange standard has been published. An initial version of the specification is expected to be ready by the end of the year. Tools that support the standard could appear next year.
Introducing The Marquis 28.8 Modem/Fax/LAN PC Adapter

Best-In-Class Performance, Leadership, Endurance. The World's Best...these are qualities the Olympic Games are known for. These same qualities can be found in the new Marquis 28.8 Modem/Fax/LAN Adapter. That's why we're proud to be an Official Sponsor of the 1996 Olympic Games in Atlanta, Georgia.

The Marquis teams industry-leading technology in both modem and LAN performance, keeping your mobile workforce productive in the office and on the road. As a principle contributor to the V.34 modem standard, Motorola gave Marquis blazing 28.8 Kbps performance and incredible DTE rates of 230 Kbps.

Motorola M-Cards*: Mobile Computing Solutions from the Mobile Communications Leader

Innovative LAN architecture provides fast data throughput and an extensive driver set delivers Ethernet connectivity to all the leading network operating systems. In fact, the Marquis features Parallel Tasking® LAN technology assuring you of world-class performance and connectivity. Perhaps most important, a powerful “installation engine” delivers an average three-minute installation, eliminating messy network set-up and card compatibility hassles.

Marquis 28.8 Modem/Fax/LAN Adapter
- 28.8 Modem Performance
- 230 Kbps DTE Rate
- 10Base-T Ethernet Adapter
- Extensive Network Driver Set
- Windows '95 Compatible

Help make your mobile workforce a “winning team” with PCMCIA solutions from the world's leader in mobile communications.

Call today for a special evaluation offer!

For more information and to locate the distributor nearest you call:
1-800-4A-PCMCIA

Motorola

* and Motorola are registered trademarks and M-Cards is a trademark of Motorola, Inc. Parallel Tasking is a registered trademark of 3Com Corp. All other trademarks are the properties of their respective owners.

Copyright © 1995 Motorola, Inc. All rights reserved.
HOME BASE. The database at the core of the data warehouse often triggers another debate as proponents promote one type of database or another. In fact, the core database can be any type: relational, proprietary, or flat file, says Hurwitz Consulting's Scheir. The data warehouse concept is not tied to any particular kind of database.

Some vendors, such as Red Brick Systems, tout their databases as being optimized for data warehouses. Opinions on the necessity of such a database are mixed.

"You don't need a specialized database," says Wayne Eckerson, senior consultant at the Patricia Seybold Group Inc., in Boston. But, he adds, these vendors do bring more expertise to the table. They may be useful when a company is building a particularly large and complex warehouse.

Similarly, multidimensional database vendors have jumped on data warehousing as the application that will lure buyers to their products. Although there is a clear role for multidimensional databases in the data warehouse, analysts increasingly question whether stand-alone multidimensional databases are the best vehicle to use as the core database.

Multidimensional analysis may be incorporated into a relational engine, as Oracle Corp. is doing through its acquisition of ESI Software Inc., or as a front end to the data warehouse database, Eckerson says.

"We use Oracle as the foundation for our data warehouse," Zosulia says. After choosing Oracle, the company turned to Cognos Corp.'s PowerPlay instead of a multidimensional database to get multidimensional data analysis.

"One problem with the multidimensional databases is that they are proprietary, Oracle is more open in that it is supported by many off-the-shelf applications and tools," he explains. With only 10GB of data in the data warehouse, Zosulia didn't feel the need for a specialized database.

MOVING AND CLEANING. Data transport tools, the fourth category, are provided by Platinum Technology Inc., Legent Corp., and others. These tools are designed to move copies of data from the production systems to the data warehouse and insert the data into the right place.

They also perform basic transformations, such as converting host-based Extended Binary-coded Decimal Interchange Code to ASCII.

Data scrubbing and normalization tools, the fifth tool category, assist with cleaning the data. This category is consistent. It includes such tasks as identifying and merging multiple records of the same data, standardizing abbreviations, and adjusting for different field lengths of the same data. Sometimes these tasks can be combined.

"You can't skip the data preparation," says Arthur Marans, a technical manager for the state of Minnesota, in St. Paul. The state's data warehouse provides Minnesota agencies and legislators with access to information from the state's accounting, procurement, payment, and human resources computer systems. The state built its warehouse from several different sources.

The data warehouse project team used Software AG's Passport to extract the data from the source databases and get it ready for use in the data warehouse.

GER'S Retail Systems, a San Diego-based company that outsources inventory tracking service to retail stores, hopes to avoid the time-consuming data scrubbing and standardization phase when it builds a data warehouse on an Oracle database. That's because the company has taken pains to do those tasks before the data is moved into the warehouse.

"We worked on that in the production system," says Dean Worra, SQL specialist at GER'S. "We've kept everything in Oracle, and we standardized on Oracle's naming structure."

Moen, data preparation involved translating the myriad codes associated with the sales data collected in the first phase of the company's data warehouse project, Zosulia reports.

"You also need to denormalize the data in the warehouse to make it easier for the user," Zosulia adds. Highly normalized databases may make for efficient performance of production systems, but normalization forces the use of expensive joins in typical data warehouse queries.

Middleware connectivity tools, the sixth category, are needed when the source data sits in different databases, such as host-based IMS databases and various server-based relational databases.

Middleware, often in the form of gateways, links the different data sources to the data warehouse and enables a three-tier approach in which information from multiple databases can be joined on a server before being passed to the client.

Middleware vendors include Information Builders Inc.'s EDA/SQL, Sybase Inc.'s MDI, TechGnosis Inc.'s Sequelink (recently acquired by Intersolv Inc.), Triznic Corp.'s Enterprise Computing

VIRTUAL WAREHOUSING: THE QUICKIE MART

Maybe a real, physical data warehouse is more than you're ready to handle. In that case, Intersolv Inc. offers its virtual data warehouse — sort of a data convenience store that can be implemented in a fraction of the time and expense required for the real thing.

When you look under the hood, Intersolv's virtual data warehouse looks like its Q & E end-user data access tool, somewhat enhanced and renamed Explorer. There is no distinct physical data warehouse. The data resides in the production systems.

The virtual warehouse simply organizes and smooths out access to the data for the end-user. This approach is similar to those taken by end-user access tools such as Business Objects Inc.'s BusinessObjects and Dimensional Insight Inc.'s CrossTarget.

"Intersolv is providing an open semantic mapping layer," explains Wayne Eckerson of Patricia Seybold Group Inc. It is this mapping layer, which Intersolv calls SmartData, that disguises the complexity of the multiple back-end data sources and allows users to access, for instance, "Sales" without knowing where the sales data is actually coming from.

Other products also provide a semantic mapping layer, but it is proprietary. Intersolv, a developer of open database connectivity (ODBC) drivers, employs industry-standard ODBC as the access method.

The virtual warehouse does not eliminate the problem of slowing down production databases with ad hoc decision support queries. As a result, it is most useful in small-scale situations, as something that allows IS to get users up and running quickly with data access as an interim step to building a real data warehouse. Even Intersolv concedes that a virtual warehouse will not replace a real data warehouse.

Consultant Bob Priestley of Clearview Software International Inc., in Dallas, built a virtual warehouse for the American Heart Association using the Intersolv tools. The virtual warehouse gives the association's financial managers access to stored in its Solomon Financials software package from Solomon Software.

"I use SmartData to develop data sets for the users," Priestley says. "I do all the joins. The user just sees field names that they know." One report that took Solomon Financials 8 hours to run required just 7 minutes as a series of SmartData commands. The report took only 30 minutes to run.

Despite the success of the virtual data warehouse, a real warehouse remains a likely possibility at the American Heart Association.

End-user data access is one of the key differences between Moen's new data warehouse and an older one. Previously, only a handful of technically proficient users and programmers could use the Information Builders' Focus report-writing tool to extract data from the company's original data warehouse, which was built on a Computer Associates International Inc. IDMS database.

"With only a few people who knew Focus, somebody would request a report and it would take days to get it," Zosulia says. And the report was static. If the person wanted to explore some aspect of the data, it required another report, leading to another delay.

The new system uses Cognos' Impromptu as the access tool. End-users use Impromptu by themselves to access data in the warehouse without knowing the structure of the data or SQL programming. They can access data, drill down for more information, or copy the data to desktop spreadsheets for further analysis if desired.

PULLING IT ALL TOGETHER. Given all the components involved in a data warehouse, "there is a growing interest among users in buying a single captured solution," says Bill Gannon Jr., vice-president of research at Seny, Karpel, New York.

For that reason, Bill's been fielding questions from potential buyers on the pros and cons of the various vendors and consultant offerings. "The market is too immature yet," he says.

One of the ways to reduce implementation costs is to consider the so-called quickie mart, a typical data warehouse that is built with off-the-shelf software.

"One of the benefits of the quickie marts is that they are less expensive to implement," says Joe Simonelli, a marketing director at Dell Computer Corp.

"The other benefit is that they are usually ready in days rather than months," he adds.

"I think we're going to see more of this," says Paul Black, a director at Plymouth, Minn., consulting firm Black & Co. The firm expects that the use of captured data is going to increase.

"The only question is how long this will last. Do we need to have data that is accurate, but at a lower cost? We need to be able to analyze that," he says.

Meanwhile, users are looking to contain the cost of data warehouses, usually by building smaller, more focused data warehouses referred to as data marts.

"You can bet we didn't spend $2 million and take two years," Dziwezeczy says. "We're looking for a more cost-effective approach to controlling costs. "We're only dealing with a small, manageable chunk: accounting, human resources, payroll, and procurement data."

If the state tried to cram all the various information used by state agencies in the data warehouse, the cost would run well into the millions, Dziwezeczy says.

Moen also took a gradual approach.

"We did the first phase in about six months, and it cost nearly $350,000," Zosulia says. "Our approach is to take it in small bites. If you try to pull in every piece of data, then it's going to cost a lot more."
Sure, one paddle will get you down the river. But two paddles work a heck of a lot better. The same applies to Pentium® Pro chips. So that's why we've developed the ALR EVOLUTION DUAL6, the first aggressively priced PC to offer an easy upgrade path to dual Pentium Pro technology. From networking to graphics design, from Windows® NT to Novell® NetWare™ 4.1 SMP, this is the computer you've been waiting for.

Here's two.

ALR EVOLUTION DUAL6 Model 1-16
- One 150-MHz Pentium Pro Processor with integrated 256-KB L2 cache
- 16-MB (ECC) RAM
- 1-GB IDE Hard Drive
- 64-bit PCI video with 2-MB VRAM
- 4X CD-ROM Drive
$4880 MRP

Starting at $3495

15-GB of storage within its six drive bays, up to 512-MB of ECC (Error Checking and Correcting) memory, and a combination of seven available expansion slots (four PCI/ four ISA, one shared). Would you rather have a workstation for CAD, animation, or graphics design? Just add a graphics crunching 64- or 128-bit PCI video adapter to one of this system's bus-mastering PCI slots. It's like having the power and reliability of one of our award-winning servers sitting right on your desktop.

It's the power you've been waiting for. So why wait any longer? For more information, please call:
1-800-444-4ALR (x5104)

ALR
Advanced Logic Research, Inc.
Macromedia meets PowerPC technology.
How did the designers at Macromedia transform Director® into an even more powerful multimedia tool? They turned to today's PowerPC™ microprocessor technology.

The added speed and increased processing power offered by the PowerPC platform set the stage for dramatic improvements in performance. With it, text, video, graphics, sound and animation can more quickly and easily be combined to create exciting interactive productions. All of which enables Macromedia Director to remain at the top of the charts for creating presentations, educational CD-ROMs, demonstration diskettes, interactive kiosks and more.

Then again, it's just the kind of rave review you'd expect from a technology co-produced by IBM, Apple and Motorola. And it's why more and more leading companies are directing their efforts to the PowerPC platform.

How can it improve the way people interact with your products? To find out, call IBM at 1 800 POWERPC, ext. 1404. Or visit us on the Net at http://www.chips.ibm.com

After all, you can teach an old cat new tricks.

(And interactivity hasn't been quite the same since.)
Canon meets PowerPC technology.
When the designers at Canon wanted to create a more powerful force in business computing, they didn't stop at one computer, but they did settle on one microprocessor—today's PowerPC™ microprocessor.

With its superior performance and flexibility, Canon's Power Workstations are a perfect fit for any size business looking for a scalable, more powerful platform. Canon also realized that the PowerPC platform's faster floating point operations would enable customers to handle graphics-intensive applications more quickly than before.

And Canon's Power Workstations are also capable of running multiple operating systems, taking full advantage of the PowerPC architecture's open systems capabilities.

For Canon and its customers, anything less would have been unacceptable. And for IBM, Apple and Motorola, who jointly developed the technology, anything else would have been unthinkable.

To see how PowerPC technology can translate into a sizable benefit for your business, call IBM at 1 800 POWERPC, ext. 1406. Or visit us on the Net at http://www.chips.ibm.com

Don't be surprised if it grows on you.

IBM® Solutions for a small planet™
Bentley meets PowerPC technology.
When Bentley™ wanted to boost the productivity and performance of its MicroStation™ computer-aided design, visualization and modeling software, it turned to today's PowerPC™ microprocessor technology.

Right from the start, engineers, planners, architects and drafting professionals discovered they could produce complex designs and photorealistic renderings at blazing speeds. So that large-scale projects could be completed in less time and at a lower cost.

In fact, the PowerPC platform enabled Bentley to give all kinds of users faster, more exciting ways to move their biggest ideas off the drawing board.

Of course, that's just the kind of performance IBM, Apple and Motorola were aiming for when they created the PowerPC platform. And it's the reason why other leading companies have chosen to adopt it for their own products.

Whatever you're looking to build, find out how PowerPC technology can fit into your business plans. Call IBM at 1800 POWERPC, ext. 1405. Or visit us on the Net at http://www.chips.ibm.com

It's what all the top models will be wearing.

(And modeling hasn't been quite the same since.)

IBM Solutions for a small planet™
Determining when training works

By Ilen Greenberg

In the blizzard of computer training choices, IS managers are developing quantifiable ways of determining whether they and their users have gotten their money's worth.

From the corner offices to the factory floor, employees are being encouraged to improve their computer skills. Companies are turning to everything from classes and computer-based training programs to centrally located quick-help kiosks. (See "Training wheels that work," Sept. 11, page 51.)

But does the investment pay off? Although client/server systems from the likes of SAP and Oracle are far more complex than typical desktop applications, some IS managers point out that assessing training programs for desktop software is considerably more difficult than assessing user progress with client/server applications.

Jonathan Vaughn, vice president of applied technology at Chase Manhattan Bank N.A., in New York, found that his large client/server software application shipped with training modules that offer built-in assessment features.

"But that's not a luxury you have with packaged [desktop] software," Vaughan says. "With desktop software we offer formal training and some classes, and pass out forms asking for feedback. But we basically approach it by looking to see if there is an eventual business payoff."

IS managers point out that measuring general productivity gains is a notoriously nebulous task. Instead, managers and users need to decide on meaningful metrics before the training begins, such as faster reporting time or better customer service reports, Vaughan says.

The trick, some training experts say, is to determine which productivity areas can be linked to better computer training.

Another more precise way for companies to acquire the training their employees need is to contract with a training service that emphasizes "just-in-time" training, a term that refers to a training program individually geared toward users skill deficiencies. At the end, employees can easily determine whether they learned the specific skills or tasks they need.

"In the banking field, things aren't very abstract, so I got more out of being able to hone right into what I used to cover," says Steve Kling, operations manager at NRB Bank, in Evanston, Ill.

A third way to assess a training program is to measure one user's skills against another's. The IS department can put an evaluative template or task on the network and measure how well the users perform the task after taking a training course. This way, managers can determine whether new skills were learned by all the attendees, says David Karlins, a Los Angeles developer of training and skills evaluation materials.

However, the course review should not be a surprise attack, Karlins says.

Training professionals point out that employees are often able to give their company an accurate assessment of the course — if they feel their assessment is mean to evaluate the course or the trainer rather than the students.

"People know what skills they need to know, so if employees feel they are volunteering, the results are going to fail," Karlins says. No test is going to determine exactly which skills were addressed and which were not. People themselves need to give that input."

"After all," Karlins adds, "it's in their interest. Training skills are something an employee can take with them to the next job."

Calendar

November
27 05/2 Bay Area User Group Meeting. Stanford, Calif. Stewart Alspock speaks.Contact 05/2 BAUG, (510) 945-7565, ext. 100. World Wide Web: http://www.davebsoft.com/05/2baug.
28-30 E-mail World and Internet Expo. Boston. Contact DCL, (508) 470-3980.
29-Dec 1 Far west '95, San Francisco. Contact BIS, (800) 874-9980; E-mail: swahidou @gigate.com.
4-7 SGMl '95: Expanding the Universe. Boston. Contact RCA, (703) 519-8100; E-mail: sgml@rad.com.
4-8 DB/Expo, New York. Features head-to-head debate among executives from Oracle Corp., Sybase Inc., and Informa Software Inc. Contact BIS, (800) 208-EXPO.
5-7 Database and Client/Server World. Chicago. Contact DCL, (508) 470-3880; E-mail: cmfl@icexplutoz.com.
5-7 ENVE/Coordinator's Conference: Leveraging Your Resources For Success. Scottsdale, Ariz. Contact Commerce Institute, (800) 456-3703.
11-15 Project World '95, Santa Clara, Calif. Conference for high-tech project managers. Contact CMR, (617) 431-9797; E-mail: admin@projectworld.com.
January 1996
February
4-7 Business Process and Workflow Conference, Lake

Buenavista Blvd., Suite 201, (617) 982-9500.
7-8 Softex, Los Angeles. Contact Interactive Information Services, (415) 842-7373.
March
6-8 Application Development Conference and Exhibition: Building World Class Systems for the Distributed Enterprise, New York. Contact CMR, (800) 808-EXPO.

May
5-9 Object World East, Boston. Contact Object World, (800) 369-4664; E-mail: omg@omg.org.
You get the mouse. Head up the screen.

Pull in a database server. FIVE seconds to lunch.

You distribute a transaction. FOUR. Put a move on multimedia. THREE. Drag. TWO. Drop. ONE...

Yeeessss. It's all over, baby.

It's easy to see why nothing propels you into the big leagues of object-oriented programming like our new VisualAge™ C++ version 3.0.

It transcends mere GUI builders. This fully integrated development environment lets you generate tight, fast client/server applications with point-and-click ease and efficiency.

A simple drag-and-drop incorporates the truly scalable capabilities of a vast library of pre-built Open Class objects, which means you can create distributed client/server apps quickly.

Can your software do this?

And with Open Class and C++ compilers for OS/2, Sun™ Solaris®, OS/400®, AIX®, and MVS, deploying your new object-oriented apps across multiple platforms is really easy. We thought that new features like these would excite you. Infoworld agreed, and has called our new VisualAge C++ “object reusability at its finest” and “a masterpiece of visual programming.”

True OO client/server development with VisualAge C++ for OS/2. It could be the best move you make.

Get a Developer's Kit including OS/2 Warp and a CD featuring an evaluation copy of DB2 v2 when you buy VisualAge C++ for OS/2. Call your authorized IBM reseller or 1 800 3IBM-OS2, Dept. SA009.
Introducing 4D®, the first unified client/server database for workgroups.

Few things are more stressful than creating client/server database applications for your workgroups. Especially when they have to run in both Windows® and Macintosh™ environments. Which software to use? Which database server? Which middleware? Which network protocol? Will it all work together? The simple answer is 4D.

With 4D, you develop only once. Using 4D Server®, you generate front-end client application and back-end server database automatically, cutting development time in half, and ensuring harmony. Then, there is no hassling with those mix n' match solutions that can turn your developers into ravenous termites.

Thanks to the 4D Platform Independent Architecture, you can deploy everywhere, without any kind of frustrating modification. And because 4D is a full 32-bit application, it seamlessly supports Windows 3.1®, Windows NT®, Windows 95®, and Mac O/S®. Of course, we also connect to the rest of the SQL world.

Since ACI has been selling workgroup-based solutions for over ten years, we understand the special licensing needs of applications for 1 to 200 users. Simply distribute 4D client software to every computer on your network. After that, you pay only for the maximum number of concurrently connected users.

Find out why over one million users around the world have made 4D the best-selling client/server database for Mac workgroups. And how it could put your database developers back on healthier, more nutritious diets.

Just give a call to our ACI/PC Connection Help Desk at 1-800-998-0076.
For fast, productive and fully integrated design and development, Powersoft's PowerBuilder® Enterprise and S-Designor for PowerBuilder are an unbeatable team.

PowerBuilder’s powerful technology, open architecture and scalable environment have made it the proven choice in application development tools. S-Designor’s unmatched ease-of-use and powerful bi-level design method have made it the leading database design tool. And now, with S-Designor for PowerBuilder, a version designed specifically for PowerBuilder, designers and developers have a seamlessly integrated, incredibly robust solution for data modeling and development. For example, you can define extended attributes in a data model and export it to PowerBuilder for enhanced consistency. Plus, with S-Designor, you can define views to further increase data access efficiency. And just point and click to translate the views into query objects for PowerBuilder applications.

PowerBuilder Enterprise and S-Designor for PowerBuilder. Fast and productive. Tightly integrated. An unbeatable combination. Available together at a reduced price for a limited time. For more information, or for free technical seminars in your area, please call Powersoft at 1-800-395-3525.

Powersoft
Building on the power of people.

InfoQuote is Here.

A more intelligent way to get the prices you need from leading systems manufacturers.

See page 51 of this issue for details.

InfoQuote is Here.

InfoWorld is proud to offer you InfoQuote: the smartest, fastest, most convenient ways to get custom price quotes. With the InfoQuote Program, you request custom pricing information through InfoWorld three different ways:

2. The InfoWorld Bulletin Board at (402) 293-0591
3. A Fax-Back Form published weekly in InfoWorld.

You don’t have to bother figuring out exactly whom to call or when or how. And you don’t have to wait.

Very smart. You get the quotes you want from top systems manufacturers, fast, through InfoQuote’s electronic service.

Manufacturers will respond directly to you with your quotation. Just fill out the convenient Fax-Back form, or visit our Web Site or Bulletin Board. See page 51 of this issue for details.
New order-entry system tames a bear of a sales process

Vermont Teddy Bear outgrew its contact manager and needed a database-oriented system — fast

By Cate T. Corcoran

Vermont Teddy Bear Co.’s systems administrator never got much sleep during the holidays, when the company was swamped with orders for its 20-inch dark brown bear. David Trudeau spent the wee hours of every morning purging the company’s database so it could handle the next day’s flood of orders.

The problem was that Vermont Teddy Bear was using a contact-management program instead of an order-entry system. The database couldn’t handle the strain.

Vermont Teddy Bear was putting in — the number of users and the number of records were both too high. Last November, when annual sales hit $20.5 million, up from $1.75 million in 1990, Trudeau knew the company couldn’t make it through the next Valentine’s Day.

So about a year ago, the Shelburne, VT-based company started looking for an off-the-shelf solution it could have running by late January to help ease the crush of the busy Valentine’s Day season. Vermont Teddy Bear wanted a system that would be as flexible as its old one, but more reliable.

BARLEY ADEQUATE. The old installation consisted of Telemagic — a contact manager, running on diskless DOS PCs connected to a PC-based server running Novell Inc.’s NetWare 3.12. Vermont Teddy Bear programmers could add, move, and change fields at will, which was convenient when the quickly growing company created new products or needed to expand a field to accommodate longer addresses. The fields were also free-form, which meant the “bear counselors” — Vermont Teddy Bear’s term for salespeople — could add extensive notes for special orders.

The system’s flexibility made taking orders fast and easy. But because the information in each field was not consistent, the system did not allow company executives to generate reports or analyses of which kinds of bears were being sold to whom. In addition, the database could hold only 35,000 to 40,000 records.

Although the system performed just fine with the usual 20 clerks entering orders, when Vermont Teddy Bear added the 130 temporary employees it needs to take orders during busy seasons, the system slowed down.

The bear counselors often couldn’t tell whether the software was passing momentarily or had crashed. Trudeau says.

To keep the system running, Trudeau would rebuild the database every morning between 12:30 and 4:30. He would hook up a modem connection from home, sleep fitfully for a few hours, and hope the modem connection would hold back the new orders (it never did.). But even after a rebuild, Trudeau sometimes received calls from salespeople at 6:30 a.m. saying the system wasn’t working.

“It was problematic, to say the least,” Trudeau says. “We’d have 50 or 100 people on the phone with customers trying to get orders in, and everything would just kind of stop.”

Each time Trudeau rebuilt the database, he had to put the old records into separate archives, which meant the company couldn’t maintain one unified database. If a customer called in with a question about an old order and didn’t know the date it was taken, a salesperson would have to look through several old databases to find it.

Finally, the system didn’t use space efficiently. A 30-character field, for example, would use 30 characters of memory even if it was blank.

RELIABILITY IN A HURRY. With just two months to select and install a new system, Vermont Teddy Bear hired an order-entry consultant to help it find a new system in a hurry. Trudeau went on a road trip to examine several possibilities but was dismayed to learn that most of the programs on his short list could not be modified, and for the others, each change would cost several thousand dollars. Even vendors willing to modify a field refused to support the product after the modification was made.

“We were getting extremely frustrated,” Trudeau says. “At that point, we were thinking ‘Do we have to write this thing from scratch? We knew we had no time to do it.”

Finally, the company visited Avexxis Corp., an Avon, Conn., VAR, where Trudeau was taken through the standard demonstration to show how fast its software could look up a name. Trudeau asked whether Avexxis could move six programmers to work on the project. No problem, the company said.

“I was convinced it was a scam,” Trudeau says, who by this time had become accustomed to vendors saying they could not meet Vermont Teddy Bear’s needs.

Avexxis convinced Vermont Teddy Bear that it could deliver on the promise. The proof matched the promise, and Trudeau gave Avexxis the go-ahead to build the system on Nov. 30, 1994. The new system was up and running by Jan. 24, just in time for the company’s biggest holiday of the year, Valentine’s Day.

NEW SYSTEMS. As part of the new system, Avexxis replaced the PC server with an HP 9000 Series 800 server that has 256MB of RAM and 8 gigabytes (GB) of mirrored disk space. (Vermont Teddy Bear uses 467 MB.) The server runs a new relational database system as well as Avexxis’ order-entry program, called Catman, which runs on top of a relational database management system called Universe, from VMark Software Inc.

A DOS PC server was too slow to handle Vermont Teddy Bear’s number of users, many of whom access the same product records at the same time, says Avexxis president Frank Hanshaw.

Although Vermont Teddy Bear significantly upgraded its server and software, it retained its inexpensive diskless PCs.

Vermont Teddy Bear decided to use diskless PCs rather than terminals because the building is already wired for a PC network rather than serial connections. In addition, the PCs support widely available programs. Trudeau says Bear counselors can run DOS productivity programs and dial in to the server through a terminal emulation program called Termite.

Eventually, the company will be forced to upgrade to Windows when its DOS programs are no longer supported, but for now the company’s content is with DOS, Trudeau says.

Avexxis can make changes in its products easily due to the design of the Universe database. In Universe, each field is divided from the next by a variable-length marker. The database comes with a data dictionary designed to create reports, which Avexxis has modified so programmers can use it to change fields as well. To add a field, Avexxis programmers tell the data dictionary that, for example, the sixth record in each file will be for phone numbers. The data dictionary also defines where the field appears on screen, how wide it is, what kind of data it contains, and what colors it uses. And Universe doesn’t waste space. If there is no delimiter where a field should be, Universe assumes it is empty.

Vermont Teddy Bear’s new system now has address links to 7 million names and has a field added to each record for automatic order-entry data.

SWEET DREAMS. With another holiday season approaching, the new system has addressed all the problems Vermont Teddy Bear was experiencing with its old system. Bear counselors can call up customers’ histories from a database of 1.2 million names with a response time of less than 1 second. Reporting has also improved vastly: Now the company knows exactly how many of each kind of bear it is selling and to whom.

Other important and unexpected benefits have come with the new system. The company’s accounting department is able to tell whether a particular radio spot brought in the desired number of customers, for example.

A credit-card validation feature determines whether a credit-card number has been typed in correctly, and credit-card authorizations can be approved in just 2 seconds. The old system offered neither feature, and salespeople would have to call back customers if cards were declined; a process that could take days.

Other improvements involve links to other departments. Orders are sent electronically to the company’s warehouse, which can automatically send a laser printer that prints them in script so they look handwritten. Previously, the company employed 2 to 40 people to write the cards by hand.

Now the shipping department can get a list of the orders that need to be processed and send them to a office machine that prints the addresses on a given day. Previously, orders were printed immediately after being taken and there was no automatic or advance scheduling.

The shipping department also uses the ZIP code information on the order to automatically route package to delivery services as they come off the assembly line.

Vermont Teddy Bear is installing an inventory system, which will be linked to the order-entry system. As soon as a salesperson takes an order for a 20-inch dark brown bear, inventory will be tracked so salespeople know what is available and inventory employees can do a better job of stocking supplies.

For Vermont Teddy Bear, the new system was a necessity, requiring little justification to management. The new system is much more reliable than the old one. It doesn’t slow down at crucial moments, and now David Trudeau is getting 8 hours of sleep per night.

Cate T. Corcoran is a freelance writer in San Francisco.
Network keeps your business up and running, even when you're not.

SunSpectrum™ system support. It's for anyone who's concerned about the fate of their mission-critical networked systems. We're the only support team that's 100% committed to UNIX® client/server computing. In fact, we support over half a million systems worldwide. With SunService, you'll have a single point of contact around the world, and multi-vendor support at your disposal. Not to mention the comfort of knowing that SunService is ISO 9001 certified. It's all part of the full range of services we offer. For the nearest SunService sales office or reseller, call us at 1-800-821-4643. Or contact us on the Internet at http://www.sun.com/sunservice Have a good evening.
Big screen test, take 10

Generous displays are no longer just for graphics professionals. In a world of Windows and the Web, they play an important supporting role for business users. Ten 17-inch hopefuls vie for a desktop part.

At the movies, there's a lot you shouldn't see on the screen — the boom mike, the director, Dustin Hoffman's lifts. But with monitors, the more you see, the better: You want spreadsheet columns to end in easy-to-find sums; the control palettes in your graphics program shouldn't obscure your flowchart for want of real estate; and cutting and pasting is easier if you can see your source and destination documents simultaneously.

On top of it all, the promises of the not-too-distant future — World Wide Web access from every desktop, broad availability of sophisticated multimedia desktop business applications, the propagation of on-line newspapers — will only increase your need for wide open spaces.

When it comes to providing room to roam today, 17-inch monitors fit the bill. They let you easily work with multiple windows simultaneously; display a ledger sheet's worth of data per screen, and are generally easy on the eyes. It's true, they're not exactly streamlined — even the skinniest models we've seen are, shall we say, statuesque. But unlike your average 21-inch heavyweight, a 17-inch unit doesn't require you to knock out a wall as part of its standard installation routine.

These simple but important benefits have prompted the market to respond. According to Jack Roberts, director and principal analyst for graphics and displays at Dataquest Inc., in San Jose, Calif., the growth rate in sales of 17-inch units increased 42 percent in 1994 — and again this year by about the same amount.

A WIN-WIN SITUATION. "Windows changed everything," Roberts says. "Look at what you put up with in a monitor five years ago." Indeed, for most users of desktop systems, the quaint charms of non-WYSIWYG CGA and character-mapped displays have faded permanently into the foggy mists of memory. So much for Forever Amber.

Few would disagree that it was Windows that — by transforming GUIs from a research center novelty into a permanent office fixture — stimulated the emergence of large-screen monitors. And now Microsoft Corp. is moving to advance Windows' role from that of simply encouraging the use of large monitors to thoroughly supporting them through Plug and Play. Plug and Play, no longer simply an idiom but a strategy, should ultimately provide for the configuration of peripherals (including monitors) with virtually no user intervention.

As Plug and Play exists today, it actually encompasses two approaches to the problem of configuring monitor timings. At the first level is Windows 95's monitor registration scheme, whereby a monitor's characteristics are specified within the operating system. If your monitor is...
registered, you can set it to function at its optimal resolution and refresh rate by simply selecting its name from a registration list.

More advanced and truly hands-off Plug and Play centers on VESA's Display Data Channel (DDC) specifications. DDC supports autoconfiguration by providing for direct communication among monitor, video card, and operating system. Full DDC functionality requires DDC support by all components. Support for DDC is evolving. As for Win95's current registration scheme, Roberts says it's underdeveloped.

"Microsoft was naïve about the tremendous number of monitors out there," Roberts says. "If your monitor's not in the registration list, and you have to figure out which registered monitor it's similar to, you're not gaining much ease of use from having to set parameters individually."

So, perhaps until DDC is widely implemented, "we're still stuck on the bridge to true Plug and Play," Roberts adds.

**THE SHOW GOES ON.** Monitor manufacturers are moving forward with their support for DDC Plug and Play. Indeed, of the 10 monitors we tested, seven are DDC Plug and Play compliant.

Several models throw in a number of value-added bells and whistles as well, including color-calibration software (see story page 84) and display utilities for making adjustments via the mouse and keyboard. And, as environmental standards have evolved, most manufacturers have responded by building monitors that comply with emissions standards, such as MPR II, and other environmental specifications, such as Energy Star.

One thing that hasn't shifted dramatically, however, is price. According to Datapoint, factory prices have declined by only $125 in the past 10 years. Roberts says that's partly the nature of the beast—improvements in monitors usually suggest larger size and consequently larger materials costs. And erratic pricing conditions for monitors have resulted from the strong yen and several Japanese manufacturers' relocation of their production facilities into Southeast Asia.

It appears that the fluctuations we've seen this year should abate in 1996, resulting in at least more predictable pricing for 17-inch monitors, if not dramatically lower prices.

**TAKING DIRECTIONS.** Although larger monitors haven't moved a whole lot closer to affordability during the past two years, their controls at least have inched forward in ease of use.

Michael Sigl, systems manager at Seattle-based Safeco Insurance Co. of America—which supports 4,000 monitors in the organization—agrees that over the years, "controls have definitely improved." Still, Sigl says, when it comes to his purchasing decisions, "controls are not the make-or-break factor. They just shouldn't be easy for users to accidentally bump into."

In our testing, we found that some models seemed to have too many knobs and buttons. Roberts says some manufacturers have been guilty of overkill—such as the stereo manufacturers a few years ago. With all the available controls, support could possibly be a headache. "If you don't support a staff of graphics professionals, you may want to consider whether a particular monitor's abundance of controls will be a bless or a curse."

Nokia Display Products Inc.'s vice president of marketing and sales, Mahyar Motrigi, says, "The Holy Grail of PC systems is that they should be as easy to use as a toaster." But for now, some monitors are still up there with the microwave ovens.

**CASTING OFF.** If you've decided that moving up from 14-inch monitors would help make your trouper better performers, you should weigh your exact needs. At current prices, 17-inch monitors are still near the premium end of the spectrum, and 15-inch models do the job just as well. (The market for 17-inch monitors is still much smaller than for their 15-inch cousins. Last year 17-inch models held 15 percent of the market worldwide; this year they have 18 percent, and next year they are projected to have 25 percent.)

Also, consider whether the footprint issue seriously. If and when space-saving flat-panel displays take the reins from CRTs—which some observers speculate will happen within five years—space-hogging displays will be as anachronistic as command-line interfaces seem today. But for now, CRTs still rule the roost; before retrofitting with 17-inch models, make sure your users have enough room for them.

Many enterprises, including Safeco Insurance, have weighed the costs and decided that 17-inch monitors are indeed a good investment. Safeco is currently buying almost exclusively 17-inch monitors. As Sigl puts it, "We're very sensitive to buying the right kind of products. Two years ago we paid a premium for 17-inch monitors, and we expect to keep them. With a 17-inch monitor, as with a Pentium, we get a longer return on investment."

**A guide to this comparison**

A monitor is as integral to today's office as the fountain pen was 50 years ago. To support productivity, any monitor needs to display images clearly and crisply and be easy to use as well. Seventeen-inch monitors extend users' capabilities by supporting the display of multiple windows simultaneously; they also accommodate more spreadsheet columns, more drawing and designing work space, and bigger views of World Wide Web pages than their 14- and 15-inch counterparts. All the monitors we looked at provide an acceptable level of display quality. There are also a couple of high-quality standouts—a couple that tend toward mediocrity in performance.

The superstars emerging from our comparison are Mitsubishi Electronics America Inc.'s Diamond Pro 177X and the Flexscan F2-17EX from Nanao USA Corp., both of which earned a Hot Pick. In our testing, the Diamond Pro proved itself the hands-down champion in image quality and text clarity. The Flexscan, while delivering rich and saturated colors, distinguished itself with a unique, thoughtfully designed control interface that makes it easier to adjust than any other monitor we've seen. Following these two talents, the competition was tight. All our runners-up performed well.

**Results at a glance**

<table>
<thead>
<tr>
<th>The Score</th>
<th>Mitsubishi Diamond Pro 177X</th>
<th>Nanao FlexScan F2-17EX</th>
<th>ViewSonic 1775</th>
<th>NEC Multiscan XP17</th>
<th>Samsung SyncMaster 17GSL</th>
<th>Sony Multiscan 17se</th>
<th>MAG InnoVision MXP17</th>
<th>Tatum CM-17MKR</th>
<th>Hyundai DeluxeScan 17 Pro</th>
</tr>
</thead>
<tbody>
<tr>
<td>8.0</td>
<td>8.0</td>
<td>7.9</td>
<td>7.8</td>
<td>7.5</td>
<td>7.4</td>
<td>7.3</td>
<td>7.1</td>
<td>6.7</td>
<td>6.5</td>
</tr>
</tbody>
</table>

**O84 Seeing things as they really are:** Hey! That bottom line's supposed to look black, not red! Color calibration tools may help.

**O84 Up to spec:** Our specification chart lets you assess each manufacturer's implementatation at a glance.

**O66 A monitor is not a toy:** It's a technology—complete with jargon. We present a vocabulary list.

**Contents**

76 Report Card
80 How we tested
80 Setup and control features
82 Compatibility options
84 Calibrate the moments of your life
84 Features and specifications
86 Glossary

**RELATED ARTICLES**

- Oct. 23, page 38 NCE's Plug and Play monitors talk back to OS
- Last month NEC introduced more monitors that take full advantage of the Plug and Play capabilities built into Windows 95. We fill you in on the details.
- Aug. 14, page 38 Qume offers active matrix, stand-alone LCD color flat panel
- Only a handful of companies currently offer stand-alone, active matrix LCD color flat panel displays for desktop systems. Qume Inc. joins the cadre.
- Sept. 19, 1994, page 37 Monitors will soon offer easier setup
- In 1994, the Video Electronics Standards Association finalized the DDC specification, a standard designed to ease monitor setup for users. Find out what makes the spec tick.
## PRODUCT COMPARISON

### 17-inch monitors

<table>
<thead>
<tr>
<th>Weighting</th>
<th>MAG Inno/Vision NMP175</th>
<th>Mitsubishi Diamond Pro 17TX</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hyndai DeluxScan 17 Pro</td>
<td>Hybrid Electronics America</td>
<td>Cypress, Calif.</td>
</tr>
<tr>
<td>(800) 223-8000</td>
<td>(800) 843-2515</td>
<td>(800) 843-3535</td>
</tr>
<tr>
<td>Fax (408) 252-8146</td>
<td>Fax (744) 751-5522</td>
<td>Fax (744) 236-0453</td>
</tr>
</tbody>
</table>

### Performance

#### Setup and usability

<table>
<thead>
<tr>
<th>Score</th>
<th>Rating</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>200</td>
<td><strong>Good</strong></td>
<td>125.00</td>
</tr>
</tbody>
</table>

Like the Multiscan and Tatung, the DeluxScan doesn't have an on-screen control-menu system. All adjustments, including contrast and brightness, are made via digital controls, with results showing on-screen right away; settings are preserved for later, automatic recall after power-down. A bank of LEDs indicates which control is being adjusted. That's helpful, but the positioning of these LEDs is not — they look like they should map to the control buttons underneath them, but they don't. Still, once you understood the DeluxScan's design, setup went quickly and smoothly.

#### Display quality

<table>
<thead>
<tr>
<th>Score</th>
<th>Rating</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>250</td>
<td><strong>Good</strong></td>
<td>156.25</td>
</tr>
</tbody>
</table>

Our panel of judges found the DeluxScan's display quality to be acceptable. However, it was not as impressive as some of the competitors. In color balance and rest clarity, it ranked among the lowest contenders (along with the Tatung). The DeluxScan certainly won't paint you to behold — but neither will it dazzle.

#### Design

<table>
<thead>
<tr>
<th>Score</th>
<th>Rating</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>150</td>
<td><strong>Very Good</strong></td>
<td>112.50</td>
</tr>
</tbody>
</table>

The midsize DeluxScan is one of only three monitors we saw (with the MAG and the Multisync) that ships with BNC, D-sub, and Macintosh connectors. The DeluxScan's physical layout is very solid, and we had no problems swiveling it; but we did find it difficult to tilt.

### Support and pricing

#### Documentation

<table>
<thead>
<tr>
<th>Score</th>
<th>Rating</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>75</td>
<td><strong>Poor</strong></td>
<td>18.75</td>
</tr>
</tbody>
</table>

We found ourselves scratching our heads trying to understand the DeluxScan's poorly written and confusing documentation. Its many useless diagrams reminded us of badly drawn road maps. Also, the documentation lacks a troubleshooting section.

#### Support policies

<table>
<thead>
<tr>
<th>Score</th>
<th>Rating</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
<td><strong>Excellent</strong></td>
<td>75.00</td>
</tr>
</tbody>
</table>

Support for the DeluxScan is as follows: Hyundai covers the unit with a two-year warranty (parts and labor) and offers free, unlimited phone support. Support is available weekdays from 8 a.m. to 5 p.m. Pacific time. Twenty-four-hour free fax-back service (also toll-free) is available from Hyundai.

#### Technical support

<table>
<thead>
<tr>
<th>Score</th>
<th>Rating</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>75</td>
<td><strong>Poor</strong></td>
<td>18.75</td>
</tr>
</tbody>
</table>

The support staff was easy to reach, but technicians were inept — baffled by our questions and providing ludicrous advice. Once we were told to return the monitor for repair, then we were put on hold, then we were finally given a correct response. And this was our most successful call.

#### Pricing

<table>
<thead>
<tr>
<th>Score</th>
<th>Rating</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>150</td>
<td><strong>Excellent</strong></td>
<td>155.00</td>
</tr>
</tbody>
</table>

At $749, the bargain-priced DeluxScan is the least expensive monitor we evaluated — about $50 less than its closest competitor and $370 less than the Diamond Pro.

### Final score

<table>
<thead>
<tr>
<th>17-inch monitors</th>
<th>Hyndai DeluxScan 17 Pro</th>
<th>MAG Inno/Vision NMP175</th>
<th>Mitsubishi Diamond Pro 17TX</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weighting</td>
<td>Hyndai Electronics America</td>
<td>Hybrid Electronics America</td>
<td>Cypress, Calif.</td>
</tr>
<tr>
<td>(800) 223-8000</td>
<td>(800) 843-2515</td>
<td>(800) 843-3535</td>
<td></td>
</tr>
<tr>
<td>Fax (408) 252-8146</td>
<td>Fax (744) 751-5522</td>
<td>Fax (744) 236-0453</td>
<td></td>
</tr>
<tr>
<td>World Wide Web:</td>
<td>World Wide Web:</td>
<td>World Wide Web:</td>
<td></td>
</tr>
<tr>
<td><a href="http://www.he.com">http://www.he.com</a></td>
<td><a href="http://www.magnmovision.com">http://www.magnmovision.com</a></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
PRODUCT COMPARISON

Nanao FlexScan F2-17EX

Nanao USA Corp. 
Riverview, Calif. 
(800) 800-2802 
Fax (313) 530-1670
World Wide Web: http://www.travelbee.com/nanao/

Very Good // 150.00

The FlexScan's construction is very high quality. The unit includes, built-in BNC and D-sub connections. The monitor is not as compact as the thin ViewSonic, but we appreciated the fact that we could both tilt and swivel the FlexScan with ease.

Nec MultiSync XP17

NEC Technologies Inc. 
Wood Dale, Ill. 
(508) 364-8000
World Wide Web: http://www.nec.com

Good // 150.00

The MultiSync's construction is of high quality. The unit includes, built-in BNC and D-sub connections. The monitor is not as compact as the thin ViewSonic, but we appreciated the fact that we could both tilt and swivel the FlexScan with ease.

Nokia 447W

Nokia Display Products Inc. 
Sausalito, Calif. 
(415) 337-4214
Fax: (415) 331-0242
Internet: Email: synokia@nokia.com

Very Good // 125.00

The Nokia is in the running with the MultiSync for sharpness of panel design — it's got just four simple buttons for navigating its strong on-screen menus and making selections. The Nokia provides a healthy selection of options. Overall, we had no problems with the setup. Two aspects of the unit bothered us, however. First, as with the ViewSonic, we had to enter on the outer menu to adjust brightness and contrast. Worse, after making adjustments, we had to wait through a time-out (as long as 10 seconds) before regaining control of the monitor. (Nokia says there's a work-around for this.)

Samsung SyncMaster 17 GLE2

Samsung Electronics America 
Ridgefield Park, N.J. 
(201) 229-4000
Fax (201) 229-2230
World Wide Web: http://www.samsung.com

Good // 150.00

The SyncMaster's design is a happy marriage of hardware and software. It was easy to try first select the feature sets we wanted to adjust (for example, position, size, geometry, and color) using on-panel buttons, then to define our specific settings using the resulting menus. What's not immediately obvious is that the control buttons involve multiple feature supersets, depending on how many you press them. Still, setup went quickly and easily overall. Like those of the Diamond Pro, the SyncMaster's buttons are located on a handy drop-down panel.

A HAPPY MEDIUM

Seventeen inches could be the sweet spot for CRT displays.

First of all, unlike some smaller monitors, a 17-inch monitor's screen is roomy enough to comfortably seat a family of several windows and to display a good portion of a large spreadsheet.

Secondly, if you're debating whether to go with an even larger unit for general business use, consider that 17-inch monitors might have an edge in comfort:

Depending on how close you sit to your display, a 21-inch model could invoke more neck movement — which would make repetitive stress injury just as wrenching.

Good // 112.50

With a street price of $900, the SyncMaster is the last fourth least expensive monitor we looked at.

8.0

7.8

7.4

7.5

HAPPY MEDIUM

Table: 17-inch Monitors

<table>
<thead>
<tr>
<th>Monitor</th>
<th>Rating</th>
<th>Score in points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Samsung SyncMaster 17 GLE2</td>
<td>Good</td>
<td>150.00</td>
</tr>
<tr>
<td>Nokia 447W</td>
<td>Very Good</td>
<td>125.00</td>
</tr>
<tr>
<td>Nec MultiSync XP17</td>
<td>Good</td>
<td>150.00</td>
</tr>
<tr>
<td>Nanao FlexScan F2-17EX</td>
<td>Excellent</td>
<td>200.00</td>
</tr>
</tbody>
</table>

Guide:

<table>
<thead>
<tr>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Excellent</td>
</tr>
<tr>
<td>Good</td>
</tr>
<tr>
<td>Very Good</td>
</tr>
</tbody>
</table>

17-inch Monitors

Nanao USA Corp. 
Riverview, Calif. 
(800) 800-2802 
Fax (313) 530-1670
World Wide Web: http://www.travelbee.com/nanao/

Very Good // 200.00

Its unique design made the FlexScan the easiest monitor to set up. Navigating the comprehensive ScreenManager menu was as simple as dialing a nifty, ergonomic adjustment knob, and initializing a setting was just as painless — and we had only to press a single, accessible button. We appreciated the fact that the ScreenManager's hierarchical menu system gave us a bird's-eye view of available options. The FlexScan's feature set is complete, and the monitor is delivered with Colorific calibration software in the box. Advanced color control features, including RGB Gain and RGB Cut Off, are added places.

Nec MultiSync XP17

NEC Technologies Inc. 
Wood Dale, Ill. 
(508) 364-8000
World Wide Web: http://www.nec.com

Good // 150.00

We found the MultiSync's controls to be complete yet comprehensible. The easily navigable OnScreenManager menu system handled adjustments with a touch of the buttons located on the monitor's front panel. The Image Manager icon-based utility extended our control, allowing us to save settings for later recall (though the mechanism to do this could be more intuitively designed). The MultiSync also provides a range of helpful, additional software utilities — including Resynchronization Manager (on Mac) for changing resolutions on the fly. Colorific is delivered standard with the unit.

Nokia 447W

Nokia Display Products Inc. 
Sausalito, Calif. 
(415) 337-4214
Fax: (415) 331-0242
Internet: Email: synokia@nokia.com

Very Good // 125.00

The Nokia is in the running with the MultiSync for sharpness of panel design — it's got just four simple buttons for navigating its strong on-screen menus and making selections. The Nokia provides a healthy selection of options. Overall, we had no problems with the setup. Two aspects of the unit bothered us, however. First, as with the ViewSonic, we had to enter on the outer menu to adjust brightness and contrast. Worse, after making adjustments, we had to wait through a time-out (as long as 10 seconds) before regaining control of the monitor. (Nokia says there's a work-around for this.)

Samsung SyncMaster 17 GLE2

Samsung Electronics America 
Ridgefield Park, N.J. 
(201) 229-4000
Fax (201) 229-2230
World Wide Web: http://www.samsung.com

Good // 150.00

The SyncMaster's design is a happy marriage of hardware and software. It was easy to try first select the feature sets we wanted to adjust (for example, position, size, geometry, and color) using on-panel buttons, then to define our specific settings using the resulting menus. What's not immediately obvious is that the control buttons involve multiple feature supersets, depending on how many you press them. Still, setup went quickly and easily overall. Like those of the Diamond Pro, the SyncMaster's buttons are located on a handy drop-down panel.

A HAPPY MEDIUM

Seventeen inches could be the sweet spot for CRT displays.

First of all, unlike some smaller monitors, a 17-inch monitor's screen is roomy enough to comfortably seat a family of several windows and to display a good portion of a large spreadsheet.

Secondly, if you're debating whether to go with an even larger unit for general business use, consider that 17-inch monitors might have an edge in comfort:

Depending on how close you sit to your display, a 21-inch model could invoke more neck movement — which would make repetitive stress injury just as wrenching.

Good // 112.50

With a street price of $900, the SyncMaster is the last fourth least expensive monitor we looked at.
### 17-inch monitors

<table>
<thead>
<tr>
<th>Weighting</th>
<th>Sony Multiscan 17e</th>
<th>Tatung CM-17MKR</th>
<th>ViewSonic 17PS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sony Electronics Inc.</td>
<td>Tatung Co. of America Inc.</td>
<td>ViewSonic Corp.</td>
<td></td>
</tr>
<tr>
<td>San Jose, Calif.</td>
<td>Long Beach, Calif.</td>
<td>Walnut, Calif.</td>
<td></td>
</tr>
<tr>
<td>(800) 352-7669</td>
<td>(800) 367-2105</td>
<td>(800) 869-7976</td>
<td></td>
</tr>
<tr>
<td>fax (404) 955-5371</td>
<td>fax (310) 637-8484</td>
<td>fax (909) 869-7958</td>
<td></td>
</tr>
</tbody>
</table>

#### Performance

**Setup and usability**

<table>
<thead>
<tr>
<th>200</th>
<th><strong>Very Good</strong> 175.00</th>
<th><strong>Good</strong> 100.00</th>
<th><strong>Very Good</strong> 150.00</th>
</tr>
</thead>
</table>
| The simplicity of the Multiscan's design is heightened by a lack of on-screen controls. Although lean- 
| ness is refreshing, cryptic labeling makes the Multiscan a challenge to use without the documentation; but once we learned to drive it, setup went easily and quickly. However, we had to be quick because, annoyingly, the adjustment mode expired after only 10 seconds. That made for some back- 
| tracking when we ran out of time during setup. The Multiscan also can take to the chase when it comes to controls, offering just a few extras, such as horizontal 
| and vertical convergence, in addition to the basics. |

**Display quality**

<table>
<thead>
<tr>
<th>250</th>
<th><strong>Very Good</strong> 187.50</th>
<th><strong>Good</strong> 97.00</th>
<th><strong>Very Good</strong> 187.50</th>
</tr>
</thead>
</table>
| Sony's Multiscan was, in the estimation of our panel of judges, a very good performer among a 
| very competitive roster of monitors. In the final analysis, the Multiscan stood among the top con- 
| tenders in our comparison — not only in image quality but also in test legibility. |

**Design**

<table>
<thead>
<tr>
<th>150</th>
<th><strong>Very Good</strong> 93.75</th>
<th><strong>Very Good</strong> 187.50</th>
<th><strong>Very Good</strong> 112.50</th>
</tr>
</thead>
</table>
| The Multiscan provides BNC connection only. 
| Construction is sturdy — the base is almost as wide as the monitor. It's not as bulky as the MAG, 
| but neither is it as compact as the ViewSonic. Unlike several others, the Multiscan was easier to 
| swivel than to tilt. |

#### Support and pricing

**Documentation**

<table>
<thead>
<tr>
<th>75</th>
<th><strong>Very Good</strong> 60.25</th>
<th><strong>Satisfactory</strong> 37.50</th>
<th><strong>Very Good</strong> 60.25</th>
</tr>
</thead>
</table>
| The troubleshooting aids, helpful diagrams, and technical specifications included in the Multiscan 
| documentation provide plenty of assistance. Diagrams are large and labeled distinctively. We spe- 
| cially liked the detailed description of the control panel and how to use it. |

**Support policies**

<table>
<thead>
<tr>
<th>100</th>
<th><strong>Excellent</strong> 100.00</th>
<th><strong>Excellent</strong> 100.00</th>
<th><strong>Excellent</strong> 100.00</th>
</tr>
</thead>
</table>
| The Multiscan 17e is covered by a three-year war- 
| ranty on parts and a two-year warranty on the CRT. 
| Toll-free technical support is available for eight 
| months from the date of purchase. Fax (a toll call) 
| and BBS support are also available. Phone support 
| hours are 8 a.m. to 5 p.m. Pacific time on Monday 
| through Thursday and 8 a.m. to 3 p.m. Pacific time 
| on Friday. |

**Technical support**

<table>
<thead>
<tr>
<th>75</th>
<th><strong>Very Good</strong> 75.00</th>
<th><strong>Satisfactory</strong> 37.50</th>
<th><strong>Excellent</strong> 75.00</th>
</tr>
</thead>
</table>
| We loved the quality of Sony's support. Technicians 
| were extremely personable and friendly, as well as 
| well versed in the use of their product. They stepped 
| us through the answers to our questions (notably 
| our query about color temperature) with courtesy 
| and thoroughness. |

**Pricing**

<table>
<thead>
<tr>
<th>(based on street prices)</th>
<th><strong>Very Good</strong> 93.75</th>
<th><strong>Satisfactory</strong> 75.00</th>
<th><strong>Very Good</strong> 112.50</th>
</tr>
</thead>
</table>
| The Multiscan is priced at $1,104. That means 
| Sony's offering falls about $15 short of the highest 
| priced monitor we looked at — Mitsubishi's 
| Diamond Pro. |

#### Final score

<table>
<thead>
<tr>
<th>7.3</th>
<th>6.7</th>
<th>7.9</th>
</tr>
</thead>
</table>

**PRODUCT COMPARISON**
Y ou've got PCs in Los Angeles, New York, London, and dozens of other locations around the world. Portable computers running around all hours.

And who knows how many network operating systems out there on your WAN.

If you want to inventory software and hardware, as well as distribute and meter

software, you have two alternatives.

You can do it manually, machine by machine, site by site. Or you can get your hands on Norton Administrator for Networks 2.0™

Norton Administrator for Networks: The Easiest Way To Manage Every Desktop On Your WAN.

The new Norton Administrator for Networks 2.0 is the only real-world solution for automating inventory, distribution, and metering across a WAN.

Why? Because Norton Administrator for Networks is the only network-independent solution. And no other solution offers a suite of more highly integrated, feature-rich applications designed for large networks – not even Microsoft's SMS. In fact, Microsoft's SMS doesn't even offer metering. And unlike SMS, with Norton Administrator for Networks, you aren't tied to Windows NT or SQL Server.

With Norton Administrator for Networks, you can track hardware and software inventory around the globe. You can even inventory computers that aren’t connected to your network. Even better, you can run the whole thing as a Windows background session, so your users will never feel a thing.

There's Only One Way To Inventory, Distribute and Meter Across A WAN With Any Of These.

Norton Administrator for Networks 2.0

Operating System Support
Supports Novell, LAN Manager, Windows NT Server, LAN Server, Vines, Pathworks, and AppleTalk and is compatible with HP OpenView for Windows. Also supports Windows 3.1, Windows NT, Windows 95, Windows NT, DOS, OS/2 and MAC OS.

Automatic Roll-Up
Automatic roll-up of inventory data, distribution and metering logs across the entire WAN.

Remote Access Management
Integrates with Norton pathworks to provide remote access to remote workstations from an inventory screen.

Metering
Restrict or permit metering of applications and users.

Desktop and Server Distribution
Distribution to user groups, workstations, servers, and multiple sites over the WAN.

S y m a n t e c .

Call us at 1-800-488-9914 ext. 9A87 and ask for our White Paper "Reducing the Cost of Enterprise Computing with Inventory, Distribution and Metering Tools."
HOW WE TESTED

The quality of your monitor can determine the quality of your workload. Having to squint at fuzzy text can be annoying and even painful. And you probably have enough demands on your time without being forced to reread the manual every time you want to change your display's contrast. Our test plan focused on display quality, usability, design, and more to provide you with all the information you need to make an informed choice when buying a 17-inch monitor.

The DellScan's LED bank shows you what you're adjusting, but it's awkwardly placed.

We requested from each participating vendor a 17-inch monitor that is capable of displaying a minimum of 1,280 by 1,024 pixels with a vertical refresh rate of at least 72 hertz.

To rate these monitors, we modified the test plan developed for our July 26, 1993, comparison of 17-inch monitors (page 68) in the following ways.

- Because all the monitors we tested incorporate controls for correcting geometric distortion, we removed our geometric distortion test.
- We did test color fidelity, because our focus was on the general business user, not the prepress professional.

Our test bed consisted of a Dell Computer Corp. Dimension XPS 900 Pentium system with a PCI bus, 16MB of RAM, a 1-gigabyte Enhanced IDE hard drive, and a Diamond Stealth64 Video 3400XL graphics adapter with 4MB of video RAM.

We used a Vopex-16V-H video splitter (courtesy of Network Technologies Inc., Aurora, Ohio, at [216] 562-7070) to connect all 10 monitors to a single system while evaluating display quality.

We configured our system with Microsoft Corp.'s DOS 6.2 and Windows 3.1 for the majority of our tests.

Can you ever have too much control? The MAG's cornucopia of on-panel adjustments is a bit overwhelming.

We wish every monitor we evaluated were as compact as the ViewSonic.

The SyncMaster unites some of the best aspects of hardware and software control. Its drop-down panel is a delight.

PERFORMANCE

Setup and usability

You might want a monitor to be a set-it-and-forget-it type of peripheral, but users often find themselves needing to make small adjustments during the course of a day's work. We designed this category to evaluate how easy it was to both install and adjust the monitors we tested. To help us make adjustments and thus evaluate the friendliness of the monitors' controls, we used the Set Up Display module in Sonera Technologies' DisplayMate for Windows utility (courtesy of Sonera Technologies, Rumson, N.J., [908] 747-6886).

Some of the monitors we reviewed provide the capability (through an additional hardware/software utility) to make adjustments to the monitor settings via the keyboard and mouse. The final scores in this category reflect whether a monitor included this type of setup utility and how well it worked. We tested, but did not score, Windows 95 Plug and Play by connecting the monitor to a completely Plug and Play-compliant system and running the Windows 95 Add/Remove Hardware Wizard. For a satisfactory score, the monitor needed to provide basic controls — contrast, brightness, horizontal and vertical position, horizontal and vertical resizing, and a degauss button. We increased the score if controls were comprehensive, easy to understand, and responsive.

We lowered a unit's score if controls necessary to adjust the monitor were not available or were difficult to reach. We also lowered the score if we had to contact a vendor's support line to get controls to work. We assigned an unacceptable score if we encountered a major problem that we could not recover from or if the monitor could not be set up correctly for running our tests.

Features

Setup and controls

| Vendor | Button controls | Dual controls | Auto-programmed after setup | Recalls optimum timings | On-screen menu adjustable | Contrast and brightness | User can elect to use menu or not | Control via mouse/keyboard | Color calibration available | Other software |
|--------|----------------|---------------|-----------------------------|-------------------------|---------------------------|------------------------|-------------------------------|-----------------------------|---------------------------|-----------------|----------------|
| MAG    | Yes            | Yes           | Yes                        | Yes                     | Yes                       | Yes                    | Yes                           | Yes                         | Yes                       | Yes             | Yes            |
| NEC    | Yes            | Yes           | Yes                        | Yes                     | Yes                       | Yes                    | Yes                           | Yes                         | Yes                       | Yes             | Yes            |
| Samsung| Yes            | Yes           | Yes                        | Yes                     | Yes                       | Yes                    | Yes                           | Yes                         | Yes                       | Yes             | Yes            |

1. For navigating Screen Manager menus and adjusting contrast.
2. The ADC Software utility is available for a fee.
3. Macintosh only.

We wish every monitor we evaluated were as compact as the ViewSonic.

Whether a monitor included this type of setup utility and how well it worked. We tested, but did not score, Windows 95 Plug and Play by connecting the monitor to a completely Plug and Play-compliant system and running the Windows 95 Add/Remove Hardware Wizard. For a satisfactory score, the monitor needed to provide basic controls — contrast, brightness, horizontal and vertical position, horizontal and vertical resizing, and a degauss button. We increased the score if controls were comprehensive, easy to understand, and responsive.

We lowered a unit's score if controls necessary to adjust the monitor were not available or were difficult to reach. We also lowered the score if we had to contact a vendor's support line to get controls to work. We assigned an unacceptable score if we encountered a major problem that we could not recover from or if the monitor could not be set up correctly for running our tests.

Features

Setup and controls

| Vendor | Button controls | Dual controls | Auto-programmed after setup | Recalls optimum timings | On-screen menu adjustable | Contrast and brightness | User can elect to use menu or not | Control via mouse/keyboard | Color calibration available | Other software |
|--------|----------------|---------------|-----------------------------|-------------------------|---------------------------|------------------------|-------------------------------|-----------------------------|---------------------------|-----------------|----------------|
| MAG    | Yes            | Yes           | Yes                        | Yes                     | Yes                       | Yes                    | Yes                           | Yes                         | Yes                       | Yes             | Yes            |
| NEC    | Yes            | Yes           | Yes                        | Yes                     | Yes                       | Yes                    | Yes                           | Yes                         | Yes                       | Yes             | Yes            |
| Samsung| Yes            | Yes           | Yes                        | Yes                     | Yes                       | Yes                    | Yes                           | Yes                         | Yes                       | Yes             | Yes            |

1. For navigating Screen Manager menus and adjusting contrast.
2. The ADC Software utility is available for a fee.
3. Macintosh only.

WEB PITFALLS

If you're designing World Wide Web pages on a 17-inch or larger monitor, Jack Roberts, an analyst for Dataquest Inc., reminds you that not all your customers will be reading the results on such large screens. Just as your company's marketing group needs to consider format and size when creating and placing print ads, so should you design your Web pages with your customers' browsing capabilities (and limitations) in mind. The bottom line: make a dry run on 14-inch and 15-inch monitors, too, before going live over the wire.
Now, every SPARCserver™ system comes bundled with Lotus Notes, the groupware standard. And that means more people can access, track, and share information than ever before. In fact, a single SPARCserver can currently support up to 250 Lotus Notes users. Along with industry-leading scalability, SPARCserver systems give you everything else you need to build a global Lotus Notes infrastructure. They support TCP/IP and SPX protocols, so you can run Lotus Notes applications across Windows, NT, Macintosh, OS/2, and UNIX platforms—and protect your technology investment. You also get the mission-critical reliability that has made SPARC the best-selling RDBMS platform. Find out more at http://www.sun.com or 1-800-786-0785, Ext. 325.

And see how SPARCserver systems and Lotus Notes groupware can take your enterprise network—and your users' productivity—to a whole other level.
PRODUCT COMPARISON

17-INCH MONITORS

Michael Sigl, systems manager at Seattle-based Safeco Insurance Co. of America, says, “All things being equal, we recognize size and ergonomics as important factors in our buying decisions.”

Display quality

A fuzzy or flickery monitor can be more than a nuisance — it can be a genuine health risk, creating eye strain and headaches. We defined two areas of quality for our 10 judges to evaluate: image quality and text quality. In image quality, our judges were asked to identify any problems occurring in brightness, contrast, color richness or fills, or with moire patterning. In text quality, they were instructed to look for problems in fuzziness and focus, especially in the corners.

Using Adobe Systems Inc.’s Photoshop 3.04 for Windows and DisplayMate for Windows, we displayed four different types of images on the monitors: a 24-bit color TIFF image of four tiled photos (each highlighting a different aspect of display, such as color saturation and brightness); four tiled Windows applications; DisplayMate’s master test pattern; and DisplayMate’s dot moire screen. We instructed each of our judges to rate each component on a scale of 1 to 5 (5 being excellent). We tabulated the final scores and ranked each monitor accordingly.

Design

Office real estate isn’t easy to come by, so your monitor should fit easily on your desk. It should be easy to tilt to the ideal viewing angle. It should give you the flexibility to connect to either a PC or a Macintosh. And because you have to stare at it all day, it should ideally be good-looking, too. To score design, we looked at how well the manufacturer addressed connections, dimensions, weight, and base; as well CRT anti-glare and anti-static treatment, overall solidity of construction, and aesthetics.

For a satisfactory score, we required an anti-glare coating and a pivot-and-tilt base. For a good score, the monitor had to be completely compact and have a solid base and a solid control panel. For a very good score, the monitor needed to have a minimum of two input connectors (for example, a BNC and D-sub). We awarded excellent scores to monitors that met all the previous criteria; provided a separate, standard D-sub Macintosh connector in the rear panel, looked good, and were well constructed.

Features

We dedicated points for missing features, poor construction, and a poorly functioning base.

SUPPORT AND PRICING

Documentation

For a satisfactory score, the documentation had to describe the basic operation of the monitor. Useful diagrams, screen shots, glossary, and any special extras raised the score. We lowered a score if a product’s manual was poorly organized, lacked important information, or contained significant errors.

Support policies

For a satisfactory score, a vendor had to offer a one-year parts and labor warranty and unlimited free technical support. We awarded bonus points for money-back guarantees, extended support hours, and a toll-free technical support number. Vendors who provided additional written materials via a fax back service, a private BBS, or CompuServe received half-point bonuses. We subtracted points if a vendor offered no technical support, a limited support period, or dealer-only support.

Technical support

We based technical support scores on the quality of service we received during multiple anonymous calls. We posed typical questions regarding basic use of a monitor, including minor troubleshooting inquiries such as how to adjust color and correct geometric distortion problems. For a satisfactory score, technicians had to give correct answers to our questions in a timely manner. We awarded bonus points if technicians went above and beyond the scope of the original question. We subtracted points for unreturned calls and long waits on hold.

Pricing

In determining the pricing scores, we considered each product’s average street price. We then assigned our rankings based solely on the average street price of each monitor; scores do not reflect the overall value of the units.

Specifically, the pricing score does not take into account the monitors’ performance or the addition of extra features or functionality.

The Diamond Pro’s ergonomic drop-down panel makes it easy to take control.

No menu system and few panel controls make the MultiSync simplicity itself.

The Tatung is tough enough, but its old-fashioned look sent us back in time.
If you want award winning engineering and Pentium technology for under $1000, there's only one way to go.
The ALR Optima SL.

The ALR Optima SL.

This amazing system delivers 75-MHz Pentium® processor power and the latest PCI technology for as little as $995.

And we're not talking about some factory close-out or no-name clone. Packed with PCI Plug 'N' Play local bus technology and fast PCI graphics, this system has the power you need to kick all your favorite applications into high gear, including the very latest from Microsoft® - Windows® 95.

It's the type of performance that you'd expect from ALR, two-time winner of PC Computing's Most Valuable Product award.

The energy efficient ALR OPTIMA SL is available with either a 75-, 90-, or 100-MHz Pentium processor. Choose one of our fully-configured bundled models, and you will be up and running in minutes.

And with the ALR OPTIMA SLs industry leading 5 year/36 month warranty with the first year of on-site service for free*, you can count on this system for years of reliable performance.

The signs are clear. For affordable Pentium technology, there's only one way to go. The ALR way. To get started, call: 1-800-444-4ALR (*x5105)
CALIBRATE THE MOMENTS OF YOUR LIFE

By Patrick Marshall

A MY SCHOOL KID who's ever lost a crayon in the middle of a coloring project knows how difficult color matching can be. And unfortunately for us grownups, getting the right color from a computer monitor can be an even bigger problem.

Sure, it might be easier to lose your Crayolas than your Diamond Pro, but those simple sticks of wax are at least WYSIWYG by nature. Computers, on the other hand, have to be carefully coaxed into producing on-screen images that will approximate the look of final printed output. The problem, in short, is how to get your monitor's output — which is composed of red, green, and blue (RGB) light — to approximate your desired printed output — which will be created by a combination of cyan, magenta, yellow, and black (CMYK) inks. There are various solutions to this tricky problem, each providing different levels of accuracy and exacting a different measure of expense. Some tools depend almost totally on your subjective visual judgment; others implement more sophisticated software or hardware-software combinations. Costs increase accordingly.

TURN ON, TUNE IN. The least expensive fixes are the monitor calibration utilities that come with image editing programs such as Adobe Systems Inc.'s Photoshop and Micrografx Inc.'s Picture Publisher.

These utilities help ensure that you'll get consistent colors and tones in your images from one work session to another — under the same lighting conditions, at least. By running these utilities at all the monitors in your office, you can also get consistent color across workstations. To calibrate your system using such a tool, you manually set your monitor's white point, identify the type of phosphors in your monitor, then use the provided visual cues to adjust gamma value (the brightness value of mid-tone gray scales) and color balance.

Unfortunately, these utilities generally don't address the critical calibration problem: mapping your screen's image to that produced by ink deposited on paper. You're only setting your monitor to match a standard embedded in the utility itself; you have no assurance that your calibrated monitor's colors will match those created by an output device such as a printer.

Accordingly, some graphics programs (including Photoshop) provide utilities that let you manually adjust your printer's use of inks. First, you must visually compare your printer's output to your calibrated monitor's; then you use the utility to adjust ink percentages so they match the picture on the display.

Such adjustments, however, are both tedious and subjective. That's why many users prefer calibration utilities that employ automatic color management schemes. The most popular such utility, Sonnetech Ltd.'s Colorific, is bundled with half a dozen or so of the major brand monitors (including the FlexScan, the Multiscan, the ViewSonic, and the Nokia). Colorific adjusts your monitor to a standard, then creates a device profile that can be used in conjunction with a package such as Eastman Kodak Co.'s Color Management System (KCMS).

The heart of KCMS is an array of "precision transform" files that specify characteristics — such as white point, gamma values, and ink levels — of various input devices (such as scan-

Specifications

17-inch monitors

<table>
<thead>
<tr>
<th>Brand</th>
<th>Model</th>
<th>Price</th>
<th>Screen size (inches)</th>
<th>Color</th>
<th>Resolution (H x V)</th>
<th>Refresh rate</th>
<th>Response time</th>
<th>Speaker output</th>
<th>Ports</th>
<th>Connectors</th>
<th>Weight (in pounds)</th>
<th>Height (in depth)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hyundai</td>
<td>DeltaScan 17 Pro</td>
<td>$899</td>
<td>17.0</td>
<td>1024x768</td>
<td>85 Hz</td>
<td>5 ms</td>
<td>20 dB</td>
<td>500 mW</td>
<td>5</td>
<td>D-sub, BNC</td>
<td>9.9</td>
<td>3.0</td>
</tr>
<tr>
<td>MAG</td>
<td>Innovision M31H</td>
<td>$1,099</td>
<td>17.0</td>
<td>1024x768</td>
<td>85 Hz</td>
<td>5 ms</td>
<td>20 dB</td>
<td>500 mW</td>
<td>5</td>
<td>D-sub, BNC</td>
<td>9.9</td>
<td>3.0</td>
</tr>
<tr>
<td>NEC</td>
<td>MultiSync P197X</td>
<td>$1,199</td>
<td>17.0</td>
<td>1024x768</td>
<td>85 Hz</td>
<td>5 ms</td>
<td>20 dB</td>
<td>500 mW</td>
<td>5</td>
<td>D-sub, BNC</td>
<td>9.9</td>
<td>3.0</td>
</tr>
<tr>
<td>Tatung</td>
<td>CM-17MKR</td>
<td>$1,399</td>
<td>17.0</td>
<td>1024x768</td>
<td>85 Hz</td>
<td>5 ms</td>
<td>20 dB</td>
<td>500 mW</td>
<td>5</td>
<td>D-sub, BNC</td>
<td>9.9</td>
<td>3.0</td>
</tr>
<tr>
<td>Samsung</td>
<td>SyncMaster 176A</td>
<td>$1,199</td>
<td>17.0</td>
<td>1024x768</td>
<td>85 Hz</td>
<td>5 ms</td>
<td>20 dB</td>
<td>500 mW</td>
<td>5</td>
<td>D-sub, BNC</td>
<td>9.9</td>
<td>3.0</td>
</tr>
<tr>
<td>Sony</td>
<td>Multiscan 17Lp</td>
<td>$1,199</td>
<td>17.0</td>
<td>1024x768</td>
<td>85 Hz</td>
<td>5 ms</td>
<td>20 dB</td>
<td>500 mW</td>
<td>5</td>
<td>D-sub, BNC</td>
<td>9.9</td>
<td>3.0</td>
</tr>
<tr>
<td>ViewSonic</td>
<td>ViewSonic</td>
<td>$1,199</td>
<td>17.0</td>
<td>1024x768</td>
<td>85 Hz</td>
<td>5 ms</td>
<td>20 dB</td>
<td>500 mW</td>
<td>5</td>
<td>D-sub, BNC</td>
<td>9.9</td>
<td>3.0</td>
</tr>
</tbody>
</table>

1. Vendor doesn't supply this information.
2. Shadow masks have a dot pitch measurement; aperture grilles have a stripe pitch measurement.
3. The standard and main, for PC and Macintosh support.
4. A/R = antireflective; A/S = antirestig; A/G = antiglare.
5. Standard monitors include contrast, brightness, horizontal/vertical position, horizontal/vertical respire, and degauss.
6. Advanced controls include horizontal/vertical convergence, horizontal/vertical moire, RGB cutoff, vertical linearity, and language select.
7. Geometric distortion controls include pincushion, tilt, trapezoid, parallelgram, and corner distortion.

©INFOWORLD NOVEMBER 20, 1995
Thanks to you, many children will have a brighter future!

Conner would like to take this opportunity to thank the donors and sponsors of the first annual Technology for Youth Charity Golf Tournament, held this November at COMDEX.

Their generous donations and support helped Conner and Gifts in Kind America raise more than half a million dollars worth of computer equipment for groups who provide educational resources to disadvantaged youth.

Through the involvement of these generous members of the high-tech community, we have been able to provide children, throughout the country, with the benefits and advantages of technology—paving the way for a brighter, more productive future.

THANK YOU TO THE FOLLOWING COMPANIES

<table>
<thead>
<tr>
<th>Adaptec</th>
<th>Goldman Sachs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alcoa Memory</td>
<td>IBM</td>
</tr>
<tr>
<td>Atmel</td>
<td>Ideal Hardware</td>
</tr>
<tr>
<td>Bank of America</td>
<td>Ingram Micro</td>
</tr>
<tr>
<td>Borland</td>
<td>International Data Corporation</td>
</tr>
<tr>
<td>Callaway Golf</td>
<td>Kaifa</td>
</tr>
<tr>
<td>Cirrus Logic</td>
<td>Lotus</td>
</tr>
<tr>
<td>CMI</td>
<td>Meadows Design Group</td>
</tr>
<tr>
<td>CMP Channel Group</td>
<td>Merisel</td>
</tr>
<tr>
<td>Compaq</td>
<td>Microsoft</td>
</tr>
<tr>
<td>Computer Shopper</td>
<td>Motorola</td>
</tr>
<tr>
<td>EMC</td>
<td>Nationwide Speakers Bureau</td>
</tr>
<tr>
<td>ESPI Video</td>
<td>Orbit Semiconductor</td>
</tr>
<tr>
<td></td>
<td>Packard Bell</td>
</tr>
<tr>
<td></td>
<td>PC Week</td>
</tr>
<tr>
<td></td>
<td>Phase Metrics</td>
</tr>
<tr>
<td></td>
<td>Pioneer-Standard Electronics, Inc.</td>
</tr>
<tr>
<td></td>
<td>Price Waterhouse</td>
</tr>
<tr>
<td></td>
<td>Read-Rite</td>
</tr>
<tr>
<td></td>
<td>Software Publishing Company</td>
</tr>
<tr>
<td></td>
<td>Symbios Logic</td>
</tr>
<tr>
<td></td>
<td>Tech Data</td>
</tr>
<tr>
<td></td>
<td>Tenex Data</td>
</tr>
<tr>
<td></td>
<td>Transphere International</td>
</tr>
</tbody>
</table>

Conner peripherals World Headquarters, 3081 Zanker Road, San Jose, CA 95134. Tel: 408 456 4500. © 1995 Conner Peripherals, Inc. All trade names or registered trademarks are the property of their respective owners.

PRODUCT COMPARISON

Glossary

- Access bus: For monitors, allows bidirectional communication between compatible systems and displays, allowing on-the-fly installation. Also supports daisy-chaining, to reduce cable snarl.

- Aperture grille: A type of monitor screen made up of thin vertical wires. Said to be less susceptible to distorting than iron shadow masks.


- A/R: Anti-reflection treatment. A high-quality treatment, but touching is a no-no, and wipe downs should be made only with recommended cleaners.

- A/S: Antistatic screen treatment; prevents shock and helps keep the screen free of dust.

- BNC-D-sub-Select: Feature that provides automatic switching between simultaneous BNC and D-sub connections; allows two monitors to be connected to a single system at the same time.

- Color temperature: Selection that determines the overall color cast of a display. 9,300 degrees Kelvin is good in environments lit by fluorescent lights, 6,500 degrees Kelvin is preferable under incandescent light.

- Geometric distortion controls: Let you adjust irregularities in the shape of your monitor's image, including tilt, trapezoid, paralellogram, and pinching/screen. On most monitors, you need only make such adjustments once per resolution setting.

- DDC Plug and Play compliant: A DDC Plug and Play-compliant monitor can transmit an identifier to the system's video card, after which the card's monitors' maximum refresh rates are synchronized and video output is optimized. This is to work both the system and the monitor must be DDC compliant.

- Degauss: A feature that disperses the stray magnetic field that can interfere with a monitor's image clarity. Avoid pressing the degauss button multiple times in succession; it need only be pressed once.

- Dot pitch/line pitch: The distance (diagonal) on shadow mask, horizontal on aperture grille) between two phosphor dots of the same color (measured in millimeters). A crisper image results from smaller pitch. A pitch of 0.27mm or 0.28mm should be sufficient for general business applications running in 1,024 by 768 mode or lower.

- EPA Energy Star: Monitors that comply with this standard consume less electricity by powering down when not in use.

- EMI: Electromagnetic interference.

- Flat-square tube: A tube designed with some curvature at the corners. Compare with vertically flat tubes (such as Trinitron), whose screens curve at the sides (and which are

ers) and various output devices (such as printers). The idea is that once you've properly calibrated your monitor with Colorific and selected the appropriate input and output transform files in KCMOS, you should be able to count on having your screen output look like the images that you see in — and having your printed output look like what's on your screen. On Macintoshes, a color management system similar to KCMOS is built right into the operating system, in the form of ColorSync.

- Some-contrasting: Software-only calibration solutions have a fundamental problem: They depend on users' subjective perceptions of brightness and color, and these perceptions can vary widely — especially with changing environmental conditions. Thus, if you absolutely, positively must have an accurate match between on-screen and printed color, you're going to have to turn to a hardware calibration system. Simpler, old-style hardware calibration devices measure the brightness of a monitor's RGB channels one at a time and then map these readings to the intensity requirements specified by the monitor's phosphors.

- Newer, more accurate calibration devices — such as NEC's ColorProof and Light Source Computer Images Inc.'s Colortron — use a tristimulus colorimeter. Tristimulus systems are more accurate than older style hardware devices because they measure the actual levels of red, green, and blue emitted by a monitor's phosphors; they can thus recognize and accommodate the inevitable phosphor drift that results from aging.

- ColorProof — an optional tristimulus device that works with NEC's XP series of monitors — measures a monitor's gamma, white point, and color qualities and automatically generates a monitor profile for use by your color management system (generally either KCMOS on PCs or ColorSync on the Mac). Light Source's Colortron is similar to ColorProof — and it can also function as a densitometer and a spectrophotometer, for measuring and characterizing color outside the computer system. You could use Colortron to measure a specific green that appears in a magazine layout and that you would like to use in a project and then use it to determine the closest Pantone color.

If you're doing dedicated desktop prepress work, you'll want to go even more upscale and opt for a dedicated self-calibrating monitor. These highly intelligent monitors employ built-in circuitry and microprocessors that adjust display characteristics automatically depending on ambient conditions. But be prepared to pay in the ballpark of $10,000 for such a solution.
The Perfect System for People Torn Between Network and Plain Paper Faxing.

With Canon’s LASER CLASS® 7000 Series of fax machines, you don’t have to invest in two different fax systems to have the option of faxing two different ways.

Alone, they come with an array of cost-saving features that can dramatically reduce your phone line charges, like a six-seconds per page transmission speed* — the fastest in the business.

But what makes the LASER CLASS 7000 Series truly revolutionary lies beyond the machines. Because as part of the Canon LAN Fax Server System, they serve PC users on your Novell® network as well.

Now everyone in your office can handle any kind of faxing task through one integrated system. Which not only reduces costs, but can make your whole office run more efficiently.

The system features award-winning Alcom® software, a leader in network software. And because it’s completely plug and play, you can have it up and running almost immediately.

What’s more, you can buy a LASER CLASS 7000 Series fax to use today as a stand-alone unit and with the addition of the LAN Fax Server, integrate it into your Novell network any time in the future.

For more information and a free video demonstrating the LAN Fax Server System, call 1-800-OK-CANON. You’ll see why Canon remains number one in plain paper faxing for the past six years.
Procom Technology's line of CD Arrays has been designed with ease of on-line connectivity in mind. As a matter of fact, our CD Arrays, with pre-installed and unique hardware, make connectivity to every popular network and topology quite literally a snap. We invite you to join companies throughout the world who have discovered there's no simpler and faster way to connect every user to as many as 256 CD ROMs per network!

- Simultaneous CD-ROM access for all network users
- Simple plug-n-play installation—no network downtime
- Configurations of 7-, 21- or 56-drives
- Choice of the world's fastest 4X or 6X CD-ROM drives
- Compatible with NetWare, OS/2, Windows NT, Windows for Workgroups & UNIX
- SCSI, Ethernet, Fast Ethernet, Token Ring, ATM, CDDI & FDDI connectivity
- Toll-free technical support number

"Hardware that's this easy to put onto the network is music to my ears."

LAN TIMES

For a Procom Technology distributor or reseller near you, call today.

Procom Technology, Inc.
Tel: 714/852-1000 x 414
Toll-free: 800/800-8600 x 414
Fax: 714/261-7380
E-Mail: info@procom.com

Procom Technology, Inc.  1995 All rights reserved. All other trademarks are the property of their respective companies.

Note: Novell makes no warranty with respect to this product.
Software  Applications and utilities for users on every platform. **Hardware**  From boards to servers.

**Direct Connection**  A quick guide to products and services. **Careers**  Employment opportunities.

**Tradeshows**  Where to go and what to see. **Training & Support**  Keep pace and keep growing. **Internet Resources**  Get on the 'Net and see the hot sites. [WWW.Home Page](http://www.wwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwww
Now, here’s a switch!

Select from 8 or more systems instantly on-screen.

Introducing the first and only screen-based concentrator switch — OutLook from Apex PC Solutions, Inc. OutLook gives you instant visual feedback on attached systems without the need to look at boxes, buttons, or blinking lights. OutLook’s menu-driven commands take you wherever you want to go, in terms that make sense to you, not someone else’s pre-defined numbers.

See for yourself. Call Apex today at 1-800-861-5858 or (206) 402-9393.

20031 142nd Ave. NE • Woodinville, WA 98072 • (206) 402-9393
Fax:(206) 402-9494 e-mail address: info@apx.com

Defined in trademark by Apex PC Solutions, Inc • All Apex products are made in the U.S.A.

Up to 4 Users can Access Multiple PC, Macintosh and Sun Computers from a Central Location!

- **Multiuser**
  - Up to 4 users can access different computers simultaneously!

- **Multiplatform**
  - Supports any combination of PC, Macintosh and Sun computers. Use any platform’s peripherals to access any type of computer in the system.

- **Multimedia**
  - Every user has full multimedia capabilities; keyboard, mouse, video, speakers, microphone and high speed serial port available.

**A U T O B O O T C O M M A N D E R 4 X P ™**

PC is a trademark of International Business Machines Corporation. Macintosh is a registered trademark of Apple Computer, Inc. Sun is a trademark of Sun Microsystems. Cybex, Commander, AutoBoot, and 4xP are trademarks of Cybex Corporation.


**Cybex Corporation**
4912 Research Drive Huntsville AL 35805 USA
(205) 430-4000 (205) 430-4030 fax
"Boxlight means great prices, superb products, and experts to help you choose exactly the right system."

A notebook computer with a six-foot screen!

Lift off display, place on overhead projector. Easy.

The Multibook C200 by Boxlight is two great units in one — an active matrix color LCD panel for use with an overhead projector, and a 486DX4 multimedia notebook PC. Simple set-up. Instant presentation power. Heavyweight performance at a lean, trim price. Fantastic light weight assures extra convenience and ease. Boxlight does it again!

486 Notebook PC and LCD Presentation Panel.
- New 10.4" active-matrix screen
- Use as PC/LCD panel combo
- Less than 8 lbs. travel weight
- Leather case & accessories
- Fast 486DX4-100, 16/510, removable HD.

ColorShow™ 1200
- Affordable Color, Our Best Seller.
  - Now 1.4-million colors
  - Mac or PC compatible
  - Compact, portable design
  - Free remote & cables
  - New faster response time

ColorShow™ 2000
- The Only "All-in-One" LCD Data Projector Under $4,000.
  - Sleek, stylish design
  - Mac or PC compatible
  - Less than 20 lbs. travel weight
  - Free remote control

Call for special price!

ProColor™ 3080
- Revolutionary Brightness And Amazing Multimedia Features.
  - Brightest all-in-one projector, use even in normally lit rooms
  - Mac or PC, Video plus Audio
  - Only 16 lbs. travel weight
  - Clarity sharp as 35mm slides

As the most trusted name in Presentation Electronics™, we offer:
- Dialog with knowledgeable people who really help
- More than 50 models to choose from, available now
- Overnight shipping to multiple world-wide locations
- Money-back 30-day guarantee
- Free lifetime tech support
- Leasing and rental options

Free Catalog, Call 1-800-762-5757

Government: (800) 497-4009
Resellers: (800) 736-6556
International: (360) 779-7901

Visit Boxlight on InfoWorld's Home Page at http://www.infoworld.com

周一到周五 6am-5pm, 太平洋时间。购买订单接受 (某些限制)。
<table>
<thead>
<tr>
<th>HARDWARE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>3480</strong></td>
</tr>
<tr>
<td><strong>The Tape Professionals</strong></td>
</tr>
<tr>
<td><img src="HARDWARE_image.png" alt="Image" /></td>
</tr>
<tr>
<td><strong>Mainframe</strong></td>
</tr>
<tr>
<td><strong>Tape Copy</strong></td>
</tr>
<tr>
<td><strong>Data Backup</strong></td>
</tr>
<tr>
<td><strong>Conversion</strong></td>
</tr>
<tr>
<td>TAR, CPQO, VMS SAVESET, ASCII, EBCDIC</td>
</tr>
<tr>
<td><strong>Tape to CD-R</strong></td>
</tr>
<tr>
<td><strong>(800) CPU-3480</strong></td>
</tr>
<tr>
<td>Computer Peripherals Unlimited Inc.</td>
</tr>
<tr>
<td>2335 N. Steve Blvd., Suite C • Flagstaff, AZ 86004</td>
</tr>
<tr>
<td>(520) 726-2261 Phone • (520) 773-9183 Fax</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>DATA INTERCHANGE and BACKUP SOLUTIONS SPECIALISTS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PC</strong></td>
</tr>
<tr>
<td><strong>QUALSTAR</strong></td>
</tr>
<tr>
<td>The World's Best Tape Drives from the Tape Experts</td>
</tr>
<tr>
<td>QUALITY</td>
</tr>
<tr>
<td><strong>3480</strong></td>
</tr>
<tr>
<td><strong>1-800-468-0680</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>BAR CODE READERS AMERICAN MICROSYSTEMS</th>
</tr>
</thead>
<tbody>
<tr>
<td>2190 Regal Parkway • Euless, Texas 76040 • (817) 571-9015</td>
</tr>
<tr>
<td><strong>FOR PC, XT, AT, PS/2 &amp; TERMINALS:</strong></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>No software changes required.</td>
</tr>
<tr>
<td>Data appears as keyboard input.</td>
</tr>
<tr>
<td>Auto-discriminates between codes.</td>
</tr>
<tr>
<td>Accepts WAND, SLOT, MAG STRIPE, CCD, LASER.</td>
</tr>
<tr>
<td>Easy To Use.</td>
</tr>
<tr>
<td><strong>PORTABLE READERS:</strong></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Use as a portable, wedge or terminal.</td>
</tr>
<tr>
<td>Input Devices: WAND, CCD, OR 5V LASER.</td>
</tr>
<tr>
<td>Real-time clock for data and time stamps.</td>
</tr>
<tr>
<td>Automatic power off with resume.</td>
</tr>
<tr>
<td>&quot;Built-in&quot; program generator.</td>
</tr>
<tr>
<td>Multiple programs and data bases.</td>
</tr>
<tr>
<td>&quot;Built-in&quot; inventory programs.</td>
</tr>
<tr>
<td>54 key alphanumeric keyboard.</td>
</tr>
<tr>
<td>Support NANS compatible modem.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TAPE SOLUTIONS FOR NETWARE, NT, PC's 3480/90 • 9-TRK • 4MM • 8MM • DLT • QIC</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PC/Mainframe Data Exchange</strong></td>
</tr>
<tr>
<td><strong>QuickTape</strong> Tape software for NetWare 3.x/4.x, Windows NT, DOS</td>
</tr>
<tr>
<td><strong>Mount Drives on Server and/or PCs</strong></td>
</tr>
<tr>
<td><strong>Conversion for IBM, TAR, CPIQO, VMS</strong></td>
</tr>
<tr>
<td><strong>Savset, Sys/36, BRU, ASCII, EBCDIC</strong></td>
</tr>
<tr>
<td><strong>Tape Copy/Duplication Systems for Disaster Recovery and Data Distribution</strong></td>
</tr>
<tr>
<td><strong>Call (800) 248-3475</strong></td>
</tr>
<tr>
<td>World Wide Web: <a href="http://www.shaftstall.com/info">http://www.shaftstall.com/info</a></td>
</tr>
<tr>
<td><strong>SHAFTSTALL CORPORATION</strong></td>
</tr>
<tr>
<td>7901 East 88th St., Indianapolis, IN 46256 • (317) 842-2077 • FAX (317) 842-8294</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>9 TRACK 3480</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>GET THE VERY BEST FOR LESS</strong></td>
</tr>
<tr>
<td>9 TRACK 3480 4MM 8MM 1/4&quot;</td>
</tr>
<tr>
<td>DATA CONVERSION</td>
</tr>
<tr>
<td>TAPE → CD ROM</td>
</tr>
<tr>
<td>DATA BACKUP • TAPE TRANSFER</td>
</tr>
<tr>
<td>TAPE COPY</td>
</tr>
<tr>
<td>WINDOWS • OS/2 • WINDOWS NT NOVELL NLM</td>
</tr>
<tr>
<td><strong>(800) 938-TAPE</strong></td>
</tr>
<tr>
<td>LAGUNA DATA SYSTEMS</td>
</tr>
<tr>
<td>FAX: (702) 655-6397</td>
</tr>
</tbody>
</table>

Are you feeling the Squeeze?

Call us! LSI specializes in processor, RAM and hard disk upgrades for Toshiba, Compaq and most other major manufacturer's laptops and notebooks... often without voiding the original warranty.

- Parts
- Upgrades
- Warranty Service
- Flat Panel Display Repair

800-683-6839

30 Day Money Back Guarantee
One Year Warranty

92 INFOWORLD NOVEMBER 20, 1995
CD-ROM

- Arrays
- Jukeboxes
- Servers
- Recorders
- Desktop to Rackmount

Call Boffin Ltd. for your CD-ROM storage needs

INTERNET: E-mail: sales@bofin.com
612-894-0595
FAX: 612-894-6175

Support For Windows 95 is Here Now!
Bestselling author Andy Rathbone has helped thousands of novice Windows users figure out the buttons, bars, and boxes in Windows 3.1. Now Andy demystifies Windows 95, the hot new version of Windows that’s heading for desktops around the world. Turn to Windows 95 For Dummies just for the information you need to make your PC more efficient and a lot easier to use.

For more information and discounts on volume orders, call Theresa Lonergan
800-842-8996 x3046

Labeling Software for DOS and Windows
- For Epson, Oki, IBM, DeskJet and LaserJet
- Any Format, On-Screen label design, WYSIWYG
- 2 of 5, 128, UPC/EAN, AIA at & Code 39
- Auto-incrementing, File input, Logos
- Formatters: Sears, Penneyes, WallMart, AIA, LOGMARS, etc.
- LabelRIGHT® for Windows – $295 • DOS – $79

Bar Code Readers
- Portable Bar Code Readers for PC and Mac
  - Battery Operated Reader - 3 AA cells
  - 64K or 256K Static RAM Memory
  - Keyboard or Serial Interface
  - Codabar, UPC/EAN, Code 128, 205, 39
  - Complete 64K Unit with Wand – $799

Bar Code Readers
- For IBM or Macintosh
  - 150 to X-Matt, Range – up to 2400 feet with Relays
  - 16 user selectable frequencies in the 915 MHz range
  - 16 Terminals per Base
  - No License Required
  - 2 way RS-232 with host
  - Wand, Laser or CCD
  - Smallest size and weight
  - Complete R/F Terminal with wand – $1255

Notebook Hard Drive Upgrades Do It Yourself

- No need to send your notebook off to someone else to upgrade. It’s easy and we’ll tell you how.
- Fully compatible Internal upgrades up to 1.3 Gb
- We have IBM Thinkpad Drives – CALL!
- External parallel cabinets and desktop conversion kits available to make use of your smaller capacity drive.

260Mb $249.
540Mb $439.
814Mb $599.
1.3Gb $799.

A small, woman-owned company
800-544-4252
(619) 632-8621 Fax (619) 753-6133

Micro Sense, Inc.
370 Andrew Ave., Leucadia, CA 92024-1130

CD-ROM Tower

Custom Built
4, 7, 14 and 28 Bay Towers, Rack Mounts and Servers

Novell, Windows, DOS, OS/2 and UNIX Compatible

NEC, Toshiba, Sony, Sanyo or Plectron CD-ROM Drives

CD-ROM Management Software

Excel (800) 995-1014

Worthington Data Solutions

800-345-4220

Call for our Catalog

November 20, 1995 Infoworld
The Ultimate Help Authoring Tool

RoboHELP Pro now includes both 32-bit and 16-bit versions of RoboHELP.
RoboHELP Pro, award-winning Help Authoring Tool for Windows 95, Windows NT, and Windows 3.x, now supports Microsoft Word 7.0 and 6.0, 32-bit or Word 2.0 and 6.0 16-bit into a full-featured hyperText authoring tool capable of creating Windows Help systems as easily as plain text. Just point-and-click for full support of all Windows Help features, including menus, pop-up windows, macros, and secondary windows. Includes help compilers, Enhanced Hotspot Editor, Screen Capture Utility, and now new Windows 95 support for: contents tabs, secondary windows, authorable buttons, enhanced multimedia and graphics, and all the new macros. Plus, RoboHELP Pro has instant test mode and rapidly converts existing documentation into a Help system or vice-versa. RoboHELP 95 also includes SmartHelp, a reusable CLE control which lets you visually add context-sensitive help to any application without programming.

BLUE SKY SOFTWARE
SMART DEVELOPMENT TOOLS FOR WINDOWS 95, NT AND IX

Now Shipping!
1-800-459-0085

Int'l: 1-619-459-6365 • Fax: 1-619-459-6837

The Next Generation in Label Design Software

LABELWORKS™ for Windows

LabelWorks sets the new performance standard for professional quality label design. No other program combines such easy operation with this much power!

Call for free DEMO Software

AmeriSoft Microsystems, LTD.
2190 Regal Parkway, Eucalyptus, CA 92810
(866) 648-4452
(817) 791-3015 FAX (817) 663-0423

File transfers between Macs and PCs just got easier.

With Here & Now™ you can share the same files between a Mac and a PC - quickly, easily & seamlessly.

- Read and write to any form of Macintosh media from your PC.
- Open Macintosh files as easily as native Windows files.
- View both extended Mac filenames and 8.3 DOS filenames.
- Launch Windows’ apps simply by double-clicking on a Mac filename.
- Easy to use - no fancy interfaces or complicated instructions.

In addition to high-density floppies, Here & Now supports Zip, SyQuest and Bernoulli drives, rewritable optical drives - even hard drives!

Only $89.95

Call 1-800-895-9297 TODAY!

Here & Now, hereon, and MacWorks are registered trademarks of MacWorks, Inc., and the Shut-up-Sign Company, MacWorks, Inc. - 123 Main Street - Anytown, Anystate 02222.
Two fast, easy ways to keep your projects on track.

Choose Milestones, Etc. or Milestones Simplicity for fast, easy scheduling!

Create schedule your way.
It's not just ease-of-use that has project managers raving about Milestones. It's also the flexibility to create almost any kind of chart you can think of, exactly the way you want it. From Gantt charts, to detailed master schedules, to employee schedules, manufacturing machine schedules, marketing schedules -- even schedules formatted to government specs.

Schedule in time periods from years down to minutes by minutes. Place text or graphics anywhere. Link dependent steps. it couldn't be easier!

A powerful team tool.
You'll be able to point out dazzling, presentation-ready schedules that are ideal for keeping your team on track, and update them easily as situations change. Share templates to standardize scheduling throughout your group. Milestones products are easy-to-use, and workgroup licenses are available. They're used by government agencies and Fortune 1000 companies across America.

Join the thousands of professionals who are moving to fast, easy, Milestones software. To order risk-free or request a free demo, call today!

KIDASA

1141 Linn Creek Blvd. • Austin Texas 78716 • Tel: (512) 328-0257 • Fax: (512) 268-0247
©1993 Kidasa Software. Windows, and the Kidasa logo are registered trademarks of Kidasa Corporation.

The Batch Language for Windows 3.1, 95, NT

Utilities you program yourself: WinBatch or WinBatch 95 can control, manipulate, and schedule:
• Windows administration
• Any applications
• Routine networking

Optional compilers make royalty-free executable runtime for distribution to anyone, anywhere.

Contact: Wilson Windowsware, Inc.
Phone: 206-936-1740
Fax: 206-936-7129
Orders: 800-936-4598

To Download in BPR
http://www.windowsware.com

IMPORT DATA FROM ANY COMPUTER REPORT INTO:

Access  Excel
dBase
Paradox
FoxPro
Approach
Quattro
 Clarion

Datalimport 4.0 for Windows goes beyond the limitations of import wizards and parsers to give you TOTAL CONTROL of your data! Datalimport lets you selectively import data from columnar and non-columnar text-based reports, dynamically clean-up reports, create data in any output format or add data to existing files.

Full Demos: http://www.windowsware.com/win/counterlook/CompuServe WINAPPA, Sec. 15
FTP: www.windowsarc.com/ftp\windows
BBS: (206) 935-5198

For a full evaluation, order risk free on our 90 day, complete satisfaction guarantee!

WinBatch $99.95
WinBatch+Compiler $149
WinBatch+Compiler+5 Users $495
(includes 16 bit WinBatch)
Shipping US and Canada: $5.00
Other Destinations: $25.00

Phone: (512) 268-0247
Fax: (512) 268-0257

Palette Software, Inc.
Laredo, Texas 78041-7719

WinBatch $99.95
WinBatch+Compiler $149
WinBatch+Compiler+5 Users $495
(95 includes 16 bit WinBatch)
Shipping US and Canada: $5.00
Other Destinations: $25.00

Phone: 206-936-1740
Fax: 206-936-7129
Orders: 800-936-4598

Wilson Windowware, Inc.
Get It Together! Multimedia Sound Card
• 19.2k Fax/Modem
• Speakerphone
• Voice Mail
• All In One!

Was $399 Now

$189 or Less

InfoWorld's Mailing List Policy
InfoWorld allows advertisers and other companies to use its mailing list for selected product promotions and other offers that we feel would be of interest to you. We screen these offers very carefully. If you do not want to receive these offers, we will be happy to remove your name.

Please write the following address:
InfoWorld
List Rentals
Department 800
155 Bovet Road,
Suite 800
San Mateo, CA
94402-3115

INFO WORLD NOVEMBER 20, 1995
Simulator Software Analyst/Consultant

Duties: Consult with clients on building simulation models using ProModel for Windows. Work on optimization of simulation models and systems using statistical analysis, production planning and quality control techniques. Design improvements in simulation modeling constructs based on object-oriented simulation techniques. Design improvements in output analysis functionality to match the latest trends in statistical process analysis. Analyze system simulation software, including Witness, SimFactory, Siman, GPSS, Stella II, and MODSIM II. Design and develop object-oriented C++ code, particularly in the simulation engine area.

Requirements: M.S. in Systems Analysis or a related field with emphasis in simulation modeling, optimization, object-oriented programming, and manufacturing systems. Must know Witness, SimFactory, Siman, GPSS, Stella II, MODSIM II, and be proficient in C++ and ProModel for Windows. Must have knowledge of industrial engineering including statistical analysis, process modeling, production planning, and quality control.

Salary: $38,000/yr.

Send resumes to: JOB SERVICE, Att: Pat Redligen, Job Order #900014, E.S. Staff Services, 5th Floor, 140 East 300 South, SLC, UT 84111

YES! I want to increase my bottom line! Send me an InfoMarket Media Kit right away!

Company Address

Name Phone Product

I'm most interested in selling my products through:

☐ Hardware  ☐ Direct Connection

☐ Software  ☐ Computer Careers

☐ Internet Resources  ☐ WWW.Home.Page

☐ Training & Support  ☐ Tradeshows

Mail or FAX this form to:

InfoMarket
155 Bovet Road, Suite 800
San Mateo, CA 94402
or call your InfoMarket Account Manager at: (800) 227-8365 or (415) 572-7341
FAX: (415) 312-0579

Computer Careers features competitive rates, a variety of ad sizes, and convenient weekly deadlines.

For details, contact Vic Kline (800) 227-8365.

Network Hardware

Hewlett-Packard • IBM • Bhuson • Midway • AMP

CRU/CDD • Flat Wave Relay • Tri-Bond

Buy/Sell/Lease

CISCO Specialists

Motorola/Codem • IINCO • IBM

Symmetrics • Cisco • HP • ECI

800-230-6638

Fax: 805-384-9648

1900 THE STRAND • HERMOSA BEACH, CA 90254

Assistant LAN/Database Administrator (Harvard Area)

The CT Judicial Branch is seeking a qualified, articulate individual to assist in managing the daily LAN operations and to provide technical support for LAN workstations, servers, and all other system hardware and software on a 100 user Ethernet (TCP/IP) system. The successful applicant must be able to analyze user problems, trouble-shoot DOS/Windows workstations, Server servers and all related hardware/software. Implement creative technical solutions, perform Relational Database operations using SQL, DBA Tools and other utilities as required, and collect, prepare and maintain system documentation. Minimum Qualifications: Three years of experience in microcomputer programming, problem diagnosis, application usage, user training and development of user manuals with a variety of microcomputer hardware and software. Two years of experience must have included LAN operational support, assessment of LAN user needs and identification of appropriate hardware and software to meet those needs. One year of experience must have included relational database system operational support with report generation and ad hoc query language; Salary range: $39,000.00 - $49,300.00 plus benefits. Resumes must be received no later than December 1, 1995. Submit resume to: State of Connecticut Judicial Branch Recruitment Unit 75 Elm Street Hartford, CT 06106 Ad. # D. NUMBER 95-000-006 A/A/E

Programmers

Command Software Systems, Inc., a fast growing company committed to changing the future of personal computing. We are looking for creative and talented people motivated to make considerable contributions to the company and the team. We have immediate openings for programmers who will design and develop Windows products. Requires several years of experience, hands-on design of software in a PC environment and proficiency in C and/or C++. Opportunities for advancement within the company. Resume to Sandra at 407-575-5263.
InfoWorld

Reader services

Subscription/basics section

If you need to renew your subscription, order a new subscription, change your address, or add back issues of InfoWorld, contact our customer service department:

Phone: (708) 647-7925
Fax: (708) 647-0226

Internet: hallmark@infoworld.com
Mail: P.O. Box 12172, Chicago, IL 60693

BB#: (402) 293-1599 (Back issues cannot be obtained via the BB).
InfoWorld is free to a limited number of qualified individuals in the United States. If you don’t qualify for a free subscription, a one-year subscription costs $145 for subscribers in the United States, $165 in Canada, and $250 in Europe. For rates in other countries, please contact our customer service department. By special arrangement, copies can be sent by air freight to and delivered from London, with arrival generally within three days of publication date. For more information, contact Parkway Garden, Westwood House, Elmhurst Road, Goring-on-Thanet, Reading, RG1 9EN England. Telephone: (414) 481-87538. Facsimile: (414) 481-87524.

Contact us if you have any questions or problems with your subscription. We are here to serve you.

Permissions

If you’d like to quote from an article, fax the request to Permissions Editor at (312) 960-4296. You must also allow for a one-week production time. We will respond in writing. Please enclose a check with the request.

Feedback

Letters to the editor

InfoWorld encourages readers to contribute their opinions for publication. Please keep letters as brief as possible. All letters will be edited for length and clarity. Send letters to the editor to our physical address, fax number, or letters@infoworld.com. Please include your city, state, and daytime telephone number. Also, let us know if you may publish your company name and e-mail address.

Person to person

InfoWorld editors want your feedback. They also want to hear about your experience putting mission-critical systems on PCs. Editors can be reached via electronic mail, fax, and telephone.

Person to person

InfoWorld editors want your feedback. They also want to hear about your experience putting mission-critical systems on PCs. Editors can be reached via electronic mail, fax, and telephone.

Person to person

InfoWorld editors want your feedback. They also want to hear about your experience putting mission-critical systems on PCs. Editors can be reached via electronic mail, fax, and telephone.

Person to person

InfoWorld editors want your feedback. They also want to hear about your experience putting mission-critical systems on PCs. Editors can be reached via electronic mail, fax, and telephone.

Person to person

InfoWorld editors want your feedback. They also want to hear about your experience putting mission-critical systems on PCs. Editors can be reached via electronic mail, fax, and telephone.

Person to person

InfoWorld editors want your feedback. They also want to hear about your experience putting mission-critical systems on PCs. Editors can be reached via electronic mail, fax, and telephone.

Person to person

InfoWorld editors want your feedback. They also want to hear about your experience putting mission-critical systems on PCs. Editors can be reached via electronic mail, fax, and telephone.

Person to person

InfoWorld editors want your feedback. They also want to hear about your experience putting mission-critical systems on PCs. Editors can be reached via electronic mail, fax, and telephone.

Person to person

InfoWorld editors want your feedback. They also want to hear about your experience putting mission-critical systems on PCs. Editors can be reached via electronic mail, fax, and telephone.

Person to person

InfoWorld editors want your feedback. They also want to hear about your experience putting mission-critical systems on PCs. Editors can be reached via electronic mail, fax, and telephone.

Person to person

InfoWorld editors want your feedback. They also want to hear about your experience putting mission-critical systems on PCs. Editors can be reached via electronic mail, fax, and telephone.

Person to person

InfoWorld editors want your feedback. They also want to hear about your experience putting mission-critical systems on PCs. Editors can be reached via electronic mail, fax, and telephone.

Person to person

InfoWorld editors want your feedback. They also want to hear about your experience putting mission-critical systems on PCs. Editors can be reached via electronic mail, fax, and telephone.

Person to person

InfoWorld editors want your feedback. They also want to hear about your experience putting mission-critical systems on PCs. Editors can be reached via electronic mail, fax, and telephone.

Person to person

InfoWorld editors want your feedback. They also want to hear about your experience putting mission-critical systems on PCs. Editors can be reached via electronic mail, fax, and telephone.

Person to person

InfoWorld editors want your feedback. They also want to hear about your experience putting mission-critical systems on PCs. Editors can be reached via electronic mail, fax, and telephone.

Person to person

InfoWorld editors want your feedback. They also want to hear about your experience putting mission-critical systems on PCs. Editors can be reached via electronic mail, fax, and telephone.

Person to person

InfoWorld editors want your feedback. They also want to hear about your experience putting mission-critical systems on PCs. Editors can be reached via electronic mail, fax, and telephone.

Person to person

InfoWorld editors want your feedback. They also want to hear about your experience putting mission-critical systems on PCs. Editors can be reached via electronic mail, fax, and telephone.

Person to person

InfoWorld editors want your feedback. They also want to hear about your experience putting mission-critical systems on PCs. Editors can be reached via electronic mail, fax, and telephone.

Person to person

InfoWorld editors want your feedback. They also want to hear about your experience putting mission-critical systems on PCs. Editors can be reached via electronic mail, fax, and telephone.

Person to person

InfoWorld editors want your feedback. They also want to hear about your experience putting mission-critical systems on PCs. Editors can be reached via electronic mail, fax, and telephone.

Person to person

InfoWorld editors want your feedback. They also want to hear about your experience putting mission-critical systems on PCs. Editors can be reached via electronic mail, fax, and telephone.

Person to person

InfoWorld editors want your feedback. They also want to hear about your experience putting mission-critical systems on PCs. Editors can be reached via electronic mail, fax, and telephone.

Person to person

InfoWorld editors want your feedback. They also want to hear about your experience putting mission-critical systems on PCs. Editors can be reached via electronic mail, fax, and telephone.

Person to person

InfoWorld editors want your feedback. They also want to hear about your experience putting mission-critical systems on PCs. Editors can be reached via electronic mail, fax, and telephone.

Person to person

InfoWorld editors want your feedback. They also want to hear about your experience putting mission-critical systems on PCs. Editors can be reached via electronic mail, fax, and telephone.

Person to person

InfoWorld editors want your feedback. They also want to hear about your experience putting mission-critical systems on PCs. Editors can be reached via electronic mail, fax, and telephone.

Person to person

InfoWorld editors want your feedback. They also want to hear about your experience putting mission-critical systems on PCs. Editors can be reached via electronic mail, fax, and telephone.

Person to person

InfoWorld editors want your feedback. They also want to hear about your experience putting mission-critical systems on PCs. Editors can be reached via electronic mail, fax, and telephone.

Person to person

InfoWorld editors want your feedback. They also want to hear about your experience putting mission-critical systems on PCs. Editors can be reached via electronic mail, fax, and telephone.

Person to person

InfoWorld editors want your feedback. They also want to hear about your experience putting mission-critical systems on PCs. Editors can be reached via electronic mail, fax, and telephone.

Person to person

InfoWorld editors want your feedback. They also want to hear about your experience putting mission-critical systems on PCs. Editors can be reached via electronic mail, fax, and telephone.

Person to person

InfoWorld editors want your feedback. They also want to hear about your experience putting mission-critical systems on PCs. Editors can be reached via electronic mail, fax, and telephone.

Person to person

InfoWorld editors want your feedback. They also want to hear about your experience putting mission-critical systems on PCs. Editors can be reached via electronic mail, fax, and telephone.

Person to person

InfoWorld editors want your feedback. They also want to hear about your experience putting mission-critical systems on PCs. Editors can be reached via electronic mail, fax, and telephone.

Person to person

InfoWorld editors want your feedback. They also want to hear about your experience putting mission-critical systems on PCs. Editors can be reached via electronic mail, fax, and telephone.

Person to person

InfoWorld editors want your feedback. They also want to hear about your experience putting mission-critical systems on PCs. Editors can be reached via electronic mail, fax, and telephone.

Person to person

InfoWorld editors want your feedback. They also want to hear about your experience putting mission-critical systems on PCs. Editors can be reached via electronic mail, fax, and telephone.

Person to person

InfoWorld editors want your feedback. They also want to hear about your experience putting mission-critical systems on PCs. Editors can be reached via electronic mail, fax, and telephone.

Person to person

InfoWorld editors want your feedback. They also want to hear about your experience putting mission-critical systems on PCs. Editors can be reached via electronic mail, fax, and telephone.

Person to person

InfoWorld editors want your feedback. They also want to hear about your experience putting mission-critical systems on PCs. Editors can be reached via electronic mail, fax, and telephone.

Person to person

InfoWorld editors want your feedback. They also want to hear about your experience putting mission-critical systems on PCs. Editors can be reached via electronic mail, fax, and telephone.

Person to person

InfoWorld editors want your feedback. They also want to hear about your experience putting mission-critical systems on PCs. Editors can be reached via electronic mail, fax, and telephone.

Person to person

InfoWorld editors want your feedback. They also want to hear about your experience putting mission-critical systems on PCs. Editors can be reached via electronic mail, fax, and telephone.

Person to person

InfoWorld editors want your feedback. They also want to hear about your experience putting mission-critical systems on PCs. Editors can be reached via electronic mail, fax, and telephone.

Person to person

InfoWorld editors want your feedback. They also want to hear about your experience putting mission-critical systems on PCs. Editors can be reached via electronic mail, fax, and telephone.

Person to person

InfoWorld editors want your feedback. They also want to hear about your experience putting mission-critical systems on PCs. Editors can be reached via electronic mail, fax, and telephone.

Person to person

InfoWorld editors want your feedback. They also want to hear about your experience putting mission-critical systems on PCs. Editors can be reached via electronic mail, fax, and telephone.
Upcoming in InfoWorld

November 27 Enterprise FEATURE It has been a rough year for enterprise server vendors, and PC server makers such as Compaq and Dell would have you believe that systems with redundancy, reliability, and management tools built in are unnecessary. What role does an enterprise server play in a client/server information system?

Product Comparison Speech Recognition Systems: Our comparison of speech recognition products examines two of the most popular applications currently offered for the Windows platform, IBM's VoiceType Dictation, Classic Edition, and Kurzweil's Voice for Windows, Release 1.0. Both are discrete, speaker-dependent speech recognizers that enable hands-free command and control of your applications and provide basic dictation.

December 4 Enterprise FEATURE It seems as though more and more people are distributing information using World Wide Web technologies these days. But there's a problem. Most people are taking information stored in one format and reformatting it for use with another Web server. This week we take a look at a growing number of Web tools that tie your Web server to your database and promise to ease the administration of information.

Product Comparison Cross-Platform C++ Environments: These tools let you create a GUI application in C++ and port it to multiple platforms using the same source code. We compare Reams Data Inc's Elements Environment, IVT Software Inc's Development Solution for C++, and Rogue Wave Software Inc's 2App Developer's Suite.

In future issues Product Comparison PC/AT Card Modems: With the V.34 standard ratified and in an amazing number of vendors putting new products on the market, we decided it's time to put 11 V/AT PC Card modems to the test: Roca Research Inc's Cellular-Ready Modems, Fujitsu Microelectronics Inc's LS 28.8 Fax Modem, Hades Microcomputer Products Inc's Optima 288 V.34 + Fax, Megahertz Corp's PACIMA Modem with X-Jack, Microcom Inc's TravelCard Fast 28.8, MultiTech Systems Inc's MGT6385 34/56 Modem, Practical Peripherals Inc's OCMC 144 with 142 port, TDK Systems DFT 1484 E34, U.S. Robotics Inc's Courier K, Everything PACIMA PC Card with DataView, Xircom Inc's CreditCard Modem 28.8, and Zoom Telephonics Inc's PACIMA V.34. If this flood of PC Card modems performs as promised, expect faster data transfer rates and better modem interoperability at a bargain price.

Enterprise FEATURE Searching the Internet is like going to a grocery store looking for food. There is plenty there, but finding the selection that meets your current needs is another matter. Searching engines are cropping up, trying to simplify the whole needle-in-a-haystack problem. Contributor David Stroud looks at some different approaches.

Enterprise FEATURE Setting up a Web server is relatively easy, but once it's up and running, it can take a lot of time managing the information. Contributor David Stroud looks at some different approaches.

Enterprise FEATURE A growing number of vendors are providing applications that automate client/server load testing through a GUI front end. We'll take a look at these packages and see how they stack up against traditional approaches to load testing.
We're going to take an educated guess and assume you've heard about new Microsoft® Windows® 95. Heard about the Start button and how it makes nearly all the software's functionality accessible to first-time users (including kids). Heard about its simplified interface, long filenames, and 32-bit performance. Heard about its built-in fax and e-mail. Its smoother video and better sound and graphics. Its plug-and-play capabilities, systems policy editor, and multiple user profiles. Heard about all that stuff. And with all the input we got from teachers and all the testing we did with students, well, right about now a bell should be going off in your head.
The problem with other CD-ROM drives is the constant loading and unloading.

Put down your CD-ROMs for a second and think about this: With a Pioneer DRM-624X changer sitting faithfully at your PC's side, all the little things that can damage your discs, from yesterday's lunch to today's newsprint, don't have a chance. You see, along with being the fastest multi-disc CD-ROM changer on the market, the DRM-624X's patented magazine is the only one that lets you pop in six discs at once and never have to touch them again. And, as your CD-ROM needs grow, you simply add magazines. So give us a call today at 1-800-444-OPTI and learn how you can make CD-ROMs a hands-off operation on your PC.
Finally, a fun reason to upgrade

By Patrick Marshall

Can Windows 95 be taken seriously if it isn’t fun? Sure, but not by those looking for a good time. In the past, Windows’ slow performance meant that those looking for fun, gamers and game makers alike, couldn’t take Windows very seriously. All the best games and simulators — including Microsoft Corp.’s own classic, Flight Simulator — were written for DOS.

That’s all about to change. Thanks to the improved interface speed of the 32-bit operating system and Microsoft’s new game development tools, game programmers expect to deliver a host of impressive new titles in time for Christmas. In most cases, you’ll find better graphics and, in some cases, even better performance under Windows 95 than under DOS. Id Software Inc.’s Doom II for Windows 95, for example, was still in beta testing when this issue went to press, offers faster, smoother play than the DOS version of the same game. At press time, only a handful of native Windows 95 games were shipping.

But look for a dozen or so additional games to be available in stores in time for Santa, including Doom II ($1800, 434-2637), which is a sequel to LucasArts Entertainment Co.’s Rebel Assault II and The Dig ($415, 472-3400). I looked at what was shipping and found three titles worthy of note.

Microsoft Fury 1.0

If you want your shoot-em-down, blow-em-up action unfiltered by trivialities such as characters, dialog, and plots, you should take a hard look at Microsoft Corp.’s new game. The graphics are dazzling, the sound is deafening, the controls are responsive, and the story is nearly impossible to follow. Yet this is a game worth playing, and it’s not the one you’d expect from Microsoft.

Fury is an ambitious shooting game designed by StarCom Software. The game is set in the midst of an alien invasion, and you must take on the role of a squadron commander. As such, you can choose from a large number of weapon types, and your strategies are limited only by your imagination.

On the Home Front

Another game worth considering is Microsoft Corp.’s Zone of Normalcy I. The graphics are exceptional, the sound effects are perfect, and the game play is smooth. But the game is also very difficult to control, and the controls are difficult to grasp. The game is also very long, and the story is not particularly interesting.

Windows and Macintosh pinball

Hey pinball wizard, how do you tilt this computer?

By Chris Ulterwijk

Here’s one game the InfoWorld Test Center pinball wizards can’t play by sense of smell. Sierra On-Line Inc.’s imaginative CD-ROM title 3-D Ultra Pinball offers the excitement of real pinball with features that only a computer game could provide.

3-D Ultra Pinball gives you the chance to test your hand-eye coordination on three playing fields: the space mine, the colony, and the command post. The concept, building colonies on a distant planet through coordinated target shots, is loosely based on Sierra On-Line’s Outpost, a popular space strategy game.

Using your keyboard as a control panel, you can play either multi-player pinball, which is when you control the objects yourself, or you can choose to have the computer play them for you. You can even add your own object, such as a flying object or a pterodactyl of targets that rise from the bottom of the playing field.

The Bottom Line

3-D Ultra Pinball

Ultra Pinball adds elements other attempts have overlooked, using the full screen to break the limits of “real” pinball. Press: Great sound effects; high-speed feel of real pinball; extras that would be impossible in a real pinball game, such as flying objects and a plethora of targets that rise from the bottom of the playing field. Cons: Ball occasionally appears slippah when you throw it.
**Windows music notation software**

**Composers’ tool can bring Rhapsody into your life**

By Brenda Cruden and Cindy Wally

Finally, there’s an affordable notation program that saves musicians and composers the time and effort to write their scores. Passport Designs Inc., the makers of Encore, have come out with a toned-down version of that product called Rhapsody. Whether you own a 486 or higher system with sound card or a MIDI recording setup, you now have an equal opportunity to produce high-quality music. There is a caution for 386 owners, however. Though Rhapsody runs on a 386, it doesn’t run well, as we found out.

Your favorite flavor of sequencer program can provide a basic composition, but wait until you get your hands on Rhapsody and see a visual interpretation—from drums to brass—in any key you choose.

We really liked how this product works with the general MIDI specification, thus reducing the chance of an instrument voice assignment conflict. Rhapsody will support 32 staves at eight voices per stave, and it records and prints bass and treble clefs with instrument names, as well as guitar chord diagrams.

Rhapsody lets you create a melody within the program, though you will not have the same flexibility you enjoy with your sequencer software. The Beaming feature worked well, providing an easy-MIDIFILE transfer from Cakewalk Professional from Twelve Tone Systems Inc., to Rhapsody for quick scoring. (It’s a good idea to “quantize” a score recording process in any way we were able to detect. Passport Designs says it is reviewing the problem.)

Brenda Cruden and Cindy Wally are waiting by the phone for that big-break recording contract.

**THE BOTTOM LINE**

**Rhapsody, Version 1.0**

Those with a good working knowledge of MIDI can really take advantage of Rhapsody, which offers flexibility to compose on either a MIDI setup or computer with sound card.

Pros: Compatible with many sequencer applications and offers robust notation capabilities they lack; supports general MIDI spec and 32 staves at eight voices per stave.

Cons: Can’t use all features when run on a 386; minimum requirements not sufficient.

Passport Designs Inc., Half Moon Bay, Calif., (650) 431-3210, (415) 726-0200; fax (415) 726-2254; E-mail: passport @appl.com.

Price: $249 list.


**Windows and Macintosh recipe manager**

**Someone’s in the kitchen with Mangia, the sous chef**

By Anita Epler

I’m always looking for ways to get my computer wired into my kitchen. As my Macintosh and stack help me restore my Volvo and design historical costumes, cooking should be a snap. Unfortunately, my previous experiences with recipe software were disappointing. Packages generally fell into two categories: one that provides a recipe database and another that works like the homegrown hacks that they generally were.

Mangia improves on both of these models, and then some. The heart of Mangia is its recipe database, broken down by cookbooks. The vendor provides a cookbook on disk, and offers two more for free when you register the product.

Users can create their own recipes, and electronic versions of published cookbooks—including The Tassajara Recipe Book and Good Cheap Food—are available for $10 to $20.

Mangia’s powerful search engine finds recipes by virtually any criteria: main ingredient, seasonal appropriateness, portability, kid appeal, preparation time, and a long list of others. Essentially, if Mangia keeps track of it, you can search for it. Using the Pantry—Mangia’s easily updated database of what’s on hand in your kitchen—you can also find recipes that can be made without shopping.

Unlike competing packages, Mangia’s shopping-list generator actually works the way I shop. By working hand in hand with the Pantry, shopping lists I created didn’t include anything I already had, and were organized by the product’s locations in the market, rather than as a simple dump of ingredients from recipes. Still, I’d like to see an import/export option, as I have a large collection of recipes in text format.

MANGIA’S recipes can be formatted in a variety of preset or customized layouts.

**THE BOTTOM LINE**

**Mangia, Version 1.2**

If you’d rather spend your time enjoying your meal than scrounging for the right recipe, Mangia is for you. Its powerful search functions, helpful shopping-list feature, and a cookware dream feature make Mangia the best software package of its kind.

Pros: Excellent price; good recipe variety; amusing interface.

Cons: No text import/export; no nutritional analysis.

Upstart Software, Berkeley, Calif., (800) 568-3696, (510) 525-0176; E-mail: upstart@telcom.com; World Wide Web: http://www.mangia.com/mangia

Price: $49.95 list; $35 street.


**Windows dive-logging utility**

**Let software assist in your next plunge**

By Rod Chapin

You pull yourself out of the water, cold, wet, and tired from a day of floating among spectacular coral reefs or a brush with a scuttled wreck. A beer and a dry set of clothes are waiting, is now the time to sit down with a pen and log book, and write down all your dive stats?

Go ahead and enjoy that beer, along with the Bridge II from DiveRite Manufacturing Inc., a portable dive computer that automatically logs these particular dives. DiveRite has taken another plunge by creating Bridge for Windows, which downloads the dive computer’s data to a PC and displays it in detail.

Bridge for Windows contains three parts: logbook, dive profile section, and a graphical statistical presentation of the Bridge II. The logbook is an electronic version of a notebook for recording dive notes and statistics. Each logbook will store as many as 200 dives. Information automatically transferred to the log includes the date and time of the dive, its length, maximum depth, water temperature, and any alarms that occurred. In addition, there are user-definable entries to record information such as dive location, boat, weather conditions, and what you saw while under water.

The dive profile section allows the diver to profile to show other information. It gives the diver, at a specific point in the dive data such as elapsed bottom time, current depth, and the time left before the diver must make a mandatory decompression stop. The stop also has a dive time, with which the user can simulate a dive.

The Bridge quickly connects to your PC via an interface box that eliminates any possibility of the unit developing leaky connectors and makes for quick, effortless hookup. One feature I’d like to see is a greater sampling rate (now 3-minute intervals) for the dive profiler.

**THE BOTTOM LINE**

**The Bridge II and Bridge for Windows, Version 1.01**

Bridge for Windows logs information from your Bridge II dive computer. It’s easy to use and loaded with useful features for beginning and expert divers.

Pros: Extensive record-keeping features; real-time simulator for planning dives.

Cons: Limited sampling rate; no capability for recording surface intervals.

DiveRite Manufacturing Inc., Lake City, Fla., (904) 752-1087; fax (904) 755-0113; E-mail: dive@bridge.com.

Price: $599 for the Bridge II; $299 for Bridge for Windows (interfaces included).

After scanning the car with HP ScanJet 4c, we added and manipulated Corel Professional Photos using Corel PHOTO-PAINT 5 to create this exciting image.

Together Corel PHOTO-PAINT 5 and the HP ScanJet 4c Color/Grayscale scanner can help you unleash the power of your imagination in creating impressive documents, flyers, and brochures. Now when you purchase the HP ScanJet 4c scanner you will also receive Corel PHOTO-PAINT 5.

**HP ScanJet 4c**
- Easy to use scanning software for the novice or expert
- Scan images at 2,400 dpi enhanced optical resolution (600 dpi optical resolution)
- One billion colors (30-bit internal) for improved shadow detail and smoother colors
- 10-bit internal grayscale for 1,024 levels of gray
- Also comes with Calera Wordscan OCR and HP ScanJet Copy utility for making color and black and white copies
- Includes Visioneer PaperPort software for easy e-mailing, filing and faxing of documents
- Affordable scanning solution for only $1,179 US list, $1,679 Cdn list

**COREL PHOTO-PAINT**
- Precise photo-retouching: edit, crop, change colors
- Amazing special effects: mesh warp, swirl, pinch, 3D perspectives
- Over 50 image enhancement filters: swirl, wet paint, glass block, psychedelic
- Accurate color calibration system
- Enter text directly on screen: up to 32,000 characters
- Load and edit partial images
- Intuitive user interface: fun and easy to use

Corel Corporation invites you to participate in its NEW TECHNOLOGY TOUR, previewing Corel's exciting line of products for Windows® 95—CorelXARA™, CorelFLOW™ 3, Corel Print House™ and Corel® CD Creator 2. Please call 1-613-728-0826 to find the location of the tour venue nearest you. Just for attending, you will receive a free CD HOME 300 and be eligible to win great prizes!

To purchase this incredible bundle call toll-free for the HP authorized dealer nearest you!

**Corel PHOTO-PAINT NUMBER ONE in IMAGE-EDITING**

**Product** | **S.P.R. (US)** | **tww. mrk.**
---|---|---
Corel PHOTO-PAINT 5 Plus | $249 | 44
Micromedia Picture Publisher 5.0 | $595 | 42
Adobe Photoshop 3.0 | $895 | 39
Fractal Design Painter 3 | $499 | 38

PC World, Best Buy Award, April 1995

**http://www.corel.com**

"The best in photo-editing and bitmap creation."
**PRODUCT REVIEWS: FUN AND GAMES**

> Windows trip-planning software

**Microsoft’s Automap Road Atlas keeps you on course**

By Mike Heck

**With Microsoft Corp’s Automap Road Atlas and Automap Streets, you won’t need a global positioning satellite receiver to figure out how to get from here to there.** Road Atlas 4.0’s new Route Wizard asked for my starting point, destination, and personal travel preferences, then calculated the best route — all in less than 10 seconds. It’s that simple. The built-in database includes more than 400,000 miles of highways and 150,000 places in the United States, Mexico, and Canada, so there’s a good chance the software will map out your travel plans reliably.

To test Road Atlas for a test spin, I used a familiar 2-hour trip between Philadelphia and New York. Road Atlas prepared a detailed map and driving instructions, including information about where to turn, how far to drive, when to refuel, and the approximate cost of gasoline for the trip. Most important, the instructions (on-screen or printed) matched almost exactly the best routes I’d discovered over years of trial and error.

With my confidence high, I planned longer trips over unfamiliar terrain. These journeys included variables such as how many hours I wanted to travel per day, the type of roads I prefer to drive, and a request to list points of interest.

When I chose the Secondary Roads option, Road Atlas mapped out a scenic trip with planned stops at more interesting landmarks. For example, this version lists more than 300 ski resorts, with information on ski runs, average snowfall, and telephone numbers. You can also find out about states, cities, national parks, mountains, forests, historic sites, and recreation areas.

The Avoid Area command, another new feature, lets me block a box around an area that I want to bypass. When I used it in combination with colorful terrain maps, I could bypass mountain roads during bad weather.

Once you’ve reached your destination, the companion Automap Streets program (which you can access directly from Road Atlas) lets you pinpoint any address in all major U.S. metropolitan areas.

---

> Global and astronomical display program

**The world’s in your hand with Home Planet**

By Tom Marshall

**Knowing that the moon revolves around the Earth, which — in concert with eight other major planets and a host of assorted smaller bodies — orbits the sun, is one thing. To experience it as a matter of night and day, and much besides, can be something else.** It’s so hard to relate such abstract knowledge to our everyday experience that it took the better part of two centuries for the heliocentric hypothesis to win general scientific approval in Europe.

**Home Planet’s main screen is a day/night map of the Earth.** An extendible multimedia object database provides a window on a universe of facts. The Orrery offers a glimpse of the solar system at the present or any other time. But being able to see it work — to see the regular progress of night and day across the face of the Earth, and with it the moon’s location and phases, for instance — brings the whole scheme home in an exciting way.

John Walker, the former chairman of CAD stalwart Autodesk Inc., released the first version of Home Planet in 1993 as public-domain freeware, and he makes the present version freely available on his World Wide Web site. Home Planet is no quick download, however. Its five component zipped files total 48MB and expand to 12MB. But you get much more than a simple planetarium program.

In fact, the planetarium-style sky view is bettered by several other shareware or freeware programs. But Home Planet excels in its other points of view. An Orrery and an Ephemeris provides a chart of the solar system as seen from beyond it — from above, for instance, where you can see the current planetary positions and orbits in any of three scales (real, logarithmic, and equal). You can also change the date or heliocentric latitude and longitude, for example, to observe from the plane of the Earth’s orbit or that of other planets.

Heavenly bodies
- Home Planet includes several celestial elements
  - Day/night map with moon phases
  - Ephemeris views
  - Earth from sun/moon
  - Orrery
  - Satellite tracking
  - Multimedia object catalog
  - Screen saver

But more important, Home Planet offers an array of other data on many heavenly bodies, and even images of some of them. The database can hold text and sound as well.

Tom Marshall’s earthbound Internet address is tom_marshall@infoworld.com.

---

**The Web FunList**

**The Top 10 most entertaining World Wide Web sites to check out.**

1. **An Entirely Other Site**
   - http://www.etext.org/Zines/EOD/ Greg Knauss is loopy as a loon and lets everyone know about it. Read about Greg's giving up Skirpees for Lent, Greg’s conversations with monkeys, and Greg's fun Saturday night counting the letters in his Alpha-Bits cereal.

2. **SumoWeb**
   - http://www.bcf.usc.edu/~tmccarth/sumo.htm Where does a 589-pound Japanese athlete have a URL? You'll find it here, along with sumo wrestler statistics, tournament results, a glossary, and more.

3. **Find a Friend**
   - http://www.ain.net/findfriend/ You sent out a new year’s prom date? Want to track down dear great-ain Hilda now that she’s retired to Florida? For a mere $18, you get a list of possible matches to a name, address, or Social Security number that you supply.

4. **Guide to the 1996 Olympic Games**
   - http://www.atlanta.olympic.org/ You have fewer than 250 days to order front-row tickets to the gymnastics competition at the 1996 Summer Olympics in Atlanta. This site contains ticket information, travel advice, the official program, and even an animated clip of that dorky blue M&M, the official mascot, Izzy.

5. **Astronomy Picture of the Day**

6. **The Dilbert Zone**
   - http://www.unitedmedia.com/comics/dilbert/ For those of you with your nerder generation, lives a virtual life. View old Dilbert comics, see scads of sock-puppet pictures, buy officially licensed merchandise, or join Dogbert’s ruling class.

7. **The Almost Complete Microbrewery and Brewpub Guide**
   - http://www.cs.nist.gov/80/Scotto/mww/html/ After a long day of Web browsing, sit down with a tall, cold, glass of hops. Scott O’Neill’s national list contains all types of small beer producers, from those with wide distribution, such as Pete’s Wicked Ale, to neighborhood taverns with their own brew on tap.

8. **The World of Cocktails**
   - http://mbb.lem.zephyrhost.com/woc It’s the lab of love of a group of vomit-comet aficionados. Reviews, pictures, statistics, and gossip make this Web site an exciting ride.

9. **Point Review**
   - http://www.pointcom.com Point Review has reviews of plenty of other fun pages.

10. **The Impressive Collection of Comic Book Websites**
    - http://www.primus.com/staff/paulp/useless.html? This one lists sites maintained by people with entirely too much time on their hands. — Brought to you by the idle hands of Amy Helen Johnson

---

106 INFOWORLD NOVEMBER 20, 1995
Relied on networking expert for ISDN connection.

Choosing the right company to supply your hardware connection to the high-speed world of ISDN can really make a difference in your lifestyle. Which is why you should choose the company that has connected nearly 25 million users to networks. 3Com.

At 3Com, we’ve used our extensive networking expertise to develop a full line of modems and adapters to meet all your ISDN needs. In fact, our 3Com Impact digital modems are the first to deliver Multilink PPP at the speed of 128 Kbps, making them at least four times faster than even the quickest analog modems. The 3Com Impact™ ISA adapters have also combined this same technology along with high-performance LAN features to optimize remote LAN access. Plus, all of our products are easy-to-use and install and are standards-based, insuring compatibility.

So when it comes to ISDN, call the expert and relax. We’ll send you a free CD or diskette that demonstrates the benefits of using ISDN versus analog. Just give us a call today at 1-800-NET-3Com. Or visit our web site at http://www.3com.com to learn about our networking solutions.
PRODUCT REVIEWS: FUN AND GAMES

> Windows and Macintosh personal finance software

Quicken Deluxe helps with mutual funds, offers advice

By Ayse Sercan

Quicken Deluxe 5.0 for Windows and Quicken Deluxe 6.0 for Macintosh offer a solid, register-based money-tracking system with a bunch of extras such as budgeting, a calendar for scheduling transactions, and financial planning tools.

The much-touted electronic banking doesn't start until December, so I wasn't able to test it. I could set up an account now, though. Several banks are offering deals for customers who sign up for electronic banking through Quicken.

Another popular feature, the budgeting tool, is great, but it's possible to go overboard. Quicken can handle various levels of detail in budgeting, although it's easy to be misled by using Quicken data to automatically fill in the budget if you don't record cash transactions. There's a good chance you may miss out on a significant expense. I found that I didn't use budgeting very much. More useful are the various customizable reports on what my money was up to. I could build a pie chart showing how much of my salary went to taxes, ala.

I really enjoyed FInance 101, a sort of fireside chat with two financial advisors. It's a great alternative to an entry-level book on personal finance in a much more accessible format. The information is good and timely, and it's based upon a personal profile you fill out with your age, marital status, and salary. A similar feature that gave me some great ideas was the development team's talking about how they use Quicken.

The Home Inventory tool is also well worth the extra money. If you've got a collection of anything, Home Inventory can help you keep track of it. It took me about 15 minutes to set up a collection of pieces of my home computer; adding serial numbers, the price paid for each piece, and its current market value took a bit longer. If you're planning to start an inventory, be sure to gather that kind of information beforehand.

Even without all its extras, Quicken Deluxe is a great program. It helps you get a handle on your finances without forcing you to record every penny you spend, although it also deals well with that level of detail.

> Eduanimation software

Kids outstt cosmic plagiarists with Alien Tales

By Joe Peschel

wise-guy aliens have beam ed down into an interstellar game show, hosted by Sal de Century, and they claim to have written children's classics such as The Wizard of Oz and Charlotte's Web. It's your kid's job to expose these feisty little fellas as plagiarists and zap them back, a-hurtin' like Will E. Coyote, to their home planet.

In Alien Tales, for kids ages 9 to 13 and for somewhat older software reviewers, contestants read sample passages from selected children's stories and prove they know more about the tales than the cosmic impostors. Each time your child correctly answers a challenge from the alien, he or she collects Starbucks and goes on to solve puzzles related to the story. If the kid is stumped, he can go back and read the passage, but he'll collect fewer bucks. (I was certain Dorothy was wearing ruby slippers, but that was in the movie.)

If a contestant wins one round, for instance, "To Tale the Truth," she advances to "Beat the Krok," and then "Stump the Human or the "Meteor Match." Contestants begin as Rocket Rookies and can graduate to Cosmic Champions.

Somehow, the Interstellar Broadcasting System, which produces and airs Alien Tales at 7 p.m. interstellar time, made a kid of me again. I challenged Yer Yout of Yer Mynd on having written Charlotte's Web. I managed to detect, in the first round, when Yer Yout was fibbing: I solved the puzzle in the second round and won a sal de Century lamp, delivered by horse-drawn cargo van. After I won the third round — questions about White's personal life and his writing for The New Yorker and Harper's — a shoe-on-a-piston squashed Yer Yout and sent him home on the rocket ship of shame.

Haak of Siegels cost me Starbucks when he claimed to have written The Wizard of Oz and asked about the slippers. I'll have to rise to the rank of Cosmic Cadet, but the game got tougher.

The game show in space concept is a neat way of encouraging kids to first listen, read, and comprehend the passages, because they'll score bigger Starburrs that way than if they backtrack for answers. Broderbund says the game also stimulates memorization and analytical and problem-solving skills. Maybe so, but it's fun, too, and your kids might even want to read the books.

Joe Peschel is a free-lance computer journalist who'd like to be 10 again instead of 40 tomorrow. He can be reached at JPeschel@aol.com.

> Windows strategy game

Create, subdue your opponents

I was favorably Impressed with Oldian Systems' Cloak, Dagger, and DNA. It's a strategy war game, with spies, armies, and an underlying economic system.

You move the armys and spies around and conquer land, winning when you have conquered three-quarters of the map. It's a fun game, but not ground-breaking. The most important parts are the AI (artificial intelligence) opponents.

The game can be played over a network with as many as four players, or you can substitute an AI player to make up a fourth. But this is no Microsoft Hearts. The AI players learn to play the game along with you. Although you may start out with some fairly benign opponents, pretty soon they're a real challenge.

The only thing I'd change in the game is the graphics. The map looks really ugly, and sometimes the small army and spy icons are hard to see in the patterns.

If you register your copy, you get the map editor, which can help you to create your own maps for the game.

— Ayse Sercan

THE BOTTOM LINE

Quicken Deluxe 5.0 for Windows, Quicken Deluxe 6.0 for Macintosh

Quicken Deluxe takes a number of steps to reduce the amount of detail work necessary to make Quicken effective. You can budget by overall categories, and on-line banking will balance your checkbook.

Pros: Mutual Fund selector, Home Inventory and Finance 101 add depth; improved reports and charts; on-line banking.

Cons: No graphical interface; lacks the flexibility, features of the PC version.

Intuit Inc., Menlo Park, Calif. (800) 813-8025; (415) 322-6573.

Price: $29.95 street for regular version; $59.95 street for Deluxe version.

THE BOTTOM LINE

Alien Tales, Version 1.0

My 6-year-old niece tells me Broderbund Software Inc. offers some of the best edutainment titles in the business; Alien Tales should be no exception when she's a bit older.

Pros: Passage samples will encourage your children to read the entire book. Cons: Misleading a few selections; lacks violence.


Price: Approximately $54 street for cross-platform CD.


THE BOTTOM LINE

Cloak, Dagger, and DNA, Version 1.0

If you prefer strategy games over multimedia experiences, you'll like this one. The genetic algorithms controlling the computer players make for exciting games, even when you're playing the computer.

Pros: Edifiable playing field; computer opponents learn how to play along with you.

Cons: Computer opponents sometimes learn faster than you do; graphics need serious work.


DOWN TO THE WIRE • NICHOLAS PETRELEY

Heroes of Might and Magic, Dungeon Master II fill up coffee breaks

NORTH. You are now in a clearing, sometime in the early 1980s. In the middle of the clearing is a rock that bears the inscription "XWDTW!". West. You cross a bridge that takes you through a text-based adventure game to the next generation of graphic computer games. On the horizon you see Dungeon Master, a break-through in computer gaming by the company FTL. This first-person perspective dungeon game sets the standard for its genre, and though many games have surpassed this one dramatically in graphics and sound, Dungeon Master has remained unmatched in playability for years.

South. You find yourself transported to the recent past, when Interplay Productions Inc. announced Dungeon Master II.

Southwest. You come across a horde of Dungeon Master fans who are going berserk waiting for this game, because it has been delayed several times. You find me among those fans, waving frantically.

To my delight, Dungeon Master II shipped earlier this year. Though I enjoyed Dungeon Master II a great deal, I think it had more to do with the nostalgia it evoked for the original game than the playability of the sequel.

The three-stage plot is a little shallow. In the first stage, you have to round up the keys necessary to get you to the second stage (ho hum). In the second, you restore a machine and fire it up, which opens up a door to the last stage (yawn), where you duke it out with the antagonist at the end. At that point, it becomes obvious that the first two stages served primarily to boost your characters enough to go up against the big bad meanie.

The original Dungeon Master was shallow, too, but it succeeded because it so cleverly exploited the element of discovery during the plot. It dumped you into a game world with practically no information about what to do or how to get by. The II placed each necessary bit of information just barely within your reach.

The balance was masterful. When you discovered a strategy for keeping well stocked with food and water, you got this wonderful sense that you found a unique way of accomplishing the goal, even if 90 percent of the other Dungeon Master players solved the problem the same way.

Both the problem and appeal of Dungeon Master II come from the fact that Interplay simply took the elements from the original game and cranked up the intensity. This makes the sequel much more challenging, but it also means you can't always cover spells, but the game strategies are rather obvious, so you don't get that same sense of accomplishment during play.

Some of the most annoying features of the game are the new ones. The new minions (or gnats, as I have learned to think of them), are little flying units you can create to fight your battles. Unfortunately, your enemy can create them, too. At the peak of the game, you spend so much time swatting his gnats that it's hard to enjoy the brief moments where you actually get to do something.

It looks like it will take Interplay's Stonekeep to take dungeon games to a new level. Nevertheless, I recommend Dungeon Master II to die-hard dungeon addicts like me. Call Interplay at (800) 969-4263.

Mighty morphin' master of magic

Northwest. You have now left the area of first-person perspective games and entered the world of third-person perspective strategy games. And if you prefer medieval strategy games, check into New World Computing Inc.'s Heroes of Might and Magic ($49.99 on CD, at [800] 325-8808).

The rules are simple. You recruit one or more heroes and outfit them with troops from your castles. The types of troops you can draw upon depend on the type and state of your castle grounds, so you have to choose wisely and develop your castle.

Then you go out and explore and conquer. Along the way, you fight enemies and take over their castles, pick up artifacts with special powers, and appropriate various structures that generate gold, gems, or other resources.

At first glance, Heroes looks like a knock-off of Magic (from Microzone Software Inc.), which, in turn, is basically Sid Meier's now-famous Civilization game gone medieval and magical. All are third-person perspective strategy games where you explore your world and conquer as you go.

In Master of Magic, you spend most of your time in Heroes within the world map. You can see only a small window upon this world when a new game starts, but the land details unfold as you explore and plot your long-range strategies.

The game zooms in on a closer third-person perspective when you have actual confrontations. Then, you can either have the computer do your fighting or, if you or can manually control your players.

I prefer the graphics, music, and sound in Heroes of Might and Magic, but because Master of Magic is based on such a detailed and engaging world, I was disappointed in Heroes until I stopped comparing the two so closely. Once I started to appreciate how much strategic planning must go into this game in order to win, though, game play became extremely addictive.

You see, the game may be simple, but winning isn't. It has beaten me on even the lowest settings, with me and other computer opponents to act like virtual morons. Now, I'm admittedly a rotten player when it comes to games like this, but you can be fairly certain this will not be an easy game to master for most players.

Now, if you say "XY-DTTW", you should take you back to the beginning of this column. If that means nothing to you, shame on you for doing real work when everyone else was playing the original text-based Adventure game.

Turn north again and send E-mail via the Internet to nicholas_petreley@infoworld.com or CompuServe 71333,426.

Interactive multimedia horror novella

Scared diskless: Phantasmagoria intelligent, creepy

By Jeffrey Gordon Angus

Phantasmagoria is a seven-CD horror novel with live actors, special effects, buckets of gore (user-selectable levels), incredible sets, chilling sound effects and musical score, and anxiety-enhancing camera work.

Sierra On-Line Inc. has been making computer games as long as any company. A Sierra On-Line game requires the user to move the protagonist through a series of locations, pick up objects, use them to manipulate the environment, interact with other characters to collect crucial information, and solve problems.

With full motion video, MIDI music, and sound cards available on a hefty part of the installed base, it's now possible to use live actors instead of cartoons, score the soundtrack, and apply special effects. In short, you can deliver a movie the viewer interacts with, that has multiple outcomes, and that can take the time (in seven CDs, you have the time) to develop characters and situations.

The protagonist is Adrienne Delaney, a mystery novelist who, with her photographer husband, moves into an old New England house replete with ghosts and more evil than a collection of Edgar Allan Poe stories. You propel Adrienne through the complex mansion, exploring rooms and the outside grounds while finding secret passages and solving puzzles, picking up items and gathering clues by talking or using magic.

As with any good contemporary horror tale, there's lots of good and evil, some comic relief to break the tension, and lots of false alarms and foreshadowing music and sounds to keep you on edge. The story's anxiety quotient ascends chapter by chapter, pulling you into a totally engaging and literate fright-fest.

Phantasmagoria gives hints when you're stumbled and uses actors instead of cartoons.

The title has an Uncensored/Censored switch, and it's a good thing, too, because there's explicit gore and one love scene that turns violent. With the switch, you can password-protect the game; it can be played as a "PG" rated experience, or as opposed to an "R" rated one. Censored, the most controversial scenes are partially grayed out (but still with full scary sound).

I believe the censor feature is somewhat useful, but Phantasmagoria is a horror title for adults and late teens. The story, the complexity of it, and the mood are all more appropriate and engaging for that audience. As an artifact of its time, it can provide a link with the past.

THE BOTTOM LINE

Phantasmagoria

Like all great horror this title engages multiple senses and the brain as well as the adrenaline glands. Scary, stylish, and smart; couch potatoes and the squeamish need not apply.

Pros: Live actors; well-developed characters; progressive anxiety.

Cons: Watch out for nightmares after playing.


Price: $59.95 list.

Platform: Windows 95, Windows 3.x, DOS; Mac version due this month.

NOVEMBER 20, 1995 INFOWORLD 109
DISTRIBUTED THINKING - STEWART ALSOP

Oracle, Sun, and IBM are trying to replace the PC with Dumb and Dumber

Larry Ellison, Scott McNealy, and now Lou Gerstner all agree on one thing: Personal computers are too complicated and Microsoft makes way too much money supplying the software for the internal machines. That’s right: The guy who founded a mainframe database company, the guy who cofounded a workstation company, and the guy who’s supposed to turn around the world’s largest big-computer company all have trouble figuring out how to use a PC. So their solution is to dumb down the computer to such a degree that an idiot could use it, even if it doesn’t do very much.

OK, so I might have tipped my hand about how I feel about the concept of McNealy’s Internet Terminal (Sun Microsystems Inc.), Ellison’s Network Computer (Oracle Corp.), or Gerstner’s Inter-Personal Computer (IBM). I’ve spent nearly 15 years in the personal computer industry, I’ve seen this idea before, and it doesn’t work for one very basic reason: People actually like PCs. Let me go even further: People associate the difficulty and complexity of using a PC with the reason they like it, that it is infinitely programmable, and can be made to do anything by either programming or buying a program. Trying to simplify a PC is like neutering a bull — nice but kind of pointless.

Do you remember 3Com’s 3Station, developed by a team managed by my esteemed cocolumnist, Bob Metcalfe, when he was still chairman of the company he founded? I quote from a story I wrote about it at the time: “What distinguishes 3Station is the fact that it is designed from the ground up to be used only on networks and not as a standalone PC. As a result, it has no slots and no drive cage. 3Station is a very small box that contains a single logic board with an 8-MHz 386 processor, 12MB of memory, a Paradise PEGA 1 enhanced graphics controller with 256KB of video memory, an Ethernet controller, and support for the enhanced memory specification. The machine has no fan and only needs a 25-watt power supply. The back of the box carries the Ethernet connectors, two serial ports for a mouse and modem, and a parallel port for a local printer.”

It was designed to run Windows 286, to be built in volume, and was priced at “only” $1,895. 3Station was introduced in May 1987. 3Com sold 100,000 of the boxes but discontinued the line because it was so hard to sell a computer that didn’t have a floppy disk.

At Comdex last week, Ellison described his Network Computer as the following: a $50 microprocessor (probably a StrongARM, but be emphasized it could be any low-power 4MB of DRAM, 4MB of ROM, an Asynchronous Transfer Mode (ATM) interface for the network, infrared for the keyboard, keyboard, video interface for TV or RGB monitor, presumably a printer interface, and a small, fast operating system (defined as not being Windows or from Microsoft). A total of about $450 of components could be sold for the cost. No hard disk. No floppy disk. No CD-ROM. No profit. Larry’s a software guy, but you can believe him when he says this device would be radically easier to use than a PC, because it would be simple and you would never have to configure anything. You would download new versions of the OS and new components from the network.

This is precisely the same machine that Herman Hauser is pitching as the NetSurfer Metcalfe described in a recent column. (See From the Ether, Oct. 23, page 59.) Hauser is a little more realistic. He’s built a 1.4Kbps modem, instead of ATM, into NetSurfer, but he is a major proponent of low-cost ATM and clearly wants to build that in when there are ATM outlets to plug in to. (Other manufacturers are pitching similar machines. Apple is licensing a Mac-based technology called Pip-pip and has supplied the boxes used in British Telecom’s interactive TV trial in Britain. Microvawe has licensed its OS9 software for similar machines; the first, a box called Stellar 1000 from Stellar Corp., is being used in the Bell Atlantic interactive TV trial in Virginia.) Would you buy these machines yourself? They don’t sound like computers anymore. They sound like expensive cable-TV controllers that show you the World Wide Web instead of TV. If they are cable-TV controllers, they have to compete with much cheaper devices that primarily give you the ability to change cable TV channels. If they are computers, then you lose the ability to download video clips and other documents. You’ll be reduced to looking at the ‘net on a television set.

Perhaps I’m just an old PC bigot and out of touch with the times, but I just don’t get the current fascination with selling really cheap, dumbed-down computers.

Complaints registered

We really appreciate the feedback we’ve gotten on InfoWorld Electric (http://www.infoworld.com), which we launched a week ago. We are aware of the problems with the registration process: They don’t affect everybody, but if you do have a problem, please remember that it’s our fault. (We’ve had many users assume it’s their fault.) We hope to have eliminated the last of the glitches by the time you read this.

Write to Stewart Alsop at stewart_alsop@infoworld.com.

NOTES FROM THE FIELD - ROBERT X. CRINGELY

If Kaleida is lucky enough to get an epitaph, will Apple write it in ScriptX?

The economy of Las Vegas is based almost entirely on luck. People come to gamble, hoping for good luck, while casino operators make their own luck.

Sure there’s the Liberace Museum and the water parks where you drown your kids, but it’s gambling that still brings people out to the desert. Some of those gamblers are computer hardware and software vendors willing to bet $2,000 per square foot of Compaq booth that their product will sell.

One of the luckiest computer guys in Vegas makes most of his money now in the casinos, playing, believe it or not, video poker. Between last Comdex and this one, he’s up $250,000. Beats the hell out of Windows Solitaire. I’m not sure if I should name the company this guy came from, but they publish Harvard Graphics. Subtle, eh?

"Introduce me to him," commanded Pammy."I want to learn a new trade."

The house always wins

Not all the gamblers are in Las Vegas. Some of them work at the Compaq store in your town or mine.

Given the small profit margins these days in the retail PC business, dealers are coming to increasingly rely on other profit centers, such as extended warranties. You know the drill: For only an extra $39 or $79 or $99, you can get a five-year on-site warranty for a desktop digital whatnot. The warranty is sold by the dealer, but it’s actually an insurance policy arranged with another company and the dealer gets a commission on every one sold.

The way to really make money, though, is to sell the warranty but not buy the insurance policy, which is what Compaq USA did between mid-August and early November. Extended warranties sold in that period aren’t real. Gambling, too, that most people won’t accpet the policy, that warranty. Compaq USA isn’t informing affected customers that their coverage is worthless. They are waiting for problems to appear, then trying to solve them as quickly as possible. If I bought an extended warranty during this period, I’d take my paperwork down to CompUSA and make some noise.

Kaleidostrophic

With Pammie off learning the mystic inner workings of video poker, I had a chance to enjoy Comdex on my own. Here’s my report — big struggles and all.

Now back to strained gambling metaphors.

Among last week’s losers were the boys and girls of Kaleida Labs, one of the Apple-IBM partnerships. Kaleida is closing its doors in 60 days, with the ScriptX product going to Apple along with the potentially even more valuable RenderMorphics (pre-Microsoft) source license. Developers are likely to be snooked by this development, which means Robert Winter’s Crazy for Ragtime may be the only ScriptX production ever when it ships in December.

Other losers last week included the folks who own PCs with AMD’s 486 BIOS Version 5.00-2.1 produced on April 4, 1993. These PCs went into an infinite loop, playing “Happy Birthday” on Nov. 13. Setting the date for Intel’s current chip won’t fix the problem that AMD attributes to a former employee born, of course, on Nov. 13.

“I’ve not that rich, but I did make a little money,” said Panama on her return from the casino. “That guy has a point at the Mirage! Why aren’t you successful like that, Bobby?”

Irish whiskey, that’s why. Before the next round, call me with an industry secret at (415) 525-9270; fax: (415) 525-9208; or bob@cringely.com.
The World's Leading Manufacturing Software Can Help You Create Your Own Industrial Revolution.

What would you do with manufacturing software that could communicate real-time changes in volumes and product mix to plants all over the world? Or switch from one form of manufacturing to another, depending on changes in the market?

You'd start a revolution. And Customer Focused Manufacturing (CFM), created by Computer Associates, would help lead the way. A "blueprint" for enterprise manufacturing solutions, CFM lets you build closer relationships with the lifeblood of your business: your customers.

Because with CFM, you're involved in an ongoing dialogue with your entire supply chain. So you know exactly what can be delivered and when the delivery can take place.

And with CFM, a full range of multi-platform solutions helps you respond to customer demands both quickly and profitably.

For instance, CA-PRMS" gives you the flexibility to easily meet your co-existent manufacturing needs with support for discrete, process and repetitive manufacturing.

CA-KBM" incorporates and automates people-based product knowledge and dimensionally engineered-to-order configuration where it's needed most: throughout the entire supply chain.

CA-MANMAN/X" gives you the power to manage entire product life cycles — from engineering design to mass production — with real-time planning.

CA-MANMAN" gives you immediate access to timely information and the ability to share that information across all manufacturing areas.

CA-CAS* is an enterprise-wide manufacturing and financial management system that decentralizes decision-making by delivering critical customer-based information right to your users.

CA-Warehouse BOSS" is a comprehensive warehouse management system that improves customer service by cutting order cycle times and increasing shipping accuracy.

For More Information On CFM, Please Call 1-800-225-5224, Dept. 16104.

So phone today. And get a closer look at how Customer Focused Manufacturing can revolutionize your world.

Customer Focused Manufacturing Software
CA-PRMS® • CA-KBM® • CA-MANMAN/X® • CA-MANMAN® • CA-CAS® • CA-Warehouse BOSS®

© 1994 Computer Associates International, Inc., Islandia, NY 11788-7000. All other product names referenced herein are trademarks of their respective companies.
THE BRILLIANCE OF ACTIVE MATRIX. THE SPEED OF 100MHz. THE PRICE OF WOW.