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E655	15/13.8	0.24	1280 x 1024	YES	TCO '92
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E771	17/16.0	0.24	1280 x 1024	YES	MPR-II
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GS771 <sup>*</sup>	17/16.0	0.23	1280 x 1024	YES	TCO '92
GS773 <sup>*</sup>	17/16.0	0.22	1280 x 1024	YES	TCO '92
GS790 <sup>*</sup>	19/18.0	0.22	1600 x 1280	YES	TCO '92
GS810	21/20.0	0.22	1600 x 1280	YES	TCO '92

\*Short Depth Monitor \*\*Multi-port USB hub

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PS725 <sup>†*</sup>	17/16.0	0.22	1600 x 1280	TCO '99
PF97 <sup>††</sup>	19/18.0	0.25-0.27/AG	1600 x 1280	TCO '99
PF790 <sup>††</sup>	19/18.0	0.25-0.27/AG	1600 x 1280	TCO '99
PF795 <sup>††</sup>	19/18.0	0.25-0.27/AG	1920 x 1440	TCO '99
PS790 <sup>†</sup>	19/18.0	0.22	1600 x 1280	TCO '99
P810	21/20.0	0.22	1800 x 1440	TCO '99
P815 <sup>*</sup>	21/20.0	0.22	1800 x 1440	TCO '99
P817 <sup>*</sup>	21/20.0	0.22	2048 x 1536	TCO '99
PF815 <sup>††</sup>	22/20.0	0.25-0.27/AG	1920 x 1440	TCO '99

† Aperture Grille \*Short Depth Monitor \*\*Multi-port USB hub  
††Multi-port USB hub and Short Depth ††PerfectFlat

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ViewSonic Model	CRT Size/Viewable	Horizontal Dot Pitch	Maximum Resolution	TCO Low Radiation	Speakers
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M70 <sup>∞</sup>	17/16.0	0.24	1280 x 1024	TCO '92	2-watt (X2)

∞Also available in black bezel

## ViewPanel Series

ViewSonic Model	Screen Viewable	Special Feature	Maximum Resolution	Analog Interface	Bezel Integrated Speakers
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VE150	15.0	WALL MOUNTABLE	1024 x 768	YES	
VE150B	15.0	WALL MOUNTABLE BLACK VERSION	1024 x 768	YES	
VG150	15.0	WALL MOUNTABLE	1024 x 768	YES	
VP150	15.0	PIVOT	1024 x 768	YES	YES
VP150	15.0	WALL MOUNTABLE	1024 x 768	YES	
VP151	15.0	COMPOSITE VIDEO	1280 x 1024	DIGITAL/ANALOG	YES
VP181	18.1	COMPOSITE VIDEO	1600 x 1200	DIGITAL/ANALOG	YES
VPD150	15.0	PIVOT	1024 x 768	DIGITAL INTERFACE	YES
VPD180	18.1		1280 x 1024	DIGITAL INTERFACE	



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# The Computer PAPER

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GREATER TORONTO EDITION  
MAY 2000

## Commentary

- 6 From the Editor
- 10 Letters
- 128 The Last Byte  
*ATI: The once and future king (of graphics)*

## New & Notable

- 12 What's New
- 14 Gates says anti-trust battle far from over
- 102 Speech next user interface, says IBM

## Tuning Up Your Computer

- 16 Tune it up  
*Top 10 PC and networking utilities*
- 22 Utilities the heart and soul of Linux
- 28 Utilities for enhancing your Mac  
*Commercial, freeware, shareware offerings*
- 46 Fixes for five common PC problems  
*IT troubleshooter offers time-tested solutions*
- 77 Absolutely freeware at its best
- 89 Two firms test PC support via the Net
- 92 Think utility, not just utilities
- 97 Revisiting the art of tweaking Windows
- 98 Help for sad Mac users
- 99 Browser incompatibility
- 100 The right tool in the right hands  
*Norton Utilities 2000*

## Tech Enterprise

- 34 Waking up to denial of service attacks
- 34 DoS vulnerability hits home
- 34 LAN Line: Internet sharing in Windows 98 SE

## Hands On

- 51 Athletic Athlons hit 300 on benchmark
- 51 Helio: middle ground or leading edge?
- 51 Monsoon speakers' sound anything but flat

- 52 Store this!  
*TCP Test Lab looks at the latest storage options*
- 54 Storage surveys
- 62 Burning CDs on the road

## Platform News

- 73 Neugents bring us a step closer to AI
- 73 Palm explores wireless, service partners
- 73 Microsoft bulks up apps, colour for Pocket PC

## Online & Connected

- 81 MP3 is music to indie ears  
*Artists promote and distribute online*
- 81 Weaving your own Web site: Part 56  
*XHTML (aka HTML 5.0): Part 1*
- 81 IE5 for Mac ready for download
- 86 Computer game teaches lesson in Net safety

## Careers & Training

- 104 Office Suite Training: Taming your toolbars
- 104 Linux for Newbies Part 10:  
*Finding things on a Linux system*
- 104 VB Tutorials Part 10:  
*Review and consolidation*
- 113 O'Reilly compiles User Friendly antics into book
- 116 MCSEs say Microsoft ending NT tests too early
- 117 Guide to iMac full of practical tips
- 118 Quick tips for better brochures

## Reader Services

- 122 Marketplace
- 125 Classified
- 125 User Groups
- 126 Calendar
- 127 Advertising Index



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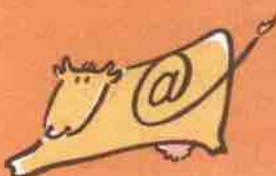
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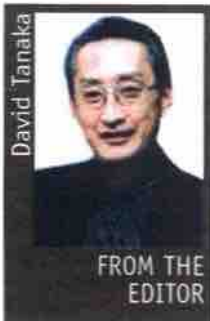
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# Art and technology



David Tanaka  
FROM THE EDITOR

Recently, I was invited to a seminar hosted by a distributor who wanted to educate customers about some new products. Distributors hold these events all the time, but this was an unusual invitation for me because the host,

Newmarket, Ont.-based Booth Photographic Ltd., was not a computer distributor, but a photographic products distributor.

Jeff Cowdrey, president of Booth, knew of my interest in digital photography, and invited me because one of the seminar sessions was devoted to fine-art inkjet papers and archival inks. Booth had set up a small area at the back of the seminar room, with various items on display. Amid the muslin backdrops and silver reflectors and other photographic gear was a selection of inkjet papers and inks from manufacturers I didn't recognize. But that was just the beginning of an afternoon of revelations.

The topics presented and the questions from the audience made it quite clear that a discussion of inkjet printers, inks and papers amongst photography enthusiasts is quite different from a discussion amongst computer users. The priorities and concerns are worlds apart.

For example, when TCP conducts printer reviews, we often judge a printer to be excellent because you can't tell its output from the prints you get back from the local photofinisher. For a serious photographer, however, this is merely the starting point for assessing the quality of inkjet prints.

Tonal range, colour accuracy and image permanence are the characteristics that serious

photographers care about. And current inkjet technology does not score well on those dimensions—or at least not well enough to lure photographers away from traditional printmaking. When the seminar leader asked how many in the audience owned an inkjet printer, I was surprised that about 30 percent did not.

Interest is growing, however, and the seminar presented products that will make inkjet printing better able to meet photographers' needs. For example, lack of image permanence has been a major and longstanding concern with inkjet prints. Whereas the photographer thinks of print lifespan in terms of multiple years, the best that inkjet manufacturers have managed with their ink formulations is longevity measured in multiple months.

Companies like British ink developer Lyson Inc. have already established a good track record for longevity with one line of permanent inks, and the recently introduced line of inks under the Fotonic brand that are optimized for photographic images. While the claim is still being tested by independent labs, the Fotonic inks promise fade resistance com-

parable to traditional photographic prints.

Lyson has also introduced a Quad Black ink set (only for the Epson 3000 so far) which substitutes the cyan, magenta and yellow ink cartridges with three shades of black. This product addresses another limitation of inkjets in photographic printmaking: their inability to create black and white prints without introducing tinges of colour. The Quad Black ink set has been tested independently and has an estimated fade resistance of more than 100 years.

Printer manufacturers are not blind to these needs. Epson recently addressed image permanence with papers and inks for its new 870 series of printers. These have been rated to last up to 10 years for glossy and 16 years for matte finishes. And as you might infer from this rating it's not just the inks that are important—ink and paper interact to determine how long your image will last.

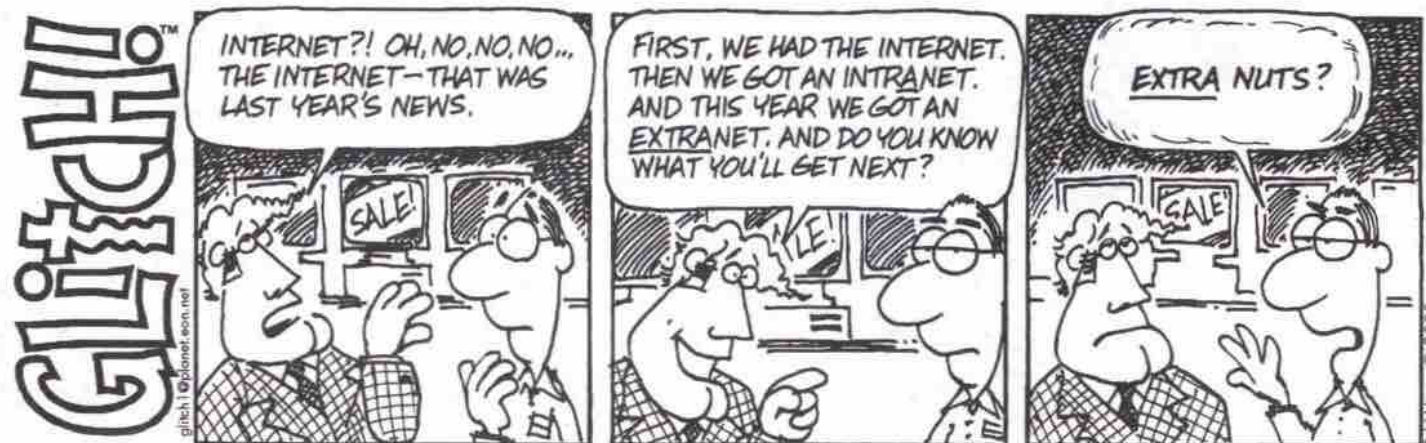
TCP has tested a variety of inkjet papers, and has reported differences between the various brands. But again, a serious photographer's demands are different than a computer users'. Not only do photographers want permanence,

they want variety in stock weights and surface finishes. Epson and Hewlett-Packard offer good selections of paper, but broader solutions are coming from outside the computer industry. For example, inkjet papers are available in grades and finishes that more closely match photo papers. Some manufacturers are offering stocks that are more like the papers used by artists for painting and sketching.

This is an interesting crossover, because inkjet photographic prints themselves have become a recognized art form. Referred to generically as *giclee* prints (from the French verb to spray), these are photographic or other digital art works that are printed on high-resolution commercial inkjet printers.

As inkjet technology improves, and as colour accuracy and image permanence limitations are overcome, fine art printmaking will be possible even on an inexpensive desktop printer. We're not there yet, but my, we are getting close.

Interesting times ahead  
David Tanaka, Editor



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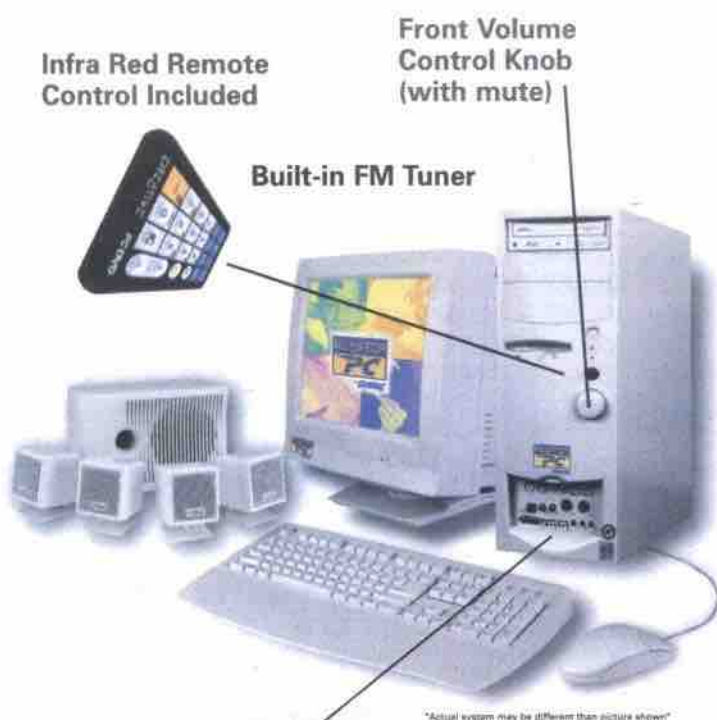
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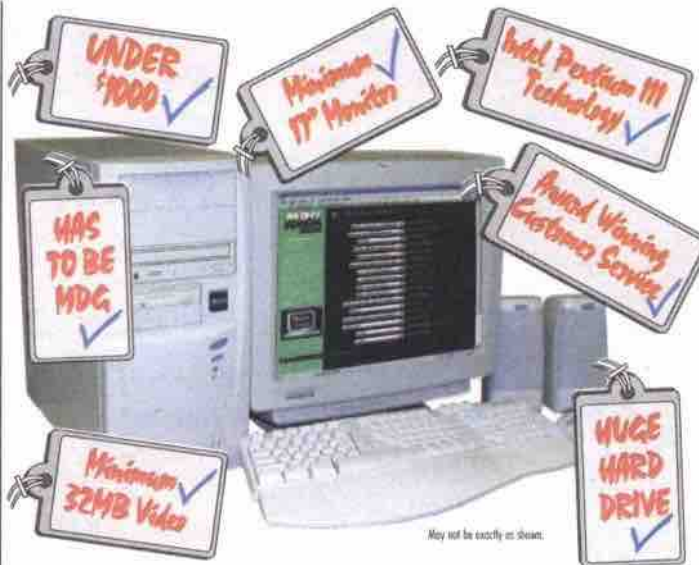
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You probably do not realize how stories like "Sir, it's your fridge calling" (see cover story April issue) can make someone wince, who was in the computer field in the 1950s. Is this the *Brave New World* we worked so hard to bring into being? I cannot imagine what my toaster would have to say to any other appliance, or how it could be wired to do so for anything close to the \$12 we paid for it! At first, I thought the story might have been tongue-in-cheek in honour of April 1. Clyde Owens

I just read "Sir, it's your fridge calling" and I think the writer, Tom Venetis, is dreaming, while I see a nightmare. First, maintaining a database as dynamic as fridge contents is easily messed up especially if you're not the only one in your household. Second, I don't want my washer arranging for service without checking with me first (too many technical troubles can be fixed with a power-on reset. Why pay for a home visit by a technician?). Third the serviceable life of a large appliance can be 30 years or more. Are these interfaces going to last that long?

This is the scenario that I think would be more likely: your spouse complains the dishwasher and washing machine don't work. It looks like a sensor in your hot water tank is sending a false signal saying there isn't enough hot water. I hope you can bypass it so you have clean dishes for breakfast the next day. Will it even let you take a shower? You call a repairman to get it fixed. It turns out something is creating a lot of interference. At this point the repairman could pack up and leave, since his company is not responsible for anything other

than the water heater. But he is a nice guy and helps you isolate the trouble, which ends up being a \$10 alarm clock. You get a bill for \$50.

Even so, this new technology does have some handy possibilities, like not having to reset every clock in the house every spring and fall, or (for those in the country) having your water pump stop before it sucks air, (when your well is low) and at the same time stopping the appliances that are drawing all the water.

People don't change their habits easily, and if taking advantage of a new technology means adding another step in putting the groceries away, it probably won't get used. If it means more money for trivial benefit, don't count on me buying it.

Roger Clarke

**Video editing, take two**

Your video editing lab report in the April edition of TCP was largely accurate, although I don't think it's relevant to rate FireWire cards by their throughput. FireWire video cards, by default, must transfer 3.6 Mbps for full DV video and audio.

The DV specification of 3.6 Mbps is easily handled by any modern computer system, even those that are several years old. It's not about your RAID array or how fast your hard drives are any more, the real bottleneck in DV editing is the speed of your system processor and how long you're willing to wait for your edited sequence to render.

The iMac comes with a 10 GB drive, as you mentioned, which is more than enough for basic iMovie editing. Nobody sits through a 30-minute birthday video anyway. By having somewhat limited drive space, the movie maker is also forced to put the best footage into the computer, which is what editing should be. Even professionals review their tape and log the scenes they want to use before importing them into the computer. To do any long-form editing in iMovie is almost like shooting yourself in the foot. That's what Final Cut Pro is for, and of course, with a price tag that matches!

Phil Pang

Apple Product Professional

**Waterlogged reporting**

In the April issue of TCP, a "What's New" item discusses Xybernaut Corp's wearable computer powered by fuel cells that run on water. This is impossible. Fuel cells produce water, they do not run on it.

In order to run a fuel cell with water, an electric current would have to be used to split the water into hydrogen and oxygen, which would be reacted in a fuel cell to once again produce water and electricity. This is inefficient, and begs the question "If you had enough electricity to degrade the water, why didn't you just use it to power the computer directly?"

I don't doubt all the benefits claimed by using fuel cells. Hydrocarbon fuels do store a large amount of energy in a small space. Using a fuel cell to efficiently convert this energy to electricity will definitely run a portable/wearable computer for long periods of time.

Beny Spensieri Jr.

**More on Internet sharing**

I would like to take this opportunity to thank you for your outstanding monthly paper. I look forward to reading it each month and value the product reviews and comments contained within.

I don't know how you come to review one product over another, but since you reviewed

*Continued on page 12*

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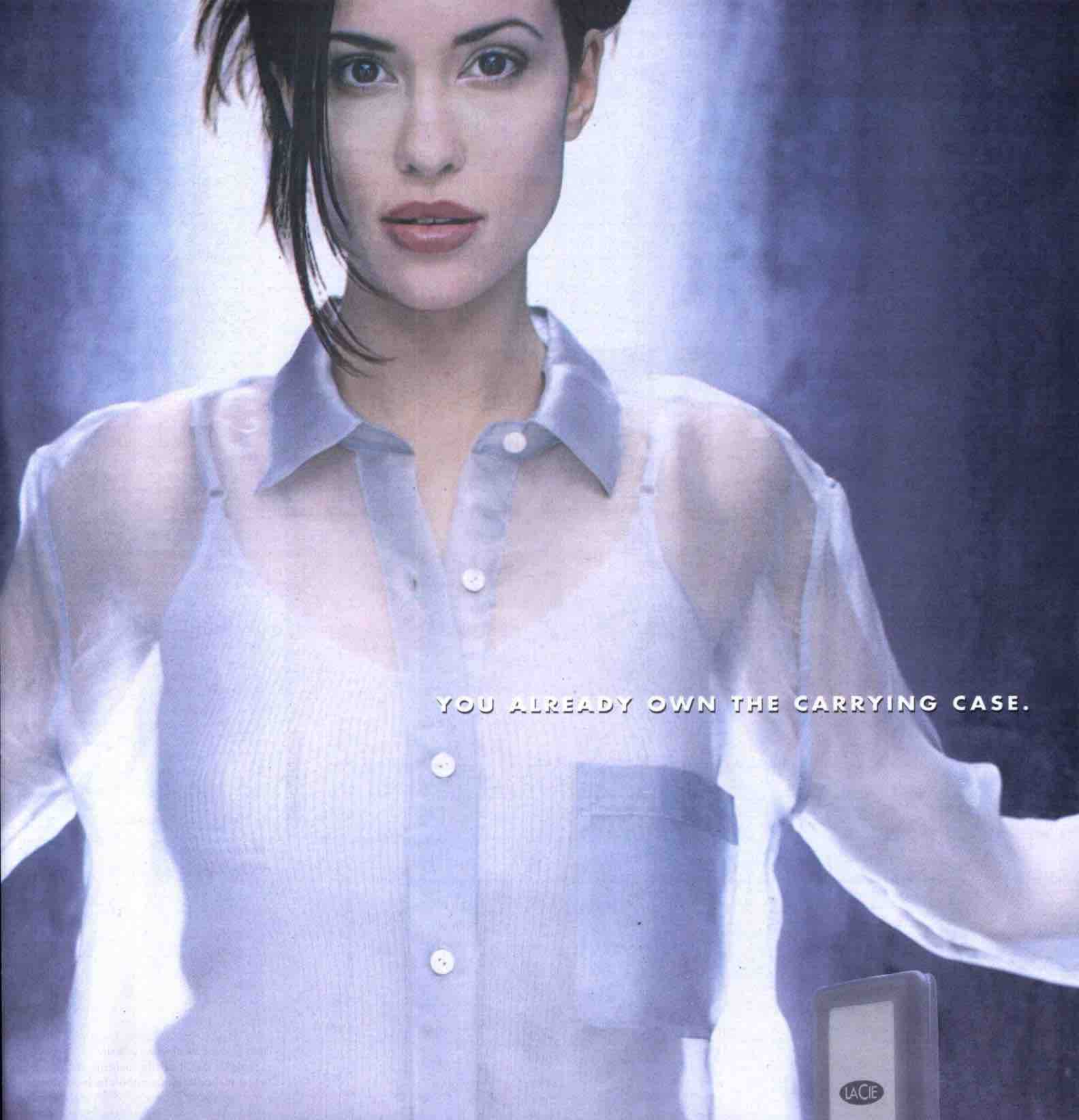
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# WHAT'S NEW



WiLAN chairman Hatim Zaghoul

**High-speed wireless forum formed**  
**SAN FRANCISCO**—At the recent Broadband Wireless Forum in San Francisco, a group of information technology (IT) firms have announced the creation of the OFDM forum

(<http://www.ofdm-forum.com>), an alliance of high-speed wireless companies.

OFDM stands for orthogonal frequency division multiplexing, a technology that, as the name implies, allow different frequencies to be

multiplexed together for high-speed wireless communications.

The companies behind the forum—which include CalTrans, Ericsson, Nokia, Philips Semiconductors, Samsung, Sony and Calgary-based Wi-LAN—have enlisted the support of Microsoft in their quest for a common set of standards for high-speed wireless communications.

The move towards a common global standard for high-speed wireless communications will, the companies say, make for economies of scale, as well as the ability to source suitable OFDM systems worldwide. The origins of the forum go back to December, 1999, when, at the invitation of Wi-LAN and Philips Semiconductor, 104 representatives from 60 firms from around the world met to discuss the idea of the alliance.

The reason for the need for a forum, Wi-LAN says, is that OFDM has become the foundation of the IEEE 802.11 and other wireless standards, meaning that the wireless world is now ready for products based on OFDM technology. Plans call for the OFDM Forum steering committee to act as the executive body of the organization.

Dr. Hatim Zaghoul, Wi-LAN's chairman, said that the interest in the creation of the forum was beyond both Wi-LAN's and Philips' expectations. "There is no doubt, with the representation of the companies shown here, the success in driving the market and technology focus of an OFDM technology standard is imminent," he said.

At Philips Semiconductors, meanwhile, Phil Pollok, the company's general manager of business line networking, said that forum will be an industry driving force for a multi-standard, high data rate physical layer technology. "The advantages of interoperability, co-existence and lower cost will be a major market enabler for wireless data systems of the future," he said.

—Newsbytes



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## PrivacyX issues encryption challenge

A Vancouver-based startup has issued a challenge to its competitors in the encrypted email arena with an updated version of its free, any-

Continued on page 120



## Letters

Continued from page 10

the ISB 2 LAN box in the April issue, I'd like to tell you about a similar product from LinkSys, which I just bought.

The Instant Broadband Ethernet Cable/DSL Router has got to be the best value on the market right now. No software, no fuss, and a street price between \$249 and \$320. It has, by far, [the] most value to the home and small business buyer because it comes with a four-port 10/100 switch built in! I purchased this product and had it operational in my home with my three computers in minutes!

I would strongly advise that you give this product the once over.

Don Smith

TCP replies: Thanks for the tip, Don. We contacted LinkSys, and the company will be sending us a product to review. □





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# Gates says anti-trust battle far from over

By Stefan Dubowski

After months of legal wrangling, the United States Department of Justice (<http://www.usdoj.gov/>) finally handed down its ruling in the Microsoft Corp.

(<http://www.microsoft.com>) anti-trust trial: the software giant runs an unlawful monopoly.

"The court concludes that Microsoft maintained its monopoly power by anti-competitive means and attempted to monopolize the Web browser market," wrote U.S. District Court Judge

Thomas Penfield Jackson in his April 3 conclusion of law. "Microsoft also... unlawfully [tied] its Web browser to its operating system."

For its part, Microsoft says the battle is far from over.

"Today's ruling was not unexpected, given

the court's earlier findings," said Bill Gates, Microsoft's chairman, in a statement. "But there are several steps in this case. While we did everything that we could to settle this case, and will continue to look for new opportunities to resolve it, we believe that we have a strong case on appeal."

Jackson's decision came only days after talks between Microsoft and its court adversaries, including the State of New York, broke down. The arbitrator in those discussions, Judge Richard A. Posner, said the warring parties could not come to an agreement, nor could he make them do so.

"After more than four months, it is apparent that the disagreements among the parties concerning the likely course, outcome and consequences of continued litigation, as well as the implications and ramifications of alternative terms of settlement, are too deep-seated to be bridged," Posner wrote in an April 1 statement.

In his own statement from April 1, Gates seemed unhappy that the arbitration had ended.

"There were divisions and extreme views on the other side that brought us to the point where mediation wasn't going to be successful," he wrote. "And that's unfortunate, because it would have been in the best interest of consumers, the government and Microsoft if we'd been able to come up with something."

The question now is, what will the Justice Department do to Microsoft? Reports suggest the company will be divided three ways: one part software, one part Internet and one part operating systems. Some, however, say Microsoft would be even more powerful as three companies than it was as one.

In a recent brief, Forrester Research, an industry analysis firm from Cambridge, Mass., said the Justice Department should create a "Windows Corporation" for Microsoft's operating systems. This will ensure that the company's most popular products—its consumer and business operating systems—do not subsidize its other, less popular products.

Forrester also recommends that the Justice Department create legal standards for writing software.

"Today's Microsoft shareholders would, at minimum, receive shares in both a monopoly operating system company and a competitive applications company," the brief read. "Meanwhile, users would get stable platforms, standards, and competition, and the U.S. government wouldn't get into the software babysitting business."

Microsoft can take some consolation from these recent events. For example, in his statement, Posner said he wanted "to emphasize that the collapse of the mediation is not due to any lack of skill, flexibility, energy, determination, or professionalism on the part of the Department of Justice and Microsoft Corporation." Posner did not mention, however, the professionalism of Microsoft's other court adversaries, the 19 states siding with the Justice Department.

The arguments started late in 1998 after Microsoft's competitors complained the company wasn't playing fair by including its Internet Explorer browsing program with its operating systems, instead of selling it on the open market where it would face competition from other browsers like Netscape. □



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# Tune it up

Your PC is going nowhere fast. Time to pull out the toolkit and tweak the beast. But which tool and why? Read on for our choices for the top 10 PC and networking utilities

By Nathan and Jack Surveyer

This is a Hans and Franz thing. One of us (Nathan), like Hans, works out a lot as a PC technician setting up and maintaining PC networks all over the Toronto area; the other, like lazy Franz, works as a consultant. That means he borrows nine out of the 10 best utilities from his brother all the time.

But seriously, the following utilities have helped both of us immensely in the PC and network support work we do, so we thought we would bring you our latest list of top 10 utilities—which are ranked in roughly increasing order of importance.

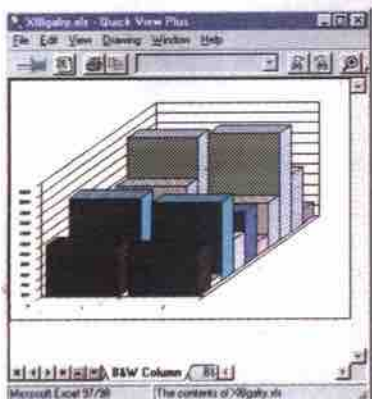
Like Hans and Franz, we could hardly agree on which should be where and what should be on the list. But since Hans/Nathan did most of the work in writing this up, you can guess who had the final say on the list.

Without further ado, we hope these programs will pump you up with better PC utility muscles.

## Ten utilities for a PC technician

1. Quick View Plus 5.1
2. DSX 1.34
3. Visio 2000 EE
4. Drive Image 3
5. F-Prot for DOS
6. LapLink 2000
7. List 9.0j
8. Partition Magic 5
9. System Commander Deluxe 4.031
10. WinZip 7.0

### Quick View Plus



#### Pros

- Works in Windows OSes of every flavour including the recently released Windows 2000.
- The 200 filetypes it can view include most image, word processing,

JASC, the developer of PaintShop Pro, now markets this very handy utility that was originally designed by Inso Corp. PC Viewer does just what it says, allowing you to view more than 200 different filetypes from Word to AutoCAD to JPEG to PowerPoint. It can be ordered directly from Jasc (<http://www.jasc.com>).

spreadsheet, and presentation formats.

- It can also print and export files.

#### Cons

- Doesn't conveniently fit on a floppy diskette, but is handy on a network or with LapLink (see below).

#### Out of the box

Very simple install. Brief user guide gives the basics.  
Street price: \$50

### DSX 1.34



We use DSX in our work to electronically erase, obliterate, and shred (it overwrites more than 10 times in two different ways) sensitive data from hard drives. It runs in DOS or in Windows 95/98 DOS boot mode. It is used to completely wipe (surplus) hard drives of all data prior to disposal of equipment. DSX 1.34 is copyright GKH 1989-1999.

#### Pros

- Very easy to use and secure. Requires a password to operate.
- Does a sector-by-sector erase and verification of hard drive.
- Easily fits on a bootable 720KB or 1.44 MB floppy diskette.

#### Cons

- Password must be entered each time you use it.

#### Out of the box

Easy install. Hardest part is getting the password right.

### Visio 2000 EE

The Enterprise Edition of Visio (<http://www.visio.com>) has two features packed away in its hundreds of up-to-date drawing templates. First of those features is its ability to search just about any network and automatically detect and diagram all the devices on it. Visio does a good job of revising the diagram as new devices are added, moved and/or disconnected. Its auto-layout features are topnotch, as are the true-to-life resizeable diagrams of the specific devices detected.

The second feature is Visio 2000's ability to do the same sort of auto-detection of database resources on the Net as well.

#### Pros

- The auto-detect network step can be automated with help of wizard.
- Stencils available include flowcharting, project design, room layout, and

dozens of tasks.

- Figures use smart shapes and connectors that auto-adjust to movement, and resizing.
- Extensive formatting control including styles, colour, text, fill, etc.

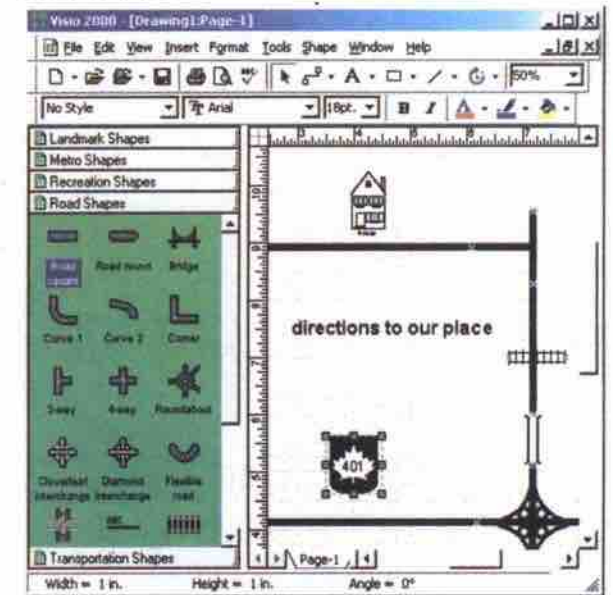
#### Cons

- Substantial learning curve is required to master all of its features.

#### Out of the box

Long install. Essential to do tutorials on CD-ROM.

Street price: \$1,060



### Drive Image 2.0

Nathan purchased Drive Image because of some problems he ran into with Ghost, from Symantec. Drive Image, like Ghost, is a disk partition copying utility that runs in DOS or in Windows 95/98 DOS boot mode. It copies partitions from a hard disk to any other hard disk (or available DOS/network partition). Drive Image 2.0 is from PowerQuest Corp. (<http://www.powerquest.com>).

#### Pros

- Copies entire hard drives to other hard drives on the same PC.
- Copies partitions to the same drive or to other hard drives.
- Has a more powerful user interface than Ghost.
- More tolerant of errors on the destination disk than Ghost.

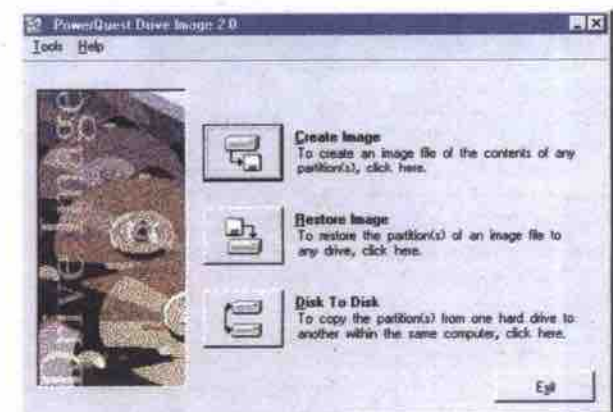
#### Cons

- Cannot be installed on a single floppy without using a compression utility.
- User interface occasionally presents too many options.

#### Out of the box

Simple install. Manuals are a bit confusing.

Street price: \$60



### F-Prot (DOS) 3.06c

Both of us first saw F-Prot while taking a Novell course in which it was used to defend against viruses. It was available for free then, as now, as shareware. F-Prot is a robust and frequently updated virus checker. It runs in DOS or in a DOS window. F-Prot (DOS) 3.06c, shareware is from Frisk Software International (<http://www.datafellows.com>).

#### Pros

- Simple interface and the DOS version is free for private use.
- Cleans viruses off floppies or hard drives.
- Updated frequently.

#### Cons

- Does not fit on a single floppy diskette.

Continued on page 18



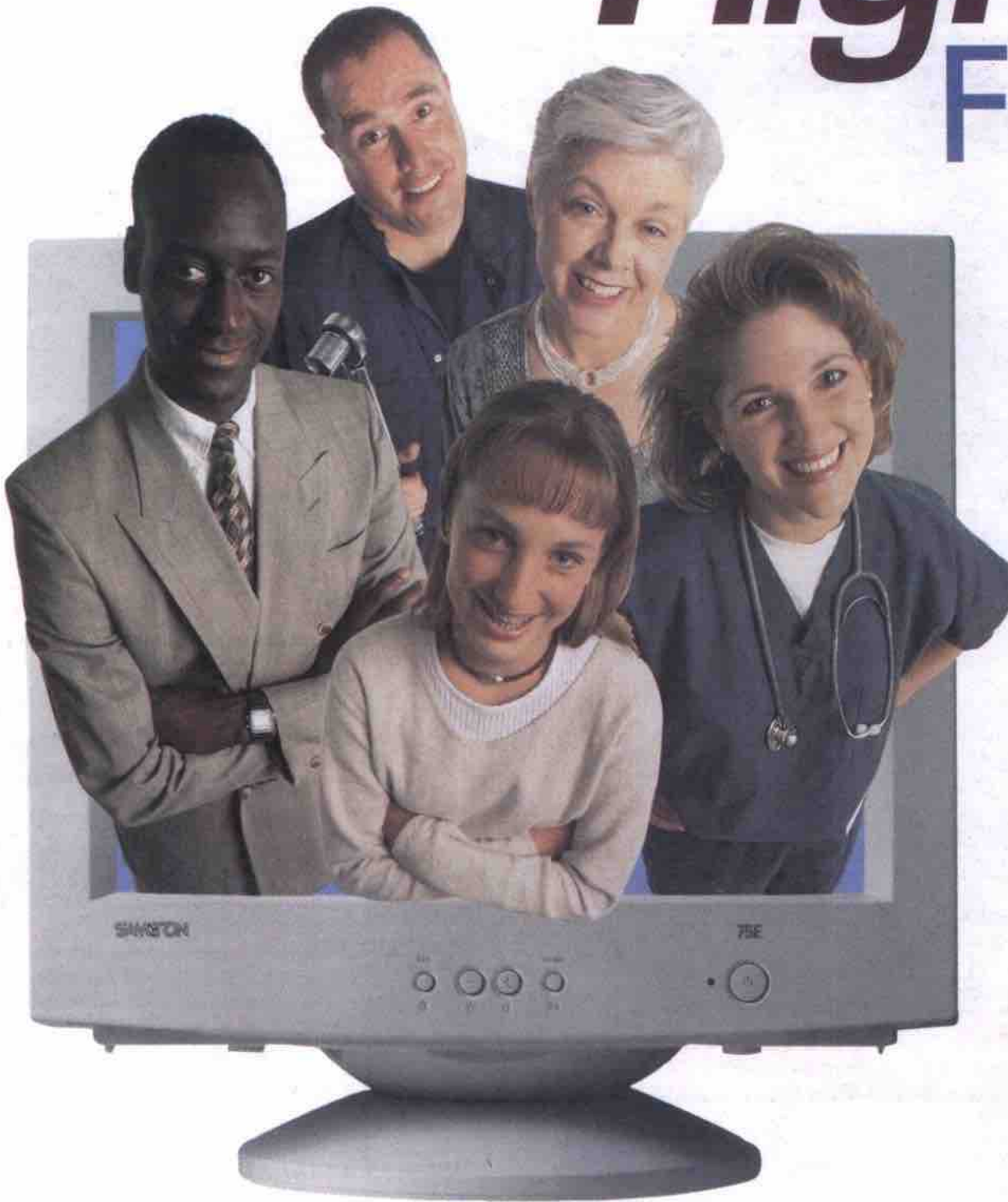
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**Tune it up**  
Continued from page 16

- Free version does not include a memory resident virus interceptor.

**Out of box**  
Easy install, but screen navigation somewhat confusing. Street price: \$45

**LapLink 2000**  
We used LapLink (<http://www.laplink.com>) at work extensively when DOS and Windows 3.x were

prevalent. LapLink is a directory and file copying utility that operates in DOS or in a DOS window. LapLink's range of connectivity options allows you to connect to another PC via the Internet, modems, dial-up networking, LANs, cables, wireless and fast infrared communication—all work easily and reliably, not just to transfer files.

- Pros**
- Simple, small program that fits on a single 1.4 MB bootable floppy diskette.
  - Copies files and directories via a LapLink printer port

to printer port cable.

- Copies files at a reasonable speed.
- Cons**
- Slow to copy very large files or directories (over 10 MB of files) on some setups.

**Out of box**  
This is a complex product. Pay attention to the good user's manual. Street price: \$75.

**List 9.0j**  
We first used this shareware program, List, in



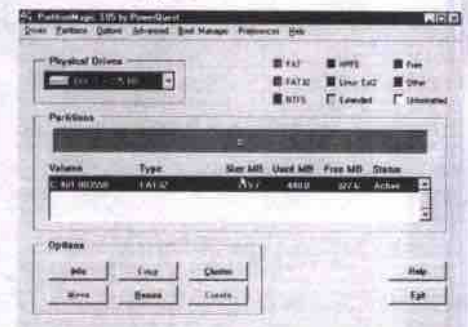
1992 and found it so useful we both registered our copies right away. List is a simple DOS utility that replaces the DIR, CD, COPY, DEL, MOVE and ATTRIB commands in DOS. It also allows you to navigate your way through complex DOS directory structures, and view the contents of files. List 9.0j 1983-1994 shareware is from Vernon D. Bueg (<http://bueg.com/list.html>).

- Pros**
- Small, self contained, executable (approx. 26KB).
  - Allows easy navigation of DOS directory structures from any DOS window.
  - Copies, moves, deletes any DOS file.
  - Deletes empty directories.
  - Can look inside any DOS file (and display contents in HEX).
  - Change attributes of any DOS file (hidden, system, archive, read only).

- Cons**
- Can't create directories.
  - Can't delete directories that still contain files or sub-directories.

**Out of box**  
Great user's manual. This was the pioneer shareware utility and is still good. Street price: \$54

**Partition Magic 5**



This program is one of the most useful for anyone working with disks that have multiple partitions. Partition Magic is a very powerful improvement on Microsoft's rather lame FDISK. It can partition and format disk partitions for Fat16, Fat32, NTFS and HPFS. It can also create/resize/delete primary and extended disk partitions. Partition Magic 3.05 is from PowerQuest Corp. (<http://www.powerquest.com>).

- Pros**
- Runs in DOS with 4 MB of free memory on any 486 PC.
  - Creates/resize/deletes Fat16, Fat32, NTFS and HPFS partitions.
  - Resizes/deletes all manner of UNIX partitions on a PC.

- Cons**
- Can't be run from a single bootable floppy diskette, unless a compression utility is used.

**Out of box**  
Easy install. Very good documentation. Street price: \$30

**System Commander Deluxe 4**

This program is a *must* for anyone trying to load more than one operating system on the same PC. It will allow you to partition, format, and check for bad sectors, then install any of a number of Intel PC operating systems (DOS, Windows, Linux, NetWare, etc.). System

Continued on page 20

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# AZURA



**Tune it up**

Continued from page 18

Commander Deluxe 4 is from V Communications (<http://www.v-com.com>).

**Pros**

- Works on any PC with sufficient storage space to add a new operating system.
- OS Wizard makes installing a new OS a piece of cake, repartitioning, verifying that sufficient space is available for boot files, then installing the OS.
- Controls which OS you boot at startup.

- Can password protect any/all OS(es) at bootup.
- Can check for master boot sector viruses.
- Comes on two floppies.

**Cons**

- Perhaps the price... at about \$75 Canadian (not including shipping).

**Out of box**

Easy install. Very good manual and wizard support. Street price: US\$49.95 (US\$39.95 for download version)

**WinZIP 7.0 SR-1**

WinZip (and prior to Windows 95, PKzip)

have been an essential tool for any PC technician or for that matter any Internet user since day one. This utility saved my bacon more than once when I was in college, as there was always one file that was too big to fit on a floppy... thank God for PKzip and now WinZip. WinZip is a file compression utility that allows you to compress any file into either a self-extracting EXE or a ZIP file. WinZip 7.0 SR-1 shareware is from Nico Mak Computing Inc. (<http://www.winzip.com>).



**Pros**

- Ubiquitous compression format (ZIP) used on IBM-compatible PCs.
- Archives can be set to uncompress with directories and sub-directories intact.
- Can create self-extracting archives.
- Opens pretty much any type of compressed file (ZIP, Z, GZ, TZ, TAZ, TGZ, LZH, ARJ, ARC, TAR, CAB, EXE, UU, UUE, XXE, BHX, B64, HQX, MIM).
- Extensive help utility.

**Cons**

- Can't think of any, other than it doesn't run in DOS.

**Out of box**

Simple to install. Very good documentation. Street price: \$45

**Further thoughts**

It is interesting the way shareware and commercial utility vendors are getting harder to differentiate. Most of the commercial utility vendors now offer 30- to 60-day free trial versions of their utility software on their Web sites. At the same time, all of the shareware vendors listed have produced timely updates to their programs and offer support services for a fee.

Inevitably we get asked if we could choose only one, which utility would we absolutely, positively have to have with for PC pump up work. For Franz/Jack it's easy: he'd have List nestled away on every one of his emergency boot disks. For Hans/Nathan, the choice is Partition Magic with List (as its only 26KB) snuck onto the same diskette. □

Nathan Surveyer (A.K.A. Hans), works as PC/MAC/network technician; he can be reached at [nes\\_pcmac@kawartha.com](mailto:nes_pcmac@kawartha.com).

Jack Surveyer, (A.K.A. Franz), pumps up as a consultant; he can be reached at [jbsurv@inforamp.net](mailto:jbsurv@inforamp.net).

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**Streaming cinema**

NB—Kanakaris Communications Inc. has launched an Internet cinema it calls CinemaPop.com, streaming movies-on-demand for Web surfers with Microsoft's Windows Media Player. CinemaPop.com serves up a combination of free offerings, members-only access (US\$4.95 a month), and pay-per-view screenings (usually Y\$1.95 to watch a single film any time during the course of a month). Already on the bill for free is 1950's *Cyrano de Bergerac* starring Jose Ferrer, and the not-so-classic 1977 horror flick *Alice, Sweet Alice* starring Brooke Shields.  
<http://www.cinemapop.com/>

**Global pop music chart**

NB—Worldpop.com is the first global Web site designed with the music needs of teenagers and young adults in mind. This niche, the firm says, has been overlooked by many, but worldpop.com is destined to become the portal for chart music fans the world over.  
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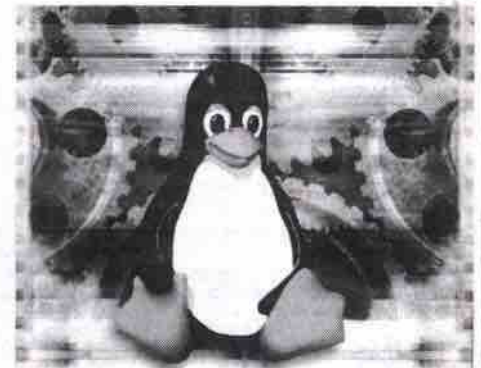
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# Utilities the heart and soul of Linux

From a certain point of view, Linux can be seen primarily as a set of utilities bonded together by a common kernel. These utilities form the "toolkit" model that has endeared Unix to programmers, system administrators, and advanced users for more than three decades.



By Gene Wilburn

It is frequently the utilities that attract new users to Unix in the first place. The tools are so rich in potential that entire books, such as *Unix Power Tools* (O'Reilly & Associates, ISBN: 1-56592-260-3, \$85.95), have been written about them.

Many of the key utilities that come with Linux were developed by the GNU Software Project, headed by Richard M. Stallman. Linux is so heavily dependent on and interwoven with GNU utilities that one Linux distribution, Debian, calls itself Debian GNU/Linux. The GNU utilities include everything from a directory lister to a C++ compiler. GNU utilities, most of which are based on older Unix utilities but rewritten from scratch, tend to be feature rich. They frequently improve on the originals.

Linux utilities come in two basic flavours: open source and commercial. Some commercial products, such as RealPlayer, are available for free, while others, such as the BRU tape backup software, are available for a fee. The majority of Linux utilities are free, open-source packages.

Traditional Unix utilities evolved in the command-line environment. Because of that, they can be joined together to form powerful shell scripts and cron jobs. Some of the newer, graphical utilities are designed to be clicked and pointed at in the X Window System. In this article we'll take a brief look at some of the more popular Linux utilities.

### The toolkit mindset

When the entire OS is largely a collection of tools, it's difficult to find a starting place. Just about everything you do on a Linux system, from listing files (ls) to changing your password (passwd) is a utility. The results of one utility can be piped into the next in a chain to create a new, customized utility. For a simple example of this, let's assume you'd like to know how many files are in your /bin directory. To find out, you can simply pipe the output of ls to the word count utility, wc, using the "lines" flag (-l):

```
$ ls -l /bin | wc -l
64
```

Continued on page 24



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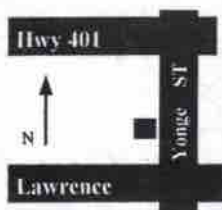
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**Utilities the heart and soul of Linux**  
Continued from page 22

It's a piece of cake to take something like this and create a new utility shell script. Here's one I created to monitor the activity of a Linux mailhub. It checks the sendmail processing queue to see how many email messages have been deferred due to delivery problems. I called the script "mqueue" and placed it in /usr/local/bin for system-wide access. It's a one-liner:

```
$ ls -l /var/spool/mqueue/ql* | wc -l
```

At any time you can type **mqueue** on this system to find out how many potential "problem" messages are in the queue.

Taking the concept one step further, I created a shell script called "mailalert.sh" that checks the number of messages in the queue against a threshold number and sends the system administrator(s) an email saying that there might be something amiss. If the number crosses a certain threshold, it could be the result of a dropped link to the Internet or, worse, a spam-relay attempt by an outside party. Although the queued messages could also be the result of normal, heavy processing with a high incidence of undeliverable mes-

sages, it's something you, as system administrator, should know about:

```
#!/bin/sh
# mailalert.sh

threshold=20
currentnum=`ls -l /var/spool/mqueue/ql* | wc -l`

if [ $currentnum -gt $threshold ]
then
datestamp=`date`
mail postmaster -s "Mail Queue Alert" <<EOM

There are $currentnum messages in the mail queue on

$datestamp

Check /var/spool/mqueue

EOM
fi
```

Note the backticks or left-apostrophes (') in the script. These are essential for issuing commands. A resulting mailalert message looks like this:

```
>From root Sun Mar 12 08:16:29 2000
Date: Sun, 12 Mar 2000 08:16:29 -0500
```

```
From: root <root>
To: postmaster
Subject: Mail Queue Alert

There are 65 messages in the mail queue on

Sun Mar 12 08:16:29 EST 2000

Check /var/spool/mqueue
```

(As an aside, you should always alias postmaster to a real user account or two on a production system so that a sysadmin will regularly receive mail about anything out of the ordinary with the system's mail agents.) The preceding shell script combines four basic utilities—ls, wc, date, mail—into one logical sequence. The next step is to put this into a scheduler to be run at specified times during the day.

This brings us to "cron," the traditional Unix scheduling daemon. Once you've created and tested a new utility script, you can schedule it to run at various times of day or night by scheduling it with the crontab utility. You invoke crontab as **crontab -e** for editing. A typical crontab entry looks like:

```
0 */4 * * * /usr/local/bin/mailalert.sh
```

This "cron job" entry can be translated as "run the mailalert shell script located in /usr/local/bin every four hours, on the hour, every day of the week, every day of the month, every month." For a full explanation of crontab entries, type **man 5 crontab**.

Nearly every Linux utility is accompanied by a man (manual) page for quick reference. To see all the possible options you can use with any given utility, consult the man pages (man ls or man wc for example). Your progress with Linux will bear a direct correlation to the amount of time you spend reading man pages.

This simple example—having the system monitor the status of the sendmail processing queue for deferred messages and sending alerts when appropriate—gives you a glimpse of the Unix toolkit mindset. When the tools and all the glue needed to join them together are at hand, you have unlimited, open-ended opportunities to create anything you need. Linux is the ultimate tinkerer's dream.

**Finding things in files**

Not everything has to be scripted, of course. You run many utilities from the command line to do one-off tasks and queries. Examples of such utilities would include the members of the grep family—grep, fgrep, and egrep—which are used to find pattern matches in files.

For example, you may know that some of the HTML pages on your Web site contain references to Linus Torvalds but you can't remember all the relevant pages. If the pages are in a single directory, you can type:

```
$ grep -il linus /home/httpd/html/opensource/*.html
```

This one-liner does a case-insensitive (-i)

search on "linus" through all the .html files in the directory /home/httpd/html/opensource. The -l flag asks grep to print a list of all the filenames that contain matches. Without the -l flag, grep would display every matching line in every matching file, which can also be highly useful.

Want to email this list to your Web master? You can do it all at one time from the command line:

```
$ grep -il linus /home/httpd/html/opensource/*.html | \
> mail -s "The Linus Torvalds files" webmaster
```

Grep is frequently used to search for patterns in log files. It provides a quick way to find that needle in the haystack. For example, one of your users may complain that a message he or she sent to a colleague in Arizona was never sent (implying, of course, that your server is at fault). You can grep the system mail logs under the recipient's email address to see if the outside system accepted the mail or not. If the reply "User unknown" is in the logs as part of the status of the message, it's a sure bet that your user has mistyped the address. Convincing the user that this might be the case is a little easier when you can provide the evidence.

Although the grep default is to display the line that contains the match, it is often useful to have some context for that line, such as the line preceding and the line following the matching line. GNU grep, which Linux systems offer, provides contextual grep by either using the -C context flag, which provides two lines before and after, or by specifying the number of context lines you want. Here's an example of looking through the mail log on a Debian GNU/Linux system with one line of context before and after the matching line:

```
$ grep -l gwilburn /var/log/mail.log
Mar 12 11:43:34 debian sendmail[513]: LAA00513:
from=root, size=50,
class=0, pri=30050, nrpts=1,
msgid=<200003121643.LAA00513@debian.wilburn.all
>,
relay=root@localhost
Mar 12 11:43:34 debian sendmail[513]: LAA00513:
to=gwilburn@home.com,
delay=00:00:00, mailer=local, stat=queued
Mar 12 12:29:14 debian sendmail[545]: alias database
/etc/aliases.db out of date
```

Contextual grep is particularly useful when inspecting documents or source files.

Quite often it's desirable to grep right down through an entire directory tree. The traditional way to do this is by combining grep with another utility called find. Find is a powerful, complex tool that can traverse directory trees.

Out of curiosity, I used find and grep to query the number of references to Linus Torvalds in the /usr/doc directory of a Red Hat 5.2 system:

```
# find /usr/doc -type f | xargs grep -i torvalds | wc -l
78
```

**Examples**

**Example 1**

```
$ df
Filesystem 1024-blocks Used Available Capacity Mounted on
/dev/hda2 1022327 294144 675364 30% /
```

**Example 2**

```
$ df -h
Filesystem Size Used Avail Capacity Mounted on
/dev/hda2 998M 287M 660M 30% /
```

**Example 3**

```
$ free
total used free shared buffers cached
Mem: 22176 21624 552 20324 1996 10272
-/+ buffers/cache: 9356 12820
Swap: 130748 124 130624
```

**Example 4**

```
3:31pm up 8:39, 3 users, load average: 0.00, 0.00, 0.00
38 processes: 37 sleeping, 1 running, 0 zombie, 0 stopped
CPU states: 5.8% user, 6.7% system, 0.0% nice, 87.5% idle
Mem: 22176K av, 21688K used, 488K free, 20632K shrd, 2044K buff
Swap: 130748K av, 124K used, 130624K free 10156K cached
```

PID	USER	PRI	NI	SIZE	RSS	SHARE	STAT	LIB	%CPU	%MEM	TIME	COMMAND
1693	genew	13	0	728	728	568	R	0	7.5	3.2	0:00	top
178	root	4	0	2856	2856	576	S	0	5.0	12.8	1:17	XF86_SVGA
1	root	0	0	368	368	312	S	0	0.0	1.6	0:05	init
2	root	0	0	0	0	0	SW	0	0.0	0.0	0:00	kflushd
3	root	-12	-12	0	0	0	SW<	0	0.0	0.0	0:00	kswapd
4	root	0	0	0	0	0	SW	0	0.0	0.0	0:00	md_thread
5	root	0	0	0	0	0	SW	0	0.0	0.0	0:00	md_thread
160	genew	0	0	1176	1176	900	S	0	0.0	5.3	0:00	bash
161	root	0	0	420	420	352	S	0	0.0	1.8	0:00	getty

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**The state of your system**

Two Linux utilities you will find invaluable are `df` and `du`. The `df` utility summarizes free disk space. By default it lists sizes in blocks, which can vary from system to system (see Example 1 in table).

This display is the default on most Unix systems. GNU `df`, however, offers the excellent `-h` flag, meaning "human-readable", that produces a more graspable result (see Example 2 in table).

The `du` (disk usage) utility offers more granularity. It can traverse a directory tree or subtree to determine how much space is being used. It can take the measure of an individual user or the extent of your corporate Web site.

The `du` default provides a directory by directory summary, with a grand total summary at the end. It, too, can be invoked by using the `-h` flag for improved readability. On my Debian GNU/Linux portable, for instance (an elderly IBM ThinkPad), the `/usr/doc` directory occupies about 20 MB of disk space. Using another useful utility, `tail`, here are the last 10 lines of its readout, including the summary:

```
$ du -h /usr/doc | tail
20K /usr/doc/sgml-tools/html
202K /usr/doc/sgml-tools
137K /usr/doc/psgml
9.3K /usr/doc/netcape-base-407
1.0K /usr/doc/netcape-base-4/doc
10K /usr/doc/netcape-base-4
9.3K /usr/doc/netcape-base-45
1.8K /usr/doc/plugger
2.5K /usr/doc/motifnls
20M /usr/doc
```

With the summary flag, `-s`, I can get a snapshot of my personal disk usage:

```
$ du -hs /home/genew
867K /home/genew
```

It's easy to see that with less than 1 MB, this is a new setup. It'll begin to fill up in no time.

Another good state-of-the-system utility is `free`. `free` gives you a snapshot of memory usage, including virtual memory, or swap space (see Example 3 in table).

Another essential system utility is `top`. `top` shows you the top processes running on your system. It can be highly useful for identifying memory hogs or a runaway process. When you type `top` you see a display similar to Example 4 (see table).

**Backup and compression utilities**

One of the most ubiquitous Unix utilities is `tar`, short for tape archiving. `Tar` is used to create tar files and tar backup tapes. On a file level, `tar` works in a manner somewhat similar to the Windows ZIP programs, except that, by default, `tar` does not compress files. The most widely used compression utility is `gzip` (GNU zip), which is unrelated to DOS ZIP.

By default `tar` recurses subdirectories, making it a good utility to use when moving large sets of directory structures with subdirectories and files from one place to another. If you have a SCSI tape drive attached to your Linux system, you can `tar` your whole system to tape with the following command:

```
# tar cvf /dev/st0 /
```

Restoring everything from the same tape would require:

*Continued on page 27*

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Utilities the heart and soul of Linux

Continued from page 25

```
# cd /
# tar xvf /dev/st0
```

There is usually a bit more to backup than this, however. There are certain directories you should exclude (/dev and /proc, for instance). The tar man pages will help you with the finer details.

Tar is also used extensively as a way to transfer Unix and Linux programs. When you go to a site to get source files, you generally get a compressed tar file, which you reconstitute to a directory on your local system. These files are frequently referred to as tarballs.

A tar file is often compressed with GNU zip and ends in the extension .tgz or .tar.gz. You can uncompress the file, then extract the tar files, or do it all in one:

```
# gunzip myarchive.tar.gz
# tar cvf myarchive.tar
```

or simply

```
# tar cvfz myarchive.tar.gz
```

If you obtain a file with the extension .Z, as in myarchive.tar.Z, it has usually been compressed with an older Unix utility called compress. To uncompress it, you type:

```
# uncompress myarchive.tar.Z
```

Other compressors include the more aggressive

bzip2, which makes smaller files, and zip/unzip, utilities that can create or open DOS ZIP files.

Tar is by no means the only way to backup your Linux system. Most veteran system administrators prefer dump and restore over tar for whole system backups. Others use a more complex program called cpio, which includes better error detection. Dump, restore and cpio are usually installed by default on Linux systems.

For backing up several servers across your network to a single tape device, many administrators turn to amanda, an open-source product from MIT that is available for all Linux distributions.

Backup is one area where commercial utilities have made some headway into the Linux world. Two of the popular backup programs are BRU (Backup and Restore Utility) from Enhanced Software Technologies (<http://www.bru.com>) and Knox Software's Arkeia backup software (<http://www.arkeia.com>). Specially licensed home versions of these are sometimes included in Linux distributions or are can be downloaded for personal use. Both products offer robust error checking, tape management, GUI interface, and multi-server backup across the network.

Other noteworthy utilities

Unfortunately there are so many excellent utilities available for Linux that this survey barely scratches the surface. Is Perl a utility or a programming language? Perl scripts are easy to incorporate inside shell scripts. Two of the classic and powerful Unix utilities, awk and sed, are studies unto themselves. Awk can parse

fields out of text files and sed, the Unix stream editor, can be used in search and replace scripts on text files such as HTML pages.

There are several programs available for synchronizing your system's time with public time standards. Of these, rdate is the simplest to use.

Want to see a file in hexadecimal? Use hexdump or the octal dump utility od with the -h hex flag. Need version control over a set of files? Visit rcs, revision control system, for a very sophisticated utility that is free on Linux (and costs upwards of \$500 for Windows systems).

Need to compare the differences between two files? Meet diff. Want to filter your incoming email into various mailboxes and filter out email from certain parties? Just study procmail. Need to set up an email vacation notice while you're holidaying in Fiji? Use vacation.

Everyone needs security. Replace telnet with ssh. Need to download files from the Net but don't like all the banner ads? Lynx, the champion character-based Web browser to the rescue.

If you're exchanging floppies with the DOS world, you'll love the mtools. Programs like mcopy, mdir, mdcl make exchanging data on floppies very easy.

And then there's probably my personal favourite utility: screen. It allows me to have several virtual terminal sessions on a single connect. Perfect for the command-line junkie.

We haven't even touched on sound utilities, CD rippers, and graphical wonders such as The GIMP. It's all there. You can spend the better part of a lifetime just discovering all the useful utilities for Unix/Linux. One way to

keep up with new offerings is to subscribe to the comp.os.linux.announce newsgroup.

And don't forget more and less, the essential Linux page viewers. Well, that's more or less all the space we have for grok'ing Linux utilities (to the best of my knowledge, Linux does not have a utility named grok). Happy greping. ☐

Gene Wilburn (gwilburn@home.com) is a Toronto-based IT manager, musician and writer who operates a small farm of Linux servers. Back issues of his Linux for Newbies and Linux Inside columns are available on his Web site (<http://www.northernjourney.com>).

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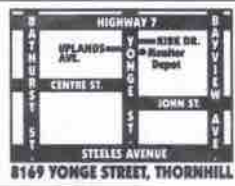
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620PU (600x1200 dpi/36-bit)	\$129/\$131

**Hewlett Packard**

4200 (600 dpi/36-bit/USB)	\$265
5200 (600 dpi/36-bit/USB/P)	\$359
6300 (1200 dpi/36-bit/USB/S)	\$519

**Modem/Network**

**Acer**

56K V.90 w/voice PCI/ISA	\$45/\$68
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**Diamond**

56K PCI V.90	\$43
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**Jaton**

56K V.90 PCI/ISA	\$33/\$62
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**Motorola**

56K V.90 USB(EXT)	\$75
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**WiseCom**

56K PCI V.90 Software	\$23
56K PCI V.90 w/voice	\$31
USR 56K PCI w/voice (Retail)	\$169

**Aopen**

10/100 B-T PCI	\$23
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**AOpen**

10 Base-T PCI	\$16
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**Aopen**

10 Base-T 4-Port Hub	\$52
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**ARK**

100 Base-T 4-Port Hub	\$92
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**WiseCom**

10/100 Base-T PCI	\$15
10 Base-T 4-Port Hub	\$32
10/100 4/8-port Hub	\$97/\$119

**Monitor Super Special**

**CyberVision 19"**  
**\$468**

**Viewsonic 17"**  
**\$299**

**Viewsonic 19" PF790**  
**\$640**

**NEC 17" FE700**  
**\$397**

**KDS 17"**  
**\$250**

**Hard Drive**

**Fujitsu**

6.4G MPE3064AT	\$123
8.4G MPE3084AT	\$135
10.2G MPE3102AT	\$151
13.6G MPE3136AT	\$171
17.6G MPE31360	\$180
13.6G MPE3136AH	\$195

**IBM**

DeskStar 20G 5400RPM	\$250
DeskStar 25G 5400RPM	\$315
DeskStar 20G 7200RPM	\$255
DeskStar 27G 7200RPM	\$379

**Quantum**

CX 20G 5400RPM	\$214
LM 10G 7200RPM	\$189

**Accessories**

Chassis - Aopen; AT & ATX  
Keyboards - KeyTronic / Ace!  
Mouse - Areson/Logitech  
Blank CD - Mitsui / Hi-Space

All prices are suggested retailed price, Monitor Depot may sell for LESS.



# Utilities for enhancing your Mac



## Commercial, freeware, shareware offerings

By Peter Milburn

Despite frequent updates and advances to operating system software, somebody always manages to figure out a way to extend, enhance or generally make your computing experience more enjoyable. These additions or enhancements are known as utilities. According to the *Oxford Dictionary*, a utility is defined as "a useful thing." On the Mac, a utility can be as rudimentary as a software control panel or extension, all the way up to full-blown specialized applications.

Pricing varies as widely as the choice of utilities. The programs reviewed here are either freeware, shareware, or commercial, and can therefore range from free to a few hundred dollars.

### Maintenance utilities

Like any machine, computers aren't failsafe. Under certain conditions the data stored on your drive can become corrupted, robbing you of your information and sometimes rendering your machine unusable.

Disk maintenance utilities are not intended as a substitute for regular backup procedures. Their primary purpose should be to perform preventative maintenance of your storage mediums, and they should only be used to recover data as a last resort.

### Disk First Aid

From: Apple Computer  
<http://www.apple.com>  
 Price: bundled with Mac OS  
 This simple utility is included on your Mac OS CD-ROM, or you can download it from

Apple's Web site. Although not as sophisticated as many of the commercial disk maintenance utilities when it comes to data recovery, it will likely serve you well if you use it as a preventative tool on a regular schedule. If you want your Mac to automatically check for directory damage during the startup process after a forced restart, then go into General Controls under Control Panels and check the Shut Down warning option.

Continued on page 32



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Blank CD \$1.70each CD Backup \$7. Each

Professional System	Advance System	AMD K7 System	Intel 810 System																																																																																																				
ASUS P3C-2000, intel820 chipset mainboard Ball Bearing Cooling Fan SDRAM 128MB, 133mhz, 168 PINS ASUS V6800 Pure Deluxe 32MB AGP Sound Blaster Live Value! Panasonic 1.44MB Floppy Drive Fujitsu 20GB /w 2MB Hard Drive (7200rpm) Pioneer DVD-4, 10X Internal DVD Rom ATX Deluxe Case with 250W Microsoft Internet Keyboard Microsoft IntelliMouse ViewsonicPF775, 17" D-Flat Monitor Altec Lansing ACS 56 Digital Sound System Aopen 56K v.90 internal voice modem Windows 98 (2nd edition) Manual and CD <b>Pentium III 533(133) .. \$2,819.</b> <b>Pentium III 550(133) .. \$2,839.</b> <b>Pentium III 600(133) .. \$2,929.</b>	Aopen / QDI VIA chipset 133mhz mainboard Ball Bearing Cooling Fan SDRAM 64MB, 133mhz, 168PINS ATI Xpert2000 32MB AGP Video Card Yamaha 3D PCI Sound Card NEC 1.44MB Floppy Drive Fujitsu 10.2GB Ultra DMA Hard Drive Panasonic 40X Internal IDE CD-Rom ATX Med-Tower Case with 250W Windows 95 Keyboard Logitech PS/2 Mouse AcerG77217".251280Monitor Samsung SMS6100 Mini Subwoofer System 56K v.90 internal voice modem Windows 98 IS NOT INCLUDED <b>Pentium III 500 (100) .. \$1,379.</b> <b>Pentium III 550 (100) .. \$1,449.</b> <b>Pentium III 600 (133) .. \$1,539.</b>	Gigabyte K7 mainboard K7 Ball Bearing Cooling Fan SDRAM 128, 100mhz, 168PINS ASUS V3800 Magic TNT2 AGP Card Sound Blaster Live Value! Panasonic 1.44MB Floppy Drive Quantum 13GB KA Hard Drive (7200rpm) Toshiba DVD-4, 6X Internal DVD Rom Hi-Tower Case with 250W Logitech Internet Keyboard Logitech First Mouse Plus ViewsonicPS790, 19".251600Monitor Creative PC Works Aopen 56K v.90 internal voice modem Windows 98 (2nd edition) Manual and CD <b>AMDK7-600... \$3,079.</b> <b>AMDK7-650... \$3,259.</b> <b>AMDK7-700... \$3,659.</b>	QDI Winnex1, i810 mainboard SDRAM 64MB Pc100 Cooling Fan Intel 4MB / 3D Sound On-Board Fujitsu 6.4GB Hard Drive Panasonic 1.44M Floppy Drive Delta 48X IDE CD-Rom Windows 95 Keyboard ATX Med Case Logitech PS 2 Mouse 56K v.90 internal voice modem Samsung15".281024Monitor Windows 98 IS NOT INCLUDED <b>Celeron433... \$859.</b> <b>Celeron466... \$869.</b> <b>Celeron500... \$899.</b> <b>Celeron533... \$989.</b>																																																																																																				
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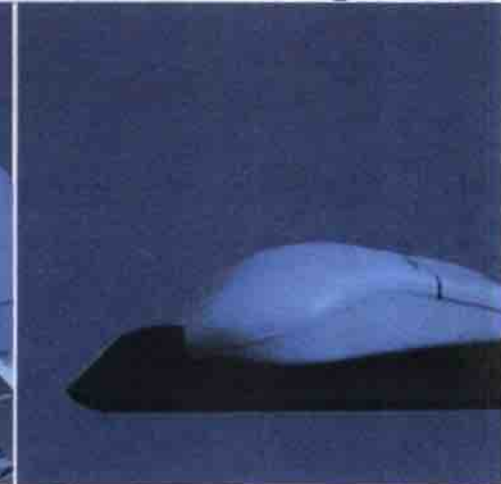
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**Utilities for enhancing your Mac**  
Continued from page 28

**Apple System Profiler**

From: Apple Computer  
http://www.apple.com  
Price: bundled with Mac OS  
This has been one of the most useful utilities Apple has bundled with the Mac OS in recent years. It can be accessed under the Apple menu and provides you with comprehensive identification of your hardware devices, network set-

tings, control panels, extensions, applications and system software.

**Norton Utilities**

From: Symantec  
http://www.symantec.com  
Price: \$150 (commercial licence)  
This package has been a mainstay for many years by offering a wide suite of diagnostic, recovery and other specialized tools. Symantec includes the Norton Disk Doctor module as a first-line-of-defence preventative

diagnosis and repair tool. The more sophisticated Volume Recover module is intended to be used in dire situations in which Disk Doctor fails to repair damage, and you need to attempt to salvage your data. Although some of its functions are automated, it has some powerful custom controls that are better left to experts who better understand them. Some of the other modules include Speed Disk for disk optimization, and UnErase for recovering files after emptying the trash.

Long considered the preeminent disk repair

tool, Symantec has recently been slow to offer updates that address changes in Apple system software. This has left the door open for smaller, more aggressive and nimble competitors like MicroMat and Alsoft.

**TechTool**

From: MicroMat  
http://www.micromat.com  
Price: \$120 (commercial licence)  
MicroMat offers disk and data recovery tools similar to Norton Utilities, but it goes the extra mile by including more comprehensive hardware diagnostics as part of the package. For



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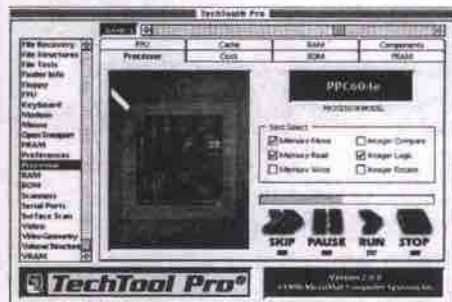
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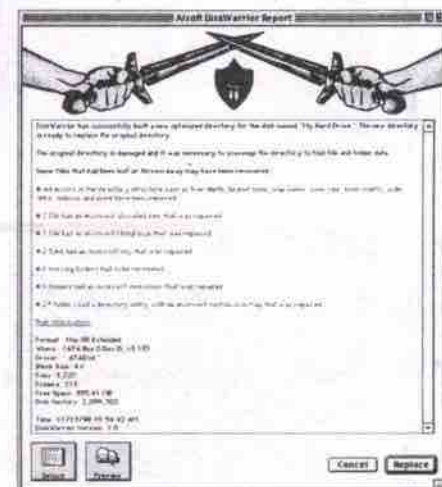


example, TechTool can identify the type of RAM your computer uses, and, if applicable, whether or not it is properly interleaved. If you have an older Mac, it will go as far as testing devices on an external SCSI bus to see if they are all functioning properly. It will even check your dial-up modem for line noise.

TechTool comes in Standard, Pro and Deluxe versions. If you purchase the Appicare extended warranty package, the deluxe version is included at no extra charge.

**Diskwarrior**

From: Alsoft  
http://www.alfsoft.com  
Price: \$105 (commercial licence)



Alsoft takes the approach of developing tools that do one job extremely well with little intervention required from the user. Diskwarrior is a highly specialized disk diagnosis tool that takes a unique approach to repairs. Other utilities simply patch directory problems, whereas Diskwarrior rebuilds the directory from scratch, then rewrites it to the disk as an optimized file.

**PlusOptimizer**

From: Alsoft  
http://www.alfsoft.com  
Price: \$45 (commercial licence)  
Similar in function to Norton's Speed Disk, PlusOptimizer rewrites fragmented file data into contiguous blocks. Performing this type of maintenance every month or so decreases access times, thereby increasing disk performance and saving wear-and-tear on the hard drive mechanism.

Continued on page 41



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## Waking up to denial of service attacks

The DoS attacks of February are a fading memory, but they leave unanswered questions: Who launched them? Why? What implications will such attacks have on the evolution of the Web?

By Tom Venetis

The reason behind the recent denial of service attacks on some of the Web's most popular sites still remains a mystery.

In February, Yahoo!, Buy.com, eBay, E\*Trade, Amazon.com, ZDNet and CNN.com were hit by a distributed denial of service (DDoS) attack, a coordinated effort involving several computers around the U.S. and possibly within Canada that flooded the sites with bogus information requests. Anyone wanting to get to these sites was effectively shut out as they stalled due to the information overload.

While there has been much speculation around possible motives, law enforcement officials both in the U.S. and Canada have been tight lipped about the direction of their investigations.

### Sifting clues

Steve Berry, supervisory special agent with the FBI in Washington, D.C., would only say the investigation into the recent attacks was ongoing. He was also reluctant to talk about the work the FBI has been doing with the RCMP in order to investigate a possible Canadian link to the attacks.



"The only thing we are confirming with regard to the RCMP is that we had discussions with them," Berry adds. "We are not giving details of what the discussion entails or what the outcome of the discussion was."

The RCMP's Technological Security Branch in Ottawa—which investigates computer-based crimes—would not comment on its joint efforts with the FBI.

While denial of service (DoS) attacks are nothing new, what surprised many about the February attack was its scale and coordination. Most DoS attacks involve a single computer or server sending bogus information requests to another in an effort to overload it. What made these attacks different is that several Web sites were attacked at once and a number of computers in different locations were recruited to launch it.

John Alsop, president and chief executive officer of BorderWare Technologies Inc. in Mississauga, Ont., says the attack was so effective because of the general lack of security around the many networks and individual computers hooked up to the Internet. This made it easy for someone to get to an unsecured machine and install the necessary programs that would later seize the machine and

*Continued on page 38*

## DoS vulnerability hits home

By Tom Venetis

When someone decides to launch a denial of service (DoS) attack, they rarely do it directly for a very simple reason: a direct attack is too easy for network managers and law enforcement officials to detect and track back to the person who launched it.

"One of the reasons the FBI is having problems tracking down the DoS hackers is that they did not go to one system and tell that system to attack Yahoo," says Greg Gilliom, chief executive officer of Network Ice Corp. (<http://www.networkice.com>) in San Mateo, Calif. "They bounced through three or four systems and used the fourth to tell the machines to attack Yahoo. If you are a good hacker, you would never start an attack from your own system. You would be caught."

Gilliom suspects that on average a home system that is regularly connected to the Internet is scanned by hackers at least once a week.

Instead, what hackers look for are unsecured, vulnerable systems that can be used to reach other systems. For the longest time, university computer systems were a favourite target because they were largely open to all computer users. In the distributed denial of service (DDoS) attacks that made news headlines in February, several university systems were found to have been hacked into, then used to coordinate the attacks.

Because of this, universities are now beginning to shut down the security holes hackers have used to get into their systems. But as universities begin making their systems more secure, hackers are shifting their focus to home systems as a platform from which to launch their attacks. The home systems most attractive to hackers are those using cable modems or DSL connections to the Internet.

Framingham, Mass.-based International Data Corp. (IDC) predicts there will be some 327 million users worldwide hooking onto the Internet by 2003. Forrester Research Inc., which is based in Cambridge, Mass., expects to see nearly 15 million cable modem or DSL connections in the U.S. by 2002.

Gilliom says home systems using cable or DSL modems are appealing to hackers because they are always connected to the Internet.

While there are no firm statistics on how

*Continued on page 37*

## Internet sharing in Windows 98 SE



Windows 98 SE (Second Edition) is a minor upgrade from Windows 98. It contains bug fixes, some new drivers and minor new features, Internet Explorer 5.0, and one major feature that isn't available as a free download: Internet

Connection Sharing (ICS).

ICS is a very easy way of sharing a single Internet connection and account with your network of users. However, judging from conversations I have had, and newsgroup postings I have read, implementing ICS is not without challenges. Following are some details about how to get through some of the trickier parts of installation and configuration.

ICS requires Windows 98 SE be installed on one computer only—the one you use to connect to your Internet service provider (ISP).

The client computers can be running different versions of Windows. If you are using Sympatico HSE (High Speed Edition), don't bother since it isn't compatible. A regular Sympatico account—and any other dial-up account—will work. I used a Netcom Canada account and a 56Kbps modem for my testing. I should point out that ICS is also part of Windows 2000 Professional, but my description is based on Windows 98 SE.

The ICS feature is not part of a default installation of Windows 98 SE. If it isn't installed on your computer, you will need to install it before you can begin. Go to the Control Panel, Add/Remove Programs, click on Windows Setup, then pick Internet Tools. Select Internet Connection Sharing and, if prompted, supply the Windows 98 SE CD-ROM. The ICS files are on the disc, but so many computers have the entire contents of the Windows CD-ROM in a subdirectory that it's often not needed.

Once you reboot, as prompted, a Wizard starts. There is a very good chance that the

Wizard will succeed in setting up your computer if your LAN and dial-up networking connection are in good order. You should also have TCP/IP installed and bound to your Ethernet card. The Wizard only needs to run on the computer that connects to your ISP. It is often called a gateway (even if it's an HP or Compaq).

You should have a blank diskette handy. The Wizard will prompt you for it, and will write two files to it. You will use this diskette to configure the other computers on your LAN to use ICS. The two files are very small, so the disk is ready in a few seconds. Remove the diskette and restart the computer. When you log in again you won't see the Wizard—and unless you've read a manual or a readme file, you won't know what to do next. One of the files on the diskette is the readme file you need (it would be helpful if the Wizard did a better job of guiding the user).

If you go to Network in the Control Panel, you will see that the Wizard did more than just

*Continued on page 40*



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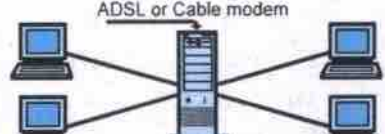
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<b>Hard Drive</b>	Western Digital 6.4GB	Western Digital 15.3GB, 7200rpm	Western Digital 15.3GB, 7200rpm	IBM 20.5GB, 7200rpm 2M
<b>Controller</b>	On-board EIDE, ATA/66	On-board EIDE, ATA/66	On-board EIDE, ATA/66	On-board EIDE, ATA/66
<b>Chassis, Power Supply</b>	ATX Med-Tower & 250W	ATX Med-Tower & 300W	ATX Med-Tower & 250W	ATX Med-Tower & 300W
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<b>Monitor</b>		Samsung 750S, 17" .27 monitor	Samsung 750S, 17" .27 monitor	Viewsonic PF790, 19" .25 monitor
<b>Keyboard</b>		Acer PS/2 & MS Sidewinder GamePad	Acer PS/2 keyboard	Microsoft Internet PS/2 keyboard
<b>Mouse</b>		Logitech 2 button PS/2 Mouse & pad	Logitech 2 button PS/2 Mouse & pad	AOpen PS/2 Wheel Mouse & pad
<b>Modem</b>	AOpen V.90 Data/Fax/Voice Modem	AOpen V.90 Data/Fax/Voice Modem	AOpen V.90 Data/Fax/Voice Modem	AOpen V.90 Data/Fax/Voice Modem
<b>Internet Access</b>	One month unlimited access of Internet	One month unlimited access of Internet	One month unlimited access of Internet	One month unlimited access of Internet
<b>Operating System</b>	Windows 98 2nd Ed. w/ CD & manual	Windows 98 2nd Ed. w/ CD & manual	Windows 98 2nd Ed. w/ CD & manual	Windows 98 2nd Ed. w/ CD & manual
<b>Depot Warranty</b>	2 years labour & 1 year parts warranty	2 years labour & 1 year parts warranty	2 years labour & 1 year parts warranty	2 years labour & 1 year parts warranty
	<b>Celeron 433</b> \$619	<b>AMD K7 600</b> \$1,848	<b>Celeron 466</b> \$1,438	<b>Pentium III 550</b> \$2,538
<b>Throne Computer Special Price</b>	<b>Celeron 466</b> \$629	<b>AMD K7 650</b> \$1,898	<b>Celeron 533</b> \$1,508	<b>Pentium III 600</b> \$2,608
	<b>Celeron 500</b> \$659	<b>AMD K7 700</b> \$1,968	<b>Pentium III 550</b> \$1,628	<b>Pentium III 700</b> \$2,908
	<b>Celeron 533</b> \$699	<b>AMD K7 750</b> \$2,108	<b>Pentium III 650</b> \$1,798	<b>Pentium III 750</b> \$3,138

\*\*All Prices are already 3% discounted for cash, Money Order and Certified Cheque (pre-approve only), or Direct payment (Interac). VISA, Master Cards or Government P.O. are on regular prices. (Regular price = Cash discounted price + 3%). Government, educational institutions & corporate P.O. are welcome, shipping cost is extra. Prices are subject to change without notice. See our up-to-date prices at: [www.throne.com](http://www.throne.com)

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Int IDE HD ATA/66 Removable Kit \$ 63	ATX, Med Tower 6 bays 250W \$ 60	ATX, Med Tower 6 bays 250W PS2 \$ 18	AGFA Snapscan 1212U (white) USB \$ 138	SDRAM 32M, 168pins 100MHz \$ 46	AOpen 56K Ext V.90 Serial \$ 72
IDE 5400 RPM:	ATX, Full Tower 9 bays 250W \$ 85	Keytronic 104 keys Keyboard AT/PS2 \$ 23	AGFA Snapscan 1236S SCSI \$ 265	SDRAM 64M, 168pins 100MHz \$ 83	AOpen 56K Ext V.90 Serial \$ 98
Maxtor 8.7 GB 90871U2 \$ 149	ATX, AOpen Mini Tower 250W \$ 85	Logitech mouse Serial / PS2 \$ 15	Creative Webcam Go USB \$ 208	SDRAM 64M, 168pins 100MHz IBM \$ 127	USR 56K Int V.90 w/voice PCI HW bulk \$ 104
Maxtor 10.2 GB 91021U2 \$ 156	ATX, AOpen Full Tower 10 bays 300W \$145	Logitech USB Wheel Mouse \$ 25	HP ScanJet 3300C USB \$ 169	SDRAM 64M, 168pins 133MHz \$ 85	USR 56K Int V.90 PCI retail \$ 144
Maxtor 15 GB 91531U3 \$ 183	ATX, Intel Columbus III Server Case 300W \$487	Logitech Wingman Joystick \$ 35	HP ScanJet 5200C * USB/Parallel \$ 329	SDRAM 128M, 168pins 100MHz \$ 165	USR 56K Ext V.90 retail \$ 173
Maxtor 20.4 GB 92041U4 \$ 206	ATX, Intel Astor II Server Case 300W \$725	Microsoft Internet Keyboard \$ 36	HP ScanJet 6300C USB/SCSI \$ 515	SDRAM 128M, 168pins 133MHz \$ 170	
Maxtor 30 GB 93073U5 \$ 289	Power Supply 250W / 300W \$ 28 / 35	Microsoft Internet Keyboard Pro USB \$ 60	HP ScanJet 6350C USB/SCSI \$ 632	SDRAM 256M, 168pins 100MHz \$ 330	
WD 6.4 GB 64AA \$ 141	ATX Power Supply 250W / 300W \$ 33 / 60	Microsoft Intellimouse Exp Optical Mouse \$ 75	Intel PC Camera w/ Video Capture \$ 178	SDRAM 256M, 168pins 133MHz \$ 355	
WD 8.4 GB 84AA \$ 149					
WD 10.2 GB 102AA \$ 162					
WD 13.6 GB 136AA \$ 182					
WD 20.5 GB 205AA \$ 217					
WD 30 GB 307AA \$ 280					
IDE 7200 RPM:					
IBM 20GB \$ 259					
Maxtor 13GB \$ 212					
Maxtor 30GB \$ 325					
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IBM 9.1G 07N3220 U160 10020rpm 2M \$ 525					
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ATX, Med Tower 6 bays 250W \$ 60					
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**DoS vulnerability hits home**  
Continued from page 34

many home systems have been hacked, Gilliom suspects that on average a home system that is regularly connected to the Internet is scanned by hackers at least once a week. Hackers are looking for vulnerabilities that they can exploit.

Using such programs as Back Orifice or Sub7, hackers look for weaknesses that they can use to download Trojan programs onto a system. The program will then take over the system and make it a platform to reach another vulnerable system or to launch an attack against a Web site. Many times, people don't even know their system has been taken over until the police show up with a

warrant to confiscate the computer.

To combat home system hacking, Network Ice released BlackIce Defender, a program that acts as a personal firewall. It continually monitors a computer's connection to the Internet to detect whether someone is trying to gain access. If it detects someone trying to get to the computer, it will automatically block access and try to track where the hacker is.

Chris Monnette, Canadian general manager for Symantec Corp. (<http://www.symantec.ca>) in Toronto, says even users with standard dial-up Internet connections are vulnerable to hackers. Recently, Symantec released Norton Internet Security 2000, a software suite that filters a computer's inbound and outbound information.

"I don't have broadband at home and I was downloading a fairly sizable file," Monnette says. "I have Norton Internet Security [on my home system] and when I came back from doing something else I noticed that there were at least two attempts of someone trying to hack into my computer and [they] were blocked."

Gregor Freund, president of the San Francisco, Calif.-based Zone Labs Inc. (<http://www.zonelabs.com>) suspects that in the next little while more home systems will be hacked into and used as platforms to launch attacks, especially as many hacking programs are now being ported to Windows.

"We think this will become a huge concern as institutions and universities begin shutting down

the vulnerabilities of their computers," adds Freund. "The next logical venue for a DoS attack would be from home computers. If you sit on a cable modem, you have a 10 Mbps pipeline that can be used in these kinds of attacks."

Like Network Ice and Symantec, Zone Labs also offers computer users a personal security utility. ZoneAlarm 2.0 monitors a user's connection and system and issues a warning when an application or program tries to access the Internet. A user can specify which programs and applications they want connecting to the Internet and blocking others. ZoneAlarm also works by making the system invisible to the network thereby making it harder to be scanned or hacked into. □

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**Waking up to denial of service attacks***Continued from page 34*

use it as a platform to attack a Web site.

"What happened is that a lot of smaller companies have their computers on the Internet thinking no one will target them," Alsop adds. "But the reality is that hackers have automated tools which can scan large blocks of Internet addresses and will find unprotected and vulnerable systems, and break in without you knowing about it. That system will then be used as a platform for an attack."

One puzzling aspect of this DDoS attack is the lack of bragging from those responsible after the fact. Most attacks or hacking incidents are often followed by a floods of people in hacking chat rooms and sites claiming credit.

For a short time, it was suggested that someone going by the moniker Mafiaboy was a suspect. Now speculation has shifted to someone called Coolio. Recent media reports in the U.S. have law enforcement officials investigating a New Hampshire teen, who they suspect may be Coolio. However, there is some suspicion that this teen may not be the Coolio associated with the February DDoS attack, but may indeed be another Coolio who has been linked to earlier, less damaging attacks on other Web sites. There are also questions as to whether more than one individual was involved in the attacks.

"Our investigation is continuing and we have made some progress with a number of leads that have taken us in several directions," added a spokesman for the FBI in Washington, D.C. when contacted by *The Computer Paper*. "But until someone has been charged with anything we would not comment further."

**Was it political?**

The silence from law enforcement officials has not stopped people from speculating on motives for the attacks. There has been suggestion that the attacks were a form of protest against the rapidly growing commercialization of the Internet—a coordinated form of culture jamming or hacktivism aimed squarely at those most interested in commercializing the Internet for their own gain.

It was only a few years ago that the Internet was being heralded as a tool for creating a more egalitarian and democratic society. It would liberate people by giving them instant access to information and break down such pesky barriers as national borders and government controls. Now, some say, the Internet is nothing but a place to buy left-handed bottle-cap openers, and the only liberating thing about it is how quickly you can file an IPO for an Internet startup company.

The culture-jamming scenario has been given greater credence in some quarters because it followed on the heels of the protests against the World Trade Organization in Seattle, Wash. in late November. A distinguishing feature of the WTO protests was how effectively many groups involved used the Internet not only to organize the protests but to focus

discussion on how big business is exerting more control over the world's economies and the Internet.

"After the WTO, I had the feeling that there are a lot of culture jammers out there who don't like the way the Net is evolving, which is [into] just another marketing tool for corporations," says Kalle Lasn, editor of the Vancouver-based *Adbusters* magazine. "It was only a short while ago that when the first ad appeared in cyberspace, the argument was whether there should be ads at all in cyberspace. Now, you go just about anywhere on the Net and it's flashing with ads."

Naomi Klein, author of *No Logo* and a critic of the commercialization of the Internet, says if the February DDoS attack was a kind of culture jamming, there was a certain elegance about it. The attack turned the tables on the sites by flooding them with the kinds of information requests the companies ask people to send to them all the time.

"It is sort of like jujitsuing them," Klein adds. "They are bombarding us with messages every day and we are now bombarding them with messages."

Others, however, don't see the attacks as either elegant or as a form of protest. They say the attacks were poorly conceived and too plainly obvious. Among older hackers, the attacks smack of someone young and inexperienced, looking to make a name for themselves. They don't believe any larger social statement was being made.

"I don't think the person or persons are following any kind of ideology," says Ken Chase, vice-president of operations at Velocet Communications Inc. in Toronto. "If someone was culture jamming, they would be more mature and they would take up a much more subtle, insidious and effective anonymous attack. We would still not know what happened."

Klein disagrees and argues that what bothers older hackers is the possibility of there being a larger social message behind the attacks. For older hackers, what mattered was the elegance of the code and how swiftly they could get into a system. There was no social message behind what they were doing, except to show off their programming and hacking prowess.

"These are not high-tech hacks because the point is not to show off your technical ability, but to make a political point," Klein says. "That confounds the old school hackers whose point is to show off how skilled they are and to later market that skill. Hacking is like an extreme job application."

Still others wonder what all the fuss is about. David Jones, a professor of computer science at McMaster University and president of Electronic Frontier Canada in Hamilton, Ont., says the attacks were not as disruptive as many in the news and government organizations have suggested. There are days when a Web site gets so overloaded with regular requests that people are shut out until things die down, he says. It may cause a few to grumble in despair, but life goes on nonetheless.

"It is also important to recognize that the denial of service attacks were detected and put to an end within a few hours," Jones adds. "So rather than thinking of this as a catastrophic problem, the site reacted very quickly. Last year, there was a fire in a downtown Toronto Bell building and a lot of the Internet in Canada was offline for much of the day. That was a greater catastrophe than what hit eBay."

And Jones is skeptical of the claims being made by some that the stock values of these companies were harmed because of the attack. On any given day, any one of those company's stock can go up and down on the exchange and for reasons that have nothing to do with the attacks.

"The prices continue to be where they were before and there was no stock crash," Jones adds. "It seems people who hold these stocks believe these attacks don't really matter. There is nothing true today that was not true last month for both the Internet and e-commerce."

**Liability issues**

One of the interesting questions raised by these recent attacks against some of the Web's major e-commerce sites is what legal remedies a company has to protect itself.

Michael Geist, a law professor at the University of Ottawa, and a specialist in the Internet and e-commerce, says Canadian federal law has provisions built into it that would most likely apply to the kinds of attacks launched against Yahoo!, eBay and the others.

Currently, the Criminal Code has anti-hacking laws that deal with the fraudulent use of computer services, in some cases imposing maximum terms of up to 10 years imprisonment for perpetrators. These laws could be applied to hackers who broke into systems in order to launch attacks against another site—which is the first step in a DoS attack.

The more interesting question for Geist is whether the owner of the system that was taken over and used in the attack is liable for the attack.

"The emerging consensus on that issue is that there would be the potential for such an

action, provided that the party that facilitated the attack was negligent in allowing the attack to occur," Geist adds. "The standard is much the same that we see in any tort action where the question is has someone not provided sufficient duty of care to anyone they have a contract with or otherwise."

Currently, Geist is unaware of any Canadian companies that have been taken to court because their systems were hacked into and used to attack another Web site.

"We are really at the cusp of this sort of activity and I don't know of anyone who's been sued for conducting denial of service attacks or facilitating them," he continues. "My own view would be that there are not sufficiently accepted standards or precautions that ought to be taken that a court could cite as a reasonable set of protections."

Geist suggests that online sites also look into hacking insurance as a way of giving themselves another level of protection.

David Griffiths, senior vice-president and head of the financial services group with Toronto-based Aon Reed Stenhouse Inc. says hacking insurance has been around for some time. Lloyds of London has offered hacking insurance since the mid-1980s and there are some nine companies around the world offering hacking coverage of various kinds.

Griffiths says such hacking insurance covers a wide range of liability, privacy, intellectual property and exposure issues along with third-party coverage for attacks from the outside.

He also believes it would be very hard for someone to sue for possible losses suffered because a site was hit by a DoS attack because many sites offer other traditional means of doing business that exist alongside their Web initiatives. An investor, for example, could still use a phone to buy or sell stocks if their broker's Web site goes down. Many Web sites offer businesses and their clients more convenience, but they have not replaced more traditional means of conducting business.

Sites that only offer a Web-based means of doing business may be more vulnerable to lawsuits as they do not offer alternatives if problems occur. □

**Scrabble on the Web**

NB—This site is the home of the Scrabble board game, where use of the more unusual letters of the alphabet scores big rewards. The site is multilingual and contains stuff for kids and adults, information about new CD-ROM games, the Scrabble for schools program in the U.S., an interactive anagram builder and an online dictionary lookup to solve disputes about allowed words.

<http://www.scrabble.com/>

**Speakers' Corner on the Net**

NB—Speakers' Corner is situated on a corner of London's Hyde Park, a strange and exciting place where meetings are held and people can speak to an audience from a soapbox in the open air freely. Among those who have attended meetings here are influential figures in world history such as Karl Marx, Frederick Engels and V.I. Lenin. This Web site helps the visitor explore and understand Speakers' Corner, looking at the oratory, discussion, debate, humor and madness, that has sustained it for over 150 years.

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Internet sharing in Windows 98 SE

Continued from page 34

write two files to a diskette. You'll see that ICS, along with several other components, have been added.

The gateway computer does more than just share its connection: it acts as a DHCP host, providing an automatic, private IP address as well as name resolution service to client computers on the LAN.

Take the diskette over to the first computer you want to configure. The only file other than the readme.txt file is called iclset.exe (I would guess that the name is derived from ICS Client Setup). This is a tiny 84KB application, which you double-click after first checking that the gateway computer is connected to the network and also to the Internet. In a few seconds, you can select the option to connect to the Internet through your gateway over the LAN.

Then the browser—in my case Internet Explorer 5.0—will appear. Microsoft says Internet Explorer 3.x/ Netscape Navigator 3.x or later will also work. I think most other browsers, such as Opera, will work too, but I wasn't able to test this.

I groaned when the browser came up with the MSN home page by default, since I don't like that kind of intrusiveness. However, my groans were quickly quieted by the speed of my connection. I know from experience what to expect from a 56Kbps modem, and this was much faster. When I saw download speeds in excess of 100Kbps, which is about 15 times faster than I would expect, I realized that I was connecting to the Internet via my proxy server

(running on a Linux computer connected to the Internet with a cable modem).

The reason why this happened is simple and instructive. As Microsoft points out in the readme file, this version of the ICS Wizard configures the browser, but doesn't install or configure the TCP/IP protocol for Ethernet adapters. I had TCP/IP installed, but with a fixed IP address and other choices that aren't what ICS needs. I selected Obtain An IP Address Automatically, and Use DHCP For WINS Resolution. I also disabled DNS and removed the IP address of my proxy server from the installed gateways section.

Once I had made these changes and rebooted, everything went smoothly, with one small exception. The client computer receives bandwidth on demand. Simply loading the Web browser is enough. If the gateway computer is connected, there is instant bandwidth. If it isn't, a dial-up networking session is initiated. Unfortunately, the connection doesn't occur fast enough to avoid an error message on the browser. The best solution I found is to choose a blank page as the default start page.

Setting up connection sharing with ICS is as easy as with any competing product I have tried. If your needs are straightforward, there will be no further issues. However, there are programs, such as online games, that need to connect to particular ports. That's where it can become messy. Microsoft addresses this issue in a Knowledgebase article, which shows how to build an INF file to solve this problem. Microsoft carefully points out, though, that it doesn't support this technique. □

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**Utilities for enhancing your Mac**  
Continued from page 32

**PlusMaker**

From: Alsoft  
http://www.alsoft.com  
Price: \$45 (commercial licence)  
With the release of Mac OS 8.1, Apple began to give users the option of formatting their disks as either Mac OS Standard (HFS) or Mac OS Extended (HFS+). The extended format increases disk storage capacity efficiency by making disk allocation block sizes smaller. Normally, one would have to backup data to another device, reformat and reinitialize the hard drive, then move data back to the extended format drive. PlusMaker lets you do this conversion quickly and painlessly while leaving your data stored on your drive. To see whether your disk is formatted as standard or extended format, select the drive and use the Get Info command.

**Anti-virus utilities**

Viruses in the Macintosh world are rare occurrences. However, if you frequently share files through discs and the Web, you may want to consider one of the following utilities.  
It's important to remember keep this software up to date so it can recognize the latest viruses. Next to disk maintenance tools, anti-virus tools are probably the most popular type of utilities.

**Disinfectant**

ftp://ftp.acns.nwu.edu/pub/disinfectant/  
Price: free (freeware download)  
This popular anti-virus software is easy to use but it can only eradicate viruses that have already infected your hard drive. It's available as a free download on many Mac sites.

**Norton AntiVirus**

From: Symantec  
http://www.symantec.com  
Price: \$110 (commercial licence)  
Norton AntiVirus is considerably more sophisticated than Disinfectant. It can monitor every activity on your hard drive, consistently warning you of suspicious modifica-

tions. Although this can become annoying, it can help prevent viruses before they infect your hard drive. Configuration controls allow you to adjust the degree of interruption you feel comfortable with.

**System software utilities**

These utilities augment the Mac OS by either improving existing management features, or adding strategic technologies to address Apple's core markets.

**Conflict Catcher**

From: Casady & Greene  
http://www.casadyg.com  
Price: \$120 (commercial licence)  
Extensions patch themselves onto the system software's core to add functionality. Many devices and software you install on a Mac use this extension mechanism in order to offer specific features.

Unfortunately, extensions can be both a blessing and a curse. The more devices and software you install, the greater the chance that a conflict between extensions will occur. The Mac OS's bundled Extension Manager allows you to enable or disable extensions to avoid conflicts, but it is up to you to figure out through trial and error which one is the culprit.

Conflict Catcher extends the Extension Manager's capabilities by offering features like automatic extension conflict detection, merging of your old system folder with a clean installation, and many other useful tools.

In Mac OS X, extensions will no longer patch themselves directly onto the OS, so it will be interesting to see whether extension managers will have a role in the future or not.

**USB Overdrive**

From: Alessandro Levi Montalcini  
http://www.usboverdrive.com  
Price: \$30 (shareware)  
One of my personal favorites, USB Overdrive is best described as a universal driver for attaching any USB peripheral to your Mac and configuring its operation. USB Overdrive works in concert with Apple's USB Support



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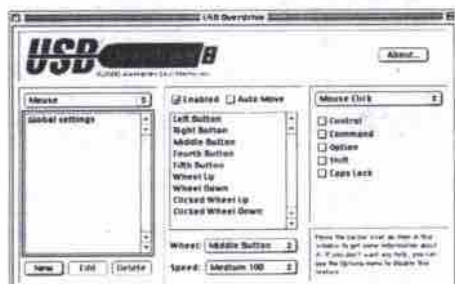
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- KDS 17" .27 1280x1024 \$ 249
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- Viewsonic E773 17" .25 1280 \$ 365
- Optique 095 19" .26 1600 \$ 485





1.3.5 software and Game Sprockets 1.7.3. The obvious advantage is that you can use USB peripherals that don't have Mac OS USB drivers developed for them. Alternatively, you can disable limited function drivers and further enhance a device's capability. It's especially useful for third-party mice, game controllers and joysticks.

**Suitcase**

From: Extensis



http://www.extensis.com

Commercial price: \$150

The Mac's most popular font management utility, Suitcase, competes with Adobe's Type Manager Deluxe. If you have a large font library, you can break it up into smaller sets

that are well-suited to various projects. The latest version now allows you to temporarily open fonts that are not part of the font set you are using.

**AppleScript**

From: Apple Computer

http://www.apple.com/applescript

Price: bundled with Mac OS 9

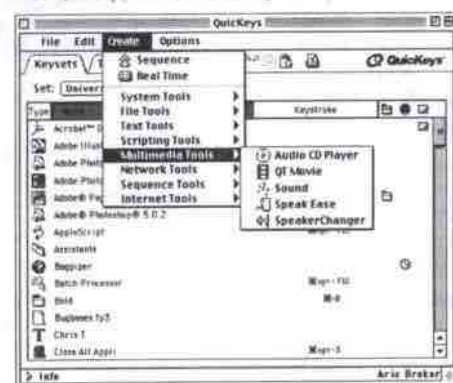
One of Apple's best kept secrets is the scripting language built in to the Mac OS. AppleScript offers sophisticated control over the OS, application and network functions using a high-level English-like syntax. These scripts can then be played back to automate repetitive operations. Mac OS 9 has added support for AppleScript communication over TCP/IP. If you don't want to program your own scripts, then go to Apple's or third-party Web sites to download freely available scripts.

**QuickKeys**

From: CE Software

http://www.cesoft.com

Price: \$150 (commercial licence)



Not prepared to take on the programming challenges of AppleScript? Then consider the point, click and record simplicity of QuickKeys. It won't give you the same level of control that AppleScript offers, but can generate many types of useful scripts for everyday tasks that don't require AppleScript's sophistication.

**QuickTime Pro**

From: Apple Computer

http://www.apple.com/quicktime

Price: \$45 (download upgrade)



If multimedia production is the way you make your living, then it is definitely worth upgrading from the standard QuickTime Player included with Mac OS to QuickTime Pro. Its comprehensive import and export capabilities for various image, sound and video formats will allow you to easily repurpose existing content for distribution to film, tape, CD-ROM and the Web.

**Application utilities**

Many of the following utilities are freeware or shareware. If you have a full-time high-speed

connection to the Web you'll find a few of them extremely useful.

**Stuff Expander/DropStuff**

From: Aladdin Systems

http://www.aladdinsys.com

Price: free

On the Mac platform, these file compression/decompression applications are the definitive standard. The latest versions support decompression of the .bin and .hqx formats that are common on ftp sites. They can be downloaded for free or are accessible from the Mac OS 9 disc.

**Acrobat**

From: Adobe

http://www.adobe.com

Price: \$375 (commercial licence)

Acrobat saves any of your native documents as universal font- and platform-independent PDF (portable digital format) files. As long as the recipient has Acrobat Reader (which is free) installed on their computer, your documents can be opened and printed with font and graphics formatting intact. This format has become extremely popular on the Web for promotional literature distribution, and is quickly becoming a standard in electronic publishing.

**Transmit**

From: Panic

http://www.panic.com

Price: \$40 (shareware)

This ftp client shareware product is an attempt to unseat the incumbent Anarchie standard by

Continued on page 44

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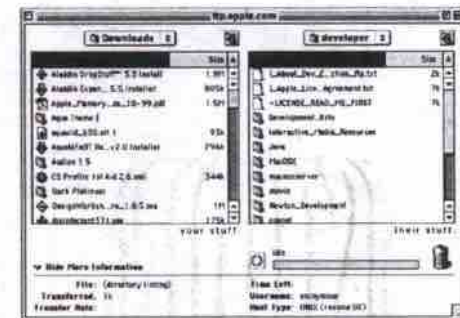
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Utilities for enhancing your Mac  
Continued from page 42



offering a glossy drag-and-drop interface. A trial version is available from Panic's Web site.

#### MacTicker

From: Aladdin Systems  
<http://www.aladdinsys.com>  
Price: \$45

If you like to track your stock portfolio at home or at work, this trading board and electronic stock ticker may be what you are looking for. MacTicker is a portal that allows you to track markets all over the world by retrieving quotes from a few of the major stock sites on the Internet. Keep in mind that the reports you see are not relayed in real time, quotes are usually delayed by at least 15 minutes.

#### Macster

From: Blackhole Media  
<http://www.blackholemedia.com/macster>  
Price: free

Familiar with an application called Napster in the Windows world? Macster is the equivalent utility that searches the Web for your favourite MP3 files. The latest release allows you to save downloaded MP3 files with the QuickTime creator and type codes, so you can open them up directly in QuickTime Player.

#### Bottom line

We've barely managed to scratch the surface of the utilities available for the Macintosh. There are literally dozens of other commercial, shareware or freeware packages that can be hunted down on the Web. I've just covered some of the more popular ones and others that I use on a regular basis.

It's worth noting that anti-virus software and many of the software extras in Norton Utilities (such as Filesaver, Disklight etc.) will add considerable complexity to your system, and may compromise stability of your system. You'll have to weigh these stability issues against the benefit of the feature offered to decide if they're really worth using. □

Peter Milburn is with Elite Systems Support in Calgary, Alta. He can be reached at elite.systems@home.com.

#### Adventures in Internet dating

NB—A funny, witty and sometimes scary look at Internet dating. This site collects together a pile of funny, interesting, peculiar and sometimes vulgar responses to one woman's search for online romance. If you've tried it yourself you may recognize the style of some of the letters she received. If you're thinking you might meet someone through the Internet, it's worth a look so you're prepared for what may arrive in your mailbox!

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# Fixes for five common PC problems

## IT troubleshooter offers time-tested solutions

By Al Buchanan

How many times a week does your system lock up or produce an error message? Do you find yourself waiting for your system to load applications or open Web sites? You are not alone. These are the most common problems—among a few others—I have dealt with over the past five or six years.

With all of the technological advances in the last decade, you would expect the personal computer to be more refined and a whole lot more stable. Not so. In this same period, operating systems have become infinitely more complex, and PC processor speeds have started to push the 1 GHz (gigahertz) envelope.

Think about it this way: Imagine you're walking along at a leisurely pace down a forest path and you trip over a tree root. You skin your palms or bump your knee when you fall, but you get right back up and carry on down the path. You are a 33 MHz 486 DX system running DOS 6.22 and Windows 3.1. Now imagine you are sprinting down the same path wearing a 90 kg backpack, juggling five raw eggs and trying to keep an eye on the path 25 m ahead. Suddenly, you trip over another tree root. This time you can't get up so quickly, the eggs are done for, and you might even have broken a bone or two. You are a 700 MHz Pentium III running Windows 98 SE.

People are demanding faster and faster PCs, but operating system developers are falling further and further behind. Consequently, companies are releasing new and revised products before they are ready, and the consumer is left to sort out the bugs.

Here are some tips to help make your PC more productive and your time computing less of a headache.

available updates specific to your system.

Pay close attention to the Critical Updates section. Check off any of the updates and follow the instructions. The patches in the Critical and Recommended sections will help stabilize and secure your platform.

There is also a link on this page that leads to the Office 2000 update page. If Word or Excel are acting up on your PC, try the patches available at <http://officeupdate.microsoft.com>. If you are having trouble with graphics files or frame rates, download the Microsoft upgrade to DirectX 7a.

### Data corruption

Excel won't open a spreadsheet? Word complains about invalid end of file? Your data is scrambled? Most of these problems are caused by General Protection Faults (errors) or system freezes because the files were not closed properly by the application. This can result in the loss of hours of work.

A product called Office Recovery may be able to help. Point your Web browser to <http://www.officerecovery.com> and select the type of file you need to recover. Office Recovery offers free trial versions of this software (which offer limited recovery capability). Currently, they can perform recovery on Excel Spreadsheets, Word documents and PowerPoint presentations. Recovery capabilities for Access databases, Outlook files and Exchange files are under development. Office Recovery software has been a ZD Editor's Pick in the past.

Product	Licence	Price
Word Recovery 1.0	single-user	\$99
	10-user	\$190
Excel Recovery 2.1	single-user	\$149
	10-user	\$290
PowerPoint Recovery .5	single-user	\$99
	10-user	\$190

(Order online or by phone 203-272-4380.)

### Unstable OS

To keep your operating system stable, I always suggest people keep abreast of product updates. This is a very simple exercise. Microsoft maintains a Web site where all of the latest patches for its currently supported products can be found.

Point your Web browser to <http://windowsupdate.microsoft.com> (clicking on the Windows Update icon in your Start menu will also take you to this site.). On the left of the update page, you will find a link to Product Updates. Click on this and a small Java applet will run, checking your system for the latest revisions of particular files. The site then builds a list of

### Viruses and Trojan infection

By far the most prevalent and intrusive problem that has evolved from the use of the Internet is the spread of virus code and trojan applications. Re-mailer viruses like Happy99, remote-control Trojan viruses like Back Orifice, or system killer viruses like Chernobyl can all infiltrate your system and do anything from sending themselves to everyone on your email address list to overwriting your system

Continued on page 48



The Proven Winner In Motherboards

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## M865VIA



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The advanced features of the PC133 VIA Apollo Pro system Board include Support 3-450 - 750mhz, Coppermine 500-750mhz, PII 233-450mhz & Celeron 266-533mhz  
 CPUs with frequency at 66/100/133mhz in slot 1/ socket 370 for Baby AT Form factor  
 Provides 3 x DIMMs for PC133 SDRAM memory modules and expandable up to 768mhz 3 x PCI, 1x ISA and 1x AGP  
 3D PCI Sound Pro on board, meets PC98 Spec., HRTF Positional Audio supports MS- Direct Sound  
 3D and Aureal's A3D compatible interface, w/ 4 channel speaker out; software Wave-table synthesizer  
 and Digital Audio interface (SDPIF) In/ OUT with 24-bit, 48KHz sample rate and measured 128dv audio quality  
 56K Fax/ Modem on board, supports b.90 Fax/ Modem standard for internet communication  
 2MB Flash ROM on board, provides complete Advanced Configuration Power Interface (ACPI) and  
 Legacy PMU, Ultra DMA 66, fully compliant with PC97 and PC98 Spec. Provides ATX power connector supports various functions of ATX power such as Suspend, Shutdown,  
 Wake on LAN, Wake on modem, Wake on Alarm, interrupt Wake up from keyboard/ mouse , and Keyboard Power On/OFF  
 Supports PC98 Color connector for easy identification of peripheral devices. Provides Trend Micro-'s ChipAway Virus and PC-Cillin98 (OEM ) for Windows 95/98 and Internet virus protection.

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Intel i810 AGP chipset

Celeron 266-500MHz at 66/100MHz Micro AT Format  
 Support both Slot 1 and Socket 370 Processors for flexible CPU selection  
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 Audio supports MS Direct 3D and Aureal's A3D interface, w/ 4 Digital Audio Interface (SPDIF) IN/OUT with 24-bit Stereo,  
 Bundled Gamut includes MP3 Encoder/ Decoder  
 Intel 810 chipset, Dynamic Video Memory Technology, up to 1600 x 1200 in 8-bit colour at 85HZ Refresh  
 PC99 Colour Connector for easy identification of peripheral devices  
 56K Fax/Modem on board, bundled Super Voice for Fax/Modem and Voice application; MediaRing Talk for Internet Phone Communications  
 Built-in 10 Base T/100 Base TX LAN  
 and ANSI X3212 TP-PMD standards

## M756HLMRT2



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The advanced features of the PC133GFXcel system board includes:

Support p3-450 - 750mhz, Coppermine 500-750mhz, PII 233-450mhz & Celeron 266-533mhz  
 CPUs with frequency at 66/100/133mhz in slot 1/ socket 370 for Baby AT Form factor  
 Provides 2 x DIMMs for PC133 SDRAM memory modules and expandable up to 1GB  
 2 x PCI, and provides an A-DIMM slot , supports the Display Cache card or the Video Bridge add-on-card for NTSC/PAL TV output, Digital LCD monitor or Secondary CRT Monitor (optional)  
 High performance 128-bit 3D AGP Graphic Accelerator with 64mb (max) frame buffer embedded in North Bridge, up to 1920x 1200, 16M resolution; AGP Rev. 2.0 Spec.  
 3D PCI Sound Pro on board, meets PC98 Spec., HRTF Positional Audio supports MS- Direct Sound  
 3D and Aureal's A3D compatible interface, w/ 4 channel speaker out; software Wave-table synthesizer and Digital Audio interface (SDPIF) In/ OUT with 24-bit, 48KHz sample rate and measured 128db audio quality  
 10/100Mbps Fast Ethernet LAN on board, supports IEEE802.3 and 802.3u standards, and fully compliant ANSI x3.263 TP-PMD physical sub-layer  
 56K Fax/ Modem on board, supports b.90 Fax/ Modem standard for internet communication  
 2MB Flash ROM on board, provides complete Advanced Configuration Power Interface (ACPI) and Legacy PMU, Ultra DMA 66, fully compliant with PC97 & PC98 Spec  
 Provides ATX power connector supports various functions of ATX power such as Suspend, Shutdown,  
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 Supports PC98 Color connector for easy identification of peripheral devices. Provides Trend Micro-'s ChipAway Virus and PC-Cillin98 (OEM ) for Windows 95/98 and Internet virus protection.

## M771LRT



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Socket 370 supports the following processors:  
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 Integrated graphic controller with 4MB display Cache.  
 3D PCI Sound Pro on board, meets PC98 Spec., HRTF Positional Audio supports MS- Direct Sound 3D and Aureal's A3D compatible interface, w/ 4 channel speaker out; software Wave-table synthesizer and Digital Audio interface (SDPIF) In/ OUT with 24-bit, 48KHz sample rate and measured 128dv audio quality  
 PCINet DM9102 LAN chipset on board, supports IEEE802.3 and 802.3u standards, and fully compliant ANSI x3.263 TP-PMD physical sub-layer  
 4MB Firmware Hub on board, provides complete Advance Configuration Power interface (ACPI) and Legacy PMU; fully compliant with PC 97 and PC98 Spec.  
 HSP 56Kflex /v.90 modem chip  
 2MB Flash ROM on board, provides complete Advanced Configuration Power Interface (ACPI) and Legacy PMU, Ultra DMA 66, fully compliant with PC97 and PC98 Spec.  
 Provides ATX power connector supports various functions of ATX power such as Suspend, Shutdown, Wake on LAN, Wake on modem, Wake on Alarm, interrupt Wake up from keyboard/ mouse , and Keyboard Power On/OFF  
 Provides Trend Micro-'s ChipAway Virus and PC-Cillin98 (OEM ) for Windows 95/98 and Internet virus protection.



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Boards are sold without processors. Intel logos are strictly for visual representation of processors supported by the respective boards. Pricing is based on suggested retail pricing, and your local dealer may change prices without notice. All pricing is bareboard or bundled with processor only, and does not include cooling devices.



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- True 600 x 600 dpi
- 4 MB memory

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**QwikLaser Printer QL-5100A**

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- True 600 x 600 dpi
- 4 MB memory

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SyncMaster™ TFT Monitor



**SyncMaster 770TFT**

- 17" viewable size
- LCD display
- .26 mm dot pitch

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- Flat screen - no visible curvature
- .20 (H) mm dot pitch

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**Samtron 95P**

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# Hands On

Lab Test • Hardware Evaluations • Software & CD-ROM Reviews

## Athletic Athlons hit 300 on benchmark

By Sean Carruthers

AMD recently made headlines when it announced the first desktop processor to break the 1 GHz (gigahertz) barrier. While it's certainly a noteworthy milestone, it left people puzzled for a couple of reasons. First, wasn't the 800 MHz Athlon just released? Second, will the typical desktop user need anywhere near this much processor power?

In fact, the 800 MHz Athlon chips are only now starting to appear in desktop systems—systems that are definitely being aimed at power users. Anyone involved with high-end multimedia work will find the power boost extremely useful, as will dedicated gamers. Because they are still so new, however, you have to be willing to open up the wallet to play with these speed demons.

We had a chance to look at three new machines using the 800 MHz Athlon processor. Overall, these are among the fastest systems we've tested, with two of the three either touching or exceeding 300 on our Sysmark98 test—the first machines to do so.

### Express Micro AMD 800

From: Advance Interface Electronic Inc.  
Tel: 905-479-1443.  
<http://www.aiei.com>  
Estimated street price: \$3,195.



The Express Micro system is one of the cheaper 800 MHz systems we've looked at, but it contains a lot of power. The hard drive is spacious, and the DVD and LS-120 drives make it versatile in terms of media handling. The GeForce256 and Sound Blaster Live! cards give it a step up in the multimedia and gaming field, too. Other than the operating system, there is no software included with this machine. You also have to buy your own monitor, but considering what is included, the price is still very good.

### Sysmark98 scores

Overall Sysmark rating: 297  
Office Productivity: 277  
Content Creation: 327

### Highlights

- Gigabyte GA71XE motherboard with UDMA/66 support.
- Nvidia GeForce256 32 MB.
- 27 GB Fujitsu 7,200 rpm UDMA/66 hard drive. (NOTE: System tested with 13 GB version; benchmarking results may be slightly different, but should be in same range.)
- 8x Panasonic DVD-ROM drive.
- 128 MB PC133 SDRAM.
- LS-120 SuperDisk drive.
- USR 56Kbps modem.
- Sound Blaster Live! sound card.
- Logitech First Mouse and Keytronic ErgoForce keyboard.
- Windows 98 and Plus!

### IBM Aptiva E 881

From: IBM Canada  
Tel: 800-465-7999. <http://www.can.ibm.com>  
Suggested retail price: \$3,699

### Sysmark98 scores

Overall Sysmark rating: 300  
Office Productivity: 285  
Content Creation: 323

### Highlights

- IBM motherboard with UDMA/66 support.
- Elsa Erazor III AGP video card with 32 MB onboard memory and both graphics and digital video output.
- 128 MB SDRAM.
- 27 GB IBM Deskstar UDMA/66 hard drive.
- 8x DVD-ROM drive.
- CD-RW drive.
- Internal 56Kbps modem.
- IBM Rapid Access keyboard and ScrollPoint II mouse.
- Vortex AU8830 audio.
- Windows 98.
- Software bundle includes Lotus Smart Suite Millennium, World Book Millennium, and Freespace II: Colossus.

Sporting a big black case, Big Blue's latest offering is an 800MHz Athlon system that has a lot of power. It also sports



## Monsoon sound anything but flat

By Justin Siemens

In 1965, Intel co-founder Gordon Moore predicted processor capacity would double every 18 to 24 months. In the 35 years to follow, his observation, Moore's Law, has been bent and tweaked to describe the shrinking size, increasing capacity, plunging prices, and skyrocketing power of just about every element of computing. The dynamic, first applied to PC components, then the PC itself, has extended to peripherals such as monitors, printers, scanners, and speakers. In recent years PC speakers have become increasingly compact and powerful, and with the Monsoon speakers, flatter than ever before.

### Monsoon MM-700 Multimedia Speaker System

From: Songstix  
<http://www.songstix.com>  
Estimated retail price: US\$149  
Rating: 4.5 out of 5.0

Songstix's flat-panel speakers are based on a proprietary technology—Planar Focus—which uses a pair of thin, rectangular satellite drivers that work with a separate 5.25-inch powered subwoofer to create a clean, accurate representation of recorded music when properly positioned. The Richmond, B.C.-based company offers two versions of the flat speaker system, the MM-700 and the more powerful MM-1000. For this review, we looked at the former.

*Continued on page 66*

## Helio: middle ground or leading edge?



By Jim Omura

VTECH's Helio handheld combines software that is about as compact and efficient as the Palm OS with hardware that has the form factor of a Windows CE palm-size device. The VTECH unit uses the same Philips chip set that Philips uses in its own Nino 510 colour Windows CE handhelds.

But by incorporating the best characteristics of two established platforms—Palm and Windows CE—is Helio a leader or a follower? Considering the price of this unit, the quality of hardware and software, and the early indications of VTECH's good attitude towards customers and developers, I'd put them closer to the lead. Although testing of the Helio was not completed, it is certainly the most promising newcomer in the pocket computer market.

### Helio

From: VTECH Information  
<http://www.vtechinfo.com/>  
Price: US\$179 (available through direct sales only)

### Helio specifications

Size: 11.6x8.1x1.7 cm (4.5x3.18x11 in.)  
Weight: 155 g (5.5 oz.)  
Screen: 5.5x5.5 cm (2.16x2.16 in.)  
160x160 pixels, 16 grey levels  
CPU: 75 MHz Philips PR31700 (MIPS 3000 RISC)  
RAM: 8 MB SDRAM  
ROM: 2 MB Flash  
Controls: nine buttons, contrast wheel, six stenciled screen labels.  
Batteries: 2 AAA cells  
Software for Helio: VT-OS 1.1.0.3, CIC Jot  
Software for PC: Helio Desktop 1.1, CompanionLink 1.1f

**Pros:** Compact size, good applications, powerful hardware, open development system, low price.

**Cons:** No flip lid or third-party programs. Has first-generation software problems. Not available at retail level in Canada.

One area in which VTECH has taken the undisputed lead is in selection of cases, offering the Helio in five solid and three translucent colour options. The overall fit and finish of the parts were good (reflecting the company's years of experience making cordless phones), and the stylus is metal with a rubber grip.

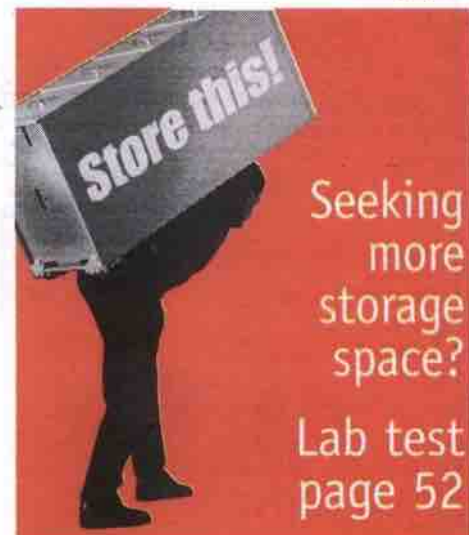
### Portability

The Helio is currently the smallest handheld computer using standard AAA batteries. The only smaller devices are the PC Card-size Rex and the Palm Vx—but the former uses a slightly less standard lithium cell, and the latter is powered by a custom lithium ion rechargeable. Though the device is compact, VTECH has chosen a soft padded case over a hard plastic flip-lid, which adds some bulk.

### User interface

Helio's implementation of graphics overall is

*Continued on page 64*







If you're seeking more storage space, what are your options? Three choices are to buy a bigger hard drive, invest in removable storage or burn your own CDs. TCP Lab reviews the latest products in each category.

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All dimensions shown are CRT size. Viewable size is smaller.

By Sean Carruthers

Think back to the last time you upgraded your hard drive. Try to remember how happy you felt buying it, how large it seemed, and how much room you thought you'd have for all your stuff. Now think about that same hard drive and about how much room you have left. Still happy?

A lot of users have gone through this storage boom and bust: what seems exceptionally spacious now will seem paltry in no time. Software manufacturers haven't been much help when it comes to hard drive space, either. Every time you turn around, they release newer versions of programs that are much larger, containing improved graphics, sound, and more features. Most of the time we welcome the added functionality, but silently curse our disappearing hard drive space.

### The options

When you run out of space, there isn't a single easy solution. If you're a heavy user, and plan to install more software and create a lot of big data files, a new hard drive is probably the answer. You can either replace your existing one for a larger, faster new device, or run two drives, using one for data and program files and the other for the operating system and drivers. (We'll get into the criteria for figuring out your best configuration below.)

If you need more data storage space—as opposed to space to install new programs or operating systems, for example—a high-capacity removable storage solution will be a better answer. With a removable solution, you can add extra storage space in smaller chunks, and swap media in and out as necessary. The removable media can be used to offload files from the hard drive that you don't want to completely eliminate, but which you won't use very often—old records you might refer to once or twice a year, for example. For this analysis we've divided removable storage into floppy-like devices and CD-RW drives, and we treat them separately. But first, a look at hard drives.

### Hard drives

If you need a larger hard drive, this is a great time to buy. Over the last year, capacities have shot up and prices have fallen. Last year, 20 GB drives cost around \$1,000. This year, drives near the same capacity mark can be purchased for under \$300. Users who want to push the envelope can get IDE hard drives that hold 40 GB of data (additionally, IBM has just announced 75 GB models), but it's an expensive solution for all but the most space-hungry user. For this month's roundup, we focused on the 20 GB range, which seems to offer one of the best cost-to-capacity ratios.

It's important to get your terms straight before you go shopping, because there are a few varieties of drives available, and you want to make sure the one you buy will work with your system.

- **IDE (Integrated Drive Electronics):** This type of hard drive is installed on most systems because most motherboards have IDE as a standard socket. Each IDE chain can hold two devices: one set to master, the other to slave. Because each motherboard typically has two IDE sockets, users can configure up to four hard drives per system. But remember that a CD-ROM generally uses the IDE chain as well. Some systems can handle up to four drives per interface, but this is uncommon.
- **UDMA/66 (Ultra Direct Memory Access):** This is the newest generation interface for hard drives, offering twice the transfer speed—up to 66 Mbps—of older drives. UDMA/66 drives can be used with older systems, but to meet the full potential of the drive, the motherboard should be equipped with the UDMA/66 interface, which can be identified by the bright blue socket, and the thinner 80-lead IDE cable. This specification is also known as Ultra ATA-66. Those without UDMA/66-compatible motherboards have two choices: upgrade the whole board, or look for a UDMA/66 upgrade card (usually PCI) to add the functionality into an older system.
- **SCSI (Small Computer Systems Interface):** The fastest SCSI drives beat IDE drives—even those with UDMA/66—in speed com-

parisons. For this reason, SCSI drives tend to be favoured by those who need high throughput between the computer and the hard drive (notably multimedia professionals). One advantage of SCSI drives is that they can be chained in greater numbers—generally up to seven per interface—inside a system. The bad news is that they tend to be pricier than their IDE counterparts, and require a special controller for systems that don't have SCSI on the motherboard (most don't). Because of the limited appeal of SCSI, we have chosen not to look at any for this review. But for users who have the money and a need for speed, SCSI is certainly worth a look.

- **5,400 rpm/7,200 rpm:** The number of revolutions per minute—commonly known as the spindle speed—indicates how fast a drive spins. Most currently available are 5,400 rpm drives. Those looking for a performance boost without having to upgrade their system's motherboard to the UDMA/66 spec can add a 7,200 rpm drive. A word of caution, though: 7,200 rpm drives have a tendency to run very hot, so you'll also have to consider an extra cooling fan, especially if the components are packed tightly inside the case.

### The testing

This month we asked for 5,400 rpm hard drives using the UDMA/66 specification, at or close to 20 GB. Each drive was formatted as a single large FAT32 partition, and a typical installation of Windows 98 was put onto each drive. Ziff-Davis' WinBench99 1.0 benchmarking suite was used to test their performance. (To publish these results we are obliged to state that WinBench is a trademark of ZD Inc. in the U.S. and other countries. These tests were performed without independent verification from Ziff-Davis, and Ziff-Davis makes no representations or warranties as to their results.)

Data transfer speeds were measured in Kbps (kilobytes per second), with higher numbers representing better performance. The rest of the test system consisted of an Asus P3C2000 motherboard with a 600 MHz Pentium III, 133 MHz system bus, an 8 MB ATI Rage Pro video card, and 128 MB of PC100 RAM.

NOTE: both IBM and Western Digital were invited to participate in this roundup, but drives were not available in time for testing.



**Fujitsu Desktop 27 XV MPE3204AT**



- UDMA/66 compatible.
- Three-year warranty.



Suggested retail price: \$320

- 5,400 rpm.
- 20.4 GB capacity.
- 512KB buffer.
- UDMA/66 compatible.
- Three-year warranty.

Drives in Fujitsu's Desktop 27 series range in capacity from 6.4 through 27.3 GB. Although the test speeds were lower than the other drives, they were still quite good. Coupled with a three-year warranty and Fujitsu's reputation for reliability, this drive makes a great choice.

**Maxtor Diamond Max 40 92049U4**

Estimated street price: \$219

- 5,400 rpm.
- 20.49 GB capacity.
- 2,048KB buffer, using 100 MHz SDRAM.

Available in 10 GB through a whopping 40 GB capacities, the Diamond Max 40 series uses a full 2 MB of 100 MHz SDRAM in the buffer for a performance boost. It certainly showed in the drive's benchmarking scores, which were consistently better than the drives that only use a 512KB buffer. This drive is also aggressively priced, which makes it an attractive option.

**Quantum Fireball 1ct10**

Estimated street price: \$269

- 5,400 rpm.
- 20.4 GB capacity.
- 512KB buffer.
- UDMA/66 compatible.
- One-year warranty.

One of Quantum's value-oriented drives, the

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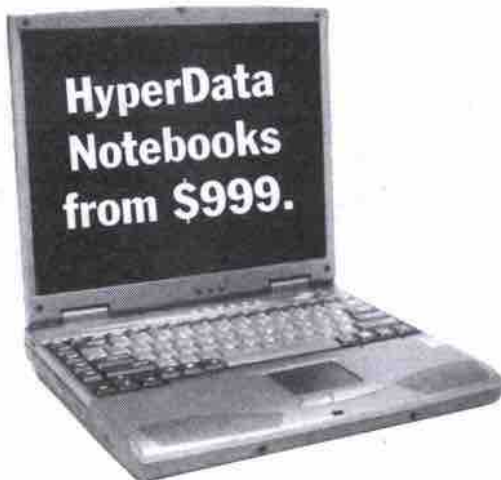
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## Hard drive survey

	Fujitsu Desktop 27 XV MPE3204AT	Maxtor Diamond Max 40 92049U4	Quantum Fireball Ict 10	Samsung SpinPoint Voyager SV2044D	Seagate U8 ST317221A
Capacity (GB)	20.4	20.49	20.4	20.4	17.2
Buffer	512KB	2,048KB	512KB	512KB	512KB
Spindle speed (rpm)	5,400	5,400	5,400	5,400	5,400
Interface	UDMA/66	UDMA/66	UDMA/66	UDMA/66	UDMA/66
Average seek time: read (ms)	9.5	9	9.5	8.5	8.9
Max transfer rate: to/from media	30.4 Mbps	36.9 Mbps	37.1 Mbps	36.4 Mbps	35.75 Mbps

### ZIFF-DAVIS WINBENCH99

#### DISK INSPECTION TESTS

- Disk transfer - begin. (Kbps)	19,600	25,700	22,500	24,300	23,400
- Disk transfer - end (Kbps)	12,000	14,900	13,400	13,300	14,300
- Disk access time (ms)	17.3	17.7	15.9	16.4	18.5
- CPU utilization (percent used)	4.31	4.25	5.25	5.24	5.29

#### DISK WINMARKS

Disk playback/bus overall (Kbps)	3,690	4,770	4,000	3,910	3,680
High end (Kbps)	11,700	14,500	13,600	12,500	12,100
- AVS/express 3.4 (Kbps)	8,470	8,490	9,550	7,480	7,950
- Frontpage 98 (Kbps)	51,800	67,600	66,700	53,700	62,700
- Microstation SE (Kbps)	12,700	14,200	14,100	12,600	13,000
- Photoshop 4 (Kbps)	6,750	8,710	7,680	7,710	7,070
- Premiere 4.2 (Kbps)	10,500	16,700	13,200	13,300	11,900
- Soundforge 4.0 (Kbps)	16,800	21,100	19,200	18,400	16,600
- Visual C++ 5.0 (Kbps)	12,400	17,500	15,300	14,500	13,500

Contact	800-263-8716	800-262-9867	800-624-5545	800-726-7864	877-271-3285
Web site	www.fujitsu.ca	maxtor.com	quantum.com	samsung.com canada.com	seagate.com
Warranty	3 years	3 years	1 year	3 years	3 years
Price	\$320 SRP	\$219 street	\$269 street	\$299 SRP	\$210 (est.)

Fireball Ict10 keeps the price low by offering a shorter warranty period than most of the other drives. This drive offers very good performance, turning in benchmarking scores in



results for the drive were quite good, and it sports a three-year warranty.

Seagate U8 ST317221A

the mid-range of our results this month. Those who have been fans of Quantum's drives in the past will like this one, and it may also earn a few new fans, too.

Thanks to Samtack (<http://www.samtack.com>) for the loan of the Quantum drive.

### Samsung SpinPoint Voyager SV2044D

Suggested retail price: \$299

- 5,400 rpm.
- 20.4 GB capacity
- 512KB buffer.
- UDMA/66 compatible.
- Three-year warranty.

Samsung's Voyager 10200 series ranges from 10.2 through 20.4 GB. We looked at the highest capacity drive in that line. Benchmarking



Suggested retail price: \$210 (converted from US\$145)

- 5,400 rpm.

## Removable media drive survey

	Imation SuperDisk 120 MB	Iomega Jaz 2 GB	Iomega Zip 250 USB	Iomega Clik! PC Card Drive
Capacity	120 MB	2 GB	250 MB	40 MB
Interface	USB	Ultra SCSI	USB	PC Card
Drivers	Windows 98, Mac 8.1	Windows 3x/9x/NT, DOS, Mac OS 7+	Windows 98, Mac 8.1	Windows 98
Copy 100 MB directory (min:sec)	5:47	1:15	5:47	Not tested*
Quick Format (min:sec)	0:09	0:12	0:10	0:05
Full Format (min:sec)	10:06	48:00	13:28	5:32
Media est. street price	\$20 each,	\$187 each	\$59 (2x),	\$45 (2x),
Multipacks	\$50 (3x)		\$194 (8x)	\$75 (4x), \$149 (10x)
Contact	888-326-7758	800-697-8833	800-697-8833	800-697-8833
Web site	www.superdisk.com	www.iomega.com	www.iomega.com	www.iomega.com
Warranty	1 year	1 year	1 year	1 year
Price	\$249 street	\$529 SRP	\$269 SRP	\$299 SRP

\*The maximum capacity of each Clik! cartridge is only 40 MB.

## CD-RW drive survey

	Hewlett-Packard CD-Writer Plus 8250i	LaCie CDRW4424u	Mitsumi CR-4804TE	Yamaha CRW8424EZ
Interface	ATAPI / IDE	USB	ATAPI / IDE	ATAPI / IDE
Write speed	4x	4x	4x	8x
Rewrite speed	4x	4x	4x	4x
Read speed	24x	24x	24x	24x
Buffer	2 MB	2 MB	2 MB	4 MB
Sustained write transfer rate: 600Kbps		600Kbps	600Kbps	1,200Kbps
OS compatibility	Windows 95/98	Windows 95/98, Mac	Windows 95/98/NT	Windows 95/98/NT, Mac
Web site	www.hp.com	www.lacie.com	www.mitsumi.com	www.yamaha.com
Contact	800-387-3867	416-530-2545	800-647-7864	416-298-1311
Warranty	1 year	1 year	1 year	1 year
Price	\$350 SRP	\$359 SRP	\$299 ESP	\$479 SRP

**Multimedia System B**  
466 MHz \$669  
500 MHz \$709  
533 MHz \$739

Intel Celeron processor  
SOYO 71WM ATX mainboard (Intel 810)  
64 MB PC100 SD RAM, 128K cache  
Fujitsu 6.4 GB UDMA66 Hard Drive  
Panasonic 1.44 MB floppy drive  
On Board 2D/3D Graphic Video  
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**Multimedia System C**  
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PIII 550 MHz \$ 999  
PIII 600 MHz \$1,039

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SOYO 6VBA+ ATX mainboard (VIA)  
64 MB PC100 SD RAM  
Fujitsu 6.4GB UDMA66 Hard Drive  
Panasonic 1.44 MB floppy drive  
ATI Xpert98(Rage Pro) 8MB AGP  
Acer 56K int. fax/modem/voice V90 PCI  
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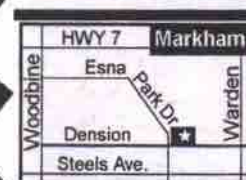
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PIII 550 MHz \$1,409  
PIII 600 MHz \$1,449

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ASUS P3C 2000 ATX M/B(Intel 820)  
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Western Digital 13GB UDMA66 hard drive  
Panasonic 1.44 MB floppy drive  
ATI XPERT 2000 AGP 32MB video card  
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Medium ATX tower case  
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Keytronic 104 PS2 keyboard  
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17" Optquest Q71 Monitor .27dpi	\$305
17" Viewsonic E771 Monitor .27dpi	\$305
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- 17.2 GB capacity.
- 512KB buffer.
- UDMA/66 compatible.
- Three-year warranty.

At 17.2 GB, this drive falls a bit short of our capacity target this month, but it was also Seagate's highest-capacity 5,400 rpm drive at the time of writing (its 7,200 rpm drives are more spacious). The drive may be worth considering, though, because it has a lower street price than a full 20 GB drive, and offers reasonably good performance, too.

## Removable storage

Removable storage offers a lot of benefits. Because it's a bolt-on solution, it generally doesn't involve the kind of extensive system rebuilding and reconfiguration that can be required when you install a new hard drive. Because the media is removable, you can add more media as required. The only limitation is the maximum capacity per disc or cartridge that your new solution uses. And because it's removable, the information on the media can be easily shared with anyone who has the same type of drive.

### Connector connection

It's important to know what kind of interface would be the best match for your system when considering a removable storage solution. The three main types of external interfaces for removable storage peripherals are parallel, SCSI and USB, though FireWire devices are expected to become more common.

Parallel devices are a mixed bag. Though the parallel port appears on pretty much every PC, it's one of the slower interfaces available, and it can be difficult to configure the system so it works with other parallel devices installed. Users with older systems may find that a parallel port connection is their only option, but those whose systems have USB ports should really look for versions of the drives that use this faster connection.

SCSI devices are a much nicer option for some users. The interface is very fast, with some users reporting that they can run games off SCSI-based removable media. Additionally, SCSI devices can be chained, allowing several devices to use the same controller. The controller, however, is the issue for many users.

Those whose systems don't have a SCSI card already installed will have to make sure that there is room for one (both on the motherboard and in the system resources!), and should be prepared to pay for a good-quality card.

A happy medium for anyone with a relatively new computer system is a USB. The interface is fairly fast, devices are hot-pluggable and generally require a minimum of user intervention to make them play well with other devices on the system.

### The tests

For the removable storage portion of our tests, we used the same 600 MHz Pentium III-based system, with the addition of a 13.6 GB Quantum hard drive. A 100 MB directory consisting of 971 files of varying types and sizes was created.

The files were first copied as a whole directory (by dragging the folder from C: drive to the removable media drive).

In the second part of our tests, the files were copied loose (by highlighting all files and dragging them over as a batch). This is an important consideration with removable media, because of the way Windows handles such tasks. When copied as a directory, the files leave the hard disk in the order they were written to the original source. When files are copied loose, Windows tries to alphabetize them on the fly, and can end up tripping over its own feet trying to get them into order.

On our test system, all of the removable media failed this second test rather quickly. It's worth noting that users with slower processors will be able to handle the task better, but could still run into errors when they attempt to copy large numbers of smaller files at one time.

### Imation SuperDisk USB external

- Estimated street price: \$249  
Estimated media price: \$20 each, \$50 three-pack
- Uses USB interface.
  - Removable media capacity: 120 MB (same dimensions as floppy diskettes).
  - Drives read and write to standard floppies.
  - Designed for use with Windows 98 and Mac OS. Also works automatically with Windows 2000.
  - Time to copy 100 MB directory: 5 min., 47 sec.
- The SuperDisk's compatibility with standard 1.44 MB floppy diskettes is both its beauty and its big drawback. Drawback first: by



compacting the media down to the same size as the floppy, it has longer write times—the SuperDisk took twice as long as the next-slowest device. The upside, however, is that it is an excellent option for machines that don't come with a floppy drive... like the iMac!

### Iomega Zip 250 USB



- Suggested retail price: \$269  
Estimated media price: \$59 two-pack, \$194 eight-pack
- Uses USB interface.
  - Removable media capacity: 250 MB.
  - Is backwards compatible with 100 MB Zip media.
  - Designed for use with Windows 98. Also works automatically with Windows 2000.
  - Slimline design comes with rubber clip for orienting the drive vertically.
  - Time to copy 100 MB directory: 3 min., 12 sec.
  - Optional PC Card attachment available for \$59. This allows drive to be used with notebook PCs and eliminates need for a power cable, too.

Zip drives have become so popular that the name is almost the generic term for removable media. Not content to rest on the laurels of the trusty old Zip-100, though, Iomega has introduced the Zip 250 drive—the media which has the same form factor but more than double the data capacity at 250 MB. The drive itself, however, is a slim new design that is the perfect complement to a notebook computer, as well as a desktop system.

### Iomega Click! PC Card Drive

- Suggested retail price: \$299  
Estimated media price: \$45 two-pack, \$75 four-pack, \$149 10-pack
- PC Card form factor fits into a notebook PC.
  - Removable media capacity: 40 MB.
  - Media slides into the end of drive.

## LaCie's 20 GB FireWire solution

### LaCie Hard Drive

- Suggested retail price: \$999
- FireWire interface.
  - Molded plastic case similar to LaCie's CD-RW drive (see main Lab Test report), so edges may be sharp!
  - 20 GB capacity.
  - 7,200 rpm.
  - 512KB buffer.
  - Dimensions: 2.54x10.16x14.6 cm.
  - Weight: 500 g.
  - Compatible with both Windows and Mac OSes.
  - One-year warranty.



Multimedia professionals and enthusiasts who need a fast, high-capacity solution for video capture will find LaCie's new FireWire hard drive is a perfect complement to their system. Plugging into any free FireWire port, it acts as a standard hard drive, with the excellent throughput that multimedia work demands. Because it is an external unit, it can easily be moved from computer to computer, which could be useful when a lot of information needs to be moved from one iMac DV to another, for example. Though its higher price means it will likely remain a niche item, those who work in a specialty field like video editing will find it an excellent addition to their systems.

—Sean Carruthers

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The Klik! PC Card drive is a bit of a specialty item. Designed for use in a notebook computer, the media slips into the drive, which itself slips directly into the PC Card slot of the notebook. Though not many devices currently use the Klik! for storage, Agfa's CL50 Klik! digital camera is a notable exception. For photographers on the go, the Klik! PC Card drive is worth considering, as it simplifies freeing up valuable space on your notebook. (Note: because Klik! disks have a maximum capacity of 40 MB, we didn't perform the 100 MB directory copy test.)

### Iomega Jaz 2 GB



Suggested retail price: \$529

Estimated media price: \$187 each

- Uses Ultra SCSI interface for fast transfers.
  - Compatible with Windows 3.1/95/98/NT, DOS and Mac OS. Automatically compatible with Windows 2000.
  - Removable media capacity: 2 GB.
  - Drive is backwards compatible with 1 GB Jaz cartridges.
  - Time to copy 100 MB directory: 1 min., 15 sec.
- Jaz has become a common tool for anyone who has to back up large files on a regular basis. Originally available in a 1 GB version,

*Continued on page 58*



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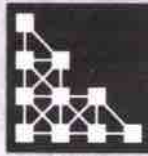
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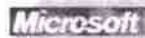
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Continued from page 56

Jaz now offers a 2 GB version for handling even bigger files. The biggest drawback to the Jaz is the media cost: at nearly \$200 a crack, it's not cheap. The ability to flip 2 GB of data in and out of the drive with the press of the eject button, however, is a definite boon for those who need to back up or offload large amounts of data. Its fast transfer speed and compatibility with a large number of OSes are big pluses, too.

### Recordable CDs

One of the biggest limitations of removable storage is the proprietary nature of their storage media. In other words, if you need to access the removable disk or cartridge at home and at work, you need to have the same drive on both systems. And if you send out data on those disks or cartridges to a service bureau or another company, you have to make sure they have compatible drives. Although Zip is fairly popular, it's not universal. As most PCs do now have a built-in CD-ROM drive, CD-based storage goes a long way towards solving compatibility problem.

CD-R (CD-recordable) drives were introduced a few years ago, and have become a success despite a few initial obstacles: expensive media, and slow, unreliable performance. Since then, prices for write-once media have plunged to about \$2 per blank, and improvements in CD writing software have made it easier than ever to custom configure a disc

with both data and audio components.

With the introduction of CD-RW (CD-rewritable) drives, it became possible to use a single disc repeatedly, as you would use a floppy diskette. CD-RW media was also initially very expensive but prices have now dropped to about \$15 per blank. Because the difference in cost between the two technologies is narrowing, manufacturers are starting to eliminate the CD-R drives in their lines, in favor of producing more CD-RW drives.

Those looking at a CD-RW drive should keep a few things in mind, the first of which is interface options. Most common CD-RW models at the consumer level have an ATAPI/IDE interface, which resides on the same chain as the standard hard drive. More expensive but more powerful are SCSI models, which have faster throughput and come in both internal and external models. Those looking for external CD-RW solutions have the option of drives with parallel, USB or FireWire connectivity. At this point, FireWire models are still uncommon and expensive, and parallel models may conflict with other parallel devices. USB models are becoming more common, but throughput may be problematic, especially for systems with other devices already on the bus.

A second consideration you need to address when considering CD-RW technology is software. If you're replacing an older drive and want to use the same CD writing software, you may have to update it before it will recognize your new drive. New users shouldn't have to worry, as CD-RW drives are usually bundled with a CD writing program.

Continued on page 60



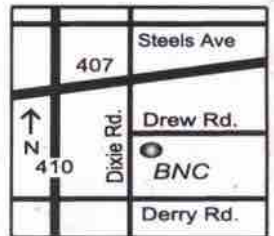
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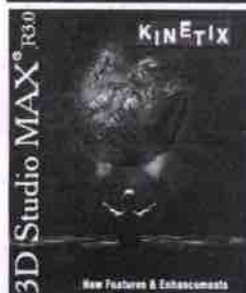


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Continued from page 58

We had a chance to take a quick look at a few CD-RW drives currently available.

### Hewlett-Packard CD-Writer Plus 8250i

- Suggested retail price: \$350
- Internal model.
  - Uses ATAPI/IDE interface.
  - Speed: 4x write, 4x rewrite, 24x read.
  - Bundled with Adaptec EasyCD Creator and DirectCD.
  - 1-year hardware warranty.
  - Designed for use with Windows 95/98.

Hewlett-Packard's CD-Writer line is very



popular, and this model is another fine addition. It provides reliable performance and reasonable speed. The price point on the drive is also good, especially considering the reputation of HP's CD-RW drives.

### LaCie CDRW4424u

- Suggested retail price: \$359
- External model.
  - Uses USB interface instead of ATAPI, which means driver installation isn't as simple as plugging it in.

- Specific drivers are required before the PC will recognize it.
- Speed: 4x write, 4x rewrite, 24x read.
  - During testing buffer under-runs occurred often when using the highest write speed. Copying to the hard drive first didn't seem to help, though lowering the write speed to 2x did.
  - Molded plastic case has modular design, but very sharp edges (I actually cut myself on it).
  - Because drive has its own cooling fan, it was fairly noisy.
  - Comes with Adaptec's EasyCD Creator and DirectCD for Windows 95/98, and Toast software for Mac OS.

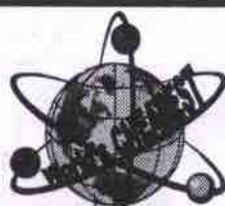


Users looking for an external CD-RW drive may want to take a look at LaCie's USB offerings. But first, a few upfront warnings. Though the drive is cross-platform, it can't be used with Windows NT. Also, because the USB interface is slower than SCSI, users familiar with SCSI may find this model's tendency towards buffer under-runs while writing a disc at the highest speed setting rather

Continued on page 62

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frustrating. Crank it down a notch, however, and it makes a good tool for multi-platform environments where USB is a standard.

### Mitsumi CR-4804TE

Estimated street price: \$299

- Internal model.
- Uses ATAPI/IDE interface.
- Speed: 4x write, 4x rewrite, 24x read.
- Older CD writing software may not recognize this drive, but it comes bundled with Adaptec EasyCD Creator 3.5 and DirectCD 2.5, as well as TriWorks Gazo and PowerQuest Drive Image.
- Designed for use with Windows95/98/NT 4.0.
- 1-year hardware warranty.

Mitsumi's drives aren't flashy, but the performance is good, with 4x rewrite and write speeds. A good software bundle adds even more value, especially since Adaptec burning software is included. The lower price of the package is also very attractive.

### Yamaha CRW8424EZ



Suggested retail price: \$479

- Internal model.
- Uses ATAPI/IDE interface.
- Speed: 8x write, 4x rewrite, 24x read.

- Bundled with Adaptec EasyCD Creator 4, Direct CD, and MGI's PhotoSuite III SE and VideoWave III SE.
- Compatible with Windows 95/98/NT 4.0 and Mac OS.
- We experienced very few problems during testing, with most discs copying at full speed without incident. Of the CD-RW models looked at this month, the Yamaha stands out for a few reasons: it has the highest write speed, we had very few discs go bad during writing, and it is bundled with excellent CD writing software. It is more expensive than other internal models, but the performance boost is certainly well worth the extra investment.

## Editor's Choices



### Hard drives:

#### Maxtor Diamond Max 40 92049U4

The performance is top-notch, largely owing to excellent buffer specifications. With the addition of a competitive price, this drive is very attractive.

### Removable storage: Iomega Zip 250 USB

Zip is pretty much the standard for removable storage, and the Zip 250 USB shows why. It's high capacity, backwards compatible with older Zip media, and can be used with both desktop and notebook systems. It has a very appealing design, too!

### Recordable CD: Yamaha CRW8424EZ

Though it's more expensive, the Yamaha drive had excellent speed, an excellent software bundle, and it produced the fewest coasters of any of the CD-RW drives we looked at. What more can you ask for? □

## Burning CDs on the road

Although working at a desktop PC is a comfort most of us take for granted, there are those intrepid among us who have no fixed corporate address, heading from branch office to branch office, from city to city. These so-called road warriors may also need to burn their own CDs from time to time, and a new generation of portable CD-RW devices has emerged to handle these demands.

The first portable drive we had a chance to look at was the **Hewlett-Packard CD-Writer M820e** (<http://www.hp.cdwriter.com>). It is SCSI-based and comes with its own PC Card SCSI controller. Installation of the drive is quick and easy on a Windows 98 machine, and with 4x write, 4x rewrite, and 20x read speeds, the M820e burned CDs quickly and reliably. Because the drive detaches from the controller cable, it can also be used with a desktop system, connecting to a standard 25-pin SCSI cable.

The one drawback to this unit is that the drive requires external power. If it drew power through the PC Card, it could be used even when an AC outlet wasn't available. But this is a minor drawback in an otherwise nifty little device that comes bundled with Adaptec EasyCD Creator and DirectCD, and has a one-year warranty.

Mechanically, the **Panasonic KXL-RW10A** (<http://www.panasonic.ca>) is pretty much identical to the above-mentioned HP drive, but aesthetically it's quite a different ballgame, with a silver case and window for viewing the spinning disc. Otherwise, this device shares the HP's excellent performance and minor drawbacks. It also sports a one-year warranty and ships with Adaptec's EasyCD Creator and DirectCD.

Moving away from SCSI, **Micro-Solutions' Backpack Bantam** (<http://www.micro-solutions.com>) offers slimline CD-RW performance for the parallel port. Installation is easy, and Micro-Solutions' special parallel technology offers increased reliability and a pass-through for other parallel devices. The drive connects to a standard parallel port, but also ships with a PC Card parallel port (which installs as LPT2), which is just as easy to use. While bulkier than the HP or Panasonic units, the Bantam has the advantage of being compatible with most computers—portable or not—because it connects via the parallel port. Like the other drives, it comes bundled with Adaptec EasyCD Creator and DirectCD software.

—Sean Carruthers



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## Athletic Athlons hit 300 on benchmark

Continued from page 51

an open architecture: all of the components are standalone cards instead of being incorporated into the motherboard, making it easy to upgrade or swap components at a later time. Performance-wise, the machine did quite well, scoring an even 300. Considering what's inside the box, IBM's pricing for the model is also very competitive.

## Smart Machine Viper F-800

From: Smart Machine  
 Tel: 416-665-4455. http://www.smart-machine.com  
 Estimated street price: \$3,495

## Sysmark 98 scores

Overall Sysmark rating: 323  
 Office Productivity: 311  
 Content Creation: 340

## Highlights

- MicroStar MSI-6167 motherboard with UDMA/66 support.
- Asus V6800 DDR 32 MB video card.
- 34 GB IBM 7,200 rpm UDMA/66 deskstar hard drive.
- 10x Pioneer DVD-ROM drive.

## Helio: middle ground or leading edge?

Continued from page 51

good, but with one pervasive irritating problem. Sometimes the screen shows white letters on a dark grey background and black letters on a light grey background at the same time. As well, both black and white letters are shown simultaneously on a middle grey background in some situations. In this case, adjusting the contrast to see both the white and black letters is difficult.

- HP CD-Writer 9100 CD-RW drive with 8x write, 4x rewrite and 32x read speeds.
- 128 MB PC100 SDRAM.
- USR 56Kbps modem.
- Aureal Vortex-2 Super-QUAD sound card.
- Microsoft Intellimouse with optical tracking.
- Microsoft Internet keyboard.
- Windows 98.
- Software bundle includes Lotus SmartSuite 2000, Compton's Encyclopedia 2000, Drakan, Gamers Power Pack 1, RollCage, Broderbund PrintShop™ Multimedia Organizer, Sonic Foundry's Acid, and Neato CD labeling software.

Smart Machine's Viper F-800 system is a more expensive affair, but it's also topped up with more goodies. The hard drive is larger, at 34 GB and the system comes with a CD-RW (rewritable) drive in addition to a DVD drive and a good software bundle. The mouse and keyboard are high quality, especially the optical Intellimouse, which can be used on virtually any surface. This system turned in the fastest Sysmark98 benchmarking score we've seen (for now), which means it should satisfy the needs of most of the power users out there. □

I found the stenciled labels confusing at first. The Edit selector, for example, didn't always bring up choices I expected. For clarity, I'd suggest changing Edit to Menu, then switching Main Menu to System or Desktop.

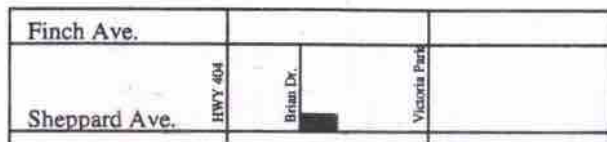
The Helio includes a version of Communication Intelligence Corp.'s Jot software, which is used on most Windows CE palm-size devices. While the character shapes are a bit closer to true Roman characters, the

Continued on page 66

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 56K FAXMODEM & Microphone  
 ATX Mini TOWER CASE  
 109 WIN98 KB&MOUSE & Pad

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 ATI 3D CHAR 8M AGP  
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**Helio: middle ground or leading edge?**  
*Continued from page 64*

modal nature of the input (dependent on what area of the screen is used for entry) leaves it roughly as good or bad as Palm's Graffiti.

Sound recording is not adjustable for quality. The quality is similar to cheap digital voice recorders—roughly the same as the lowest quality voice setting on Windows CE and Psion devices. Testing found a digitization rate of about 2.3Kbps, which confirms VTech's claim that about 55 minutes of sound can be stored on the unit's 8 MB RAM. No voice recognition software is included.

**System functions**

Data reusability and integration is minimal. Cut, Copy, and Paste functions are supported between applications for text but not graphics. There is no provision for linking items and no global find. In fact, the only application that has a Find function is the Phone Book. The Memo application can only be sorted alphabetically or by creation date.

**Data ports**

The Helio has two external connectors, both of which are essentially serial ports. A small connector has six signal lines, four of which are used. This port supports up data transfer rates

of up to 56Kbps. The other fast serial input/output port supports data rates of up to 3.5 Mbps. The Helio does not have an infrared port.

**Connectivity software**

The unit's connectivity is currently a weak point. VTech claims data connectivity with Microsoft Outlook, Scheduler+, Lotus Organizer, Act!, GoldMine and Palm Desktop. Unfortunately, when I tried importing my main phone file from Palm Desktop, the conversion to Helio Desktop worked without problems, but when I tried to sync the Helio it crashed completely requiring a cold boot, and restoring of my old data.

**Applications**

The Helio is weaker than Windows CE Palm or Psion devices in primary personal information management (PIM) software, but includes more application software.

The Phone Book supports 22 fields, a user definable category and free-form text notes. Also, Text Memos can have Sketch attachments, but the sketch must be drawn specifically for each memo.

The calculator has four modes: Simple, Metric-to-Imperial conversions, Money Exchange and Mortgage Payments.

The Expense application would probably be unacceptable for most business people, as

expense types are not user definable, and there is no text annotation field, which is mandatory for most business records.

The Sketch application includes line, circle, rectangle and text functions but does not support grey shades and Cut and Paste is limited to moving a single clip from point to point.

**Expansion**

Memory for the Helio comes on a removable card. To add to the 8 MB RAM, this card has to be completely replaced.

VTech is also planning an intriguing keyboard/modem (for an estimated US\$100) for the Helio. A photo of the prototype with the Helio indicates that the combination is about the size of the Hewlett-Packard Jornada 680, a highly portable clamshell Windows CE device. Attached to the add-on, the Helio is held sideways with the system software rotating the screen 90 degrees for viewing.

**Conclusions**

For Canadians, the biggest drawback of the VTech Helio is that it can only be purchased through VTech's U.S. Web site.

Except for the problem importing my Palm data, the Helio has proven to be a reliable product with overall adequate performance and great long-term potential. With a little more work it could be a serious challenger for the Palm. □

**Monsoon sound anything but flat**  
*Continued from page 51*

**Set up**

Included in the box are two satellite speakers, a subwoofer and all the necessary cables to connect to your computer. Also included is a brief but well-written user manual. The satellite speakers include wire stands, which, sadly, cannot be adjusted. Set up is no more complex than that of any other PC speaker system. However, positioning is critical for optimal sound quality. The manual features a section on positioning, but some fine-tuning to suit your specific environment is still required.

**Features**

The features that distinguish the MM-700 from competing desktop systems are the flat panel technology and the control wheel. The

wheel—which has a mute button and volume control—is located on the cable that connects the subwoofer to the PC. This control wheel is the only way to set the volume, which could be a problem if you wanted to connect other audio devices that required a different cable. A master volume control on the base unit would have been a nice feature.

The flat-panel technology employed here is nothing short of stunning. Not only do these speakers require less space, they are also more stylish and sound better than traditional cone-based speakers.

One disappointing omission is the lack of a second audio input (to hook up a Discman or game console, for example), which is common in speaker systems in this price range.

**Sound quality**

The MM-700 speakers were tested by playing a

mix of audio CDs and computer entertainment titles. The audio CDs included albums from Diana Krall and Fiona Apple, as well as *Koyaniskatsi* by Philip Glass. For music performance, the output from these speakers matched many other home stereo systems they were compared to.

Clarity of sound was excellent on the high end, and in general all sound ranges were represented well without distortion. At certain levels there was too much bass for the subwoofer to handle. In most cases, this could be solved by turning down the bass level of the subwoofer, or turning down the system volume slightly. However it would be nice if the subwoofer had slightly more power. If you are going to listen primarily to music, and sound quality is of the utmost importance, the higher powered MM-1000 series (US\$199) would be a better bet. In general, however, the MM-700 system will exceed the sound quality many people are used to from PCs or home stereos.

For entertainment purposes, the results were equally positive. While playing games such as Quake3 and Unreal, a very convincing 3D sound field was created. The speaker system made it easier to pinpoint the location of sounds in the games, creating a more immersive 3D experience. Sound effects were crystal clear, and audio never seemed muddy, even with plenty of bass. Again, however, with the system volume set too high, the subwoofer was prone to distortion under heavy load.

**Conclusions**

Overall, these speakers are highly recommended for anyone who is looking for the very best sound output for playing games or music CDs. This set is a little pricier than conventional speakers, but the added clarity makes a huge difference. Anyone who has money to spare and wants to put together the ultimate system is probably better off looking into the MM-1000 series, which features more power and two audio inputs. The MM-700 series, however, is perfect for most home users. □



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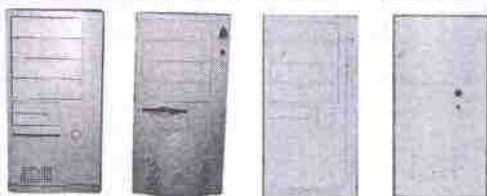
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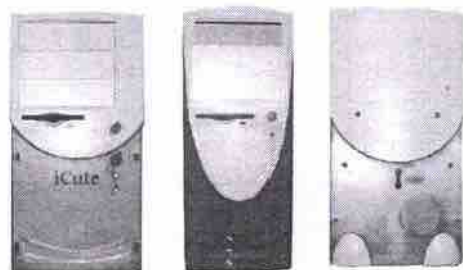


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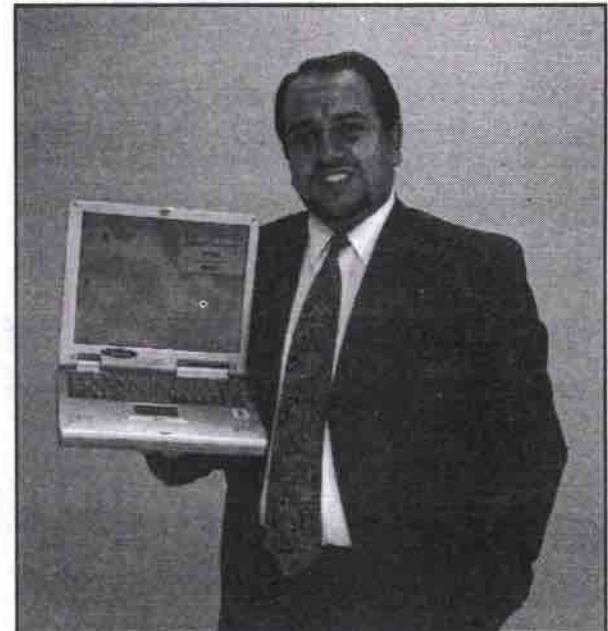
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# Platform News

Macintosh • Linux • Windows • Palm • Emerging Trends

## Neugents bring us a step closer to AI

By Ross MacDonald

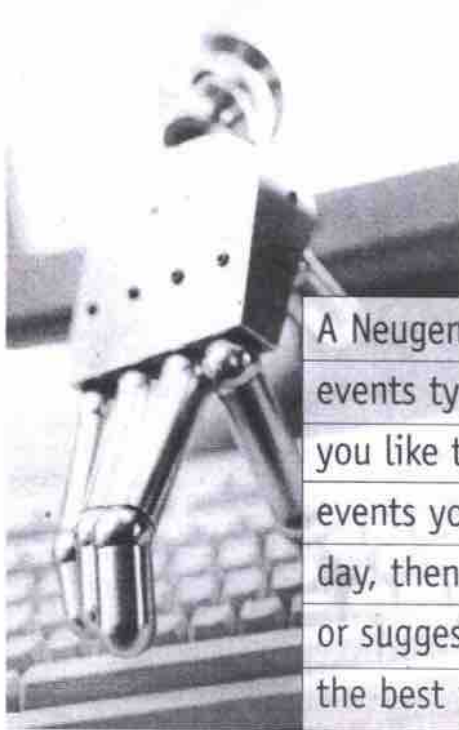
Stop Dave. Stop. I'm afraid, Dave... just a moment... just a moment..." These words immediately remind Stanley Kubrick's fans of HAL's mistaken prediction of an AE-35 unit failure and Dave and Frank's subsequent worries about the computer controlling their mission in *2001: A Space Odyssey*.

Ironically enough, Computer Associates (CA) introduced failure prediction software only a couple of years before 2001. This software constitutes a significant step toward the artificial intelligence (AI) science fiction buffs can still only see in the movies.

Called Neugents, such products predict the behaviour of a given system based on analysis of that system's past behaviour. "A Neugent is an intelligent software agent that allows predictive management," says Brandon Musler, CA's business manager for performance and Neugents. "It doesn't just react to events, but tells you that a problem may be developing so that you don't have to spend a lot of resources fixing the outcome of that problem. You avoid it instead."

Musler draws a comparison to anti-lock brakes in cars that do not—contrary to popular belief—make you brake better, but instead allow you to steer around any problem encountered on the road.

When discussing Neugents with anyone at CA, it is impossible to avoid the phrase "neural network technology"—the algorithmic



people had been implementing one-off neural engines in various applications for a long time. But Computer Associates has been able to take this customized [application] and pragmatize it so that it will work as a product right out of a box."

Where the implications of this development are far reaching indeed, the current practical application is in large corporate and governmental networks where component failure can have potentially disastrous results. The first

A Neugent could recognize which events typically make you late, how you like to organize your day and the events you have planned for a current day, then either alert you to problems or suggest a schedule so that you get the best results based on your habits.

functions that mimic the decision-making process of the human brain. Combined with other AI (artificial intelligence) and statistical functions, the collective impact is Neugent software that can "learn and think for itself."

"Neural network research has been going on for 20 or 30 years," says Musler. "In fact,

Neugent was developed specifically for Microsoft Windows NT and, staying with that business networking orientation, the current product is specific to CA's Unicenter TNG network manager. Versions for UNIX and mainframes are currently being developed, but CA

*Continued on page 74*

## Microsoft bulks up apps, colour for Pocket PC

REDMOND, Wash.—Microsoft has announced that a new Windows CE implementation, called Pocket PC, set for launch by mid-June, will have a better Microsoft Outlook inbox plus revised versions of Word and Excel.

Phil Holden, a Microsoft group product manager, said the Pocket PC versions of the leading office applications will have a far greater reach than organizers and personal digital assistants (PDAs) can deliver. He said the software will power handheld devices to be announced by Casio, Compaq, and Hewlett-Packard.

Acknowledging that, in its effort to win a significant share of the handheld computing market, Microsoft is facing an uphill battle against the market-leading Palm Computing platform, Holden said the Pocket PC will outperform the just-released colour Palm IIIc. He said the Palm IIIc draws 1.2 watts of power, much more than Pocket PC prototypes he has seen. Casio, for example, claims 25-hour battery operation for its color Pocket PC-based device and 80 hours for the monochrome version, Holden said. Also, some of the color handhelds will have reflective screens that are easy to read in direct sunlight—a challenge for the Palm IIIc.

Pocket PCs will also do a better job of importing data from Microsoft Outlook than the Palm conduits now available, Holden said. Among the most frequent downloads of third-party software for the Palm platform are apps for viewing Word and Excel documents. By including their functions in the Pocket PC, Microsoft hopes to extend the enterprise reach of its Office suite.

The more robust Outlook Inbox in the new platform will support a range of file attachments including BMP, DOC, GIF, HTML, INK, JPG, RTF, TXT, WAV and XLS. The inbox will work with IMAP 4, LDAP, and POP 3 for compatibility with Microsoft Exchange and Lotus Notes messages.

Holden demonstrated a version of Internet Explorer for Web browsing with full, interactive graphics. The Palm OS' Web clipping function is text-only.

Pocket PCs will have built-in password security. Holden said several U.S. federal agencies have shown active interest in the Pocket PC-based devices, but he declined to name them.

—Newsbytes

## Palm explores wireless, service partners

By Tom Venetis

While many people have been excited by the recent introduction of a colour display to Palm Computing's lineup, analysts suggest the real story is the company's continuing push to move the Palm OS and Palm devices firmly into the convergence market.

At the Toronto launch of the colour Palm IIIc and Palm IIIxe handhelds, the company highlighted its many strategic partnerships with companies such as Qualcomm, Nokia, Oracle, Sony and Handspring. These partnerships indicate that Palm is moving away from being simply a device manufacturer, and is

expanding its role as an information management platform developer.

"From our perspective, we can't be everything to everyone," says Michael Moskowitz, general manager of Palm Canada Inc. in Mississauga, Ont. "Two years ago, we were a device company. But we knew long-term that while the market growth was very strong for handhelds, it was out of our control."

Moskowitz says he began to see early on that handheld devices would begin to converge with wireless technology so people could get at information anywhere and at any time, which is why Palm is looking to integrate its OS into cellular phones.

"We knew these new kinds of phones need-

ed to do more than just [handle] voice [calls]," Moskowitz adds. "They had to tap into the enterprise, have some kind of Web browsing ability, and deliver content. They have to do more than what they can do today."

A Palm OS-enabled cellular phone could let someone browse the Internet, get email or synchronize data between the phone and the office.

Recently, Santa Clara, Calif.-based Siebel System Inc. announced plans to integrate its eBusiness solutions with Palm's Address Book, Calendar and To-Do applications to allow for data synchronization between the enterprise and Palm devices.

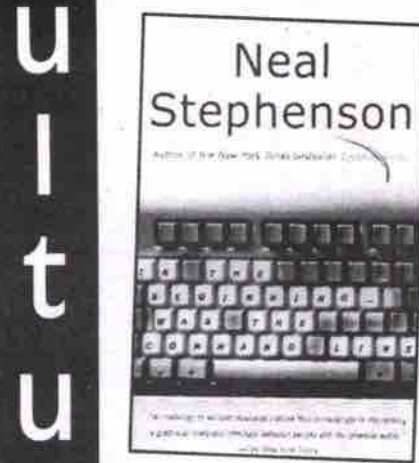
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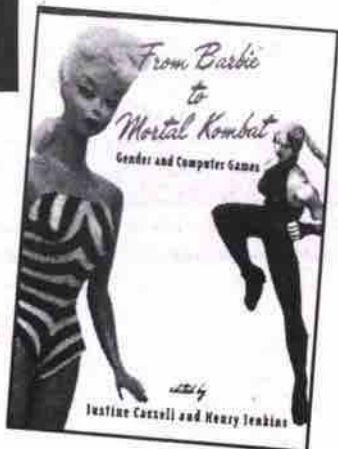
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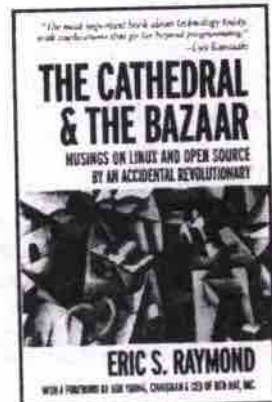
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### Neugents bring us a step closer to AI Continued from page 73

plans to extend this "thinking ability" beyond the business IT environment and, eventually, into our homes.

Musler says that some day we might see Neugents not only in our home PCs but in personal digital assistants (PDAs) as well. "We are looking for this technology to become ubiquitous," he says. "This is a way for consumer devices to signal each other over a network that they exist so your camera knows that there's a printer that it can output a photograph to, for example... to diagnose the dependencies between devices, what things can talk to what things, and what it makes sense to alert the user to."

Predicting further, it would be possible to develop personalized Neugents to review the past daily schedules of a very busy person, in order to analyze the current day's schedule for problems or conflicts. Applied in such a way, a Neugent could recognize which events typically make you late, how you like to organize your day and the events you have planned for a current day, then either alert you to problems or suggest a schedule so that you get the best results based on your habits.

And way way further on, AI at the Neugent level might be built into a VCR so that it learns your favourite programs and records them, even when you have forgotten or neglected to set things up beforehand.

It is important to remember, however, that AI on even that rudimentary level is still quite some time away and that Neugents constitute only a first step toward that outcome in at least

being able to "learn." Musler is quite adamant that Neugents recognize patterns, so the technology would not be applicable to completely random situations like predicting the stock market or the weather.

Musler says that we're already surrounded by AI at the consumer level but that we're just not aware of it. He cites the example of regular household vacuum cleaners whose engines no longer burn out when they suck up inappropriate objects because they monitor the patterns of what usually gets sucked in then register the bad object and shut the engine down.

"But nobody cares about that," he says. "They want to know the price of the vacuum cleaner, the attachments it comes with, that sort of thing. They don't want a lecture from the salesman about artificial intelligence." Which is a sign of a successful technology in Musler's estimation; where people don't see that type of sophistication as exotic or futuristic but simply take it for granted.

And there are plenty of situations in which that type of intelligence, expanded by Neugents, can be applied right now to the benefit of business and ultimately to consumers.

"You might have a large e-commerce site," Musler speculates, "where you want to track patterns of customer utilization—how they move through your site, where they enter from, where they exit from, that sort of thing. Neugents might help you set it up better by detecting things like, if a particular page takes too long to download and a large number of people are dropping out at that point. But before you actually start losing people at that page, it will predict and tell you to expect, say, an 82 percent loss rate at that point and suggest that you change the

graphic... At the rate hardware technology is developing, I see it as a short step away.

"E-commerce is really driving the need for this. You have more and more people operating over the Internet, and networks in general, which means more and more independent programs and automatic processes are taking place. Business quite simply needs something to monitor this activity because human beings can't simply just sit and stare at a screen all day. The scale and scope of today's IT infrastructures is such that they now require these self-learning and self-modifying agents. And that's, in fact, what Neugents are."

So what Neugents aren't, yet, is HAL. But if Musler is on the right track with his prognostications, we might soon be hearing, "Daisy, Daisy, give me your answer do" from our vacuum cleaners as we switch them off and pull the plug. □

### Palm explores wireless, service partners Continued from page 73

While business integration is a growing market for Palm, with some 40 percent of developers writing Palm-based business applications, the company also sees itself moving into the entertainment arena.

Jordan Worth, telecommunications analyst for International Data Corp. (Canada) Ltd. in Toronto says Palm's recent alliance with Sony means consumer electronics devices with the Palm OS integrated into them are likely to start appearing.

Worth expects consumers in Asia will be the first to see Palm OS-enabled consumer devices that will have increased functionality and interoperability. In North America, similar devices will become available later, when improvements in wireless technology allow for the delivery of multimedia content.

"With the inception of the 3G wireless service, that is where you are going to see the real services take off," Worth says. "What you are seeing now is cheap wireless devices giving good voice access. The limitation of the current wireless standard is that the maximum throughput speed you can get is about 14.4Kbps. 3G wireless is expected to offer a minimum of 364Kbps throughput speeds. So you are talking about very fast speeds, which could offer things like video."

In the future, Palm users will see customized information and content delivered to their devices. Currently, AOL Canada and Excite.ca are offering users customizable content for their desktop and laptop PCs. With improved wireless throughput, that kind of content could be delivered to a variety of wireless handheld devices.

In the U.S., AOL and Yahoo have already partnered with Palm to let their members send and receive email through their Palm devices. There are also plans to let AOL members use their Palm devices to access AOL's Instant Messenger and Buddy List services.

Yahoo, meanwhile, has announced that its Yahoo Instant Messenger and Yahoo Mail will be bundled with various models of the Palm, later this year.

Palm Canada's Moskowitz expects that, in the future, his company will get more of its revenue from its OS than it will from its line of handheld devices.

"We are very reliant on the device side today where in the future we will be more reliant on the platform side as we will become a much stronger software company rather than a device company," he adds. □

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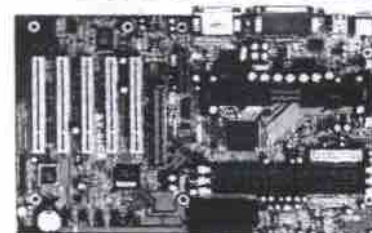
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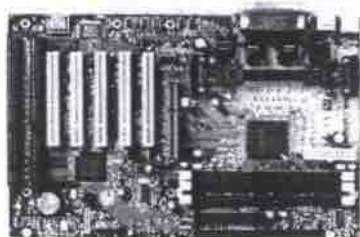
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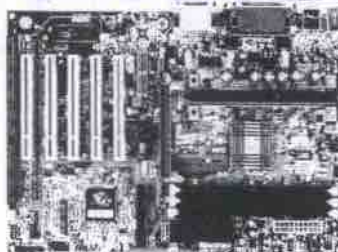
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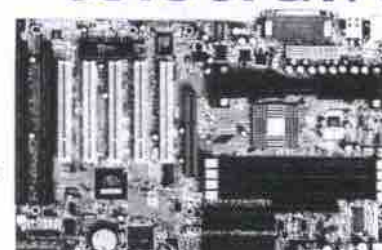
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 SOYO Jumperless design, SOYO Power-Up Feature  
 Superb Overclock Capability  
 SOYO AI-BIOS Intercepts CIH virus  
 AGP, 5PCI, AMR, (1ISA), 3DIMM, ATX



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## SOYO SY-BA+4



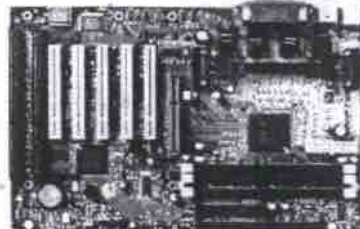
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 SOYO AI-BIOS Intercepts CIH virus  
 AGP, 5PCI, 2ISA, 4DIMM, 4IDE, ATX



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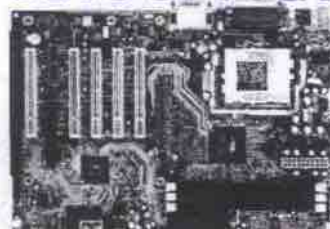
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VIA 694X Chipset, ATA66, 4xAGP  
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 Superb Overclock Capability



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< TUNING UP YOUR PC >

### Fixes for five common PC problems Continued from page 48.



The PowerTweak control panel shows Celeron register settings and PCI/AGP devices registered with BIOS.

**WinBoost and InternetTweak**  
Remember the TweakUI Control Panel applet? The Magellas Corporation has developed a pair of applications aimed at tweaking Windows 9x and Dial-up Networking hidden settings.



WinBoost control panel shows the more than two dozen Desktop Enhancement options.



InternetTweak shows the Dial-Up Networking Enhancement options.

WinBoost has all of the settings TweakUI had and then some. InternetTweak will enhance the performance of your browser(s), email and dial-up connection. Both applications include hundreds of tips and hints all rolled up in graphical consoles that are very easy to use.

Point your browser to <http://www.magellas.com>, but be very careful. If you connect to the Internet with ADSL or a cable modem, InternetTweak will actually slow you down. Online ordering is secure, and 10-day trial versions are available.

### CMOS configuration

Every PC has a section of memory called CMOS, which is used to store the configuration of the system hardware. Your system's CMOS uses a battery to retain settings for hardware, time and date, system speed and memory handling. If any of these settings are incorrect, your system will underperform or not work at all. (If you want an in depth explanation of CMOS and how it functions, link to [http://www.officewizard.com/books/CMOS/02775\\_Mysteries\\_CMOS.htm](http://www.officewizard.com/books/CMOS/02775_Mysteries_CMOS.htm) by Neil Randall.)

If you suspect your CMOS is not set correctly, and you feel confident enough to try changing settings in an area you suspect is afflicted, by all means make the changes. But before you do, write them down. That way you can reverse the setting if it doesn't have the desired effect.

Not sure about altering the CMOS yourself? Don't take the chance. Call a qualified technician or engineer to help.

Al Buchanan, a 15-year Information Technology (IT) veteran, is a Senior Network Engineer for Velocity Computer Solutions (<http://www.velocityIT.com>), a provider of integrated online, voice and on-site IT support services. A regular guest on the monthly *Dotto on Data Tech Parlay*, Al can be reached by email at [abuchanan@velocityIT.com](mailto:abuchanan@velocityIT.com).

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# Absolutely freeware at its best

By Jacques Surveyer

The following list includes programs that are absolutely, positively free. There is no cost other than the time it takes you to download them from the Internet.

Freeware is having an important effect on software development. First, as long as these programs remain free, these categories of software will be off limits to all but the hardest of commercial software vendors.

Also consider the many ways freeware vendors contrive to make money: charging for

deluxe or pro versions of the program; charging for support and other services; offering the freebie as a lead-in to other products or hardware; and displaying banner ads within the free software (called adware) to pay the way. Traditional commercial software vendors will have to try some of these tactics in order to more rapidly develop their market position and ward off potential competitors.

### Copernic 2000

<http://www.copernic.com>

This is an absolute steal for supercharging your

Web searches. Don't go to AltaVista, Lycos or Yahoo. Let Copernic do the search of all these sites (plus seven others) in a fraction of the time it would take you. See the ranked results in a handy browser-like interface. X-Portal allows you to add user-selected sites to your searches, but at \$70 it cannot match Copernic's speed or ease of use. WebFerret also cannot match its speed and features.

### ICQ

<http://www.icq.com>

This little piece of software makes the Net

one gigantic chat room. I am not certain if this is for good or ill, since I keep getting interrupted by chatty colleagues. I suspect team sites like QuickTeam (<http://www.quickteam.com>) and Placeware (<http://www.placeware.com>), or direct connect software like Microsoft Net Meeting may steal some of its thunder, but ICQ really lets people hook up (yep, some of the chats are salacious) over the Net in dozens of ways useful, sad, entertaining and even enchanting.

<p><b>SUPER VALUE!</b> <b>\$479</b></p> <p>INTEL PIII-466A PIII-PIII MAINBOARD 32MB SD RAM PC-100 8M AGP VIDEO ON BOARD 6.4 GB HDD / 1.44 FDD ATX TOWER CASE 50X CD-ROM 56K FAXMODEM/LAN 16 BIT SOUND &amp; SPKS. WIN 98 K/B &amp; MOUSE</p> <p>UPGRADE TO 64MB RAM + \$39</p>	<p><b>BEST BUY</b></p> <p><b>\$559</b></p> <p>AMD K6-II 500 ASUS P 5-99 VM 64MB SD RAM Pc100 8M AGP CARD ON BOARD 8.4 GB HDD / 1.44 FDD ATX MID TOWER CASE 50X CD-ROM 16 BIT S.C. &amp; 120W SPKS. WIN98 K/B &amp; MOUSE 56K V.90 MODEM</p> <p>AMD K7 600 K7BOARD INCLUDE +\$339 AMD K7 700 K7BOARD INCLUDE + \$399</p>	<p><b>OFFICE STAR</b></p> <p><b>\$828</b></p> <p>INTEL PIII-500 ASUS P2-99 ZX 64MB SD RAM Pc100 ATI 3D 8M AGP CARD 10.2 GB HDD / 1.44 FDD ATX MID TOWER CASE 50X CD-ROM SOUND CARD /120W SPKS. WIN98 K/B &amp; MOUSE 56K V.90 MODEM</p> <p>INTEL P-III 550 I + \$59 UPGRADE TO 128MB RAM + \$79</p>	<p><b>SUPER PLAY</b></p> <p><b>\$1089</b></p> <p>INTEL P-III 550 ASUS P 3B-F 128MB SD RAM PC-100 ATI XPRT 128 16M AGP 13 GB HDD / 1.44 FDD ATX MID TOWER CASE 50XCD-ROM/ SPKS. SOUND BLASTER 128 PCI WIN 98 K/B &amp; MOUSE 56K V.90 MODEM</p> <p>INTELP-III 600E + \$59 UPGRADE TO 256MB RAM+ \$149</p>	<p><b>PC2000</b></p> <p><b>\$1749</b></p> <p>INTEL PIII-650E ASUS P3B-F 256MB SD RAM PC-100 32MB ATI ALL IN WON.128 AGP 20FUJI HDD / 1.44 FDD ATX MID TOWER CASE 2000 52XCREATIVE / SPKS SUBWO SOUND BLASTER live value WIN 98 K/B &amp; MOUSE 56K V90 U.S.R. MODEM</p> <p>INTELP III-600EB SYS. \$1679 ASUSP3V4X 133MHZ/256MB PC133RAM</p>
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# ICCT

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SAT: 11:00-17:00

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Maxtor 15 / 20 / 30G \$185/205/285	Voodoo III 3D/FX 3000/3500 18M AGP \$160/279	
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PC-100 32M / 64M / 128M / 256M \$49/79/149/299	104 Microsoft / Logitec / INTERNET \$45	ACER 56K PCI int. with voice \$35
PC-133 64 / 128 M \$99/159	Acer Scan 320P/620P/7320U/620U \$109/135/119/140	Motrola 56K V.90 int. \$39
SDRAM 32M / 64M 168pin \$55/90	HP 5200C / 5300C / 6300C \$345/395/509	USR 56 K Sportster int/ext V.90 \$55/175
<b>Motherboard + CPU Bundle</b>	UMAX 2000USB / Parallel \$169/135	Acer 8 / 16 ports HUB 10Base T \$49/129
Intel Pentium 233 MMX + Pentium Mainboard \$129	Mustek 600EPI/USB/1200CU/USB \$85/99/119/119	3 COM Ethernet PCMCIA 10 BASE T \$229
Intel Pentium II - 450 + MAINBOARD \$349	Microtek Flatbed color V900/E3/X6 \$259/195/219	3 COM 905 TX PCI 10/100 \$75
Intel Pentium III - 550 + MAINBOARD \$425	Canon 330p / 630p / 630u \$115/159/199	3 COM 4/8/12 Ports Ethernet Hub 10 \$95/129/299
		3 COM 8/12 PORTS Ethernet Hub 100 \$275/469

### Java JDK

http://java.sun.com  
 OK, this one is like getting socks for Christmas. But hey, where can you get a truly cross-platform programming language that works wonderfully in DOS and OK in Windows while it is absolutely revolutionizing not just the Web but all those new handheld devices and gizmos? This is the sleeper and keeper language of the next decade. Be there and be square to the tune of big bucks.

### StarOffice

http://www.sun.com/staroffice  
 StarOffice is close enough to the Corel and Microsoft office suites in its capabilities to supply real value, especially in the core functions of word processing, spreadsheets, and presentations. StarOffice cannot match the breadth, macro/VBA features, and graphics abilities of the other suites, but it runs on more platforms including Windows, Linux, OS/2 and Solaris.

### Winamp

http://www.winamp.com  
 There are so many good programs available for playing MP3, WAV, CD, and other audio files like Sonique or MusicMatch it's hard to choose one. But WinAmp's new browser interface, with equalizer and plugin architecture, keep it ahead of the pack. Tools like MP3 Fiend, Audiograbber and Media Jukebox (see the URL for ZDNet noted below) will help round out your PC audio setup.

### Clickomania

http://www.zdnet.com/downloads/specials/free.html  
 (Type in the filename, clkmnia.exe, at this site.)  
 OK so we have to have one addictive game and Clickomania is certainly that. It is a cross between Tetris and a Rubik's cube. Its logic, colours and sound sort of grow on you as you solve the puzzle and become almost Zen-like. For all those addicted to solitaire (and at more than two million downloads, there are quite a few), 123 Free Solitaire and FreeSolitaire v3.0 are also available at the ZDNet download site.

### BuddyPhone 2

(Type in the filename, budphon2.exe, at ZDNet site.)

### PhoneFree

(Type in the filename, phone.exe, at ZDNet site.)  
 These are full-body and slim-and-trim Internet phone contenders—each offering its own advantages. BuddyPhone's bulk translates into a high audio quality aided by option to link to ICQ directory services. PhoneFree weighs in at less than 500KB and is compatible with Netscape's CoolTalk and VocalTec's Internet Phone giving it the potential of a very broad reach. You choose. They're both free and make free long distance voice calls over the Net closer to reality.

### Go!zilla 3.5

(Type in the filename, gozilla.exe, at ZDNet site.)  
**NetZip**  
 http://www.netzip.com  
 These two programs perform the same basic function, managing file downloads, and both give you the ability to pause and/or re-connect when a download has gone AWOL. NetZip provides more robust compression/decompression capabilities, while Go!zilla manages downloads with more options, such as multiple file handling and automatic update searches. Again, it's your choice.

### MoreSpace 99

http://www.contactplus.com  
 This disk space management utility helps eliminate wasted space by identifying and allowing you to remove duplicate files, file hogs, temp files, and the like. It also produces a statistical report on the types of files being used on any and all drives. Its free, sort of. You get banner ads—adware—in return.

### Acrobat Reader 4.0

http://www.adobe.com  
 Almost stealthily, Acrobat's Portable Document Format (PDF) has become the standard for distributing high quality print material over the Internet. But Acrobat is not limited to printed words. Images and sound and video clips can be included within a PDF file. The format also supports links, so the PDF file builder can direct you anywhere—to another page in the document, another application, or a Web site. The paid version of Acrobat allows for team sharing and annotating of documents. □

# FULLY UPGRADEABLE Desktop Replacement Notebooks

**5100**

- 12.1" HPA or Active Display
- 433 MHz Intel Celeron
- 4 MB Video SGRAM
- Up to 256 MB SDRAM
- Weighs 6.2 lbs / 2.8 kg

Starts at: **\$1,799**  
 \$66/month (36 month lease)

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- 14.1" XGA TFT Display
- 433 MHz Intel Celeron
- 8 MB Video SGRAM
- Up to 256 MB PC-100 SDRAM
- Weighs 6.6 lbs / 3 kg

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- 13.3" XGA or TFT Display
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All models are equipped with a 6 GB Hard Drive (up to 43 GB), up to 256MB RAM, 24x CD-ROM (optional DVD), Floppy Drive (LS-120 optional), Smart Li-Ion Battery, and Windows '98. The EUROCOM family of notebooks offers you the freedom and convenience to upgrade anytime. Superior expandability, custom built-to-order configurations, and state-of-the-art performance for entry-level, mid-range and high-end users alike. Why not test drive a EUROCOM today?



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Toronto

OTA Notebook Centre  
921-1177  
343 College St.  
Toronto

Scarborough Computers,  
491-3139  
3313 Sheppard Ave

Telematech Technologies  
410-7559  
117 Tyler Street  
Aurora

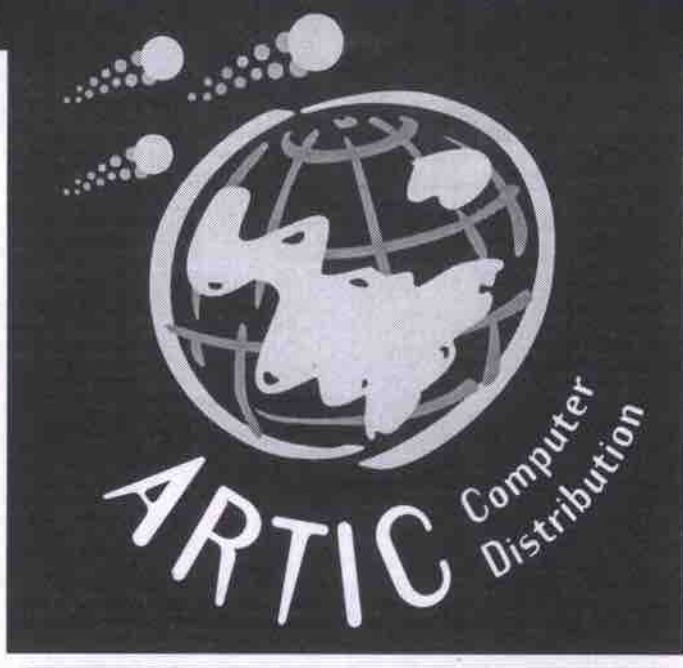
www.eurocom.ca  
  
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**MONITORS MONITORS**

15" ACER 54E	\$199	17" XJ796	\$388
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17" ACER 77XE	\$264	17" 796FD	\$414
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17" ACER 79G	\$406	19" 810FD	\$722
19" ACER 99SL	\$480	21" XJ910	\$1167
21" ACER Z11C	\$1080		
<b>MITSUBISHI</b>			
15" ADI E44	\$219	15" DS50	\$289
15" ADI 4P	\$241	17" DS70	\$400
17" ADI 5P+	\$359	17" DPLUS71	\$481
17" ADI 5G	\$420	17" DPLUS72	\$485
17" ADI GT56	\$441	17" DP710S	\$527
19" ADI 6P	\$560	17" DP700E	\$655
19" ADI G66	\$592	19" DS90E	\$678
21" ADI 6G+	\$1082	19" DPLUS91	\$748
		19" DP900U	\$874
		22" DPLUS200U	\$1345
		22" DPRO2040U	\$1595
<b>HITACHI</b>			
17" CM610	\$425	<b>NEC</b>	
17" CM643	\$531	15" AS50	\$210
17" CM650	\$531	15" AS50+	\$247
19" CM776	\$680	15" AS50M	\$250
19" CM769	\$858	17" AS70	\$320
19" CM761	\$863	17" AS70M	\$360
21" CM811	\$1270	17" A700+	\$367
21" CM812	\$1375	17" FE700	\$404
21" CM813	\$1600	17" FE700M	\$459
21" CM814	\$2120	17" FE750	\$498
		17" M700	\$605
		17" E750	\$605
		19" AS90	\$520
		19" AS90M	\$558
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		21" P1250+	\$1342
		22" FE1250	\$1175
		22" FP1350	\$1350
		22" FP1370	\$1665
<b>KDS</b>			
15" VS550	\$187	<b>NOKIA</b>	
15" AV5T	\$220	15" 4492A	\$288
15" VSX5	\$231	17" 447Z I	\$480
17" VS71	\$251	17" 447X J	\$481
17" K770	\$289	17" 447Z+	\$500
17" AV7TF	\$379		
17" VS9E	\$397		
19" VS190	\$407		
19" VS195	\$457		
19" AV195TF	\$652		
21" VS21E	\$999		
<b>MAG INNOVISION</b>			
15" XJ500T	\$244		
15" 570FD	\$256		
17" XJ770	\$333		



**SYSTEM SPECIALS**

**INTEL P2 433 CELERON • 128K CACHE • 64MB SDRAM PC100 • 8GB HARD DRIVE • ACER 40X CD ROM • 56K V90 VOICE MODEM • PCI SOUND • 8MB AGP VIDEO • 1.44MB FLOPPY • 104 KEYBOARD • MID TOWER CASE • MOUSE...**

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CELERON 466 w/128k	\$579	P3 600 w/256k	\$839
CELERON 500 w/128k	\$599	P3 600 w/512k	\$839
CELERON 533 w/128k	\$639	P3 600 w/256k	\$869
P3 500 w/512k	\$729	P3 650 w/256k	\$945
P3 533 w/512k	\$755	P3 677 w/256k	\$975
P3 533 w/256k	\$765	P3 700 w/256k	\$1099
P3 550 w/512k	\$775	P3 733 w/256k	\$1225
P3 550 w/256k	\$785	P3 750 w/256k	\$1299
P3 600 w/512k	\$955	P3 800 w/256k	\$1529

**MONITORS MONITORS**

17" NOKIA 447XPRO	\$760	15" 550B	\$219
17" 447DTC/C	\$1600	17" 750S	\$278
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19" 446XPRO	\$1009	17" 700NF	\$440
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		19" 900NF	\$660
		21" 1100P+	\$1069
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15" Q51	\$213	<b>SONY</b>	
15" Q55	\$217	15" E100	\$304
17" Q71	\$302	17" E200	\$515
17" Q75	\$385	17" G200	\$582
19" Q95	\$504	19" E400	\$762
21" Q115	\$952	19" G400	\$891
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		21" G500	\$1622
		21" F500R	\$2658
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17" E701	\$309	15" E651	\$216
17" SL75	\$377	15" E655	\$224
17" SM701	\$426	15" M50	\$245
17" PL701	\$462	15" G655	\$249
19" SL95	\$599	17" E771	\$309
21" P110	\$1120	17" M70	\$339
		17" E773	\$358
		17" G773	\$365
		17" M70 BLACK	\$366
		17" EF70	\$380
		17" GS771	\$405
		17" GS773	\$425
		17" PS775	\$474
		17" PF775	\$488
		19" E790	\$486
		19" E790 BLACK	\$531
		19" GS790	\$598
		19" PS790	\$692
		19" PF790	\$698
		19" AGF900	\$672
		21" G810	\$1057
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<b>SAMSUNG</b>			
15" 550S	\$187		

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3DFX V8000 PURE 32MB	\$367	3DFX VELOCITY 1000 8MB	\$97
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ALL-IN-WONDER 128 16MB AGP	\$218	3DFX VOODOO3 3000 16MB w/tv	\$178
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XPRT 98 8MB AGP	\$84		
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3COM PALM PILOT VX 8MB	\$505
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HP JORANDA 430	\$624
HP JORNADA 680	\$1,134
HP JORNADA 820	\$1,300

**MOTHERBOARDS**

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ARBIT BE6	\$195	Asus P5S-B	\$118
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ARBIT W36	\$175	Super Micro 3705EA	\$184
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Asus K7M/W/A	\$222	Super Micro 3705WD	\$164
Asus ME-99/OM/WOA	\$227	Super Micro 3705WM	\$135
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Asus ME-NW1	\$237	Super Micro P3SWA	\$168
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Asus MEW-333/WV4M/WL	\$292	Super Micro P6DBE USA	\$240
Asus ME-99B/WV4M/WL	\$175	Super Micro P6DBE USA	\$277
Asus P2-99	\$148	Super Micro P6DBS USA	\$498
Asus P2B-B	\$178	Super Micro P6DBU USA	\$685
Asus P2B-D	\$292	Super Micro P6DBU USA	\$718
Asus P2B-D5	\$388	Super Micro P6DGS USA	\$650
Asus P2B-L	\$244	Super Micro P6DGU USA	\$650
Asus P2B-L5	\$505	Super Micro P6SBA	\$160
Asus P2B-S	\$370	Super Micro P6SBS USA	\$389
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Asus P3B-F/6P21	\$185	Super Micro PHIDM6	\$633
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Asus P3C-2000/WA	\$233	Super Micro PHISEA	\$177
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Asus P3C-E/WA	\$277	Tyan S158CC2	\$167
Asus P3C-L	\$310	Tyan S1830S	\$164
Asus P3C-S	\$628	Tyan S1837U/ANGR	\$778
Asus P3V	\$552	Tyan S1846S	\$147
Asus P3VX	\$158	Tyan S1854 TRINITY400	\$143
Asus PE-99VM/WOA	\$116	Tyan S1857-B	\$145
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Asus P5A-AA	\$147	Tyan S2066AG4 I810 TOMCAT	\$167

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AMD K7-650	\$639	CALL P3 600 w/256k	\$869
AMD K7-700	\$419	CALL P3 650 w/256k	\$945
AMD K7-750 OEM	\$552	CALL P3 677 w/256k	\$975
AMD K7-800 OEM	CALL	CALL P3 700 w/256k	\$1099
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INTEL PII CELERON 466 w/128k PPGA 66mhz	\$125	CALL P3 750 w/256k	\$1299
INTEL PII CELERON 500 w/128k PPGA 66mhz	\$160	CALL P3 800 w/256k	\$1529
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INTEL PIII 533 w/512k 133mhz	\$315		
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INTEL PIII 550E w/256k FCPGA 100mhz	\$325		
INTEL PIII 600E w/256k 133mhz	\$385		
INTEL PIII 600E w/512k 100mhz	\$385		
INTEL PIII 600 w/512k 133mhz	\$385		
INTEL PIII 600 w/256k 100mhz	\$499		
INTEL PIII 650 w/256k 100mhz	\$535		
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INTEL PIII 800 w/256k 133mhz	CALL		

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FUJITSU 8.4GB	\$140	QUANTUM FIREBALL LA 8.4GB	\$152
FUJITSU 10.2GB	\$150	QUANTUM FIREBALL LA 13.0GB	\$183
FUJITSU 10.2GB 7200rpm	\$171	QUANTUM FIREBALL LA 17.0GB	\$191
FUJITSU 13.6GB	\$165	QUANTUM FIREBALL LA 26.0GB	\$277
FUJITSU 17.3GB	\$181	QUANTUM FIREBALL LB 5.1GB	\$121
FUJITSU 20.4GB	\$205	QUANTUM FIREBALL LB 10.2GB	\$159
FUJITSU 20.4GB 7200rpm	\$243	QUANTUM FIREBALL LB 15.0GB	\$184
FUJITSU 27.3GB	\$278	QUANTUM FIREBALL LB 20.4GB	\$207
FUJITSU 27.3GB 7200rpm	\$313	QUANTUM FIREBALL LB 30.0GB	\$285
IBM DESKSTAR GP 20.3GB	\$234	QUANTUM FIREBALL LM 10.2GB 7200rpm	\$183
IBM DESKSTAR GP 25.0GB	\$302	QUANTUM FIREBALL LM 15GB 7200rpm	\$207
IBM DESKSTAR GP 37.5GB	\$436	QUANTUM FIREBALL LM 20.5GB 7200rpm	\$237
IBM DESKSTAR GXP 20.5GB 7200rpm	\$255	QUANTUM FIREBALL LM 30GB 7200rpm	\$359
IBM DESKSTAR GXP 27.3GB 7200rpm	\$358	WD 6.4GB	\$146
IBM DESKSTAR GXP 30.0GB 7200rpm	\$381	WD 8.4GB	\$145
MAXTOR DIAMOND MAX 10.2GB	\$150	WD 10.2GB	\$162
MAXTOR DIAMOND MAX 15.3GB	\$175	WD 10.2GB - 7200RPM	\$187
MAXTOR DIAMOND MAX 20.0GB	\$211	WD 13.6GB	\$187
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MAXTOR DIAMOND MAX 40.9GB	\$373	WD 20.5GB	\$226
MAXTOR DIAMOND MAX+ 15.3GB 7200rpm	\$202	WD 20.5GB - 7200RPM	\$271
MAXTOR DIAMOND MAX+ 20.4GB 7200rpm	\$230	WD 27.3GB - 7200RPM	\$394
MAXTOR DIAMOND MAX+ 30.7GB 7200rpm	\$289		
MAXTOR DIAMOND MAX+ 40.9GB 7200rpm	\$387		

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Asus 40x	\$64
Asus 50x	\$73
ACER 40X	\$51
ACER 48X	\$54
ACER 50X	\$56
ACER 52X	\$58
ACER 4432 KIT 4X/4X/32X (Box)	\$250
ACER 9624 KIT 8X/4X/24X (Box)	\$265
ACER 8432 KIT 6X/4X/32X (Box)	\$270
ACER 8432 KIT 8X/4X/32X (Box)	\$315
ACER DVD 1040 10X IDE SLOT	\$197



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Fax: 905-943-9154  
E-mail: markabo@direct.com

**Scarborough**  
4500 Sheppard Ave E #102  
Tel: 416-754-4512  
Fax: 416-754-9462  
E-mail: scarabo@direct.com

# ABC

**Ethnicolor**  
248 Browns Line  
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Fax: 416-253-8569  
E-mail: eloabc@direct.com

**Newmarket**  
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Tel: 905-954-1900  
Fax: 905-954-1711  
E-mail: newabc@direct.com

## DREAM MACHINE

550 MHz <b>\$1399</b>	600 MHz <b>\$1469</b>	650 MHz <b>\$1589</b>	700 MHz <b>\$1769</b>
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- \* Asus P3BF ATX Motherboard w/Intel 440BX Chipset,
- \* Intel® Pentium® III CPU,
- \* CPU Heat Sink & Ball Bearing Cooling Fan,
- \* 128M PC100 SDRAM, 168 Pins, 100MHz,
- \* 15GB Ultra DMA HD w/512K Cache,
- \* Panasonic 1.44M Floppy Drive,
- \* ATI Xpert 128 16MB AGP Video Card,
- \* USR 56K V.90 Int. Data/Fax/Voice Modem,
- \* 48X IDE CD-ROM Drive,
- \* Creative Sound Blaster PCI 128 Sound Card,
- \* 450W Subwoofer Speaker System,
- \* Deluxe ATX Tower Case & 250W Power Supply,
- \* Microsoft® Internet Keyboard,
- \* A-Open PS/2 Mouse w/Wheel & Mouse Pad,
- \* Microsoft® Windows 98 Full Version CD w/Manual & License

Upgrade to:  
Toshiba 6X/  
Panasonic 8X  
DVD ROM  
Drive  
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Asus P3C 2000 Motherboard.....	\$ 50
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Diamond MX-300 Sound Card.....	\$ 25
Altec Lansing ACS-45.2 Subwoofer Speakers.....	\$ 60
ATX Full Tower Case & Power Supply.....	\$ 20

Office Hour:  
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10AM-6:30PM  
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8.4GB Ultra DMA HD w/512K Cache	\$139
15GB Ultra DMA HD w/512K Cache	\$179
20GB Ultra DMA HD w/512K Cache	\$209
20GB Ultra 66 HD w/2M Cache 7200 rpm	\$249

## 2000's SECOND GENERATION

ATX Form Factor w/Pentium® III Processor

550 MHz <b>\$1179</b>	600 MHz <b>\$1249</b>	650 MHz <b>\$1369</b>	700 MHz <b>\$1549</b>
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- System Includes:**
- \* Asus P2-99 ATX Motherboard w/Intel 440ZX Chipset,
  - \* Intel® Pentium® III CPU,
  - \* CPU Heat Sink & Ball Bearing Cooling Fan,
  - \* 64MB PC100 SDRAM, 168Pins, 100MHz,
  - \* 10GB Ultra DMA Hard Drive w/512K Cache,
  - \* Panasonic 1.44M Floppy Drive,
  - \* ATI Xpert 98 AGP 2X Rage Pro 8M Video Card,
  - \* A-Open V.90 Int Data/Fax/Voice Modem,
  - \* 48X IDE CD-ROM Drive,
  - \* Creative® Sound Blaster™ PCI 128 Sound Card,
  - \* 450W Subwoofer Speakers System,
  - \* Deluxe ATX Tower Case w/250W ATX Power Supply,
  - \* Keytronic 104 Keys PS/2 Keyboard,
  - \* A-Open PS/2 Mouse w/Wheel & Mouse Pad,
  - \* Microsoft® Windows 98 Full Version CD w/Manual & License
- Upgrade to:
- |  |       |
|--|-------|
| ATI Xpert 2000 32M AGP Video Card.....               | \$ 60 |
| 15GB UDMA HD w/512K Cache.....                       | \$ 30 |
| Toshiba 6X/Panasonic 8X DVD ROM Drive.....           | \$120 |
| Altec Lansing ACS-45.2 Subwoofer Speaker System..... | \$ 60 |
| Microsoft Internet Keyboard.....                     | \$ 20 |



**Monitor Extra:** (With System Purchase Only)

15" 0.28 1024x768 N.I.....	\$185
17" Tatung 0.27 1280x1024 N.I.....	\$269
17" NEC AS70 0.27 1280x1024 N.I.....	\$299
17" ViewSonic E771 0.27 1280x1024 N.I.....	\$299
17" ViewSonic E773 0.25 1280x1024 N.I.....	\$379
17" ViewSonic PS775 0.25 1600x1200 N.I.....	\$459
17" ViewSonic PF775 0.25 1600x1200 N.I.....	\$469
19" ViewSonic E790 0.26 1600x1200 N.I.....	\$499
19" ViewSonic PF790 0.25 1600x1200 N.I.....	\$649
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# Online & Connected

Internet Trends • Wired and Wireless • Online Services • Work & Play on the Web

## MP3 is music to indie ears

Independent artists, many having never signed a record deal, are actively using the Net to distribute and promote their music

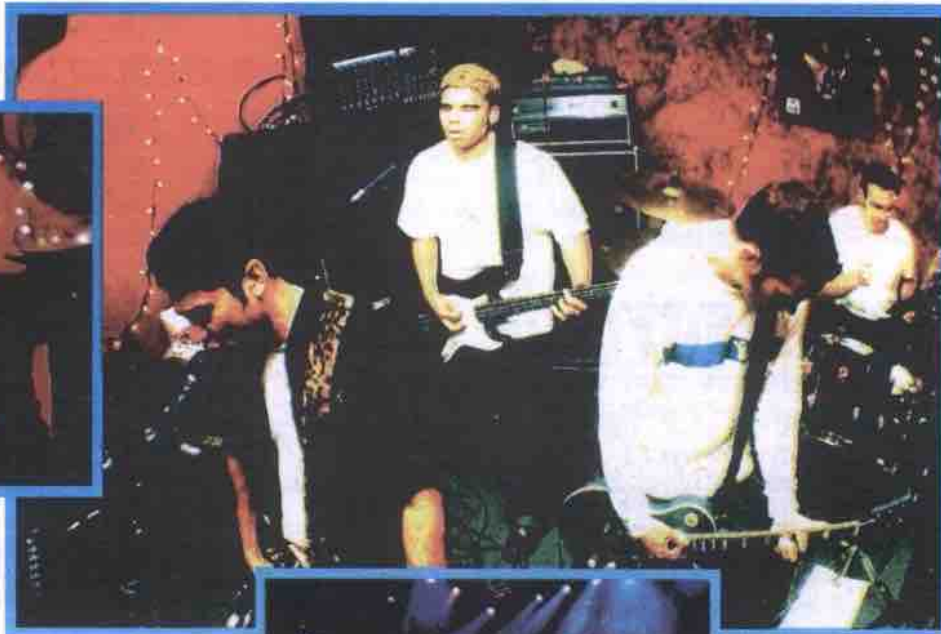
By Tom Venetis

According to statistics released during New York-based Jupiter Communications Inc.'s Plug-In conference last July, more than 70 percent of 12- to 18-year-olds have visited Web sites looking for music to download. Cambridge, Mass.-based Forrester Research Inc. predicts that companies able to tap into this digital flow from musicians to consumers could share in an estimated US\$1 billion in revenue by 2003.

With such obvious consumer interest and potential for profit, you'd expect the major record labels and artists to be among the first to jump on the bandwagon. But while mainstream musicians like David Bowie and Chuck D push for online music distribution, the gulf between reality and hype is pretty wide.

The biggest promoters of music distribution over the Web are not the major record labels. Instead, it's independent artists—many having never signed a record deal—who are actively using the Internet to distribute and promote their music.

"A lot of [major] labels want super groups," says Robert Garbowski, drummer for the San Diego, Calif.-based pop-punk band Lucky 7.



Jane Siberry, Lucky 7, and Fisher are all artists without major label record deals who are successfully using the Internet and MP3 technology to sell their music and promote their careers.



that is a failure. But "for most musicians, one can make a living off of selling 100,000 CDs."

Lucky 7 combines elements of new school punk with pop, surf and rock

"They want a group that is going to sell two to three million copies of a CD. They don't want a group that will only sell 100,000 CDs because

sounds. Shortly after forming in 1997, the band booked studio time and cut its first

*Continued on page 84*

## IE5 for Mac ready for download

Microsoft's new browser features Tasman page-drawing engine, Internet scrapbook

Microsoft Internet Explorer 5.0 Macintosh Edition (IE 5 for Mac), is now available for download from either Microsoft's Mactopia Web site (<http://www.microsoft.com/mac/>), or CNet (<http://www.cnet.com>).

The Mac version of the popular browser has a new page-drawing engine, code named Tasman. Tasman is claimed to be more reliable, and significantly faster than the engine in the previous version of Internet Explorer. Early testers also report that causes some interesting new interactions between browser and HTML pages, which may result in different page views, font sizes, compatibility issues and performance compared to earlier versions of IE for Mac.

At launch, the new browser was available in nine different language versions, including French, English, Japanese and German, with additional languages promised "soon."

Microsoft has also made the IE 5 for Mac more like the Windows version. It is now more easily configurable, allowing users to modify the appearance and layout of the browser. An Internet Scrapbook feature integrates the ability to manage Web page elements within the browser. An unusual but interesting new feature is an online auction management option.

Microsoft decided to avoid issuing a "legacy" 40-bit version of the new browser in favour of distributing only a 128-bit version, which means it will always have the highest-powered security and encryption capability.

Along with IE 5 for Mac, Microsoft has released the new Outlook Express 5.02 for Mac email client, featuring improved security. It is also available for free download, either alone or bundled with the new Web browser. Outlook Express 5.02 for Mac also has Authenticated SMTP security.

Very early adopters of the new browser and email client have already reported some bugs, including difficulties in installation, memory problems, and other glitches. It's likely that, as with most new software products, there'll be a period of teething troubles resulting in bug fixing patches and workaround advice being released by Microsoft, eventually followed by a service pack release. Microsoft has also announced that it will release a version of IE 5 for Mac at the upcoming release of the new Mac OS X.

One anticipated but unavailable feature of IE 5 for Mac is a media toolbar, which would have given users direct access to a variety of digital media playback formats, such as MPEG. Some observers have speculated that

*Continued on page 88*

## Weaving your own Web site: Part 56

### XHTML (aka HTML 5.0): Part I

By Keith Schengili-Roberts

In January, the World Wide Web Consortium (W3C) released a new official specification charting the direction of HTML. This new specification is the successor to the official HTML 4.01, which has gained wide acceptance in the Web authoring community and among browser manufacturers, who have implemented most of its features.

Everyone was expecting the successor specification to be called HTML 5.0, but instead it is called XHTML 1.0, and it signals a fundamental change in the way Web pages will be written and the purposes for which they can be used. Amongst other things, the new spec-

ification will mean Web authors will have to change their coding habits: forcing sloppy programmers to get things right, and expanding the possibilities of what users can do with the resulting Web pages.

#### XML, HTML and XHTML

The "X" in XHTML points to another coding standard called XML (extensible markup language). XML is a way to embody and describe data elements, and at the moment is being used most in the construction of many Web-based databases. The XHTML specification essentially merges aspects of XML into HTML. To get a real understanding of what's going on, you need to know some fundamentals behind HTML and XML.

One of the ongoing complaints about HTML is that while it is a good coding standard for describing how Web pages should look, it does not do a good job of describing the relationships between elements on a page. So, for example, you could create a menu listing that looks good on the Web page, but there is no simple way for a computer program to understand its contents. Take a look at this code listing as an example:

```
<TABLE>
<TR>
<TH>Food</TH>
<TH>Price</TH>
</TR>
```

*Continued on page 83*



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THE INTERNET BEGINS HERE...



**Weaving your own Web site**  
Continued from page 81

```
<TR>
<TD>Soup</TD>
<TD>$1.00</TD>
</TR>
<TR>
<TD>Hamburger</TD>
<TD>$2.50</TD>
</TR>
</TABLE>
```

Anyone who is proficient in HTML can easily make out what is going on here. This menu has the two headings Food and Price. Food relates to the contents in its column, namely Soup and Hamburger, and Price relates to the contents in its column, namely \$1.00 and \$2.50. When seen through a Web browser, it will look something like this:

Food	Price
Soup	\$1.00
Hamburger	\$2.50

The relationships between the items on the menu are easy for us to distinguish, but this is not the case for a program trying to read the contents of this page. While HTML is good at describing how all of these items should be arranged on the page, it does not implicitly describe the relationships between the items. Without an explicit description of the relationships between the elements in the table, a computer program could mistakenly think that \$1.00 is related directly to \$2.50, and not to Soup. This is where XML comes into play.

Whereas HTML was created to tell a Web browser where things should be placed on a Web page, XML was devised to describe the data contained on a page and the relationships between various data elements. One of the fundamental differences between XML and HTML is that XML allows Web authors to define their own tags—this is where the “extensible” part of the language comes into play. So for example you could create tags called <food> and <price>, and enclose the items on the previous menu page so that it looked like this instead:

```
<heading>Food</heading><heading>Price</heading>
<menuitem><food>Soup</food><price>$1.00</price>
</menuitem>
<menuitem><food>Hamburger</food><price>$2.50
</price></menuitem>
```

While this sample code adequately describes the relationships between the items on the page, a typical browser would not know how to display this code. While it is possible to tell a browser how these XML tags should be displayed, on the whole HTML provides a simpler way of displaying the same data. The new XHTML 1.0 specification is a way of taking the descriptive data features of XML and combining them with HTML's ease of data display.

**No more lazy Web code**

The XHTML 1.0 specification requires Web authors write code in a very rigid style in order for an XHTML-compliant browser to fully understand it. In essence, here are the main elements required in writing XHTML code:

- Certain XHTML elements must always appear on a page.

- Web pages have to conform to XML rules.
- Tags and attributes must be in lowercase.
- All XHTML elements have to be “closed.”
- Any attribute values must be in quotes.
- Minimization of code is no longer allowed.
- The “id” attribute replaces the old “name” attribute.
- Extended characters need to be explicitly defined prior to use.

Let's go through each of these one-by-one. Under XHTML, there are a number of mandatory elements to distinguish an XHTML page as an XHTML page. XML requires that all documents have what is called a “root” tag, and that all of the tags that follow must be considered sub-elements (or what is commonly referred to as “children”). As a result, the following tags are mandatory in an XHTML page: <!doctype>, <html>, <head>, <title> and <body> (plus all of their appropriate closing tags).

All of the tags on a Web page must also conform to the proper XML rules, which means that the tags must be properly nested (i.e. <b><i>this is correctly nested</i></b> and <b><i>this is not</i></b>). They also must follow the correct order, so that the <body> and <head> tags are contained within the <html> tags. In addition, under XHTML, the <title> tag and its contents must be first tag to appear after the opening <head> tag.

As you may have noticed from the earlier XML sample code, XML is written in lowercase. This is because XML is case-sensitive, meaning that tags like <B> and <b> or <BR>, <br>, <br> could be interpreted as different tags. As a result, XHTML code must also be written in lowercase letters to be properly understood by the browser.

All XHTML tags have to be “closed.” This means that there must always be either a closing tag (i.e. </p>), or if the tag is a standalone, it has to have a “/” at the end of it (i.e. <br />).

XHTML also requires that if you are using a tag that has an attribute value, it must be enclosed in quotes (i.e. <img src=“fred.gif” height=“50” width=“50” />). If this is not done, the attribute will not be recognized and the tag as a whole may not be displayed properly.

The XHTML specification also says that the id attribute is now the name attribute, so all of the tags that used name (<a>, <applet>, <frame>, <iframe>, <img> and <map>) must now use id instead.

You also cannot use minimized attribute forms with tags anymore. So, if you used to write code that allowed a contracted form, such as <dl compact> or <option selected>, it must now be written in its full form instead, such as <dl compact=“compact”> and <option selected=“selected”>.

Under XHTML scripting and style elements (which also includes such entity characters such as &lt; and &amp;) have to be explicitly set so that the browser doesn't simply see them as text content. This is done by declaring these elements as being special #PCDATA content, which should be interpreted rather than displayed. You would do this for some sample JavaScript code in the following fashion:

```
<script>
<![CDATA[
...the code for a JavaScript program would go here ...
]]>
</script>
```

In this case CDATA is recognized by the XML.

Continued on page 88

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**MP3 is music to indie ears**

Continued from page 81

album. However, it didn't have a record deal and band members began to investigate ways to promote themselves and distribute their music until a deal came along. What they found was the Internet and a fledgling company called MP3.com.

MP3.com, which is also based in San Diego, was started to give artists like Lucky 7 a way to distribute and promote their music over the Internet. It uses a technology, MP3 (MPEG-1, Audio Layer-3), which can compress audio files to about 10 percent of their original size, making them small enough to download quickly while maintaining CD-quality sound. The MP3.com site debuted in late 1998 with only a handful of bands. In less than 18 months since the launch, some 40,000 artists have an MP3.com presence, and the site is host to more than 250,000 samples of their work that can be downloaded for free.

John Lenihan, director of public relations for MP3.com, says his company has empowered both the artist and the audience.

"What is great about the Internet and MP3.com is you are able to access the music you like," Lenihan adds. "If you really like

Celtic music, you can go into the Celtic section on our Web site and listen to or purchase a CD which was really unavailable in the past. And it is a great tool for artists to market their music to a global audience."

When artists sign onto MP3.com, they agree to make at least one cut available for free, allowing Web surfers

"[Major labels] don't want a group that will only sell 100,000 CDs because that is a failure. But for most musicians, one can make a living off of selling 100,000 CDs."

—Robert Garbowski, Lucky 7 drummer

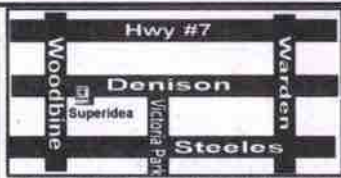
to sample their sound. If they like what they hear, listeners can purchase a CD directly from MP3.com's Digital Automatic Music (DAM) service. DAM presses a single CD, complete with artwork and jewel case, and ships it to the consumer in about 48 hours.

"You [the group or solo artist] are in control of your music," Garbowski says. "You are in control of the artwork and the price to charge. You don't have to manufacture any CD and [MP3.com] will make them as needed." The only up-front cost for the band is studio time.

Another advantage for artists using DAM is they receive 50 percent of the net revenues from the sales of their CDs—a deal no major record company would offer, especially to a band that is just starting out.

Lucky 7 says it has sold some 700 CDs through DAM and that MP3.com has logged about 100,000 downloads of the group's free

Continued on page 86



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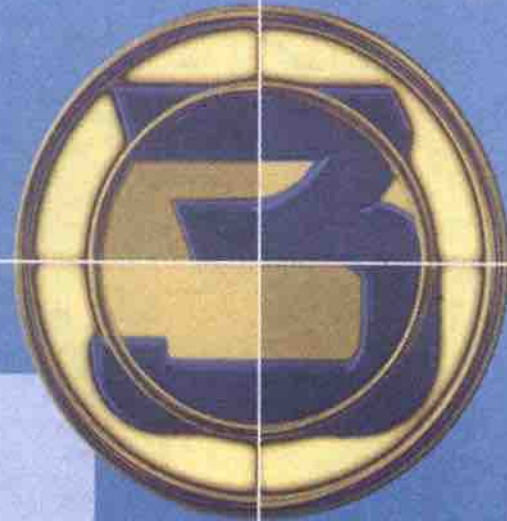
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## MP3 is music to indie ears

Continued from page 84

songs. MP3.com also links listeners to Lucky 7's own site (<http://www.feelingluckyjunk.com>), where they can get more information on the band, find out about tour dates, new releases, and purchase band merchandise.

But what bands like Lucky 7 find most useful about online music distribution is the relationships they begin to build with their fans. People looking for music on the Internet tend to be pickier and more loyal to the music genres and artists they like. One would have to be, as tracking down a song or album online can be time consuming, especially if the artist has a lower profile than, say, the Backstreet Boys. But once they find something they like, Internet-savvy fans tend to stick with an artist and even help promote them.

### Underground goes online

Thomas Ryan, the former chief music officer and co-founder of New York-based Cductive.com (which was recently acquired by EMusic.com), says he started his online music distribution company as a way of promoting underground, electronic, and dance music to a wider audience.

"It [underground music] was not distributed well, so if you knew what you wanted chances are you might not have been able to find it," Ryan says. "And it was difficult to learn more about it unless you had a friend in the know. We started Cductive.com to combat those two deficiencies and grow the market for high-quality underground music."

Cductive.com posts selections from a wide variety of artists, many of whom are signed to small, independent labels. The site is not only a place to buy music, it is a venue where a community of like-minded musicians and listeners can come together.

The Los Angeles-based band Fisher credits the Internet with helping it find its audience and fans. Fisher was started about six years ago by lead singer Kathy Fisher and producer, arranger, keyboard player Ron Wasserman. About two years ago, Fisher's song *Breakable* was featured on the soundtrack for the film *Great Expectations*. This was a big break for an unsigned band.

The movie did not do well at the box office and *Breakable* was never released as a single. However, the soundtrack also featured music by Tori Amos, whose fans are extremely loyal. They liked *Breakable* so much they started calling Atlantic Records, which put out the

## Vancouver developer's PC game teaches lesson in online safety

By Stefan Dubowski

A software company from Vancouver has created a computer game designed to teach kids and parents about the perils of Internet surfing.

LiveWWWires Design Ltd. (<http://www.LiveWWWires.com/>) based the game, *Missing*, on a real-life Internet abduction experience. Just like Zack in the small-screen version, the teen, who's tale *Missing* is based on, was lured to the U.S. by an online predator who promised the world.

According to LiveWWWires president, Drew Ann Wake, the game is meant to send a very strong message to kids and parents. "You have to be extremely wary of people who promise California on a platter," she said during a telephone interview. "They have underlying motives."

*Missing* comes with a video documentary—which recounts another abduction attempt—and a workbook. The company is distributing 20,000 copies of the package through Industry Canada and provincial education ministries. Wake said it should eventually be available in every school and public library in the country, at no charge to the recipients.

"Not every province is on board yet," Wake said. "But, since the game is free, there's no downside to receiving it."

Thanks to benefactors like the Mounted Police Foundation, which paid for the 20,000 packages, individuals can buy *Missing* from the company's Web site for \$35, Wake said. "We wanted to offer it at the price of a book."

*Missing* draws a frightening scenario for its target audience (10- to 14-year olds and their parents). In game one, the player is a member of the RCMP's Missing Children's Registry wrestling with a father's pleas. It

seems that the man's son, Zack, has been spending a lot of time on the Internet. A brief look at Zack's email suggests he has been in contact with an online predator. Then Zack goes missing. In game two, it's up to the player to find Zack in California before his abductor whisks him off to Mexico.

In designing *Missing*, Wake said LiveWWWires went through 30 stories of Internet prey before settling on Zack's tale. "It was difficult," she said. "Very different tactics are used for girls and boys. Predators usually offer girls support for how they look... Predators send boys pornography or pictures their parents don't allow."

LiveWWWires got on board when the RCMP's Computer Crime Branch came calling. The police were researching software companies, looking for a game that could help teach kids about safe-surfing habits.

"Every once in a while, a project comes along that just suits the company," Wake said. The company's expertise with realistic video and audio came in handy. "We knew we would produce the perfect game to teach kids about the dangers of the Internet."

While the game might appeal to teens and pre-teens, the developers felt that the parents could use some schooling, too. So LiveWWWires included the documentary about a teenager who almost makes it out the door, en-route to meet a predator living in New York.

"There's a tremendous amount of denial and disbelief among parents," Wake said. "We wanted to break through that disbelief."

It seems to be working. LiveWWWires put *Missing* through a number of tests with the target audience, and was pleased by the response.

"We know the game is hitting home," she said. □

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soundtrack, asking where they could get Fisher's CD. The problem was Fisher was not signed with Atlantic, nor did it have a commercially available CD. The fans then began searching the Internet for information on Fisher, which prompted the band's move online.

"So the position we were in, it would have been crazy not to have our own Web site and that pushed us to do a CD because we were getting requests for one," Kathy Fisher says.

People looking for music on the Internet tend to be pickier and more loyal to the music genres and artists they like.

Wasserman says he applies the same philosophy to the Internet that Honda does to letters of complaint. If Honda receives a written missive about one of its cars, it assumes there are roughly 25,000 other people with the same complaint.

"So if we are getting email, possibly each one represents about 500 people," Wasserman says. "And I thought maybe we have an audience out there that we don't know about."

Unlike the Web sites for multi-million CD selling artists, Fisher's Web site (<http://www.digitalsound.net>) keeps fans up-to-date on what the band is doing. The site features photos taken on the road, and performing and backstage at a recent L.A. awards ceremony. Wasserman also takes the time to respond to each email the band receives.

"One of the things we really tried to create is interaction," he adds. "When we had a show at the House of Blues and had to cancel because Kathy was sick, the next day I had to answer 300 emails telling people what her health was like. When someone picks up a CD in a store, there is not a snowball's chance in hell they are going to talk to anyone who works with the band."

Another artist who is using the Web to do more than distribute music is Toronto-based singer/songwriter Jane Siberry. Following her departure from a major label, Warner/Reprise, in 1996, Siberry started Sheeba Records and launched a Web site for her label. Sheeba.ca (<http://www.sheeba.ca>) not only distributes Siberry's music, but acts as a resource for fans wanting to find out about new releases and tour dates. The site is currently being

"The Canadian music scene is pretty strong and significantly different from the U.S. music scene, especially in the independent area."

—Jeff Baryshnik, MP3.ca

redesigned, but she hopes fans will continue to give her feedback about its direction. In the past, she has encouraged fans to use the site as a kind of watering hole; a forum in which Siberry could ask questions and receive suggestions and ideas from visitors.

"I put up a 'Jane Asks' area and people would write in with what they knew and I

would post it," Siberry said. "I get a lot more out of it personally. People see me struggling and come forward with their expertise in different areas."

**MP3.ca arrives**

Even more Canadian musicians and independent bands will likely take to using the Internet and MP3 technology to promote themselves with the recent launch of MP3.ca. While not affiliated with MP3.com, MP3.ca intends to

follow the same formula of distributing and promoting artists as its American counterpart. MP3.ca will link up with individual artists and bands, and their Web sites, and allow them to post information on tour dates. Promoters will also be able to use MP3.ca to book bands.

"We want to act as a Canadian source for music," says Jeff Baryshnik, president of Toronto-based MP3.ca. "The Canadian music scene is pretty strong and significantly different from the U.S. music scene, especially in the

independent area. And there are some big bands in Canada that are not really in the States."

**Labels will not go gently**

Though musicians now have more control over marketing and selling their music independently, even many of the artists who use MP3 and the Internet extensively will admit that these technologies will never replace the

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major labels, and many would jump at the chance to sign a deal if they believed the terms were right.

"When people ask us whether MP3 will replace record labels, we say an emphatic no," says Kathy Fisher. "What it has replaced is artists putting flyers up and down Sunset Strip and doing shows where they have to buy the tickets and do their own advertising. It is a cost effective way to get your music out to your audience and to a worldwide audience."

While the major labels will certainly not

disappear any time soon, they have also not shown any great enthusiasm about the MP3.com technology itself. The main reason being that the format makes it easy to illegally distribute copyright-protected music. An enterprising and persistent Miles Davis fan, for example, can probably find most of the jazz legend's recordings online in MP3. Great for the fan, but certainly not for the record company or artist (or in Davis's case, his estate) who are losing revenue.

The Recording Industry Association of

America (RIAA), which represents many of the major labels, has gone as far as "educating" administrators at U.S. universities about the illegality of Web sites containing pirated MP3 collections residing on campus servers. In August, a University of Oregon student who posted MP3 files on the university's network was the first person in the U.S. convicted under the No Electronic Theft (NET) Act. It was the campus network administrators who tipped off the authorities. In November, 71 Carnegie Mellon University students were

disciplined by school administrators for posting illegal MP3 files on the campus network. Their Internet privileges were revoked and they were required to attend a class on copyright issues and to write an essay about what they learned.

While the major record labels, through the RIAA, are making sure MP3 pirates are prosecuted, they are not ignoring the Internet and its potential for digital music distribution. Recently, many signed onto the Secure Digital Music Initiative (SDMI) in an effort to research methods of distributing music online while maintaining copyright protection.

Several major labels have also signed onto Listen.com (<http://www.listen.com>), which produces a directory of downloadable music. Listen.com's principals include BMG, EMI, Universal Music Group and Warner Music Group. In October, Sony Music also invested in the company. There is some suggestion that Listen.com will be used as a platform for the major labels to distribute their music online, while still allowing them to retain a great deal of control over it.

But no matter how the major labels react, the music landscape has already begun to change because of MP3 and the Internet.

"I'm not saying that music that you buy at a record store is bad, but that you are being fed the stuff a record company believes you will buy a lot of," says Tal Klein, a member of the New York-based duo Trancenden (<http://www.trancenden.com>). "On the Internet you have a lot more variety. Everyone has a specific kind of music that they like, from country music to hardcore techno. And on the Internet you will probably find someone who combines both." □

**Weaving your own Web site**  
*Continued from page 83*

processor in the browser, telling it to process the JavaScript code instead of displaying it.

By now you have an idea as to how a typical XHTML Web page differs from an HTML version of the same page. In the next article, we will look at XHTML in more depth, and look at specific sample pages written using XHTML. □

**Next time:** Writing XHTML Web pages. Keith Schengill-Roberts welcomes any comments, suggestions or HTML tips you may have. You can email Keith at: [robertsk@wave.home.com](mailto:robertsk@wave.home.com). Look for his upcoming book on CSS, *Core CSS*, (ISBN: 0-13-083456-4) to be published by Prentice Hall. Previous articles in the series can be found at: <http://www.web-weaving.net>.

**IE5 for Mac ready for download**  
*Continued from page 81*

it was not included with this release because it couldn't be completed and debugged in time, and may become available at a later date.

To entice early adopters of IE5 for Mac, Microsoft has included an Apple iMac giveaway promotion in the download process, open to Canadian and American residents (<http://www.microsoft.com/mac/download/en/default.asp>).

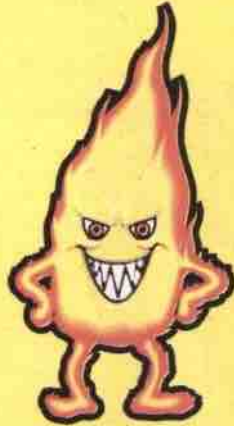
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# Two firms test PC support via the Net

By Tom Venetis and Megan Johnston

Internet service provider (ISP) ParaLynx Internet (<http://www.paralynx.com>) will soon begin a three-month trial offering PC support services to subscribers in an agreement it has entered with PCsupport.com (<http://www.pcsupport.com>).

Heidi Lynn, operations manager for ParaLynx in Vancouver says the computer support services will help differentiate ParaLynx from other ISPs, particularly among those novice PC users making their first forays onto the Internet.

"I've noticed over the last few years an increase in the number of new computer users signing up for Internet services," Lynn says. "The first time they need technical support for their computer is when they are going online. So our technical support guys here come to be seen as their first point of contact if they have technical problems."

Lynn says many of the support calls they get have nothing to do Internet connection problems. Instead, people may call up asking why they can't print a page from a Web site or why their modem cuts off when they are online.

Now, when ParaLynx's subscribers have a problem with their PC, they will get help from a PC Support Centre portal customized by Burnaby, B.C.-based PCsupport.com.

Cliff Rowlands, vice-president of sales and marketing for PCsupport.com says anyone using Microsoft's Internet Explorer 5.0 Web browser can access a variety of online services that will help troubleshoot and maintain their home systems. Services will include regular virus alerts, maintenance utilities, backup services and software upgrades for applications when they become available.

"At every level, they have to give us permission, and at any time, all they have to do is touch the mouse and control [of the PC] reverts back to the subscriber."

—Cliff Rowlands, PCsupport.com

By offering these services on the Net, PC users will avoid the frustration of calling a service centre and waiting in a phone queue until someone takes their call.

"All of those call centres practice call avoidance techniques with people punching in numbers in order to route calls," says Rowlands.

PCsupport.com's Support Centre will even let someone log on and speak to a support staff person either through chat or email. Another feature is the ability for the support staff to directly go into a person's system and fix problems that may have occurred, such as

broken links, disk errors and damaged files and programs. All of this is done through the browser and with the permission of the user, who approves changes before they are made by the technician.

"We want the customer present when we do

the work and they can watch us do everything on the screen as we do it," Rowlands says. "At every level, they have to give us permission, and at any time, all they have to do is touch the mouse and control reverts back to the subscriber."

All of PCsupport.com's technicians are trained by the company and have four to five years of technical experience, including certification. Currently, PCsupport.com does not charge for its services as it is building its sub-

Continued on page 91

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**Two firms test PC support via the Net**  
Continued from page 89

scriber base, but Rowlands did not rule out the possibility of charging a minimum fee at some point in the future. He says he is also considering the possibility of bundling PCsupport.com into service packages that PC vendors would offer to customers.

ParaLynx's Lynn says her company will offer the service for free to start, but they will charge a fee eventually. She would not say what those charges would be, or whether they would be part of a basic ISP subscription.

PCsupport.com plans to offer round-the-clock technical support when more staff comes online in the next while. Currently, the support is limited from 8 a.m. to 6 p.m. PT. After hours, people can email in their questions and they will be contacted within 24 hours.

**Velocity OSP trials**

Another company, Velocity Computer Solutions Ltd. (<http://www.velocityIT.com>) has started beta trials of its own online troubleshooting and repair service.

Unlike Paralyx, the nearly two-year-old company, which has offices in Vancouver, Calgary and Toronto and plans to cross into the northwestern U.S. by the end of the year, is not an ISP. Velocity provides a range of "solutions," from helping clients plan hardware, software and connectivity purchases, to repairing and servicing their systems. The company already offers round-the-clock voice support and on-site repair and servicing through its call centre

and team of more than 45 mobile engineers.

For the new service, Velocity is targeting its client base of about 2,100 businesses, which range in size from single computer operations to medium-sized enterprises. What they have in common, according to Velocity, is the desire to avoid the high cost of "down time."

In researching the new Online Service Products (OSP) solution, the company said it found that even though the price of hardware and software continues to drop, the total cost of ownership (TCO) has risen. This is credited to the climbing costs of servicing, and the cost of having employees sitting idle.

According to Velocity chief executive officer, Shawn Chute, "Over 90 percent of customer calls into our support centre originate from software problems instead of a hardware failure." And many of the software problems can be fixed remotely.

The company felt that if they could diagnose and fix problems that could be addressed via a broadband connection prior to dispatching an engineer, it would not only save money, but their clients' systems would be up and running more quickly with the elimination of travel time.

"Our new [services] will allow us to access and remotely control a customer's computer or network over a high-speed Internet connection," said Chute.

Like the PCsupport.com service, this is done only with the client's permission. Clients initiate the online service by clicking on the Velocity Supportal icon on their PC desktop.

"Within seconds, a Velocity support specialist will be available by videoconference to

discuss the problem, and the best way to provide a solution," says Chute.

By using videoconferencing technology instead of chat or email, Velocity technicians literally talk clients through online service sessions. During a demonstration of the OSP service to TCP and a group of investors in early February, a Velocity representative said that a 56Kbps modem is the minimum connectivity requirement to use the service, which is platform independent.

"We will eventually be able to solve most of our customers' problems without dispatching an engineer from our office."

—Shawn Chute, Velocity

"Velocity's support team can work on a customer's computer or network just as easily through a broadband Internet connection, using our remote control software, as an engineer could if sitting in the customer's chair.

"We will eventually be able to solve most of our customers' problems without dispatching an engineer from our office," says Chute.

Velocity does not have pricing for the OSP service yet. It says it eventually plans to extend its OSP offerings to include maintenance, upgrading and training services. □

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# Think utility, not just utilities

Utilities used to be restricted to small, single purpose helper programs, but no more. Fully functional trialware versions of expensive commercial software now compete for the same customers with better-than-ever shareware. The Web has provided a common distribution channel, and we users are demanding more and more from our PCs.

By Jacques Surveyer

In researching the topic of top 10 PC utilities, the issue of whether or not to include shareware along with commercial PC utility software arose. If you ask "why not?" you have probably already observed a notable trend—shareware and regular software are rapidly merging. Many popular programs (for example, four of the top five Web authoring programs I reviewed for an upcoming issue of TCP) are available in 15- to 60-day free trial versions. These demo programs are full versions with the ability to save files, and no limits on size of workspace or other functionality. Increasingly, these programs can be found at popular download Web sites, like TUCOWS (<http://www.tucows.com>) or Download.com (<http://www.download.com>).

It is remarkable that computers—those logical whizzes—are primarily being used not to enhance calculation or logic but communication and the arts.

Sound like shareware? Indeed. And for its part, shareware offerings are becoming more like trial versions of commercial software, but from a different starting point. Instead of unlimited trial periods, most shareware programs have switched to the time-limited model. Also, most shareware is now fully enabled, instead of offering the limited functionality of "light" versions of programs. Shareware also sports all the pro features like tooltips, wizards, rich help files, tips of the day, online tutorials and electronic documentation.

At many download sites you will see old-fashioned shareware mixed in with software from such big names as Adobe, Allaire, Macromedia, McAfee, NetObjects, and Sybase.

Of course the great equalizer is the Internet. Both regular software and shareware vendors realize that because trial software can easily be downloaded from numerous shareware Web sites or found on popular, free best-of CD-ROMs, customers are becoming less concerned about brand name and more about the effectiveness of the programs. And since all vendors are moving to all-electronic documentation and Web-based product support, there is little to distinguish brand name programs from shareware other than the quality of the code.

With this in mind we went to three major software download sites and listed their most popular downloads as of early March 2000. From this list, augmented by input from *The Computer Paper* staff, we choose our top 10 PC

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utilities. As you will see, many of the programs on the list stretch the definition of a utility. (Every program is a utility from the operating system's point of view; and every utility program is a candidate to become a part of the operating system from Microsoft's point of view.) However, we limited ourselves to PC software, but with this same broad definition of a utility. By inspecting the most popular downloads from the freeware/trialware/shareware sites, one gets a feel for the range of "utility" software available today.

**Most popular**

When examining the most popular downloads—ICQ, NetZip, WinZip, CuteFTP, Go!zilla, iSpeed, WebFerret, Netscape, Internet Explorer, GetRight—it is clear that Web utilities top the list. All of these are Internet-based or Web assist programs.

The second most popular group include multimedia titles. WinAmp, Sonique, ACDSee, Webshots and PaintShop Pro—audio players, and image cataloging utilities are all about multimedia. It is remarkable that computers—those logical whizzes—are primarily being used not to enhance calculation or logic but communication and the arts.

In compiling this list, we also chose some OS add-ons—WinZip and PCAnywhere—which are more traditional utilities. But in keeping

with the evolution of the PC as the intelligence and networking/messaging hub in home and SOHO (small office/home office) environments, some non-traditional categories have been included. We are really trying to identify software, and especially trialware, that adds a lot of value and utility in diverse settings.

**Notes/Domino**

http://www.lotus.com  
At about 75 MB this is a whopper of a download (you can also order the trial CD-ROM), but Notes, the standard for collaboration, is available for a free 90-day trial period. New Release 5 adds Web development features like Java, Javascript, XML, HTML 4.0, OLE, and advanced CORBA/IOP support.

Notes/Domino provides a Web development environment with messaging, data search and synchronization, plus workflow and routing that can handle the diverse demands of e-business in a solid messaging framework. And Lotus is not resting on its laurels: its Raven technology unites Notes/Domino messaging and synchronization, SameTime secure chat, plus QuickPlace, TeamRoom, and LearningSpace collaboration in a knowledge management portal.

**WinZip**  
http://www.winzip.com

WinZip set the same standard for Windows shareware that List.com did for DOS. From the outset it was a comprehensive implementation—offering fast and efficient compression

and decompression of files with an easy-to-use Windows Explorer-like interface. In this era of increasingly massive hard drives one might

**Top 10 utility downloads**

<b>CNet</b> http://www.cnet.com	<b>TUCOWS</b> http://www.tucows.com	<b>ZDNet</b> http://www.zdnet.com
<b>ICQ</b> Chat over Web.	<b>Netscape</b> Internet browser, mail, page editor.	<b>ICQ</b> Chat over Web.
<b>Winamp</b> Play MP3, MP2, CD, MOD, WAV files.	<b>Winzip</b> Handles ZIP files with ease.	<b>WebFerret</b> Do Web searches at multiple sites.
<b>Winzip</b> Handles ZIP files with ease.	<b>ICQ</b> Chat over Web.	<b>Go!zilla</b> Manage Web downloads.
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<b>Sonique</b> Play MP3, CD, WAV, MOD, WMA files.	<b>ACDSee</b> Image album/catalogue program.	<b>Swimsuit Screensaver</b> Need I say more.
<b>NetZip</b> Net downloads managed very well.	<b>WinAmp</b> Play MP3, MP2, CD, MOD, WAV files.	<b>MS RegClean 4.1a</b> Helps manage registry.
<b>Microsoft Internet Explorer</b> Web browser.	<b>CuteFTP</b> Net transfer files easily.	<b>Internet Explorer</b> Web browser.
<b>CuteFTP</b> Net transfer files easily.	<b>GetRight</b> Download files safely.	<b>123 Free Solitaire</b> Six solitaire variations.
<b>Netscape Communicator</b> Web browser.	<b>PaintShopPro</b> Edit JPEG, GIF, and other image files.	<b>iSpeed for Windows</b> Speed Web transfers.
<b>Go!zilla</b> Manage Web downloads.	<b>Internet Explorer</b> Web browser.	<b>Power Toys</b> Microsoft utilities for Windows 95.

<p><b>Intel P III-500</b> <b>\$788</b></p> <p>Intel P III-500 CPU, 512K Cache 100MHz BX/ZX Main Board 64MB PC-100 SDRAM Dynamic 3D Video 3D Sound Pro Integrated Sound 56K V.90 Voice/Fax/Modem 8.4GB UDMA HDD, 3.5" FDD 40X CD-ROM, 100W SPKs Win98 Keyboard, Mouse/Pad Mid Tower 250W Case</p> <p><i>Special for parts:</i> Win2000 oem... \$209 Win98 sec. oem... \$140 Win95B oem... \$99 15" SVGA Monitor... \$199 17" SVGA Monitor... \$269 Log. QuickCam USB... \$79 36Bit scanner... \$89 Acer 620P Scanner... \$125 (After rebate)</p>	<p><b>Intel P III-550</b> <b>\$988</b></p> <p>Intel P III-550 CPU, 512K Cache ASUS P2-99 100MHz BX M.B. 64MB PC-100 SDRAM 8MB ATI Xpert98 AGP Video Sound Blaster 128 PCI Sound Aopen 56K V.90 Modem 10.2GB UDMA HDD, 3.5" FDD 48X CD-ROM, 180W SPKs Win98 K.B., Mouse/Pad ATX High Tower 250W Case</p> <p>Canon BJC 1000SE Printer... \$89 (After Rebate) Epson 760usb Color Printer... \$339 ATI All in Wonder pro 16MB... \$199 ATI All in Wonder 32M AGP... \$319 Voodoo3 2000 16MB AGP... \$139 ASUS V6600 G-Force pure 32M AGP... \$339 Sony 15" 110GS .25 Monitor... \$289</p>	<p><b>Intel P III-600B</b> <b>\$988</b></p> <p>Intel P III-600B CPU, 133Mhz Houston 756 133Mhz M.B. 128MB PC-100 SDRAM Up to 64M Dynamic 3D Video NTSC/PAL TV output option 3D Sound, 56K V.90 Modem 13GB UDMA HDD, 3.5" FDD 48x CD-ROM, 180W SPK Win98 K.B., Mouse/Pad Mid Tower ATX 250W Case</p>	<p><b>SUPER GUY PC!!!</b> <b>\$1788</b></p> <p>Intel P III-600B CPU, 133Mhz ASUS P3V4X 133MHz M.B. 128MB PC-133 SDRAM ASUS V6600 G-Force 32M Video Sound Blaster Live Value Sound U.S.R./3Com 56K V.90 Modem 17GB UDMA HDD, 3.5" FDD Altec Lansing 45.2 SPKs w/Sub. Aopen 10x slot DVD MS Natural K.B., IntelliMouse ATX High Tower 250W Case</p>	<p><b>Sun Unix/Linux Server</b> <b>\$3088</b></p> <p>Intel P III-733EB CPU, 133Mhz ASUS P3V4X 133MHz M.B. 1GB (256MB*4) PC-133 SDRAM ATI 3D Charger 4M PCI Video Intel Pro/100 10/100 Ethernet NIC Maxtor 30.4GB Ultra66 7200 HDD Creative 52x CD-ROM Panasonic 3.5" FDD Full Tower ATX Case w/300w Win98 Keyboard PS/2 Mouse and Pad</p>	<p><b>Sales Keep Going</b></p> <p>Intel P II-466A CPU, 128K Cache Pentium II Intel chip Main Board 32MB 168pin 10ns SDRAM Dynamic Integrated AGP Video 3D Sound Pro Integrated Sound 56K V.90 Fax/Modem 5.1GB UDMA HDD, 3.5" FDD 40X CD-ROM, 100W SPKs Win98 Keyboard, Mouse/Pad Mid Tower 250W Case 14" SVGA 28 Monitor</p> <p><b>Total: \$799</b> (Tax included)</p>
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think compression utilities would get the short stick. Not so. Backups, Web downloads, and general file management can always benefit from compressed files.

But as WinZip reaches version 8, it is seeing increasingly tough competition. WinRAR, for example, matches nearly all WinZip's features while delivering files that are five to 20 percent more compressed, handling more compression formats (including ZIP), and running on more platforms (including Linux, most popular versions of Unix and OS/2). Another competing free program, FreeZip, is very compact (attaching itself to Windows Explorer) and minimal.

**DecisionTime**

http://www.spss.com/decisiontime

Until now, Intuit Quicken and Microsoft

Money have been the cream of the free trial business software. But no longer. SPSS DecisionTime is a powerful planning and forecasting tool that is available for a 45-day free trial. This well-developed forecasting software simplifies every step but doesn't forgo sophisticated statistical and economic analysis methods.

DecisionTime is only one of a series of new business trialware, such as Maximal's MPL optimizing tool (http://www.maximal-usa.com), Palisade's group of Risk Analysis software programs (http://www.palisade.com), and Decisioneering's Crystal Ball (http://www.decisioneering.com) for sensitivity/what if analysis. Ace that business course or super-charge your business analysis with DecisionTime and the other exemplary business trialware available on the Net.

**PCAnywhere**

http://www.symantec.com

**Laplink 2000**

http://www.laplink.com

These packages are engaged in a holy war for the remote-access and file-transfer/synchronization market. Laplink has the lead on file transfers by including more options, plus free serial and parallel cables. PCAnywhere, which is available in a 30-day trialware version, has the lead in remote access over modems or the Internet.

But they both need to watch their backs as their primarily Windows orientation leaves room for freeware-like Java-based VNC, which provides some remote access services that run on any platform.

The bottom line is that remotely accessing your PC for help/product support or simple

file transfers is easier and more secure than ever before.

**Canvas 7**

http://www.deneba.com

The worlds of desktop publishing, vector graphic illustration and paint programs are about to collide and arriving ahead of time is Canvas. Think of Canvas as your ultra-versatile computer-based graphics layout board. Use it to create snappy brochures, precise illustrations, Web page styling, and very sophisticated image compositions. This program has pro-features like Pantone, DCS, and ICC colour profile; two dozen file formats for input and output, including PDF; plus DHTML, Javascript and GIF animations for Web output.

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<h1>Netmicro Warehouse</h1> <p>Business Hours: Mon-Fri. 10:30-6:30 Saturday 10:30-4:30</p> <p>60 Amber St. Unit 10, MARKHAM, ON. L3R 2Z9 Tel: (905)948-8229 Fax: (905)948-1220 email:netmicro@idirect.com</p>		<p><b>Professional Series</b></p> <p>Pentium III-550 \$1284 Pentium III-550E \$1264 Pentium III-533EB 1274 PentiumIII600EB \$1334</p> <p>Soyo 6VBA /Asus P3V motherboard ATA66 PC-133 PC-100 128M/PANASONIC 1.44 FDD 13G Fujitsu 7200rpm hard drive Acer 50X CD/SB Live Value v.2 Diamond Stealth III S540 32M 4X AGP USR 56K V.90 MODEM MICROSOFT INTERNET KB/MOUSE Aopen 250W ATX MID CASE ALTECLANSING #33 SUBWOOFER</p> <p>AMD K7-600 \$1284 AMD K7-650 \$1334 AMD K7-700 \$1454</p> <p>Backed by: AMD Retail CPU+ Gigabyte k7LXE MB</p>	<p><b>Beginner System</b></p> <p>PII-C-433/466 = \$689/\$699 PII-C-500/533 = \$739/\$889</p> <p>Soyo 6IWM/L PII/PIII Intel 1810/VGA/Au/Mo PC-100 32M/6.4G HDD Fujitsu PANASONIC 1.44/48X CDROM ON BOARD 8M VGA/Audio/56K Modem 250W ATX CASE/120W SPEAKER AOPEN KB/Logitech 2B mouse 15" MONITOR INCLUDED</p> <p>AMD K-6-2-500 = \$669 AMD K-6-2-533 = \$699</p> <p>Backed by: :Soyo 5SSM5+K6-3-450</p>	<p>14<sup>th</sup> Ave. Amber St. Denison St.</p> <p><b>Video &amp; Printing</b></p> <p>ATI Rage Pro 8M AGP \$56 ATI Rage 128 16M \$109 Asus 6800 Oforce 32M \$379 Voodoo 3-3500 TV 16M \$179 Voodoo 3-3500 16M \$285 Matrox G400 D.H. 32M R. 279 Aopen 56k V.90 PCI hard \$45 Motorola 56k v.90 \$23 HP 840C = \$219 Epson 740 = \$209 Canon 2000SE = \$113</p> <p><b>Call for Not List Items</b></p> <p>All trademarks represent their owners. Systems are 2Y labor &amp; 1Y parts depot warranty. All prices are 4% cash discount, already 20% Restocking fee charge on return. Taxes not included. Price &amp; avail subject to change change</p>
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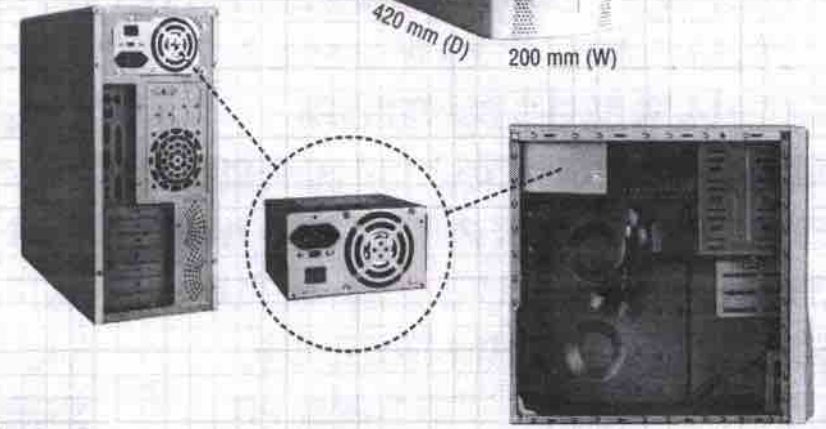
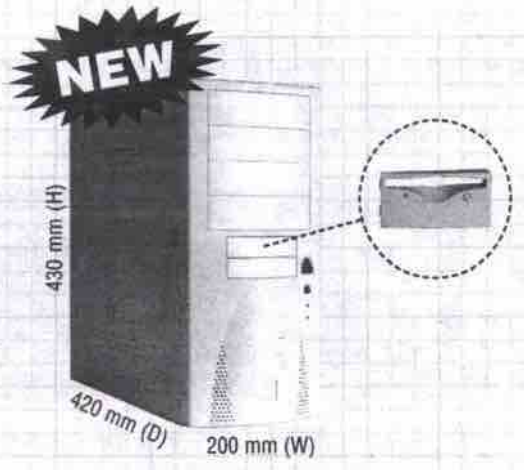
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can master its Sprite effects and Lens technology (yep, there is a big learning curve here), which allow bitmap effects to be applied to text and vector graphics in unique, captivating ways. Oh, and you can choose from Windows, Mac or Linux platforms.

Right now, only the Aussies, with Wright Design (<http://www.wright.com.au/design/>), are giving Deneba's Canvas a graphic-object challenge.

**GoBack**

<http://www.goback.com>

Wildfile's GoBack is for road warriors and power users who are constantly making changes to their systems—by adding and removing software, presentations, notes, etc.—but who encounter that dreaded moment when suddenly things go wrong, badly wrong. Can't reboot or find a critical file?

For the price of about 10 percent of your disk space, GoBack will let you restore your system (or just one or two inadvertently deleted files). It is not like undelete software, which is at the whim of whether the PC filesystem overwrote a file. GoBack logs all disk changes. It has some limits, though: depending on the size of log files, GoBack will only go back four to five days; it only supports Windows 95 and 98 (a Windows 2000 version is due soon); it offers no support for compressed disk drives; and there are some limitations on removable drive support. But overall, the benefits of efficient version logs have come to the PC with GoBack.

**Mapinfo Pro**

<http://www.mapinfo.com>

**ArcView**

<http://www.esri.com>

Like PCAnywhere and Laplink, these programs are engaged in a knock-down drag-out fight. In this case it is for the computerized-mapping market. The latest battle point is over ActiveX controls: MapX in the case of Mapinfo and MapObjects in the case of ESRI.

For a lot of organizations, mapping the location of customers and constituents can help an organization decide where it wants/needs to go next. More importantly, dynamic Web maps in the fashion of MapQuest (<http://www.mapquest.com>) are possible with map servers or downloaded ActiveX controls. In sum, having maps, and all the insights they offer, is easier than ever before.

**PaintShop Pro**

<http://www.jasc.com>

PaintShop Pro is a step or two behind top-of-the-line paint programs like Adobe Photoshop and Corel Photo-Paint in masking and layering options, but it nearly matches the big boys in its effects, colour manipulation, and image-editing functions. What sets PaintShop Pro apart are its extra utilities, such as a built-in album display, vector-based text and graphics, plus interfaces to scanners and digital cameras along with the very adept Animation Pro tool.

In the hot digital-imaging marketplace, PaintShop Pro is a very compelling bundle of features for home, Web and SOHO use. SmartDraw (<http://www.smartdraw.com>), which approximates the flowcharting virtues of Visio, is a close runner up.

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**Maple 6**

<http://www.maplesoft.com>

Why download a calculator when you can get a math whiz as an assistant (check for the free trial CD-ROM on the Maplesoft Web site). In addition to calculations, this whiz does full mathematical formula manipulations like simplification of complex equations, derivatives, integration, power series, and more, while offering graphic visualization and optimization capabilities.

Rivals Mathsoft and Mathematica may have included whiteboarding features, 3D graphics capabilities, top-notch matrix and simulation operations (in the case of Mathworks), but the underlying Maple Math Engine is hard to beat for versatility. Boy if I had only had this for physics class.

**Norton SystemWorks**

<http://www.symantec.com>

**McAfee Office**

<http://www.mcafee.com>

These two programs get the last word on utility software. These suites, which have a street price of less than \$90, bundle together for a complete Swiss army knife of utilities. Norton SystemWorks includes Norton Utilities (a suite in itself), Norton Anti-Virus, Remove-IT, Mobile Essentials, and Norton Crash Guard. McAfee Office includes Uninstaller, Nuts and

Bolts, First Aid, OilChange, and McAfee VirusScan. So if you are looking for two or more utilities, go here first, but check the details at the respective Web sites.

**Conclusion**

What is the common denominator among our top 10 utility picks? First and foremost, the ability to download and try out all of the software with few or no restrictions on functionality. This is real value when comfort and ease of use are as important as features in deciding whether software will meet your needs.

Second, the developers of most of these products have taken the comprehensive approach to delivering functions and services. You definitely will not find yourself shortchanged with Notes/Domino, Canvas 7, or Norton System Works, for example. Despite powerful features, all of the programs thrive because they allow users to get at the functions quickly and easily, often offering the helping hand of built-in wizards and hints.

The third common denominator is their versatility. Beyond their own feature sets, many of the utilities provide for batch operation or macro/scripting capabilities. In addition, all provide extensive customization and personalization, allowing users to configure them to

match their personal preferences.

Finally, software developers have been the first of the brick-and-mortar companies to face the challenge of the Internet.

But who wins in these ultra-competitive showdowns? In the OS utilities market, for example, developers have taken a big financial hit with utilities that used to sell for \$30 to \$75 each and now fetch \$60 to \$100 for five- or 10-user packs. The end user may be smiling now, but in the longer term—as we have seen in the case of Web browsers—bad things can happen as continued innovation

slacks off and/or broad product support becomes problematic.

But inevitably innovation persists. In fact, here is a prediction: in three years time one of the top 10 utilities will be for voice activation, handheld and home device synchronization, or agent beeper spam suppression.

Ahhh, utility! It is all in the eye of the beholder. □

Jacques Surveyer is a writer and consultant. Travel to <http://www.inforamp.net/~jbsurv> and let him know your beauty of a utility.

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# Help for sad Mac users

By David Tanaka

Major applications are now available in versions for both Macintosh and Windows machines, and when the

computers are humming along, the differences between the two platforms aren't blatant. If you've used Adobe Photoshop, Netscape Navigator, Microsoft Office, or Quark XPress for Mac, you can probably use Windows ver-

sions of those programs with only minor adjustments to the way you work.

**Sad Macs, Bombs, and Other Disasters: And What to do About Them, 3rd Edition**

rebuilding the desktop is a legitimate and common maintenance procedure for Macs. *Sad Macs, Bombs, and Other Disasters* covers the whys and hows of this, along with dozens of other procedures for keeping your Mac healthy or diagnosing problems when it gets sick.

Peachpit rates the book as suitable for beginners, and that's a fair assessment, although the information is concentrated, so getting the most from this book requires more than a casual browse. For beginners, *The Little Mac Book*, also from Peachpit, would be an excellent companion resource.

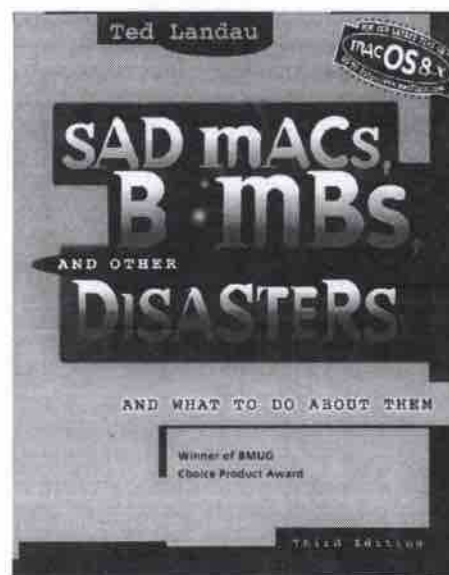
*Sad Macs* organizes the material into three major units. Part I includes a short introduction to the Macintosh system, and general problem-solving strategies.

Part II gets into the nuts and bolts of fixing a range of problems. The information follows a practical layout, naming the problem, then listing symptoms, causes, and what to do to fix it. The symptoms are also referenced in a Symptom Index at the back of the book, which is very helpful for zeroing in on the solution to a specific problem.

Part III, called Disaster Relief, describes 17 Fix-its to cover just about everything that could trouble your Mac. Oh, and there's an 18th Fix-it if you are still stumped: seek outside help.

The book is also sprinkled with useful tidbits of information under the headings, By the Way, Technically Speaking and Take Note. Unfortunately, coming across one of these nuggets just when you need it would be a serendipitous event. If the publisher included indices of these, in the same vein as the Symptom Index, these tips would be far more accessible. But that's a minor criticism of an otherwise excellent reference.

Note: This review covers the third edition. A fourth edition of *Sad Macs* has been announced, which adds coverage of G4s and Mac OS 9. It was supposed to be released in February, but at press time, the Canadian representative of Peachpit Press said the book was not yet available in Canada. □



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 Publisher: Peachpit Press  
 Tel: 800-283-9444. <http://www.peachpit.com>  
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 Softcover: 964 pages 1997  
 Price: \$41  
**Rating**  
 Information content: \*\*\*\*  
 Readability: \*\*\*\*  
 Intended for: Beginner to advanced user  
 Overall Rating: \*\*\*\*

But when a computer experiences problems, the differences between PCs and Macs reveal themselves. When I was dropped into a Mac kingdom in the early '90s, for example, I found that I could function productively on a Mac. I suspected that I was being set up for an office joke, however, when a co-worker suggested that I "rebuild the desktop" as a solution to my Mac problems.

As it turned out, and as Mac users know,

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# Browser incompatibility

### Examples of freeware gone bad

Among the most popular software downloads freeware outnumbers trialware or shareware. And it makes sense as good freeware should attract a number of users. But freeware has its limits. Support offered for such products is minimal unless there is a "step-up" product or service. Updates are episodic, often triggered by a competitor rather than by some rational schedule of development. But even more telling is the old homily that "you get what you pay for." A perfect example of this is the world of Web browsers.

Both Microsoft and AOL/Netscape are creaking under the load of developing complex browsers for free. While AOL's chief executive, Steve Case (who owns Netscape), spends billions on the acquisition of Time-Warner and has updated his own AOL browser to versions 4.0 and now 5.0, Netscape 5.0 has been consigned to the open source community.

Now I have no problem with true open source development. I believe GNU, OpenBSD and Linux bear testament to what it can accomplish. However, Netscape's Mozilla.org seems to be tottering under the load of being servant to two masters: AOL/Netscape and the open source community of developers. With Windows 2000 finally chugging out the door, only Oracle's Internet File System (IFS) can rival Netscape 5.0 on the list of very, very late software.

Web developers still have to spend anywhere from 15 to 40 percent of their time making sure their Web pages will work properly in the top two browsers.

With that in mind I went to the Net and downloaded Opera 3.6 (free for 30 days or US\$35 per individual licence) and NeoPlanet 5.1 (free) in the hopes that I would finally find a browser that would run both Internet Explorer 4.0 and later and Netscape Communicator 4.0 and later HTML/JavaScript/XML/CSS/DOM. Alas, it was not to be. So, three years after both Microsoft and Netscape promised to implement W3C (World Wide Web Consortium) and other Internet standards completely, Web developers still have to spend anywhere from 15 to 40 percent of their time making sure their Web pages will work properly in the top two browsers. (HTML, XML, DOM, and CSS are W3C-recommended standards. JavaScript, in the form of ECMAScript, is the European ECMA recommended standard.)

I am one person who would pay up to \$100 for a browser that could execute all of the latest Internet standards. In sum, free software does not always bring the best out in developers.

—Jacques Surveyer



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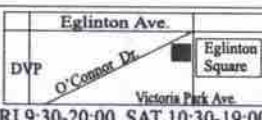
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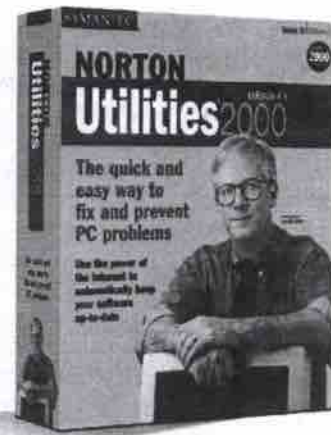
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# The right tool in the right hands

Norton Utilities 2000 is the Swiss Army knife of the patch, fix, and clean software category. And like any sharp instrument, if you don't know what you are doing with it, you'd be well advised to proceed carefully.

By Rod Lamirand

My father used to say that you have to have the right tool for the job. When you have the right tool, everything is easier, better, and faster. I can't count the number of times I have pulled out a Norton product and used it successfully to help solve a particular problem.



**Norton Utilities 2000**  
**Version 4.5 for Windows 95/98**  
 From: Symantec Canada  
<http://www.symantec.com/region/can/>  
 Suggested retail price: \$74.95

Norton Utilities 2000 has combined a number of those utilities into one package. Here is a short rundown of the types of things you can do with this product.

- SpeedDisk: Defragments your hard drive faster and with more information and options than Windows' own defragmenter.
- CrashGuard: Tries to save you from crash-

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ing programs. CrashGuard often doesn't perform any better than Windows (which results in having to close down your misbehaving program), but sometimes using the Revive Program button will let you quickly save your work before another freeze up.

- **Zip Rescue:** Automates core system backup. You can manually save your Windows' settings to a Zip or Jaz drive, but it's easier with Zip Rescue.
- **System Doctor:** Runs in the background and notifies you if it sees a way to improve performance.
- **Disk Doctor:** The oldest and most useful product in this package allows those unafraid of a DOS box to get right down to it.
- **WinDoctor:** Automates analysis, cleaning, and backing up of the registry. Some people go into the registry manually without a safety net, I'm not one of them.
- **Wipe Info:** Some people refer to this type of utility as a shredder, which makes it impossible to reconstruct a deleted file.
- **Norton UnErase:** For recovering a deleted file (which you can do so long as you haven't shredded it, or waited too long).

The package includes many other functions and features, too: the CD-ROM is bootable, the recycling bin can be further protected, you can update the program from the Web once you register, and system information can be displayed in various ways, most of which are customizable. The long and the short of it, is that Norton Utilities likely has the utility you need for most standard PC problems.

**Tread carefully**

Which brings me to the rather hard lesson I relearn each time Symantec sends me a new version of its utility collection. Although I am quite aware of the dangers of making wholesale changes to my Windows machine, it doesn't take long before I have clicked here and there and found myself in trouble.

**Revisiting the art of tweaking Windows**

*Continued from page 97*

As you progress through later chapters, solutions become more exotic—and more complicated to implement. However, the instructions are clear.

How about paring down Windows 95 to occupy less than 20 MB, or yanking Internet Explorer out of Windows 9x? *Optimizing Windows* tells you how.

One of the most intriguing chapters for me is devoted to running Windows from a RAM disk. Farquhar notes: "I put 256 MB of RAM in an old 266 MHz computer, coaxed Windows into running entirely from the RAM disk, and the computer blew away any and all expectations I would have of a 700 MHz screamer."

A RAM disk is a logical drive that is created in RAM, and because there are no mechanical components to slow access, data on a RAM disk is available much more quickly than from a hard drive. This won't improve activities that depend primarily on processor power, but where a process involves a lot of requests for data on the hard drive, RAM disks can perform much faster than even the speediest mechanical drive. RAM disks were a common solution in the pre-Windows days, but as programs became larger and RAM prices remained high, the solution became impractical. Now, as RAM prices once again begin to fall, this may be the biggest bang you'll achieve from 400 bucks. □

It usually starts innocently enough with some small problem—maybe even just a tiny annoyance—that I try to fix. I start tinkering with the "safe" changes (marked in green by Norton). If things don't get better, I get annoyed and start changing things marked in cautionary yellow. Finally, I am getting rid of DLLs, ActiveX files, folders, all sorts of things, completely ignoring the program's reminder that I should be backing up every deletion.

Eventually, I give up and turn off the

machine, only to return the next day to find that my computer won't work. Then the pain starts—the denial, the remonstrations, and slow process of rebuilding my entire system.

I admit that this isn't the fault of the product. It explained what was going to happen. Still, I mention it to stress the fact that a powerful program for managing core functions of the operating system, among other things, is capable of disabling your system and destroying your work, when placed in the wrong hands.

**Recommendation**

If you are not planning to upgrade to Windows 2000 anytime soon, and do not have an earlier version of Norton Utilities, this new release is a good choice for an all-round, jack-of-all-trades utility program. (Despite the common "2000" in the name of both products, this version is for Windows 95/98 only.) With Norton Utilities you can fix or at least better understand many of the problems that regularly come up in the wonderful world of Windows. □



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# Speech next user interface, says IBM

By David Tanaka

In coming years, the computer's familiar graphical user interface (GUI) will give way to a conversational computing interface more in tune with the multidimensional character of human communication, according to IBM's voice technology experts.

"We as human beings use our hands and our mouths [to communicate]," said Ossie Osborne, general manager of IBM's Voice Systems group at a briefing in Toronto in March. "That's what this interface is about."

What IBM calls the conversational computing paradigm is a multi-modal interface. This means we would be able to talk to the computer, point to a spot on a touch-sensitive screen or use a keyboard, mouse or keypad (and perhaps eventually even gesture) to interact with it, depending on what was most appropriate or convenient. Likewise the computer could respond in a context-appropriate way.

Thus, in a street map scenario, if we were looking at a computer screen, we might type in our present location and our destination—or point to them on a touch screen—and see the route mapped out visually. However, if we were in our car, we would find it more convenient (and safer) to be able to merely say to the onboard computer or our organizer "How do I get to my next appointment?" and have the computer respond with auditory instructions: "Turn left on Main, three blocks ahead," etc.

Voice technology research is one of IBM's longest ongoing projects, and Osborne said much of IBM's work to this point has been devoted to "getting the plane to fly—getting it to work."

David Nahamou, director of human language technology at IBM's Watson Research Center in Westchester County, N.Y., said "we took the '70s to prove to ourselves that a new way of speech processing was possible. The '90s was the product phase."

It was primarily during the last decade that IBM and other companies transformed the technology into retail products that allowed people to dictate to their computers. But, said Osborne, creating retail voice-dictation products is not the principal focus of voice technology research and development—making it a building block for a digitally connected world is. Among the underlying technologies that will play a role are machine language translation, voice over IP, and a recently introduced VoiceXML specification. These may show up in multilingual text-to-speech systems like speech-enabled call centres that people would be able to access over the Internet.

Osborne demonstrated a sample application—interacting with an Interactive Voice Response (IVR) system for movie listings over a telephone line to find out where and at what times a particular movie was playing in a particular community. He suggested that voice-enabled "conversational" set-top boxes might be another consumer application. And with wireless access to the Internet approaching, voice will be the most practical interface on smartphones and electronic organizers that are too small to accommodate a usable keyboard.



"We as human beings use our hands and our mouths [to communicate],"

—Ossie Osborne, IBM

IBM has released a Personal Speech Assistant that brings the conversational computing interface to Palm devices, Nahamou said, although he stressed that it is a technology demonstration at this stage, not a commercial product. The Personal Speech Assistant provides speech recognition, a text-to-speech capability, command and control (of menus and applications), and a memo-recorder function.

### Fewer, bigger voices for speech tech

Meanwhile, the other two major speech technology developers have decided to join forces. Lernout & Hauspie says it will acquire competitor Dragon Systems of Newton, Mass. Belgium-based L&H, whose North American headquarters are in Burlington, Mass., said the talents of the two companies would create a "brain trust" that would advance speech and language technology. L&H also recently acquired Dictaphone.

Dragon is the better known company in Canada, and its Dragon NaturallySpeaking product was the first continuous speech processor intended for use by the general public. (Continuous speech means you no longer need to put a distinct pause between each word, an annoying requirement of previous generations of speech processors). Dragon holds 35 patents related to speech and language processing. L&H has a competing product, called Voice Xpress. The company says both products will continue to be marketed and supported, although the technologies from each will eventually be combined into a single product line.

L&H has also been working in the areas of language translation and voice-enabled computer control. At last Fall's Comdex event in Las Vegas, L&H showed TCP voice-enabled Web browsing, and a multilingual utility that translated email into a variety of different languages. □

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## Taming your toolbars



Helen Bradley  
OFFICE SUITE TRAINING

In the early days of computers in the workplace, office applications required cumbersome key combinations to perform common tasks like indenting and setting margins. Over time these were replaced by applications with

menus and toolbars that allowed you to see your options and didn't require you to memorize keystrokes.

If you're like most users, however, you'll find that the tools aren't always positioned to suit your needs. So, this month we'll look at some ways to customize your toolbars and menus.

We have a unique collection of tips, tricks and tools for modifying toolbars and menus that you won't find in most manuals. But be warned, when everyone in the office sees what you've got at your fingertips, they'll want to know how you did it!

In this column we've used Microsoft Excel 97 and Word 97 to illustrate some of the things you can do with menus and toolbars. Most of these tips are applicable to the programs that make up Microsoft's Office 97 suite and to corresponding programs in Office 2000.

### Quick toolbar tips

You can customize toolbars by moving the

buttons around from one visible toolbar to another. Do this by holding the Alt key as you drag a button from one toolbar to the other. To remove a button, hold the Alt key while you drag the button off the toolbar and drop it into the editing area where it will disappear.

You can see what toolbars are available by selecting View, then Toolbars. If a toolbar is currently displayed, there will be a checkmark to the left of its name on the toolbar menu. If it has no checkmark, select its name to display it.

### Add some handy buttons

One handy button that doesn't appear on the Standard toolbar in Word or Excel is the File Close button. To add it, right-click the Standard toolbar and choose Customize. Choose the Commands tab, then from the Categories list, choose File, and from the Commands list choose Close. Using the left mouse button, drag the Close button out of the dialogue box and into position on the Standard toolbar. Choose Close in the dialogue box to finish. You can now test the button by clicking it. If your file hasn't been saved you'll be prompted to save it before it is closed.

You can follow this same process to add other Word and Excel commands to the toolbars. To see the range of commands available in Word, right-click any toolbar and choose Customize. Choose the

Commands tab, from the Categories list, choose All Commands, and you will see what's available in the Commands list. In Excel, there is no such master list. The various commands are simply organized into functional groups in this program.

Two handy commands are the ToolsAutoCorrectSmartQuotes, which automates replacement of double quote marks with smart quotes; and ToolsWordCount, which calculates the number of words in your document. Once you start exploring, you'll be sure to discover plenty more that are useful to you. If you are unsure what a command does, select it and click Description to get an explanation.

You'll also see that some commands have their own custom buttons and others don't. This doesn't affect your ability to place the command on a toolbar, it just affects what you see when you put it there—text or a button graphic.

When you choose a command that doesn't have an icon, such as ToolsAutoCorrectSmartQuotes, you can create one yourself. To do this, place the command on a toolbar, right-click it, and choose Edit Button Image. In the Button Editor dialogue box you can choose colours with the mouse and use them to create an image for your button. When you're done, choose OK to finish.

When an icon on the toolbar displays both text and an image, you can set it to display the

*Continued on page 105*

### The Visual Basic Tutorials: Part 10

## Review and consolidation

By Jacques Surveyer

In this, our 10th Visual Basic Tutorial, we shall take a look back, then go forward. The look back will underline the most important points to remember about the VB interface while doing another database component exercise. The reason we are "repeating" database and components is because this is what programming in the new millennium is really like.

You, as programmer will be expected to quickly interconnect databases, Visual Basic (VB) and third-party components, into a working package. In fact, this is so important, our next three or four tutorials will uncover how to do this with VB for Applications (VBA), which is available in every copy of Microsoft Word 97 (or later), Corel WordPerfect 2000 (and on), Visio 5 (or later), and dozens of other popular Windows programs. For better or worse (with the good there comes distinct shortcomings), VBA is rapidly becoming the macro language for Windows.

But first, let us review the VB graphical user interface (GUI) and some usage guidelines as shown in Figure 1. As you become more proficient in VB you will spend more time in the Source Code editor and the many designers (especially the database designer) than in the visual forms editor. So often, for example, you close down the Toolbox or the Properties Sheet to make space to really motor in the Source Code Editor.

On returning to visual edit your form, you discover that the Property Sheet or Toolbox does not automatically pop up when the form is displayed. Figure 1 is a reminder of the toolbar icons that you can click on to restore these important reference windows (these settings are also available in the View menu). Finally, we shall see the identical icons when using VBA's macro editor in Word, Excel, PhotoPaint, etc.

Figure 1 also helps to answer the question from Visual Basic Tutorial 8: how do you make a form non-resizable. Notice that on the Property Sheet the form's MinButton and MaxButton properties have been set to False. In addition, the BorderStyle property is set such that Sizable is not enabled. With these settings your form cannot be resized.

### Dynamic database components

A lot of VB projects involve displaying data either as reports or cross-tabulations so users can get a feel for their data. The database grid and flex grid components included with VB 5 and 6 are adequate. However, I would encourage readers to download free demos of ActiveReports and/or DynamicCube components from <http://www.datadynamics.com>. These components are very flexible and easy to pro-

*Continued on page 108*

### Linux for Newbies: Part 10

## Finding things on a Linux system

By Gene Wilburn



Now where did I put that file?" is a common question on all computer systems. On Linux systems file dispersal is a particular fact of life when you add programs to your system either via RPM's or hand-rolled tarballs. Where did the RPM put that executable or library file? Where are those sample Java programs I was experimenting with? Where did that PNG graphic I created with the GIMP get stored?

Finding things is somewhat easier on Linux than on some operating systems because Linux has a logical file structure. You can usually find binary files, for instance, by simply looking in logical places, such as /bin, /sbin, /usr/bin, /usr/sbin, and /usr/local/bin. Nonetheless some executables can end up

elsewhere, such as /opt/wp/bin or some other directory such as /usr/X11R6/bin.

Most of your own files end up somewhere in your /home directory. If you're running an Apache Web server, your HTML docs can be under either Apache itself (/home/httpd/html on Red Hat systems), or in your home directory—/home/yourname/public\_html, for example.

Even though the logic of the file system helps, when you are looking for something among the thousands of files that typically populate any Linux setup, it's nice to know that there are aids for finding things.

### Quick finders

Quite often you need a quick way to know where a binary file resides. Different Unix systems have slightly differing philosophies about where certain things are stored, and the slight variations sometimes need to be taken into account. If, for example, you download a Perl script, it may have the bangpath statement `#!/usr/local/bin/perl` as the first line. If the

script doesn't run on your Linux system, there's a good chance your Perl is not in /usr/local/bin. To find out where it is, use the `which` command:

```
$ which perl
/usr/bin/perl
```

This displays the full path of a program. With this information you can then change the bangpath at the top of the program to `#!/usr/bin/perl` in the script, or add a symbolic link from /usr/local/bin/perl to /usr/bin/perl.

`locate`, which is similar to `which`, provides a command-line front end to a database of all the files stored on your computer. It often displays a considerable amount of output, so you may need to pipe the results through `less` or `more`.

You can use `locate` to find the related files for a program. For instance, the default vi editor in Red Hat Linux is `Vim`. You know that `Vim` has help files you can invoke from with-

*Continued on page 110*



**Taming your toolbars**  
Continued from page 104

image only to save room. To do this, right-click the toolbar, choose Customize, right-click the button, choose Default style, then choose Close to return to the editing screen.

**Word's Work menu**

One of Word's best-kept secrets is its built-in Work menu, which, unfortunately, isn't available in other Office applications. It's handy for storing a list of frequently used documents. This menu is different from the list of recently opened files that appears under the File menu. In contrast, the Work menu contains only those files you choose, and they remain there regardless of when you last accessed them.

To add the Work menu to your Word menu bar, choose Tools, Customize, then select the Commands tab. From the Categories list choose Built-in Menus, then, from the Commands list, choose Work. Using your left mouse button, drag the Work menu option from the dialogue box onto the menu bar, dropping it into position to the left of the Help icon. Choose Close from the Customize dialogue box to return to Word.

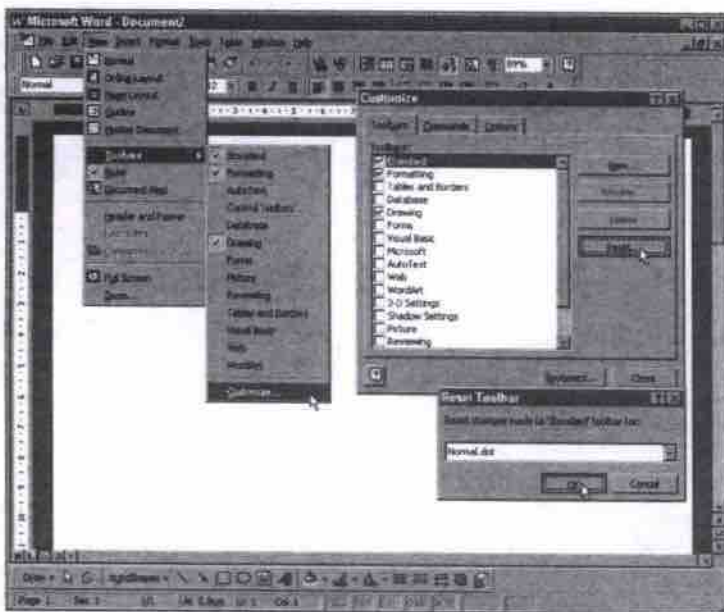
Add a file to your new Work menu by opening it, and, when the document is visible on the screen, choose Work, then Add To Work Menu. Once a file is added to the menu, you can open it anytime by selecting Work and choosing the file from the list.

You can remove a file from the Work menu by pressing the following combination of keys: Ctrl + Alt + - (minus key). (Make sure to use the minus key situated to the left of the Backspace key and not the one on the numeric keypad.) When your mouse pointer changes to a thick black horizontal bar select Work, then select the name of the file you want removed from the Work menu. This only removes the file from the menu and doesn't remove it from your hard disk.

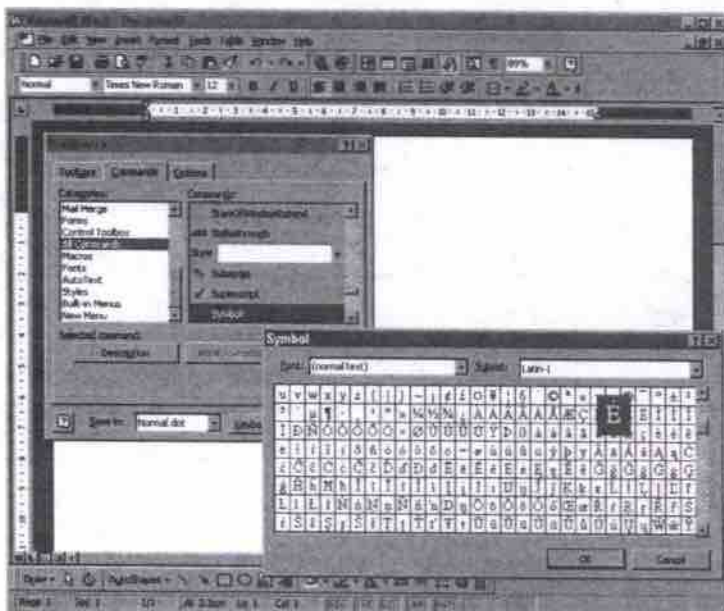
**More toolbar options**

You'll find you have more room on your screen if you remove toolbars when you're finished using them. To do this, right-click any toolbar and choose the toolbar to remove from the list. All visible toolbars have a checkmark to the left of their name, so you can identify which are open and choose the one to hide.

When you're experimenting with toolbars you may remove a button by mistake or arrange buttons in a way you don't like. To reset the toolbar to its original state, choose View, Toolbars, Customize, Toolbars tab, and select the toolbar that you want to reset from the list—you can do this regardless of whether a toolbar is visible or not. Choose Reset and, when prompted with the Reset Toolbar dialogue box, click OK to confirm that you want to reset it. Keep in mind that resetting restores toolbars to their "original" state—you'll lose any



If you make a mistake and accidentally remove buttons from your toolbar, use the Reset option to return it to its original state.



You can create a button to insert frequently used symbols into your text.

changes or additions you've made to the settings since you first installed Excel and Word.

Sometimes, instead of just adding buttons, you'll want to create a new toolbar. To do this, choose View, Toolbars, Customize, then select the Toolbars tab. Click New and, in the New

Toolbar dialogue box, type a name for the toolbar and click OK. The toolbar will now behave like any Word toolbar and you can add buttons to it, remove buttons from it and display or hide it using the same processes you would for existing toolbars.

The commands attached to many of the toolbar icons can also be selected from the keyboard using shortcut keys. You can display the keystroke equivalents in a button's ToolTip if you choose Tools, Customize, Options tab, choose the Show Shortcut Keys In ScreenTips checkbox, then click Close. In time, you can use this information to learn the shortcuts for some frequently used commands.

**Icon ideas**

An icon is simply a 16x16 pixel image that you create yourself or copy from another program. Within the Office suite you can copy an icon from one program and paste it into another program by right-clicking the button to copy. Choose Customize, right-click the button again, then choose Copy Button Image. Switch to the location you want to paste the image, right-click the toolbar, choose Customize, right-click the button to change, then choose Paste Button Image.

You can also use any standard paint software to make your own custom button images. If you use this process, you have access to a larger range of colours than the range offered in Office's built-in Button Image editor. To create a button in a program like Paint, load it, choose Image, Attributes, set the Width and Height to 16 pixels and create your icon using the tools available. When you're done, choose Edit, Select All, Edit, then Copy. Switch to the application in which you want to paste the

Continued on page 109

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**Review and consolidation**  
Continued from page 104

gram. DynamiCube will be used in the tutorial to show how easy it is to supercharge a component with some simple GUI elements. In this case two combo boxes will allow us to control what fields are displayed in the DynamiCube.

Figure 2 shows the running DataCube application. DataCube is displaying marketing data from the CATS database (which is an Access table, but could as easily be IBM DB2 or Oracle 8i database tables). The Unit Price field is about to be removed from the DynamiCube. The field name will be transferred from the In Cube combo box to the Out of Cube combo box. As the Unit Price field is transferred between combo boxes it is also removed from the DynamiCube. Users appreciate this capability because it allows them to simplify or drill down into the data in the exact manner that they want.

The programming trick is to load up the combo box with the field names that are being used in the DynamiCube, then to know how to do the transfers.

```
Private Sub Form_activate()
Dim i As Integer
For i = 0 To
Data1.Database.TableDefs("CATS").Fields.Count - 1
Combo1.AddItem
Data1.Database.TableDefs("CATS").Fields(i).Name
```

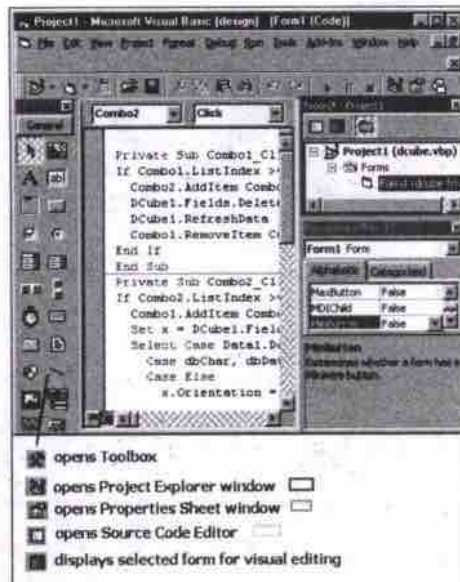


Figure 1: VB graphical user interface

```
Next
End Sub
```

First there is the (above) Form\_activate() code to load Combo1 (In Cube combo box) with the field names from the CATS database. If you plan to do any amount of VBA and VB programming you will have to get used to the naming conventions of VB collection classes. It is all explained in the VB Help topics on col-

lections, and in particular the TableDef collection. Basically, the For loop is through the collection or list of fields used in the CATS table. The Combo1.AddItem adds each name into Combo1. The next piece of code transfers a field out of the DynaCube.

```
Private Sub Combo1_Click()
If Combo1.ListIndex >= 0 Then
Combo2.AddItem Combo1.Text
DCube1.Fields.Delete (Combo1.Text)
DCube1.RefreshData
Combo1.RemoveItem Combo1.ListIndex
End If
End Sub
```

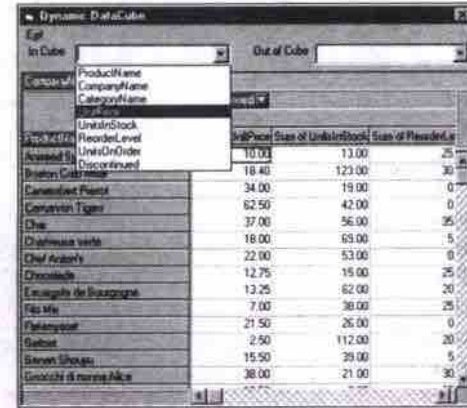


Figure 2: Dynamic DataCube application

First, the Click event on the combo box indicates a field name has been clicked or selected. This triggers the transfer. Notice the order of events. First, we add the field to the Out of Cube combo box (Combo2); then we delete it from the DynaCube (DCube1) and refresh/repaint the DynaCube; finally we remove the item from In Cube combo box (Combo1). The reverse code, Private Sub Combo2\_Click(), follows the same pattern. For a little coding, one certainly gets very robust display of data.

As final convenience some simple resize code provides an alternate to the VS/OCX and other "smart" resizers we covered in our previous tutorial. When, as in this case, most of the dialog box is taken up with the DynaCube

(think also of database grids, large text/memo boxes or picture boxes) then it is simple to code the Form\_Resize() routine:

```
Private Sub Form_Resize()
Dim i As Integer
On Error Resume Next
DCube1.Move 0, 400, ScaleWidth, ScaleHeight - 400
End Sub
```

All we have to do is move the DynaCube to the same start position while resizing it to the new form dimensions, ScaleWidth and ScaleHeight. Note if those dimensions would cause an error then the resize On Error just leaves the old set-

Continued on page 109

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**Taming your toolbars**  
Continued from page 105

icon image, right-click the toolbar, choose Customize, right-click the button you want to change, and choose Paste Button Image.

Even if you can't copy an icon from a program, you can still use it. To do this, make sure the icon is visible on the screen and press the Print Screen key on your keyboard. Open Paint, choose Edit, then Paste. Use the Select tool to choose a 16x16 pixel area on the image (you can read the dimensions from the foot of the screen). Choose Edit, Copy, then discard the image. Switch to the application in which you want to paste the image, right-click the toolbar, choose Customize, right-click the button you want to change, then choose Paste Button Image.

**The way we were**

If you've upgraded to Microsoft Office 2000, you may be yearning for the old Office 97 interface. Office 2000's new personalized menus hide the less frequently used options and the Standard and Formatting toolbars share one row on the screen. If you're used to seeing all the options available, you may find Office 2000's habit of changing the visibility of menu options and the order of toolbar buttons frustrating. To return to a setup similar to Office 97, choose Tools, Customize, and select the Options tab. Deselect the Standard and Formatting Toolbars Share One Row checkbox and/or the Menus Show Recently Used Commands First checkbox, and click Close.

In Word 97 and 2000 the Frame option no longer appears on the Insert menu as it did in earlier versions. If you'd like it to appear, you can add it to your menus by choosing Tools, Customize, then select the Commands tab. From the Categories list choose All Commands, then select InsertFrame from the Commands list. Click the Insert menu to open it, drag the InsertFrame option from the Commands list and drop it in the desired location on the Insert menu. Click Close to finish. You can repeat this step and add the

FormatFrame option to the Format menu so it is similar to earlier versions of the program.

**Did you know?**

Some Excel toolbar buttons do double duty. If you hold the Shift key when choosing such buttons, they do something different. These are the double-duty button combinations:

- Open/Save
- Print/Print Preview
- Underline/Double Underline
- Align Left/Align Right
- Sort Descending/ Sort Ascending
- Center/Merge and Center
- Increase Decimal/Decrease Decimal
- Increase Indent/Decrease Indent

**More advanced buttons and menus**

If you regularly use accented characters, you can create a toolbar buttons for each one. For example, to create a button for an e acute, choose View, Toolbars, Customize, then select the Commands tab. From the Categories list choose All Commands and from the Commands list choose Symbol and drag it onto the toolbar. When Symbol dialogue box appears, from the top of the Font list choose normal text, then choose the letter e acute from the grid, and click OK.

Right-click the new button and, in the Name area, replace the current entry with the character itself. Do this by holding the Alt key as you type out the number 0 plus the code for the character. In the case of e acute, you would type 0233 on the numeric keypad. Hold the Alt key as you type all four numbers. (Note: It's very important to hold the Alt key down while you type in the full code and that you use numbers on the numeric keypad.) You can now click the button every time you need this character. □

Helen Bradley specializes in writing hands-on tutorials. Her columns appear regularly in a number of publications in the U.S., U.K. and Australia as well as *The Computer Paper*. Contact Helen at [helen@helenbradley.com](mailto:helen@helenbradley.com).

**Review and consolidation**

Continued from page 108

tings intact. Note also, we leave a strip along the top 400 twips in size for the combo boxes (or any other controls). VB uses a device-independent unit of measurement, a twip, for calculating size and position. Two properties of the Screen object, TwipsPerPixelX and TwipsPerPixelY, can be used to determine the

exact size of a display (converting twips to pixels or inches) at run time.

*VB6 Black Book*, published by Coriolis, discusses combo boxes on page 252-272, and resizing plus twips on page 608-609. *Beginning Visual Basic 6* covers these topics on pages 206-227 and 636-637. □

Jacques Surveer is a consultant; get back copies of these tutorials at <http://www.inforamp.net/~jbsurv>.



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**Finding things on a Linux system**

Continued from page 104

in an edit session but you wonder where those files reside. You can find out with the *locate* command:

**\$ locate vim | less**

```
...
/usr/share/vim/doc
/usr/share/vim/doc/autocmd.txt
/usr/share/vim/doc/change.txt
```

```
/usr/share/vim/doc/cmdline.txt
/usr/share/vim/doc/digraph.txt
/usr/share/vim/doc/editing.txt
/usr/share/vim/doc/eval.txt
/usr/share/vim/doc/farsi.txt
/usr/share/vim/doc/gui.txt
/usr/share/vim/doc/gui_w32.txt
/usr/share/vim/doc/gui_x11.txt
/usr/share/vim/doc/help.txt
/usr/share/vim/doc/howto.txt
/usr/share/vim/doc/lf_cscope.txt
```

```
/usr/share/vim/doc/lf_ole.txt
/usr/share/vim/doc/lf_perl.txt
/usr/share/vim/doc/lf_python.txt
/usr/share/vim/doc/lf_tcl.txt
/usr/share/vim/doc/index.txt
...
```

```
level formatted floppy disk
modinfo (1) - display information about a kernel module
nfs (5) - nfs fsstab format and options
...
```

Ah yes, it's *mformat*!

The *locate* command shows that there are a large number of help files in */usr/share/vim/doc*.

*Locate* uses the *locatedb* database, which must be updated periodically to keep up with changes and additions to your system. Most Linux systems have a cron job set to update the database. However, if you don't run your system 24 hours per day, you may need to update your *locatedb* manually. You do this by logging in as *root* and typing the following:

**# updatedb**

*Whereis* is a command similar to *locate*, but somewhat simpler:

**\$ whereis vim**  
**vim: /usr/share/vim /usr/man/man1/vim.1**

*Whereis* only displays a program's binary executable, its source and its man page locations. This is preferable to *locate* when you don't want all the extra related file locations.

There are times when you can remember the name of a command but can't remember what it does. What is *mformat* for instance? To find out, just type the following:

**\$ whatis mformat**  
**mformat (1) - add an MSDOS filesystem to a low-level formatted floppy disk**

*Whatis* is complementary to *whereis*. Because *whatis* is also a database, it too needs to be rebuilt occasionally. To rebuild the *whatis* database, log in as *root* and type:

**# makewhatis**

Sometimes a different kind of search is necessary. You know there's a utility that does such and such, but you can't quite remember its name. What is the name of the command that can format a DOS disk? *Apropos* to the rescue. *Apropos* searches the *whatis* database for matching strings. You can find the program you're looking for by typing:

**\$ apropos format**  
...
man (7) - macros to format man pages
menu\_format (3x) - set and get menu sizes
mformat (1) - add an MSDOS filesystem to a low-

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These handy finding aids are quick and easy. Once you start using them, finding most files becomes a simple task. But sometimes you're after a needle in the haystack. For those occasions, you turn to find, arguably, one of the most useful and powerful tools on a Unix/Linux system.

**Find—a Unix/Linux power tool**

*Find* does just what the name suggests—it finds things. It's a brute-force seeker, recursing down through every directory in its path looking for patterns (including wildcards and regular expressions). Because it has no pre-existing database, it's much slower than *locate* or *whereis*, but it is thorough and dependable. If *find* doesn't find it, it most likely doesn't exist.

Linux uses *GNU Find*, a swiss-army-knife utility with options galore. *Find* has a somewhat unusual syntax that requires a little study. The most common use of *find* is to find a single file or a set of files related by name. The following example shows a way to look for any filenames or directory names called "perl," starting at the root directory (/):

**# find / -name perl**  
**/usr/bin/perl**  
**/usr/local/src/htdig-3.1.2/db/docs/ref/perl**

It should be noted that the syntax in the preceding example is considered very modern and won't work with all versions of *find* on all Unix systems. Because of this, I prefer the classic, slightly more verbose, syntax of *find* (using the same example):

**# find / -name "perl" -print**

This more universal version of the command includes the *-print* qualifier (meaning print to screen) and surrounds the search term in quotes.

The search expression can include wildcards. If you're pretty sure, for instance, that there's a file on the system that ends in "perl" the search can be rephrased as:

**# find / -name "\*perl" -print**  
**/usr/bin/find2perl**  
**/usr/bin/perl**  
**/usr/bin/suidperl**  
**/usr/doc/mod\_perl-1.19/eg/makepl\_args.mod\_perl**  
**/usr/doc/samba-1.9.18p10/examples/misc/wall.perl**  
**/usr/lib/perl5/site\_perl**  
**/usr/lib/perl5/site\_perl/386-linux/auto/mod\_perl**  
**/usr/local/src/libwww-perl-5.18/blib/lib/auto/libwww-perl**  
**/usr/local/src/libwww-perl-5.18/blib/arch/auto/libwww-perl**  
**/usr/local/src/htdig-3.1.9/db/docs/ref/perl**

Likewise you can surround the entire search term with wildcards (e.g. "perl\*"), to fish out any instance of a file or directory that has "perl" anywhere in its name.

**Advanced uses of find**

*Find* has an armada of optional qualifiers, including file types, date qualifiers and boolean logic ("and", "or", and "not"). One of the most common uses of *find* is looking for

Continued on page 112

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**Finding things on a Linux system**  
Continued from page 110

files of a certain age. For example, you can search down your home directories looking for files that were modified exactly 10 days ago using the `-mtime` qualifier (date last modified):

```
# find /home -mtime 10 -print
```

Likewise you can look for files that have not been accessed for more than 90 days by typing:

```
# find /home -type f -atime +90 -print
```

The `-type` qualifier, in this example, tells `find` to search only for regular files (`f`), as opposed to block files or other binary files. The `-atime` qualifier inspects the "last access" time stamp on any files found. This can be very useful for cleaning up systems. If you have a rule, for instance, that user files that have not been accessed in more than a year should be automatically deleted, you add the `-exec` qualifier to `find`:

```
# find /home -type f -atime +365 -exec rm {} \;
```

The syntax following the `-exec` operator may look a little odd. The `{}` is a placeholder or variable for each instance of a filename that

`find` finds. The `\;` tells `find` that it is at the end of any additional commands and prevents odd things from happening during shell-script expansions. Anything that uses the `rm` command is potentially dangerous. Use the `-print` qualifier in place of `-exec` during testing until you're sure you've got it right.

Now, let's think about what we've got here. A utility (`find`) that can traverse an entire file system, or selected parts of the file tree hierarchy. Once it finds things, it can execute commands on the things it finds. We now have the makings of some very powerful scripts, such as a global search and replace on a Web site. You could combine `find` with a command-line Perl statement to change all instances of "Copyright 1999" to "Copyright 2000" on all the HTML pages of your site, making a backup copy of all the changed files, just to be safe:

```
# find /home/httpd/html -name "*.html" -print |
xargs \
> perl -p -i.bak -e "s/Copyright 1999/Copyright
2000/g;"
```

To get rid of all the `*.bak` files this command created, you can type the following (after you've verified that everything was changed correctly):

```
# find /home/httpd/html -name "*.bak" -exec rm {} \;
```

This is the inner beauty of Unix—providing logical building blocks that allow you to string together existing utilities to create your own custom utilities.

Another use for `find` is searching for programs on your system that have special permissions set. Some executables, such as `lpr` or `sendmail`, need to execute with root privilege and are "set user ID" to root (SUID). Knowing where these are on your system can help you watch for security vulnerabilities. You can find all such files on your system by typing:

```
# find / -user 0 -perm 4000 -print
```

If you see a file in this listing that doesn't

make sense, you may have detected the work of an intruder.

`Find` has so many qualifiers and so many potential uses, that this column only begins to convey a sense of its full power. You can find out more about using `find` from advanced Unix books, such as *Unix Power Tools* (published by O'Reilly & Associates, ISBN: 1-56592-260-3, \$85.95). □

**Next time:** Regular expressions.

Gene Wilburn (gwilburn@home.com) is a Toronto-based IT manager, musician and writer who operates a small farm of Linux servers. Back issues of this series are available at <http://www.northernjourney.com>.

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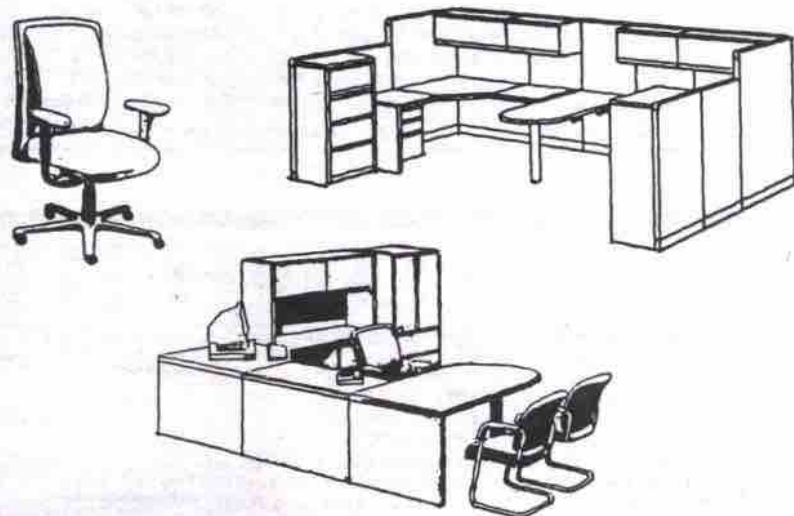
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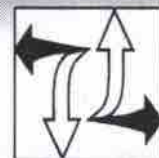
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# MCSEs feel Microsoft ending Windows NT exams prematurely

By Stefan Dubowski

Microsoft and the engineers trained to administer its Windows operating systems in the field are at odds over the company's decision to change its certification qualifications.

The software giant has decided to stop testing for its older business-related OS, Windows NT, in favour of certification for Windows 2000.

As far as Microsoft Certified Systems Engineers (MCSEs) are concerned, Microsoft is pulling the exams too quickly. As well, according to a letter from the Coriolis Group LLC's chief executive officer, Keith Weiskamp, Microsoft is unfairly forcing MCSEs to upgrade their skills.

What's at issue here is the qualifying standard. If MCSEs don't upgrade to Windows 2000, they run the risk of losing their "certified" standing. Plus, Microsoft will give the engineers only one free chance to pass the exam. If an MCSE fails, he or she will have to pay for their second attempt.

"Changing and restricting the MCSE Windows 2000 program is counterproductive, because you are alienating a dedicated

community of professionals," Weiskamp wrote in his open letter to Microsoft and its chairman Bill Gates. "This is particularly true because the Windows NT 4.0 certifications will expire before many companies have replaced that software with Windows 2000 alternatives."

The Windows NT 4.0 exams are scheduled to end this year. Microsoft says this still gives MCSEs plenty of time—until the end of 2001—to upgrade their skills.

"We expect any individuals who choose to certify in the MCSE track to assume a leadership role in helping their employers or clients stay competitive," wrote Donna Senko, Microsoft's director, certification and skills assessment, in a response to Weiskamp's letter. "And maintaining current certification shows that those individuals are fully equipped with the needed skills to meet that challenge. MCSEs are leaders in their field—not followers."

In a telephone interview, the director of the Canadian Business College in Toronto, Mazher Jaffery, agreed with Senko: "In introducing the new program, I don't think they're going too fast at all... Things change,

and we have to keep up with it."

But Michael Lane, director of communications for Toronto's Canada College of Business and Computers (CCBC), isn't pleased with Microsoft's decision to demote engineers who choose not to upgrade.

**"Changing and restricting the MCSE Windows 2000 program is counterproductive, because you are alienating a dedicated community of professionals."**

—Keith Weiskamp, Coriolis Group LLC

"It's like telling a teacher 'If you don't get more training, you can't teach anymore,'" he said.

According to CCBC's admissions counsellor,

Kyle Phillips, only a handful of schools are currently qualified to teach the Windows 2000 skill set. In what he called a "great marketing" scheme, Microsoft has its engineers hooked on this training investment.

"I agree in setting a standard," Phillips said. "But... from their [Microsoft's] perspective, they've been quite successful."

As far as Weiskamp is concerned, Microsoft owes the engineers more time.

"MCSEs gave your software a second chance," he wrote. "You should give them a second chance, too. Please reconsider your limitations on the... Windows exam, and stretch out the timetable for upgrading MCSEs to Windows 2000 by at least one more year!"

For its part, Microsoft says its current exam path is more than fair.

"MCSEs who have planned for and made the transition to Windows 2000 will have a significant advantage over uncertified individuals," Senko wrote.

"MCSEs will need to invest time and effort in Windows 2000 as well, but we are confident that the ultimate payoff will be significant." □

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# Guide to iMac full of practical tips, which iBook text mostly rehashes

By Keith Schengili-Roberts

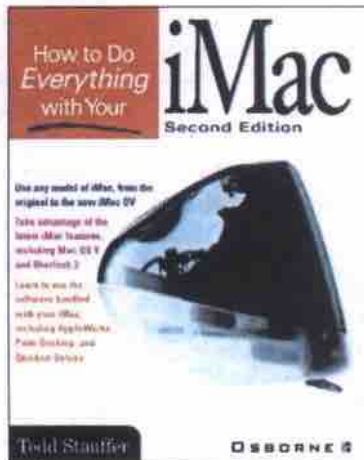
Since its launch in 1998, the iMac has been turning heads. Its radical new look and features easily made it stand out from the crowd. The same can be said for the portable version of Apple's consumer PC, the iBook, which debuted in September 1999. Both machines are designed to be very easy to use—pull them out of the box, plug them in, and you're up and running. This built-in user friendliness, however, raises the question of how useful and/or necessary the following two guides are.

## How To Do Everything With Your iMac, 2nd Edition

Author: Todd Stauffer  
Publisher: Osborne (dist. by McGraw Hill Ryerson)  
Tel: 800-565-5758  
ISBN: 0-07-212416-4  
Softcover 634 pages 2000  
Price: \$39.95

**Rating:**  
Information content: \*\*\*1/2  
Readability: \*\*\*\*  
Intended for: Beginner  
Overall Rating: \*\*\*\*

This guide pretty much lives up to its name, as author Todd Stauffer takes the reader on a tour of the iMac and what you can do with it. *How*



*to Do Everything with Your iMac* is designed as both a reference and a tutorial for the new iMac owner. It has four sections: Get Started, Get Your Work Done, Get Online and Customize Your iMac.

Get Started provides a basic tour of the iMac, covering lots of Macintosh basics, such as describing icons, and how to launch programs. If you are a complete computing neophyte, you'll find this section useful, though more experienced Mac users will likely skip it.

Get Your Work Done is largely devoted to using the iMac as a business system. It covers such topics as how to make charts, presentations, create and organize databases, and keep track of appointments and finances. It also has a fun side, looking at QuickTime for editing movies, playing popular Mac games, and using other software tools.

Get Online deals with the major Internet-based applications—email, surfing the Web using Internet Explorer and Netscape Navigator, transferring files, and creating Web pages—central to the iMac's popularity.

The final section, Customizing Your iMac, tells you how to personalize and upgrade an iMac. Readers learn how to modify the look of the desktop, change sound settings, set the iMac up for multiple users, add peripherals and memory, link to a network, and troubleshoot.

This updated guide looks at technologies that have been released since the first edition was printed including: Mac OS 9, Outlook Express 5.0, Sherlock 2, Quicken 2000, and QuickTime upgrades. It also has information on Apple's AirPort wireless network and the latest DV series of iMacs.

This book contains tons of tips offering very practical advice on everything from cleaning your iMac, to adding rolling credits to movies you are editing. There is a lot of good info here, though some sections could easily have been expanded. The relatively paltry section on writing Web pages, for example, barely takes the reader through the basics. On the whole though, this book contains a lot of useful information about the iMac and how to use it.

## How to Do Everything with Your iBook

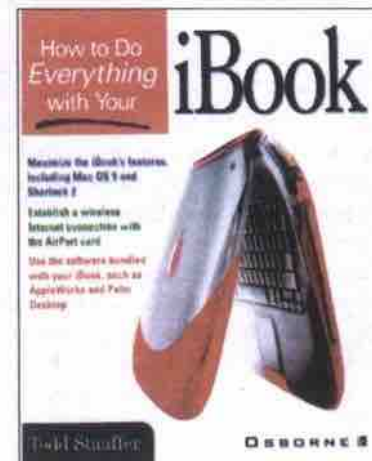
Author: Todd Stauffer  
Publisher: Osborne  
ISBN: 0-07-212419-9  
Softcover 636 pages 2000

Price: \$39.95  
**Rating:**  
Information content: 1/2  
Readability: \*\*\*\*  
Intended for: Beginner  
Overall Rating: 1/2

The iBook guide is basically the same book—almost word for word, paragraph for paragraph, and page for page. While you expect some "recycling" in the computer book biz, *How to Do Everything with Your iBook* contains almost 100 percent recycled material. The portions of material that are exclusive to this book do not make it worthwhile for the iBook user.

The differences in the two books lie in sections devoted to hardware. The iBook guide takes a slightly more extended look at features more commonly associated with Apple's consumer portable PC, such as AirPort networking. The info it contains is useful, but for the most part, is simply a rehash of *How to Do Everything with Your iMac*. Attaching the word iBook to the title is misleading.

*How to Do Everything with Your iBook* is a good iMac book, but is definitely thumbs-down as an iBook guide. Save your money for the titles out there that are more truly tailored to using the iBook. □



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**Quick Tips**

## Better brochures

By Helen Bradley

If you have a need for a small print run of brochures, you can create them in-house using Microsoft Word or Publisher. For a larger volume printing job, a local print shop might be a better choice, but you can still design it yourself. Here are some ideas for creating better business brochures.

**Who are you?** • Always prepare your brochures so they contain enough information to stand alone as a document. Even if you routinely post your brochures with a covering letter, chances are they'll part company, so don't rely on details in the letter to cover for details you've omitted from your brochure. Always include your organization's name, telephone number, and postal and email addresses prominently on your brochures so people interested in your services or products can easily contact you.

**Small print runs** • Your brochures don't have to be printed in full colour. They can be just as effective if neatly output on a monochrome laser printer. If you're making small print runs, consider using quality preprinted paper stock from a company like Idea Art or Paper Direct. For larger runs, a cost-effective solution is to have your print shop pre-print paper with your logo and other fixed details in colour. You can then overprint the brochures with a monochrome laser printer as you need them.

**Team players** • Every document you produce should look like it is part of a team and not a solo performer. When you place your business cards, letterhead and brochures side by side, they should display common elements, such as the company logo (with a common placement), type faces, colours, line styles, etc. When you're designing brochures, stick to a basic theme that reflects the style of your other business documents. This way, you'll have fewer choices, but the design tasks will be easier and the results will look more professional.

**Repetition** • A basic rule of design is repetition. Repeating elements throughout a brochure gives it strength and style. A quick way to use repetition to bring order to an unruly brochure is to reduce the number of type faces to one or two, and to line everything up against the left margin. Format every heading the same way, add some additional space before each heading and close up the space between the heading and the following paragraph. This makes a visual connection between the heading and the paragraph it relates to.

**Follow the flow** • In general, people read left to right and top to bottom, so make sure the information in your brochure follows this flow. On a typical trifold brochure the reader expects to view the cover first, then the three inside panels. Finally they'll turn the brochure over

and read the fifth and sixth panels. Include the basic information you want to get across to your reader on the first three panels inside the cover. Relegate contact information and the mailing area to the two back panels.

**Common sense coupons** • Ensure that any clipable coupon in your a brochure backs onto less important information. You wouldn't want to put your phone number or address on the back side of a coupon, for example, because once the coupon is used, readers no longer have that information. Place the coupon on one edge or corner of the brochure so it's easy to remove. Mark the coupon with a dashed line so it's clear what the reader should do with it. Include your mailing information inside the coupon, so it can be clipped and mailed without reference to the original brochure.

**Post it** • If you design brochures that are self mailing, you'll save on the cost of envelopes

and the time it takes to fill and seal them. If you do this, make sure your design allows for quality content opposite the postal information, providing your recipient with an incentive to open the brochure.

**Date it** • If you include time-sensitive data (prices, for example), make sure you put the date somewhere on the brochure. Recipients can then determine if prices are current when they read the brochure. You can also identify the realistic lifespan of the information. If you publish monthly, include the month and year. If you publish quarterly, indicate a season: spring, fall, etc., and the year. If your brochure can be expected to remain in circulation for a year, then including the year will do. □

Helen Bradley specializes in writing hands-on tutorials. Her columns appear regularly in a number of publications in Australia, the U.K., U.S. and Canada. Contact Helen at [helen@helenbradley.com](mailto:helen@helenbradley.com).

### Human-powered search engine

NB—California-based iNetNow Inc. has launched what it calls a "human-powered" Web-search service users can access from a telephone. It is human powered because users call iNetNow's toll-free number, tell an operator what they're looking for, and iNetNow's staff does the actual work. iNetNow "surfers" can do anything the Internet is traditionally used for, including looking up an address, booking a flight, making reservations, online shopping, or obtaining stock quotes. The service costs US\$0.45 per minute, but the company is offering three months of free service to the first 5,000 people who sign up.

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## The Computer Paper Year 2000 Editorial Calendar

	Cover Feature	Lab Report	Tech Enterprise	Ad Booking	Camera Ready	Distribution
June	Working the Web: Tools for personal fame and fortune	Inkjet printers	Security Tools and Techniques	Tues. May 2	Wed. May 3	Fri. May 19
July	Ultimate Peripherals and Accessories Guide	Monitors	Tools for business presentations	Tues. May 30	Wed. May 31	Fri. Jun 16
August	What's new in New Media	PC Music	Knowledge Management	Tues. Jun 27	Wed. Jun 28	Fri. Jul 14
September	Tracks and strategies for a career in IT	Multimedia cards (audio /video)	Video Conferencing	Tues. Aug 1	Wed. Aug 2	Fri. Aug 18
October	Mondo PC: the system you really want	Flat-panel displays	Small Business Essentials	Tues. Aug 29	Wed. Aug 30	Fri. Sep 15
November	TCP's Best of Breed software picks	Multifunction machines	Network state of the union	Tues. Sep 26	Wed. Sep 27	Fri. Oct 13
December	Gift Guide: Great gifts for computerists	Handheld computers	Watching the pennies: Accounting and Payroll software	Tues. Oct 24	Wed. Oct 25	Fri. Nov 10

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Continued from page 12

mous service.

PrivacyX.com (<https://www.privacyx.com/>) claims its PE-mail is the only offering of its kind to let Net surfers send and receive fully secure email messages without letting anyone know who they are—not even the company.

Douglas Whorrall puts it succinctly: "We don't know who our customers are," said the president and chief executive, during a recent press briefing in Toronto. "We issue digital certificates anonymously."

The updated service—PE-mail 2.0, which was released March 23—will eventually carry advertising within the email messages to support the free service, but "without compromising the security of the encryption," according to Whorrall.

Interested users can visit the PrivacyX Web site to register for the service. A questionnaire for new subscribers will let the company target its ads according to specific interests, such as music or clothing.

According to the company, users are issued a PrivacyX email address (which they can choose) and a corresponding digital certificate that meets "industry-standard X.509 protocols." The user's identity is protected by the company through anonymous registration and filtering systems. The result is that routing information is removed from each message header, according to PrivacyX.

"We have no way of decrypting your email," said William Boucher, vice-president of technology and development. As for the prospect of government or police agencies trying to block or regulate PE-mail and similar anonymous services, company representatives said they foresaw no problems. "Email should be just as private as Canada Post mail," Whorrall said.

While he may not know who its customers are, Whorrall does know there are currently about 50,000 PE-mail users. The advertising won't likely begin until that number at least triples, he said.

For those users who don't want any advertising, PrivacyX plans to offer PremiumX accounts, for a fee, Boucher said. Of course, there are problems with charging for an anonymous service that aims to keep its subscribers nameless. "We have to work out a way for people to pay anonymously," he said.

—John Saunders

**Intel matches AMD's 1 GHz processor**

SANTA CLARA, Calif.—Advanced Micro Devices Inc. (AMD) had a short-lived hold on the claim to being the only company shipping com-

puter processors capable of cranking at 1 GHz. Intel Corp. (<http://www.intel.com/>) announced the availability of its own 1 GHz Pentium III, just two days after AMD unveiled its record-breaking 1 GHz Athlon processor.

In matching AMD in the speed department, Intel managed to one-up its competitor on price. The new 1 GHz Pentium III is currently tagged to sell at US\$999 each when purchased in quantities of 1,000, while AMD's fastest Athlon was launched with a price tag of US\$1,299 when purchased in bulk.

Paul Otellini, executive vice-president and general manager of the Intel Architecture Business Group, said the new Pentium III is now the "highest performance microprocessor for PCs," citing a variety of benchmark tests which factor in variables beyond raw clock speed. However, independent labs have yet to test machines available to end users which pack the new processors.

Dell Computer, Hewlett-Packard and IBM will be manufacturing systems based on Intel's 1 GHz processor, while Compaq and Gateway have announced systems using AMD's offering.

—Newsbytes

**New 850, 866 MHz added to lineup**

Following the announcement of the 1 GHz chip, Intel released new 850 and 866 MHz Pentium IIIs, which rounds out its chip lineup to 13 processors, the slowest now being a 450 MHz model.

The chipmaker says the new 850 and 866 MHz processors are "designed to power an Internet experience filled with rich audio, video, animations and 3D that make information come alive." The new Pentium IIIs are targeted for home and office environments.

But with 11 chip speeds on the market already, how does Intel plan to convince its customers that 866 is any better than 850 MHz? And is there a significant difference between 850 and 800 MHz?

According to Kevin Krewell, a senior analyst with MicroDesign Resources, we shouldn't rely on the published numbers alone. The difference between these chips is in the details.

The 850 MHz offering, for example, uses a 100 MHz front-side bus. And, says Krewell, "I suspect this will be the last time we see an Intel product that supports the BX chipset."

This older chipset adheres to the equally old 100 MHz speed. Now that the bus is known as the main throttle-point for computer performance, the more the better. Thus, although Intel's two new chips stand only 16 MHz apart, the 866 MHz Pentium III, with a 133 MHz front-side bus, should perform substantially better.

As far as Krewell is concerned, Intel is putting an end to the overclocker's need for speed with the faster Pentium III. Apparently Intel caught its Taiwan partner, Via Technologies Inc., pushing the 100 MHz Intel chipset to 133 MHz.

"You can't officially overclock the motherboard," Krewell said. "They weren't designed to work faster than 100 MHz."

In the end, Intel sued Via, but the American arm also learned a lesson. Make the product faster, or others will do it for you.

If this is the case, why bother with the 850 Pentium III at all? Krewell said not everyone is willing to toss the old motherboard, even if they want a faster processor. In the end, Intel's marketing makes sense.

"You have a mix of old and new from a motherboard point of view," Krewell said of Intel's target audience.

—Stefan Dubowski

**Monitor system via Web, Palm, cell phone**

BURLINGAME, Calif.—Serena Software (<http://www.serena.com/>) has taken the wraps off ChangeXpress, a software package that allows software updates to be approved (or denied) using mobile devices such as mobile phones and Palm PDAs (personal digital assistants), as well as fixed and mobile Internet access devices.

The software is designed to interface with the firm's existing Change Man (for legacy systems) and eChange Man (for distributed systems) packages, allowing IT managers to leave the office, and yet still be able to securely approve software updates.

This facility is useful, the company says, where IT managers are responsible for IT systems that service large numbers of users inside an organization or, perhaps more critically, for publicly accessible computing platforms.

A spokesperson for Serena said the firm's software is in active use at more than 2,000 IT installations around the world.

The most important feature of ChangeXpress, the firm says, is that it provides a consistent Web-style interface for Change Man and eChange Man-driven systems.

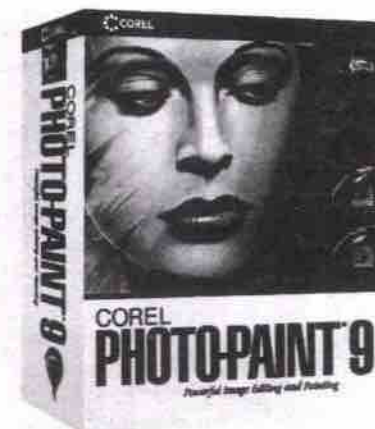
Tony Stanyer, Serena's vice-president of marketing, said that extending the firm's software into the mobile and Internet-accessible environment is the next step in integrating seamless enterprise software change management.

Serena says Change Man and eChange Man automatically trigger a notification when changes on any major computing platform are ready for a manager's approval. Notifications can now be sent via email, and relayed immediately to pagers, mobile phones, and Palm hand-

held devices.

ChangeXpress supports a variety of communications protocols, including the pervasive computing standard (PVC) and Wireless Application Protocol (WAP) technologies.

—Newsbytes

**Corel Photo-Paint 9 free for Linux users**

Ottawa's Corel Corp. (<http://www.corel.com/>) has announced plan to give Photo-Paint 9 to Linux users for free, when downloaded from the Corel Web site, beginning in early summer.

Photo-Paint 9 is the latest version of Corel's premiere photo-editing, image composition and painting application (a review of the Windows version, comparing it to other high-end image-editing software, "Image editing's front five," ran in the February 2000 issue of TCP). Corel says comprehensive online documentation will be available for the free Linux version.

A retail version of CorelDraw 9 Graphics Suite for Linux, which will include Photo-Paint 9, is expected to ship by the fall, with pricing comparable to the Windows version of the suite (currently about \$945).

Corel has had tremendous response to previous free downloadable software offerings of its products, including WordPerfect 8 for Linux and the Corel Linux OS.

—TCP Staff

**Deneba develops Canvas 7 for Linux**

Deneba Software (<http://www.deneba.com/cv7linux/>) has announced that a Linux-based version of its Canvas 7 graphics software is under development. The company plans to release a beta version in April that will be available for free from the Deneba Web site.

Deneba president Manny Menendez, says he expects Canvas 7 will be very appealing to the Linux community. "We've always been ahead of the curve, willing to move quickly to embrace new technologies and provide our customers

Continued on page 125

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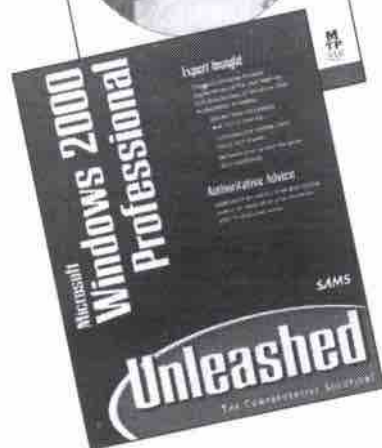
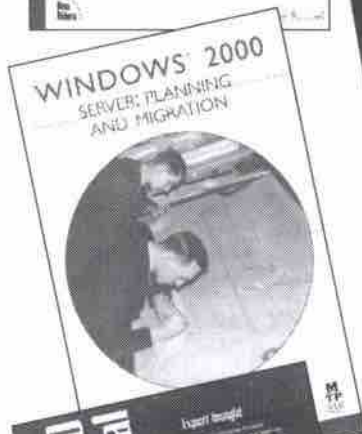
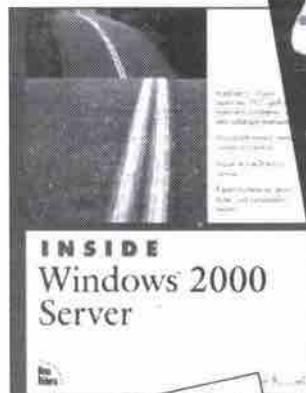
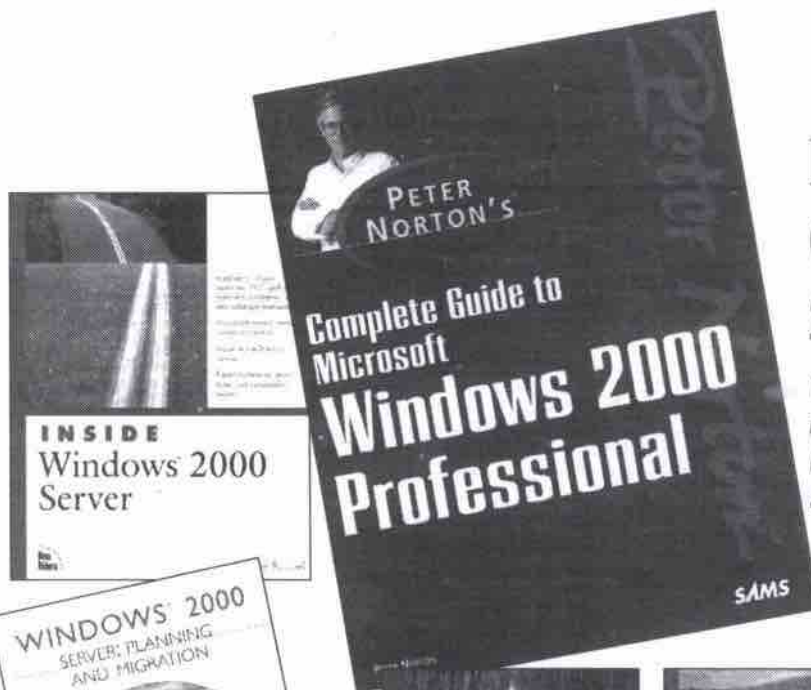
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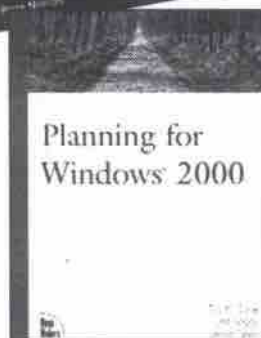
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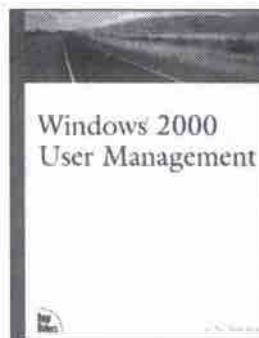
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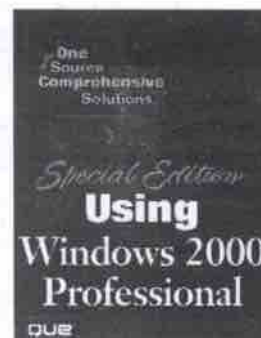
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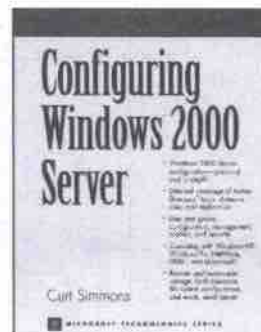
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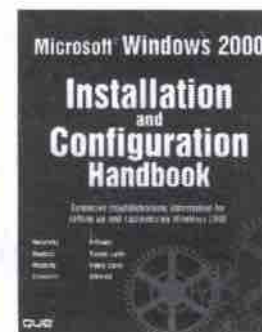
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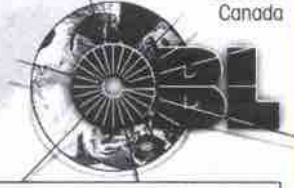
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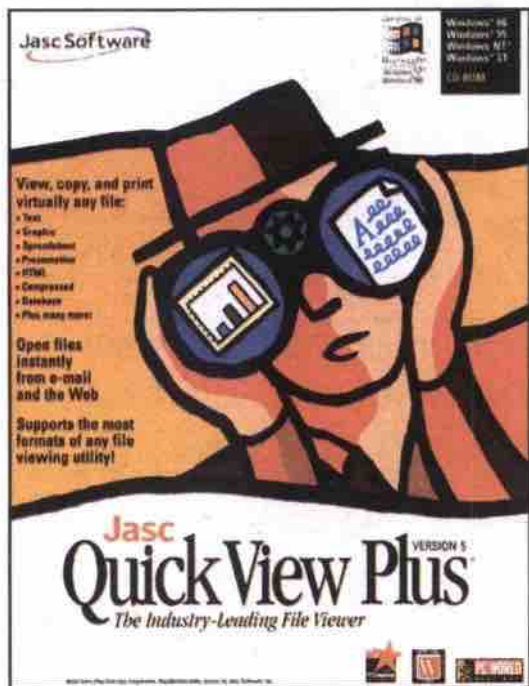


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Issue	Booking Deadline	Art Deadline	Distribution
June issue The Computer Paper	May 2	May 3	May 19
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- Category** (check one)
- |  |                                     |  |   |
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DELL P133 32MB 2GB 12.1" 10x CDROM 28.8Modem Case \$850, Call 878-8777, 953-7152.

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## PRINTERS

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WINDOWS NT SERVER V4.0 - (15 user lic., transferrable) \$1000. Call Lynda-Wawa Med Ctr - 705-856-1313, Email: [erlkyby@onlink.net](mailto:erlkyby@onlink.net)

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## USER GROUPS

ATTENTION USER GROUPS: Send in your listing (maximum 120 characters) for the June issue by Tuesday, May 2, 2000. Submissions run for one month only in the local edition. The Computer Paper reserves the right not to print submissions which are deemed unsuitable.

CAMBRIDGE CLONE CLUB meets every 3rd Wednesday evening, 1111 Lang's Circle, Cambridge ON, N3H 5E6 or e-mail [WALKER@p3g.mcdermott.com](mailto:WALKER@p3g.mcdermott.com)

CLUB CUBASE, a forum for Steinberg users, meets the last Monday of each month at Trebas Institute, 410 Dundas St. E at 7:30 pm. Call (416) 789-7100.

CLUB MAC meets at 7 p.m. On The Second Tuesday Of every month at 488 Dupont St. (at Bathurst) For Details of The Next Meeting, Call The 24 Hr. Info Line at (416) 462-1702 Or Visit Our First Class BBS At (416) 462-2922 or our Website At [www.cmac.org/cmac](http://www.cmac.org/cmac).

COMPUTER TRAINERS' NETWORK meets the first Thursday of each month to discuss training/technology issues at Metro Hall, 55 John St. Look us up at [ww.ctnet-work.org](http://ww.ctnet-work.org).

HAMILTON PC USER GROUP meets last Monday of each month @Hamilton Spectator 7:00 PM [www.hwcn.org/link/hpcug](http://www.hwcn.org/link/hpcug).

H.U.G. (Hamilton PC Users Group) - IBM and PC clone users meet on the last Monday of each month in the auditorium of the Hamilton Spectator, 44 Frid Street at 7:00pm. For further info contact Jim Rennie (905) 639-0771 or E-mail at [jim.rennie@freenet.hamilton.on.ca](mailto:jim.rennie@freenet.hamilton.on.ca).

IRMAC (Information Resource Management Association of Canada) offers meetings on issues concerning Data Warehouse, Modelling, Information Planning etc. [www.IRMAC.ca](http://www.IRMAC.ca) or via [info@IRMAC.ca](mailto:info@IRMAC.ca).

KAWARTHANET USER GROUP. Primarily concerned with helping each other to get the most out of the Internet. Write to PO Box 183, Bobcaygeon ON, K0M 1A0; Call 705-738-4578; Email [tonyc@kawartha.net](mailto:tonyc@kawartha.net).

LOGIC, Toronto's oldest Apple User Group meets at N.T.M.C.C. 200 Eglinton Ave. West on 1st +3rd Tuesday 7:30pm + 4th Sunday 1pm of the month. [www.logicbbs.org](http://www.logicbbs.org)

NIAGARA COMPUTER CLUB- Cy Leonard The president and Bob Dulu a member of the Toronto branch of the CanAm club. Meet every Saturday morning at Cy's

house. Looking for people to join from Toronto, currently our group now varies 18-25 members to swap computer ideas, tips and generally have a good time. NO Charge! All you have to do is pay for your breakfast when we line up a place to hold our meetings. Please email [bobbdutru@direct.com](mailto:bobbdutru@direct.com).

NYSE - NEWMARKET YORK SIMCOE EXCHANGE -- Investment club meeting monthly in Newmarket. Discuss trends, ideas and investment strategies. Contact Steve 1(888)252-1802 [pallett@canada.com](mailto:pallett@canada.com)

PERSONAL COMPUTER CLUB OF TORONTO (PCCT) meets 3rd Tuesday of each month at 7pm, North York Memorial Community Hall, 5110 Yonge St. one floor below the Central Library, \$5 for non-members. Call (416) 633-6971. BBS (416) 636-6394.

SOCIETY OF INTERNET PROFESSIONALS (SIP) <http://www.netpro.org> Networking party at Vineyards Lounge, ground floor Metro Hall, King & John Sts., 6-9pm. RSVP would be appreciated; please send an e-mail message with your name and company to [founder@netpro.org](mailto:founder@netpro.org).

TAF (Toronto Atari Federation) meets 3rd Wednesday of each month between September and June in the Rose Room of the North York City Centre underneath the Central Library, at the North York subway stop. The meetings are held from 6:30 pm to 10:30 pm TAF's mail address is suite 1402, 45 Grenoble Drive, Don Mills, Toronto, Ontario, M3C 1C4, and our eMail address is [dave.lee@taf.tn.org](mailto:dave.lee@taf.tn.org) TAF's BBS (TAF Online) can be reached at (416) 421-8999 [8-N-1, 28800] and TAF's phone numbers are (416) 533-0504 or 766-4743. TAF's Web Page can be found at <http://www.interlog.com/~schrist/taf> April's meeting will be looking at emulation, MAC's, PC's and Atari's!

THE MISSISSAUGA COMPUTER CLUB meets the first Wednesday of every month at the Burnhamthorpe Community Center, 1500 Gulleiden Dr. 1 block east of Dixie and one block south of Burnhamthorpe, at 7:30pm, for more information see our web page at <http://welcome.to/tmcc>, or email at [tmcc@direct.ca](mailto:tmcc@direct.ca), you may also use the

free BBS at (905)840-0592.

THE TORONTO ACT! USER GROUP. For more information e-mail: [vickiv@passport.ca](mailto:vickiv@passport.ca) Call: (416) 761-1963 or Fax: (416) 761-1530.

THE TORONTO POWERBUILDER USER GROUP, in conjunction with Sybase Inc., is hosting a PowerBuilder Training Conference on Monday November 15 in Toronto. Please visit their web site at [www.interlog.com/~tbug](http://www.interlog.com/~tbug) for more information.

IT-IS TOASTMASTERS meets every Tuesday, 6:15pm, Manulife Building, Syd Jackson Theater, 200 Bloor St. East, Toronto. The IT-IS Toastmasters is a non-profit club for technology industry workers who want to improve their speaking, listening, communication and leadership skills. Check the web site for location changes and more information. [www.amegory.com/toastmasters](http://www.amegory.com/toastmasters).

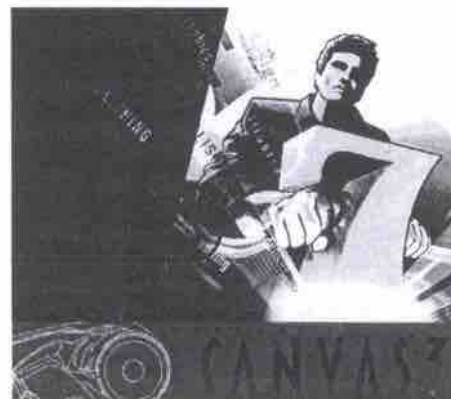
TORONTO CYBERSPACE LIONS CLUB. World's 1st Internet Service Club. Multi-cultural membership, interested in community-service projects. Meetings in person and on IRC. Educational meetings. \$75. annual fees. Contact: Roger Roberts, 416-515-9324, email [roar@cyberlions.com](mailto:roar@cyberlions.com), visit [www.cyberlions.com](http://www.cyberlions.com).

TORONTO OS/2 USER'S GROUP meets 2nd Thursday of each month, 7-10pm, IBM Canada Building, 3600 Steeles Ave E in the auditorium. Free. Call (416) 299-3410. E-mail: [to2@io.org](mailto:to2@io.org) [www.io.org/~to2](http://www.io.org/~to2).

OTTAWA SAS USERS GROUP (OSUG), Contact Winfried Jakob@ 613-231-8503 ext 236, Infoline: 613-231-9503, ext 6787, fax: 613-231-8526 Attention: OSUG, email: [osug@can.sas.com](mailto:osug@can.sas.com). Meetings: call Infoline for announcements.

WOODSTOCK COMPUTER USERS CLUB. We meet the 1st Tuesday of each month at Working World Training Centre in Woodstock (located in the Blandford Mall). There are maps to our location on our web site at [www.wcuc.org](http://www.wcuc.org) (currently under construction). Next Meeting: Tuesday, October 5, 1999 Topic: GIZMOS and Video Fun, presented by Kevin Procter.

## What's new Continued from page 120



with compelling alternative solutions. Likewise, Linux users are innovative, tech-savvy early adopters that really appreciate elegant, efficient solutions like Canvas 7. Now we're giving them their first real opportunity to experience state-of-the-art illustration and graphics software on their operating system of choice."

Canvas 7, which was released in November for Macintosh and Windows users, is an illustration program that includes complete image editing, Web design and page layout tools.

—TCP Staff

## UWO's Beowulf debuts

The University of Western Ontario (UWO) is Canada's computing juggernaut, thanks to a \$200,000 donation in computer equipment from Compaq Canada Inc.

With a grand total of \$1.6 million worth of chips, screens, motherboards and wires, the school's Centre for Computational Research is "up and running," according to Peter Poole, a professor of applied math at UWO and one of



the centre's directors. "This is the most powerful Beowulf [a Linux cluster] in Canada by far," boasted Allan MacIsaac, also a director at the centre.

For its part, Compaq is

boasting 70 Alpha microprocessors in ES40 and AlphaStation systems running in a Linux environment. UWO's researchers will use the massive computer (which MacIsaac described as a "monolithic block of machines") to study fluid dynamics and materials modeling, among other traditionally computation-heavy subjects.

Researchers also plan to access the centre's computing power to sort out complex scheduling problems. "We're demonstrating that Linux is not only invading the desktop," said Poole, a self-described Linux fan. "It's invading the high end as well. And it works well."

Poole's penchant for Linux speaks to his work as a researcher. "We want to spend our research money completing throughput," not equipment, he said. Linux, the free, open-source operating system means, "we haven't spent a cent for software."

And as far as Poole is concerned, UWO could have an "in" with companies seeking serious number crunching. "If a business wants a solution pretty quick... with facilities like this we can go out to a customer and say, 'we have the computing muscle to solve your problems.'"

The London, Ont., university was looking for

Continued on page 126



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## CALENDAR

**CANADIAN INFORMATION PROCESSING SOCIETY - TORONTO (CIPS)**  
**CIPS TORONTO'S "IT IS TOASTMASTERS CLUB"**  
WHEN: Every Tuesday  
TIME: 6:15 p.m. to 8:15 p.m.  
WHERE: Syd Jackson Theatre, Manulife Financial, 200 Bloor Street East, Toronto, Ontario

Every Wednesday Evening, - CIPS Toronto's IT University SIG. This seminar is held at the Ontario Club, Commerce Crt. S, 30 Wellington St. W., 5th Fl., Toronto at 7:00 p.m.  
Tel: 905 882 0018 or email toronto@cips.ca. For more information go to [www.cips.ca/toronto](http://www.cips.ca/toronto) and register now!

**MARCH**

Thursday, March 9, 2000 - Paul Swinwood, President, Software Human Resource Council Inc. will speak on Human Resource Issues 2000 - Who gets to play and who gets left behind for CIPS Toronto's monthly Dinner meeting, held at Ontario Club, Commerce Crt. S, 30 Wellington St., 5th Fl., Toronto at 6:30 p.m.

Wednesday, March 22, 2000 will speak on TBA for CIPS Toronto monthly

KNOWLEDGE MANAGEMENT SIG at 5:45 p.m. to 8:00 p.m. at the Ontario Club, Commerce Crt. S, 30 Wellington St., 5th Fl., Toronto. For more information go to [www.cips.ca/toronto](http://www.cips.ca/toronto) and register now!

**APRIL**

Thursday, April 13, 2000 - Eric Gilboord, writer for The Globe and Mail will speak on

Small Business Marketing Services for CIPS Toronto's monthly Dinner meeting, held at Ontario Club, Commerce Crt. S, 30 Wellington St., 5th Fl., Toronto at 6:30 p.m. For more information go to [www.cips.ca/toronto](http://www.cips.ca/toronto) and register now! Tel: 905 882 4692 or e-mail [toronto@cips.ca](mailto:toronto@cips.ca)

Wednesday, April 26, 2000 will speak on TBA for CIPS Toronto monthly KNOWLEDGE MANAGEMENT SIG at 5:45 p.m. to 8:00 p.m. at the Ontario Club, Commerce Crt. S, 30 Wellington St., 5th Fl., Toronto. For more information go to [www.cips.ca/toronto](http://www.cips.ca/toronto) and register now!

**MAY**

Thursday, May 11, 2000 - A Speaker from LGS Group will give a presentation on CRM - Hype or Business Imperative for CIPS Toronto's monthly Dinner meeting, held at Ontario Club, Commerce Crt. S, 30 Wellington St., 5th Fl., Toronto at 6:30 p.m. For more information go to [www.cips.ca/toronto](http://www.cips.ca/toronto) and register now! Tel: 905 882 4692 or e-mail [toronto@cips.ca](mailto:toronto@cips.ca)

Wednesday, May 24, 2000 will speak on TBA for CIPS Toronto monthly

KNOWLEDGE MANAGEMENT SIG at 5:45 p.m. to 8:00 p.m. at the Ontario Club, Commerce Crt. S, 30 Wellington St., 5th Fl., Toronto. For more information go to [www.cips.ca/toronto](http://www.cips.ca/toronto) and register now!

May 28 - June 1 Informatics 2000 CIPS National Conference - Theme - E-volution of Business will be held at the Metro Convention Centre. For more information go to [www.cips.ca/info2000](http://www.cips.ca/info2000).

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**FOR IMMEDIATE RELEASE**

Year 2000 Will Be A Boom Year for Project Managers, Say Organizers of Canada's Largest Project Management Event

Toronto, Ontario - December 1, 1999 - The world of project management is about to explode, say organizers of Canada's largest project management event - Project Management 2000 Symposium and Workshops, which will take place May 1-2, 2000 in Toronto. Whether they're looking to acquire new skills or enhance existing ones, more people than ever are interested in learning about one of corporate Canada's fastest-growing

disciplines, particularly as we enter the new millennium.

"There won't be any year within the previous 20 or next 20 that will be bigger than the year 2000 in the project management field," said David Barrett, President of Mississauga, Ont.-based Solutions Network Inc., which is organizing the show. "The white boards are filled with pent-up projects that have been put on hold while companies prepare for the new millennium. Once it's here and systems are intact, the flood gates will open."

A record attendance of 1,500 people from industries across the board - including information technology (IT), telecommunications, new media, pharmaceutical, human resources, construction, engineering and facilities management - are expected to attend Project Management 2000 Symposium and Workshops.

Another key reason for enhanced interest in project management, said Barrett, is overwhelming demand for project managers themselves, particularly in the IT field.

According to recent statistics from the Information Technology Association of Canada (ITAC), project managers are the highest ranked staffing requirement among IT organizations today. "And they remain at the top of the priority list for the next two years," Barrett added.

"Not only does corporate Canada need to produce more project managers in order to meet the expected demand, but we also need to find ways to help our current project managers work smarter and be more productive," he explained.

Project Management 2000 Symposium and Workshops - ranked as the second largest project management show in North America - will help achieve this goal by providing valuable project management advice and solutions from industry experts, sharing successes and failures from some of Canada's leading companies, and demonstrating new products, services and programs.

An overview of the event follows:  
**WHAT:** Project Management 2000 Symposium & Workshops - Canada's largest and

North America's second largest project management event, presenting industry leaders and experts who will showcase the latest trends, products and programs in project management.

**WHEN:** Monday, May 1, 2000 - 7:30 a.m. to 7:00 p.m.  
Tuesday, May 2, 2000 - 7:30 a.m. to 5:00 p.m.

**WHERE:** Metro Toronto Convention Centre (255 Front Street West)

**SEMINARS:** Ten distinct streams of interest - targeted at meeting the individual needs of attendees - will be presented, including: Skills Development (Advanced and General), Information Management/Information Technology Case Studies, Project Environment - The Project Office, New Media, Project Case Studies and Lessons Learned, Telecommunications, and Human Resources/Training and Career Development.

**WORKSHOPS:** A series of 12 workshops will run prior to and during the symposium, featuring one-, two- and three-day sessions designed to teach specific skills to project management practitioners.

**EXHIBITS:** The latest in products, services and programs will be displayed by more than 70 leading players in the project management field, including software developers, management consultants, service providers and training organizations.

**KEYNOTE**  
**SPEAKERS:** Chip Bell, an expert in Customer Relationship Management and Mentoring (May 1); Doug DeCarlo, Senior Project Management Consultant, ICS Group (May 1); Dr. Brian Little, Professor of Psychology at Carleton University in Ottawa (May 2); and Sharon Wood, the first North American woman to climb Mount Everest.

**ADMISSION:** Two-day individual admission is \$695; two-day group admission for groups of 5-20 is \$645 per person; and two-day admission for groups of 20+ is \$615 per person. Those registering before January 15, 2000 will receive a \$100 discount.

**PRODUCED BY:** Solutions Network Inc., Canada's leading project management gateway, offering project management recruiting, training and event services.

For more information, or to register, please call toll-free 1-888-820-7103, e-mail [symposium@solutionsnetwork.com](mailto:symposium@solutionsnetwork.com), or visit the Solutions Network Inc. Web Site at [www.solutionsnetwork.com](http://www.solutionsnetwork.com).

### What's new

Continued from page 125

a private-sector partner with the hardware to handle high-level number crunching.

"We spent two years trying to capture attention," MacIsaac said. "Especially Compaq's."

According to the professors, Compaq had the right equipment: fast, robust micro-processors, server technology and the wherewithal to put it all together.

"It's a new direction for them [Compaq]," MacIsaac said, referring to earlier acquisitions of Digital Equipment Corp. (creator of the Alpha chip) and Tandem Computers Inc. "Before, they were focused on the PC. By buying Digital, they got Alpha. And with Tandem, they got the server... They were developing network technology. Compaq said, 'let's turn that into a commodity product.'"

UWO doesn't plan to stop here. With the help of other post-secondary institutions in southwestern Ontario, the school plans to organize a "cluster of clusters," according to Poole. Through the federal government's Canada Foundation for Innovation—a \$1.9 billion fund for high-tech research projects—UWO, the University of Guelph, Laurier University, McMaster University and the University of Windsor hope to turn Canada into a world-class computing nation.

"We want to go further," Poole said. "Canada isn't traditionally thought of as a super-computing nation. And Canada's universities have never even been on that map."  
—Stefan Dubowski

**Indigo.ca builds site for phone surfers**  
Canadian online bookseller, Indigo.ca (<http://www.indigo.ca>), is taking to the air with a new wireless venture. The company is developing a new Web site that will be viewable on PCS digital cell phones (specifically those from Bell Mobility), allowing users to shop online while they're on the go.

In creating the site, Indigo.ca enlisted the

help of 724 Solutions, which specializes in secure online banking, brokerage and e-commerce services across a wide range of Internet-enabled wireless and consumer electronic devices.

Indigo.ca also turned to the Bank of Montreal in developing the new site's security features. The bookstore's mini-Web site—which will be launched in April—will have 128-bit RSA encryption and will incorporate the same technology the Bank of Montreal uses to ensure security for wireless banking transactions.

Although it will be small, Indigo.ca's wireless component will offer the same range of music, books, and gifts as the company's full-size Web site.

—Stefan Dubowski

**Star Wars Online expands frontier**  
Star Wars fans can soon become inhabitants of George Lucas' faraway galaxy by making the jump into cyberspace.

To create its first online role-playing game, Star Wars Online, LucasArts (<http://www.starwars.com/>) has some heavyweight help. Online PC game developer Verant, which created the massively popular multiplayer game EverQuest, will develop the PC-based game, and Sony Online will exclusively host the Net play on The Station (<http://www.station.sony.com/>). The game, due in 2001, will be sold at retail (no price set), and monthly subscriptions will be about US\$10.

As with EverQuest, Star Wars Online will be a first-person role-playing game that lets gamers choose from several roles to portray in a huge fantasy world. (EverQuest has more than 200,000 paying subscribers, 120,000 who play daily.) Players' characters perform tasks, tackle quests and do battle. And unlike single-layer games, everything that happens affects the entire fantasy world. In this case, the fantasy world starts with Luke Skywalker's home planet of Tatooine, about the same time the original Star Wars film began.

—Newsbytes



# ADVERTISING INDEX

<b>BOOKS</b>	HI Computers.....70	Datech.....58
Chapters.....121	Hits.....129	<b>NOTEBOOKS</b>
Cybercity.....105	Houston.....47	Angel Computers.....72
Mcgraw Hill.....20	IC Technology.....60	Eurocom.....78
U of T bookstore.....74	ICCT Computers.....77	Notebook Depot.....122
<b>CAREERS &amp; TRAINING</b>	Infotec.....37	Notebook Universe.....115
3D Micro.....110	Input Media.....122	Notebook-City.....105
3P Computer & Network Canada.....108	Intelligent Batteries Inc.....120	<b>OFFICE FURNITURE</b>
C.I.I.T.....111	IPC.....68, 69, 136	Reliance Office/Home Furnitur...114
CANNET Technologies.....111	IT Computer.....99	<b>ONLINE</b>
CICT.....111	JC Computech Inc.....94	3 web CyberSurf Corp.....85
Computek.....106	Just Checking.....53	AEI Internet.....90
Dynamic Computer Associates.....107	K-Matic Global Trading.....70	AT&T.....13, 35, 61
Fazcom Training.....106	Keit Computers.....64	Auction4it.com.....24
Focus Institute.....107	KV Computers.....114	Axiomsoft.....38
Hitech Network.....109	LaCie.....11	Blue Genesis.com.....18
Lancomm.....106	Laptop Closeout.com.....71	CADVision Development Corp.....88
Maverick Solutions.....108	Liata.....45	Capris Communications.....102
Microhard.....107, 109	Linkup Technologies.....75	Computer Pages Inc.....91
PrimeTech Institute.....111	Lintec.....100	DollarHost.....62
SAIT.....123	Logic Computer House.....21	Domain Direct.....29
Toronto Image Works.....106	MDG.....8, 9	Easy Hosting.com.....33
Toronto IT School.....109	Media Realm.....115	Echo Online.....82
U of T Technical Design.....106	MG Computer.....74	Elosoft.....66
Unicom Information Systems.....106	Micro-Star International.....50	ESS.....41
Xincom Computer Institute.....107	MicroPoint.....71	Fairnet Communications.....91
<b>CD-ROM</b>	Microtech Solutions.....113	FunCow.com.....5
CD Creation.....123	Monitor Depot.....27	HomeBase Internet Publishing.....91
Disc Master.....122	MPT Computers.....93	Information Highway.....65
Multimedia Replication Canada.....123	Multimedia Effects.....63	Internet Domain Registrars.....133
Pinnacle Canada.....115	Nav's Computer.....112	Internet Gateway.....86
Quantum Media.....123	Netmicro.....94	Netlink Computers.....96
<b>EVENTS</b>	New Legend 2000.....100	NetNation Internet.....89
Comdex Canada.....132	OZ Tech Computers.....59	Pacific Online Inc.....86
ComputerFest'00.....95	PC Centre.....30, 31	Pathway Communications.....25
NewMedia 2000.....92	PC Village.....42	Paybest.com.....40
Toronto Webgrrls.....119	Perfect System Inc.....113	Primus Canada.....15
<b>HARDWARE &amp; SOFTWARE</b>	Peripheral Express.....103	Site Action.....55
2000 Computers.....98	PowerColor Computer Inc.....101	Sitewarehouse.net.....87
3P Computer & Network Canada.....93	Premier Linux.....112	Tamco Technologies.....97
ABC Computer.....80	Prima Computer Inc.....54	The Computer Shop.....56
ACC Maxsystem.....102	Promax.....99	The Connection.....46
ACM Computer.....110	Rama.....122	Vif Internet.....130
Advanced Computer.....113	Rebel.com.....53	Vision Online.....48
Advantage Computer.....108	Rocket.....97	WEBbuilderinc.com.....122
Artic Computer Distribution.....79	Rogers Computer Technology.....70	<b>RECORDABLE MEDIA</b>
Azura.....19	Ryelle.....131	Western Imperial Magnetics Ltd..122
Banna Computers.....116	Samsung.....17, 49	<b>SERVICE &amp; CONSULTING</b>
Best value Computers.....70	Signa Computer.....39	APO International.....71
Bits & Bytes.....76	SIMMCO.....115	CBL Data Recovery Technologies.....123
BNC.....58	SkyNet.....41	ComNet Services.....122
Brampton Electronic Components.....83	Smart Machine.....23	Copywell.....115
Brother.....57	Softnhard Computer.....97	Data Recovery Labs.....123
Canada Computer.....40	Solution Systems.....114	DataXperts.....122
Canon Canada Inc.....14	Sonnam Computer Network.....71	Digital Tomato.....123
Cellular Battery Corp.....98	Superidea Technology.....84	iCard.....123
Compu-Tel.....115	Techwave Computer Inc.....22	Image Control.....114
Compumemories.....44	The Computer Edge.....43	Monitor Plus Inc.....122
Compusolution Depot.....71	Throne Computers.....36	Nomi Computer-Sense.....122
Computer Second Source.....70	Tomigi.....114	SPD Technonologies.....122
Computer Ultra.....76	Tomken.....67	<b>THE COMPUTER PAPER</b>
Computer Warehouse Outlet.....123	Tribus.....70	TCP Subscription.....124
Computronic.....96	Turbocom Computers.....48	TCP/Funcow Promo.....117
Daytek.....52	Ultinet.....134	Y2K Editorial Calendar.....118
Dell Canada.....2	Union Computer.....78	<b>TELECOMMUNICATIONS</b>
Digital Tek.....64	Viewsonic.....3	2000's Technologies.....66
EdcomTech.....28	Wintel.....127	<b>TONER REMANUFACTURER</b>
Electro Computers.....122	Wintronic Computers Plus.....115	Laser Speed.....123
EMPAC.....7	World's Cheapest Computer Wareh..60	Marvel Laser.....115
Eprom Inc.....84	Yes Computer.....116	
Epson Canada.....10	YHC Cassette Industrial Ltd.....115	
Factory Direct Computer Outlet.....26	Yonge Computer.....110	
G2000 Computers.....95	Zoltrix.....135	
Good As New Computers.....114, 122	<b>MACINTOSH</b>	
H & Y Computer Corp.....71	Clickon.....114	
Hewlett Packard.....12, 32	Simplify Macs.....122	
	<b>NETWORKS</b>	

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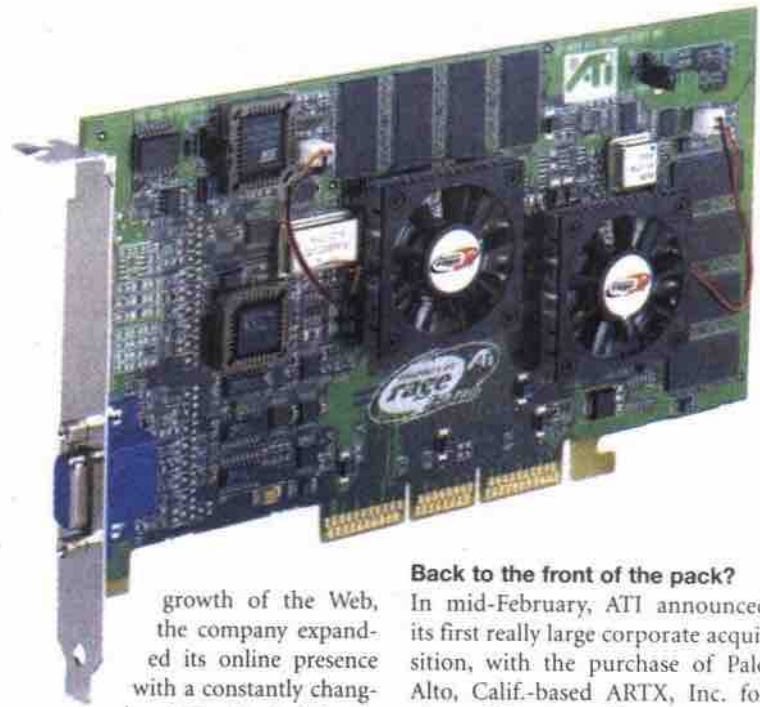
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# The once and future king (of graphics)



Canada's ATI covers the PC graphics market from end to end, while playing catchup to NVIDIA in the 3D gamer ghetto



Founded in 1985, ATI Technologies Inc. has grown to become the largest maker of PC and Mac graphics hardware in the world. Yet, for the last two years, in the high-end, real-time 3D-gaming segment, the Thornhill, Ont.-based firm has been surpassed by two recently formed upstarts, 3DFX and NVIDIA. These two U.S.-based firms have consistently produced hot graphics processors that attract a large contingent of leading-edge software developers, and the graphics cards based on their chips consistently win performance shootouts from reviewers.

Whenever I talk about personal computer graphics with Sean Carruthers, the head of *The Computer Paper's* Test Lab, he rates the graphics performance of PCs using the latest 3DFX and NVIDIA chips well ahead of PCs using ATI RAGE 128-based graphics cards. Yet ATI in general has continued to forge ahead as the market leader in the PC industry. How is this possible?

ATI's mobile graphics chip line has gone from zero market share two years ago to 37 percent of the global mobile graphics market at the end of 1999.

## From soup to nuts

The answer to this paradox is clear if you look at the PC market as a whole, rather than focusing solely on the high-powered, 3D-gaming sector. Unique among graphics chip makers, ATI has developed a line of products that spans the entire

price/performance range from entry-level, budget PCs, to high-performance, big ticket power user PCs. The low-end ATI graphics cards offer decent performance for common tasks, such as running office software and educational multimedia CD-ROMs, and cost less than \$50 in some cases (and much less in bulk, or as chipsets to install on motherboards), making them popular in PCs that are not intended for high performance games or 3D software.

ATI has also developed extremely effective graphics products for the notebook PC market (the Rage mobility line) and for the Apple Macintosh platform. The mobile graphics chip line has gone from zero market share two years ago to 37 percent of the global mobile graphics market at the end of 1999. Apple has bought millions of ATI cards or chips to install in both desktop and notebook Macs, including the ATI Rage 128 Pro for the Power Mac G4 line. Most recently, ATI announced strong support for the Linux market, promising to develop Linux drivers for its products.

## Converging on the future

In conversations with ATI engineers and product managers over the last year, the depth and range of ATI's product strategy for a "converged" world of digital media has been laid out pretty clearly. For example, ATI virtually created the mass market for digital video on the PC with its All-In-Wonder line of multi-function cards. The All-In-Wonder cards combine TV tuner, video capture, picture-in-picture display, MPEG2/DVD digital video playback, as well as 3D graphics acceleration.

There have been lots of other PC TV tuner or entry-level desktop video or MPEG playback cards, but the ATI approach—of offering a huge, well integrated set of video features on one card—has enabled it to sell around 1.5 million All-In-

Wonders over the last few years. ATI has concentrated enormous efforts on delivering good quality MPEG video playback from its graphics chips. This has given it a great advantage with makers of PCs that come with a DVD drive.

In December, ATI announced its Rage SDTV and Rage HDTV products, which it claimed were the "most highly integrated set-top box video/graphics controllers ever developed." The ATI digital video controllers are likely to appear over the next year in some of the first affordable digital video devices aimed at a wide market. As higher resolution, better quality digital video becomes a growing part of the broadcast and cable TV industry, ATI technology may become a standard for the set top box and in-monitor electronics that will bring digital TV to millions of North Americans.

ATI has also worked hard for 15 years to establish strong relationships with both its PC-

growth of the Web, the company expanded its online presence with a constantly changing Web site (originally, <http://www.atitech.com>, which was recently changed to <http://www.ati.com>).

## 'ATI Inside'

The company maintains a comprehensive System Builder Program that has recently been enhanced with a "real-time response" capability, to try to get graphics components shipped to PC manufacturers immediately after an email request is received. ATI was voted the number one vendor at the PC industry's System Builder Summit last fall, on the basis of how effectively it has met PC makers' needs.

Outside of North America, ATI's products have been accepted by companies such as Panasonic, which chose the mobile Rage LT Pro graphics chip for its WILL, ultra-compact PC. Sony announced in February that it had selected the Rage 128 Pro AGP 4X chip for its VAIO Slimtop LCD computer.

ATI has even moved outside the traditional personal computer graphics market with a contract to sell ATI Rage 128 GL chips to Sun Microsystems, for use in the Sun Ray Enterprise Appliance.

Most of the major PC desktop and notebook makers are now ATI customers, and ATI's innovations in desktop video, digital video and high definition TV (HDTV) have brought partnerships with Microsoft, General Instruments and Sony.

## Back to the front of the pack?

In mid-February, ATI announced its first really large corporate acquisition, with the purchase of Palo Alto, Calif.-based ARTX, Inc. for about US\$400 million. ARTX, a leading developer of 3D/graphics and multimedia technology, was purchased in an effort to boost ATI's ability to compete in the future PC and consumer electronics markets.

And, in late February, ATI announced a new, integrated chipset, the S1-370TL, aimed at the budget PC market, offering very high price/performance for general purpose PCs.

ATI showed it was once again ready to go head to head with NVIDIA and 3DFX, when it announced its Charisma Engine and Pixel Tapestry Architecture in early March. ATI claims the new chips will deliver a tenfold increase in 3D graphics power. No doubt, NVIDIA and 3DFX will have their own announcements of new generations of 3D chips in the months to come (NVIDIA has been chosen to supply graphics processors for the forthcoming Microsoft X-Box).

What all the players in the PC graphics market should keep in mind, however, is that they are no longer playing in a PC-only world. Over two-thirds of games software sold in North America in 1999 was for video consoles, such as Sony PlayStation and Nintendo 64. This fall, PlayStation 2 will land in the North American market, with an undoubtedly large impact on the PC 3D-gaming industry. When that happens, ATI's ownership of so many different parts of the graphic market, and its ventures into digital television and mobile computing, may cushion it from the post-PlayStation 2 fallout better than its hotshot 3D rivals. □

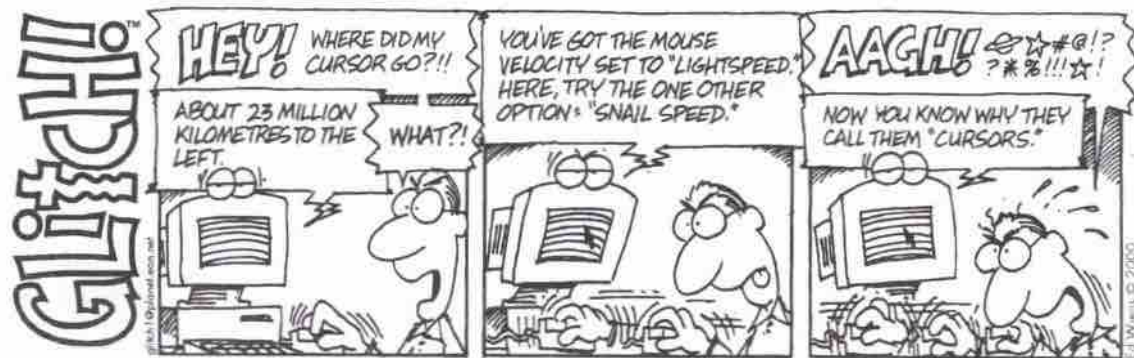


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THE LAST BYTE



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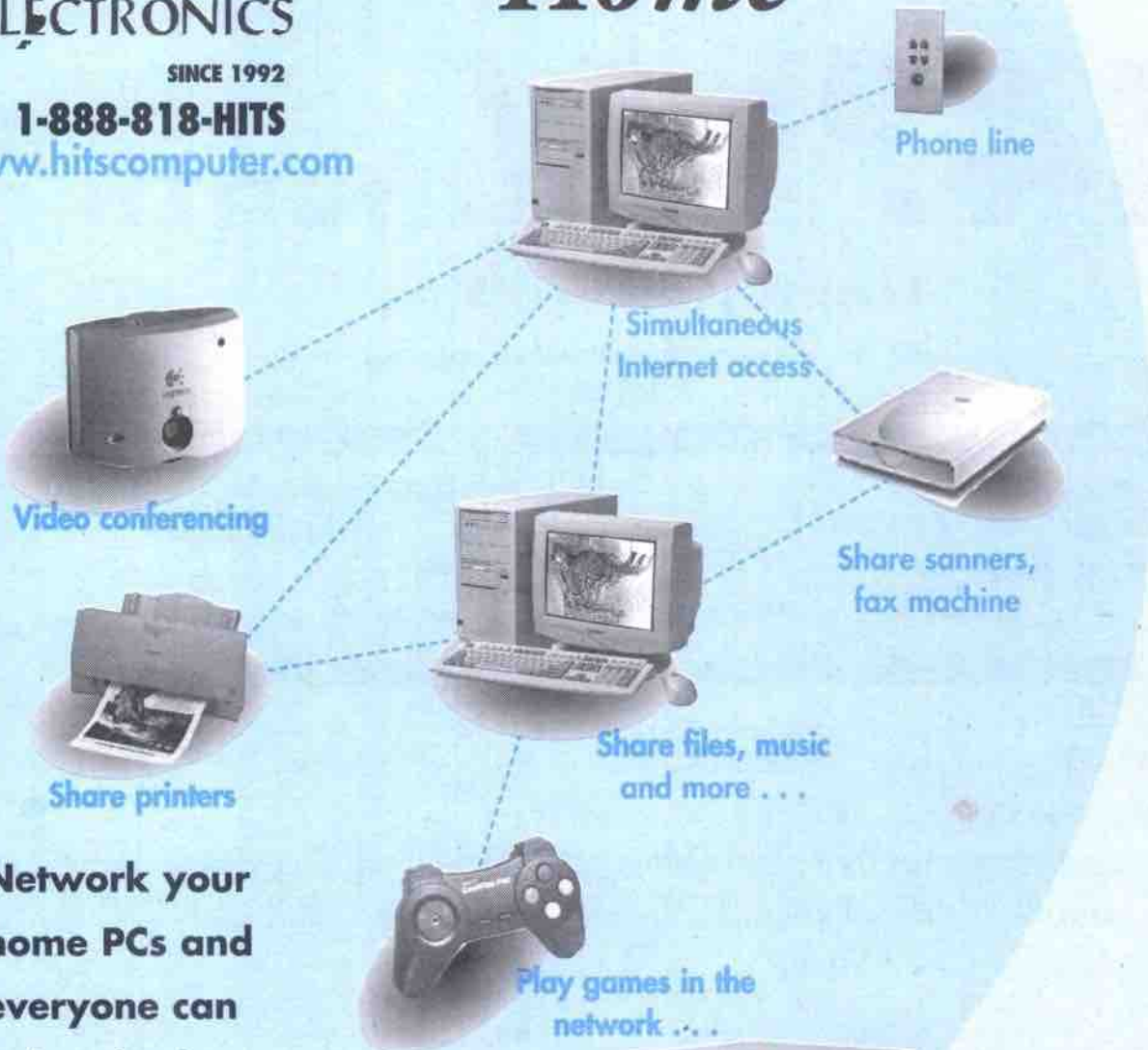
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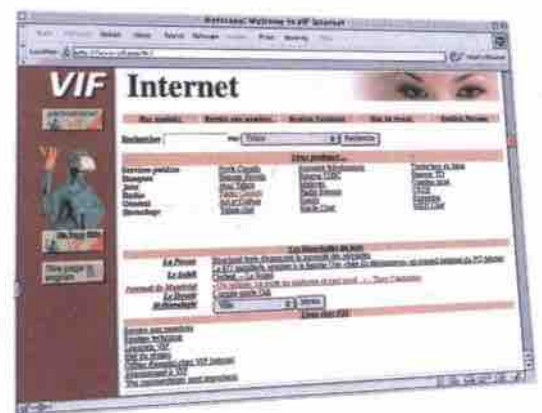
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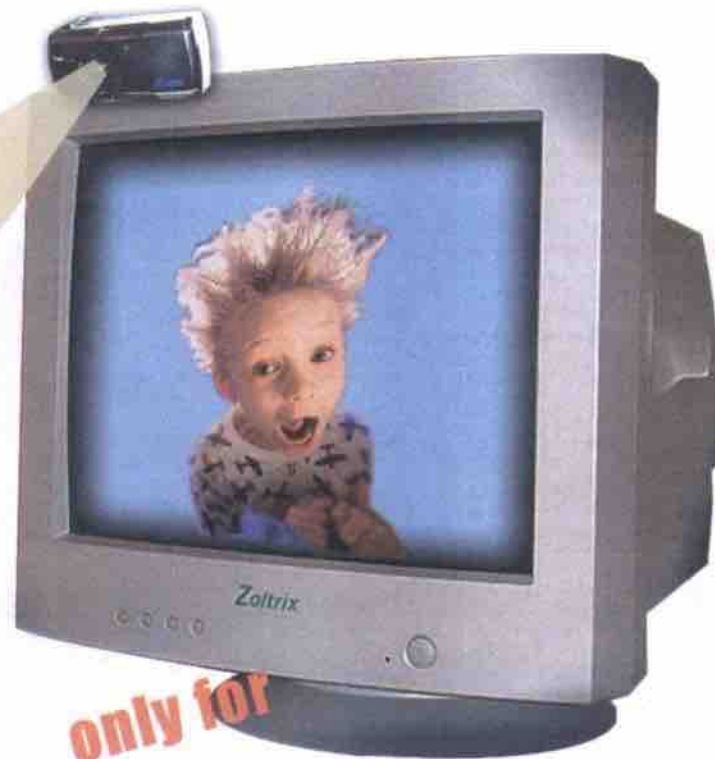
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### FEATURES

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- Full motion video capture
- Sizable TV with moveable windows
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- Supports Microsoft Web TV
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- USB Gamepad and Game
- Philips Free Speech 98
- Corel® WordPerfect® Family Pack
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- Microsoft Gamepad and Game
- Philips Free Speech 98
- Corel® WordPerfect® Family Pack
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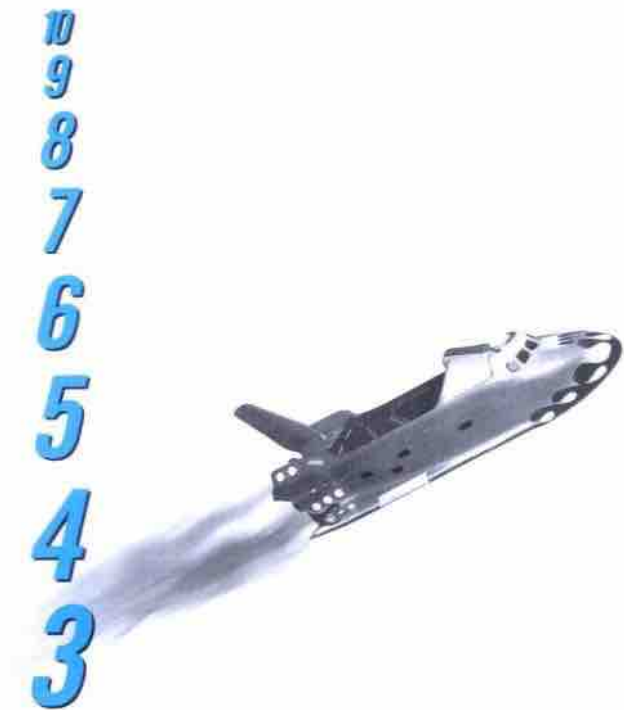
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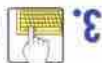


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1. Follow the easy instructions and you'll be online in minutes!



2. **WINDOWS USERS:** If installation does not begin automatically, click **Start** on the task bar (**Windows 3.1** users click on the **File** menu of your **Windows Program Manager**) then select **Run**. Type **D:\SETUP** (or **E:\SETUP**) and press **OK**.  
**MAC USERS:** Double-click on the install icon. (AOL 4.0 for MAC)



3. Insert the enclosed AOL Canada CD-ROM into your CD-ROM drive.

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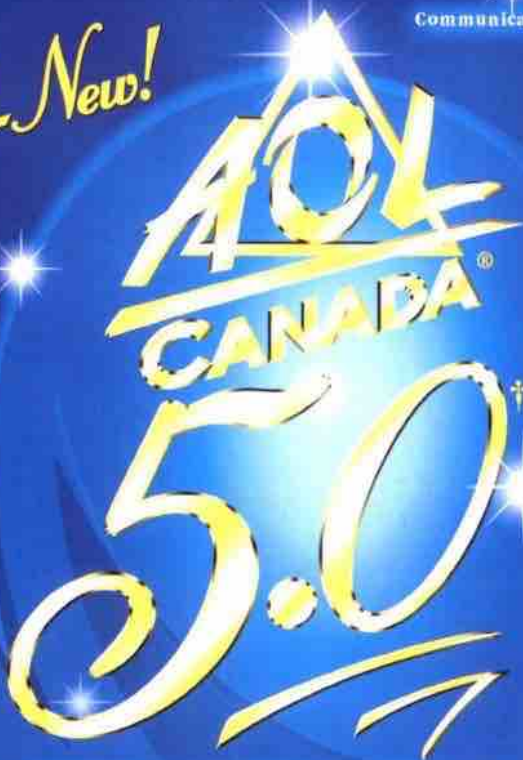
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- 1 Insert the CD-ROM into your computer's CD-ROM drive.
- 2 **Windows® Users:** If installation does not begin automatically, click **Start** on the task bar (Windows® 3.1 users click on the File menu of your Windows® Program Manager) then select **Run...** Type D:\SETUP (or E:\SETUP) and press OK.  
**MAC Users:** For AOL 4.0, double click the **Install** icon.
- 3 Follow the easy online instructions to install AOL, and when prompted, enter the registration number and password found below for your FREE trial.

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