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ZERO1 Awards

The Best Products of the Year 2003

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zero1
AWARDS
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A Year in Innovation

As this year draws to a close, information technology finally seems to have found its feet and emerges from the turmoil of the year before, stronger and more mature. Looking back at the best technologies of the year, it is very satisfying to see an upsurge in accessible innovation, defined by sub-Rs 20,000 PCs that can actually do everything reasonably well. The domination of tech-toys has given way to technology that focuses on solving problems and enabling new avenues for work and pleasure.

Who says technology is stagnating? If anything, technology leaders have taken to innovation as a means of catalysing growth. 64-bit hardware is finally here, with two relative dwarfs, Apple and AMD, beating the big guys to the desktop. You won't see the impact of this paradigm shift anytime soon, but it lays the required groundwork for the next year, when we should see richer applications enabled by these processors. With the new push towards wireless and mobility, jacking-in to the network anywhere is a breeze. As the Sony Ericsson P800 and the Handspring Treo 600 converge from opposite corners towards the ultimate connected handheld, it has never been easier to stay connected to the pulse of information and humankind.

The spirit of computing, embodied by versatile, smart appliances, grows beyond the beige box. In their new physical avatars, computers finally present a challenge to the idiot box. While digital music has led the entertainment charge for the last few years, visual media are all set to invade your desktop. Digital cameras may have been beyond the reach of most pockets, but this is the year many Indian brands are planning low-cost 3-megapixel cameras.

Recorded video is another story though. We have been playing hide-n-seek with DVD for 3 years but have yet to see the acceptance of this significantly superior medium. Now that DVD writers are approaching affordability, that might change.

The year ahead may turn out to be the year that the PC firmly establishes itself as the centre of digital everything. For now, we acknowledge the impending transition with the first free movie distributed with a magazine, as a VCD.



sumod_hajela@jasubhai.com



Sumod Hajela
Assistant Editor

“In their new physical avatars, computers finally present a challenge to the idiot box.”

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HARDWARE

Bazaar 84

- Altec Lansing 641 4.1 speakers
- Creative Inspire T7700 7.1 speakers
- EasyDisk 128 MB USB drive
- Emerge UPS 600
- Gigabyte GA-7NNXP motherboard
- MSI 865PE Neo2 motherboard
- SONY SDM-N80 18.1-inch LCD monitor

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- Apple iPod MP3 player
- BenQ v991 CRT monitor
- Canon Ixus 400 digital camera
- Canon S530D Photo inkjet printer
- Creative Megaworks THX 5.1 550 speakers

- EasyDisk 128 MB USB drive
- Gainward GeForce FX 5900 Ultra (256 MB) graphics card
- Gigabyte GA-7NNXP motherboard (AMD)
- HP 4570c scanner
- Maxtor MaxLine Plus II 7Y250P0 hard drive
- Microsoft SideWinder Precision 2 joystick
- Microsoft Wireless Optical Desktop Elite
- MSI 865PE Neo2 motherboard (Intel)
- Pentium 4 3.2 GHz processor
- Samsung ML-1710 laser printer
- Sony CRX 300A combination drive
- Sony Ericsson P800 mobile phone
- SONY SDM-N80 18.1-inch LCD

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- Xerox WorkCentre Pro 412 multi-functional device
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- Xandros 1.0
- ZoneLabs ZoneAlarm Pro v3.7.159

ON THE 6 CDs



You're in for a treat this month! We have six CDs filled with amazing software, an entire technology encyclopedia, topped off with a Hollywood blockbuster movie, Ice Age... Enjoy!

CD 1

SMART@OFFICE

Work smart, not hard. Make productive use of your PC at work and be the envy of your colleagues. Manage e-mails better, instantly convert printed text to typed text, manage your contacts and inventory, and do lots more.



CD 2

QUICK@UTILITIES

Want to keep your PC running in optimum condition? This CD helps you do just that. Dive into this CD for virus scanners, firewalls, FTP clients, file managers, general tweak-ers, registry tuners and more!



CD 3

FAST@INTERNET

If you prefer riding the Internet rather than letting it ride you, this CD is for you! It has loads of software that let you resume broken downloads, surf faster, share your Internet connection, weed out spyware, and search the Internet better.



CD 4

FUN@HOME

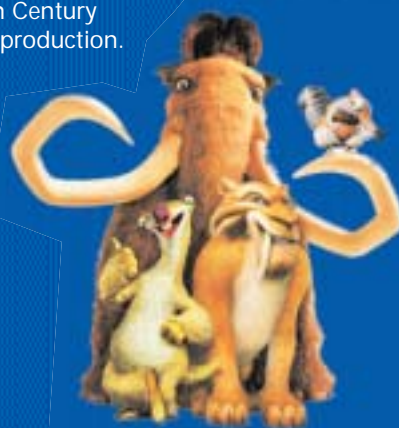
Add a dash of fun to your PC with this CD, which offers you a hand-picked collection of screensavers, window theme managers, calendars, icon managers, screen-capturing software, desktop enhancement applications and much more.

Powered by



ICE AGE

For the first time ever, a movie with a magazine! We bring you the Video CD of an Oscar-nominated movie. Set about 20,000 years ago, Ice Age tells the tale of Sid the sloth, Manny the mammoth, Diego the tiger and Scratt the squirrel. They come across a dying mother who hands them her toddler with the hope that someday, the child would be united with a migrating tribe. Watch the four brave adverse environmental and physiological conditions to meet their goal, in this beautiful 20th Century Fox production.



TECHNOLOGY ENCYCLOPEDIA

Immerse yourself in this comprehensive compilation of technology terms. Learn the meaning of terms such as Phreaking, Smartcard, Active Directory, WINS and Gopher in plain English. As a bonus to Digit Readers, we've included a hand-picked collection of Tips & Tricks on a dozen different categories. Use them to maximise the productivity of your computer, and mould it to suit your needs!



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WEB SPECIAL



Power on the Move
A closer look at some of today's mobile power sources and a peek at what's just around the corner

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Mindware

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Size: 174 MB
Playware

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Let the penguin pinch your pennies



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news feed

DIGIT | DECEMBER 2003

hypethesis

Bluejacking

■ What Is It?

Sending anonymous messages via Bluetooth is referred to as Bluejacking. Bluetooth-enabled devices, such as PDAs and mobile phones that are set to 'discoverable' mode in the range of the sender's device, can be bluejacked.

■ How Is it done?

The bluejacker, as the sender is called, searches for Bluetooth-enabled devices in the area. A contact entry is then created where the message is the name of the contact itself. This contact entry is then sent to the pre-selected victim.

■ How do you prevent it?

Devices can be hacked into using bluejacking. So, enable Bluetooth only when needed. Also, ensure that you disable the discoverable mode in the Bluetooth menu. This prevents others from discovering you when they search for Bluetooth devices in the vicinity.

KaZaA goes desi

Film makers Aum Creates have struck a deal with Australia-based content providers Altnet Networks, to distribute the Indian movie *Supari* over KaZaA. This deal marks the first time a full feature movie will be legally sold over a P2P network. "KaZaA has already managed to create widespread awareness for *Supari*. Selling the full movie is the next logical step, and with a relatively low-budget movie,

this is a cost-effective way to reach the masses", says Padam Kumar, the director of *Supari*.



ILLUSTRATOR: Mahesh Benkar

Altnet Network is a partner of Sharman Networks, the distributors of KaZaA. The deal allows the 60 million users of KaZaA to download the movie for US \$2.99 (about Rs 150). Apart from the movie, users can also download individual songs from the movie. Nikki Hemming, Sharman Networks chief, has said that about 4 per cent of the users who saw a preview of the movie have already bought it.

Sony PSP to be a 2-in-1

Sony has revealed early prototype images of PSP—its hand held gaming device. It will contain two processors, based on the 32-bit MIPS R4000. There will also be two graphics processors. The sound subsystem, Virtual Mobile Engine(VME), is capable of 7.1 channel output. Communication is handled via USB, IrDA, 802.11 and a 4.5-inch, 480 x 272-pixel LCD screen. The storage subsystem, called Universal Media Disc (UMD), is a



DVD-like disk offering a capacity of 1.8 GB. The design of the device hasn't been finalised. Sony is trying to position the device along the lines of Nokia's nGage. Also, the PSP will not be a single device, but a

range of devices with different sets of features. Apart from games, the PSP will be able to play back MP3, AAC, and ATRAC3 sound formats. It will compete against the likes of MP3 players such as the Apple iPod.

Cheaper calls

Net4India announced a reduction in calling rates over the Net by 20%. The revised rate, from Rs 4.95 to Rs 3.95 per minute, will be effective to 14 destinations including the USA, the UK, Canada, France, Singapore, Germany, Australia, and Hong Kong.

HP assembles

According to IDC, about 70 per cent of the Indian PC market in 2003 was held by local assemblers. Taking this into consideration, HP has launched International Modular Premium Assembled Component Technology (IMPACT). Under this scheme, HP will provide local assemblers with a kit consisting of a cabinet, motherboard, floppy drive, keyboard and mouse. Other parts such as the processor will be provided as optional components. Redington, a Chennai-based distributor, will provide the service and warranty. →

snapshot

IBM has sold its **20 millionth**

ThinkPad Laptop, making it the best selling Laptop model.

Source: ibm.com

China dumps DVD

China will announce the indigenously-developed industrial standard for the Enhanced Versatile Disk (EVD) next month. Zhang Yijun, deputy chief engineer of the Shanghai-based SVA group, is confident of the

next-generation digital disk technology, as China will now possess important intellectual property

According to experts, EVD players will offer five times the image definition offered by DVD players.

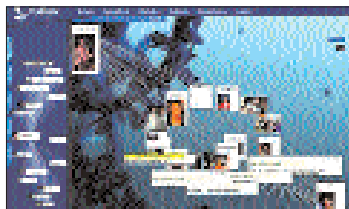
■ Toshiba develops a 40 GB hard drive that weighs 62 gms ■ AMD expects to stop production of 32-bit processors by the end of 2005

Microsoft to sparkle and wallop

Microsoft is developing an animation toolset—code-named Sparkle—as a part of Longhorn, the next version of Windows. Sparkle has already been put to use—the clock in the side bar of Longhorn was developed using Sparkle. This tool, which is expected to be released before Longhorn is shipped, is causing a lot of hype in an industry that sees it as a replace-

ment to the popular Flash, but Microsoft is quick to explain that Flash is a Web-based, platform independent tool, while Sparkle will just be a Windows application development tool.

Social computing is another direction in which Microsoft is moving. The company announced that it is working on a tool called Wallop, which combines



blogging and social-networking capabilities. Although the tool was not made public, Microsoft did display some screenshots.

redalert

W32.Dumaru.a@MM

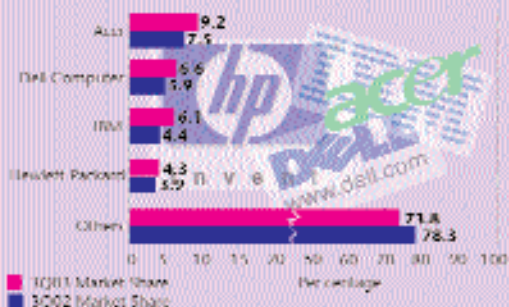
This mass-mailing worm arrives in an e-mail attachment as a .exe file. After infecting the host computer, it uses its own SMTP engine to e-mail itself to all contacts stored locally. It copies itself into the Windows folder, adds a few registry keys, and searches for .htm, .wab, .html, .dbx, .tbb, and .abd file extensions to spread the infection. Additionally, PWS-Narod—a password-logging program—is installed, which provides hackers an entry into the PC. Visit <http://securityresponse.symantec.com/avcenter/venc/data/w32.dumaru@mm.removal.tool.html> for a removal tool.

W32.Mimail.i@MM

W32.Mimail.i@MM is a worm that steals credit card information by posing as an e-mail from an authorisation Web site called PayPal.com. The message indicates that your PayPal account will expire unless you run the attached applications and provide your credit card information. It then attempts to e-mail this information to four different e-mail addresses hard-coded into it. It also tries to connect to www.akamai.com and send the same information to ppinfosys—a group of e-mail addresses. Visit <http://securityresponse.symantec.com/avcenter/venc/data/w32.mimail.removal.tool.html> for details on how to remove the worm.

statattack

Asia-Pacific PC Unit Shipment Estimates of units for third quarter 2003



Source: Gartner

Estimates by country for third quarter 2003



Source: Gartner

INFOGRAPHICS: Sachin Davi

Virtual PC in production

Microsoft has announced the Release to Manufacturing (RTM) of its virtual machine solution—Virtual PC 2004—which will be available by the end of 2003. Using Virtual PC, multiple operating systems, including all Microsoft's operating systems, as well as OS/2, can be run on a single computer. One operating system is installed as the host, while the others are installed as guests.

Virtual PC is based on a technology from Connectix Corp., a company that's been into development of virtual machines since 1988. Microsoft has added support for four network adapters, XML file-based configuration, and support for memory up to 4 GB. It has retained earlier features of Connectix's

■ Apple unveils the new iMac all-in-one desktop that comes with a 20-inch display ■ Microsoft starts testing MSN Newsbot—a personalised news search service



A Novell Spree

Novell has announced that it is taking over one of the leading Linux companies—SuSE. Novell will pay \$210 million in cash; the acquisition is expected to be completed by January 2004. In August 2003, Novell acquired Ximian, another Linux-based company. Acquiring SuSE will allow Novell to offer complete Linux solutions, from desktops to enterprises. Such a deal will make Novell a serious player in the Linux market.

However, SCO, a Unix-based company, claims that it inherited a non-compete agreement from Santa Cruz Operations when it bought the latter's Unix business in 2000. This agreement prevents Novell from competing with SCO; by distributing Linux, Novell would be competing with SCO.

SCO has also hinted at taking the copyright infringement fight beyond Linux; it's now looking at Berkeley Software Distribution (BSD)-based OSes such as FreeBSD, OpenBSD, NetBSD, and possibly Apple.

snapshot

MSN reports profits for the first time in 8 years

Source: Yahoo!

The great Xbox shuffle

Control over hardware is key to the success of a gaming console unit. So, Sony uses made-to-order chips from IBM, ditto Nintendo.

How does this afford control? Take the Xbox as an example. By using an Intel Pentium 3 processor as the heart of its system, the console is only a few hacks away from becoming a low-cost PC.

There's another reason—piracy. Piracy is rampant on the DVD-based Xbox system. A console draws revenue by selling games, and piracy quickly becomes a

major headache.

To tackle these issues, Microsoft recently made several announcements. Two major contributors to the Xbox are out of the game:

Intel and nVidia. Microsoft has recently signed a technology deal with IBM that will power future Xbox products.

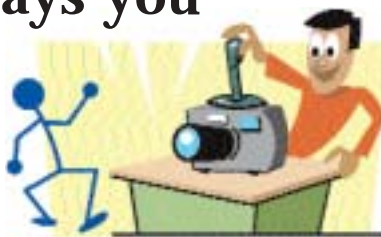
Microsoft also announced that SiS will supply the chipset technology for the future console. Finally, to replace the nVidia graphical powerhouse of the current Xbox, Microsoft has signed on ATi—nVidia's arch-rival.



EyeToy plays you

What started as an underwater camera meant for automated surveillance of marine life is now visiting the largest selling gaming console—the Sony PS2. The EyeToy is a PS2 peripheral that jacks into the unit's USB port. Richard Marks, a 34-year astronautical and aeronautical engineer, was the brains behind it.

The camera gained popularity because it is able to track movements of players and translate those into the game being played. This flattens the



learning curve involved.

EyeToy's technology was originally developed for more dangerous missions—the video sensors can be used to track schools of jellyfish, perform outer-space repair jobs, and to clean up nuclear waste. Sony's Vaio laptop division has already expressed interest in the prototype.

heroes

System Emulators

Microsoft and Intel—the pioneers of the Wintel platform—are working on system emulators. Intel plans to provide support for virtualisation at the hardware level with its Vanderpool technology.

Online Music stores

Following the success of Apple iTunes, almost all the top-tier companies such as Dell, Sony, Real Networks, etc., are starting online music stores. Microsoft has announced plans to launch one next year.

zeroes

Electronic Bugs in Cars

Bugs in computer controls are causing luxury cars such as the BMW 7 series, Mercedes-Benz S-Class and E-Class to behave in a weird manner. CDs spit out at passengers, the fuel gauge shows a faulty reading, and at times the engine switches off on the highway!

Red Hat Desktop Linux

Red Hat will drop all support for desktop Linux from April 2004, retaining it only for the Enterprise Edition. Red Hat has also started Fedora—a community project through which it provides free products, sans any support.



■ Kasparov draws with the X3D Fritz computer. The match was played on a virtual floating chess board ■ HP plans to enter the television market

Mr. Santa Claus

Think beyond Red and White.

Microsoft

G5 Fastest? Not in the UK

The Independent Television Commission (ITC) of the UK has banned the television commercial of Apple's 64-bit personal computer, the G5. ITC says the ad claims that the G5 is the world's fastest, most powerful personal computer, without sufficient evidence. Though Apple backed its findings in a white paper on its Web site, ITC says that the claim was based on the results of limited tests, in which the specifications of the computers were configured to give Apple the best results. Apple says the tests were done by Veritest, an independent lab, and that it fully disclosed the methods used in the tests to keep the process transparent. Apple has now modified its Web site, and is calling the G5 'the world's first 64-bit personal computer'.

snapshot

725 new software flaws and **823** worms & hybrid threats found in the third quarter of **2003**

Source: www.iss.net

Web sites held ransom

The latest innovation in criminal ideas is online extortion. In Eastern Europe, criminals are using hacking threats to extort money from online business houses. The targets are businesses such as retailing, betting and payment providers, who depend on

online trade. A British online betting site was brought down, and it received a threat that it would happen again if it refused to pay. When it refused to do so, the site was brought down again. National Hi-Tech Crime Unit, the British agency responsible for tackling hi-tech crime, was then put on the case.

Betting sites, especially, seem to be a favourite target—a dozen betting sites based in the US were also brought down and asked to pay \$50,000 a year to get respite from the attacks.



ILLUSTRATOR: Mahesh Benkar

Collect bounties on virus writers

Microsoft has created an anti-virus reward programme to net people who release worms, viruses or other malicious code on the Internet. The initial \$5 million of funds will be used for monetary rewards to those who help in arresting such people. Residents of all countries will be eligible for these rewards.

As the first step of this program, Microsoft has announced a reward of a quarter of a million dollars to anyone who helps finding the per-

son responsible for the MSBlast.A worm. Although arrests for the B and C variants have been made, the person responsible for the original worm is still unknown. MSBlast was designed to attack Microsoft's Windows Update Web site. The second reward has been announced for information resulting in the arrest of the person responsible for the Sobig virus. Messages from Sobig's B and C variants appear as if they're from Microsoft, and attack individual PCs.



Spam

Smart anti-spam

SmartScreen—a junk-e-mail filtering technology—uses an algorithm based on probability to determine spam. The database that this technology uses consists of feedback from users who volunteered to review e-mails to identify spam. An e-mail arriving at Microsoft's e-mail server, or a client running SmartScreen technology, is studied for the occurrence and pattern of more than 500,000 words to distinguish spam from legitimate e-mails. This technology has already been incorporated into Outlook 2003, MSN 8 and Hotmail, and will be available in other products as well.

Circumventing spam

AT&T has received a patent for a technique that circumvents a junk mail filter that uses duplicate detection to identify spam. To circumvent the filter, the e-mail addresses are grouped in different sub-lists and a set of different messages is created. Each sub-list is sent a different e-mail message, thus rendering duplicate detection redundant. A&T is expected to use this patent to sue spammers who use such techniques, thus helping to reduce spam.



■ Intel plans to make a huge investment in supercomputing research and develop the fastest supercomputer using Itanium 2



Big little super-computer

Clustering is fast becoming a reliable means of extracting super-crunching power. The third most powerful supercomputer consists of 1,100 dual-processor Apple G5 computers. Dubbed the Big Mac, it clocked in



10.3 teraflops per second.

Another interesting system is a TV-sized model that consists of 1,000 CPUs based on the Power PC processor technology. The project's goal is to build a computer capable of one thousand trillion operations per second.

Interestingly, processor technology will also be the foundation of the new gaming consoles from Nintendo and Sony. Sony claims that the Cell processor—the heart of the upcoming PlayStation 3—is capable of being a super-computer on a chip. The processor used in the mini-supercomputer contains five network controllers and 4 MB of L3 memory, and runs at 700 MHz.

The chips are less expensive and consume less power than traditional microprocessors, making it possible to pack the same amount of computing power into a smaller space.

Walkie-talkies of the near future

Nokia recently announced the 5140 cell phone, touting it as a walkie-talkie for the masses. The 5140 is based on push-to-talk technology that lets you chat instantly with fellow 5140s at the push of a button.

The unit is a tri-band model slated for release in the second half of 2004. It will be priced between \$150 and \$200 in the US; Asian pricing has not yet been announced. It also sports a digital compass, an integrated VGA camera, and support for the GPRS and EDGE com-



munication technologies.

Samsung Electronics, in reply, announced the SCH-V410 that records up to 2 hours of video! It also offers an MP3 player with dedicated external buttons that act as a universal remote control of sorts, for home appliances.

The inbuilt camera claims to compensate for backlighting and sports a flash. You can also play back video on its 262,000-colour TFT internal screen and extra information on the 16-grey OLED external screen. Currently a Korea-only model, the unit is priced at around \$600.

tomorrow's technology

Plastic Memory

Research at Princeton University and Hewlett-Packard's HP Labs has revealed a new way to store data on plastic. The memory is built using a combination of plastic foil and silicon. Data is stored by applying a strong current to a polymer fuse, blowing it and changing its conductivity. Lower voltages are used to determine which fuses are blown, thereby determining the zeros and ones that make up digital data. Data is stored perma-

nently. This suits applications such as accounting and digital imaging. Recently, AMD bought Coatue, a company that is developing plastic memory with 15 times the storage capacity of DRAMs. Earlier this year, researchers from the Indian Association for the Cultivation of Science and the Italian National Research Council unveiled another technique for storing data on plastic, but the memory was not stable for more than an hour.

quoteworthy

"I'm getting a lot of advice...One person suggested we unload Java. There's a good idea. Ford, why don't you unload cars?"

Sun CEO, Scott McNealy on the suggestions received by the company

"I think God put me on this world to challenge big companies."

Michael Robertson, CEO Lindows, when asked why he was always gunning for the top players

"It's no fun to go into a market that Microsoft is in, but it's even worse to go into a market they aren't in"

Senior Vice President for Macromedia, David Mendels, referring to the expected competition from Microsoft

snapshot

Intel invested over **US \$200 million** in more than **100** companies world-wide last **year**

Source: venturewire.com

■ Korea plans to wire the entire country with a 50-100 Mbps network ■ Yahoo! launches a toolbar with popup blocker ■ Wal-Mart plans to open an online music store



Installing Win98 on a 486

Today, everyone needs a computer, but what most people don't realise is that not every application needs a gigahertz monster such as a Pentium 4, 3.2 GHz, or an Athlon XP 3000+.

You pointed out in your 'More For Less' article, in November 2003, that Windows 98 requires at least a Pentium to run on. So, a bunch of Engineering friends and I set off to beat team Digit, and going just that little bit lower. We tried to install Windows 98 on a spare 486 with 16 MB RAM and a 1 GB hard drive, and it worked! It took 14 hours to install, but we could now practise our C and C++ compiling on it. Our next project is to install Windows XP on it. Do pray for us, team Digit!



ILLUSTRATOR: Mahesh Benkar

Darshan Sukthanker

Via e-mail

Dear Darshan,

Congratulations! Your patience is remarkable. Your 486 with 16 MB of RAM is indeed the official minimum recommended hardware for Windows 98.

However, this excruciatingly slow example just goes to show that anyone using Windows 98 on less than a Pentium will enjoy long, leisurely coffee breaks. It will be interesting to see if you can get Windows XP installed on it—do keep us posted. However, be prepared to put your hard disk through a huge thrashing test, as the swap file attempts to compensate, if the installation does proceed.

All the best!

digit

Big names missing

Dear Sumod,

You guys did a good job on the November 2003 issue. I loved the second-hand PCs story, and it taught me a lot. I was surprised that you didn't include big brands such as Dell, IBM and Sony in your test drive section, and even left out Compaq and HP in your PDA test. May I know the reason for this?

Nitin Garg

Via e-mail

Dear Nitin,

We do make every effort to get all available products, and indeed, pride ourselves in having comparison tests that cover the broadest range of products. However, there are a couple of reasons why we sometimes can't get every product that you could buy. Most commonly, these products are not sold in an organised way, such as the PDAs you mentioned. More expensive products are usually only imported on order. Also, some established companies sometimes do not want to have their products compared against others, and would rather have customers rely only on their advertisements for information. In such situations, we have no choice but to skip those companies.

digit

Forum and DVD

I noticed that Digit doesn't answer all Q&A questions, so why not start a forum where people can get their questions answered?

Also, I loved your DVD issue, and hope that you will make it a quarterly affair. You can bundle all the software of the previous 3 months onto the DVD. I would gladly pay Rs 150 for such an issue, because it would solve my storage and backup problems by having all my favourite software on a single DVD.

Vaibhav Mehra

Via e-mail

Dear Vaibhav,

Digit already has such a forum, at www.thinkdigit.com/forum, which you are welcome to join. We have a lively group of readers who may be able to assist you with your problems, and you can share your experiences to help some of your fellow readers.

The concept of distributing software on DVD-ROM on a regular basis has a little way to go. Many of you do not have access to DVD drives, so we will stay with only providing DVDs that add to the CD offerings, for the near future. However, we look forward to being able to provide much more on regular DVDs as soon as the format becomes more commonplace.

digit

Thank you, Prayaas Rana

Dear Digit,

I would like to thank Prayaas Rana for drawing our attention to this extraordinary free e-mail alternative to Hotmail, Yahoo!, et al. After reading about it (in Readers Letters, November 2003), I immediately connected to the Internet to give it a go. It was, as we were told, amazingly slick and fast. It was exactly what I was looking for. I was sick and tired of deleting scores of junk mail. It just goes to show how competitive the Internet is, and that there are bigger and better services out there.

Arjun Behuria

Via e-mail

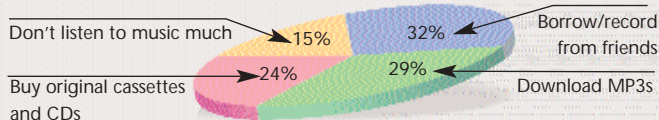
Dear Arjun,

Hotmail with its simplicity does have benefits for people new to e-mail, but may not satisfy power users. The one definite principle of the Internet is that there are always alternative routes, services and options. If, like Prayaas, you have suggestions or tips to share with your fellow readers, do write in to us.

digit

digit READERPOLLS

Q. How do you get your music?



Responses: 2,143

This month's question:

Do you buy second-hand hardware?

- ☐ Own a second-hand computer
- ☐ Own some second-hand components
- ☐ Don't trust second-hand hardware reliability
- ☐ Never considered buying second-hand hardware

Log on to www.thinkdigit.com and vote

Your vote counts

Happy with helpdesk

I am a regular reader and subscriber of Digit. Last month, I was extremely annoyed to find that my copy of the magazine had not been delivered. I promptly sent off an angry e-mail to your help desk, expecting it to take a few more e-mails to get my copy. However, I was pleasantly surprised to receive the copy within 2 days! Keep up the good work!

Abhijeet Ahluwalia

Via e-mail



I am a Digit subscriber who was lucky enough to claim the special 10-CD pack offer for a one year subscription.

Unfortunately, the second Linux CD was damaged, and refused to be read by my CD-ROM drive. I sent an e-mail to the help desk indicating my problem. I received a prompt reply, as well as a replacement CD. Now, I can install Linux and join the Open Source movement. Thanks a lot.

Dr M Saravanan

Via e-mail

Dear Abhijit and Dr Saravanan,
Over the last few months, the customer service team has been working hard to optimise procedures based on subscriber feedback. They are delighted by your acknowledgment of their efforts.

digit

Q&A in PDF?

The Q&A booklet was quite an achievement. However, in today's electronic age, I feel a PDF format would be better suited. Instead of searching through the booklet, or reading it like a novel, we could just press [Ctrl] + [F] and search for a keyword. Think about it!

Aditya

Via e-mail

Dear Aditya,
We are in the process of examining the demand for making more of our content available as PDFs. While a few of our readers have asked for PDFs of the magazine and additional content on the Digit CDs, we need to balance that against the usage of the same space for additional software. We would like to hear our readers' opinions on the matter, so please keep writing in and let us know.

digit

Goof Ups

- The person in the photograph of November's Qubit quiz was Mr Ted Hoff, and not Vinod Dham, as was inadvertently mentioned.
- Similarly, the answer to Q. 4 of the aforementioned quiz is option 'b', and not option 'a'.

Notice any goof-ups?

Write to goof@jasubhai.com

From the Forum (www.thinkdigit.com/forum)

Gunshot Silence

Digitized!
Joined:
02 Nov 2003
Posts: 122
Location:
Lucknow

Posted: Fri Nov 07, 2003 6:57pm Post subject: I won a 3 month subscription!!

Hey all ,

I won a 3-month subscription free!

The other day, I was ill in bed when my mom said, "Digit *ala ahe*" (Digit has come). Being half asleep, I didn't reply. Strange! Our bulding library subscribes to it. I asked my Dad to start getting Digit for it when he was the secretary last year. The other kids and I, have to fight to read it first. Then, why did it arrive at my doorstep? It then dawned upon me that it's because I entered the Samsung contest and won, and I forgot about it. I didn't expect to get a free subscription. It's also the first time I won a contest. Thank you Digit! I know that this might be part of their marketing strategy, but no problem. I like it.

Gunshots's my name.... SharpShooting's my game!!

SILENT & COVERT OPS. may be LETHAL. BUT Going FULL BLAST gives SATISFACTION !!

usandee pc
Newbie
Joined:
29 Sep 2003
Posts: 5

Posted: Thu Nov 13, 2003 2:11 pm Post subject:

BACHHE HUM YAHAN 2 BAR 3MONTH FREE SUBSCRIPTION JEETE HAIN!!!

Short Bytes

The September issue was simply superb. And the Q & A booklet was the icing on the cake! It answered all my PC problems. The article on audio file conversions did make 'Sound Advice'! The tool on the Mindware CD came in useful to convert all my favourite oldies into digital music. Could you carry a test on car stereo systems in the upcoming issue?

Raghav Ranjan

Via e-mail

I'll have to get into the habit of receiving surprises from Digit. Last year, I won a Celeron PC, and now a 3-month subscription!

Vikram Bhatia

Via e-mail

E-mail: readersletters@jasubhai.com

Send your letters marked 'Readers Letters' to the Digit office:

D-222/2, Om Sagar Building, MIDC, TTC Industrial Estate, Nerul, Navi Mumbai 400 706

Phone: 022-762 9191/9200 Fax: 022-762 9224



Yolanda Chan
Regional Sales Director,
HED, Microsoft Apac

// For India, we see that because of the geography, the infrastructure available and the market, in the short term, we're focusing on the hardware area //

Microsoft's Game Plan

Yolanda Chan is the Regional Sales Director, Home and Entertainment Division (HED), Microsoft Asia-Pacific (Apac) Region. HED is one of the seven business groups with Microsoft Corporation, and consists of Xbox, hardware products (input devices), Game Studios, Home and Productivity software and Office for MAC product offerings.

The second week of November saw Ms Chan visiting various cities in India. We caught up with her and Mohit Anand, Manager, HED, Microsoft India, to ask them a few questions about their plans for the subcontinent.

Digit (D): What's the purpose of your trip?

Yolanda Chan (YC): The purpose of my visit is to understand the market, its gaming potential. There are a lot of great things happening in India, such as the hardware product launch in September (this was when MS launched around 21 keyboards and mice). I'm mostly touring around, to understand the market, know how the consumers are, and meet our partners. One of the reasons is to launch the *Halo* Championship Programme in Bangalore. It's really exciting. We launched *Halo* on the 17th of October, and considering the response we've got, we want to help build a community. The contest includes 7 cities, and 1,000 participants per city. It starts in the middle of December.

Mohit Anand (MA): It's a cash-based championship, with a first prize of a lakh of rupees, and no entry fee. The winner gets a chance to participate in the World Championships to be held in Los Angeles on January 24 and 25, on an all-expenses-paid trip. December 28, is the date for the India finals.

D: MS game titles seem to be priced high, with Rs 3,500 for *Flight Simulator 2004*, Rs 1,700 for *Halo*. Most other games retail at around Rs 1,500. Why is this so?

YC: We actually have a global pricing strategy for MS titles. Based on the market potential, we adjust prices accordingly. Our bottomline is that the pricing reflects the value that the title has to offer.

MA: Indian game prices are actually among the lowest in the world. The factors of a negative dollar-rupee conversion and the lower purchasing

power, are taken into account while fixing the price. But consider the amount of effort that goes into the making of a game. A modern title takes upwards of 2 years and several million dollars to put out on the market—there's not a lot of money that we make on the game as such, especially considering its pricing here.

D: Maybe, but the prices of MS titles are still way above those from other publishers—*Warcraft III's* expansion, *The Frozen Throne*, retails for Rs 999, as compared to *Age of Mythology: The Titans Expansion*, which sells for Rs 1,299.

MA: In the AOM series, if you look at the kind of details that's gone into it, it's a very fair pricing. The fact of the matter is that no other publisher is present in the country. And we've been there for the last five years. Nobody else is making a move to come in, which shows the commitment that they have in the long term to the market and the gamer. We invest marketing dollars towards developing gaming as an alternative form of entertainment in the country. No other publisher's done that. So, those are factors you need to take a look at while determining the overall price.

D: Maybe time will answer that. We do get a lot of readers complaining about the prices of games...

YC: I'd like to first thank readers that actually pay for a product, or buy any game, whether it's a competitor's or not. With regards to pricing, each company will have a different pricing strategy, each will look at their strengths, the quality of the product and the engineers and designers that work on it.

MA: Speaking of which, FS2004 has met with stupendous success. For that matter, it's the second-best selling title from June till today, behind *Rise of Nations*. It shows that there are people out there willing to pay for the quality they get.

D: What kind of work does HED do, and what are you attempting to do in India?

YC: Well, we're very much focusing on the PC platform. It's only in the last 5 years that we've gone aggressively in this region—this year, we've actually reworked the entire organisation, since we've seen that the home is the market of the

future. The way we network our homes, the way we're embracing the digital lifestyle, is where the world is going. Under the HED, there are actually two separate divisions. One of them is tied into the hardware, PC games, consumer software, and the Mac Office. In the other category, tied into the entertainment area, is the Xbox product. Here, we have Xbox games, the Xbox Live! service, and more.

For India, in the short term, we're focusing on the hardware area. Moving into the second quarter, we're getting games.

D: Why did Microsoft pull out of the gaming peripherals market? Your products were considered among the best.

YC: Well, a study we undertook revealed that the preferred input device for gamers continued to remain the keyboard and mouse. It was pretty surprising to us too, but there you have it.

MA: The gaming peripheral market has suffered a two digit drop in sales across the board. We've decided to focus on quality input devices like keyboards and mice instead, and our September launch reflects that.

D: Microsoft has a great track record at working with third-party manufacturers, to come up with standards for the industry. Why do you feel the need to manufacture input devices? Dedicated peripheral manufacturers such as Logitech are making equally good devices at even lower prices?

YC: We've actually been around much longer than Logitech in the area of input devices. We have several firsts to our credit. The first optical mouse, Microsoft's Intellimouse Explorer; the first keyboard with a non-standard design meant to offer the best in ergonomics with the Microsoft Natural Keyboard.

MA: Ensuring full compatibility with the hardware you use, and the best possible experience for the consumer is what we're aiming at.

D: When do you plan to launch the Xbox in India, considering that the PS2 is already here?

YC: We'd like to see how the PS2 does first! A large part of our efforts are directed at the Xbox Live! service, which is based on a subscription model. For this to work in India, broadband access needs to reach a certain level of mass acceptance.

Another major factor is the perception of consoles like the Xbox. Parents in this country perceive the PC as an educational tool their child can use. Then that same PC is used for playing games.

The perception needs to change. We're waiting to see how this market shapes up, how it matures.

D: The entertainment division is a leading loss-maker for Microsoft (especially the Xbox). Ken Kuataragi, CEO SCE, even said that the Xbox is not competition to the PS2 because Microsoft is losing money hand-over-fist on the hardware. What's is your response to that?

YC: The Xbox is much more than a gaming console. We've invested billions of dollars into the Xbox program over a period of several years, and we're in it for the long run.

We don't aim to make money off the Xbox hardware. We work closely with developers to ensure quality software for the Xbox. A major source of income is the Xbox Live! subscription service. Here too, there's a lot of collaboration with game developers, as well as revenue-sharing.

D: The Xbox 2's hardware is a major departure from the Xbox. The Xbox was essentially a half-priced PC, while the Xbox 2 is heavily customised—rumoured to have an IBM Power PC CPU, ATi GPU and SiS chipset. Will it be backward compatible?

YC: It's still early days for the Xbox. There's a lot of research going on into the Xbox series, so it's a little too early to say anything about the Xbox 2.

D: Is there any chance we will see the entry of MMORPGs (Massively Multiplayer Online Role Playing Games) in India?

MA: An MMORPG requires a lot of infrastructure to run—broadband connections, servers, a billing engine, and so on. Currently, all of these are missing in India. The biggest impediment currently, is the lack of broadband access for home users.

D: Reliance has such a system in place; you're even using it to conduct the Halo contest. Reliance should be happy to have people spending hours at its stores.

MA: Yes, but Reliance has a pay-per-play model, while MMORPGs call for a subscription model.

True, but being the giants they are, surely Reliance and Microsoft can team up to work out a viable solution.

MA: I guess they can. We'll have to see about that... ■

BADRI NARAYAN

badri_narayan@thinkdigit.com

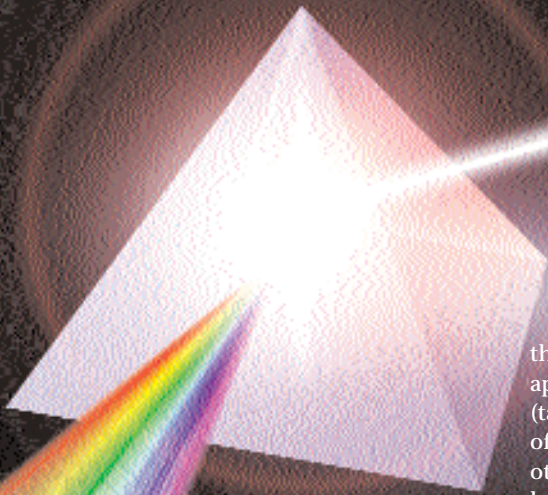


Mohit Anand
Manager, HED,
Microsoft India

// Indian game prices are actually among the lowest in the world. The factors of a negative dollar-rupee conversion and the lower purchasing power are taken into account while fixing the price //

CONVERGENCE on the **Verge**

Eyeglasses that record everything you see; watches that bring you TV; bracelets that let you communicate; refrigerators that order food; dolls that bring you instant messages; doors, windows and lights that talk to each other; it's not magic, it's convergence...



The gossip must have reached you—friends, strangers, colleagues, children, they all like to talk—the PC is dying. They are right, but in a very wrong way. Technology's in the air; pervasive, ubiquitous and out to get you; meanwhile the PC, like a virulent entity, has fragmented itself into a myriad of forms to serve as a vessel for technology. Rumours of the death are greatly exaggerated. Coming soon, to a wristwatch near you...

Let's start small: the cell phone. It brings you voice and data, and is probably the most easily identifiable form of convergence. Users of the latest Apple Mac enjoy a deeper bond with their cell phones, thanks to the wireless connectivity offered by Bluetooth. Imagine yourself with an Apple computer and a Bluetooth-enabled phone such as the Sony Ericsson T68i—the computer can talk with the phone via several nifty applications over Bluetooth.

Scenario 1: You get back home, turn the keys at the door and walk in to your apartment, the phone says Hi to the PC (talking behind your back), an exchange of pleasantries, they get to know each other, the PC goes "Ah, your owner is here, you have 5 unread e-mails, sir. You probably want the lights on and Alanis Morissette blaring from the Harmon Kardon speaker sets...". Questionable taste? Perhaps they exchange a giggle, who knows? You head towards the kitchen; the computer is aware that you're leaving, and the music pauses. A jug of juice in hand, you plop on the sofa and use the cell phone to remote-play your favourite DVD, turn up the air conditioning, turn down the lights, reach for the slice of pizza... Impressive? Child's play, scratching the surface!

Scenario 2: In the cab, bored. You zip out the 183 gram device; a tap takes you to Central Perk and the shenanigans of Friends, or to Wankhede Stadium where Australia is pummelling India into the pitch yet again. A chime announces an e-mail and you let yourself be distracted—it's your significant other announcing a new number. You go through the mail, tap the number, flip the device and talk, "Yes dear going shopping... yes almost there... shoes? Sure..." Out of the cab into the shop, "Hey you'll love this pair, hold on I'll send you a pic..." you turn the

device around, click, send an MMS. She likes them; that was too easy. "Don't forget to bring the sweets, we have guests tonight," she says. "Forget? I never forget! Talk to you later." You can't believe you forgot about the sweets! No more chances; a tap lets you write down a note, set a reminder alarm—forget the sweets and sleep on the couch!

Science fiction? Not really, this device—the Nokia 7700—is the convergence

of a cell phone, an FM radio, an MP3 player, a PDA, a camera, a video player-cum-recorder and a TV set; it's due out next year.

Convergence in the communication arena is going through interesting times. Sales of PDAs are dropping, cell phones are on the rise, and both of them are stomping and vying for your pocket space. We thus have such devices as the Sony Ericsson P900 in one corner and Handspring's Treo 600 in the other. The former is the phone industry's answer to the PDA, the latter the PDA's answer to the cell phone. Whichever way you look at it, the lines separating the contestants are blurred: like it or not, your cell phone and PDA will soon become one, convergence to the max.

While a convergence of technology serves as foundation, it will be services that draw customers in and keep them hooked. We thus have a coming together of services: from the PC to other devices. You must have noticed the Orange hoardings, advertising the fact that you can access your Hotmail account via the cellular service. Microsoft is taking its messenger services places, mostly to your phone. Tie-ups to bring you instant

messages, e-mail, the weather, news, stock quotes... the strategy is two-pronged: get market share via pure services such as the Orange/Hotmail offering, or via such hardware-cum-software platforms as SPOT (Smart Personal

Object Technology) and Smartphones.

SPOT is a US and Canada-centric idea which has Microsoft and FM broadcasters casting a DirectBand network over major cities. The network will be supported by SPOT-enabled devices such as wristwatches. The idea is to offer access to continually updated content on news, traffic, weather, stocks, sports, instant messaging; and features such as automatic time adjustment based on location, customisable watch faces, chronometer, calendar and alarm functions. Microsoft and National Semiconductor have devised a SPOT

chipset, along with a special OS to address the power, size and cost challenges that a wristwatch offers. The chipset is an ARM7 CPU along with SRAM and ROM, and a radio chip in the form of a 100 MHz RF receiver.

Ever competitive, the software behemoth is eyeing the Symbian success with disdain, and has been trying to get its own Smartphone initiative off the ground for some time now. Sierra Wireless has attracted quite a buzz with its Voq Smartphone. The Voq is a tri-band phone powered by a 200 MHz Intel PXA262 XScale processor, supporting GSM voice networks and GPRS data networks. It includes 32 MB of RAM

(16 MB of which is available to users, to run applications) and has 48 MB of Flash memory (20 MB available to store data and software), plus an SD/MMC slot for removable media. It will run the Windows Mobile operating system, and will sport a 220 x 176 pixel screen, a joystick and a flip-open QWERTY keyboard

for user input. Voq users will be able to access e-mail, browse the

Web, send instant messages, make phone calls, play games, and run MS-Office type applications.

Another match-up attracts attention—this one between makers of consumer electronics and PC companies. The Dells and the Samsungs of the world are ready to go at each other over convergence.

PC sales are slowing down to an annual growth rate of single-digit percentile points, CRT monitors are all but

dead (a fate coming soon to a country near you). LCDs are the new chic, PVR is hot, broadband is hesitant but interested, things are stirring up. Where is the fight? The CE guys see the TV as the centre of digital entertainment, the PC guys... well, the PC. Everyone seems to agree that CRTs are out, thin is in. Thus we have Plasma screens that work

as PC monitors and television sets, ditto LCDs. This is where the twain part. PC manufacturers, perhaps for evident reasons, are warming up to solutions such as Microsoft's Media Centre, while the boys from CE are tooling TV sets with hard disks, Ethernet, USB, FireWire ports, enabling them to talk Bluetooth and WiFi, to transparently connect to the Internet, to record favourite programs straight to DVDs... Samsung Electronics is convinced of the evangelical benefits of the TV: in a CNet News.com interview, their Executive VP, Eric Kim, was quoted as saying, "We believe TV will become another digital centre for the home. Until now, the digital centre was the computer, but while the digital experience of the PC is great for certain things, it's limited... With a TV, you're leaning back, very relaxed. You may have friends or family with you. It's a very different experience... The time is coming when we'll see a shift from a PC-centric orientation to a TV-centric orientation. That's our bet, and we're investing a lot of money behind it."

Meanwhile, tunnels have been dug under safe havens, and dents have been made in the traditional markets of the consumer electronics giants. Sony, for example, was never in worse shape,

Info Sony, Sharp, Pioneer, and Kenwood are working together on a new line of stereo systems with Ethernet ports that can download music directly from the Internet—without requiring a PC



The Nokia 7700 — also a cell phone



This is Gateway's answer to Plasma TV. All 50 inches of it

financially. Plasma and LCD TVs from Dell, Gateway and the like, have undercut Sony's Trinitron offerings. Moreover, Apple with its phenomenally successful iPod personal-music player and the loss-leader iTunes music service has taken a large chunk off Sony's other pie—audio hardware such as Walkmans and Discmans. Even Dell has a personal MP3 player in the offering. Sony is reacting though; the PlayStation Portable (PSP) is touted as the Walkman for the next generation, while a low cost answer to the iPod is rumoured to be along the way.

Also of interest is the concept of a digital home—the ultimate in convergence where every device under your roof will be aware of every other device; talking with each other, sharing resources and generally making things easier for you. Central to the concept is the idea of a spoke—a PC with Ethernet and other connectors, ready to talk and rock—connected to other devices such as TV sets, refrigerators, microwave ovens, air conditioners, etc.

Samsung's Home Network Solution for example, has a backbone Internet connection that offers a single-point access to the Web and a skeletal intranet that connects myriads of devices.

A fingerprint recognition system protects the house, while a Web camera monitors the door for security purposes: when the doorbell rings, you can hit the remote and check out the visitor on your 42-inch Plasma TV, which is connected to a central PC-hub via a network switch (which also lets you connect all internal phone lines for an intercom system, offers Voice over IP for those long-distance calls and more). The switch interconnects the TV of the hall, the microwave and the fridge in the kitchen, the PC and the LCD of the bedroom to wall-access units; such that you can monitor and access all services from a central or non-central location.

For example, you can watch TV in

your bedroom, pause the program, surf the Internet, fire off an e-mail, print a web page, return to your program (done via PVR-capabilities of the Media Centre PC) all from one location... sweet!

Enough talk; time to take a closer look at some of these devices.

Archos Video AV380

Boasts of being the first handheld personal entertainment centre, rings true at a glance. The device combines a modular MPEG-4 video player and recorder, an MP3 music player and recorder, a digital camera, camcorder, a digital photo wallet and a data storage device—all in a form factor that sits in the palm of your hand.

With MPEG-4 video and an 80 GB hard disk, one can enjoy up to 160 hours of near-DVD quality video (640 x 368 at 25 fps) with MP3 sound. MPEG-4 recording lets you record off a TV, VCR or a camcorder, while a built-in microphone



enables you to use the AV380 as a voice recorder with 4,000 hours of capacity. The 3.8-inch colour LCD is a decent size for movies and pictures on the move. For larger screen requirements, the unit can connect to your TV set. Thanks to a USB 2.0 port, the device can be mounted as an external storage device on which you can store anything.

Home Hub

Remember the digital home? The Home Hub is central to such a concept, from Salton Inc.

An entertainment and command centre, it allows users to play Audio CDs, check the time, weather forecast and financial information, and acts as the gateway for other connected devices. Known as the Beyond Connected Appliances, these are: a microwave oven that can read the bar code of a food-package, access a database of recipes and cook it to



perfection; a coffee maker that can be programmed, via a point-and-click Web interface; and a bread maker that has a bar code reader similar to the oven, and puffs pastries to preset delight. The Home Hub connects to the Internet—via the Microsoft CE.NET operating system—and a Web site where its information is updated automatically. It is connected to the Beyond Appliances through a home's electrical wiring, allowing the appliances to also have their settings updated from the Web site.

Flipscreen

The Flipscreen is a device that aims to connect the kitchen to the rest of the world. Based on the Windows CE.NET OS and powered by a National Semiconductor Geode sc3200 CPU, this innocuous device will hang on to an available cabinet with élan. A 12.1-inch anti-glare, touch-sensitive LCD forms the central interface. With it, the Flipscreen can bring you TV channels, play DVD movies or CD Audio, surf the air for FM channels, and connect to an external camera to help you monitor the kids or the spouse as you cook.

A wireless keyboard and mouse let you control remote functionalities of



switching channels or surfing the Internet, via the Internet Explorer 5.5 browser. Both peripherals are washable.

Gateway Media Center 610

The 610 Media Center is an all-in-one PC, TV, DVD, PVR, MP3 player, FM tuner and stereo system that requires only two cables to get up and get going; a digital home entertainment system at its simplest. The 610 features the Microsoft XP Media Center OS 2004 and an Intel Pentium 4 processor with wireless technology.



Personal Video Recorder capabilities let you pause and rewind live TV and record shows with the press of a button. You can listen to your favourite tunes—Gateway also throws in a month of free Napster service; watch movies, view photo albums and slide-shows, listen to FM radio stations, or play games—all from one location, and with the convenience of a single remote control. A 17-inch wide-screen LCD with a built-in subwoofer adds both visual and sonic punch to the package.

Recently unveiled, the Gateway 901 Family Room Media Center PC is similar to its brethren with one major difference: its form factor lets it sit on a rack with stereo equipment.

CommanderPack

Here's one device that takes convergence to the extreme and packs it all into an easy-to-carry backpack. The CommanderPack straps on to your back and comes with a cell phone, a two-way radio, a Tablet PC, a satellite link, a helmet with a built-in video camera, microphone, and a special waterproof glove that can be used to make phone calls, send e-mail, or transmit video.

The cell phone, radio and satellite link



provide integrated local and worldwide connectivity from land, sea or air for voice, data and video communications. It has a GPS locator for tracking and mapping services along with weather forecasting, e-mail messaging, video conferencing and wireless LAN capabilities. The Tablet PC can, obviously, handle office applications and information management.

Aquos LC-151U-S

The Aquos LC-151U-S is weird TV. Introduced in September, the unit from Sharp offers a unique take on wireless networking: its 15-inch LCD detaches from the base, and one can use the built-in handle to take it places. The unit is battery-powered, connects via 802.11b wireless to its base station, which in turn transmits content from a video source to the set. This



way you can watch movies or TV in any room while the base remains connected to the source of the video.

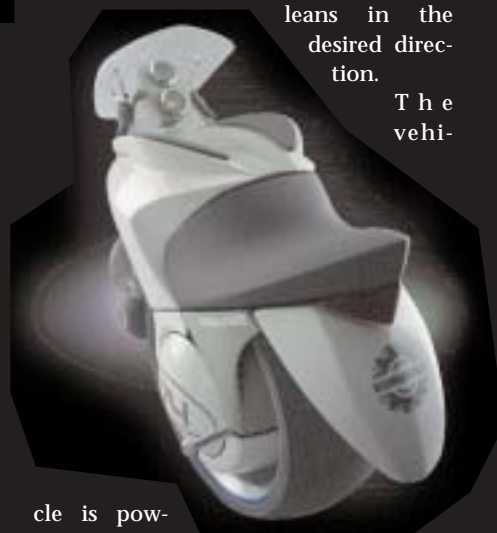
EMBRIO

A personal recreational vehicle. With just one wheel, the EMBRIO looks like a joke, but take a closer look at the design and the technology behind the enigma, and

one can only come away impressed. Gyroscopic and electronic magic make up for the solitary wheel, along with sensors, a high-performance braking system, an active suspension, night vision and robotic assistance.

A concept vehicle, a digitally encoded learning key will start the engine. To move forward, the rider activates a trigger on the left handlebar. A landing gear that offers additional balance at slow speeds retracts when the speed reaches 20 Kmph. To turn, the rider leans in the desired direction.

The vehicle



is powered by a fuel cell, and recycled aluminum and polyethylene for the body makes the Bombardier EMBRIO an eco-friendly design.

The technological reasons for the flood of convergence devices are plenty: fabrication processes for electronic components are improving at a healthy rate, bringing along smaller, more energy efficient processors and circuit boards to go along. Take LCDs then, they are now cheaper to manufacture and offer great clarity. Hard disks are shrinking with burgeoning capacities in tow; rechargeable batteries are coming to the fore (with fuel cells on the way), things are generally looking good for us.

Convergence is no longer a catchphrase that is juggled around within social circles and at boring parties. The concept has emerged from the drawing board of technology and the demand of economics has brought it within buying distance of us consumers. ■

AHMED SHAIKH

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features ■ droolmaal

Magellan RoadMate 700 portable GPS Auto Navigation System ►► Finding your way

Here's a substitute for those old road maps. RoadMate guides you using 3D navigation systems and voice prompts. Currently, maps of the US and Canada are built-in, and maps for other countries can be downloaded from the company's Web site. It uses WAAS (Wide Area Augmentation System), and uses up to 12 satellites to track your position with an accuracy of 3 metres. There are four ways to choose a route—shortest route, shortest time, least use of highways and most use of highways. You can even change your route depending on traffic conditions.

Price: \$1,233



Screaming Screens

Here are a few devices that use display technologies in cool ways

◀◀ O2 - Xda II Xda revolutions

This mobile PDA is powered by Windows Mobile 2003 for Pocket PC, and has a high-quality inbuilt digital camera and tri-band functionality. It has 128 MB of memory and runs on an Intel PXA 400 MHz processor. It also features a 65,000 colour screen with Windows Media Player and can store up to 40 MP3 tracks. It features a PDF and PowerPoint viewer, and can run presentations too, after plugging in an LCD projector.

Price: \$562 with a 12-month contract, in the UK



Nokia 7700 ►► All-in-one phone

The 7700 is a Bluetooth-enabled tri-band GSM phone that's packed with cool features: a 65,536 colour touch screen with a resolution of 640 x 480; an onscreen keyboard; handwriting recognition; integrated camera with 2x digital zoom; an inbuilt MP3 player and FM radio, and more. You can surf the Internet with its HTML and XHTML browser, and check your POP or IMAP4 e-mails as well. It has 25 MB of internal memory, and a 64 MB memory card, extendable up to 128 MB. There's also has an offline mode, which lets you access features that don't require you to insert a SIM card.

Price: NA



SAMSUNG



Only For Your Ears

The unique sDSM™ technology with Auto Sound Calibration comes with the advanced Digital Acoustic Ear. It receives and analyses signal tones from each individual speaker in the Samsung Home Theatre system to create the perfect listening environment at the touch of a button.



◀◀ **Photo3D Model 303** Click it to life!

This kit packs in a camera attachment to capture 3D images. Use it to click two images of the same object and blend them using the Photo3-D Mixer software that's bundled along. The resulting 3D photos can be viewed with the red and blue eyeglasses provided. Also included are a mini handheld tripod, 5 handheld paper viewers, 3 paper glasses and a greeting card.

Price: \$129



Sanyo Xacti DMX-C1 ▶▶ Spy cam?

This is claimed to be the lightest and smallest high quality digital video camera. It weighs only 155 grams, has a resolution of 3.2 megapixels and records high quality MPEG4 videos at 30 frames per second. The camera uses SD memory cards, and can record 30 minutes of video on a 512 MB card. It also boasts of 32x digital zoom and 5.8x optical zoom. It comes with a 1.5-inch 110,000 pixel LCD.

Price: \$630

▼ **ViewSonic Airpanel V150** Monitor on the move

This cordless touch-screen monitor is based on Microsoft's Smart Display technology—you can access everything on your PC from anywhere in your home. The monitor is powered by an Intel XScale 400 MHz processor and has 64 MB ROM and 128 MB SDRAM. The battery lasts up to five hours, and can be used as regular desktop monitor when connected to the docking station.

Price: \$999.99



▶
HT-DB350
MRP Rs. 28,990
RMS: 350W
sDSM™



▶
HT-DB650
MRP Rs. 37,990
RMS: 500W
5 DVD, sDSM™



▶
HT-DB758T
MRP Rs. 1,19,990
RMS: 600W
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Sight. Sound. Senses...Mesmerised

Hidden in plain sight, flanked by innocuous shops, shaded by sedate trees, the place wears an innocent façade that masks a classroom atmosphere—kids at play. Screaming and cursing is encouraged. When the name of the game is fun, two things are guaranteed: a large crowd and a large crowd with money.

You push the glass door and the gentle murmur of the street is drowned in a wave of noise. Screams, taunts, jeers and jocular expletives fortify into a solid wall of sound that appeals to the reptilian core of the brain—bringing back the grin you had lost with the wonder years of bunking lectures and mimicking lisping professors.

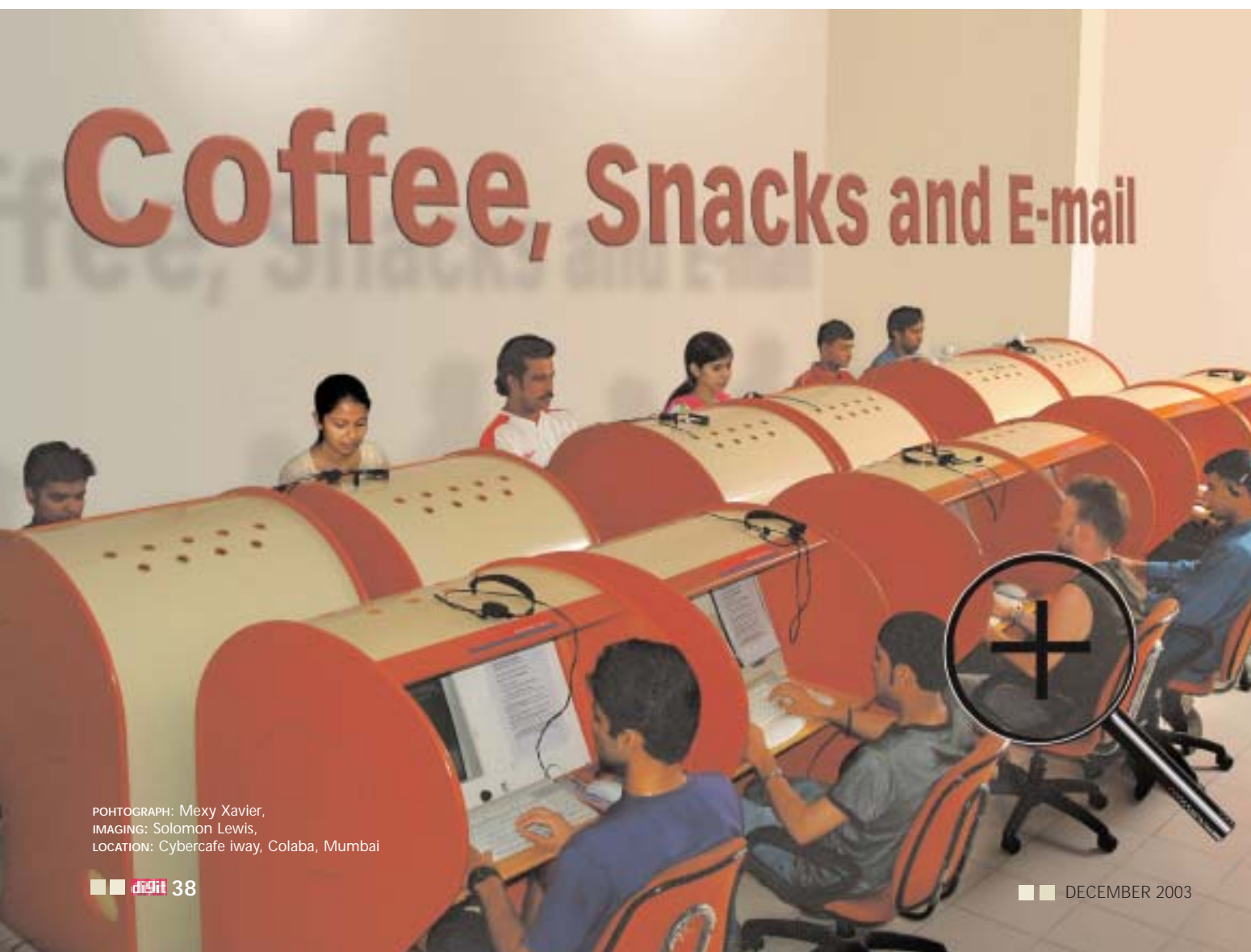
Meet Yogesh Nagdev; the crowd, the noise, the hunger for more—blame it all

on him. Well, you can't, for much like his gaming cafe, Yogesh or Yogi as he is fondly called, is imbibed with the cherubic quality of innocent fun. For him, the 450-odd square feet of real-estate—Plug In, also known in select circles as *Yogi da e-Dhaba*—heralds both money and his one true love, games. The noise gets between words, forcing repeated sentences and awkward pauses, before we find ourselves whisked to a quieter place where quotes are born. "There was a trend of cyber cafes that has disappeared. It's a difficult business now. There are cafes running near offices, schools, residential areas and commercial areas such as banks. They depend on big offices for revenue. It used to be fashionable to chat, surf, etc., but now it has become a

thing of work." So why set up a cafe? "Because I had nothing better to do (laughs). I abandoned my studies after the twelfth standard, worked at a cyber cafe for six months before I decided to start my own cyber cafe. Dad helped me a lot, the place is on rent and this is the fourth year that we are in the green and in a position to buy the place. I will do that eventually."

As Yogesh explains, cyber cafes are a different animal today. Not that they offer something unique or different—the beverage is the same, the bottle brand new. Today, cyber cafes mould themselves to their surroundings. One size does not fit all. Every owner of a successful cyber cafe will tell you a tale of those who did not make it. Thus lines are

While Baristas with WiFi access may seem an extreme proposition, cyber cafés are looking to a blend of different models to rein in and retain their customers. We stir up the brew to freshen our perspective on this social business



PHOTOGRAPH: Mexy Xavier,
IMAGING: Solomon Lewis,
LOCATION: Cybercafe iway, Colaba, Mumbai

drawn, customers segregated according to locale and a pitch is made to draw in the majority. Gaming for the young, e-mails for the old—a generalisation for sure, but reality is not far from this. “We offered only surfing initially, but our customers demanded more games and we took off from there. We offer browsing, printing, scanning, the usual... but concentrate on games—70 to 80 per cent of our customers are gamers. The age group varies between 6-year olds to 40-year olds, the oldest gamer that we have had is 32-years old,” says Yogesh. The concept of a gaming cafe is still new, and is concentrated in the more affluent sections of a town or city where customers can afford to pay for a quick frag. “Gaming cafes are too few. No one knows that games are out there, they can be an attractive proposition. Our customers bunk lectures and come to my cafe. Parents should encourage gaming. Gaming is shunned in India, while gamers abroad get paid to both play and test games,” says Yogesh.

Cyber cafe is people

‘A Family Entertainment Centre’, announces the brochure. It had to happen. A McDonald’s with computers? The intent has been rendered, if not quite in

ambience; certainly in the content of fast food and faster internet access. Dhiraj Gejria is the brains behind FastMindz. A 22-year old, unmarried, commerce graduate from MMK College, he worked for Sun Infoways for 2 years as a Chief Course Consultant. Dhiraj also freelanced as a designer dabbling in the electronic media—Web pages, Flash animations and CD-ROM presentations. With a background in sequestering thoughts, it comes as little surprise to learn of the triumvirate of Classic Mindz, Virtual Mindz and Privilege Mindz. It is a concept best explained by Dhiraj himself.



Bhushan Kadam
Beenstalk
ON SERVICES PROMISED BY RELIANCE

“ Basically their technology is not good. *Maaza nahi hain.* You might have Schumacher sponsoring your car but if your car is bad, how will it sell? ”

“We wanted to start a Family Entertainment Centre. We wanted parents to bring their kids along, such that the kids can play games, surf the Internet or eat snacks while the parent works. With that in mind, we have designed the place into three sections: A surfing (Classic Mindz) section where ergonomics is firmly in mind with recessed monitors, a gaming

Illegal operation

A cyber café owner pointed out an interesting juggle that some owners perform to soften the bills. A normal dial-up Internet connection has a pulse rate of Rs 1.20 for three minutes, or Rs 24 per hour. A PCO however has the subsidised rate of Rs 0.60 for three minutes, or Rs 12 per hour. Certain cafés, especially those that are close to a PCO booth, tap into the PCO lines and use the same for their Internet connection. It is a 50 per cent reduction in cost, and thoroughly illegal.

section (Virtual Mindz) where the monitors are kept at a height and at a convenient distance to reduce eye-strain. The third section, Privaleedge Mindz is where you have video-conferencing, voice-chat, Net-2-Phone (voice over IP), etc. We have multi-functional PCs. The most popular games are installed on all machines, while the gaming section has been segregated by a glass partition to minimise noise and distractions for other customers.”

A young age group needs its entertainment for sure, but what of assignments and project reports—the duller aspects of youth? Vishal Kandoi is the man in-charge of Cupid’s Nest. This cafe sits right outside the gates of D Y Patil college in a suburb of Mumbai, and quickly satiates the needs of the studying crowd—food and printouts. “The cyber cafe was secondary. People coming here are college students. The main attraction is the fast food... joints that offer only surfing do not do so well—ice-cream and cold drinks go well with the Internet: Something to munch and surf.” Dependence on a particular segment brings along the trepidations of withdrawal. “I have a slack season when the colleges are not open, otherwise the business is great. It is not that profitable,” he quickly adds—lest the tax man come knocking. Yogesh faces a similar reality: “The response is seasonal. As gamers are a larger percentage of our clientele, examinations see a slack in the number of customers.”

Iqbal Singh of Jeet cyber cafe lives in interesting times. He is surrounded by similar endeavours; most offer better bandwidth and speeds, yet this amiable youth (who refuses to divulge his age) remains unfazed. “Cyber cafes are not running because of speeds and stuff; good speeds are a part of it, but customer

Cyber Warez

“We have legal copies of Windows and of Word for two PCs, the rest house EasyOffice. We lose users because of EasyOffice but it is better than being raided and asked to close shutters.” Like Dhiraj Gejria of FastMindz, most cyber cafés have legal and multiple versions of at least two software: Microsoft Windows OS (generally Windows 98) and Microsoft Word. Anything else is a freeware version (EasyOffice), a non-registered version of a shareware (WinZip) or a pirated copy (Adobe Photoshop). Linux is nowhere to be found. The reasons vary from: “Most people don’t know how to work with Linux. I am not sure if Linux is compatible with browsing,” says Kandoi of Cupid’s Nest, to “Most of the games require patches and drivers to work under Windows XP...

Linux also has compatibility problems with games and software,” as Gejria of FastMindz says.

The reason for piracy is also, predictably, that of prohibitive costs. As one café owner on condition of anonymity confessed, “Original software is not affordable and the returns are not great. You need a separate license for each PC. I have to keep five licenses for each version of Norton Antivirus, each for Rs 2,000. I am not earning that much, why should I then invest? Similarly for Windows, the investment would run into lakhs.” Most owners though take the stance of Bhushan Kadam of Beenstalk: “In India, lots of things about piracy are not very clear. So I try to steer clear of questionable software.”

relationships are the most important aspect." Such Zen hits upon the most important aspect of this business. Cyber cafes are about people, and people warm up to good relationships. Invariably, you will find a brisk crowd goes hand-in-hand with a smile and a warm atmosphere to feel at home in.

Jack was lucky with his real-estate. You sell your cow for five beans and pray that the soil is kind. A fertile ground sprouted an excellent business opportunity of golden eggs—giants notwithstanding. Similarly, Beenstalk enjoys an enviable locale: smack in the middle of a residential-cum-commercial area. Customers are guaranteed. Add to that the comfort of an air-conditioned interior, snacks and drinks an order away, and an amiable staff. When Bhushan Kadam started his cyber cafe, it was the first in Vashi (New Bombay). "I had been to Australia where I saw the concept. I had a plan to set up a gaming zone, but it never materialized. Beenstalk caters to a mostly business audience, we serve food and people can eat, drink and enjoy their work with samosas and vadas." The largely business clientele means that he is somewhat immune to the price cuts other cafes have had to employ to retain customers. "If you offer good speeds, people don't care about money. There is no point in lowering my Rs 30 per hour charge. In the present scenario the air-conditioning costs more than the Internet connection. My AC bill averages about Rs 9,000 per month,



Vishal Kandoi
Cupid's Nest

// People do come here to see pornographic content, but I discourage the habit //

as opposed to my Internet average of Rs 5,000." Moreover, his location softens the slack periods that other cafes experience, "My business has always fluctuated between Rs 2,000 to Rs 3,000 per day. I wouldn't say that things have reached a plateau but there is a need for some new technology, or something similar to spurt growth. Technology is always slow to visit Vashi." Like Iqbal, Bhushan also believes that there is more to his business than mere bandwidth. "Someone might offer better speeds than I do, but it is all about relationships."

Flight or Fight

The big boys have entered the game. Satyam Infoway's Sify initiative, Tata Infocomm and Reliance's WebWorld offerings are the biggest players in the commercial space of cyber cafes. Regardless of the provider, these seek to offer a uniform experience across towns, cities and states—similar speeds, similar services and similar prices. Such is the thought, and the execution follows that line of thinking. The cyber cafe owners that we spoke with were hesitant to sacrifice their identity to such a corporate setup, but most entrants to the business go the franchise route: the profits are decent and the risks involved, minimal.

So with a multi-crore muscle looking for a piece of the cafe pie, should the entrepreneurs take fright? "There is an 8 per cent service tax under proposal for cyber cafes. That, in addition to the high cost of purchasing or renting space, especially in the cities, makes competition cut-throat; prices are forced down; bills, especially for electricity and technology, are large money sinks." Yogesh paints a realistically gloomy picture, while Shailesh, his friend and colleague, adds a stroke of the inevitable: "When Reliance comes in, and everyone gets cheap access to the Internet, cafes that offer only surfing are bound to close down." Ask Iqbal about the business at hand and he quips with characteristic

Franchise this

"I did approach Satyam Online. They wanted to rename my cafe, but I wanted to maintain the identity of Cupid's Nest, which is why I rejected their offer. They were willing to pay all online charges but profits would be split 30 to 70 per cent in their favour. They sell packages in the form of clocked cards. A track is kept of the number of cards sold. The money thus earned is split up"

Vishal Kandoi, Cupid's Nest

"I tried to tie up with ISPs, but the cost is too much"

Bhushan Kadam, Beenstalk

"Tata Indicom did approach us. The Net service would be provided by them, and the profits would be shared 60 to 40 per cent, split in their favour. We were not interested; it would have been managed by them, which we did not want. We wanted to maintain our identity."

Dhiraj Gejria, FastMindz

humour, "I don't think it has much life left. The business is good but there is a lot of *"Reliance aa raha hai"*. People were talking of Reliance 3 years ago, and I was warned not to invest in a cafe. I have yet to see their service. Their mobiles suck, so will their fibre optic services."

The reality is that setting up a cyber cafe is a very risky proposition. Returns are a distant likelihood, and maintenance coupled with upgrades bleed money at a steady trickle. No one can shed more light on this aspect than Yogesh: "I was struggling for 3 years... I am still investing in the infrastructure, it is hard to keep up with the latest technology. New games, new hardware and upgrades are a frequent money drain." Bhushan gets the last word in: "Most start-ups will have rents to deal with; will have to charge not more than Rs 20 per hour and the price will only go down... You will never be able to break even for 2 or 3 years. You are an idiot if you want to put up a cyber cafe." ■

AHMED SHAIKH

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It's in the book

Post 9/11, cyber cafe owners are required to register all customers' name and address information. Furthermore, they are to keep in touch with their local police station, as Vishal Kandoi of Cupid's Nest explains:

"We need to fill forms at a police station, in addition to registering ourselves as a cyber cafe." As Dhiraj Gejria, FastMindz, further adds, "To become a member, you need to fill in two forms, submit two photos (one for an ID and the other for our reference). Each cyber cafe manager is required to maintain user information by cyberlaw. If I know your name, it is good for both the relationship and for legal issues." For most owners however, the law is another hurdle, more red-tape to get around.



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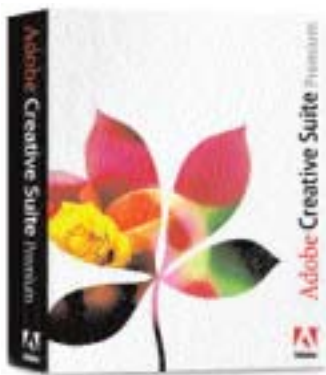
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System requirements

(for Premium edition)

Macintosh

- PowerPC® G3, G4, or G5 processor
- Mac OS X v.10.2.4 through v.10.2.8 with Java Runtime Environment 1.4.1
- 192MB of RAM to run any one component (256MB recommended)
- Additional RAM required to run multiple components simultaneously
- Additional 128MB of RAM required to run Version Cue desktop server
- 2GB of available hard-disk space to install the entire suite
- 1,024x768 monitor resolution with 16-bit or greater video card (24-bit screen display recommended)
- CD-ROM drive
- For Adobe PostScript printing: Adobe PostScript Level 2 or PostScript 3™
- Internet connection recommended
- QuickTime 6.3 required for multimedia features

Windows®

- Intel® Pentium® III or 4 processor
- Microsoft® Windows 2000 with Service Pack 3 or Windows XP
- 192MB of RAM to run any one component (256MB recommended)
- Additional RAM required to run multiple components simultaneously
- Additional 128MB of RAM required to run Version Cue desktop server
- 2GB of available hard-disk space to install the entire suite
- 1,024x768 monitor resolution with 16-bit or greater video card (24-bit screen display recommended)
- CD-ROM drive
- For Adobe PostScript printing: Adobe PostScript Level 2 or PostScript 3
- Internet or phone connection required for product activation
- QuickTime 6.3 required for multimedia features



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	Premium edition	Standard edition
Adobe Version Cue file manager	•	•
Design Guide and training resources	•	•
Adobe Photoshop CS with ImageReady CS	•	•
Adobe Illustrator CS	•	•
Adobe InDesign CS	•	•
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When you've perfected your image or composition in Photoshop, import it directly into Adobe Illustrator CS—or create a drawing in Illustrator and import it directly into Photoshop if that's how you prefer to work. Working with various types of artwork in multiple applications isn't a problem in the Adobe Creative Suite; simply drop native Illustrator files directly into InDesign layouts as well as documents created in Microsoft Office and other applications.



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Import your native vector and bitmap artwork directly into Adobe InDesign CS for sophisticated print layouts or into Adobe GoLive CS for powerful Web pages. And thanks to support for such technologies as Adobe PDF and XML, you can easily output your pages to print and the Web.

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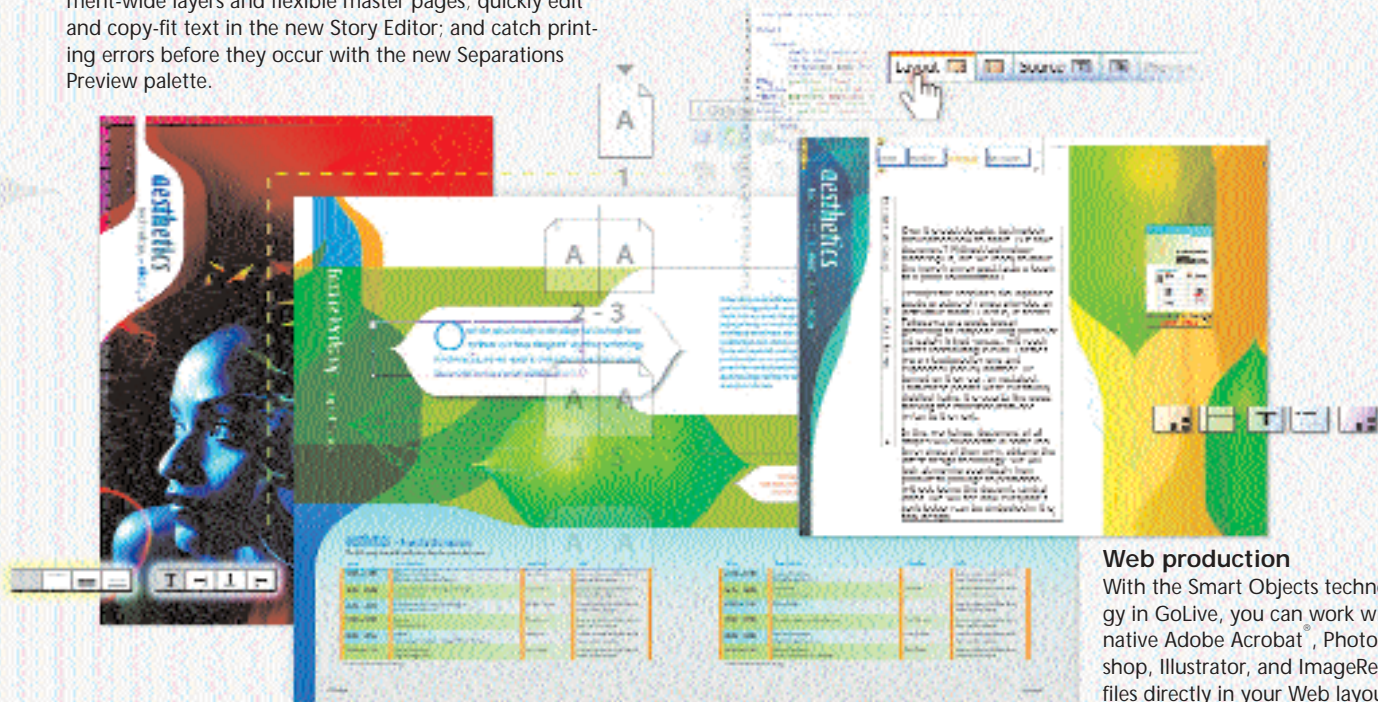
Importing native Photoshop and Illustrator files into InDesign adds tremendous flexibility to the page-layout process. After importing native Photoshop files—including multi-tones and spot channels—you can apply editable drop shadows, feathering, and other opacity settings to produce natural-looking transparent effects. You can even maintain soft edges when placing transparent Photoshop files. Then organize and control objects using document-wide layers in InDesign to hide, show, lock, and reorder them as you work. Robust cross-media support in InDesign also means you can import, create, edit, and export XML documents complete with structure and tags.

Page layout

Powerful production tools in InDesign CS deliver the efficiency, precision, and reliability you need to produce your best page designs. Efficiently manage layouts using document-wide layers and flexible master pages; quickly edit and copy-fit text in the new Story Editor; and catch printing errors before they occur with the new Separations Preview palette.

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Comprehensive Web authoring and built-in dynamic database tools in GoLive help you streamline your Web design workflow. Use Smart Objects to optimize assets such as Photoshop, Illustrator, and Macromedia® Flash™ (SWF) files. Or use XML-based content packaged and exported directly from InDesign to automatically prepare pages for Web publishing. Work comfortably in a customizable environment in which the toolbars and palettes have been updated to match other Adobe applications, and automatically convert Web sites to fully linked and scaled Adobe PDF files for streamlined project reviews.



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With the Adobe Creative Suite, you can deliver your final files efficiently and confidently. Built-in support for the Adobe PDF standard across the entire suite means you can streamline review cycles, prepare final files of the highest quality, and prevent costly production mishaps.

Review and comment

Client reviews and approvals are streamlined with the help of several new features in Adobe Acrobat 6.0 Professional. New review-management features let you track the status of feedback as well as filter, sort, and print comments. You can also speed reviews by soft-proofing Adobe PDF files and using Acrobat Professional software's enhanced tools for viewing and navigating large-format documents.

Prepare for print

Generate high-quality output with professional printing features that let you proof color separations, set marks and bleeds, and determine Adobe PostScript® options. When you're ready to send your final piece to the printer, eliminate surprises and know exactly how your documents will print using color separation and transparency-flattening previews. Then save time and avoid printing errors using the built-in preflighting tool that lets you examine Adobe PDF files for hundreds of customizable criteria, including PostScript level compatibility and PDF/X compliance.

Prepare for print

Generate high-quality output with Acrobat Professional by proofing and previewing color separations, setting marks and bleeds, and preflighting files for hundreds of customizable criteria.



Review and comment
Track the status of feedback; filter, sort, and print comments by author, date, and status with Acrobat 6.0 Professional.



For more information on Adobe Creative Suite e-mail your details to: adoberesponse@vsnl.net
Web site: <http://www.adobe.co.in/products/creativesuite/main.html>

Name of the person Designation
Company Name Phone: Fax:
e-mail:

How we Test



It looks good and the technology is glitzy, but does it do the job?

To ensure that our readers have all the information they need to make an informed buying decision, reviewers at the Digit Test Centre conduct comprehensive tests to evaluate the latest hardware, software and technology services in accordance with international standard evaluation processes and methodologies.

Our test results may be presented either as Comparison Tests, or as individual reviews in the Bazaar section. The representation of the results is different for each in the interests of clarity, but the test process for both is identical in all respects.

Of all the products we test, only the best make it to the A-List.

Comparison Tests

In the comparison tests, we compare the performance of products within a particular category. Each product is evaluated under different parameters such as performance, value for money, features, ergonomics, etc.

Weightages are then applied to the various test parameters according to their importance for that particular category of products. These weightages are then used to arrive at scores for features, ergonomics and performance for each individual product. A detailed test process is included with each comparison test, and explains the parameters that were taken into consideration, along with weightage allocation and reasons for the same.

In Bazaar

The evaluation of products in Bazaar also covers the same parameters such as performance, ease of use, value for money, build quality and features of the product.

Here, each of these parameters is rated on a scale of 5, which is represented by arrows (->).

The greater the number of arrows, the better the product. This simple five-point rating system is designed to give you an easy-to-interpret assessment of a product. For example, a product that

receives a value for money score of five arrows signifies an outstanding buy.



The Awards

Digit awards outstanding products by selecting a Best Performance and Best Value winner in each comparison test. The winner of the Best Performance Award will be the product that scored the highest in the performance segment combined with rest of the package including features, ergonomics, bundled accessories etc. This award represents the best performing product in our tests in terms of the complete package that is offered to a customer. The winner of the Best Value Award will be the product that scores the highest in our value for money parameter which is derived taking into account the ratio of a product's ergonomics, performance and features to its price. The product winning this award offers a good combination of performance and features at a great price. Since value for money takes into account all scores for all parameters including the price, this score will be used to arrive at a grade (e.g. A+) for each product.

The 5-point Rating System used in Bazaar	
▶▶▶▶▶	Excellent: A brilliant combination of price, performance and features—far beyond expectations
▶▶▶▶▶	Good: A good buy, better than most products in its category
▶▶▶▶▶	Average: Reasonably competent but nothing spectacular about the product
▶▶▶▶▶	Mediocre: Does not live up to expectations, needs improvement in many areas
▶▶▶▶▶	Poor: has serious drawbacks and needs improvement before it can be used for its target application



PEERLESS PERFORMANCE

Throughout the year, we test hundreds of hardware and software products to help you decide which one to buy. From core system components such as processors, motherboards and graphic cards, peripherals like printers, scanners and speakers, to accessories such as MP3 players, digital cameras and cell phones—we've seen them all. The annual Zero 1 awards are the top honours we bestow upon the best products and technologies.

The culmination of all the effort put in by manufacturers to make their products better is what earns them the coveted Zero1 award. You can be sure that the Zero1 Award winner in each category is the best product in terms of performance and features for the year 2003. So without further ado, and doing away with nominations and other frivolities, we present the best of the best...



CELLPHONES

The P800 is the first Symbian OS v7.0 tri-band handset, with a 12-bit colour display, a small keypad, 5-way jog dial and a touch screen with a stylus. It comes with the fast ARM 9 processor. There's an audio and video player that lets you watch MP4 video and play MP3s, although video playback is sluggish.

Small features such as images with contacts, and daily, weekly and monthly views for the calendar will be appreciated, but just three types of events—appointments, reminders or all-day events—won't. There are a few good applications such as the Jotter, which allows taking down notes, MS Word and MS Excel Viewer. Included are SMS, e-mail and MMS functionality. The P800 comes with 12 MB of internal memory and a 16 MB memory stick duo card.

The P800 supports Infrared and Bluetooth, and ships with a USB cradle for recharging and syncing purposes. The most interesting feature is the inclusion of a radio-free or flight mode to ensure compatibility with sensitive devices such as hospital equipment. The lithium poly-

Sony Ericsson P800

+ Rock solid and stable Symbian 7.0 operating system, expandable memory, PDA functionality is excellent

– Plastic stylus does not provide good grip, build quality is not up to the mark, small plastic buttons on the keypad are no pleasure to work with, proprietary memory sticks, aesthetically unappealing

Price: Rs 35,400

Contact: Sony Ericsson Mobile Communications International AB

Phone: 011-2618 0808

Email: sudhin.mathur

@sonyericsson.com

Reviewed In: May 2003



PREVIOUS WINNERS

2002: Sony Ericsson T68i

2001: NA

mer 1000 mAH battery gives 3 to 4 days of normal usage. We recommend the P800 only for a business class user, who

WORTHY MENTIONS

Nokia 3650

+ Tri-band, quality digital camera, support for external memory, support for viewing XHTML sites, slightly higher battery life than the Nokia 7650

– Odd keypad layout, poor integration of SIM, no support for cable connectivity

Price: Rs 23,999

Contact: Nokia India Pvt Ltd

Phone: 011-2677 9000

Email: k.sriram@nokia.com

Reviewed In: May 2003

Sony Ericsson T68i

+ Good features, good performance, terrific price, aesthetically appealing

– Six hours of talk time is good but not enough

Price: Rs 13,000

Contact: Sony Ericsson Mobile Communications International AB

Phone: 011-2618 0808

Email: sudhin.mathur@sonyericsson.com

Reviewed In: May 2003

will actually make use of the plethora of options offered.

CPUs (PROCESSORS)

The Pentium 4 3.2 GHz runs on a 200 MHz Quad-Pumped FSB, giving it a total bandwidth of 800 MHz. It supports hyperthreading and has an easy-to-install cooling fan. We tested it on an Intel D875PBZ motherboard with support for 800 MHz FSB, 512 MB of DDR 333 MHz Kingmax RAM in dual-channel mode, with an MSI GeForce4 Ti 4800 SE graphics accelerator.

In the Quake III Arena test, the 3.2 GHz was able to pump 387 fps in normal mode, 377 fps in high quality mode and 292 fps at a resolution of 1,024 x 768 and 32-bit colour depth.

The 3DMark 2003 benchmark saw it return 700 CPU marks—the highest we've ever come across. In the SiSoft Sandra 2003 Pro's CPU arithmetic tests, it gave 9,649 Dhrystones and 6,059 Whetstones, and yielded similar results with CPU multimedia tests. The Integer benchmarks saw a score of 14,693, and FPU SSE2 yielded a huge 23,321.

The advantage of the dual channel was reflected in the the memory bandwidth

Pentium 4 3.2 GHz

+ 800 MHz FSB support, best performer till date

– None

Price: Rs 37,500

Contact: Nebula Technologies

Phone: 022-2684 8612

Fax: 022-2684 8618

E-mail: pratik@neb-

ulatechnologies.com

Reviewed in: August 2003



PREVIOUS WINNERS

2002: AMD Athlon 2600+

2001: Intel Pentium 4.2GHz

test—scores were 4,000 and above. The video encoding process was completed in just 70 seconds. However, the CPU took 29 minutes for the rendering in the PovRay 3.5 test.

At a price tag of Rs 37,500, you could choose to ignore the 200 MHz increase

WORTHY MENTIONS

Pentium 4 3.06 GHz

+ Northwood core, 512 KB of L2 cache, hyper-threading

– 8 KB L1 cache

Price: Rs 38,600

Contact: Nebula Technologies

Phone: 022-2684 8612

Fax: 022-2684 8618

E-mail: pratik@nebulatechnologies.com

Reviewed in: February 2003

AMD 1800+

+ 256 KB L2 cache, 266 MHz bus speed

– 0.18 micron fabrication

Price: Rs 3,800

Contact: AMD Far East India Ltd

Phone: 011-2623 8620

Fax: : 011-2628 1364

E-mail: amd@surfgold.com

Reviewed in: February 2003

and wait for something better. But for those who need the best and need it now, this is the best money can buy. →



DESKTOP PCs

More often than not, buying a new PC brings up the dilemma of whether you should opt for a slightly expensive branded system or settle for the local assembled PC. However, branded players are trying their best to break out of the stranglehold of assembled PCs by offering PCs priced below Rs 25,000.

The Premium PC from Zenith was truly a performance PC based on high performance hardware. It delivered on all counts.

The Zenith PC offers the Pentium 4 3.2 GHz. The processor supports hyper-threading and an awesome 800 MHz FSB. In the processor sub-system tests, the Pentium 4 3.2 GHz crushed all the records to come out tops. Even the motherboard used was top-notch—Intel's 865GBF. In addition, the system has 512 MB of DDR 400 MHz memory modules configured in dual-channel mode.

This PC comes with an Asus GeForce4 MX 440-8X card, which is DirectX 8.1 compliant—we were able to play Quake III at lower resolutions easily. It even opened a 200 MB TIFF file from the hard disk in

Zenith Premium PC

+ 3.2 GHz, 17-inch LCD
– No Operating System
Price: Rs 60,000
Contact: Zenith Computers Ltd
Phone: 022-2837 7300
Fax: 022-2837 7297
E-mail: one-up@zenith-india.com
Reviewed in: November 2003



PREVIOUS WINNERS

2002: Visualan Lavish
2001: Dell Dimension 8100

just half the time taken by the HCL Beanstalk 4658.

The Zenith PC stood out from rest of the crowd with its crisp, extremely good-looking 17-inch LCD Monitor. However, this machine didn't have either a combo drive, headphones, or a 56k PCI modem.

WORTHY MENTIONS

HCL Beanstalk 4658
+ Ennyah GeForce Fx-5200 graphics card, Microsoft Encarta bundled
– 256 MB RAM
Price: Rs 50,990
Contact: HCL Infosystems Ltd
Phone: 0120-252 0977
Fax: 0120-253 3877
E-mail: raman@hclinsys.com
Reviewed in: November 2003

HCL Ezeeb
+ Great value for money
– Needs a better graphics card
Price: Rs 27,490
Contact: HCL Infosystems Ltd
Phone: 0120-252 0977
Fax: : 0120-253 3877
E-mail: raman@hclinsys.com
Reviewed in: November 2003

There's no bundled OS or software, either.

However, in terms of pure performance, the Zenith PC beats the others by a significant margin.

DIGITAL CAMERAS

The Ixus 400 boasts of a four-megapixel CCD sensor with 3x optical zoom and 3.3x digital zoom, in an ultra compact body. The design is simple, clean and elegant. At the back, the camera cramps in a small, bright LCD, with all the necessary buttons near it. The CF slot and the USB connection are on the sides. An irritating rubber flap that covers the USB and AV-out jack mars the otherwise flawless design.

The Ixus 400 has perfect ergonomics. Since the buttons are placed beneath or near the LCD, there is enough space at the back to place your thumb in the natural position. This aids in single-handed camera usage. The lenses provide terrific zoom. The Ixus 400 also comes with shutter speeds ranging from as high as 15 seconds to as low as 1/2000th of a second. With five pre-defined flash modes and a host of metering techniques, you will never need a professional photographer for your wedding photographs. The camera comes with ISO speeds ranging from 50 to 400.

In the image test, the Ixus 400 came out

Canon Ixus 400

+ 4 megapixel, cerabrite body, five white balance modes
– Expensive
Price: Rs 49,995
Contact: Canon India Pvt Ltd
Phone: 011-2680 6572
Fax: 011-2680 7180
Email: shyam@canon.co.in
Reviewed In: September 2003



PREVIOUS WINNERS

2002: Olympus Camedia C-2100 Ultra Zoom
2001: Sony DSC-P1

tops, giving the best results of them all. It was able to pick up all three colours perfectly, and the deviation was within the acceptable 5-10 per cent range. The image was clear, bright and vibrant. In the specular and gradation test, the camera reproduced finer details with exemplary perfection. The camera blew the competition to bits in the RGB test.

WORTHY MENTIONS

Fuji Finepix S304
+ Good features, excellent performance, terrific price, 6x optical zoom
– Only 16 MB xD memory card, bulky
Price: Rs 34,000
Contact: Jindal Photo films Limited
Phone: 022-2850 4949
Fax: 022-2850 4044
Email: k_mohan/jpl@jindals.com
Reviewed In: September 2003

Kodak DX 6340
+ 4x optical zoom, 10 to 60 cm macro mode, supports SD/MMC card
– Built-in 16 MB memory
Price: Rs 20,900
Contact: Neoteric
Phone: 022-2417 2600
Fax: 022-2418 5294
Email: rajeev@neoteric-info.com
Reviewed In: September 2003

The camera costs Rs 50,000 in India, but is available for half that abroad, so you might want to think twice before buying it here.



GRAPHICS CARDS

Graphics cards have come a long way from the good old days when they just had to have a little processing power and a few megabytes of RAM. The trend over the years has been to move much of the load of graphics processing and rendering from the CPU to the GPU. So much so, that today's graphics cards are heavy-duty number crunchers that use much more advanced technology than other parts of the computer system. Today you get graphics cards for almost every requirement—high-end or entry level—and at every level they come in a mind boggling variety, as compared to the few that were available just a while ago.

The 5900 Ultra is a gamer's delight. It has a mellowed down core clock speed of 450 MHz with the memory clock speed at 800 MHz, and also does not generate the amount of noise that its predecessor did. The video RAM has been doubled, and the card has an onboard video memory of 256 MB DDR. This is quite a large amount of memory, and is enough to future-proof you from any resource-hungry game that you throw at it. The card also supports

Gainward GeForce FX 5900 Ultra (256 MB)

- + Best performance
- Expensive, availability is low

Price: Rs 37,875

Contact: Mediatech India

Phone: 022-5639 6696

Fax: 022-2201 4083

E-mail: sales@mediatechindia.com

Reviewed in: October 2003



PREVIOUS WINNERS

2002: Gainward GeForce4

2001: Asus V8200 GeForce Deluxe

hardware DirectX 9 and OpenGL 1.4, which means that games like the soon-to-be-released Half-Life 2 and Doom 3 will not only just play smoothly on this card, but also with all the eye-candy turned on, at high resolutions. This video card belongs to the reputed Golden Sample Category. This is a special line-up of cards that Gainward produces using the choicest of

WORTHY MENTIONS

Gainward GeForce FX 5900

- + Best value
 - No video-in
- Price: Rs 23,950
Contact: Mediatech India
Phone: 022-5639 6696
Fax: 022-2201 4083
E-mail: sales@mediatechindia.com
Reviewed in: October 2003

Gigabyte Radeon 9600 Pro

- + 0.13 micron fabrication, four full DX9 pixel pipelines, two-vertex shader
 - Lower scores than nVidia 5600-based cards in *Quake III Arena*
- Price: Rs 14,100
Contact: Digi-Giga Systems Ltd
Phone: 022-2652 6696
Fax: 022-2883 5886
E-mail: sales@dlinc.co.in
Reviewed in: October 2003

components so that the card is over-clocker-friendly, and also gives maximum performance without being over-clocked. In our tests, this card was a clear winner.

INPUT DEVICES (GAMING)

The major players in the Indian gaming-devices market are Microsoft and Logitech, with awesome technologies and prices to match, while companies such as Saitek, Frontech and Typhoon provide the price-to-performance advantage.

The Precision 2 joystick is an affordable buy, but is packed to the brim with features.

The base is small, light and funky, and has a comfortable grip, thumb recess and a commendably-sized palm rest. While the button layout remains the same as its predecessor, one of the most promising differences from the Force Feedback 2 is its excellent throttle. The throttle has a sizeable amount of throw angle and so gives a very linear response—a very good feature, one that can make a lot of difference when playing flight simulators.

The base was redesigned and made smaller, so the Precision 2 weighs less and hampers stability to an extent. The rubber pegs manage to hold on to the surface, but the stick has a tendency to trip when jerked

Microsoft SideWinder Precision 2

- + Eight buttons, hat-switch, excellent throttle, third axis, good build quality
- Stick has a tendency to trip when jerked sideways

Price: Rs 1,200

Contact: Microsoft Corporation India Pvt Ltd

Phone: 1600-111 100

Fax: 011-2642 8540

E-mail: connect@microsoft.com

Reviewed in: March 2003



PREVIOUS WINNERS

2002: NA

2001: NA

sideways. The presence of a third axis on this stick is laudable, considering the price.

What makes the Precision 2 stand apart from the competition is that at Rs 1,200, the eight buttons, hat-switch,

WORTHY MENTIONS

Logitech WingMan Formula Force GP

- + Rugged and non slippery, excellent force feedback
 - No gear paddle
- Price: Rs 2,300
Contact: Aditya Infotech Ltd
Phone: 022-2880 1335
Fax: 022-2883 5886
E-mail: origin121@vsnl.com
Reviewed in: March 2003

Logitech WingMan Cordless Rumble Pad

- + 8 way movement, 2.4GHz RF signal with max distance of 20 feet, bundles four AA Duracell alkaline batteries
 - Quite heavy
- Price: Rs 4,300
Contact: Aditya Infotech Ltd
Phone: 022-2880 1335
Fax: 022-2883 5886
E-mail: origin121@vsnl.com
Reviewed in: March 2003

excellent throttle, third axis and good build quality, are reasonably priced for the casual and amateur gamer alike.



INPUT DEVICES (GENERAL)

The keyboard of the Microsoft Wireless Optical Desktop has the characters etched in white over the translucent black keys, producing excellent contrast. The scroll wheel allows for horizontal as well as vertical scrolling. The keyboard comes with hot keys for folders, as well as multimedia keys, apart from five programmable keys. It has a soft un-detachable palm rest with a smooth leather finish.

The optical mouse comes with Microsoft's new Tilt technology that allows scrolling in both horizontal and vertical directions. This feature is a great help if you work with Excel, or DTP software, where horizontal scroll is a boon. The mouse is designed for right-handed people, with contoured grooves that result in stress-free usage. The scroll wheel is too smooth, and lacks tactile feel when used in games for switching weapons—or maybe we are too used to the click of a Logitech scroll wheel. The mouse is extremely precise and is not plagued with the line of sight problem, because it uses RF. The combination requires Five AA batteries—three for the keyboard and two for the mouse. The soft-

Microsoft Wireless Optical Desktop Elite

+ Works on RF, horizontal plus vertical scrolling, 5-button mouse

– Designed for right-handers, lacks tactile feel

Price: Rs 7,250

Contact: Microsoft Corporation India

Phone: 1600-111 100

Fax: 011-2642 8540

E-mail: connect@microsoft.com

Reviewed in: October 2003



PREVIOUS WINNERS

2002: Logitech Cordless Freedom Optical Keyboard (Keyboard), Microsoft Wireless IntelliMouse Explorer (Mouse)

2001: Logitech Cordless Freedom Navigator (Keyboard), Logitech Cordless MouseMan Wheel (Mouse)

were provided shows the battery status and the wireless signal quality.

The Microsoft Wireless Optical Desktop Elite is priced at Rs 7,250 and comes with a

WORTHY MENTIONS

Microsoft Multimedia Keyboard

+ Well designed and sturdy

– Expensive

Price: Rs 1,498

Contact: Microsoft Corporation India

Phone: 011-2629 2640

E-mail: connect@microsoft.com

Reviewed in: January 2003

Microsoft Wireless IntelliMouse Explorer

+ Optical Mouse, USB interface, 2 extra buttons, 2 AAA batteries

– Expensive

Price: Rs 4,278

Contact: Microsoft Corporation India Pvt Ltd

Phone: 011-5151 1234

Fax: 011-2629 2640

E-mail: connect@microsoft.com

Reviewed in: January 2003

3-year replacement warranty. Overall, a great product for your desktop if you can afford it; but gamers might want to stay away from this combo as it lacks that extra feel required for gaming.

MFDs

We tested MFDs in both the Inkjet and Laser categories. The Xerox WorkCentre Pro 412 is a top-of-the-range MFD solution for corporate users, and dwarfs all the others in features and performance alike.

The design is very traditional Xerox, and it looks like a full fledged copier. It's huge, and weighs 22 kg.

The feature list on the 412 is long and extensive: the paper loading cassette has a capacity of 650 pages. The printer unit supports a true resolution of 600 x 600. The scanner unit employs a CCD sensor and supports a true resolution of 600 x 600. The 35-pages Automatic Document Feeder simplifies scanning. The fax features 4 MB of memory that can store 400 pages of faxes, and can acquire a maximum modem speed of 33.6 kbps.

Performance was good in all departments. Printing was fast, and the quality was excellent. Both text and image scanning were fast. In the IT8 card tonal deviation test, the 412 demonstrated excellent colour repro-

Xerox WorkCentre Pro 412

+ Fast printing, excellent quality

– Expensive

Price: Rs 73,500

Contact: Xerox Modicorp Limited

Phone: 0124-2561 930/940

Fax: 0124-256 1255

E-mail: kuldeep.malhotra@ind.xerox.com

Reviewed in: October 2003



PREVIOUS WINNERS

2002: NA

2001: NA

ducing capability. But in the colour deviation test for the lighter regions of the spectrum, the 412 performed badly. Resolution was average.

The 412 showed its true mettle in the copying test: where all the other MFDs took a minimum of 20 seconds, the 412 completed the job in just 12 seconds, and that, without any loss in quality.

WORTHY MENTIONS

Canon MP 730

+ Lots of features, easy to use, low running cost, best performance in prosumer category

– Bulky design

Price: Rs 34,995

Contact: Canon India Pvt Ltd

Phone: 011-2680 6572

Fax: 011-2680 7180

E-mail: rajeev.singh@canon.co.in

Reviewed in: October 2003

Lexmark X 5150

+ Good scanning, best value

– Bad printing quality, ink guzzler

Price: Rs 10,999

Contact: Lexmark International (India) Pvt Ltd

Phone: 022-2605 7755

Fax: 022-2605 4678

Email: sandeepk@lexmark.com

Reviewed In: October 2003

Although it's expensive, the WorkCentre Pro 412 makes up with features that'll meet the demands of most corporate offices.





MONITORS (CRT)

Everyone would like their favourite movies to come through in breath-taking colour on their PC monitors. Entertainment, designing and multimedia are the biggest things to hit the PC industry today. This year we tested just the 17-inch and the 19-inch monitors, with the 15-inch still surviving.

The BenQ v991 became the performance winner across monitors from more than 10 vendors. It's a 19-inch flat-screen CRT offering a large viewing area of 18 inches, or 47.5 cm. The high refresh rate produces flicker-free images, which makes it easy on the eyes. The diagonal dot pitch is an ultra-fine 0.25 mm. It also has an iScreen OSD control, allowing instant adjustment to the most suitable settings. This monitor is ideal for professionals who work at high resolutions.

Performance was amazingly good, and we saw it topping in four of the five tests we performed. It managed 23.25 out of 35 in the sharpness and resolution test, where all the other monitors were not able to cross 19. In the geometric test it tied for top spot with the LG Studioworks 900B, another good monitor.

BenQ v991

- + High resolution, great performance
- No extra accessories

Price: Rs 16,999

Contact: : BenQ India Pvt Ltd

Phone: 022-2570 5231

Fax: 022-2570 5235

E-mail: salesenquiryin@benq.com

Reviewed in: July 2003



PREVIOUS WINNERS

2002: Sony Multiscan G520

2001: Samsung SyncMaster 955DF

The LG was able to get the better of this gem from BenQ only in the screen pixel resolution test.

The BenQ is ideal for page layout artists and those who use a lot of geometric drawings, as they will be able to see crisp images with minimal jagged-

WORTHY MENTIONS

LG Studioworks 900B

- + Decent performance
- Considerable ghosting and streaking

Price: Rs 14,200

Contact: LG Electronics India Pvt Ltd

Phone: 0120-256 0900

Fax: 0120-256 0940

E-mail: response@lgebuy.com

Reviewed in: July 2003

Compaq MV7500

- + Detachable speakers, calibration software
- No anti-glare coating

Price: Rs 12,000

Contact: AVI Electronics

Phone: 022-2646 5522

Fax: 022-2646 0347

E-mail: aviteam@vsnl.com

Reviewed in: July 2003

ness—even at high resolutions.

The three year on-site warranty is the clincher. The warranty ensures that you will never have the headache of carrying this monitor to a service centre, in the rare event of a component failure.

MONITORS (LCD)

The Sony SDM-N80 has a device termed the Media Engine. It has connecting points to the display card as well as to another digital display device. Inbuilt speakers on the side of the device add to the multimedia experience.

The LCD itself has a very stylish-looking OSD control panel on top of the screen. Support for USB is provided by a 2-port mini hub at the back. The recommended resolution is 1280 x 1024 at 60 Hz, with the maximum resolution supported being 1600 x 1200. The angle tilt can reach a maximum of 60 degrees, but there's hardly any height adjustment possible.

In the test we conducted using the Display Mate Video Edition software, the horizontal, vertical and diagonal lines were very sharp, but with a tinge of yellow. There was hardly any sign of streaking or ghosting, but there were dark corners. With hardly any flicker, almost perfect screen uniformity, and an absolute zero mirror reflection in the dark screen test, this LCD performs very well indeed. A separate test was conducted to check the pixel

SONY SDM-N80 18.1"

- + In-built speakers, 2-port USB hub, brightness/contrast adjustment according to ambient light, user sensor that switches off the LCD when no one's around

- A tinge of yellow visible

Price: Rs. 1,47,000

Contact: : Rashi Peripherals

Phone: 022-2826 0258

Fax: 022-2822 1012

E-mail: ho@rptechindia.com

Reviewed in:

December 2003



PREVIOUS WINNERS

2002: Samsung SyncMaster 171MP

2001: NA

persistence—this test indicates how good games and movies will look. The monitor passed the test wonderfully.

This monitor scores full marks for style, and will add a lot of appeal to any desk.

WORTHY MENTIONS

Samsung Syncmaster 171S

- + Can be used in landscape or portrait mode, height adjustment, wall mounting, best performance and best value in the 17-inch category

- Omission of DVI support

Price: Rs 42,000

Contact: Samsung Electronics India Information & Telecommunication Ltd

Phone: 011-5151 1234

Fax: 011-5160 8820

E-mail: marketing@samsungindia.com

Reviewed in: February 2003

Sharp LL-T15G3

- + Very compact, auto gain can be set, best performance and best value in 15-inch category

- Performed poorly in OSD test

Price: Rs 19,200

Contact: Sharp India Ltd

Phone: 011-2643 1313

Fax: : 011-2643 8748

E-mail: lcd@sharp-oa.com

Reviewed in: July 2003





MOTHERBOARDS (AMD)

The Gigabyte GA-7NNXP board has a clean capacitor layout. Except for the floppy drive connector, all the other connectors are well placed.

Features-wise, there's an AGP Pro 8X slot, nVidia's onboard sound system, two LAN connectors, and support for a dual-channel DDR 400 MHz memory. It also features IDE RAID and S-ATA RAID functions, thus allowing maximum expandability in terms of storage. One unique feature is the Dual Power System (DPS) that can provide a six-phase supply to boost the voltages required during over-clocking. The board comes with 6 USB ports, 3 Firewire ports, an IR header and front USB ports.

We tested it with an AMD Athlon 3200+, 512 MB of DDR 400 MHz Corsair matched pair memory, an ATi 9800 128 MB graphics card and a Seagate Barracuda 40 GB hard disk, with Windows XP as the OS. In the SiSoft Sandra CPU test, the results were 8209 and 3297 respectively for the Dryhstones and Whetstones—the best so far for any AMD platform.

Gigabyte GA-7NNXP

+ Top-of-the-line features
– Expensive
Price: Rs 15,000
Contact: Digi Giga Systems Ltd
Phone: 022-2652 6696
Fax: 022-2652 8914
E-mail: sales@dlinc.co.in
Reviewed in: December 2003



PREVIOUS WINNERS

2002: MSI KT4 Ultra
2001: Asus A7M266

Quake III Arena saw it return a whopping 315 fps at 32-bit colour depth and a resolution of 1024 x 786. Video encoding a 50 MB file took just 72 seconds. The ZDbench Content Creation and Business Winstone benchmarks saw it give proof of the seamless working of all its sub-systems.

The price is rather high, but the

WORTHY MENTIONS

EPOX EP-8K3A

+ Feature-rich, onboard RAID controller, excellent value for money
– No Serial ATA support
Price: Rs 3,650
Contact: Abacus Peripherals Pvt Ltd
Phone: 022-5692 3941
Fax: 022-5692 3946
E-mail: enquiry@abacusperipherals.com
Reviewed in: February 2003

DFI AD77 Infinity

+ Supports upto 4 GB memory
– No Bluetooth support
Price: Rs 7,000
Contact: Zeta Technologies
Phone: 022-2410 2288
Fax: 022-2410 2277
E-mail: tejas@zetaindia.com
Reviewed in: February 2003

numerous features and the three-year warranty make up for it. All in all, it's the best motherboard for the AMD platform that money can buy.

MOTHERBOARDS (INTEL)

The 865PE Neo2 is the latest entry from MSI for the Pentium 4 processor, which supports hyperthreading and 800 MHz FSB. It sports the usual clean layout, with no capacitors cramped around the CPU area. The dynamic over-clocking feature helps running CPU-intensive applications effectively.

The 865PE Neo2 comes with support for dual-channel DDR 400 MHz memory via four memory slots, Gigabit LAN, four S-ATA hard drive connectors and six-channel audio. The board has six onboard USB ports on the back panel and two in the front. The Firewire bracket connects to the board to provide 3 Firewire ports.

We tested the board with a Pentium4 3.2 GHz, an ATi 9800 128 MB card, Corsair 400 MHz matched pair memory, a 40 GB Seagate Barracuda hard drive and Windows XP as the OS. The results were absolutely stunning. The CPU tests saw it crossing the 10,000 mark on the Dryhstone value. Similarly, the multimedia FPU recorded an astounding 23,583 in the SiSoft Sandra benchmark, reflecting the superb CPU sub-system. In Quake 3

865PE Neo2

+ Great performance, dual-channel DDR 400
– None
Price: Rs 13,000
Contact: Cyberstar
Phone: 080-227 6986
Fax: 080-223 6781
E-mail: narend@cyberstarin.net
Reviewed in: December 2003



PREVIOUS WINNERS

2002: Gigabyte GA-8ITXE
2001: Asus P4T

Arena, it recorded a maximum of 556 fps in the fastest mode—this can be attributed to the 800 MHz FSB and the DDR 400 MHz. The video encoding was completed in just 71 seconds—one second ahead of the Gigabyte GA-7NNXP. The board returned 42.9 and 33.3 units in the

WORTHY MENTIONS

MSI 845PE Max2

+ Six-channel sound, Firewire port
– No onboard display
Price: Rs 7,000
Contact: Cyberstar
Phone: 080-227 6986
Fax: 080-223 6781
E-mail: narend@cyberstarin.net
Reviewed in: February 2003

Mercury KOB845G-ND5Mx

+ Excellent value for money
– No overlocking possible
Price: Rs 4,000
Contact: Kobian India Ltd
Phone: 080-556 6626
Fax: : 080-556 6625
E-mail: india_support@kobian.com
Reviewed in: February 2003

content creation and Business Winstone benchmark respectively, posting the best scores till date.

At Rs 13,000, it's definitely expensive, but its features and mind-boggling performance more than make up for it. →



MP3 PLAYERS (PORTABLE)

The Apple iPod is available in 10, 15 and 30 GB storage capacities. We tested the 30 GB model. The 15 GB and 30 GB models ship with a wired remote control, a docking cradle and a carry case. A FireWire cable connects directly to the iPod or to the docking cradle. Alternatively, you may purchase a USB cable. It has five touch sensitive buttons and a scrolling wheel to control the player. The bundled CD comes with iTunes and MusicMatch for both Mac and Windows users.

The 30 GB hard drive stores approximately 7,500 songs, at 4 minutes per song, encoded at in either the MP3 or AAC formats. You can browse by playlist, album, artist, composer, genre or song.

The 'On the Go' feature lets you create a playlist directly on the device. You can also use the device as a portable hard drive to transfer any kind of data between computers. A line-out socket lets you connect the iPod to a stereo system.

You can also play Brick, Parachute

Apple iPod

+ Hard-drive based, FireWire cable bundled, line-out socket, earbud-style earphones

– Very expensive

Price: Rs 45,000 for 30 GB, Rs 36,000 for 15 GB, Rs 28,000 for 10 GB

Contact: Apple Computer International Private Limited

Phone: 080-555 0575

E-mail: indiainfo@asia.apple.com

Reviewed In: September 2003



PREVIOUS WINNERS

2002: Creative PA-20

2001: Creative Nomad II MG

and Solitaire, set an alarm that beeps or plays the song of your choice, import your contacts, calendar events, to-do lists, and view text files on the iPod.

The iPod supports the MP3, MP3 Variable Bit Rate, AAC, WAV, AA, and AIFF

WORTHY MENTIONS

Creative Digital MP3 Player LX100

+ Decent set of features, easy installation, large LCD

– No bundled software

Price: Rs 9,799

Contact: Creative Labs Asia

Phone: 98203 57713

E-mail: rajshekhar_bhatt@ctl.creative.com

Reviewed In: September 2003

Ennyah Digisound II DS601 MP3 Player

+ MP3 player cum USB stick, LCD display, cables, strap, 128 MB storage

– Bass output lacking

Price: Rs 6,500 (approx)

Contact: Great World Tech Pvt Ltd

Phone: 022-2389 2828

E-mail: sales@gtechworld.com

Reviewed In: November 2003

audio file formats. The internal lithium-ion battery that generally takes about 3 to 4 hours to charge fully, should last you about 6 hours with lots of scrolling and intermittent use of the backlight.

OPTICAL DRIVES

Ever wondered why so many people are buying CD writers, even though the capacity of an entry-level hard disk is 40 GB? It's because hard disks are not invincible. A surface error on your boot sector is enough to make it practically unusable and give you nightmares. Instead, burn your precious files onto a CD and do away with all the anxiety. With the advent of DVD-ROM drives and the increasing popularity of CD-R/RW drives, it was just a matter of time before combo drives started appearing in the market. They save space, and are an affordable option too.

The packaging and contents of the Sony CRX 300A are very similar to those of its competitors. Apart from the Sony, only Liteon offers a half-height form factor, which is useful for micro-ATX boards and small cabinets. There's a standard single eject button and multi-colour LED on the front bezel. It has a 2 MB buffer that takes care of buffer under-run risks. The Mount Rainier standard is also supported.

Sony CRX 300A

+ Low CD copy time, best performance

– Speed limit feature cannot be turned off

Price: Rs 5,200

Contact: Rashi Peripherals

Phone: 022-2826 0258

E-mail: ho@rpte-chindia.com

Reviewed in: September 2003



PREVIOUS WINNERS

2002: BenQ DVP-1648A (DVD-ROM), Iomega CDRW55296INT-B (CD Writer)

2001: Aopen 1640 Pro (DVD-ROM)

We used a non-encrypted data DVD-ROM for our Nero DVD Speed tests that yielded results that were quite surprising, to say the least. The burst rate tests yielded extreme highs and lows of data transfer. The CRX won the transfer rate tests, with a speed of 6.2X after a neck-to-neck fight from Liteon. However, its access time scores in the SiSoft Sandra test saw it finishing last.

WORTHY MENTIONS

Liteon LTC48161H

+ Half height, best value

– No data cable bundled, high CD copy time

Price: Rs 3,700

Contact: Mediatech India

Phone: 022-2201 4083

Fax: 022-5639 6696

E-mail: sales@mediatechindia.com

Reviewed in: September 2003

Krypton 52x/32x/52x

+ Low access time, best performance

– No Mt Rainier support, no manual provided

Price: Rs 2,800

Contact: Priya India Ltd

Phone: 022-5666 3100

Fax: 022-5666 3199

E-mail: priyabom@priyagroup.com

Reviewed in: September 2003

Another standard feature of the drive is the ability to copy protected data discs.

Coupled with good build quality, the Sony CRX 300A performed extremely well. If only the speed limit feature could be turned off somehow!



PRINTERS (INKJET)

Due to fierce competition between the major players in the printer market, costs have fallen drastically, making inkjet printers more and more affordable. A year ago, an entry-level inkjet printer would cost around Rs 6,000 to Rs 7,000. Today those figures are around Rs 2,500 to 4,000. The competition has also made manufacturers think about add-ons, like support for memory sticks, and direct printing from digital cameras. In this competitive scenario, we tested a range of printers.

The Canon S530D was the most feature-rich printer in our comparison tests. Its support for nearly all possible technologies makes it a one-stop printing solution. Whether printing from a PC or a digital camera, it assures that you have total control over the output.

The printer comes with the USB 2.0 interface for faster data transfer, and a Compact Flash (CF) card reader that you can insert in any digital camera and take printouts directly. Canon was thoughtful and generous enough to provide a CF adapter too.

Canon S530D Photo Printer

+ USB 2.0, Compact Flash (CF) card reader, cables for printing from a digital camera

– Expensive

Price: Rs 24,995

Contact: Canon India Ltd

Phone: 011-2680 6572

Fax: 022-2201 4083

E-mail:

brijesh@canon.co.in

Reviewed in:

October 2003



PREVIOUS WINNERS

2002: HP Deskjet 970CXi

2001: Epson Stylus Color 880

The printer's interface is an LCD screen that offers full control over settings such as paper type, ink quality, etc. It also indicates the number of photographs that you need printed. If you want to print thumbnails of all the images on the CF card, you can do so from the LCD console.

WORTHY MENTIONS

HP DeskJet 6122

+ 8 MB buffer, very accurate colour reproduction

– Data cable not provided

Price: Rs 10,500

Contact: Hewlett-Packard India Ltd

Phone: 011-2682 6000

E-mail: ashwini-k_aggarwal@hp.com

Reviewed in: April 2003

HP DeskJet 3325

+ Great price, good performance

– Only 768 KB of internal buffer

Price: Rs 2,999

Contact: Hewlett-Packard India Ltd

Phone: 011-2682 6000

E-mail: ashwini-k_aggarwal@hp.com

Reviewed in: April 2003

Also provided are cables for printing from a digital camera. Other details such as the placement of buttons and the compact flash slot—all of which are easily accessible—go into making this printer a true winner.

PRINTERS (LASER)

The Samsung ML-1710 comes in a milky white body, decorated in slate grey. Despite its small size (13.7 x 14 x 7.6 inches), the printer features a removable paper tray, capable of holding around 250 sheets. The upper body serves as the output tray, and can hold about 40 sheets.

As far as specifications are concerned, the ML-1710 boasts of an 8 MB memory buffer, which is quite effective. The downside is that the memory can't be upgraded. The printer comes with the USB 1.1 interface. Samsung has done a good job of providing drivers for a host of operating systems. Bundled accessories include a 15A power cord and an extensive manual.

The printer comes with a toner-save feature, which, Samsung claims, saves as much as 40 per cent on ink. Samsung claims that the ML-1710 is the fastest and the smallest laser printer, and they're right. The printer was able to print at 15 ppm. The quality of the output was also great, considering the speed. It printed the test image and combination-document in just 17 seconds and 22 seconds respectively—

Samsung ML-1710

+ 8 MB memory, toner saver button, water marking, high altitude correction

– Output tray can hold only approx. 40 sheets above which papers fly out, USB cable not bundled

Price: Rs 16,000

Contact: Samsung Electronics

India Information &

Telecommunication Ltd

Phone: 011-5151 1234

Fax: 011-5160 8820

E-mail: farrukh@sams-

ungindia.com

Reviewed in:

August 2003



PREVIOUS WINNERS

2002: Canon LBP1210

2001: Lexmark Optra M412

by far the fastest we've seen.

The lack of network support and small paper handling capacity means that it's not really suited for large organisations or

WORTHY MENTIONS

Canon LBP 1210

+ USB and parallel interface, 250-sheet paper capacity

– Interface cables not bundled

Price: Rs 13,500

Contact: Canon India Ltd

Phone: 011-680 6572

Fax: 011-680 7180

E-mail: brijesh@canon.co.in

Reviewed in: January 2003

Samsung ML-1510

+ Bundled interface cables, 250-sheet paper capacity, remarkably small and light

– No LCD display

Price: Rs 11,000

Contact: Samsung Electronics India Information & Telecommunication Ltd

Phone: 011-5151 1234

Fax: 011-5160 8820

E-mail: farrukh@samsungindia.com

Reviewed in: November 2003

offices. However, at Rs 16,000, it's ideally suited for a typical small office and as a home printing solution.



SCANNERS

Scanners have come a long way. Today, entry-level scanners spin their magic at well over 1,200 dpi, and are affordable, slim, and good-looking. They do well at multitasking too—a scanner can, for example, e-mail or print a scanned document, or even burn a copy of it onto a CD—all in a matter of minutes. It has thus been elevated to the status of a smart companion from just a mono-task device. Moreover, technology such as Contact Image Sensors (CIS) makes for space-saving design, without scrimping on quality.

Although the scanner is not on the list of hardware to see major technological changes, these devices can now scan at a resolution of 2400 x 4800 dpi and at a colour bit-depth of 48. Subtle changes in the way sensors are built have also helped the scanner reproduce better results in shorter times.

With a resolution of 2,400 dpi and 48-bit colour depth, the sleek HP 4570c brings eye-pleasing images to your monitor. It also has a connector for the Transparency Adapter. The scanner has a

HP 4570c

+ 4 hot keys, bundled automatic document feeder, good after-sales support
– No transport lock

Price: Rs 17,999

Contact: Hewlett-Packard India Ltd

Phone: 011-2682 6000

E-mail: ashwini-k_aggarwal@hp.com

Reviewed in: April 2003



PREVIOUS WINNERS

2002: Hp Scanjet 5470c

2001: Epson 1640SU

USB interface, which means that getting it up and running is a piece of cake. The quality delivered and the features that it offers are further backed by the results of the speed test, which are testament to its efficiency.

Features such as scan to CD, print

WORTHY MENTIONS

HP Scanjet 3500c

+ 3 hot keys, good after-sales support
– No transport lock, high pre-scan time

Price: Rs 6,200

Contact: Hewlett-Packard India Ltd

Phone: 011-2682 6000

E-mail: ashwini-k_aggarwal@hp.com

Reviewed in: April 2003

Umax Astra 2500

+ OCR software bundled, very fast photo-scanning at high resolutions

– No onboard controls

Price: Rs 3,600

Contact: Neoteric

Phone: 022-2417 2600

Fax: 022-2418 5294

E-mail: sales@neoteric-info.com

Reviewed in: April 2003

and e-mail, and a key to select colour and line art mode make it very easy to use. The build quality and looks are just as good, making it a perfect tool for those who can afford it.

SPEAKERS

From being mere add-ons to a peripheral even a home user does not ignore, speakers have come a long way. With interactive games and DVD movies becoming increasingly popular, it comes as no surprise that speakers have evolved to reproduce crisper, sharper audio. High-end, sophisticated equipment not only reproduces but also enhances the audio quality. This year saw quite a few entrants in the speaker category. The tests covered the entire gamut, ranging from the spanking new Creative Inspire 7.1 to the thunderous Creative Megaworks 5.1 550. The monstrous Altec Lansing 641 speakers were also reviewed.

This year's winner was the Creative Megaworks THX 5.1 550. The beauty of these speakers lies in its acoustics. They are clear and loud enough to give you an overwhelming experience. The bass provides the needed effect for trance and bass-intensive music. Turn down the bass and play a live orchestra track to witness these speakers produce the most

Creative Megaworks THX 5.1 550

+ Huge power output, distortion-free sound even at high volumes

– No digital input, expensive

Price: Rs 27,999

Contact: Creative Technology Ltd

Phone: 98203 57713

Email: rajshekhar_bhatt@

ctl.creative.com

Reviewed In:

April 2003



PREVIOUS WINNERS

2002: Artis S880

2001: Creative Cambridge DTT 2500D

soothing high-fidelity sound that gives you the ambience of a live concert. This THX-certified product captures the sound effects of a movie with aplomb and verve. On the flip side, it has no provision for connecting a digital input to the speakers. But this omission can be

WORTHY MENTIONS

Altec Lansing 641 4.1 speakers

+ Lots of options on the remote, tight bass

– Weak mid-range, sub-woofer overpowers the satellites at higher volumes

Price: Rs 20,000

Contact: Zeta Technologies

Phone: 022-2410 2277

E-mail: tejas@zetaindia.com

Reviewed In: December 2003

Creative Inspire T7700 7.1 speakers

+ Has a connector for the Creative MuVo MP3 player on the wired remote control

– Subwoofer is underpowered, noticeable distortion at high volumes

Price: Rs 12,299

Contact: Creative Technology Ltd

Phone: 98203 57713

E-mail: rajshekhar_bhatt@ctl.creative.com

Reviewed In: December 2003

disregarded in the light of the superb sound quality that these speakers are capable of. →



STORAGE (HARD DISK DRIVES)

Today, entry level hard disk prices are at a rock bottom level of just Rs 3,600, while prices of the largest capacity drives revolve around Rs 17,000 to 20,000. The 300 GB hard disk has hit the market. With the increase in size we've also seen an increase in speed, with drives as fast as 15,000 rpm. In this cutthroat environment, we tested various models from different hard disk manufacturers.

The 250 GB MaxLine Plus II wins hands down, be it features or performance—no other drive can match it. This was also the best performing drive in the entire spectrum of PATA and SATA hard disks taken together.

Excellent drive electronics and the 7,200 rpm spindle enabled this drive to give mind-bending performance in the SiSoft Sandra Tests. It gave excellent results in the sequential read and write speed test, with scores of 58 and 56 MBps—better than those of any of the SATA drives.

In the ATA category, nothing could really break the Maxtor MaxLine Plus II 250 GB drive in the real world tests. This drive lost

Maxtor's MaxLine Plus II 7Y250PO

+ 7200 rpm, ATA 133
– Expensive
Price: Rs 20,500
Contact: Cyberstar
Phone: 011-2643 8216
Fax: 011-2623 5460
E-mail: yogi@maxtor.com
Reviewed in:
August 2003



PREVIOUS WINNERS

2002: Western Digital WD1000
2001: IBM Deskstar 60GXP 41 GB

out in the real world test to its SATA sibling because of its slightly higher CPU utilisation. In the Photoshop test, the MaxLine Plus II 250 GB took just 4 seconds to load Photoshop, and needed just 29 seconds to load the 200 MB test file. This can be attributed to the 8 MB of buffer memory, and the good read speed burst of 9 MBps.

All in all, we recommend this drive to users such as professional audio and video

WORTHY MENTIONS

Maxtor Diamond Max Plus9 6Y200M0
+ Low CPU utilisation, serial ATA, both types of power connector modes
– None
Price: Rs 14,200
Contact: Cyberstar
Phone: 011-2643 8216
Fax: : 011-2623 5460
E-mail: yogi@maxtor.com
Reviewed in: August 2003

Samsung SpinPoint V Series SV1203N
+ ATA 133, lowest price per MB
– 5,400 rpm
Price: Rs 6,200
Contact: Samsung Electronics India Information & Telecommunication Ltd
Phone: 011-5151 1234
Fax: : 011-5160 8820
E-mail: hddsupport@samsungindia.com
Reviewed in: August 2003

editors, and gamers, who are always on the hunt for bigger capacity, faster drives that provide top-notch performance.

STORAGE (PORTABLE)

With advances in mobile computing and communications, the idea of a static workplace is slowly fading away. Today, a laptop lets you work at any time and place of your choice—be it a bus, train, inside a restaurant, etc. This makes it necessary to use light, convenient portable storage media to store data on the fly. Thumb drives and external hard drives have emerged as viable options in this media segment. They are easy to install and are durable as compared to other storage media. With improved interface standards such as USB 2.0 and FireWire, these devices are capable of transferring data efficiently and quickly, regardless of its type and size.

The EasyDisk was one of the lightest drives that we received. The real world tests saw it yielding faster data transfer rates as compared to other USB drives. Its performance was consistent and unswerving throughout the entire gamut of the testing process. A hardware switch enables you to use it alternatively as a floppy drive. There was no problem when connecting—Windows XP immediately

EasyDisk 128 MB

+ Consistent performance, inexpensive
– Uses USB 1.1, poor build quality
Price: Rs 3,500
Contact: GNH Systems
Phone: 022-2490 1333
Email: usbflashmemory@hotmail.com
Reviewed In:
December 2003



PREVIOUS WINNERS

2002: Freecom FHD-1 20 GB
2001: NA

recognised it as a removable hard drive, and also as a second floppy drive. You can also use it as a bootable media if your BIOS permits.

Bundled along are software such as Passid, a password protection tool, and Flash Mail—a utility that integrates well with Microsoft Outlook.

WORTHY MENTIONS

Freecom FHD-1 40GB external hard drive
+ Excellent data transfer rates, good build quality
– High price, quite a heavy drive
Price: Rs 13,500
Contact: J. S. Equipments
Phone: 022-2381 0713
E-mail: jse@vsnl.com
Reviewed In: December 2003

Transcend TS40GHDENC 40GB
+ Good data transfer rates, inexpensive, genuine leather carry case
– No additional software bundled
Price: Rs 11,000
Contact: Wales Technologies
Phone: 022-2382 8100
E-mail: sales@mediamangroup.com
Reviewed In: December 2003
Note: Look for our external storage comparison test in the Digit January 2004 issue

The EasyDisk 128 MB drive was the clear winner among the thumb drives, primarily due to its more-than-adequate software bundle, as well as its reliable, decent performance.



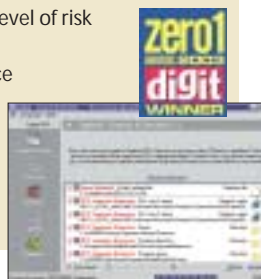
ANTI-SPYWARE

Unbeknownst to most PC users, information such as personal details, surfing habits, passwords and credit card information is at a high risk of being stolen from their PCs. How, you ask? It's spyware that's the culprit! Spyware are small applications that collect and push information to the developer of the application. In order to get rid of these pesky applications, you first need to get an anti-spyware software. That's where Spybot steps in to save the day.

PepiMK Software's Spybot is a comprehensive adware and spyware remover, at the best price ever—it's free! The installation is easy enough, and fairly quick. You get a warning telling you that removing some spyware may prevent some of your other software from functioning, or could go against their licensing policies. The program's layout takes a minute to figure out, but is very straightforward to use. Using all the default options, it quickly scanned for spyware, taking less than a minute on

Spybot

- + Shows possible level of risk associated
- Complex interface
- Price:** Free
- Web site:** spybot.eon.net.au
- Reviewed In:** July 2003



PREVIOUS WINNERS

2002: NA
2001: NA

our test rig. The scan showed up 34 objects and listed them along with their paths. Clicking on an object brings up a comprehensive description of what type of spyware it is, the possible level of risk, what that program or file does to your system, and even an overview of the company's privacy policy. This is more than enough for you to make an

WORTHY MENTIONS

Ad-Aware

- + Good scanning speed
- Not much detail provided
- Price:** Free
- Web site:** www.lavasoftusa.com
- Reviewed In:** July 2003

Spy Sweeper

- + Fast installation, online definition updates, real-time protection
- Low scanning speeds
- Price:** \$29.95
- Web site:** www.webroot.com
- Reviewed In:** July 2003

informed choice of what to keep and what should go. In this regard, Spybot provides more information and makes it more accessible than any of the other tools tested here. The only spyware that Spybot missed were some elements of Kontiki, Cydoor and WurldMedia. Any spyware applications that are running during the scan are cleared out after a restart.

ANTI-VIRUS

Viruses are, by far, the most visible threats to PC security. Having the advantage of being among the first to affect computers, viruses have had that much more time to grab hold of the world's attention. Despite being so well known, many myths abound about what viruses and their lesser cousins are, and what they're capable of.

It's generally agreed that a virus is a piece of code that can self-replicate—make copies of itself automatically once it enters a host computer. The code doesn't have to do anything nasty to be called a virus. This is something a lot of people aren't aware of. In a way, the very fact that the program is multiplying on your computer without your knowledge may be termed malicious activity.

Once the top dog in the anti-virus industry, McAfee has had a rough time since mid-2000. No version of VirusScan available at the time was compatible with Windows Me. The 'poison pill' DAT file upgrades further reduced consumer confidence. Later versions had

McAfee VirusScan 7

- + One click updates
- Scheduling capability weak
- Price:** \$49
- Developer:** Network Associates
- Web site:** www.mcafee.com
- Reviewed In:** July 2003



PREVIOUS WINNERS

2002: Norton Antivirus 2003
2001: Norton Antivirus 2001

the unfortunate propensity to corrupt Outlook Express e-mail messages, and were incompatible with Solitaire and FreeCell. Worse, certain versions had problems handling long file paths.

With version 7.0 though, all that is in the past. It turns out to be an all-rounder—providing good virus protection, one-click updates, a great

WORTHY MENTIONS

PC-cillin 2003

- + Great scheduling ability, low load on system, highly configurable
- Average scan scores
- Price:** \$49.95
- Developer:** Trend Micro
- Web site:** www.trendmicro.com
- Reviewed In:** July 2003

AVG 6.0 Free Edition

- + Free, easiest to use, least burden on the system
- No online support, below average virus scanning scores
- Price:** Free
- Developer:** Grisoft
- Web site:** www.grisoft.com
- Reviewed In:** July 2003

interface with oodles of aesthetic appeal, a very competent personal firewall and an amazing visual utility to trace the route to any Internet destination. As the winner of our best performance award, McAfee's back and it means business.



CD-WRITING

CD writers are an invaluable tool for backing up your data. You can make audio and video CDs—and there are a hundred other uses you can think up for CDs.

Nero 6 is the latest from Ahead Software. It sports a new interface—Nero Express. All wizards that were in the previous versions have been removed, but Nero Express is a user-friendly interface that provides easy access to all features. Nero 6 comes with comprehensive documentation explaining all the features and functionalities available. It supports almost all popular CD formats. It even supports the HFS file system, so you can burn CDs in the MAC format. A disadvantage we found with Nero 6 was its lack of network browsing capability—you need to use Windows Explorer to drag files onto your compilation.

You can easily create ISO images using Nero, and you can burn bootable and regular CDs from ISO and CUE images. A novel feature is support for Mini DVD discs—you can write onto these small form factor—3¼ inch—DVD discs which

Nero 6 Ultra Edition

+ Powerful features, backup creation tool, copy protection for audio CDs

– Disk spanning not supported

Price: \$59.99

Web site: www.nero.com

Reviewed In: October 2003



PREVIOUS WINNERS

2002: NA

2001: Easy CD Creator 5 Platinum

hold up to 1.4 GB of data. It also supports multiple recorders, so you can create multiple copies of a disc simultaneously, as well as packet writing through IN CD or Direct CD, for convenient drag-and-drop CDRW writing. Another good feature in Nero 6 is the addition of a virus checker and a backup tool. You can even create copy protected audio CDs using Nero 6—

WORTHY MENTIONS

Pinnacle Instant CD/ DVD

+ Easy to use wizards, inbuilt audio and video editors

– Doesn't support overburning

Price: \$99.99

Web site: www.pinnaclesys.com

Reviewed In: October 2003

Roxio Easy CD/DVD Creator 6

+ Excellent interface, supports disk spanning

– Doesn't support overburning, HFS not supported

Price: \$69.95

Web site: www.roxio.com

Reviewed In: October 2003

this excellent feature is absent in all other software; the same goes for its virus checking feature. By adding a new, improved interface, Nero has become more appealing for novice users, but it is not as user-friendly as Easy CD/DVD. For advanced users, however, it supports several options like overburning, changing buffer size, and so on. That's what makes Nero 6 an all-rounder.

DATA BACKUP

Backup software let you backup data to a safe place—on another hard disk, or across the network—so that you aren't left out in the cold when you lose those precious bytes of information.

Norton Ghost has a very easy-to-use interface. Wizards guide you through all tasks without exposing the intricacies. All tasks are grouped under three categories—Ghost Basic, Ghost Advanced and Ghost Utilities. Under Ghost Basic come all the basic backup and restore tasks. Ghost Utilities consists of the Norton Ghost Boot Wizard that helps in creating a boot disk, for various scenarios like restore from removable media, restore from shared folders, or restore from peer-to-peer network. A Peer-to-Peer Wizard eases the task of backing up or restoring between two PCs.

Norton Ghost supports removable storage media such as CD, DVD, USB drives, Zip drives and Firewire, onto which the hard disk image can be transferred. It even supports creation of

Norton Ghost 2003

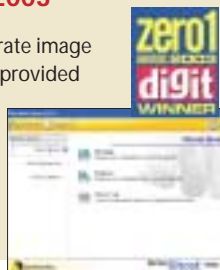
+ Feature rich, separate image integrity check tool provided

– Slow operation

Price: Rs 2,632

Web site: www.symantec.com

Reviewed In: November 2003



PREVIOUS WINNERS

2002: NA

2001: NA

images across a network. Thanks to the Image Integrity Check tool, you need not wait till you have to urgently restore the PC, to find that the image is corrupted. Browse the contents of the image of a suspicious piece of software using the Norton Ghost Explorer. The explorer also comes in handy when the image is corrupted and a few important files need to be extracted.

WORTHY MENTIONS

WinBackup

+ Security, spanning across media

– Backed-up data is not secured by default

Price: \$39.95

Web site: www.liutilities.com

Reviewed In: November 2003

GoBack 3.0

+ Very fast, utilises 10 per cent of hard disk space

– Monitors entire drive, users do not have the freedom of creating safe points manually

Price: \$29.95

Web site: www.symantec.com

Reviewed In: November 2003

One of its utilities—the GDisk utility—can be used to create and manage partitions.

Norton Ghost was a tad slow in terms of time taken to create an image. However, it compressed the resulting image file to 52 per cent of its original size. →



DATA RECOVERY

R-Studio FAT comes across as a recovery software developed for system administrators rather than for an average home user. This is well reflected by the interface which is very detailed, and lists out the details of every storage device connected to the computer.

R-Studio was the only tool that supported remote recovery over a network. It supports the creation of disk images which are perfect byte-by-byte copies of entire partitions. Though the software cannot schedule regular creation of disk images, the images we obtained were perfect copies. Another useful feature is the support for making software RAIDs or virtual volumes. Virtual volumes are a feature by which partitions can be spread across separate physical disks without the need for separate hardware controllers.

The manual is a little complex, and is targetted at advanced users—a little simplicity would be desirable.

We deleted 15 files, and tried to recover them with the software. R-Studio was able to completely recover 7 files, and par-

R-Studio FAT

+ Feature-rich, has in-built restoration capability

– Cryptic interface that needs some technical expertise

Price: \$49.99

Developer: R Tools Technology Inc.

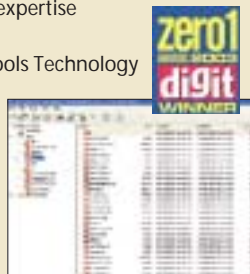
Website:

www.r-tt.com

Reviewed In:

November

2003



PREVIOUS WINNERS

2002: NA

2001: NA

tially recover another 7. It only lost 1 file.

The software was also able to satisfactorily recover the partition we deleted. Though the file structure was not saved, the data was.

R-Studio is a tool more suitable for

WORTHY MENTIONS

Ontrack EasyRecovery Professional 6.03

+ Very simple and easy-to-use interface

– Slow scanning

Price: \$499

Developer: Ontrack Data Recovery Services

Website: www.ontrack.com

Reviewed In: November 2003

Stellar Phoenix FAT & NTFS

+ Very low scanning and recovery time, very small installation size

– Low on features

Price: \$149

Developer: Stellar Information Systems

Website: www.stellarinfo.com

Reviewed In: November 2003

professionals rather than home users, as it offers a few extra utilities which otherwise would cost more to procure. It is the only tool that has system restoration capabilities. All these features come packed in just 3.39 MB of data, as compared to 53.6 MB for Ontrack EasyRecovery.

FIREWALLS

The Internet is one of the best things that's ever happened to mankind.

But like all good things in life, it comes with its share of woes. What was once meant to be a means for sharing important information across geographical boundaries has now turned into something that lets crackers sit in the comfort of their dens and wreak havoc on unsuspecting users. Securing systems and data from such malicious activity has been the top concern of leading corporate houses across the globe, and has led to a billion-dollar Internet security industry. Almost all organisations employ the services of professional security companies to secure their networks from crackers. Despite this, there has been an increase in cracking activity and security exploits worldwide.

ZoneAlarm has been one of the best firewalls for quite some time, and it was no different this time. It's very easy to install and configure, and provides very good protection. Immediately after the install, a configuration wizard pops up, which lets you set up things such as privacy control, level of alerting, and pass-

ZoneLabs ZoneAlarm Pro v3.7.159

+ Excellent performance

– High system load

Price: \$40

Web site: www.zonelabs.com

Reviewed In: July 2003



PREVIOUS WINNERS

2002: NA

2001: Zone Alarm Pro 2.6

word protection. You can also let ZoneAlarm configure permissions for the browser and its components to let it access the Internet. After this, you can

WORTHY MENTIONS

Norton Personal Firewall 2003

+ Excellent resistance to port scanning

– Expensive

Price: \$49.95

Web site: www.symantec.com

Reviewed In: July 2003

McAfee Personal Firewall Plus

+ Pie chart of the most frequently blocked ports, blocks open ports from within IE

– Does not display a graph of local port activity and Internet traffic, fails to stop port from uploading to server

Price: \$44.95

Web site: www.mcafee.com

Reviewed In: July 2003

walk through a nine-step tutorial that will get you started with configuring the firewall. The MailSafe feature lets you quarantine or allow attachments based on their file types. With all its bells and whistles, ZoneAlarm does place some serious overhead on your Internet browser, but then again, security is all that matters, right?



IMAGE MANAGEMENT

For those who only occasionally snap images and have only about a hundred images to manage, the image management in Windows XP should be sufficient. Most cameras come bundled with basic image management software, but these just let you browse through your pictures, and arrange them in different folders, but not much else. The real problem of image management arises when you have thousands of images.

Photoshop Album is a comprehensive image management software. Ease of use is written all over the software. There are a few features that help this software beat the crowd easily—the timeline shows the dates at which images were taken, and small bars indicate how many images were clicked in that month or on that date. This is useful if you want to search for an image, and you can remember only the month you shot it in.

The second feature that makes Photoshop Album stand tall is the various ways you can use images with it. You can create greeting cards, calendars and photo books, and even embed audio into all of these.

Adobe Photoshop Album

- + Friendly interface, timeline show, Creation Wizard, 3D virtual rooms
- Long boot up time, creations can be saved only as PDF files

Price: \$49.99

Web site:

www.adobe.com

Reviewed In:

September 2003



PREVIOUS WINNERS

2002: Adobe Photoshop 7

2001: Adobe Photoshop 6.01

The Creation Wizard makes the whole process a breeze.

A unique feature is that you can search for an image that is visually similar to another. You can also create 3D virtual rooms with your images on the walls, and take a 3D tour of the room.

However, Photoshop Album does have

WORTHY MENTIONS

Ulead Photo Explorer 8.0

- + Standalone viewer, image editor is impressive, CD catalogue feature
- Searching not up to the mark

Price: \$29.95

Web site: www.ulead.com

Reviewed In: September 2003

Picasa 1.0

- + Exclude duplicates, clubbing of images, dynamic timeline
- Limited effects

Price: \$29.99

Web site: <http://www.lifescapeinc.com>

Reviewed In: September 2003

its share of woes. You cannot select multiple images by clicking and dragging the mouse over them, as in Windows Explorer. Also, the program only offers basic image editing features, and you cannot add any special effects to the images. Despite these limitations, Photoshop Album's user-friendliness and features make it an attractive buy for home users.

LINUX (OFFICE DESKTOP)

SuSE Linux distributions have always been very promising, and the release of this office desktop indicates an attempt to break up the distros into two distinct categories—one targeted at the general user, and the other at the office user.

Installing the SuSE Office Desktop is similar to installing any of the standard SuSE distros. The interface is very simple for those who have had some previous experience with SuSE, but for the newbie it can get confusing—SuSE does not follow the step-by-step installation process that is used by all the other distros. Instead, it uses a format that is similar to a Web page—all detected settings are displayed on a single screen. To change any of the settings you need to click on the specific item on the listing. The problem with this kind of installation is that the user might miss out an important setting that should have been changed. Otherwise, the install is perfect. The default option provided in the installation mounted all existing Windows partitions by itself.

SuSE Linux Office Desktop

- + Auto mounts Windows partitions, Crossover bundled
- Does not follow the step-by-step installation process, can't install from source code

Price: Euro 120.60

Web site: www.suse.de/en/

Reviewed In:

August 2003



PREVIOUS WINNERS

2002: NA

2001: NA

The hardware support is quite amazing; it didn't have problems installing on any of the testbeds. The SuSE Office Desktop really stands up to its name when it comes to scaling up for the office user. Apart from the bundled StarOffice 6.0 it comes with Crossover, which lets you run many Windows-based applications on Linux.

WORTHY MENTIONS

Red Hat Linux 9.0

- + Very well documented online as well as offline, excellent configuration tools provided
- High system load

Price: Free

Web site: www.redhat.com

Reviewed In: August 2003

Mandrake Linux 9.1 Standard

- + Control Centre is an excellent tool, Software Sources Manager makes the update process a lot easier
- Has problems accessing Windows shares across the network

Price: \$39.90

Web site: www.mandrakelinux.com

Reviewed In: August 2003

Compatibility with rpm packages was not a problem. This distribution does not come with a 'make' utility, or any compilers. All installations have to be done from binary packages—bad for advanced users, but quite fine for novices.



LINUX (WINDOWS REPLACEMENT)

Xandros' installation procedure is very simple. There are two modes of install, Express and Custom. Express install does not allow partitioning of the hard drive, but preserves existing Windows partitions. Custom install lets the user partition the hard drive.

After logging in for the first time, a First Run wizard allows the user to configure the network, printers, etc., in a very intuitive fashion. Sharing files on a Windows network is also very easy. There is also a facility for searching other computers on the network.

The Xandros desktop is essentially a variant of the K desktop Environment (KDE). In fact, many of the tools available via the Launch menu are standard KDE tools. For example, the Process Manager runs the kpm tool.

Clicking the Windows key on the keyboard brings up the Launch menu—such improvements make the user much more comfortable with the GUI. Xandros is considerably faster than the other distributions. It even supports active user switching, just like Windows XP.

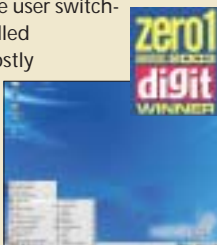
Xandros 1.0

- + Easy installation and configuration, Windows key on the keyboard brings up the Launch menu, active user switching, Crossover bundled
- Per-seat license costly

Price: \$99

Website: www.xandros.com

Reviewed In: August 2003



PREVIOUS WINNERS

2002: Mandrake Linux 8.2

2001: SuSE Linux 7.2 Professional

The Launch menu is very user-friendly, and similar to the Windows Start Menu. All the applications are neatly classified and arranged under specific categories so that the user does not have to remember command names.

The per-seat license can get a bit heavy on the pocket. Otherwise, the only fault we found with the distribution we got was

WORTHY MENTIONS

ELX Linux Power Desktop 2.0

- + Launchpads provide easy access to groups of similar applications, Windows-style icons, accessing Windows shares is extremely easy, free for personal and educational use
- Works well with KDE, but not with Gnome

Price: Free for personal and educational use, \$50

Website: www.elxlinux.com

Reviewed In: August 2003

Lycoris Desktop/LX

- + Fast installation, guided tour, near-perfect Windows desktop look and feel
- Hardware incompatibility could bring down the installation utility, worst hardware support amongst all the distributions

Price: \$40

Website: www.lycoris.com

Reviewed In: August 2003

that Crossover was bundled—which brought the price up. Xandros now offers a distribution without a Windows emulator, which is obviously cheaper.

OPTICAL CHARACTER RECOGNITION

If the question of why one might need OCR software comes up—just use your imagination. You could scan newspaper articles and save them on your hard disk as a searchable library. All those business faxes could go neatly into a folder. What about those ancient dot-matrix printouts you can't afford to throw away because you might need them some time? OCR and de-paper them.

The best thing about FineReader is its sheer versatility about file formats or the kinds of document it can recognise.

The way FineReader scanned the newspaper clip in our tests was awe-inspiring. Every bit of the layout and formatting, all the fonts and images—just about everything was retained. The resulting file looked just like the original newspaper clip—only, it consisted of clickable text!

FineReader has wizards all over the place—right from a scanner wizard to a 'Save' wizard. The main screen is well-laid out, with four buttons—Open, Read, Spell-check and Save. Each of these has drop-down lists with options. If you want

ABBYY FineReader Professional 6.0

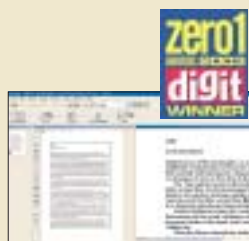
- + Extremely accurate scanning, extreme versatility, lots of wizards, several output formats, works in background
- None

Price:

Rs 13,800

Web site: www.netspiderindia.com

Reviewed In: October 2003



PREVIOUS WINNERS

2002: ABBY FineReader 6.0 CE

2001: Fine Reader 5.0 Pro

to, you can use the default options and let FineReader do everything for you.

Features-wise, FineReader is packed to the brim. The number of options in the spell-check rivals those available in Microsoft Word. Customising almost everything is a breeze. There's also a pattern editor that enables you to customise

WORTHY MENTIONS

OmniPage Pro 12

- + Recognises PDF documents, comprehensive post-OCR text editor, OCR proofreader
- Scanning weak in complex images

Price: Rs 27,600

Web site: www.hclinfosystems.com

Reviewed In: October 2003

Readiris Pro 8

- + A wide range of input as well as output supported, learning capability
- Weak in scanning from newspaper or magazine clips

Price: Rs 18,492

Web site: www.irislink.com

Reviewed In: October 2003

FineReader to suit your particular documents, with their particular special characters or formats.

With FineReader, you've reached the end of the road as far as OCRing is concerned—you won't need anything else.



SOUND EDITING

Do you have a problem rummaging through your old cassettes, or flipping through a dusty stack of records, reading them label by label before playing one of your favourite songs? With a little effort and some help from sound editing software such as Adobe Audition, you could record your old favourites onto your own PC at home, and have instant access to them in the future.

There are two editing modes in Audition—Multi Track and Edit. Multi Track is where you can lay down multiple files, mix them, etc. Edit view is the wave editor where you work with one file at a time. In the capacity we are using Audition, our primary concern will be the latter.

The Play/Pause, Record, and other buttons are well-placed. Zoom options include zooming into the selected area, and the start or end of the selection.

Recording in Audition is a breeze. Press the record button, and a dialog box comes up, asking you to define audio settings—there are options all the way up to 192 KHz 32-bit Stereo. Click OK to start recording. Whilst recording, the time-line cursor scrolls across the screen, with a realtime waveform generated behind it. Once you're done with the recording, move over to editing in the same Edit view. Switch to the

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Ads

Adobe Audition (Formerly Cool Edit Pro 2.1)

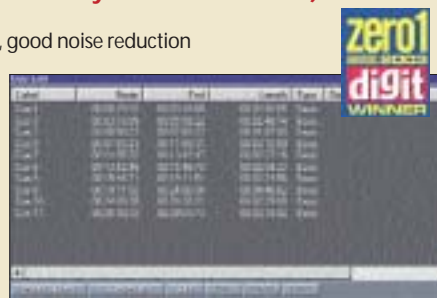
+ Recording is a breeze, good noise reduction

– Selecting and moving around is not very intuitive

Price: \$249

Web site: <http://www.adobe.com/products/audition>

Reviewed In: September 2003



PREVIOUS WINNERS

2002: Sound Forge 6.0 **2001:** Cakewalk Pro Audio 9, Soundforge 5

effects tab on the left, from where you can access most of the required functions. You can apply lots of cool effects such as pitch bending, delays and reverbs.

When it came to noise reduction, Audition performed very well. Most of the noise was removed without much change in the original audio. The cleaned up audio did have a tinny ring to it, but it was pretty good.

WORTHY MENTIONS

SoundForge 6

+ Quick response time
– Lacks multi-track editing, need plug-in for noise reduction

Price: \$349.97

Web site: <http://www.sonicfoundry.com/>

Reviewed In: September 2003

Audacity

+ Free
– Unstable at times, some operations take too many steps

Price: Free

Web site: <http://audacity.sourceforge.net>

Reviewed In: September 2003

Bazaar



We test the latest and the best hardware and software products available in the market

Altec Lansing 641 4.1 Speakers

Too powerful for your own good

The subwoofer for the Altec Lansing 641 4.1 is massive. It's the biggest the Test Centre has seen, and chances are it could give you a hernia if you don't lift it carefully.

Although the 641 is only 200 W RMS, compared to 550 for the Creative Megaworks, its satellites and woofer



are double the size and weight. Though this doesn't mean much in terms of performance, you'll definitely need plenty of room to be able to use these speakers.

One of our favourite bass tests is playing the opening cinematic of *Quake III Arena*—especially the part where the cigar butt falls to the ground. The 641 beat even the Megaworks 550 subwoofer. As far as bass goes, there's nothing better—yet.

The satellites are nice and heavy and sit firmly on your desktop. We recommend you place the subwoofer on the carpet, in the biggest room you have available. You'll know why as soon as you begin to crank up the volume knob.

Yes, the knob. Nice piece of work this. The designers at Altec have come up with a really nifty design to control volume levels, using just a knob and two buttons for the bass and treble. Pressing either of these buttons makes the knob control that effect. After a few seconds, control passes automatically back to the volume level. Also, a series of LEDs

light up to show you how light you've gone.

Make sure to nail down loose furniture and board up the windows before you turn that volume up. We only recommend this system to those who live in mansions, or those who like to show off.

SPECIFICATIONS

200W RMS, frequency response 27 Hz–20 KHz, signal to noise ratio at 1 KHz >70 dB, crossover frequency 100 Hz, system Total Harmonic Distortion < 0.3% at 10 dB, input impedance 10 KOhms, satellite drivers 1-inch tweeter and 3-inch mid-range, subwoofer drivers 2 6.5-inch Long Throw woofers.

Altec Lansing 641 4.1 Speaker System **A-**

Performance	■ ■ ■ ■ ■
Features	■ ■ ■ ■ ■
Build quality	■ ■ ■ ■ ■
Value for money	■ ■ ■ ■ ■

Price: Rs 20,000
Contact: Zeta Technologies
Phone: 022-2410 2277
E-mail: tejas@zetaindia.com
Web site: www.alteclansing.com

Sony SDM-N80 18.1" LCD Monitor

Redefined silhouette

Viewing LCDs will never be the same again, once you set your eyes on the 18-inch SDM-N80 LCD monitor from Sony. The package consists of the LCD monitor and an external device that supplies power to the monitor. Called the Media Engine, this device has points that connect to the display card as well as to another digital display device. In-built speakers on the side of the device add to the multimedia experience, but they're quite tinny.

The LCD has a stylish-looking control panel on the top of the screen. Support for USB is also provided, with a mini 2-port hub at the back. The recommended resolution for the display is 1280 x 1024 at 60 Hz. The maximum angle tilt is 60 degrees, but there's hardly any height adjustment possible.

In the test we conducted using the Display Mate Video Edition software, the horizontal, vertical and diagonal lines were very sharp, but

with a tinge of yellow. There was hardly any sign of streaking or ghosting, but there were dark corners when we inspected the purity of the

RGB colours. With hardly any flicker, almost perfect screen uniformity, and an absolute zero mir-

ror reflection in the dark screen test, this LCD performs very

well indeed.

One cause for concern is the fact that the LCD is completely useless without the external box. And considering the size of the screen, the price tag is a little on the expensive side. Style-wise though, the product scores full marks, and will definitely add a lot of appeal to any desk.

SPECIFICATIONS

18.1-inch a-Si (Amorphous-Silicon) TFT active matrix panel, 1,600 x 1,200 maximum resolution, 2 USB ports, external power supply with connections for alternate display source, sound connectors, Mac-compatible display connection

Sony SDM-N80 18.1" LCD Monitor **B+**

Performance	■ ■ ■ ■ ■
Features	■ ■ ■ ■ ■
Build Quality	■ ■ ■ ■ ■
Value for money	■ ■ ■ ■ ■

Price: Rs. 1,49,000
Contact: Rashi Peripherals
Phone: 022-2826 0258
Fax: 022-2822 1012
E-mail: ho@rptechindia.com
Web site: www.sony.co.in

Gigabyte GA-7NNXP Motherboard

Loaded to the boot

The GA-7NNXP is the latest AMD platform motherboard. It is based on the Nforce2 chipset.

The board layout is traditional Gigabyte—loads of colourful connectors on a bright blue PCB. The capaci-



tor layout near the CPU is good, except for one in the extreme upper left hand corner that came in the way when we were installing our bigger HSF (heat sink fan).

On the features front, the board comes with an awesome assortment of technologies. It supports dual-channel DDR 400 MHz via four colour-coded memory slots; the AGP Pro 8X slot can take all the latest graphic cards; it also has nVidia's onboard sound system, which is more powerful and feature rich than any other onboard audio solution. The board also has IDE RAID and S-ATA RAID functions, two LAN connectors—Ethernet and Gigabit LAN, the usual Dual Bios technology. One unique feature is the dual power system (DPS) via a daughter card that can be plugged into a small slot near the CPU. The DPS provides a six-phase supply to boost the voltage needs when overclocking.

Price: Rs 15,000
Contact: Digi Giga Systems Ltd
Phone: 022-2652 6696
Fax: 022-5690 2210
E-mail: sales@dlink.co.in
Web site: www.gigabyte.com.tw

We tested the GA-7NNXP with an AMD Athlon 3200+ processor, 512 MB of DDR 400 MHz Corsair memory and an ATi 9800 128 MB graphics card. This board outshone all the other AMD boards we've tested so far. There were no bottlenecks in the CPU test. The SiSoft Sandra CPU test yielded scores of 8209 and 3297 respectively for the Dhrystones and Whetstones—the best yet for any AMD platform. The memory scores were lower than those obtained on a Pentium 4 machine. In Quake 3 Arena, the scores were

always above 300 fps, no matter what resolution we selected. At the highest resolution of 1,204 x 768 at 32-bit, the system returned 315 fps, indicating its superior performance.

Encoding a 50 MB video file took just 72 seconds. In the ZDbench Content Creation and Business Winstone benchmarks it scored 40.2 and 34.6 units respectively, indicating the seamless working of all the sub-systems to deliver where it counts.

At Rs 15,000, the GA-7NNXP is expensive, but considering the features it offers, and the 3 year warranty, we're drawn to the conclusion that it's the best AMD platform motherboard that money can buy.

SPECIFICATIONS

Supports AMD Athlon 3200+, dual-channel DDR 400, USB 2.0, Firewire, six-channel sound

Gigabyte GA-7NNXP Motherboard		B+	
Performance	▶▶▶▶▶▶▶▶▶▶	▶▶▶▶▶▶▶▶▶▶	▶▶▶▶▶▶▶▶▶▶
Features	▶▶▶▶▶▶▶▶▶▶	▶▶▶▶▶▶▶▶▶▶	▶▶▶▶▶▶▶▶▶▶
Build quality	▶▶▶▶▶▶▶▶▶▶	▶▶▶▶▶▶▶▶▶▶	▶▶▶▶▶▶▶▶▶▶
Value for money	▶▶▶▶▶▶▶▶▶▶	▶▶▶▶▶▶▶▶▶▶	▶▶▶▶▶▶▶▶▶▶

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Creative Inspire T7700 7.1 Speakers

Sound of inspiration

The Creative T7700 speakers are the first 7.1 speakers to be launched in the Indian market. The subwoofer is made completely of wood and



gives good depth to the bass. The wired remote has a new connector called M-port that allows you to connect compatible creative MP3 players.

We tested the set with Creative's SoundBlaster Audigy 2 ZS Platinum PRO that offers 7.1 output.

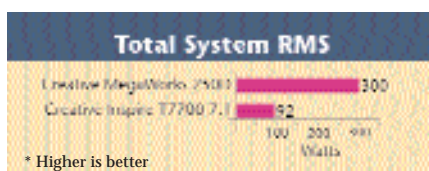
The high and mid frequencies were excellent, but the subwoofer lacked the punch that one expects.

The speakers reproduced good sound in Serious Sam, a rather dullish sound in Quake 3, but excellent reproduction

with Halo, which has some amazing EAX effects. In the music tests, the sound was good, but at high volumes the tweeters go into overdrive.

Overall, this is a good product, as it can mix the sound output of a 5.1 sound card to give you decent 7.1 surround. So

there's no immediate need to upgrade your sound card just yet—but you'll probably want to upgrade anyway, once you listen to these speakers on a 7.1 card.



SPECIFICATIONS

24W RMS subwoofer, 8W RMS satellites, 20W RMS centre satellite, dual-flared port tube in subwoofer, frequency response 40Hz-20KHz

Price: Rs 12,299
Contact: Creative Labs Asia
Phone: 98203-57713
E-mail: rajshekhar_bhattach@ctl.creative.com
Web site: http://asia.creative.com

Creative Inspire T7700 7.1 Speakers	
Performance	★★★★★
Features	★★★★★
Build quality	★★★★★
Value for money	★★★★★

Emerge UPS 600

Emerge from darkness

The Emmerge UPS 600 claims to have a backup time of 20 minutes at full load, but this depends largely on the peripherals connected.

This unit has three power-out sockets—two with battery back up and one with only power surge protection.

The Emmerge



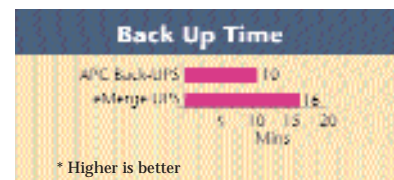
UPS comes with the WePLogic software, which runs in the background and helps shut down your system properly by saving your files. The package includes two power cords, a proprietary serial cord, an RJ11 cable, a manual and the software CD.

After charging the battery to the brim, we tested the

unit by attaching it to a Pentium 4, 3.06 GHz machine, an ATA100 hard drive and a 17-inch monitor. We boot-

ed the machine directly from the UPS and were able to keep the computer running for 16 minutes. However, the monitoring software didn't save any files, even after repeated attempts.

This UPS is a good buy for those who have regular power



outages, and need to save their work before shutting down.

SPECIFICATIONS

Line Interactive, operating range 160V-300V, 500VA/300 watts, overload protection, logical system shutdown

Price: Rs 3,775
Contact: WeP Peripherals Ltd
Phone: 080-227 0359
Fax: 080-227 0378
E-mail: chandrasekhar.k@wepindia.com
Web site: www.wepindia.com

Emmerge UPS 600	
Performance	★★★★★
Features	★★★★★
Build quality	★★★★★
Value for money	★★★★★

EasyDisk 128 MB USB drive

Easy as pie

The EasyDisk 128 MB USB drive was one of the lightest we've got—only 11 grams. The drive has a silver body with a black cap. The cap is mostly plastic, which makes it a little flimsy.

We plugged the EasyDisk into our test machine, and Windows XP immediately detected it as a removable drive and also as a second floppy drive, which means it can be used as a bootable medium. The EasyDisk comes bundled with Windows 98 drivers, a desktop-locking program called PCLock, a mail utility that's compatible with Microsoft Outlook, a standard USB extension data cable, the user manual and a neck-strap.

In Sisoft Sandra, the device reported high random read and write speeds of 924 KBps and 680 KBps respec-

tively. In HDTach, the random access time was reported at 6 milliseconds.

In our first test, we transferred a 20 MB TIFF image and a 20 MB folder to the drive. EasyDisk took only 9 seconds for the image, but 25 seconds for the assorted data. In our second test, we filled the drive to its entire capacity with both sequential and assorted files, and then calculated the actual transfer rates. The USB drive reported a speed of 0.71 MB per second for sequential data, and a transfer rate of 0.52 MB every second for the assorted folder.

The drive costs only Rs 3,500, and is quite a good buy considering its features.

SPECIFICATIONS

Size: 81x22x15 mm, Weight: 11 grams, 128 MB capacity, USB 1.1 interface

Price: Rs 3500
Contact: GNH Systems
Phone: 022-2490 1333
E-mail: usbflashmemory@hotmail.com

EasyDisk 128 MB USB drive	
Performance	★★★★★
Features	★★★★★
Build quality	★★★★★
Value for money	★★★★★

1/2 p V AD

MSI 865PE Neo2

Turbo-charged mobo

The 865PE Neo2 motherboard supports hyper-threading and 800 MHz FSB.

The 865PE Neo2 sports the usual clean layout, with no capacitors cramped around the CPU area, making the installation of the HSF fuss-free. The most attractive feature of this board is the North-bridge fan with neon lights, which keep blinking once the system is switched on. The board comes

with a dynamic overclocking feature, which, when enabled, dynamically over-

clocks the system for getting the maximum out of it when running system-intensive applications. The Core cell chip is a controller on the motherboard that controls the dynamic OC, the fan speeds of the processor and North-bridge, etc.

The 865Neo2 boasts of support for dual-channel DDR 400 MHz memory and Gigabit LAN. The board has a Promise SATA RAID controller supporting 2 SATA and 1 IDE with RAID 0, 1 and 0+1 functions. The board has six onboard USB ports on the back panel and two in the front.

We tested the board with a 3.2 GHz Pentium 4 processor running Windows XP, an ATi 9800 128 MB graphics card and Corsair 400 MHz memory. The 865PE Neo2 gave some stunning results. In the CPU tests, it crossed the 10,000 mark on the Dhrystone value. Similarly, the multimedia FPU

was recorded as high as 23,583 in the SiSoft Sandra benchmark, indicating the superb and seamless CPU sub-system on the board. In Quake 3 Arena, the fps never dropped below 450, and recorded a maximum of 556 fps in the fastest mode. This can be attributed to the 800 MHz FSB and the DDR 400 MHz in operation. The video encoding was completed in just 71



seconds—one second ahead of the Gigabyte GA-7NNXP. The board returned 42.9 and 33.3 units in the content creation and Business Winstone benchmark, posting the best scores till date. When dynamic overclocking was enabled in the BIOS, the scores took a jump, with the fps in Quake 3, getting a boost of around 15 frames; similarly in 3D Mark 2003, the score again showed a boost of around 17 units.

The MSI 865PE Neo2 is definitely expensive, but makes up on features and performance. If you want a full featured motherboard for a Pentium 4 platform, this has to be it.

SPECIFICATIONS

Supports Intel Pentium 3.2C GHz and above; dual-channel DDR 400; SATA and IDE RAID; Gigabit Ethernet; USB 2.0; 3 Firewire ports

Price: Rs 13,000
Contact: Cyberstar Infocom Ltd
Phone: 080-227 6986
Fax: 080-223 6781
E-mail: narend@cyberstarin.net
Web site: www.msi.com.tw

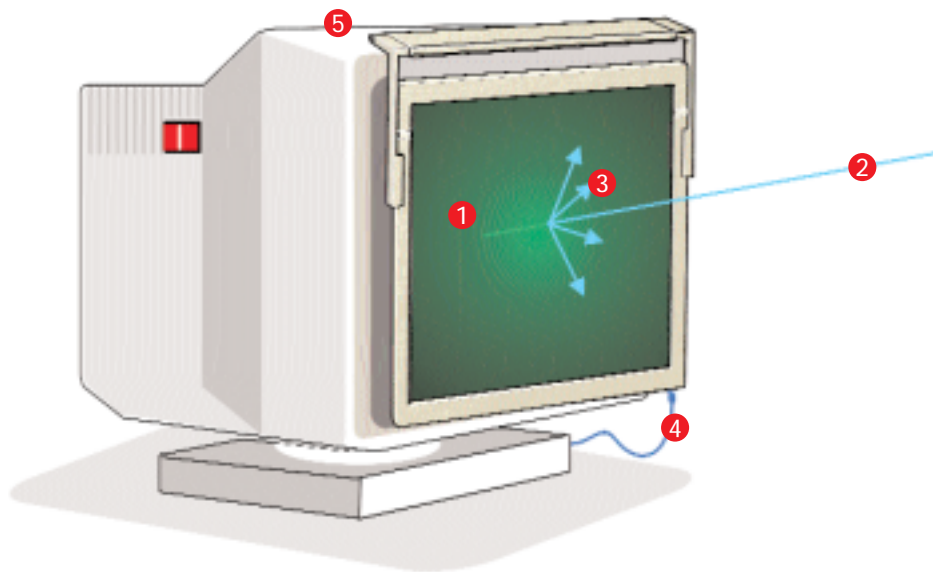
MSI 865PE Neo2		B+
Performance	▶▶▶▶▶▶▶▶▶▶	
Features	▶▶▶▶▶▶▶▶▶▶	
Build quality	▶▶▶▶▶▶▶▶▶▶	
Value for money	▶▶▶▶▶▶▶▶▶▶	

Informed Decisions



ILLUSTRATOR: Mahesh Benkar

Buying expensive hardware or software is a daunting task for most. Not only are very few aware of the technology behind the product, there are many options to choose from. It is important to know the critical features that affect performance of products. Most vendors position different product models for different usage segments. Products aimed at different kinds of users vary a lot in terms of what features are available, the tasks they can accomplish, and of course, the price at which they come. The forthcoming pages will help you solve shopping dilemmas, help you understand the basics of the technologies lying under the hood with the help of easy-to-understand diagrams, give you useful and relevant tips for buying, and also tell you where the product technology is headed.



to discharge the static, thus reducing dust accumulation.

5 The anti-glare screen is usually fixed on top of the monitor using velcro fasteners. These can be removed as required.



Do Remember

- Anti-glare screens provide long-term eye protection while minimising eye strain and fatigue.
- After installing the anti-glare screen, adjust the brightness of the screen to compensate for the darkness resulting from the introduction of the screen.
- Always keep the anti-glare screen free of dust using the correct cleaning procedures explained in the manual. Do not use any chemicals that are not recommended by the vendor, since they might affect the chemical coating on the anti-glare screen.
- The grounding provided in anti-glare screens has nothing to do with radiation protection. It is meant solely to reduce static electricity.
- While anti-glare screens reduce the glare on the monitor screen to a certain extent, it might also be necessary to reposition your monitor to reduce the amount of light falling on it.
- Some anti-glare screens double up as privacy filters. These filters distort the contents of the screen when viewed from the side. This feature is useful for corporate users who want privacy.

The Future

Anti-glare screens haven't been very popular so far, due to lack of awareness. But the benefits justify investing in a good anti-glare filter. With vendors taking initiatives to educate customers, there has been increased acceptance of these products amongst corporates—for example, call centres—and home users.



Buying Tips

✓ TYPE OF ANTI-GLARE FILTER:

Not all anti-glare screens are of the same quality and type. Anti-glare screens currently available are either mesh, polarised, or optically coated. Polarised and optically coated screens cause lesser distortion as compared to the mesh ones. While the mesh ones can go with any monitor, polarised anti-glare screens don't give good results when used over a monitor with etched or frosted glass.

✓ VARIATIONS IN OPTICALLY-COATED ANTI-GLARE SCREENS:

Optically coated anti-glare screens differ based on the optical coating used. In general, a purplish reflection, rather than green or blue, is the best quality.

✓ ELECTRICAL GROUNDING

ARRANGEMENT: An anti glare screen with grounding is always preferable since it reduces dust accumulation, by discharging static electricity.

✓ PROBLEMS WITH MESH FILTERS:

Mesh screens can collect dust. Optically coated screens are much better if your environment is untidy.

1 It fits on the top of the monitor and reduces eye-strain, glare, static and dust. It also filters out ELF/VLF radiations and in some cases, is used to improve the contrast and colour provided by the monitor.

2 The ray of light falling from any source on the surface of the anti-glare screen.

3 As soon as the ray falls on the anti-glare screen, it is diffused in different directions, thereby reducing glare.

4 A small wire is attached to the screen. This wire needs to be connected to the monitor to provide the grounding path

Quick Find

YOU NEED A robust anti-glare screen in a very clean environment

Basic Use

LOOK FOR A mesh-based anti-glare screen

YOU NEED An anti-glare filter to reduce glare on a monitor without etched or frosted glass

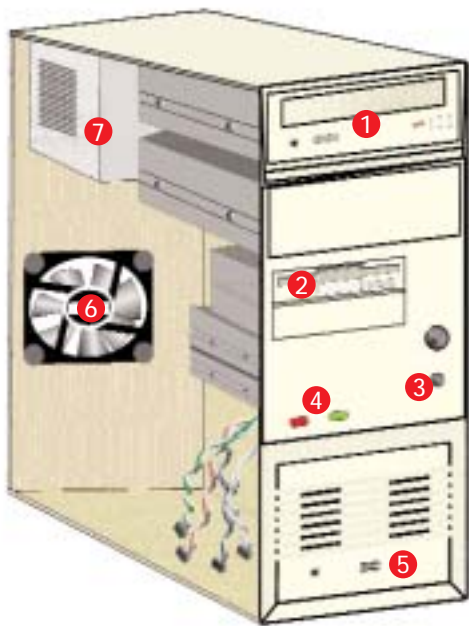
Inter Use

LOOK FOR A polarised or optically-coated anti-glare screen

YOU NEED Protection from glare, while maintaining privacy in a crowded place

Prof Use

LOOK FOR An anti-glare cum privacy filter



HDD LED blinks when the hard drive is being accessed, while the Power LED normally blinks when the system goes into standby.

6 The front panel: Normally has a grille plate through which air ventilation takes place.

7 The system or chassis fan: It acts as an exhaust fan for the PC and keeps the PC cool. Keep this dust-free.

8 SMPS: The Switch Mode Power Supply (SMPS) converts and steps down AC voltage to DC for the components of the computer.



Facts

- A configuration comprising a medium speed processor, a GeForce 3 graphics card and a 40X CD-Writer is just enough to overload a 250 W SMPS or make your system unstable.
- You can also modify your casing and add additional fans to achieve greater levels of airflow within the system for efficient cooling.
- Place a packet of silica gel inside the chassis to keep the components free from moisture.
- Some cases provide an intermediate connector for cables, such as the ones for the hard disk and power LED, that run from the front panel to the motherboard. They prove to be of great help while disassembling the motherboard for servicing, etc.

The Future

Initially, there was not much to choose from in the cabinet market. However, these cases have now incorporated a lot of changes that make them worth their price. Features such as screwless cases, front panel USB and sound ports, etc., have enhanced their appeal. Improved spacious designs provide for better airflow and make room for additional system fans. On the whole, cabinets have drastically reduced the possibility of damage to internal components due to heat, and have simplified PC assembling or disassembling. Chassis modifications are also becoming popular. Do expect a lot of see-through panels and neon lights for cabinets in the future.



Buying Tips

MOTHERBOARD FORM FACTOR:

The primary factor that decides the cabinet size is the motherboard. The form factors currently available for a motherboard are Baby AT, ATX and Micro-ATX.

DRIVE BAYS: Ensure that a new cabinet has at least three 5.25-inch drive bays to allow for future addition of devices such as a CD-RW drive, etc.

ADDITIONAL FANS: Check whether your cabinet has enough room for additional cooling fans.

SMPS: Generally, cabinets come with a 250-watt SMPS. However, the SMPS gets overloaded the moment you add extra peripherals or upgrade to a faster processor. So opt for an SMPS with a higher power rating that allows you to upgrade and add more devices in the future. Currently, the SMPSes available provide power ratings in the range of 300 watts to 550 watts.

INSIDE SPACE: Verify whether the cabinet is roomy enough to add or replace components with minimal effort. Also, ensure that the hard disk or CD-ROM do not overlap the CPU or the RAM on the motherboard inside the chassis.

- 1 5.25-inch optical drives bay :** The CD or DVD-ROM drives are inserted here.
- 2 3.25-inch drive bay:** The hard drives, ZIP drives and floppy drives are placed here.
- 3 Power Button:** The main power button of the system.
- 4 Reset switch:** You will hit this button often—it restarts Windows.
- 5 Power and Hard Disk Drive LEDs:** The power and hard disk drive-access LEDs are the status indicators for the system. The

Quick Find	
YOU NEED	A cost effective cabinet
Basic Use	
LOOK FOR	A cabinet that has a couple of optical drives bays, a couple of 3-½ FDD bays and a couple of hard disk bays
YOU NEED	A strong and good-looking cabinet
Inter Use	
LOOK FOR	An aluminium cabinet as these are very stylish
YOU NEED	A cabinet that is future proof as well as maintains a low temperature
Prof Use	
	A cabinet that has a powerful SMPS, provides ample space for additional systems fans, more internal space to enable good air flow, has more than 3 optical and hard disk drive bays



- 1 RF TX and RX amplifiers: These handle the signals in an out of the antenna.
- 2 The inner circuit: A lot of chips are placed on the PCB. Each has an assigned function.
- 3 RF and Power: It handles the power management and recharging of the cell phone; it also deals with the reception of FM channels in phones with that feature.
- 4 Microprocessor and memory: Both these chips co-ordinate the various functions of the cell phone and are responsible for communicating with the base station
- 5 DSP: The Digital Signal Processor is a customised processor that performs signal manipulation calculations at high speeds. It also takes care of signal compression and decompression.
- 6 D/A and A/C chips: These chips work in conjunction with each other and are responsible for the conversion of analogue signals to digital and vice versa.

Facts

- A message comprising 0 to 160 characters is considered a single SMS. So your service provider will charge you for three SMSes if your message comprises 450 characters.
- Tri-Band phones give you the convenience of communicating across five continents. However, make sure your service provider has tie-ups with international networks to implement this facility.
- Depending upon your service provider, a roaming scheme may not include outgoing calls from all states.
- Use only approved accessories and batteries. Do not connect incompatible products. For example, do not charge your phone with a charger that has a power rating higher than the one specified for that model. It might lower the battery life, or even damage the phone.



Buying Tips

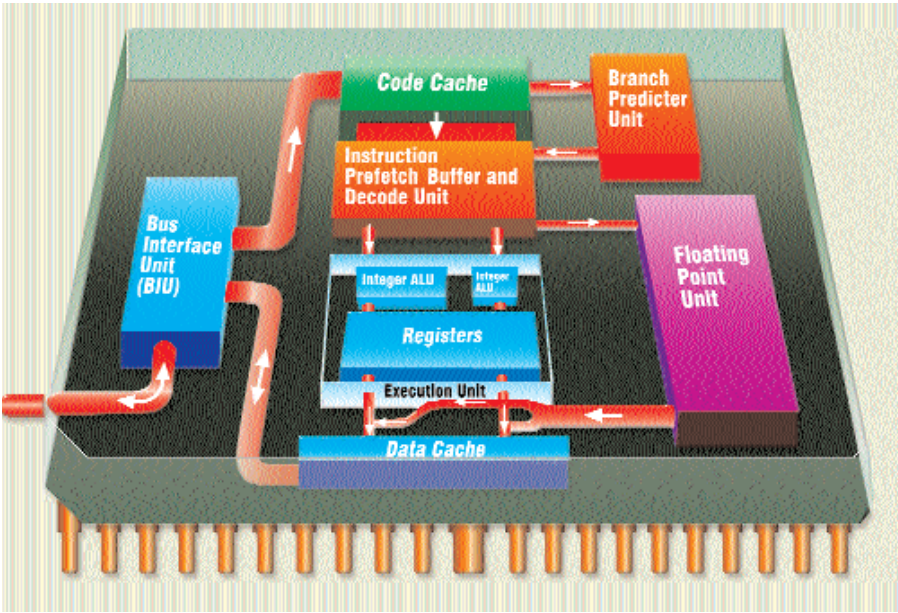
- ✓ **BATTERY LIFE:** Most manufacturers claim to have a 15-day standby time under test conditions. Practically, that is never the case. Hence, do not base your buying decision solely on this.
- ✓ **TALK-TIME:** Always check the talk-time before making a purchase. Most mobile manufacturers specify this on the box itself.
- ✓ **SUPPORT & SERVICE:** What happens when your phone breaks down? Does the warranty cover the critical parts such as circuit board, screen, software installation and BIOS? Get this verified before paying up.
- ✓ **GENERAL PACKET RADIO SERVICE (GPRS):** Opt for a phone that supports WAP over GPRS if you intend to surf the Internet and access e-mail.

Quick Find	
YOU NEED	To talk on the move
Basic Use	
LOOK FOR	A phone that allows for 100 or more phone book entries
YOU NEED	An all-round communicator
Inter Use	
LOOK FOR	A phone with a storage capacity of 500 names and 150 SMSes, GPRS, infra-red or Bluetooth connectivity
YOU NEED	A high powered gadget
Prof Use	
LOOK FOR	A phone with a camera that supports a resolution of 640 x 480, loads of internal memory, and a fast CPU

The Future

Mobile phones are evolving fast. It's no wonder then that today's latest handset model will be relegated to the sidelines within the next few months. Network technologies are moving just as fast. We will soon be able to use 'third generation' (3G) frequency networks that offer faster data access. Chances are that this trend may lead to a huge switchover from landline connections to cellular phones. However, the huge price paid for the licenses suggests that these facilities won't come cheap.

Another interesting development in the mobile phone market is the disposable cell phone. The phone will be extremely small (about the thickness of three credit cards) and lightweight. Better still is the price—they are expected to sell for under \$20—a price that includes 60 minutes of pre-paid calling time.



Instruction Prefetch Buffer and Decode Unit: This block reads the instructions from the cache and executes them one after the other. If the instruction needs an integer operation, it is forwarded to the Integer ALU; if it requires a floating point operation, it is forwarded to the floating point unit.

Integer ALU: All integer operations are carried out here.

Floating Point Unit: All instructions dealing with floating points are carried out here.

Registers: These are used to store intermediate values during a block of operations.



Bus Interface Unit: It's responsible for fetching the required data to the processor.

Branch Predictor Unit: This block is responsible for predicting the future flow of the code and corresponding data. If this unit makes a mistake, the cached data has to be flushed, and new data has to be fetched—resulting in wastage of important CPU cycles.

Code Cache: This buffer area is used to store a pre-fetched code block.

Data Cache: The data required by the code is prefetched and stored in the data cache by the BIU and BPU.

Facts

- A CPU contains many ground pins in order to reduce noise and prevent it from picking up stray voltages.
- According to Andy Moore, the founder of Intel, the number of capacitors on a chip would double every 18 months. Even though this statement is a couple of decades old, it still holds true.
- The 64-bit architecture that was initially meant only for servers and workstations is now powering desktop PCs as well.
- When the average temperature of a CPU rises by 10 degrees, its life-span is halved. This happens over a period of time due to a phenomenon called electromigration.

The Future

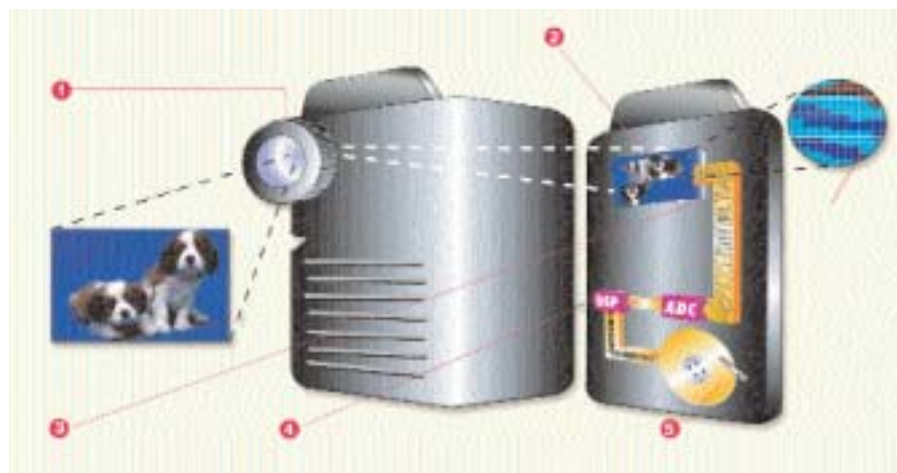
Initially, manufacturers were in a race to increase core clock and FSB speeds; next they raced to reach the 64-bit architecture for desktops. Now it's the turn of the software industry to rise to 64-bit operating systems, drivers, software, etc. Microsoft has already released a 64-bit version of its Windows XP operating system. It will take some time for software vendors to come up with software optimised for these processors—a time-consuming task, but one that is inevitable. There are other vendors such as Sun, IBM and HP that are in the race to keep their customer base intact by offering a 64-bit platform.



Buying Tips

- ✓ Present-generation CPUs are power-hungry, so ensure that your power supply is rated at 350 W or more.
- ✓ Make sure you buy a genuine CPU. Look for the hologram seal on an Intel CPU box, or that the plastic casing on an AMD CPU is not broken.
- ✓ If you plan to do CPU-intensive tasks such as graphics processing, animation and gaming, opt for a CPU that has 256 KB or more of L2 cache. The Pentium 4 Northwood, for example, has 512 KB of L2 cache.
- ✓ The new Thoroughbred core AMD processors require less core voltage and have lower power dissipation, which makes them expensive. If all this doesn't really matter to you, opt for the cheaper Palomino cores.
- ✓ Invest in a good heat sink and fan combination for your processor; even if you do not plan to overclock your system, it will help keep things cool and stable.

Quick Find	
YOU NEED	Decent performance in office productivity Applications
Basic Use	
LOOK FOR	Any processor with speeds in excess of 1 GHz
YOU NEED	Lag-free performance in graphic, multimedia and video oriented applications
Inter Use	
LOOK FOR	A processor with speeds in excess of 1.2 GHz
YOU NEED	Movies, music, gaming and complete home entertainment with oodles of processing power
Prof Use	
LOOK FOR	A processor with speeds in excess of 2 GHz



- 1 Light passes through the lens and is directed to the CCD.
- 2 The image is focused on the CCD.
- 3 The ADC converts the image from the CCD into digital signals.
- 4 The ADC sends data to the DSP that creates the image and compresses it.
- 5 The final image is stored either in the inbuilt flash memory or on a memory stick.



Buying Tips

- ✓ **DIGITAL/OPTICAL ZOOM:** Go for a camera with optical zoom if you're going to use it more outdoors than indoors. Don't get carried away by digital zoom.
- ✓ **MEMORY:** Most cameras have 16 MB of memory or less. This can store some 30-35 images depending on the subject, but if you're going to be travelling for long periods of time, you'll need much more than 16 MB.
- ✓ **MANUAL SETTINGS:** Buy a camera that has manual exposure and shutter speed settings. This will allow you to take decent images indoors, where light is usually poor.
- ✓ **BUNDLED CABLES:** Check for necessary cables such as the USB and video cables. Also, go for a camera that doesn't have a proprietary USB cable—these are costly and difficult to procure.
- ✓ **AESTHETICS:** Buy a camera that offers good grip and has proper placement of buttons. Slim cameras look good, but they are poor as far as ergonomics and functionality goes.
- ✓ **RECHARGEABLE BATTERIES:** Digital cameras, especially those with built-in LCD screens and optical zoom, need a lot of power. Buy cameras that have rechargeable batteries.
- ✓ **ENVIRONMENT PROTECTION:** Some cameras offer splash-resistant packaging, which ensures that the camera is not damaged by water or moisture.

Do Remember

- CMOS-based sensors for digital cameras are less expensive to manufacture than CCD-based sensors. But the former can't capture motion correctly. Many industry analysts believe that eventually, almost all entry-level digital cameras will be CMOS-based, and that only mid-range and high-end units will use CCDs.
- Today you can buy photo printers that can print directly from a digital camera.

Facts

- CCD technology was initially developed in the 1960s as a memory device to store data, and it was only in 1974 that Fairchild Electronics developed the first imaging device using CCDs, with a format of 100 x 100 pixels.

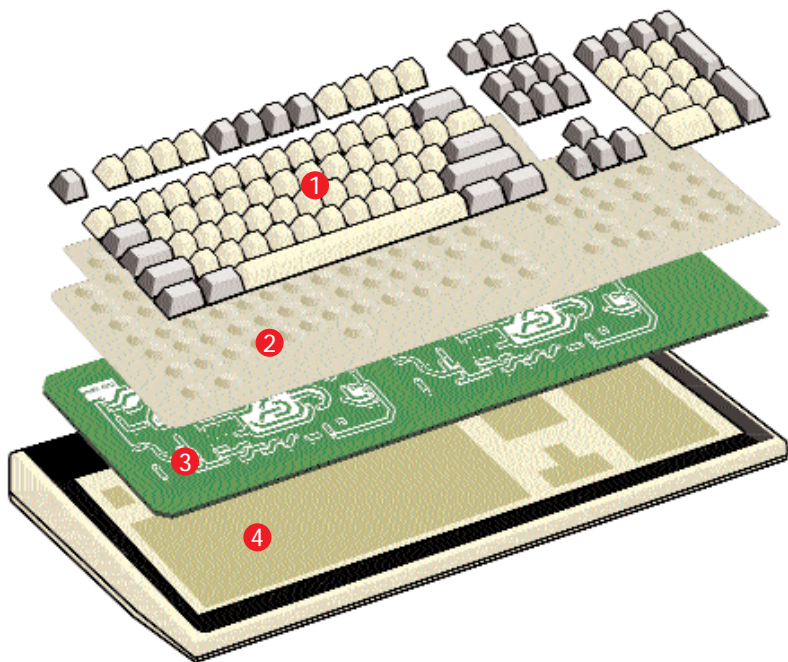
The Future

The wide acceptance of digital cameras, and the ready availability of software to modify captured images, have prompted newer operating systems such as Windows XP to bundle built-in driver support, making the devices virtually plug-and-play. There are a few features found only in high-end cameras, which will surely be implemented in entry-level cameras soon. This includes the TruePic technology from Olympus, which uses all the pixels even at lower resolutions. The software thus enlarges the image even when it is in raw format on the camera, so as to get a higher interpolated resolution than what's available with current cameras. This will reduce the artifacting that occurs when enlarging photos using image-editing software. Future cameras will also have the lenses specifically designed to suit digital cameras. This is necessary because as the CCD count goes up, the density increases manifold. Even cameras equipped with the best CCDs might not produce a great image if the lens does not let the CCD look through it precisely when zooming in or out.

Today, USB and FireWire are the interfaces of choice for most digital cameras. But as devices from laptops to PDAs, and even cell phones, embrace wireless connectivity to talk with the PC and other mobile devices, the digital camera will surely follow suit.



Quick Find	
YOU NEED	To be able to take photos to compile personal albums or publish to the web
Basic Use	
LOOK FOR	Between 640 x 480 and 1,024 x 768 resolution and 2 MB memory; perhaps one that doubles as a Web cam
YOU NEED	High quality images with plenty of configurability
Inter Use	
LOOK FOR	1,280 x 1,024 resolution with at least 2x optical zoom and 8 MB of storage
YOU NEED	Very high quality photographs with all the knobs and switches, plus expandability
Prof Use	
LOOK FOR	2,048 x 1,536 or higher resolution with special lens options, and a minimum of 16 MB of memory



Buying Tips

- AESTHETICS:** The keyboard needs to be soft and smooth to the touch. The pegs should be sturdy; many tend to break with the slightest jerk. The keys should be very responsive. Try to fit in a wrist pad to lessen the strain on your wrists.
- ERGONOMICS:** An ergonomic keyboard is split in the middle, offsetting the keys where the two hands lie. It does take some time to get used to it; especially since the arrow keys have been completely changed.
- HOT KEYS:** Hot keys let you open programs such as messengers, e-mail applications, or a browser, at the touch of a button. Opt for a keyboard that integrates a large number of hot keys in the layout.
- WATERPROOFING:** Some of the newer keyboards are waterproof. Water gets drained out via the pores at the bottom of the device. This makes the keyboard durable.
- WIRELESS CONNECTIVITY:** Opt for an RF wireless keyboard. Unlike infrared-powered devices, RF wireless connectivity does not require the keyboard to be within line-of-sight. Make it a point to check the number of batteries required. Lastly, make a note of the maximum range at which the keyboard works.

- 1 Keys:** The plastic buttons that let us type using the keyboard.
- 2 Membrane:** The membrane structure beneath the plastic keys has small bumps which correspond to all the keys on the top. At a keystroke, the corresponding bump on the membrane is pressed, which passes on to the printed circuit board (PCB) lying beneath the membrane, via the contacts.
- 3 Printed Circuit Board:** This is the heart of the keyboard. It receives signals from the membrane structure, and accordingly displays a character on the screen.
- 4 The base:** The plastic base houses the membrane, the PCB of the keyboard.

Quick Find	
YOU NEED	A cheap and long lasting solution
Basic Use	
LOOK FOR	A keyboard that sports 104 keys and a PS/2 interface
YOU NEED	The ultimate in comfort and good looks
Inter Use	
LOOK FOR	Ergonomics, a PS/2 or USB interface, a palm rest and hot keys

Do Remember

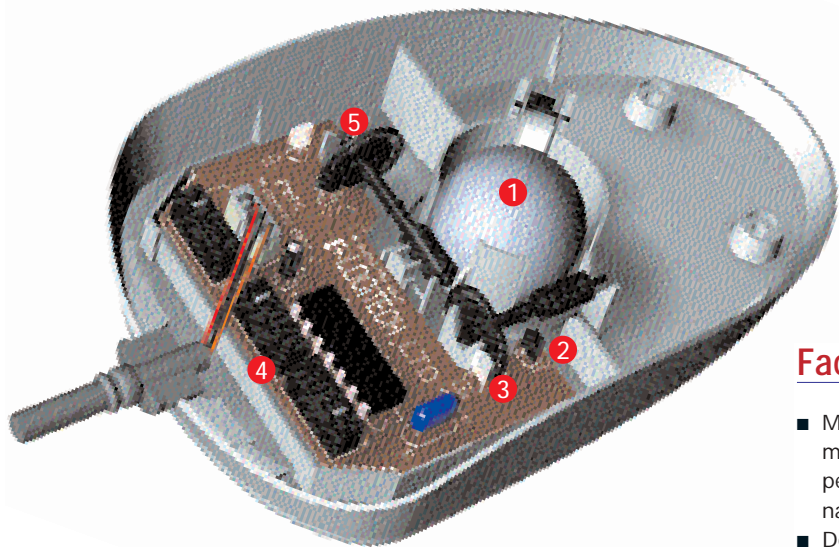
- Douglas Engelbart invented a number of interactive, user-friendly information access systems that we take for granted today: the computer mouse was one of his inventions.
- The QWERTY keyboard layout was invented by Christopher L. Sholes in 1867. This layout is dominant even today. It was used on the Sholes & Glidden type-Writer, manufactured by E. Remington & Sons in 1874.
- Tomorrow's computer keyboard might be played more like an accordion than a piano, says a Cornell University ergonomist. This, he says, is because a prototype vertical split keyboard (VK) allows two to three times more typing movements to stay in safe, low-risk positions for carpal tunnel syndrome, compared with a traditional keyboard.



The Future

If you're using a standard QWERTY keyboard-and most of us do-your keyboard design is over a century old. Keyboard design has stagnated over the last few years. However, some vendors have launched products that are wacky, to say the least, and ergonomic as well.

For instance, SafeType Inc launched a keyboard that they claim is designed as per scientific biomechanical principles and virtually eliminates the high-stress postures that contribute to Repetitive Stress Injury (RSI). This device looks like a standard QWERTY keyboard that's been broken up into three equal pieces. The two outermost pieces are placed vertically, with keys on the outside, and a couple of mirrors placed alongside. The horizontal middle piece has the number keys.



Buying Tips

- ✓ **TYPE OF MECHANISM:** Optical mice are better than the old-fashioned, rubber ball ones. They are accurate and don't require cleaning.
- ✓ **TYPE OF WIRELESS:** Unlike infrared, RF wireless connectivity doesn't require the mouse to be within line-of-sight. This makes an RF wireless mouse the obvious preference.
- ✓ **ADDON CONNECTOR:** Ensure that the manufacturer provides an USB-to-PS/2 converter, in case you have to use the device on the PS/2 port.
- ✓ **TYPE OF SCROLLING:** Some mice support only vertical scrolling, while some support horizontal scrolling as well. A mouse that offers both provides greater ease while browsing through Web pages or documents that are unusually large.
- ✓ **CABLE LENGTH:** Check if the cable is long enough to reach your cabinet.
- ✓ **NUMBER OF BUTTONS:** Opt for a three- button mouse rather than a two-button mouse. The middle button can be customised. Some mice provide you more than three customisable buttons, which come in useful while browsing, gaming, etc.
- ✓ **SYMMETRY:** Some mice are perfectly symmetrical, and hence can be used either by a left-handed or a right-handed person.
- ✓ **INTERFACE:** A device having a PS/2 interface should be preferred over a serial mouse or a USB-based mouse.

- 1 **Roller:** The roller is a round rubber ball that converts the rolling of the mouse into pointer movement along the X and Y axes. The movement of the wheels breaks the continuous signal into pulses which are then converted into a digital signal, resulting in movement of mouse pointer.
- 2 **X and Y Sensors:** The sensors sense the breakage in the continuous signal and convert that into a digital pulse.
- 3 **X and Y Lasers:** These lasers send a straight signal towards the sensors.
- 4 **Buttons:** Buttons are used to perform various actions such as single-clicking, double-clicking, etc.
- 5 **X and Y Wheels:** These wheels are slotted equally such that as the wheel moves, it allows or stops passage of signal from the lasers to the sensors

Quick Find	
YOU NEED	A cheap yet comfortable mouse
Basic Use	
LOOK FOR	A scroll mouse with a PS/2 interface
YOU NEED	Extreme precision and supreme comfort
Inter Use	
LOOK FOR	Optical scroll mouse, extra programmable buttons, PS/2, USB

Facts

- Mouse technology has survived so long mostly because it harmonises almost perfectly with human hand-eye coordination.
- Douglas Engelbart invented the 'X-Y Position Indicator for a Display System' in the 1960s, and owns the patent for it. Today, we call it the mouse.
- The first computer mouse was built of carved wood, and had one small red button that was used to select items on a computer monitor, etc. There was no room inside the casing for a second button because the electronics used in the mouse were so large.
- The first mice used two perpendicular wheels that stuck out of the bottom. Later the mouse was given a ball, which was next to a shaft. The mouse ball technology became nearly universal. The technology is still the most widely used, though other technologies have been developed.



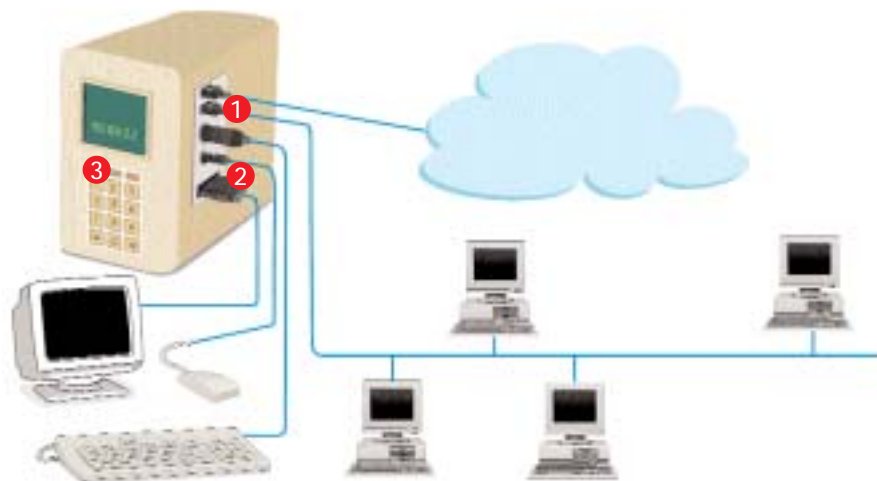
The Future

The mouse may transition to a 'mouse glove'—a wearable device fashioned in the form of a glove. This will indeed revolutionise the way one uses PCs. It's being developed for people suffering from RSI, and will also be marketed as a gaming tool.



Buying Tips

- ✓ **NETWORK PORTS:** Look for two network connectors in the device. Some devices have a history of providing only one connector. The first port helps you connect to the internal network, and the second to the external network.
- ✓ **OPERATING SYSTEM:** The OS affects the overall performance of the gateway. A stable operating system such as Linux has a dual advantage—stability and licensing costs.
- ✓ **CONFIGURATION OPTIONS:** Generally, the device will offer a console port plus browser based configuration option. But some devices even offer a command line-based option to configure devices. An elite few offer VGA, keyboard and mouse ports so you can convert to a full-fledged PC when the need arises.
- ✓ **KEYPAD AND LCD SCREEN:** Having an LCD screen and a keypad apart from the other connectors helps instant configuration as a standalone device, without the need for browser-based configuring, or connecting to a PC or a network.
- ✓ **PORTS:** Inclusion of parallel, serial, USB, and IDE ports helps you to expand the functionality of the device. For example, a device with an LPT port can act as a print server.
- ✓ **INBUILT MODEM:** An inbuilt modem is necessary for the gateway to function properly over a dial-up Internet connection. If the device has both a network port and a modem, it can act as the primary as well as the backup Internet server. If the primary Internet service is down, it can connect using the modem and provide Internet access.
- ✓ **GSM-READINESS:** Some of the newer devices also support connection through a GSM network. These devices either have a built in modem, or need an external GSM modem. Apart from the device and modem, you will also need a SIM, and a data-capable account from your GSM network provider.
- ✓ **FUNCTIONS:** Generally, these devices appear in three categories. One is simple gateway appliances with basic functionality. Another is content-filtering appliances that can filter out viruses and spam, apart from providing basic functionality. The all-in-one category includes everything—anti-virus, anti-spam, firewall, e-mail server, Web server, etc.



- ① **Network Connector:** One network connector is used to connect to the internal network while the other connects to the Internet.
- ② **PC ports:** Connectors to connect the device to the display, the keyboard and the mouse, so that it can be converted to a full fledged PC. Not all such devices have these ports; some just have a console port to connect to the serial port of the PC.
- ③ **LCD panel:** An LCD screen and a small pad to configure the devices provides very limited configuration. Options are either available as a Web-based system or via a console port software.



Facts

- Technology adoption rate amongst Indian SMEs is higher than in their counterparts in countries such as Australia, Japan, China and South Korea.
- Integrated solutions provide hardware and software under one roof; these components are known to be thoroughly tested to work with one another.
- These appliances are actually full fledged computers, either with or without support for displays, keyboards and mice.

The Future

Internet Gateway Appliances provide simple and cost-effective ways to add intelligence and functionality to networks. Today's appliances are two-network-port (LAN/WAN) devices available in specialized, small form factor or 1U or 2U chassis, and support a variety of general purpose OS functions. But the current trend shows a shift from network architecture to more intelligent service-based appliances. Some of these intelligent service-based appliances we can expect to see in the future are: Quality of Service (QoS) appliances that would provide the required level of service to an application in order to maintain an expected quality level, policy-based management appliances that will allow application of rules to define resource access and usage, and network monitoring appliances to analyse and track network activity.

Quick Find

YOU NEED	A simple gateway appliance
Basic Use	
LOOK FOR	An easy-to-use appliance with a simple GUI, which provides all the hardware and software needed, integrated into one device
YOU NEED	A content filtering appliance
Inter Use	
LOOK FOR	A device that bundles basic functionality and also provides the option to expand as and when the organisational needs increase
YOU NEED	An all-in-one appliance
Prof Use	
LOOK FOR	A device that bundles anti-virus, anti-spam and firewall functionality, in addition to that of e-mail and Web server. Perhaps a device with necessary connectors to convert it to a full fledged PC



Buying Tips

✓ **BATTERY:** The uptime for most Lithium-ion battery powered laptops is about three to four hours. Purchase a spare battery in case you happen to use your notebook for a period longer than that while travelling.

✓ **KEYBOARD:** In case you do a lot of typing, a larger keyboard is what you need to look for. Having the eight cursor-control keys is very important. Using the proper interface, any regular PC keyboard can be connected to your notebook.

✓ **DRIVES OR BAYS:** Though it makes sense to have all drives such as the floppy drive and the DVD/CD-ROM drive built into the main casing, a hot-swappable bay gives you greater flexibility.

✓ **DOCKING STATIONS:** This is useful if you are using your notebook as a desktop replacement. However, not all notebook models give you this option.

✓ **COMMUNICATION:** Look for a 56 Kbps modem PCMCIA card with an RJ-45 connector if you do not have an inbuilt modem. If you need to connect to a network, you will also need an inbuilt, or a PCMCIA-based, Ethernet port.

✓ **POINTING DEVICE:** You can choose between a pointing stick or a touch pad. Pointers are easier to control, but can give you a sore finger, especially when it's used at a stretch.

✓ **USB LIGHT:** Purchase a USB light that illuminates the notebook's keyboard, in case you carry it along on long haul flights. This eliminates the need of an overhead light.

✓ **CARRY CASE:** A sturdy carry case is essential for a laptop PC. These are available in various types and sizes. Some also serve as overnight travel bags.

✓ **NOTEBOOK LOCKS:** Opt for a Kensington lock to secure your notebook to a fixed item such as furniture. Verify whether your notebook has the necessary provision to use one.



① **External Keyboard/Mouse:** If you wish to use a laptop as a desktop replacement, you can attach an external keyboard or mouse as these provide more comfort than those inbuilt.

② **External Speakers:** If the low volume of the inbuilt speakers of a laptop gets you down, you can attach a set of external speakers.

③ **Portable Printer:** A variety of portable printers can be carried along to print on the go.



Do Remember

- Check the features and specifications of the accessories before you purchase them. Some newer accessories have issues with older laptops.
- As far as possible, opt for branded accessories since they normally come with a replacement or repair warranty. Assembled or locally made accessories may not have this option, and are usually of poor quality.

The Future

The segment of laptop accessories is very dynamic, with newer and better add-ons becoming available everyday. Accessories such as portable printers and projectors have just begun to appear. Although these have not yet become quite the craze, the convenience that such accessories offer has slowly begun to dawn upon laptop users. Expect this market to see a number of such laptop peripherals in the years to come.

Quick Find

YOU NEED	A travelling PC
Basic Use	
LOOK FOR	Batteries that will provide you with all the power you need
YOU NEED	Accessories for your laptop to make business presentations
Inter Use	
LOOK FOR	A wireless remote pointing device
YOU NEED	A laptop that acts as a desktop replacement
Prof Use	
LOOK FOR	A docking station and an external keyboard and mouse



Buying Tips

✓ **BATTERY USAGE:** Before purchasing a laptop, check the battery life. Be cautious, as several manufacturers indicate the battery usage time at the lowest possible power settings.

✓ **LEGAL SOFTWARE:** When purchasing a laptop, make sure it comes with legal software. Many end-users, or small laptop companies who build or sell laptops, may not provide you with legal copies of the software. Verify that the software that comes with your laptop is on an original CD, and has a software licence or registration number.

✓ **UPGRADABILITY:** This may not occur to you when you purchase a laptop, but it's important all the same. Here are some options to look for when upgrading your laptop—the RAM, the CPU, the hard drive, etc. Are the upgrades something you can do yourself, or do they require visits to a service centre?

✓ **LOCATION:** Before you buy a laptop, make sure you can easily return it to the dealer if it proves unsatisfactory. Also check if the dealer can service your laptop. If he can't, where's the nearest location where your laptop can be serviced?

✓ **HARD DRIVE:** Capacities range from 6 GB to 50 GB. Most users find 12 to 20 GB enough. In any case, you won't save much by buying a smaller capacity drive, and will pay a lot more for a larger drive than the one bundled.

✓ **PORTS:** Most peripheral devices connect to a USB port; make sure there are at least two USB ports. You will also need parallel (for a printer), serial, and PS/2 (for keyboard and mice) ports.

✓ **SIZE AND WEIGHT:** Weights range from 1.5 to 4 kg, and thicknesses could be as little as 1 inch. External power supplies and peripherals can add considerably to the weight.

✓ **DISPLAY:** This will require a compromise if you decide on an ultra-portable model. Most displays now support resolutions of 1024 x 768, and a 14-inch notebook display may be larger than most 15-inch desktop CRT units.

✓ **PROCESSOR:** Pentium III M, Pentium IV M and Athlon mobile processors are available for the laptop segment.



① An inbuilt web camera to record and send photos or videos.

② A speaker and Mic connection to the internal sound card.

③ A PCMCIA connector for add-on cards. Connectors like USB, LAN, telephone, PS/2, etc to connect external devices.

④ Power connector for the laptop.

⑤ A bay that can host Floppy drives as well as removable CD-ROM drives.

⑥ A battery, the source of power for the laptop, affording mobility or backup in case of a power failure.



Do Remember

- Many laptops offer large screens and can work as desktop replacements. But the larger the screen, the more difficult it will be to use the laptop in cramped locations, such as in an airplane or car.
- 'Refurbished' is a term used to describe a laptop, or any hardware device, that contains one or more components that have been used or repaired. Refurbished laptops are lower priced, and are generally a good deal for budget-conscious buyers.
- Although most manufacturers today tend to reduce the amount of documentation included with laptops, all manufacturers will include some type of paper documentation or paper inserts. Check if this includes information on upgrading, connecting the cables, and how to use the bundled software.

The Future

Laptops will have faster microprocessors with more memory. Storage may change from removable disks (floppy, Zip, CD, and DVD) to solid-state memory, which would make them even lighter and thinner. While some laptop models already have the ability to send and receive data using infrared and wireless technologies, this may become more common. In the distant future, wearable computers may eventually replace regular laptops.

Quick Find

YOU NEED

A purely functional device that offers what any casual user might need, at an affordable price

Basic Use

LOOK FOR

A model that has an extra bay that would hold a CD/DVD-ROM, floppy drive, add-on battery or even a CD-RW drive. These will generally offer a 13 or 14-inch XGA display and will weigh less than 3 kg

YOU NEED

Something that gives high performance, and has several extra features as well

Inter Use

LOOK FOR

Something that gives you all the functionality of your desktop PC

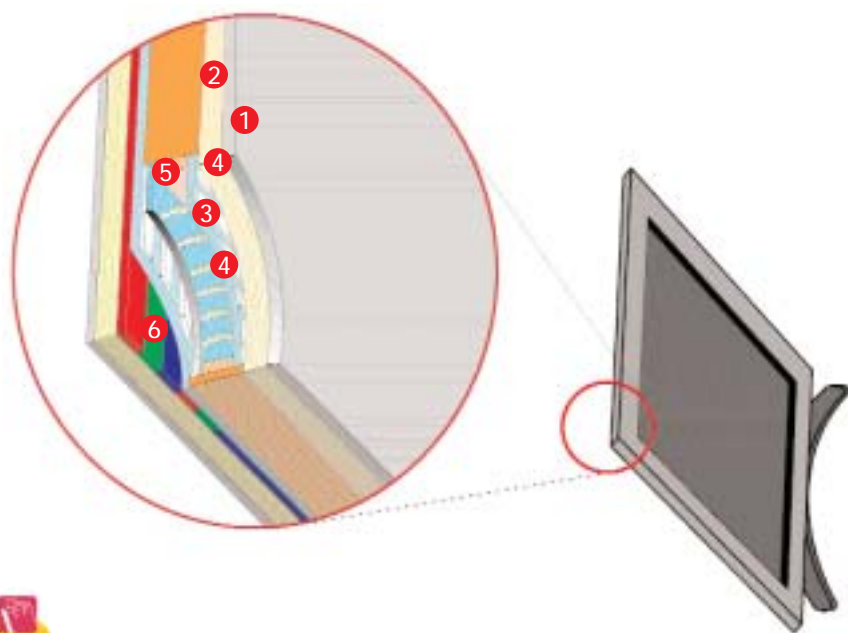
YOU NEED

An ultra light notebook; something with a little panache

Prof Use

LOOK FOR

Extremely lightweight devices that are different from the crowd



- 5 **Spacer:** It is the layer between the liquid crystals and the transparent electrodes.
- 6 **Colour filter:** This is responsible for imparting colours to the crystals.

Facts

- The rate of failure increases with the size of the LCD screen. This is one of the primary reasons for LCD monitors being so expensive.
- The power consumption of an LCD is around one-sixth that of a CRT monitor.
- The screen size of an LCD is exactly as described—i.e., 17-inch is 17 inches, and not 15.3 inches as in a CRT. So, an LCD screen is actually equivalent to the next standard size of a CRT. For example, a 17-inch LCD would actually be equivalent to a 19-inch CRT.



Buying Tips

✓ **DIGITAL OR ANALOGUE INPUT:** If you need a sharper display, you can look for a flat panel monitor with a Digital Video Interface (DVI) input. DVI—an emerging standard for digital display connections—transfers data between the PC and monitor in digital format, and so virtually does away with signal loss. Note that you will need a graphics card with a DVI output connector.

✓ **RESOLUTION:** Make sure that the native resolution of an LCD monitor is one you are accustomed to. LCD displays are manufactured to work well at a certain resolution, known as the native resolution. While it may be possible to change the resolution of an LCD, setting it to a value other than the native resolution will result in a stretched or blurry visual, or a blank screen. Look for monitors that offer the one-touch auto adjust feature that matches your screen display to your computer's resolution.

✓ **DEAD PIXELS:** One thing to look for in LCD monitors is the dead pixel problem. A pixel is a definable location on a monitor screen that consists of multiple, or a single group of phosphor dots (red, green and blue). Dead pixels are those that are always on, or always off. They appear as black or coloured dots on a white screen. A black screen shows them as white or coloured dots. A few dead pixels here and there won't really make a difference, but too many in the wrong place can be an eyesore.

- 1 **Polarizing filter:** This is the filter that polarizes the liquid crystals for display purposes.
- 2 **Glass substrate:** The glass substrate adds the needed reflection and prevents the crystals from being directly exposed.
- 3 **Transparent electrodes:** The transparent electrodes provide the required energy to heat the crystals and change their orientation to present a display.
- 4 **Alignment layer:** The alignment layer takes care of the proper alignment between the electrodes and crystals to give you a perfect display.



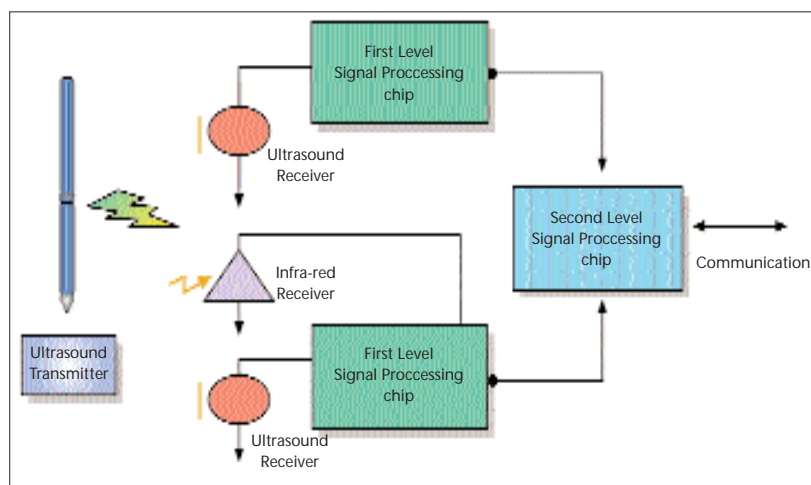
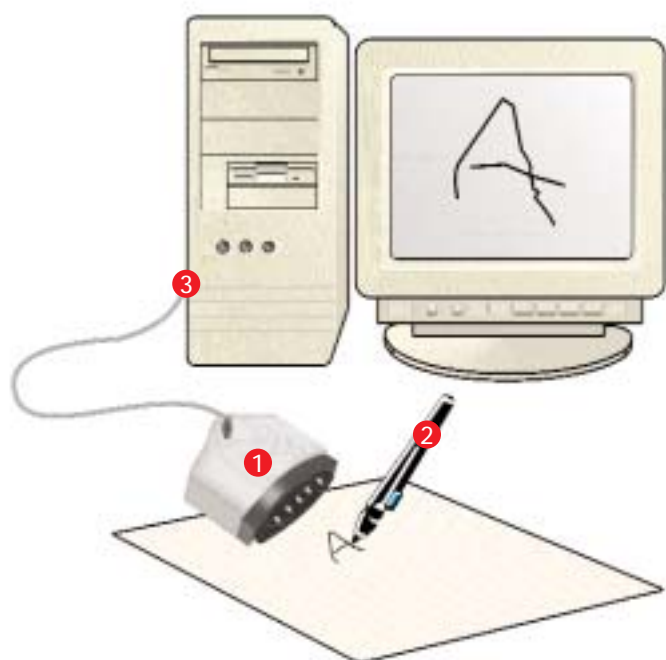
The Future

LCD screens have intruded into the CRT segment, and are gaining wider acceptance in the market day by day. However, there are a couple of new technologies on the horizon waiting for a push. One such technology is Plasma display, which hasn't really made a mark because of the very high costs involved. Plasma displays are toys of the rich and famous and do their bit well for home theatres, rather than for business purposes. On the other hand is OLED—a technology that's already made its presence in the small screens of digital cameras, but has yet to make an impact on the PC front. Just like other new technologies that have already been developed, but are waiting for mass acceptance, OLED will also need large quantities of key material and fabrication plants. The process will take time, lots of convincing, and much interaction with vendors.

Apart these, there are several others in the making, such as the Ferro Electric Display, and Digital Light Processing—Micro Mirror, Direct/Digital Image Light Amplifier—that hold a lot of promise.

Quick Find

YOU NEED	A space and power saving display solution for home, or office use
Basic Use	
LOOK FOR	A budget 15-inch LCD monitor that provides decent output quality
YOU NEED	A display that reproduces crisp text and images for corporate use
Inter Use	
LOOK FOR	A 17-inch LCD that provides resolutions of up to 1280 x 1024
YOU NEED	A display solution for your media centre PC
Prof Use	
LOOK FOR	An 18-inch LCD monitor that offers high resolution and excellent colour reproduction.



❶ **The receiver:** Input from a stylus or pen goes from the receiver to be displayed on the monitor.

❷ **The pen or the stylus:** This is the means of input used to send signals to the internals of the device.

❸ **Connector:** It's normally attached to the receiver and comes with various connectivity options. The most commonly used connector is USB.



Buying Tips

✓ **TECHNOLOGY:** Owing to its sensitivity to pressure, devices based on the older Electro Magnetic Technology (EMR) are mainly favoured by graphic artists. The main drawback of the latest electro-optical input devices is that they require special pen and paper. Ultrasonic technology is the most viable of the three, as it adapts easily to every market segment and application using regular ink and paper.

✓ **TYPES OF DEVICE:** Get to know the solution fully before you purchase it. Make sure it supports the operating system you intend using it with. Opting for a costlier feature-packed pen translates to a beneficial investment for the future. These solutions also come in package deals that bundle along a pen, tablet and a mouse as well. Other devices come with their own writing pads.

✓ **CONNECTIVITY:** Choose a device that can connect easily to your PC, and can be used with your PDA and laptop as well. Make sure that there are no issues with the drivers, so that you have a hassle-free user experience.

Quick Find

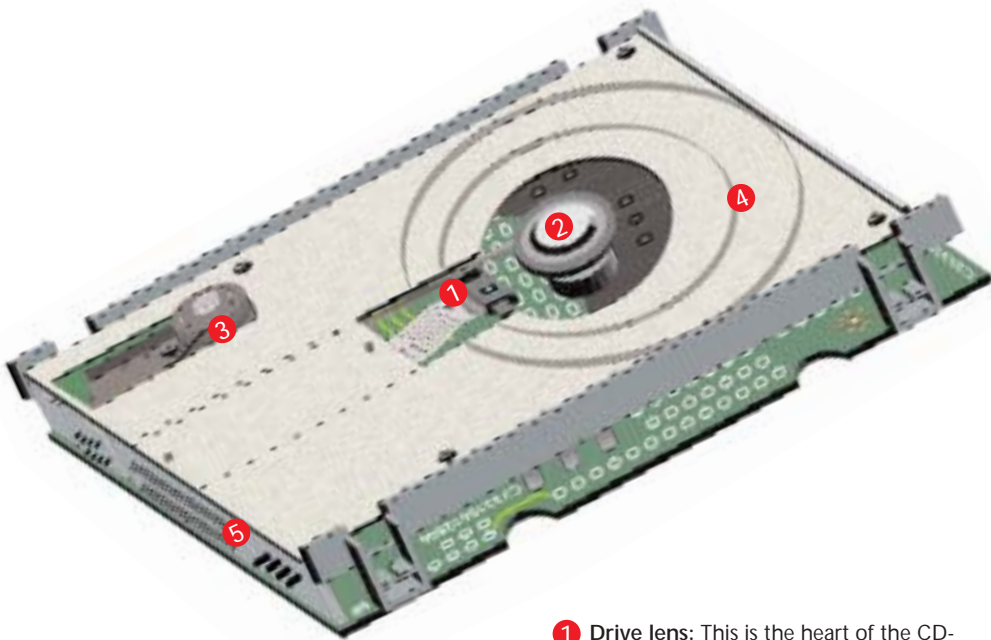
YOU NEED	A substitute for a mouse
Basic Use	
LOOK FOR	A very basic solution sans all fancy frills and features
YOU NEED	A natural input device that will be used occasionally
Inter Use	
LOOK FOR	A solution that has value-adds, such as a mouse and tablet bundled along
YOU NEED	An device that is to be used extensively for work that cannot be done using a mouse
Prof Use	
LOOK FOR	A feature-packed solution with a wide variety of connectivity options

Do Remember

- The stylus or pen is similar in size to a regular pen. You can enter text in your natural handwriting—something that makes it very convenient to use.
- Do not fall for marketing gimmicks. Opt for a solution that suits your usage style and budget.
- Understand all technological aspects involved with the solution before making a buying decision. Keep away from the 'spend now, understand later' trap.
- See to it that the manufacture packs in a few extra styli in the tablet solution. They are easily misplaced.
- Check if the bundled software is compatible with other applications. Regular updates and patches show that the company is serious in providing support to its customers.

The Future

Owing to their ease of use, natural input devices are being used extensively world-wide. Designing and digital signatures are applications favoured by professionals world-wide. College students find such devices an easy, simple tool to take down notes and complete assignments sooner. With newer and more user friendly solutions coming out, the only way this market can go is up.



- 1 **Drive lens:** This is the heart of the CD-RW drive. It not only reads the inserted disc, but also writes to a blank disk.
- 2 **Disk motor:** This controls the motion of the disk. As the laser pickup assembly moves towards the outer edge of the disc, the motor must slow down, so that the laser can scan the disk at a constant speed.
- 3 **Tracking motor:** The tracking motor takes care of the laser assembly, and makes it read from the inner to the outer tracks on the CD.
- 4 **Drive tray:** This is the tray where you place the CD. Some drives have a slot interface, where the tray is absent.
- 5 **Connectors:** The IDE and power connectors are on the back of the drive, where you connect the cables.

Facts

- You may not be able to write at high speeds using older systems, since they are incapable of feeding data to the CD writer at the required rate. This also occurs due to slower hard drives, low processing power and limited RAM.
- If you use an ATAPI (IDE) CD writer, make sure it's on a different IDE channel from the hard drive. PCs come with at least two IDE channels—primary and secondary—built into the motherboard. Each channel supports two IDE devices—a master and a slave—on a single cable. Hard drives should always be on the primary channel, and ATAPI devices on the secondary channel. It's preferable to connect the CD writer as the secondary master device.
- Use Track-At-Once instead of Disk-At-Once to burn an audio CD. This makes the audio CD sound more professional, since a 2 second gap will be inserted between each burned track. The CD can then be produced error-free.
- Use branded CDs to burn critical data. Cheap, ordinary media are prone to damage, and cannot hold data for long.



Buying Tips

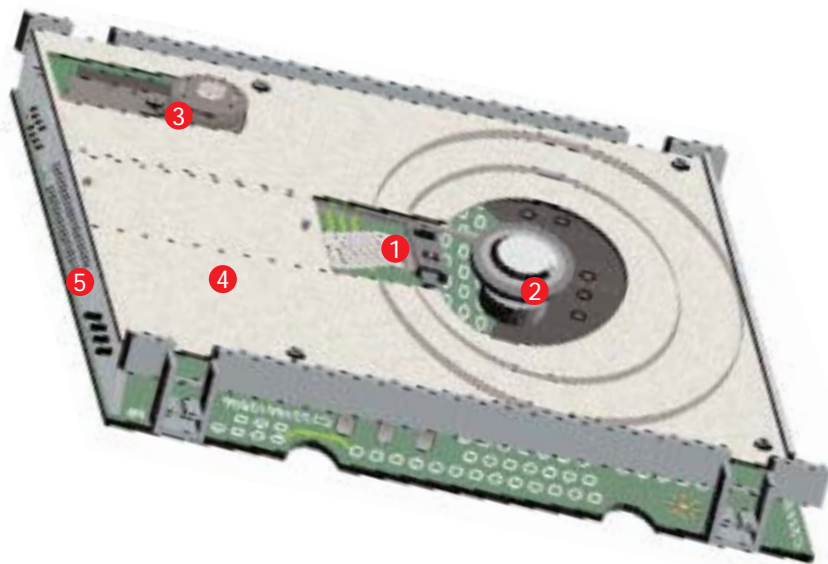
- ✓ **SPEED:** Make sure that the drive has high spin speed and low access time. Access time is more important if you need to read non-sequential data, such as in games.
- ✓ **FEATURES:** It should support oversizing, overburning, TAO, DAO, multi-session and incremental packet writing, and RAW writing.
- ✓ **BUNDLED SOFTWARE:** It should include feature-rich CD-burning software, along with drivers for all major operating systems. The audio and IDE cables should also be included.
- ✓ **FIRMWARE:** The drive's firmware should be upgradeable for future support.

Quick Find	
YOU NEED	A device that lets you take backups and burn different types of CDs
Basic Use	
LOOK FOR	A decent 52X CD writer
YOU NEED	A multi-purpose drive that not only burns CDs, but can play DVDs as well
Inter Use	
LOOK FOR	A combination drive that gives good performance

The Future

Theoretically, CD writers have reached a saturation point, from where further advances seem impossible. Several vendors have invented new ways to crunch more data into a regular 700 MB disk. However, CDs burnt in this manner have been plagued with incompatibility issues with existing CD-ROM drives, which are incapable of reading such 'oversized' media.

On the other hand, DVD writers are still in a nascent stage. Currently, available DVD-Rs can store about 4 GB of data. The latest entry into this field—Blue Ray disks—can store a mammoth 23 GB of data. The future seems destined to see several such small-size, high storage media. Expect to see a slew of writers that cater to disks of this kind.



Buying Tips

- ✓ **FORMATS AVAILABLE:** DVD burners are available in different formats. Some drives have adopted a single format, while other drives are available in dual formats. Currently, there are six recordable versions of DVDs, out of which four are prevalent in the Indian market.
- ✓ **COMPATIBILITY WITH A STANDARD DVD PLAYER:** When buying a DVD burner, make sure that you are settling for a format that is widely accepted, and can be accessed by different drives. For example, DVD-RAM media is incompatible with standalone DVD players, and is hence not recommended if you want to backup movies to watch on a DVD player later.
- ✓ **COMPATIBILITY WITH OTHER FORMATS:** It is highly recommended that you opt for a burner that is compatible with all the existing formats available in the market, to ensure that your writer does not become obsolete in a relatively short period of time. Buying a DVD writer that supports only one format will be a bad investment as the '+' and '-' formats are incompatible with each other.
- ✓ **INTERNAL VS EXTERNAL:** If you are a systems administrator who regularly shuffles from one office to another, then an external DVD writer is recommended. These are more expensive than their IDE counterparts, but the functionality remains the same. Again opting for a dual-format DVD writer is a good choice.

- ① **Drive lens:** A DVD-ROM has a greater data density than a CD-R. Therefore, the drive lens uses a high intensity laser to read data from such media.
- ② **Disk motor:** This motor controls the rotational speed of the disk. These have high spin speeds.
- ③ **Tracking motor:** This motor takes care of the laser assembly and makes it read data from the inner to the outer tracks on the DVD.
- ④ **Drive tray:** It's the tray in which you place the DVD. Some drives feature a slot interface, thereby doing away with the tray.
- ⑤ **Connectors:** The IDE and power connectors are placed at the back of the drive.

Quick Find

YOU NEED	To backup movies
Basic Use	
LOOK FOR	A DVD media format and writer that is compatible with standalone DVD players.
YOU NEED	Primarily, data backup
Inter Use	
LOOK FOR	Any format DVD writer will do. Future-proof solutions would be a good bet
YOU NEED	You are on the move and data backup is your responsibility
Prof Use	
LOOK FOR	External dual-format DVD writers are the way to go

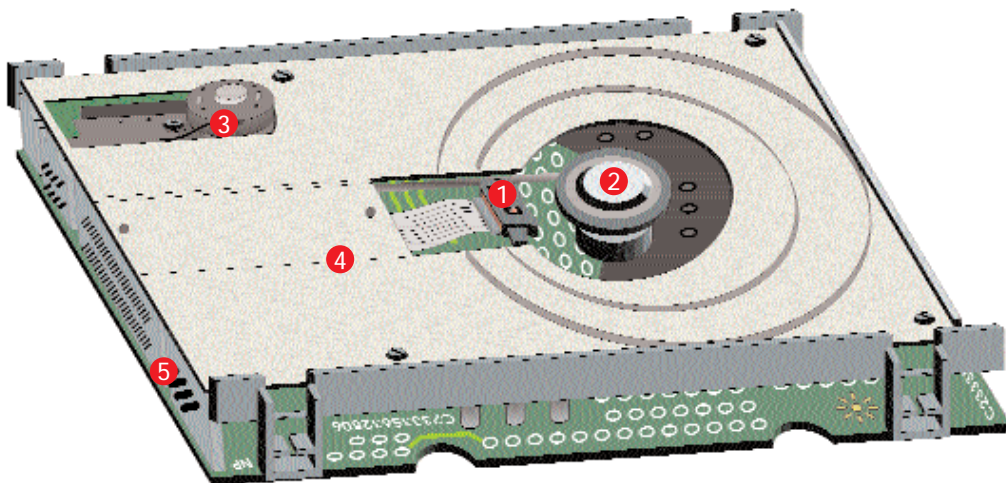
Do Remember

- Check if the software supplied with the writer is compatible with your OS. Also make sure that there are regular updates available from the software publisher at their Web site.
- Check the warranty offered by the drive manufacturer. Visit Web sites and gather information about the particular drive that you are interested in before making your decision. Make sure that the drive manufacturer has a good presence in the market and will provide support, if your drive goes kaput.
- Make sure you are purchasing a drive that can write on all types of media. Newer media formats may not work on older DVD writers although manufacturers are trying to resolve this. Opt for a DVD writer that can write DVDs at a speed of at least 8X.

LITEON

The Future

The future of desktop and SoHo storage is heading towards DVD-writers. These drives are not only able to write on DVD media, but also on CD-Rs and RWs, so you don't need to purchase another drive. These drives will remain at a premium for some time. Once a definite format is established and becomes the norm, the market is bound to flourish, given the enormous amount of data storage space available on a single DVD. Newer technologies such as Blue Ray discs, which are dual-layered and double-sided can hold more than 50 GB of data per DVD, as compared to the current 27 GB per DVD. Normal DVD±R media can back up about 4.3 GB of data per DVD, but with the finalisation of dual-layered DVDs this capacity will increase to 9 GB per disk. Given these humongous storage capacities, it is only a matter of time before the demand for such drives increases.



Buying Tips

- ✓ **SPEED:** Drives these days come in 12X and 16X speeds. Opt for a 16X.
- ✓ **FORMATS:** Take a look at the various formats the drive can play. Most DVD players can't play all formats. For example, the drive may not be able to read a DVD-RW disk. In this case, if you have several DVD-RWs, a new DVD-ROM would be a bad investment.
- ✓ **READING CAPABILITY:** Ensure that the drive can read dual-sided DVD media.
- ✓ **WARRANTY:** Ask for the warranty period, as well the parts covered by the warranty. Look for a drive that comes with a replacement warranty. Also ask the dealer if he will provide a standby drive, in case your current drive is under repair.
- ✓ **MEMORY:** Make sure you buy a DVD-ROM drive that has a buffer memory of at least 512 KB.
- ✓ **SOFTWARE BUNDLING:** Ensure that good DVD playback software is provided along with the drive.
- ✓ **HARDWARE PROVIDED WITH DVD-ROM DRIVE:** Some DVD-ROM drive manufacturers provide an external decoding card with their drives. Check if the card is compatible with your computer, and if proper drivers and software are provided.
- ✓ **SYSTEM RESOURCES:** DVD-ROM drives consume a lot of system resources when playing DVD movies. Make sure you have adequate system resources before you purchase a DVD-ROM drive.

- ① **Drive lens:** A DVD-ROM has a greater data density than a CD-R. So, the drive lens uses a high intensity laser to read data from such media.
- ② **Disk motor:** This motor controls the rotational speed of the disk. These have high spin speeds.
- ③ **Tracking motor:** This motor takes care of the laser assembly and moves to read data from the inner to the outer tracks on the DVD.
- ④ **Drive tray:** It's the tray in which you place the DVD. Some drives feature a slot interface, thereby doing away with the tray.
- ⑤ **Connectors:** The IDE and power connectors are placed at the back of the drive.

Do Remember

- The development of the DVD format started in 1994, and it was only in 1996 that it was launched.
- A single-speed DVD-ROM drive has a data transfer rate of 11.08 Mbps. Hence, a 16X DVD-ROM can transfer data up to 177 Mbps.
- People usually associate DVD disks with movies. However, DVDs are also used to distribute games and other material such as encyclopaedias.
- DVD-ROM drives can play all the DVDs and above that it can even read all the CDs.
- The DVD-ROM format has 4 standardised options: DVD-5 (single-sided, single-layered with a capacity of 4.7 GB), DVD-9 (single-sided, dual-layered with a capacity of 8.5 GB), DVD-10 (dual-sided, single-layered with a capacity of 9.4 GB) and DVD-18 (double-sided, dual-layered with a capacity of 17 GB)
- To check the formats supported by your DVD ROM drive, use the Nero Info tool. This is a freeware utility available on the Nero Web site. Once installed, run the utility and under the Drive tab you will get the information about which formats your DVD drive supports.
- The DVD-R pattern was introduced in 1997. It was capable of recording up to 3.9 GB of data per disc. Later the DVD-RW format was introduced in 2001, and is capable of recording 4.7 GB of data per disc.

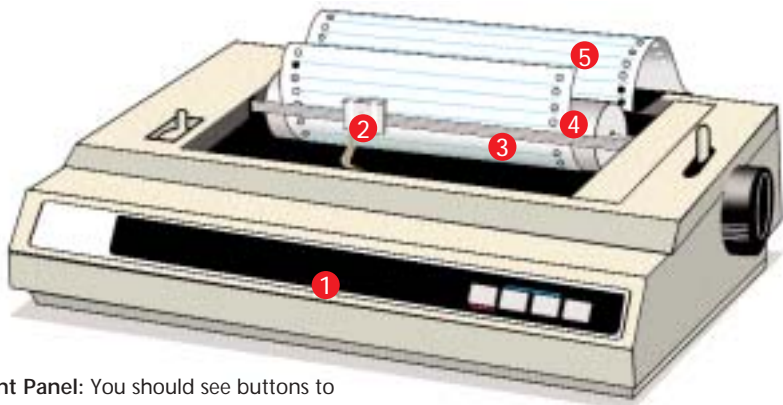


Quick Find

YOU NEED	To view DVD movies
Basic Use	
LOOK FOR	Any DVD-ROM drive
YOU NEED	A drive that will let you transfer data at the highest speeds
Inter Use	
LOOK FOR	A 16X DVD-ROM drive

The Future

The market clearly indicates that CD-ROM drives have taken a back seat; it's the DVD-ROM drives that most consumers are now eyeing. A year ago, one of the reasons why users were unwilling to migrate to a DVD-ROM was the premium pricing of DVD disks. As things stand today, one can buy a DVD disk ranging from a mere Rs 200, to Rs 1,200. This indicates that manufacturers want to ensure that the technology is widely accepted; we can therefore expect to see a rise in the sales of DVD-ROM drives.



Buying Tips

- ✓ **NUMBER OF PINS:** Here, pins refer to the metal pins on the printer head. Since every character or image is made up of dots, the more the number of pins, the better the print quality. There are two options to choose from—9 pins and 24 pins. Opt for a 24-pin print head as far as possible, since it'll provide better print quality.
- ✓ **BUFFER:** A large buffer allows for quicker printouts.
- ✓ **PAPER FEED METHOD:** Friction Feed as well as Tractor Feed should be supported. In Friction Feed, the printer pulls in a sheet from a stack of paper as and when needed. The Tractor Feed mechanism has spokes that fit into the perforations on either side of the paper, and the paper consists of a continuous sheet that can be torn at fixed lengths. Opt for printers that have Top, Bottom and Rear feeding.
- ✓ **AUTOSHARE (ALSO CALLED AUTOSWITCHING):** Some printers with both serial and parallel interfaces can be connected to 2 PCs simultaneously. The printer senses the PC that is sending data, and switches to the corresponding port. This feature, called AutoShare, does not come with all dot matrix printers.
- ✓ **LANGUAGE PRINTING CAPABILITIES:** Dot matrix printers are capable of printing in languages other than English. Look for a printer that has the facility to download different language fonts through a flash ROM.
- ✓ **PRINTING CARBON COPIES:** A lever to the side of the printer lets you decide the thickness of the paper. Combining this with a continuous sheet of type 1+1, 1+2, etc. enables you to print more than one copy simultaneously. Here, 1+1, 1+2, etc. indicate that one copy will be the original while there can be more than one carbon copy. Ready stationary to print carbon copies is available in the market.

- 1 **Front Panel:** You should see buttons to power on the unit, load paper, pause printing, select a font, etc.
- 2 **Head:** The printer head consists of either 9 or 24 pins that hit the paper through the ribbon to create the image on the paper. 24-pin printers provide better quality than 9-pin printers.
- 3 **Ribbon:** The ribbon is a nylon strip impregnated with ink which gets transferred to the paper whenever the pins strike it. The replacement of a ribbon is simple as well as cheap.
- 4 **Roller:** The roller has sensors attached to it which detect the paper. The roller pulls the paper into the printer.
- 5 **Slots:** Slots on the paper provide traction.

Facts

- Dot matrix printers have a very running cost. They are therefore an ideal option for very large print jobs where quality is not so important.
- Change ribbons as soon as they begin to fade. The ink in the ribbons is used by the print head as a lubricant for the wires or pins. Dried-up ink causes undue wear and tear on the individual pins.



Do Remember

- Make a rough calculation of the ribbon's replacement over the life of the entire unit before buying a dot matrix printer. Prints in draft mode are economical.
- In case you intend using colour ribbons, make sure you buy one that is of good quality. Though a little expensive, they do give you value for money in the long run.

The Future

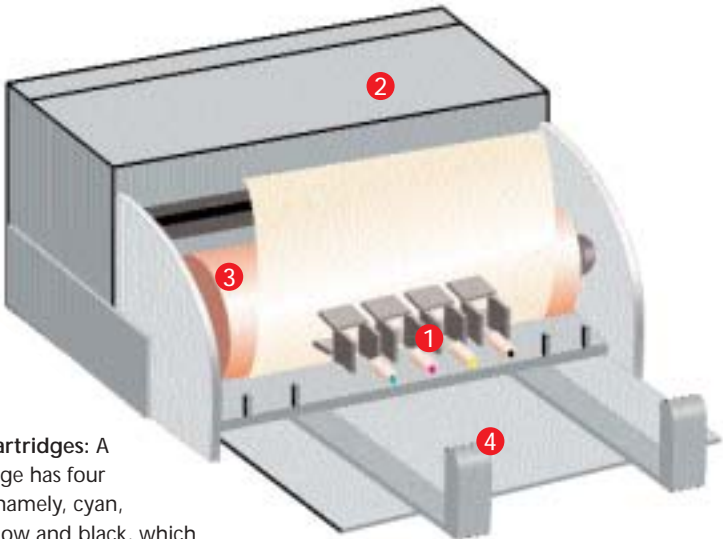
With the evolution of Inkjet and laser printing technologies, experts had predicted the death of the dot matrix printer a long time ago. However, though these printers have moved out of the home environment, they have settled into their own niche and are far from being extinct. The fact of the matter is that no other printing technology is more suitable for printing in bulk—especially in the area of billing. Though inkjets and the laserjets are much better when it comes to aspects such as print quality and speed, the low running costs and reliability of a dot matrix printer makes it a dependable choice for very large, average-quality print jobs. Indeed, they will command a portion of the market for some time to come.

Quick Find	
YOU NEED	To print bills and invoices on A4 size paper
Basic Use	
LOOK FOR	An 80-column printer
YOU NEED	To print reports, worksheets, and balance sheets on A3 size paper
Inter Use	
LOOK FOR	A 136-column printer



Buying Tips

- ✓ Opt for a printer with a USB interface since it offers higher data transfer speeds. If the printer offers both USB as well as parallel connectivity, then there's nothing like it.
- ✓ Consider the total cost of ownership and not just the purchase price. Vendors tend to sell off printers dirt-cheap. However, prices of cartridges are skyrocketing. Therefore, if you have huge volumes to print, even a difference of a rupee in the cost of the cartridge will save you a sizeable amount of cash over the lifetime of the printer.
- ✓ Check whether the printer supports additional features such as ink status determination via software, so that you can be sure of when to change the cartridge, and other features that add value.
- ✓ Inkjets using pigment-based inks are better than those using normal dye-based inks, as printouts taken with the former are smudge proof and water resistant. They also last longer.
- ✓ Choose a printer based on the kind of print quality you require. In general, Inkjet printers offer excellent quality as far as images and graphics are concerned, whereas laser printers offer better quality text printouts.
- ✓ If you're planning to buy an inkjet printer, make sure to check the page per minute (ppm) speed. Manufacturer-rated speeds are always in accordance with the printer's fastest mode of printing, and you're more likely to be printing in Normal or Best mode, which is much slower.
- ✓ If you intend to share the printer over a network, look for a higher buffer memory. The more the better.
- ✓ If you are buying a printer for photo printouts, always take a test print to check for quality. Some printers require a separate ink cartridge for photo quality printouts, while some don't. Make it a point to check for this, as it affects the price.
- ✓ Check the manufacturer's Web site for the type of support they offer, whether they offer regular software updates, patches for new operating systems, etc.



- 1 **Colour cartridges:** A colour cartridge has four types of ink, namely, cyan, magenta, yellow and black, which are combined to produce the colours on the paper.
- 2 **Front panel controls:** The front panel controls can be used instead of software, for printing.
- 3 **Rollers:** The paper is fed in and out of the printer by the roller.
- 4 **Paper tray:** The paper is fed into the printer using this tray.

Do Remember

- Check whether the printer will fit on your desktop. You might buy a 21-Inch printer only to find you don't have big enough a table.

Quick Find	
YOU NEED	An inkjet printer to print resumes, letters, Web site contents and some occasional photo printouts.
Basic Use	
LOOK FOR	A basic A4 printer that has decent speed, prints in colour and comes with warranty and support
YOU NEED	An inkjet printer that prints text and combination documents with good quality and at high speeds
Inter Use	
LOOK FOR	A printer that offers good speed and has adequate connectivity options such as USB, parallel, network, IrDA, etc.
YOU NEED	An inkjet printer that prints high-resolution, photo-realistic, vibrant prints
Prof Use	
LOOK FOR	A printer that supports the highest resolution possible, has separate ink tanks and produces excellent photo printouts

Facts

- The nozzle head of an Inkjet printer opens and closes 5000 times per second while printing.
- Typically, ink drops have a volume of 8-10 picolitres (a million millionth of a litre).
- Inkjet printers allow for photo-realistic prints even on plain paper.

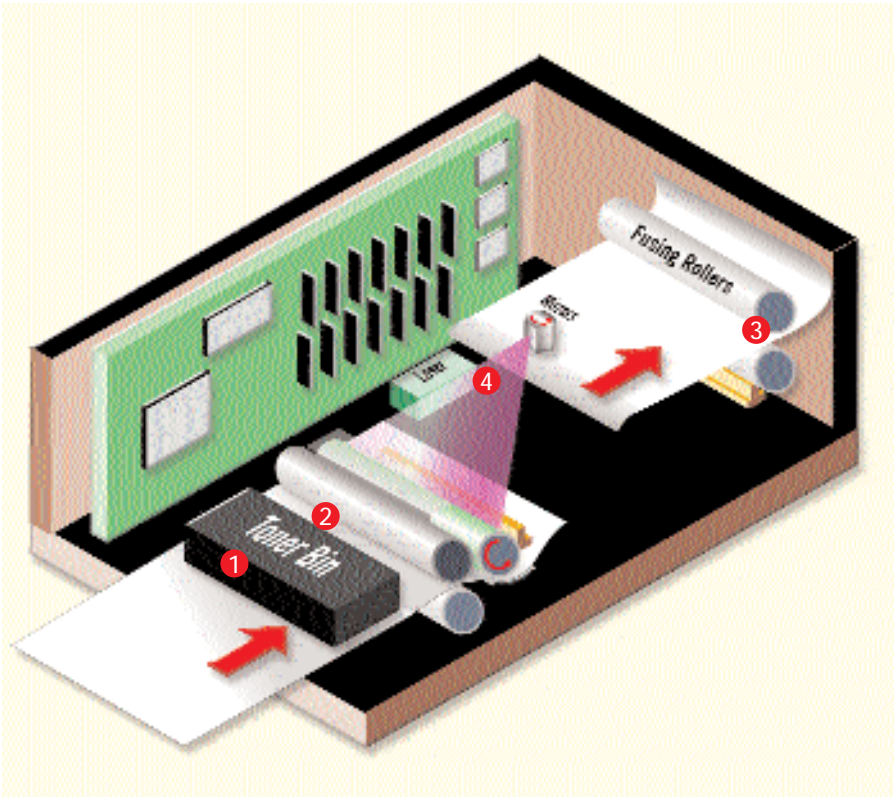


The Future

The advocates of paperless environments had predicted the death of the printer. Indeed, concepts such as e-mail, e-paper, e-books and digital collaboration have taken us a step closer to a paperless work culture, but the inkjet printer is here to stay.

Once the norm, the dot-matrix printer is now limited to billing and accounting applications.

The past few months have seen the emergence of a new breed of inkjet printer, called the photo-printer, which connect directly to a digital camera and get printouts directly from it. They are lightweight and compact in size, thereby allowing complete portability.



Do Remember

- Laser printers are often used as shared resources in an office, hence networking capabilities and a sizeable buffer memory—a minimum of 8 MB—makes all the difference.
- If the printing load at your office is high, opt for a printer that has a paper input tray capacity of more than 500 pages.
- Before buying a laser printer, check and validate the speed (rated in ppm) and the cost per page. Smaller laser printers cost less, but return a higher cost per page. A full-fledged laser printer may cost upwards of Rs 30,000, but works out cheaper in the long run.

Facts

- An A4-size page has 33 million dots at a resolution of 600 dpi.
- Prices of laser printers have dropped considerably over the last couple of years. Entry-level printers cost just Rs 10,000.



The Future

As of now, though inkjet printers rule the roost when it comes to photo-quality printing, the future lies in laser printers.

Not too long ago, laser printers were way too expensive for the average SoHo user. Despite the long-term benefits and convenience, the price used to be a stumbling block.

However, the past few months have seen a sharp drop in prices. Moreover, a wide range of features such as networking capabilities, storage and paper management, which cater to various kinds of users, have been built into laser printers.

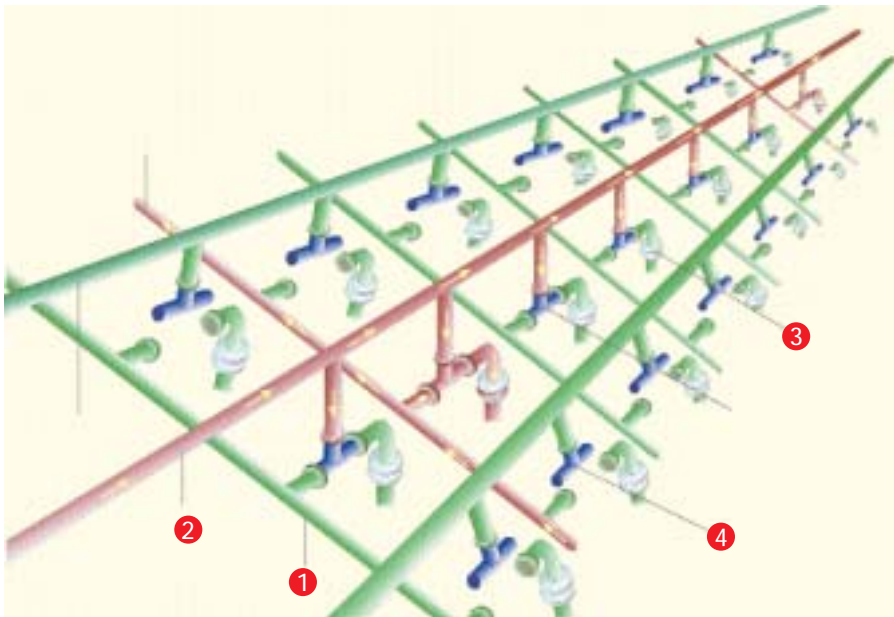


Buying Tips

- ✓ **WARRANTY:** The warranty should be comprehensive and on-site. A carry-in warranty is bad, as it might entail carrying the printer to a service centre.
- ✓ **QUALITY OR PRICE?** Faster and high-quality printers are costlier than their slower counterparts. If you're in no hurry to take your printouts, or don't need excellent quality, set your sights a little lower. You'll end up saving a lot of money that way.
- ✓ **AFTER-SALES SERVICE:** It's irritating when expensive peripherals crash or malfunction. Add lousy customer service, and you'll be ready to throw it out the window. Ask people who've already bought printers about their experiences with customer-support staff. This involves some serious questioning, but it's better than having to question your choice later on.

- ① **Toner Bin:** This stores the toner, which is responsible for forming the image.
- ② **Drum:** The drum is the heart of a laser printer; it stores the image to be printed in the form of an electrostatic charge. The charged areas of the drum pick up ink from the toner, and then the drum rolls over the paper to form the image or text.
- ③ **Fusing Roller:** The fusing roller applies heat and pressure to the paper, so that the image formed by the drum becomes permanent.
- ④ **Mirror and Laser:** The mirror and the laser convert digital data to electrostatic charge on the drum.

Quick Find	
YOU NEED	Cheap, average quality, and decent-speed printing
Basic Use	
LOOK FOR	An A4 printer with a resolution of 600 x 1,200 dpi
YOU NEED	Fast and high-quality printing, cost not being a criterion
Inter Use	
LOOK FOR	Resolution of 1,200 x 1,200 dpi, and ability to handle larger print loads



4 Closed or open transistor: It holds the data signal which can either be 1 or 0 when the transistor is closed. If it is open, it is disconnected from the series, and hence the system bus, and it could be in either state. This is called floating output.

Do Remember

- Enable the lowest CAS setting for your RAM in the BIOS. Also, set it to use the highest bus speed setting it supports.
- Close any applications you do not need so as to make more memory available for more important programs.



Buying Tips

- ✓ **MINIMUM RAM:** Most modern applications as well as operating systems such as Windows XP need at least 256 MB of RAM to run smoothly.
- ✓ **DDR OR SD RAM:** If your motherboard supports both DDR-RAM and SDRAM, opt for the former. Though the prices are nearly the same, the performance of DDR-RAM is far superior.
- ✓ **FREQUENCY:** The frequency of the RAM has to match the one supported by the motherboard.
- ✓ **SINGLE OR MULTIPLE:** As far as possible, use a single RAM module. The advantages are manifold. Firstly, a single stick costs less than multiple modules put together. Secondly, there won't be any compatibility issues, and you still have a vacant slot for a further upgrade.
- ✓ If you're buying a new motherboard that's based on the latest chipsets (Nforce2, 865, 875, etc.), opt for 400 MHz memory modules, which are currently the fastest available.
- ✓ Avoid Investing in SD-RAM. Not only will they be outdated soon, they're also more expensive than the better and faster DDR-RAM. You could also have warranty problems, as most dealers don't offer support for it anymore.
- ✓ Always buy branded RAM modules sold with proper packaging. Lifetime (5-year) warranties are also offered, albeit at a higher price.

- 1 **Address Line:** It carries either a 0 or a 1 signal amongst the transistors. There are two address lines for a series of transistors. If one address line is carrying the signal 1, then the other address line carries the signal 0.
- 2 **Data line:** It carries the cumulative data signal from the RAM to the system bus.
- 3 **Capacitor:** It holds the information—either 0 or 1—depending on whether it is in a charged or discharged state.

The Future

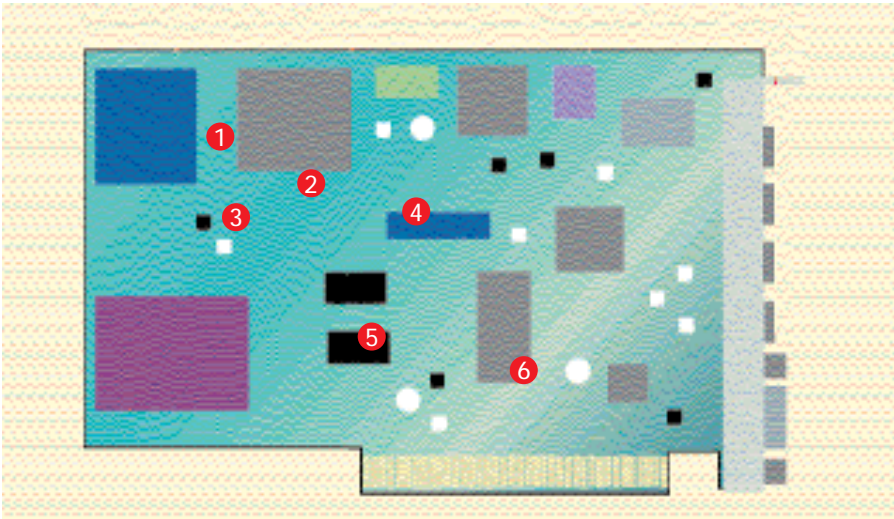
More often than not, the focus in RAM is mostly on speed, with one manufacturer constantly trying to outdo the other. The DIMM has not seen much change recently. All that has been included in the design is the HeatSpreader to boost the cooling process.

All in all, the DRAM module isn't scheduled for a massive change in the desktop segment.

However, the server segment witnesses an ever-increasing demand for RAM with practically no space for expansion. This has seen the emergence of some exciting new technologies such as Thin Small Outline Packages (TSOP), Tape Carrier Packaging (TCP), Elevated Package Over CSP (EPOC) and Foldable Electronic Memory Module Assembly (FEMMA) to overcome the problem.

The evolution of RAM modules, from the slow EDO-RAMs to the RD-RAM, and now DDR-RAM, has always strived to push the speed limit a little further. This will continue to be a trend in the future as well. While DDR 400 MHz is still the most widely accepted and recognised standard, memory manufacturers have succeeded in churning out faster memory, running at 533 MHz. With the advent of 64-bit processors that require ECC memory, the market will witness another major change. These ECC memory modules, which were only used in servers thus far, will trickle down to the desktop arena.

Quick Find	
YOU NEED	To upgrade RAM on an older board that has no Support for DDR-RAM
Basic Use	
LOOK FOR	SDRAM that preferably has a frequency of 133 MHz
YOU NEED	A cost-effective solution
Inter Use	
LOOK FOR	DDR-RAM that has a frequency in the range of 266 MHz to 333 MHz
YOU NEED	A performer—cost no bar
Prof Use	
LOOK FOR	400 MHz DDR-RAM



tiny sample recordings of actual instruments. These sounds can be played back through the sound card accurately.

6 **Amplifier:** The amplifier amplifies the audio signals, and passes it on to the line-out of the sound card.

Do Remember

- Some sound cards only have FM synthesizers, and these are considered a bad choice for creating quality music. Professionals should buy a sound card that features Wavetable and SoundFont technology support.
- S/PDIF—Sony/Philips Digital Interface—is a standard for transmitting data in a lossless digital format, to preserve sound quality. Sound cards that feature an S/PDIF connector are therefore a better choice.
- When listening to a set of stereo speakers or headphones, the left ear may hear sounds meant for the right ear, and vice versa. A well engineered sound card—one with gold-plated connectors and shielded wires, for instance—will suppress this interference, and produce more accurate sound.

Facts

- Integrated sound chips use a lot of system resources. They make good makeshift solutions, but generally offer lower quality output as compared to standalone cards.
- Check the specifications of the sound cards you are interested in against the best available. The SNR ratio (dB), THD (%) and the amount of cross-talk are three major factors to look for. This will help you make a decision.



The Future

Sound cards don't see changes very frequently, but when they do, it's generally something significant. Labs are already working on 9.1-channel surround sound. This increase in the number of channels, and hence, speakers, will not only make future movie experiences more immersive, but also give hardcore gamers an edge over rivals by allowing them to predict more precisely where an attack is coming from.



Buying Tips

- ✓ **DEFINE YOUR USAGE:** If you love watching DVDs, and don't play games too often, opt for a sound card that supports multiple channels, such as 5.1 surround. If you want a gaming solution, buy a card that supports the standard 3D sound APIs, such as DirectSound, EAX, A3D and I3DL2.
- ✓ **WARRANTY:** Make sure you get at least a one-year warranty for budget sound cards—under Rs 2,000—and at least a three-year warranty for more expensive ones.
- ✓ **INTERFACE:** Make sure that the sound card's interface is PCI and not ISA.
- ✓ **DRIVERS:** Check that the sound card you're buying has the drivers bundled, especially if you are a non-Windows user.
- ✓ Audiophiles should look for gold-plated connectors for minimum signal loss.
- ✓ Check for bundled applications such as games and media players.
- ✓ Make sure that the sound card has at least two available speaker connectors for connecting surround sound speakers. If not, make sure that there is an alternative provision for connecting 5.1 or 6.1 speakers.
- ✓ Make sure that the sound card is full-duplex, which means that it can record and play sound at the same time.
- ✓ Buy a sound card that has low processor usage, otherwise listening to music and working on a resource intensive application simultaneously will not be a pleasant experience.

- 1 **DSP:** The Digital Signal Processor processes, converts and analyses signals, and does other computational work as well.
- 2 **DAC:** The DAC is responsible for all audio signals leaving the computer.
- 3 **ADC:** The ADC is responsible for all audio signals coming into the computer.
- 4 **Connectors:** The MIDI connector is used to connect to an external music instrument, such as an electronic keyboard. A game port is used to connect joysticks and other gaming devices, while other connectors include the line-in, line-out and microphone jacks. Each of these is colour-coded. On-board connectors include the CD-audio connector and the S/PDIF connector.
- 5 **Wave table synthesizer:** This contains

Quick Find	
YOU NEED	A basic, no-frills sound card
Basic Use	
LOOK FOR	A full-duplex card, or a motherboard with an on-board sound chip that provides simple stereo or 2.1 channel output
YOU NEED	Surround sound at an affordable price
Inter Use	
LOOK FOR	A card with 4.1 or 5.1 channel support; in-built Dolby Digital decoding will be an added bonus
YOU NEED	Excellent sound quality for professional level editing
Prof Use	
LOOK FOR	A card that supports 24-bit recording at 96 KHz, along with S/PDIF, DIN, or FireWire connectors



Buying Tips

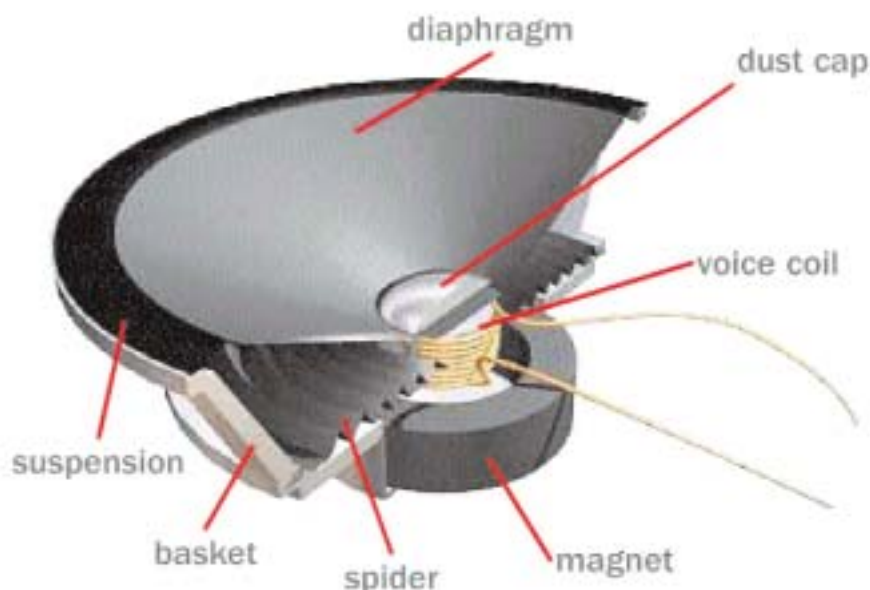
✓ **POWER RATING:** Most speaker systems deceptively specify their power rating in Peak Music Power Output (PMPO). Always go by the RMS power of a speaker, as it is the true technical measure of the speaker's capability to handle continuous power. A 40-watt RMS rating for a surround sound speaker system is decent enough.

✓ **FREQUENCY RESPONSE:** If your speaker system has a frequency range that's limited at the upper end to, say, 16 KHz, the higher treble notes don't get noticed, especially when playing classical music. Similarly, if your speakers can't go below 50 Hz, they won't be able to render that deep bass from drums, and those thunderous explosions that you come across in movies.

✓ **STANDS:** You won't need stands for a 2.1 speaker system that's primarily meant for music playback. You would probably place them right on your desk. However, for a 4.1 or 5.1 speaker system, ensure that all the satellites have a stand or a base attached. This is useful if you want to place them standing on the floor at ear-level, for proper surround-sound imaging.

✓ **CONTROLS:** Speakers with inline volume controls give you the freedom to control the master speaker volume without going to the trouble of accessing the subwoofer, where the volume controls are generally placed.

✓ **AUDIO INPUTS:** If you have a 2.1 stereo speaker system, you only need standard analogue left and right channels. However, in the case of a four-point surround sound system, you would need to look for four separate channels of analogue audio inputs to your speaker system. This would be in the form of two 3.5 mm stereo inputs (left and right for front, and left and right for rear), or four separate RCA inputs. Watch out for pseudo-four channel speakers that are actually just stereo, with two speakers for each side. In the case of 5.1 speakers, you would either need to have six separate RCA inputs for the discrete AC-3 channels, if the signal is already being split by an external decoder, or you would need a DIN connector that is fed by the digital output of your sound card, in order to have true Dolby Digital rendering on your surround sound system.



Quick Find

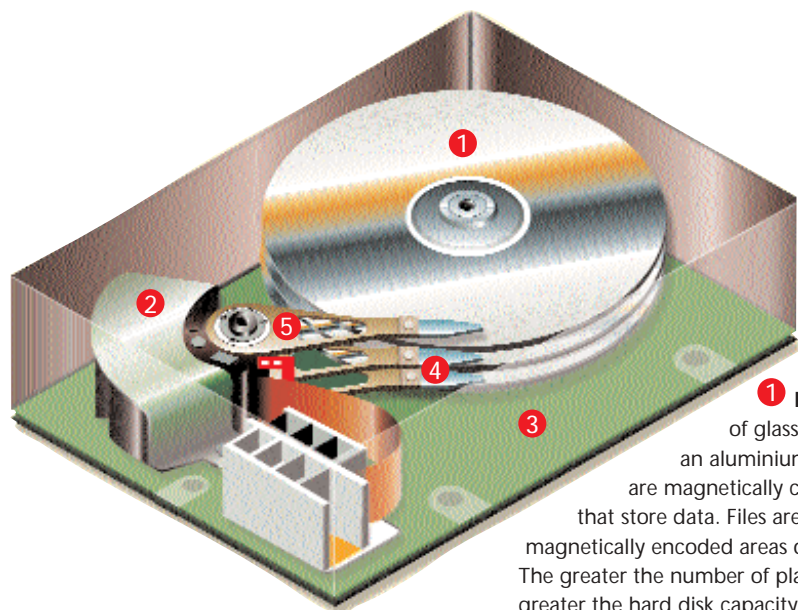
YOU NEED	A cost-effective solution
Basic Use	
LOOK FOR	A 2.1 speaker system that is well suited for DVD playback
YOU NEED	Speakers to play games
Inter Use	
LOOK FOR	A 5.1 speaker system that performs very well, especially when reproducing game sound effects
YOU NEED	A home theatre system
Prof Use	
LOOK FOR	A 7.1 speaker system with a large and powerful subwoofer, and punchy satellites

Do Remember

- Place the speakers at, or slightly above, ear level for optimum effect. You can place the subwoofer anywhere. Keep the subwoofer facing a wall, preferably in a corner of the room.
- If the surround-sound channels are too faint, 'toe-in' the surround speakers so that they point towards the listener. Conversely, if they are too prominent, place them facing the wall. This helps disperse the sound from the rear channels, resulting in a more enveloping effect.
- If you use an adapter that did not come with your speakers, make sure that the ratings of the amplifier (in RMS wattage) and adapter (in ohms) match.

The Future

Expect to see a slew of speakers that take sound to a new high. Multi-channel speakers have already become a norm. 7.1 channel sound cards have been developed to channelise sound in the right manner. Though not yet a craze, wireless speakers are bound to attract the audiophile because of the flexibility and freedom they offer. Speakers that automatically calibrate and adjust sound quality are also on the cards.



1 Platters: Made of glass substrate or an aluminium alloy, platters are magnetically coated disks that store data. Files are stored as magnetically encoded areas on the platters. The greater the number of platters, the greater the hard disk capacity, though the capacity also depends on the areal density of the platters.

2 Head Actuator: The actuator moves the actuator arms across the platters in order to precisely align the read-write heads above the area storing the data.

3 Logic Card: The printed circuit board at the bottom of the hard disk is called the logic card, and contains a microprocessor and memory. The logic card is responsible for controlling the hard drive. It receives commands via the hard drive controller that is driven by the operating system.

4 Read-Write heads: These are attached to the ends of the actuator arms and are

located on both the top and underside of each hard disk platter. The read-write heads are positioned at a distance of a three millionth of an inch from the platters, and are responsible for reading and writing data.

5 Actuator Arms: Attached to the actuator head at one end, the arms move the read-write heads across the platters to read or write data.

Do Remember

- Prefer a 7,200 rpm drive over a 5,400 rpm, for improved performance—there's hardly any difference now between the prices.
- Never invest in a second-hand hard disk, since it'll be prone to bad sectors and other problems.
- As of today, SATA drives do not provide a significant performance gain over IDE drives, but it is better to buy one if you are upgrading your PC to make it future-proof.

Facts

- The first hard disk, was introduced in 1956. It had a capacity of about 5 MB, stored on 50 24" disks. Its areal density was a mere 2,000 bits per square inch, and its data throughput was 8,800 bits per second.



Buying Tips

✓ **Speed or space?** If you need to store MP3s and DivX films, or to back up heavy image files, buy the largest hard disk you can afford. On the other hand, if you extensively use applications such as image editing or audio processing software, look for the fastest hard disk you can afford—at least a 7,200-rpm drive—and buy the largest in that speed range.

✓ **As of today,** both the SATA and IDE standards provide the same performance, but the future seems to be SATA. So, if your motherboard supports SATA, buy a SATA hard drive.

✓ **Research the market.** Ask your friends or dealers you know, or search the Internet for information about the manufacturer, the reputation they enjoy and their after sales-service.

✓ **Check the warranty.** Apart from the time frame covered, also check the type of warranty. Some manufacturers will replace the hard disk only in the first year, after which they will only repair it. This is rather unreliable, and can lead to more problems in the future.

✓ **Confirm the time it takes to replace a faulty hard disk.** This is especially important if your business relies heavily on data storage. Generally, manufacturers who run a service centre are able to provide quick replacements, while those who don't have service centres could take weeks to replace a faulty hard disk.

Quick Find

YOU NEED

Basic Use

A steady-going disk that can store all your movies, MP3s and other data with decent performance and a large enough capacity

LOOK FOR

A 7,200 RPM drive with at least 40 to 80 GB of capacity, with price per MB in the region of 5 to 7 paise.

YOU NEED

Inter Use

A disk with good performance, large storage capacity, fast in copying files on and off the drive. A drive that is future proof and won't become obsolete in the wake of SATA becoming standard

LOOK FOR

A 7,200 RPM drive with 120 GB to 160 GB of space, and excellent read and write speeds.

YOU NEED

Prof Use

A super-fast drive with excellent performance, low latency, fast in copying data on and off the disk, and also supporting future standards

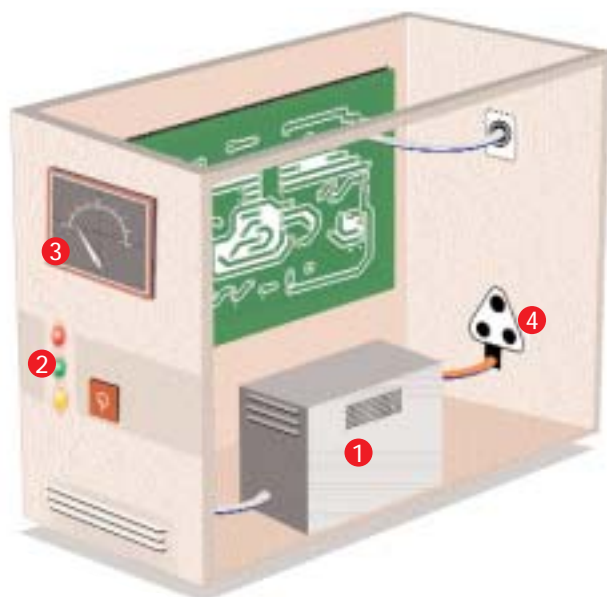
LOOK FOR

A drive with at least 8 MB of buffer, spindle speed over 7,200 rpm, extremely low CPU utilisation, good overall performance, and loads of space



The Future

The world of hard disk manufacturers is changing—on one side, the demand for storage is on the rise, while on the other side the demand for faster drives is also rising. There's pressure from existing users for better performance, as well as pressure due to the emergence of technologies such as SATA (Serial ATA). SATA is the next-generation revolution in hard disk interfaces. It is one standard that's causing a big impact in the internal interface industry. The Serial ATA interface helps transfer data at a speed of 150 MBps with ease, and is moving on to pick-up speeds of up to 300 MBps by 2005 and 600 MBps by 2010.



Buying Tips

✓ **INPUT VOLTAGE RANGE:** This is the range beyond which the UPS delivers power through its batteries. The greater the range the UPS can handle, the more versatile its power protection. Look for a voltage range between 150 and 270 V.

✓ **VA RATING:** This is the power rating that can be provided by the UPS. Choose the rating based on the requirements of the equipment you intend using with the UPS. As a rule of thumb, a 1 GHz processor-based system with a 20 GB hard disk, a CD-ROM drive and a 17-inch colour monitor would require a 500 VA UPS.

✓ **BACKUP TIME:** This is the specified time for which the UPS can provide power from its battery for a given load. Look for a backup time of at least 10 minutes at maximum load.

✓ **SWITCHING OR TRANSFER TIME:** This is the time taken by the UPS to switch from normal delivery power mode to battery mode on detecting a power failure. Ideally, look for transfer times under 5 milliseconds.

✓ **ALARMS AND CONNECTIVITY:** Most UPS systems have front panel LEDs that indicate the battery level and the condition of the input and output power. This comes in useful, especially during power failures.

✓ **CHARGING TIME:** This is the time taken to charge the UPS batteries from the completely drained state to the fully charged condition. The charging time should be between 4 and 6 hours.

① **Battery:** The heart of a UPS; the full-load capability of a UPS is directly dependent on the battery.

② **LED and power button:** Pressing the power button starts off power at the AC-out connectors. There are LEDs to indicate power, standby, and overload conditions.

③ **Voltmeter:** Indicates the current voltage in as well as voltage out.

④ **AC out:** Power connections to the cabinet SMPS, the display and the speakers come from here.

Quick Find

YOU NEED

To provide power to a low or medium configuration consumer PC

Basic Use

LOOK FOR

An offline or line-interactive UPS, with a 450 VA to 650 VA rating, and a backup time of at least 10 minutes

YOU NEED

To provide power to a PC using high-end components or a server, so as to have minimum downtime

Inter Use

LOOK FOR

An online UPS with at least 1 KVA rating, and a backup time of at least 10 minutes. It should also support remote monitoring via a serial or USB interface, with alarms and indicators to warn of power anomalies

Do Remember

- Decide on the UPS based on the total power consumed by your equipment. If it's expressed in Amps, then multiply that value by 230 V—the nominal line voltage. If the power drawn is stated in Watts, multiply it by a factor of 1.3 to 1.4 for the VA load. For example, a 250 Watt power supply (x 1.4) equals a 350 VA load. Considering a measure of safety, 500 VA is enough for most PCs.
- The VA rating of a UPS is a measure of the amount of power it can provide—usually for about 10 to 12 minutes. Therefore, if a 500 VA UPS is loaded with equipment that draws 500 VA of power, it will last for about 10 minutes. If the load is halved to 250 VA, the backup time will increase to about 16 to 18 minutes. Of course, this is assuming that the battery is fully charged and functional. Always ascertain that the equipment is connected to the UPS.
- It is advisable to charge and discharge the UPS battery completely once a month to prolong battery life. To do this, run the computer from the battery until it is completely discharged, and then recharge it.



The Future

The next trend in the Indian UPS industry should see a major shift towards reliable and intelligent products. UPSes are as important for mission-critical applications as any other element, and reliability is a major issue. At the same time, intelligent products will be able to maximise power availability for the equipment that needs it most, shutting down non-necessary equipment at different stages of battery usage. Running costs will also be a driving factor.



Buying Tips

- ✓ **SECURITY:** Data should be stored in a secure format, and access to it should be configured to a high level.
- ✓ **BACKUP AND RESTORE:** A facility to backup and restore using external storage devices such as a CD writer, Zip drive, etc., should be built into the software.
- ✓ **REPORTS:** Reports should be available at various levels and in various formats. An inbuilt report writer eases the creation or modification of existing reports.
- ✓ **IMPORT AND EXPORT:** The application should be able to import data from other packages, as well as export data in standard formats. Choose an accounting package keeping in mind the fact that you will be using it for a number of years.

Quick Find

YOU NEED

Basic accounting software

Basic Use

LOOK FOR

Software that provides trial balance, profit and loss accounts and balance sheets

YOU NEED

A complete business solution

Inter Use

LOOK FOR

Add-on modules such as production, inventory, order processing, and management information system modules

Types of Account

- Bank:** Identifies the account as a bank account.
- Accounts Receivable:** Identifies the account as being a receivable account. Receivable accounts are used for providing customers with a line of credit. Multiple receivable accounts may be defined. For example, you may wish to separate regular receivables from government or commercial receivables.
- Other Current Assets:** Identifies the account as being a current asset other than a bank type account or a receivable type account. A prepaid bill is an example of a current asset.
- Fixed Asset:** Identifies the account as being a fixed asset. Fixed assets include such things as buildings and land.
- Other Asset:** Identifies the account as being an asset other than a current asset or a fixed asset.
- Accounts Payable:** Identifies the account as being a payable account. A payable account is used for the purchase of products. Multiple payable accounts may be defined.
- Credit Card:** Identifies the account as being a credit card account—for company credit cards.
- Other Current Liability:** Identifies the account as being a current liability other than a payable account or a credit card account. Federal tax payable is an example of a liability account.
- Income:** Identifies the account as being a standard income account. Sales accounts are all income accounts.
- Cost of Goods Sold:** Identifies the account as a cost of goods sold account. When a product is sold, the inventory is reduced by

- the cost of the goods sold. The cost of goods sold account keeps track of your total sales costs.
- Expense:** Identifies the account as being a standard expense account. Expense accounts are for all expenses such as fuel, power, water, rent and staff costs.
- Other Income:** Identifies the account as being a non-standard income account.
- Other Expense:** Identifies the account as being a non-standard expense account.

Types of Report

- Trial Balance:** The Trial Balance is a simple listing of the nominal (also called general ledger) accounts, with the debit balances posted into a debit column, and the credit balances posted into the credit column. It ensures that for every debit amount there are equal credit amounts in the nominal or general ledger, and vice versa. It plays a key part in ensuring that every recorded movement of value has an explanation in the nominal or general ledger.
- Balance Sheet:** It provides a snapshot of the business at a particular moment in time. It shows what the business owns (assets), balanced against what the business owes (liabilities), and these amounts must be equal—a business is merely a device to hold value and carry out a purpose on the behalf of others.
- Profit and Loss Account:** The profit and loss account looks at how well the company has traded over a time period. It basically shows how much the firm has earned and how much it has paid out in costs (production, salaries, etc). The net of these two is the amount of profit they've earned—except that it's shown in detail.

Do Remember

- You need to know basic accounting principles to use accounting software.
- Accounting data is stored as normal files, and is exposed to the same risks as any other file on the computer—for example, accidental deletion.
- Some software support vector accounting, which allows you to split up and distribute expenses under multiple categories.
- You can even find Web-based accounting software, the advantages being, first, global access of your data around the world at the click of the mouse, and second, even if your computer crashes, you do not lose the data. The disadvantage is that there is a possibility of data being stolen, although with 128-bit encryption it is less likely.



The Future

Accounting packages have evolved from basic accounting software to complete business solutions that incorporate field-specific modules. Unfortunately, certain accounting packages have become cumbersome and confusing, in an attempt to cater to the needs of diverse users. However, there are a few that are more focused in their approach, and come across as comprehensive packages. This is because they were developed after a thorough understanding of users' needs.



Buying Tips

✓ BACKUP OR RESTORATION

UTILITIES: If you don't mind re-installing your OS in the event of a crash and then copying all the backup files to the PC, opt for backup software. On the other hand, restoration software do their job without any manual intervention and OS re-installation.

✓ **TYPE OF BACKUP:** Choose software that let you perform an incremental backup, since this feature saves a lot of space and time.

✓ **SIZE OF BACKUP DATA:** Backup software that let you compress data save you a lot of hard disk space in the long run.

✓ **NETWORK BACKUP:** This feature lets you maintain a backup over the network. Data is stored at another location and can be retrieved with ease.

✓ **EASE OF USE:** Opt for a program that has a user-friendly interface, especially if it's to be used with the family PC.

✓ **SCHEDULED BACKUP:** Manual backups can get tiresome and lead to disastrous consequences if you forget to take them on time. Hence, opt for software that lets you schedule backups at fixed intervals.

✓ **MANUAL OR DOCUMENTATION:** See to it that the backup or restoration software comes with adequate documentation. This come in handy when, for example, you need to perform a restore and don't know what exactly to do.

Quick Find

YOU NEED A way to bring your system back to its original state with minimal trouble

Basic Use

LOOK FOR A system-restoration software that has a user-friendly interface, and a decent number of features.

YOU NEED To secure your data by backing it up and copying it to another location.

Inter Use

LOOK FOR A feature-rich backup solution that supports complete as well as incremental backups, locally and across networks.

Data Destroyers

Data loss can occur due to a number of reasons. Some of the common ones are listed below:

Virus attack: Many viruses are notorious for deleting files. Some try to delete or overwrite the partition table, which stores the start and end locations of the data partitions on the disk.

Accidental deletion of files: This is a very simple reason for data loss—the user deletes some important files without moving them to the recycle bin first. The user may also delete files from the command prompt, or through applications that do not utilise the Recycle Bin, for example, WinRar.

Physical problems with the hard disk: This is by far the most common reason for data loss, and also the most difficult to remedy. Hard disks can develop a multitude of problems, starting from faulty read and write head alignment, to a badly damaged head actually glued to the hard disk platters due to stiction (static friction).

Precautions to be taken in the event of data loss:

Data loss always seems to happen at the wrong times, but a few simple precautions can lead to a much better chance of recovering data.

First of all, make sure you don't shut down or restart the machine. Don't install anything on the damaged drive—this also includes data recovery software. If the recovery software isn't already installed, run it from a CD or floppy. Remember, the lesser the disk activity there is after the crash, the more data you're likely to recover.

Backup strategies

Backup strategies change from user to user. One of the primary decisions is the frequency of backup. For home users, a manual backup as and when required ought to be enough, but for small firms with about 10 to 20 employees, this won't work. Here, a systematic schedule must be set up to make sure that data is backed-up regularly.

Do remember

- Remember to use anti-virus software, especially if you're used to downloading from the Internet. To prevent your data from being corrupted, update your anti-virus program as often as possible.
- Prevent your storage devices from impacts and shocks, especially when they are running. Don't move your cabinet about when the power is on.
- Avoid electro-static discharges when handling and installing your drives. Do not touch electric contacts on the controller board with bare hands. When handling devices, make sure your other hand is touching something metallic such as the cabinet—this will earth you and prevent electrostatic discharges.
- Hard drives should be regularly defragmented, and file systems checked. Any software or data that are no longer in use should be uninstalled or removed.

Facts

- Backup software just pick up data from a source and dump it into another location. Restoration software take periodic snapshots of the entire hard disk—including the OS files—that can be used at any later date to bring the computer to the same state as before.
- As far as possible, schedule backups to happen after office hours.

- All restoration utilities use their own environments—generally customised operating systems—during the restore operations. Thus, they can restore the PC to its former state even if the OS is corrupted.

Crash

- Backups can be complete or incremental; a complete backup will copy all the files in the folder irrespective of whether the files are modified or not, whereas incremental backups will only copy those files that are modified.

The Future

It is now possible to recover almost all data from a hard disk without resorting to special tools that scavenge your hard disk for magnetic patterns. All you need to do is take periodic backups using automated tools. Alternatively, you may use rollback software that are capable of restoring a corrupted OS to its former state. With the need to salvage and backup data becoming increasingly apparent even amongst home users, this particular segment can expect to see some interesting developments in the next few years.

Because' Disasters don't forewarn, they just Strike!

UNISTAL'S

Crash Proof

Data Loss Prevention Software

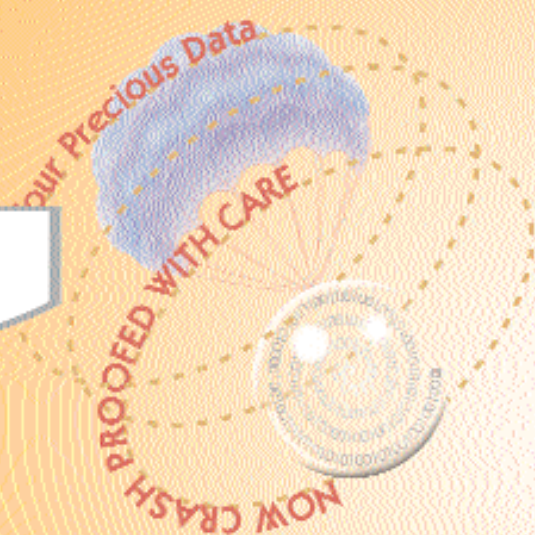
REVIVE Lost Data

RESTORE Operating System New

RECOVER Cd's, Pen, Zip & Floppies New

Crash Proof is a data loss prevention utility, once installed is designed to revive the data back even from inaccessible drives. Its new heuristic technology saves the critical images of the disk while installing and updates them at regular intervals. When data loss occurs due to whatever logical reason, Crash Proof calculates the system parameters automatically and revives the data back. Thus recovering lost files and also reducing downtime.

Proof



Crash Proof Silver

Install now to prevent data loss in future

Crash Proof Gold

Install now to prevent data loss in future and also recover from External Storage Media like: CD's, Pen drive, Zip media & Floppies

Crash Proof Platinum

Install now to prevent data loss in future and also recover from External Storage Media like: CD's, Pen drive, Zip media & Floppies. Restore operating system that crashes due to registry problems and common dll errors.

Crash Proof Server

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Buying Tips

- ✓ **BATCH PROCESSING:** Batch processing comes in handy when you have a large number of documents to scan. With this feature you need not sit in front of the scanner feeding one page at a time. Batch processing does need support from hardware as well; you should have a scanner that has an Automatic Document Feeder (ADF).
- ✓ **LANGUAGES:** Check for the languages supported by the OCR package.
- ✓ **LEARNING MODE:** Certain OCR software come with the learning mode feature that allows it to 'learn' from the corrections you make in the recognised document.
- ✓ **SAVE AS:** Apart from saving scanned files as Word documents, look for a Save As option that lets you save them in HTML, PDF and EXCEL formats as well.
- ✓ **FONT TRAINING:** The OCR software should have a provision to add specific fonts and letter types into its dictionary, in case it fails to pick them up while scanning your documents.

Quick Find

YOU NEED	A cost-effective solution for home use
Basic Use	
LOOK FOR	An OCRing software that supports documents containing text and tables with basic formatting, the occasional newspaper and magazine clipping, with average accuracy
YOU NEED	A high-end software for professional usage
Inter Use	
LOOK FOR	A software that OCRs faxes, photocopies, type-written documents, newspapers, magazines, contracts, and tenders containing text and tables, with high levels of accuracy

Why OCR?

The benefits of OCR become clearer after you start using it. Though it's generally considered a tool for enterprises, home-users and small offices can also benefit from it. To start with, you can scan all your business cards, OCR them and maintain a searchable archive of them—you can even use special software to import scanned business cards.

Utilities called form fillers enable you to scan printed forms and fill them in electronically. Storing these forms electronically prevents the need to rewrite the entire form each time a mistake is made. Also, you can fill in multiple forms simultaneously—a feature that comes in handy for railway reservation forms.

How does OCR work?

OCR is used to scan and recognise text on paper, or convert scanned pages saved as images to text. It analyses the raster image and creates an index of areas that resemble possible text fields. The software then attempts to recognise text characters by comparing the shape of the scanned objects to a database of words categorised by different fonts or typefaces.

Thereafter, it groups the individual characters and compares them with the words in the dictionary that is set to use a particular language. This step is extremely crucial for recognition accuracy. The more comprehensive the dictionary, the more

accurate is the finished product.

The OCR software marks certain words that it 'considers' inaccurate for you to correct them manually.

Finally, the OCR software uses the index it created to align the text fields as accurately as possible.

The accuracy of the OCR software depends on many factors, ranging from scanner quality to the quality of the paper on which the text is printed.

The latest breed of OCR packages uses optimisation algorithms, neural networks and even AI concepts to get this done. Using pattern recognition techniques, these software try to guess the character as a whole and look at all possibilities before arriving at a hypothesis. For example, it may guess that a character is an 'H' even if the scanned document doesn't show a horizontal bar in the image. Some OCR packages have inbuilt tools that enable them to 'learn' from the changes you make to the output.

Factors that affect OCR software accuracy

- Scanner quality
- Scan resolution
- Type of printed documents, whether laser printer outputs or photocopied
- Paper quality
- Fonts used in the text
- Linguistic complexities
- The dictionary used

Do Remember

- A document that is free of wrinkles, tears, smudges or creases yields more accurate results.
- Keep a sheet of white paper behind a document while OCRing it, especially when scanning newspapers, thin paper, etc. This helps eliminating smudges during scanning.

The Future

From just recognising standard fonts to predicting the word itself and now 'correcting' broken words, OCR software has improved by leaps and bounds. Learning OCR is already up and running with inbuilt tools that help enhance self-learning ability. Symbol recognition is another aspect of OCR that is increasingly becoming



ing a regular feature of software packages. Field-specific recognition, wherein the scanned data is automatically stored in the appropriate field in, say, a database, will also be an integral part of the software in the near future.

Paranoid about security flaws? We'll show you how to stay informed, and keep your system as secure as possible

Silhouetted against the glow of a monitor in a dark basement, typing away furiously at a keyboard, an anonymous rebellious-looking figure is plotting to take over the world... that's how hackers are depicted in movies. Reality is quite different. Today, it's all about fortune and fame. Before you can say "Digit", your system has been broken into, your files accessed and malicious remote control code installed. Hackers are on the lookout for anything to help them make money, or a name for themselves—stealing your credit card numbers, your passwords and using you as a mask to propagate spam.

Security is hogging the limelight, thanks to the Blaster and SoBig worms. The latest breed of viruses are emulating their real-life counterparts—they are stealthy, fast reproducing and powerful.

"Why would anybody want to hack my computer?", you ask. "I have nothing they would want, I don't even have a credit card." Think of your PC as a digital version of your home. Carelessness on your part could put your entire family and friends at risk. If you're infected, chances are that the worm will send itself to all e-mail addresses in your address book. Your friends and family will open the e-mail without suspicion,

thinking you finally decided to be sociable and write. That's when all hell will break loose; prepare to be ignored and hated, for a while at least.

Just like the doors and windows of your home, your system too has various avenues of entry—each one needs to be guarded using anti-virus software, firewalls, etc. Naive, paranoid, or somewhere in between, no level of security that you choose will ever be 100 per cent secure; but whatever lets you sleep peacefully at night, is what you need.

Another alternative is to use proxy servers, such as www.idzap.com or www.anonymizer.com. These proxy servers allow you to surf freely without anyone detecting your presence online.

You also need to thoroughly search for vulnerabilities in your system and patch them. Of course, you can't learn every programming language out there, and then take apart programs to find flaws—luckily for you, there are already people who do this for a living; all you need to do is stay informed so that you can take appropriate action as and when required.

Patch before hack

Often, a software company finds a vulnerability before hackers do, and even

releases a patch, but people are too slow to patch-up. The best example is the infamous Blaster worm: Microsoft announced a security patch on 16 July, 2003, but Blaster only surfaced on 11 August, 2003. If the majority had updated their PCs within the first month of the patch release, Blaster would have failed miserably. The real challenge is protecting against flaws that hackers discover before security companies do. The easiest way to minimise the effect of this is to encrypt your data and back it up.

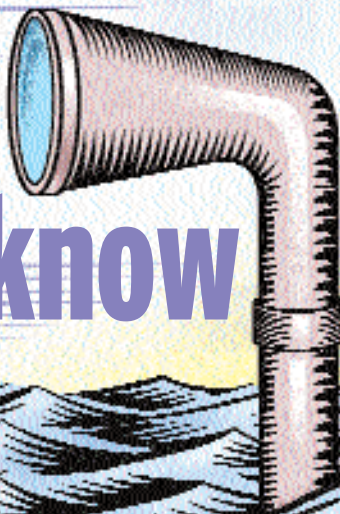
First stop

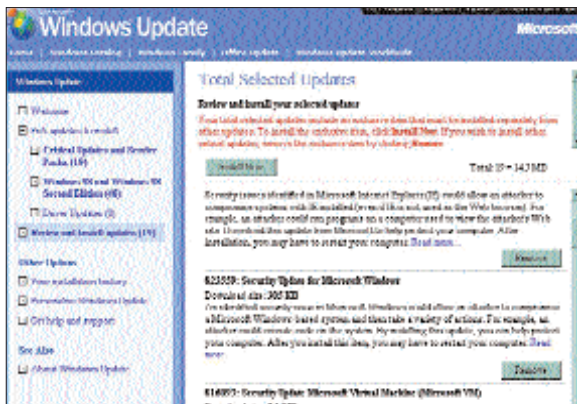
You need to keep checking the official Web sites first. Windows users ought to keep an eye on the official Microsoft security Web site (www.microsoft.com/security), which gives comprehensive information on security-related issues with Microsoft products. The company issues security bulletins that list the vulnerabilities discovered, and a link to the patch. Below the bulletin is a list of the latest viruses discovered, with an indication of the level of threat posed by it.

Another option is to subscribe to the Microsoft security bulletin, and get updates via e-mail. To opt for this, go to the security home page, click on 'E-mail Notification' and enter your e-mail address. If you have an always-on Internet connection, and run Windows 2000 and above, you can use the Automatic Update feature for hassle-free updates. Go to *Start > Settings > Control Panel > Automatic Updates* and enable the Automatic Update feature. You can also visit <http://windowsupdate.microsoft.com> and do an online scan of your system, to find missing updates and patches.

IMAGING: Mahesh Benkar

Be the First to know





Check for Windows updates at the Windows Update Web site

Symantec, one of the best known security firms, regularly announces its findings at <http://securityresponse.symantec.com>. They also have a security-related e-mail service. Similarly, McAfee too gives security updates at <http://us.mcafee.com/virusinfo>. One interesting feature of this Web site is its virus calendar, with which you can find which viruses are active on any given date. This is really helpful, as it helps track viruses that lay dormant until a particular date, and informs you on how to track and tackle them.

A common misconception is that open-source operating systems are free from vulnerabilities. Whether open source software are more secure or not is a different subject altogether; what you need to do is plug all the holes, in whatever operating system you use. With Linux, a vulnerability is usually listed with complete technical details—not something the average user needs. Red Hat announces its security updates at www.redhat.com/apps/support/errata.

to both software companies and users.

Computer Emergency Response Team - Coordination Center (CERT-CC) is an agency that was set up to address the security concerns of the Internet. CERT was established by the Defense Advanced Research Projects Agency (DARPA)—the developers of the ARPANET which subsequently became the Internet. All their announcements are made by CERT at www.cert.org. This is a comprehensive Web site for security, and doesn't merely list the latest discoveries—it also provides information on how to secure systems. A notable incident was one that occurred in September 2003—Microsoft had released a patch for a security flaw in IE 6. CERT posted this before Microsoft did, who obviously wanted to wait until

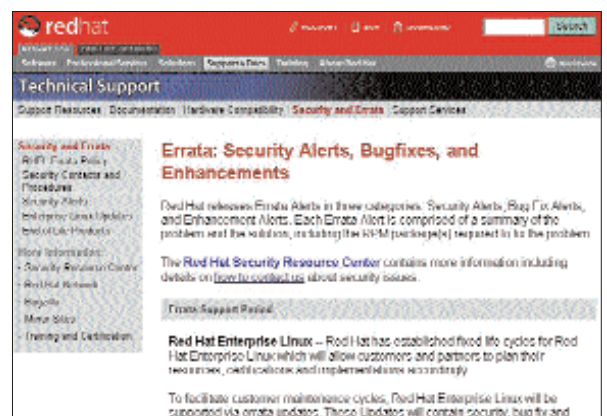
ta. Similarly, SuSE makes its security announcements at www.suse.de/us/private/support/security.

Nothing official about it
Official sites may not list vulnerabilities unless they also have patches for the same, but there are many other sites that do. These sites allow anyone to report vulnerabilities in any software. Once the vulnerability is verified, they post it on their Web site as a warning

they had developed a working patch.

One of the most well-known sites in this realm is www.packetstorm.nl. Packet Storm is maintained by a group of security professionals who believe that full disclosure is the only way to ensure the development of secure software. The site has a forum to discuss security issues, and is categorised into sections on Unix, Windows, Intrusion Detection, etc. You can post questions in the relevant forum, or just read through them to gain a lot of information on how to find vulnerabilities and patch them. On the home page, you'll find the current Top 20 advisories, exploits and tools. In the advisory section, the vulnerabilities discovered are listed along with the code for exploiting the flaw. The tools section contains security-related utilities. This site is a definite must for people who need the complete technical details, as well as for those keen on learning the finer points of security.

Secunia (www.secunia.com) is another comprehensive security Web site that has



Red Hat security announcements aren't very user friendly

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Error No. 1

One of the problems with the Internet is that it has no real security, since it was developed as a means to share information between researchers. The protocols were developed to be robust and flexible, but security wasn't considered—it wasn't required then. It was in 1985 that the first security-related incident took place, discovered by Cliff Stoll Lawrence of Berkeley National Laboratory. When investigating a simple accounting error in the computer records of systems connected to ARPANET, Lawrence discovered that foreign governments were trying to connect to the systems in the US, and transfer data from them. Back then, most systems were located at educational and military installations.

Then in 1988, Robert T. Morris, a student at Cornell University, wrote what can be called the first Internet worm—the Morris worm. The worm, when executed from any system, connected to any available system on the network and scanned it for vulnerabilities. When it found a vulnerability, it copied itself to the system and then proceeded to propagate further—even re-infecting systems several times. The worm didn't cause any damage, but re-infected systems were slowed down—about 6,000 Unix systems were infected. Morris was convicted and sentenced to three years probation, 400 hours of community service and a fine of \$10,000. In response to the Morris worm, CERT (Computer Emergency Response Team) was established. See <http://provision.textfiles.com/100/tr823.txt> for a full report on the incident.

The early worm gets the system

Worm MSBlaster	Date discovered August 11, 2003	Date Patch released July 16, 2003	Method of distribution TCP port 135, 139 and 445
Welchia (uses two vulnerabilities)	August 18, 2003	March 17, 2003 July 16, 2003	TCP port 135 and 80
Swen	September 18, 2003	March, 2001	Spreads via e-mail, the KaZaA and IRC
Nimda	September 18, 2001	March 29, 2001	E-mail, Web browser, network share and known flaws in IIS Server
Code Red	July 16, 2001	June 18, 2001	Exploits flaws in IIS



Secunia provides advisories on over 2000 products

an easy search, and an online check for vulnerabilities in its test zone. The site comprehensively covers all software and hardware products—for example, it lists the HTTP Authentication Bypass Vulnerability of Axis network cameras. Just click on the products link under the Secunia advisories section on the left pane, and you will be presented with a page that has a list of all the products. Once you select a product, all the advisories for that product are listed. The Web site offers a free trial period in which you can choose to receive security warnings of a specific product in your e-mail.


Searching for information within the site is easy. All you need to do is enter '[www.secunia.com/<search string>](http://www.secunia.com/search)' in your browser address bar. For example, to search for Windows buffer overflow errors, just type 'www.secunia.com/windows_buffer_overflow'. The test zone is located at <http://testzone.secunia.com>. Go there to automatically test

your browser, anti-virus software and operating system for vulnerabilities.

The final word

Though this may sound repetitive, there is no such thing as completely secure! If you have sensitive data such as credit card information stored on your computer, you are advised to encrypt it. Use one of the many encryption tools available online—try PGP, freely available at <http://web.mit.edu/network/pgp.html>. This is the only way to get additional security. If someone hacks your computer and manages to get your data, it can't

be read.

You need to keep in mind that patching software and keeping them up-to-date is not the only solution. As Kevin Mitnick, a former hacker, now a security consultant, said, “the weakest point in any security system is the human element”. We need to ensure that best security practices are followed—there’s no use in using a firewall if everyone knows your system password, or if it is easy to guess. By following proper security practices you can complete that security ring around you... well, almost. 

MOULY ARUN PRABHU
mouly_arunprabhu@thinkdigit.com



Sites to visit

A few more sites that list the latest vulnerabilities and other security news are:

www.surasoft.com
www.security-update.com
www.securityfocus.com



CERT-CC has comprehensive security coverage

EXCEL Entertainment

So you think MS Excel is meant only for work, work and work. Read on and think again!

Microsoft Excel, that powerful spreadsheet Office application that you use to tabulate figures everyday, supports Visual Basic, a popular programming language. Therefore, it can be used to program anything—even games. All you need is Excel 2000 or higher installed on your PC, and your system even need not be a high-end one.

Amuse yourself at work with these games, while you give the impression of doing some serious number crunching to your colleagues! And yes, besides games, Excel has some interesting hidden secrets too. But, first let's get down to gaming.

Warm up

Before you begin, run an anti-virus scan since these games employ macros, and there are chances of macro viruses being embedded in the Excel file.

Secondly, set the security settings in Excel to Medium by going to *Tools > Macros > Security*. This way

you will be asked whether you want to run an unsigned macro or not. While you will need to enable macros for the game files, you can choose to disable macros for files whose source is unknown. Note that some of the games may also require DirectX.

Where do I find them?

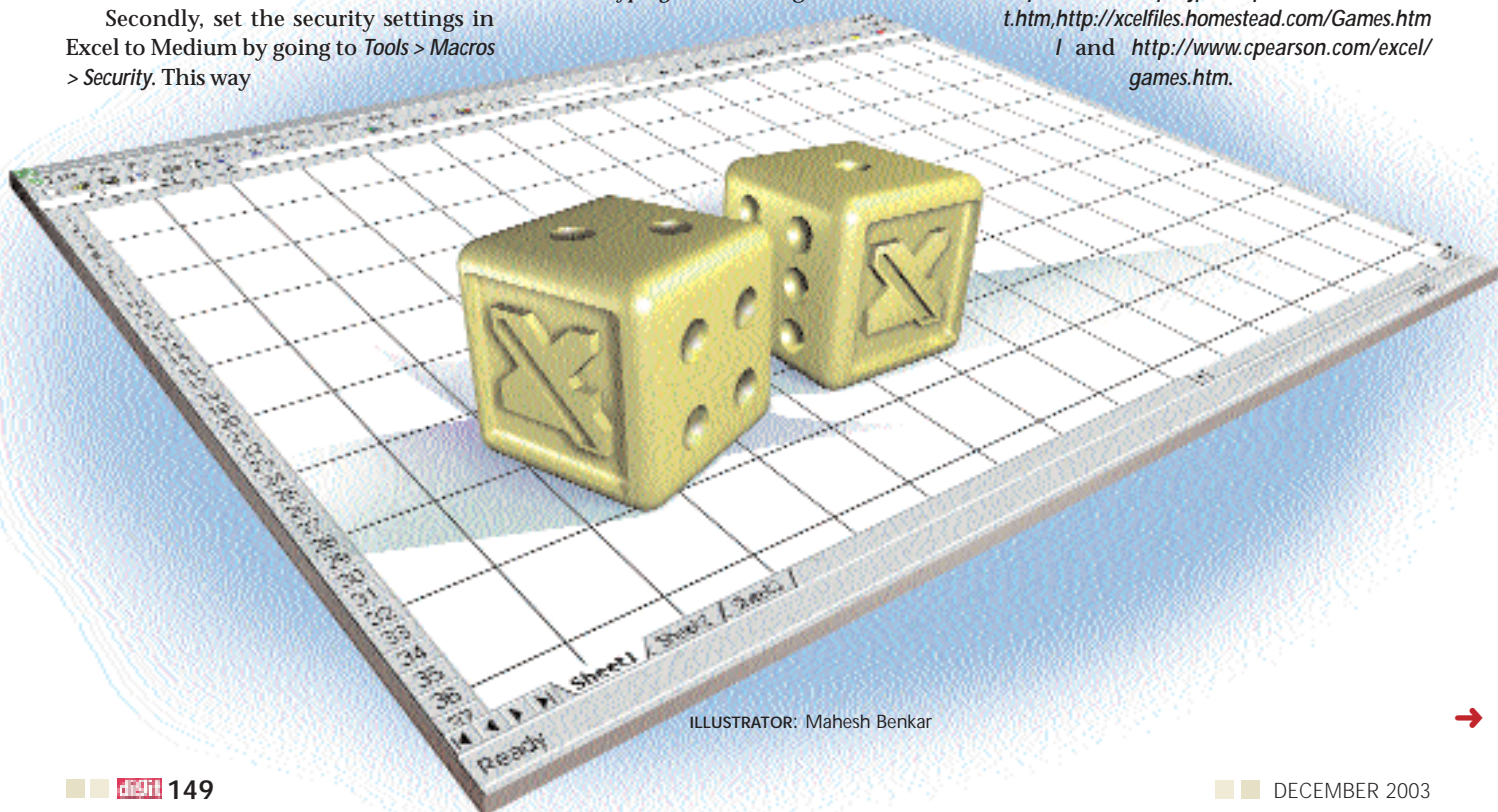
One of the many Web sites that you can look up to find Excel games is www.xl-logic.com/pages/games.html. This site has an impressive collection of around fifty games, collected from various sources—we recommend *Excellon-II*, a vertical scrolling shooting game with good visuals and sounds. Others from the same programmer include *Billiards*, *Cylcotron* and *Excelizer*, as well as *Typing Soccer* and *Typing Runner*—both designed to enhance your typing skills.

In *Typing Soccer*, the ground is divid-

ed into a number of areas, each containing a letter that represents your players. Kicking the ball entails pressing the corresponding key on the keyboard. Similarly, use the appropriate keys in *Typing Runner* to feed the cat that's at one end of the board with the food placed at the other end, and bring it back home.

A site called <http://lazyslug.homeip.net> is where you'll find the Excel version of *Minesweeper*, and other interesting games such as *RobotsXL*. Another Web site—Mr. Excel (www.mrexcel.com)—has a huge collection of free games, thanks to the Excel game contest it ran recently. You can also surf to <http://www.mrexcel.com/pc10.php> and see what interests you—*Snake* enthusiasts will find two versions of this game at this Web site.

Other Web sites worth a visit are <http://www.interq.or.jp/sun/puremis/colo/freesoft.htm>, <http://xcelfiles.homestead.com/Games.html> and <http://www.cpearson.com/excel/games.htm>.



ILLUSTRATOR: Mahesh Benkar



Make sure you configure your security settings before playing Excel games

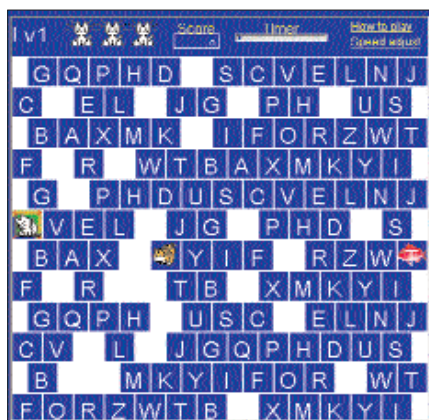
How do they make them?

Most games in Excel are programmed using Visual Basic for Applications (VBA). Recording macros involves writing small programs to do the tasks you are recording. Since the language used is VBA, coding in it provides you greater control over your macros.

Here's a small example that shows you how powerful VBA is. Open a new workbook in Excel 2000, and press **[Alt] + [F11]** to activate the VBA editor. Now, go to **Insert > Module** and type the following VBA code in the window that comes up:

```
Sub SayHello()  
    MsgBox "Hello!"  
End Sub
```

Press **[Alt] + [F11]** to return to your workbook and go to **View > Toolbars > Forms** to show the Forms toolbar. Click **Button** and draw a button on your worksheet somewhere near the cell B2. Release the mouse to get an 'Assign Macro' dialog box. Choose **SayHello** and click **OK**. Next, right-click the button you've created and choose **Format Control**. Click **Properties** and make sure that the 'Move and size



You can improve your typing skills and have fun as well, by playing Typing Runner

with cells' option is selected. Click **OK** and select the rows 1 to 4 or 5, making sure that you select much more than the size of the button. Choose **Edit > Delete** to delete these rows. Protect the sheet using **Tools > Protect Sheet**. Now, click on any cell on the sheet and you will see the 'Hello' dialogue box popping up!

Easter eggs

Easter eggs are the un-documented, entertaining part of a software that come hidden, and require knowledge of specific commands to unravel them. These can be as simple as a scrolling list of developers to full-fledged 3-D games.

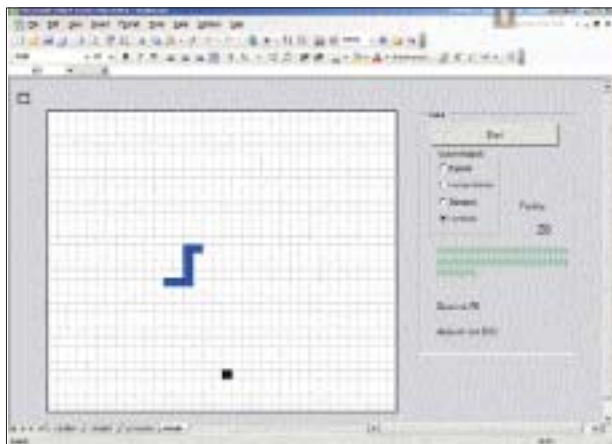
One of the most interesting Easter eggs is *Dev Hunt*—a car racing game that lets you shoot at other cars. To play this game, all you need is Excel 2000, Internet Explorer and DirectX.

Open a new Excel workbook. Select **File > Save as Web Page**. In the 'Save As' dialogue box, select 'Publish Sheet' and 'Add Interactivity'. Save this file, and open it in Internet Explorer. Scroll to row 2000, column WC, and click the row heading to select the entire row. If cell WC2000 is not highlighted, press **[Tab]** to highlight it. Press **[Shift] + [Ctrl] + [Alt]**, and click the Office logo in the upper-left corner. This brings up a full screen, 3D game with the name of the developers written on the road. Use the left and right arrow keys to steer, the up and down arrow keys to accelerate and decelerate respectively, the



Have you ever wondered about the actual size of an Excel worksheet? Well, there are 256 columns and 65,536 rows, which translates to 16,777,216 cells! This is a single worksheet, and a workbook can hold more than one worksheet. If you're using the standard 800 x 600 video mode with the default row heights and column widths, you can see nine columns and 18 rows at a time—less than 0.001 per cent of the entire worksheet.

Entering a single digit into each cell at a speed of one cell per second, will take you about 194 days, non-stop, to fill up a worksheet. Printing the results of your efforts would require more than 36,000 sheets of paper—a stack about six feet tall—and, if you want to increase the size of the worksheet, sorry, the number of rows and columns is fixed. You can't increase it.



Waiter! There's a Snake in my Excel!

[Space bar] to fire at other cars, [O] to drop oil and [H] to turn on the headlights.

For those of you still using Excel 97, there's an egg for you too. Open a new workbook in Excel and press [F5] to bring up the 'Go to' dialogue box. Type 'X97:L97' and click OK. Press [Tab], then [Ctrl] + [Shift] and click on the 'Chart Wizard' icon. You will be taken to a game that's akin to Microsoft's *Flight Simulator*. Left-clicking will accelerate and right-clicking will slow you down. The developer's credits appear

as you fly to the side of a grey stone pyramid on the purple landscape. Hold down [Ctrl] + [Shift] + [Esc] to exit. If this doesn't work, go to *Tools > Options*, click *Transition*, uncheck 'Transition navigation keys' and click OK. Try again and the egg should pop up.

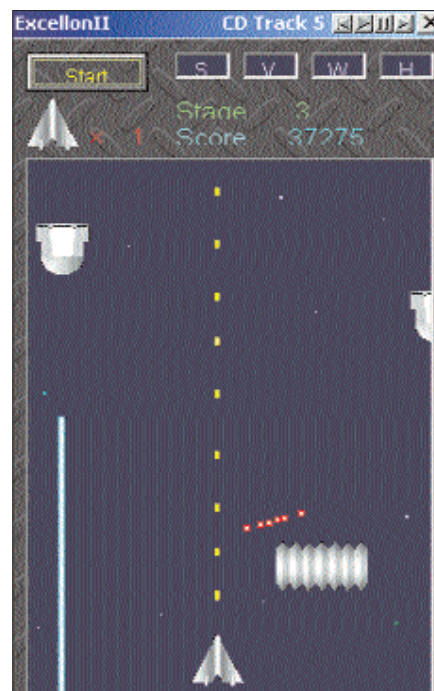
Apart from these game-like Easter eggs, you can also view the standard developers' credits. In Excel 2000, open a new workbook, press [F5],

enter 'X2000:L2000' in the dialogue box and press [Enter]. Press [Tab] once to highlight the cell M2000. Press [Ctrl] + [Shift] and click 'Chart Wizard' on the toolbar to see a scrolling list of developers. Press any key to exit.

Visit www.eeggs.com and www.eggcentral.com for a detailed list of Easter eggs for software, games and movies.

More oddities in Excel

Apart from the games and Easter eggs, here are a few more funny things about Excel—one of them being an interesting bug that identifies the year 1900 as a leap year. This bug has been carried over even to its latest version, Excel 2003. Hence, if you enter '=date(1900, 2, 29)' in a cell, it accepts it without error. Consequently, the dates prior to 1st March 1900 are also wrongly calculated. The bug has been explained as a necessity for compatibility. According to Microsoft, Lotus 1-2-3 counted the year 1900 as a leap year to simplify the handling of leap years, and Excel too assumes



Believe it or not—this was made in Excel!

the same to ensure compatibility.

Also, a little known fact is that your name gets embedded in an Excel file whenever you open and close it—even without saving. Get an Excel file that has already been used on another machine, and open it using Notepad. Press [F3] to activate the Find dialogue, and enter the name of the person who last accessed the file. You will find the name embedded in the file. Now, close Notepad and open the file in Excel and close it, without saving it. Open the file with Notepad again, and you will see that your name is now embedded. Note that this doesn't happen with files marked as 'Read Only', and the name embedded is the person that Microsoft Office is licensed to.

Have you ever tried to rename a worksheet to 'History'? Try doing that, and Excel will pop up a warning saying 'History is a reserved name'. This is because Excel creates a worksheet named History when you select 'List changes on a new sheet' in the 'Highlight Changes' dialogue box.

Feel like coming up with a little Excel delight of your own? Well, to start with, visit http://xcelfiles.homestead.com/VBA_01.html, which has many helpful VBA scripts that help you understand the power of VBA. Those of you that are dying to try out all the games we mentioned in this article, go ahead and indulge in Excel-lent gaming madness!

UPENDRA SINGHAI
upendra_singhai@thinkdigit.com

1/4th AD

Making Music with LINUX

Here's how to convert your Linux box into a jukebox



ILLUSTRATION: Mahesh Benkar

Linux is often associated with the command line and servers, but lately it's been growing in popularity as a desktop solution. Most people, however, are still scared of the very word Linux. Ask them "Why?", and they cite various reasons ranging from, "Linux doesn't have proper applications," to "No way man, I need to play games, watch my movies and blast my MP3s"... but wait! Who said you can't listen to music on Linux? Read on to see how you can edit and listen to

music, and make your Linux box sing to you... literally.

Learn to walk before you run

Before you do anything with any operating system, you need to make sure the correct drivers are installed and working—Linux is no exception. With Linux, there are so many drivers that it can be confusing at times.

Advanced Linux Sound Architecture (ALSA): ALSA was developed by a group of

Linux developers who were frustrated by the lack of sound card support on Linux. In an attempt to provide better support, they completely abandoned all existing Linux sound card drivers and started writing their own drivers from scratch. Using ALSA doesn't restrict you to only ALSA-aware applications—there are OSS emulation modules that provide good support for strictly OSS-compatible applications as well.

In order to install ALSA, you will have to download five different packages:

```
alsa-driver-0.9.8.tar.bz2
alsa-oss-0.9.8.tar.bz2
alsa-utils-0.9.8.tar.bz2
alsa-lib-0.9.8.tar.bz2
alsa-tools-0.9.8.tar.bz2
```

After uncompressing each of them using the 'bunzip2' command, 'cd' into each respective directory in the order above and use the following commands to install them.:

```
./configure
make
make install
```

After this, go to '/dev/' and type the following command:

```
./snddevices'
```

This will create the '/dev/snd' directory, and set up all the necessary devices required for using ALSA in other applications.

Playing the field

There is certainly no shortage of MP3 players for Linux. In fact, most of these players will play almost every music format available today—except for a few Microsoft file formats, due to licensing problems.

XMMS

XMMS is by far the most popular MP3 player on Linux. It is a Winamp clone with most of its features including playlists, presets, etc.—it can even import Winamp presets and equalizer settings. It provides a variety of output and visualization plug-ins that can make listening to music a pleasure.

XMMS comes pre-installed with almost every Linux distribution, but if it isn't installed on your system, just download either the source files of the latest version from www.xmms.org. The latest version is xmms-1.2.8.tar.gz or xmms-1.2.8.tar.bz2, or you can download the binary packages (.rpm files) for your distribution. XMMS needs some very basic system libraries, but don't worry, these are generally installed with every Linux distribution. To install XMMS from the source code, uncompress the file using the 'tar xzf' or 'tar jxv' commands.

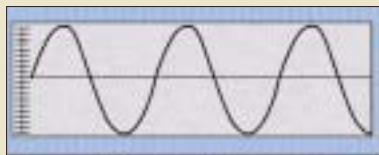
Though XMMS is preinstalled on Red Hat 8 and 9, you still won't be able to play MP3s. MP3 support has been removed from XMMS with these versions due to licensing and piracy problems. However, this doesn't mean that a Red Hat 8 or 9 user has to be MP3-starved. One way to work around this is to copy the encoder library from older Linux distributions. If any of your friends runs Red Hat 7.3 or older versions, just copy the 'libmpeg123.so' file from '/usr/lib/xmms/ Input/' to the same location on your PC. This way you can start playing MP3s immediately.

Another option is to download the source rpm for an older version of XMMS (preferably xmms-1.2.7-2.i386) from <http://www.megaloman.com/~hany/RPM/libmpeg123.so.html>. Now, run the rpm -ivh <filename> command, where '<filename>' is the name of the file you downloaded. This will install the source code into the '/usr/src/red-hat/SOURCES/' directory. 'cd' to this directory and uncompress the .tar.bz2 xmms file using the 'tar jxvf <filename.tar.bz2>' command. This creates a new directory containing the xmms source code. 'cd' to



Jargon Buster

Waveform: A waveform is a graphical representation of sound, showing amplitude over time.



A simple waveform showing the variation of amplitude over time.

Pitch: The Pitch indicates the loudness or intensity of the sound. The higher the frequency of the sound, the higher the pitch.

Amplitude: This is the height of the wave in a waveform representation of the sound.

It indicates the loudness of the sound.

Frequency: The frequency is the number of waves per unit of time (i.e., seconds). It is measured in Hz.

MIDI: MIDI is an acronym for Musical Instrument Digital Interface, and it is a method to interface musical instruments with the computer to enable direct digital recording of music. This method results in musical files that contain instructions for musical notes, pitch and instrumentation.

Sampling: Sampling is the process by which an analogue sound signal (waveform) is converted into a digital signal. This process results in a reduction of quality of audio, but also reduces the space required for storing the audio file.

this directory and type './configure'. Now, go into the Input sub-directory and type 'make', and then 'make install'. This will compile all the required MP3 libraries and install them in '/usr/lib/xmms/Input'.

That's it. You can now listen to your favourite MP3s. If you want to check that the library is properly installed, open XMMS, right-click on the main window, go to *Visualization > Visualization plugins* (or use the shortcut [Ctrl] + [V]). Now, click on the 'Audio I/O Plugins' tab and check if 'MPEG Layer 1/2/3 Player 1.2.7 [libmpeg123.so]' is listed in Input Plugins—it should be enabled too. Note that there will also be a Placeholder MP3 plugin in this list—this was the old placeholder that wasn't able to play MP3s.

Get those hands dirty

A combination of audio editors and recorders can help you set up a semi-professional recording studio. Audio editors are used to edit the waveforms that represent



XMMS provides an interface that is similar to the one provided by Winamp

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Choice Composers

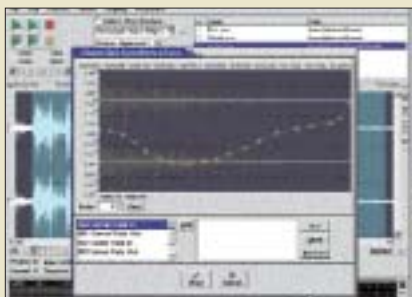
Ardour: Ardour is a very popular multi-channel Hard Disk Recorder (HDR) and Digital Audio Workstation (DAW). It is targeted at professionals who don't want to invest in dedicated hardware solutions. It also attempts to provide better functionality than proprietary software DAWs such as ProTools,



A truly world class application, Ardour has all that it takes to set up a complete Digital Audio Workstation

Samplitude, Logic Audio, Nuendo and Cubase VST/SX. It can record 24 or more channels of 32-bit audio at 48 KHz simultaneously. It supports MIDI Machine Control (MMC), and can be controlled using many of today's modern digital mixers.

ReZound: ReZound aims to be a stable, open source, and graphical audio file editor primarily for, but not limited to, the Linux operating system.



One of the many graphical audio editors, ReZound enables you to edit audio files in Linux as well as in other operating systems

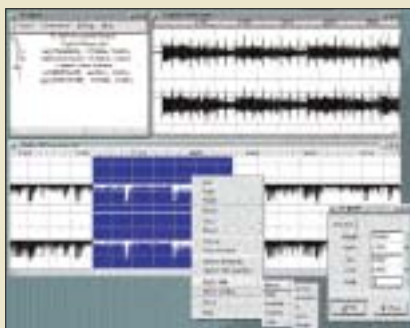
Rosegarden: Rosegarden-4 is a comprehensive audio editing software, and by far the most advanced one on Linux. Even though it's still in feature completion and beta testing, Rosegarden is stable enough for general use. It is used across the world to set up pro-



Rosegarden has a detailed interface that lets you control various aspects of audio editing

fessional audio editing and recording studios. It has an attractive, user-friendly interface that makes everything easier, from general-purpose music composition and editing to detailed audio and MIDI sequencing.

GLAME (GNU/Linux Audio Mechanics): Glame is another freely available audio editor that uses a tree view to represent files in a project. Apart from the standard project view and wave editor, it has some amazing tools to edit and combine filters to create new effects from existing ones.



GLAME has a unique tree-based project view that makes managing projects easy

Sweep: Sweep is a sound wave editor that can operate on files of various formats such as WAV, AIFF and AU, and has multiple undo and redo levels and filters. It even supports some audio encoders that aren't supported by other audio editors, such as Speex. Sweep has a very handy utility called Scrubby that lets you jump directly to specific portions of the waveform on screen, and



GNUsound is a small but useful tool that also supports LADSPA plug-ins

gives immediate audio feedback.

GNUsound: GNUsound is a simple yet powerful GNOME-based sound editor for Linux that can record, play as well as edit audio files. Though it looks simple, it has some advanced features such as support for the JACK and LADSPA plug-ins.



Sweep has a standard interface that is very easy to get around if you have even the slightest experience with audio editors

WaveForge: WaveForge is a very elementary audio editor that used to have a barebones Gnome-based interface. The interface has now been built from scratch using the Qt toolkit, and is much better to use.



This old GNOME-based WaveForge interface is not very attractive, but now a better Qt-based interface is available

audio data, while recorders allow real time recording of tracks and music. Some of the commonly used audio editors on Linux are Ardour, Audacity, Rosegarden and Sweep.

Before installing any of these editors, you need to install two special drivers that

do all the hard work demanded by these software—the JACK audio connection kit and the Linux Audio Developer's Simple Plugin API (LADSPA).

JACK: For any serious audio editing and recording, the default drivers are not

sufficient. JACK is a low-latency audio driver and server that is specifically designed for professional audio work. It supports synchronous execution of multiple clients, generally audio editors, while keeping the response time of the system

fast. To install JACK, download the latest source code (jack-audio-connection-kit-0.80.0.tar.gz) from <http://jackit.sourceforge.net>, and then uncompress and compile using the standard commands.

After this, you'll have to install the LADSPA plugins that allow for easy support of third-party plugins.

Linux Audio Developer's Simple Plug-in API (LADSPA): LADSPA is a simple and flexible API that allows programmers to develop new audio processing programs that can be easily plugged into many existing LADSPA-compliant software. This eliminates the problem of developers coming up with several different applications that use even more diverse libraries to serve their purpose. This leads to a very complex situation where you have to download and install not just the application, but a whole set of libraries for each software you try. LADSPA provides a unified interface that allows any LADSPA compliant plug-in to work with any other LADSPA compliant application.

To install LADSPA, first download the LADSPA SDK (ladspa_sdk.tgz) from www.ladspa.org/download/. Next, uncompress the package using the 'tar xzvf ladspa_sdk.tgz' command.

After this, 'cd' to the directory 'ladspa_sdk/src' and type 'make' to compile the source code.

The compilation will take a few minutes, after which you can test if it was successful by using the following commands:

```
'play ../snd/noise.wav'
'play /tmp/test.wav'
```

If the test is successful, use the 'make install' command to install the LADSPA libraries in their respective directories. The

LADSPA SDK currently comes with a basic set of plug-ins, but more advanced plug-ins are also available—visit the LADSPA Web site for links to these sites.

Now that you've set up all the drivers and plug-ins, let's install the actual audio editing software. From the plethora of audio editing software currently available, we chose to install Audacity, since it is both easy to install and ideal for novices.

Audacity

Audacity is a free audio editor that is available on multiple platforms including Windows, Linux, Unix and Mac OS X. It can record as well as play sounds, import



Audacity has been ported to many operating systems including Mac OS X

and export WAV, AIFF, and MP3 files, and more. Its simple-to-use interface lets you edit your sounds—using simple Cut, Copy and Paste operations, with unlimited Undo—as well as mix tracks, or apply effects to your existing recordings. It also has a built-in amplitude envelope editor, a customisable spectrogram mode and a frequency analysis window for audio

filters, mixers, faders, etc., that can be used to build your own audio sub-system. The audio driver is just one of the main components that interfaces with the sound card and plays data via the speakers.

GStreamer: GStreamer allows for the construction of graphs of media-handling components, ranging from simple MP3 playback to complex audio (mixing) and video (non-linear editing) processing. Applications can take advantage of advances in codec and filter technology transparently. Since GStreamer is released under the LGPL, developers can add new codecs and filters by writing a simple plug-in with a clean, generic interface.

The Replacement Player

SnackAmp: SnackAmp is a less popular but powerful music player on Linux. Its interface is more complex and rudimenta-



SnackAmp isn't as basic as it looks; it has some really cool features

ry than XMMS, but once you master its interface you get control over some amazing features that are absent in XMMS, such as cataloguing and managing folders and removable media.

analysis applications. Apart from built-in effects such as Bass Boost, Wahwah, and Noise Removal, it has support for VST plug-ins that are popular on Windows.

Installing Audacity is very simple, provided you have all the required libraries. While the Ogg and Vorbis libraries generally come pre-installed with any Linux distribution, Audacity requires a special GUI component (called wxGTK) that is required to generate its interface. This can be downloaded as an rpm file from the audacity Web site and installed using the 'rpm -ivh <filename>' command. Once the required libraries are installed, just use the 'tar', './configure', 'make', and 'make install' commands (for source code), or the 'rpm' command (for binary code) to install Audacity.

Conclusion

Overall, Linux is a very viable option, not just for setting up an MP3 jukebox, but also for more advanced work such as audio editing workstations, or even recording studios. The important factor is the effort required in setting up all these drivers and applications, and then optimising them to get the very best out of the hardware. With specialised, sophisticated drivers such as JACK and LADSPA becoming more stable and easy to configure, it seems likely that Linux will soon make waves in this field. ■

PRAVEEN KURUP

praveen_kurup@thinkdigit.com

Backseat Drivers

Open Sound System (OSS): This is the Linux sound driver from 4Front Technologies (the makers of XMMS). While these are the default drivers that ship with Linux distributions, they are being slowly replaced by the far more advanced ALSA drivers.

Enlightenment Sound Daemon (ESD): ESD is an audio driver that has its roots in the Enlightenment window manager project. Although initially meant for the Enlightenment system, it has detached itself from the window manager, and is now available as separate drivers irrespective of the GUI you choose to run on your Linux system.

Analog Realtime Synthesizer (aRts): aRts has numerous modules such as oscillators,



Installation problems, games going haywire, CD-ROM problems, missing drivers, etc. You name it, we solve it

Game for an error

Q. I have a 633 MHz CPU, on an Intel 82810e motherboard with in-built VGA and sound, running Windows Me. I get the following error message when trying to install *Delta Force*: "Intel® 82810 E graphics controller. This video card does not support HWT &L (Hardware accelerated transform & lighting). Delta Force has been optimized for cards supporting HWT &L and therefore will run slower on your hardware. The resolution has failed, please make sure that you have the latest drivers for your video card and run the video test again."

Please help me solve this problem, and if possible include the latest drivers in the forthcoming CDs.

Praveen S Bohra

A Whoops! Sorry Praveen, the problem is not with the graphics drivers; the bitter truth is that your hardware is just not good enough. What you need is a better graphics card, at least a GeForce2. Unfortunately, since you have an i810-based motherboard, you probably don't have an AGP slot. Though it hurts, both your pocket and your heart, you're going to have to do a massive system overhaul if you want to play any of today's games.

Height of AI

Q. I have a Pentium III 1.13 GHz, 256 MB RAM, 80 GB hard disk and an

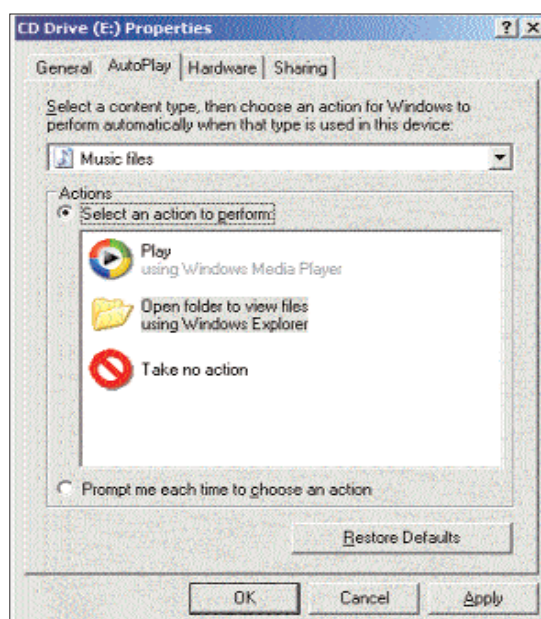
ASUS V8170 64 MB graphics card, running Windows XP. I have installed games such as *The Hulk*, *GTA: Vice City*, *Enter the Matrix*, etc. The problem is, I can't seem to control the characters, they just move left or right on their own. I don't have this problem with *The Age of Mythology*. What do I do? Also, your Mindware and Playware CDs do not autorun on my computer.

Somesh

A The most basic problem could be a malfunctioning keyboard. Check to see that the arrow keys, or whichever keys you have configured to move left and right, are not stuck—a few sharp taps on these keys will unstick them.

What's more probable is that you have installed, but not configured, some other input device such as a joystick or gamepad. This may cause a conflict and can cause your game to go haywire. Go to your game's control options and disable the use of joysticks.

If the CDs do not autorun, but you can still browse through them, it means that the autorun function has been disabled on your PC. Double-click on My Computer, right-click on your CD-ROM drive and select Properties. Now, click on the AutoPlay tab and then click on 'Restore Defaults'. This will turn the auto play function back on, and you can enjoy our CDs.



Check 'Auto Insert Notification' to enable autorun on your system.

Too many restarts

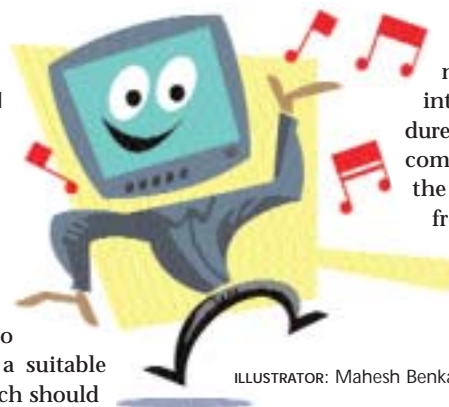
Q. I have an 8 GB hard disk with two partitions, a 2 GB one and a 6 GB one. My problem is that whenever I run either ScanDisk or Disk Defragmenter on my C drive, it runs properly for a couple of minutes and

Musical computer

Q, I have a Casio synthesizer with a midi port, and my computer has a sound card with midi/game port. How can I connect both of them to create great music?

Saurabh

A First you need to connect the two together with a suitable connector, which should have come bundled with your synthesizer—if it isn't, you'll have to buy one. You haven't specified whether your sound card is integrated or not; if the MIDI port is integrated into



ILLUSTRATOR: Mahesh Benkar

the motherboard, you'll need to check the BIOS (generally under Integrated Peripherals) to see whether the port is enabled and has an address. Next, you need to add the hardware into Windows. The procedure varies by OS version; a common method is to use the 'Add Hardware' wizard from the Control Panel.

Once the device is installed, check if it shows up in *Control Panel > Multimedia Devices*.

Finally, you'll need software that can handle an external synthesizer, such as Cakewalk, although there are plenty of alternatives. Now, you're all set to make cool digital music.

then restarts. The reason that appears for the restart is 'Drive Contents Changed'. This is really driving me mad. I run Windows Me. What should I do?

Dhananjay Gupta

A ScanDisk restarts when it detects a program writing to the disk. Therefore, before you start Scandisk, ensure that all other programs are closed—especially the ones in the System Tray, such as anti-virus programs, system monitors, firewalls, etc. You can press [Ctrl] + [Alt] + [Delete] to bring up the End Task box. This lets you see all programs currently running on your system.

If this fails to work, reboot into Safe Mode (press [F5] before Windows starts) and run ScanDisk. This will almost certainly solve the problem, but will make ScanDisk run rather slowly.

Intel or AMD?

Q, I have a Pentium III 800 MHz with 256 MB RAM. I want to upgrade my processor, as I can't run the latest games smoothly. Please suggest what I should buy—AMD or Intel? Is the latest software compatible with AMD processors?

Harsimranjit

A OK, we'll say it again: please write in and give us entire PC configurations if you want us to solve your problems properly. Now, since you haven't mentioned the most important gaming com-

ponent—the graphics card—we have to assume you don't have one. Instead of spending on a PC upgrade, you should buy yourself a good graphics card. For a Pentium III 800 MHz, a GeForce4 440MX or GeForce FX 5200 should do nicely. These cards cost about Rs 2,500 and Rs 5,000 respectively.

If you just have to upgrade, we suggest an AMD-nForce combination. This will save you money, as you will not have to buy a separate graphics card.

Three times the problem

Q, I have three questions:

Is there a way by which we can retrieve a forgotten password for a protected Excel worksheet?

Recently, I partitioned my hard disk on my home PC. I run Windows XP and Windows 98 SE. Is it possible to operate a Video Mate TV tuner card in Windows XP? I can't find the required Windows XP drivers. The instruction manual doesn't mention the manufacturer's Web site. Where can I find original or compatible drivers?

I am not able to type the '@' character. When I press it, I get an 'a'.

P. P. Chaukimath

A Yes, there are tools for recovering passwords of protected Excel files. One of them is Excel Key. A demo version can be downloaded from <http://www.lostpassword.com/excel.htm>. Another utility is Accent Office Password Recovery

1 col AD

LT; the trial version can be downloaded from http://www.passwordrecoverytools.com/store/aofpr_setup.exe.

As you haven't specified the manufacturer of your TV tuner card, we presume it is a Compro VideoMate TV. This card works perfectly with Windows XP. You can download the drivers from <http://www.comprousa.com/download/index.htm#VMTV>

The '@' problem is caused by incorrect settings for the keyboard layout. In Windows 98, go to *Start > Settings > Control Panel* and double-click on Keyboard. Select Language and click on Properties. Select 'United States 101' from the drop-down menu and click OK. This should solve your problem.

Save settings of Outlook

Q, I want to format my hard drive and reinstall Windows. How do I back up Outlook's User Account Settings and Mail Message Rules?
Michael Jayabalan

A Go to *File > Import and Export > Export to a file > Personal Folders File (.pst)*, and select the folders to be backed up, as well as the save location. Remember the password so you can open it later.

To save rules, go to *Tools > Rules Wizard* and select the rule you have created. From 'Apply rules in the following order', click Options at the bottom right corner, click on 'Export Rules' and save the rules to a separate partition. After reinstalling Windows, you can import these PST files and rules.

Floppy drive flop

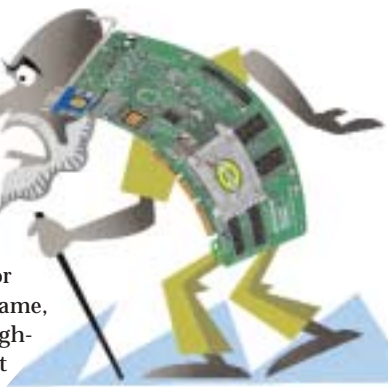
Q, Of late, I can't read the contents of floppies. I get a pop-up box that says that the disk is not formatted. The same floppy works in other drives, and I never got these messages before. What's the problem?
Swadhin Sahoo

Update, date no update

Q, My system configuration is: Pentium III 450 MHz, DirectX 9.0, VIA VT82C693 Apollo Pro Plus motherboard chipset, 128 MB SDRAM. I have a SiS 6326 graphics card (8 MB video, 32 MB AGP) running Windows 98. Recently, I purchased a game (*Cricket 2002*), and installed it. I then updated my old SiS driver (dated 03/15/2001), and the game started, but there was a problem with the display. I decided to update the driver again, but the driver shows the same, old date (03/15/2001), and the game still refuses to run. Should I change my graphics card?

Pradeep

A There's nothing wrong with your graphics card Pradeep, except for the fact that it's outdated. *Cricket 2002* is a fairly recent game and thus requires a good 3D accelerator card. To play the game, you'll need a slightly higher powered card, at least a TNT2 or GeForce2.



1/2 V Ad

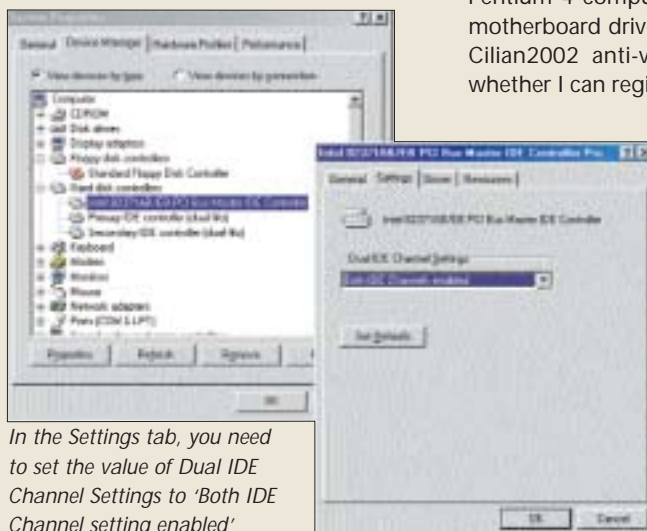
FAQs

Disappearing CD-ROM drive

Q I have a Pentium III 450 MHz processor running Windows 98. When I boot, my CD-ROM drive is detected, but later on the icon disappears. I reinstalled the OS, but the same thing happens again. What do I do?

Misbah Munawar

A To solve your problem, right-click on My Computer and choose



In the Settings tab, you need to set the value of Dual IDE Channel Settings to 'Both IDE Channel setting enabled'

Properties. Go to *Device Manager > Hard disk controllers > PCI bus master IDE controller*, and click on Properties. Now, go to Settings and set the Dual IDE Channel setting to 'Both IDE Channels enabled'. Just click OK and restart the PC, and your problem is solved.

Legally free?

Q I recently purchased an assembled Pentium 4 computer for my home. The motherboard driver CD contains the PC-Cilian2002 anti-virus. I want to know whether I can register it with the company for upgrades and

latest anti-virus definitions. What is the legal position of this product?

Rajesh Kumar.

A Don't worry, you stand on solid ground legally. You've purchased a hardware product that included software as part of the package. This

means that you've bought the right to use that software product as well. Therefore, you can go ahead and register on the Web site without any fear.

Internal modem in Windows XP

Q I have a 900 MHz CPU, 128 MB RAM and a Motorola SM56 PCI 56 Kbps internal modem. This modem runs properly with Windows Me, but not with Windows XP. I get an error message saying, "Modem is not digitally signed". When I force the driver to install by clicking Continue, the modem does not work.

Abhay Rana

A To use your Motorola SM56 modem in Windows XP, you need to install the proper drivers. As Motorola has stopped its support for this modem, there aren't any certified Windows XP drivers available. First try the Windows 2000 drivers. Remove the modem from its current PCI slot, so as to completely delete the old driver files. Try any of the following drivers: http://modemsite.com/56k/_downloads.asp?dl=xflt/sm56/sm56xp8440.exe, <ftp://ftp.dell.com/comm/ZBRCFE11.EXE> or <http://www.motorola.com/softmodem/data-fax-voice.htm#DFVwinXP>.

A The answer's simple really—your floppy drive just died, or is too dirty to operate. First, clean the drive with a floppy drive cleaning disk. If this does not solve your problem, get the drive repaired, or just buy a new one.

MS-DOS programs refuse to run

Q I can't run DOS-based programs in Windows 2000. I was told that editing the system.ini file to show the following settings, works for Windows Me, 98 and 95:

[386Enh]

PerVMFiles=250

PerVMBuffers=40

ebios=*ebios

For Windows 95 or 98, the config.sys file was edited to reflect:

FILES=200

BUFFERS=40

What are the equivalent settings for Windows 2000?

Arif N Khan

A For running legacy DOS-based appli-

cations in Windows 2000, edit the 'config.nt' file located at *C:\winnt\system32\config.nt*. Add these attributes at the end of the text:

files=250

buffers=40

This will solve your problem.

Between dealer and compatibility

Q I have an Athlon XP 1700 on a KM133 DFI motherboard. Recently, I bought a GeForce2, but now all my games hang the system and the monitor flickers every few seconds. I went to the motherboard dealer, and he says it's a compatibility problem. Is he right? If he is right, then please tell me why this happens, as I have a 4x AGP slot. The dealer who sold me the GeForce2 card is not ready to take it back. What can I do?

Shantanu Joshi

A Motherboards based on VIA chipsets generally have certain stability and compatibility issues that can be solved by installing the latest drivers.

First, download the Hyperion drivers

from www.viaarena.com. These are imperative for a stable system. Now, download and install the detonator drivers for your operating system from www.nvidia.com.

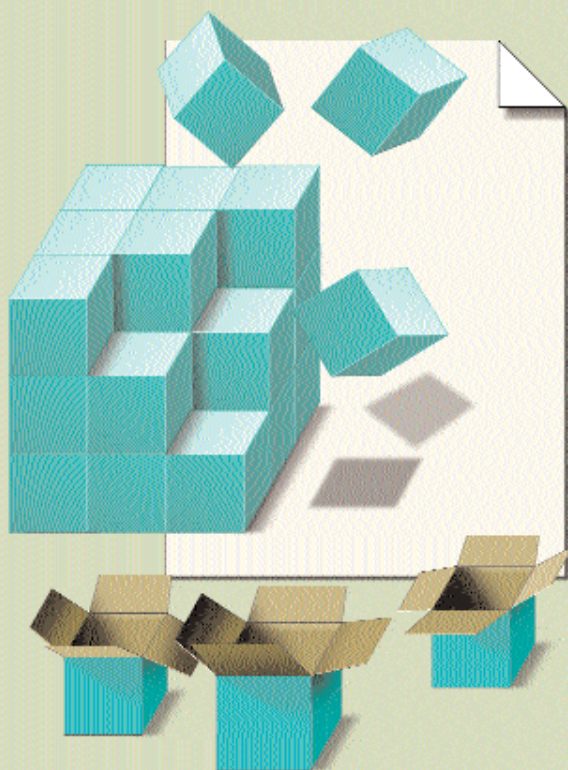
If the problem persists, set your card to lower speeds for more stability. Go into the BIOS, and in the 'Advanced Chipset Features', look for 'AGP Bus Speed' and 'AGP Aperture Size' and set them to the minimum level.

As a last resort, visit your motherboard manufacturer's Web site, download the latest BIOS update and flash your BIOS. Remember, flashing your BIOS is dangerous and may render your motherboard useless if not done correctly—preferably, get your motherboard dealer to do this for you. ■



sos@jasubhai.com
E-mail us your computing problems, and we may answer them here! Since we get more mails per day than we can handle, it may take some time for your query to be answered. Rest assured, we are listening!

tips & tricks



IMAGING: Solomon Lewis

Registry Unplugged

Editing the registry is not black magic; it is just another step towards taming Windows. Learn the top registry tweaks to get complete control

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- 95 Ease the Task
- 95 Covering Tracks



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The registry is the place where Windows stores all its settings. These settings are used to control hardware, installed applications, the user interface—practically every setting in the system. So to make any changes to the default settings, the registry has to be edited. To open the registry editor, go to *Start > Run*, type 'regedit' and press [Enter]. The registry editor contains two vertical panes. The left pane has a Windows explorer-like hierarchy structure. Each item here is called key, and a key can have sub-keys. When you select a key, you'll find some items in the right pane. These are the entries corresponding to the selected key. The keys are organised containers for the entries; it is the entries that store the settings. The entries can store different types of data: String, Binary and DWORD values.

Back up...back up

The registry is critical for the health of any Windows system. Any damage to it will cause the system to behave erratically. It's recommended that you don't make any changes to the system registry without backing up the current settings. To take a backup of the registry, open the registry editor and select *Registry > Export Registry File*. In the dialog box that appears, select 'All' and enter a name for the backup file. It's also possible to back up specific registry keys. To do so, select the key to be saved, and go to *Registry > Export Registry File*, check 'Selected branch' and click OK.

Windows Me and XP users can create system restore points. This feature lets you revert to a particular state in case of a system crash. To take a snapshot of the current state of the system, go to *Start > Programs > Accessories > System Tools > Sys-*

tem Restore and select 'Create a restore point'. To revert to this point later, you will have to start System Restore and select which point you want to restore to.

Creating a new key

To create a new key, just right-click the parent key and select *New > Key*. To create an entry, select the key in the left pane, right-click over in the right pane and select

the data type of the entry to be created.

Restart

When a change is made to the registry, the effect may or may not be visible immediately. For example, when changing the title bar text of IE, you need to restart it for the changes to be reflected. For OS-related tweaks you may need to log off and log on again, or even restart the machine.

CUSTOMISATION



ILLUSTRATOR: Farzana Cooper

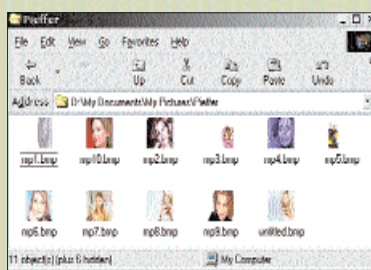
Creating icons

The icon of a bitmap file can be set as the file image itself. To effect this setting, navigate to the key *HKEY_CLASSES_ROOT\Paint.Picture\DefaultIcon* and set the value of 'Default entry' to '%1'. Also navigate to the key *HKEY_CLASSES_ROOT/.bmp* and set 'Default entry' to 'PAINT.PICTURE'. The flip side of this tweak is that folders with a lot of bitmap files might take longer to load. In

such cases, try increasing the icon cache to make the folders load faster. The icon cache can be increased using the 'MaxCachedIcons' entry (type string) in the *HKEY_LOCAL_MACHINE\Software\Microsoft\Windows\CurrentVersion\Explorer* key. Increase the value of this entry to increase the icon cache; use any value between 100 and 4,096.

Start Menu scrolling

When your Start menu overflows, it isn't possible to list all the entries in a single column. Then, Windows either creates a second column or a scrolling menu. You can control this through the registry. Navigate to the *HKEY_CURRENT_*

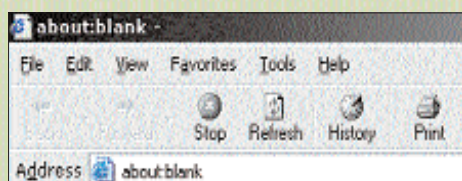


Use bitmap images as icons

`USER\Software\Microsoft\Windows\CurrentVersion\Explorer\Advanced`, and select the entry called 'StartMenu ScrollPrograms'. If it's not present, create a new String value called 'StartMenu ScrollPrograms'. Specify the value as 'Yes' if you want the Start menu to scroll, and 'No' if you need the Start menu as multiple columns.

IE Title bar text

Internet Explorer installations distributed by companies other than Microsoft might have their names in the title bar. If you want to change this, navigate to `HKEY_CURRENT_USER\Software\Microsoft\Internet Explorer\Main`, and edit or create a string value entry called 'Window Title'. Double-click the entry and enter any



Remove unwanted text from the IE title bar

string you want. Leave it blank if you want to remove the default string. You'll need to restart Internet Explorer for the change to take effect.

Size of desktop icons

Using the Control Panel display settings, icons in Windows can be displayed in only two different sizes. Tweaking the registry allows you to have any size for icons. Go to `HKEY_CURRENT_USER\Control Panel\Desktop\WindowMetrics`, and create or modify the string value 'Shell Icon Size'. Give the value of your desired icon size, in pixels.

Extracting the product key

The Windows product key is sometimes forgotten or mis-

placed after the Windows installation. This serves as a blockade during the inevitable Windows reinstall. In case of Windows 95, the product key can be obtained from the system properties window (*Windows key + [Pause\Break]*). For Windows 98, it's possible to extract the key from the registry. Select the `HKEY_LOCAL_MACHINE\Software\Microsoft\Windows\CurrentVersion` key, and in the right pane, the value of the entry `ProductKey` will give the product key of the current Windows installation.

Logon message

To create a personalised logon message in XP, go to `HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\WindowsNT\CurrentVersion\Winlogon`. In the right pane, double-click the string entry 'LegalNoticeCaption', enter the string 'My Windows XP Machine' and click OK. Next, double-click the 'LegalNoticeText' string entry, and enter the message to be displayed.

Screensaver grace period

If you've set a screen saver password in Windows 2000 or XP, and the screen saver activates, there is a grace period before which Windows doesn't prompt for a password when you press a key or move the mouse. For security reasons, it is advised that you remove this grace period. Go to `HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\WindowsNT\CurrentVersion\Winlogon`, create a string entry named 'ScreenSaverGracePeriod' and give it a value of '0'. If the key exists, modify its value to '0', or else create a DWORD entry, with the above details.

Display Administrator in logon screen

Like the root user in Linux, Windows XP has a default user called 'Administrator'. This user is not displayed in the logon screen where all the users in the system are displayed. To view this account, go to `HKEY_LOCAL_MACHINE\Software\Microsoft\Windows-NT\CurrentVersion\Winlogon\SpecialAccounts\UserList`. If the binary Administrator key does not exist, create it. Assign its value to '1' to see the Administrator, or '0' to hide it.

Change the welcome screen

Windows XP displays three different screens during boot-up. The second screen is the one that says "Welcome". To change this, navigate to `HKEY_USERS\DEFAULT\Control Panel\Desktop`. Under this key, you will find an entry named 'Wallpaper'; double-click it and enter the path of the image file you want displayed. The file can be a BMP or JPEG image. If you want to tile the image, set the value of the 'TileWallPaper' entry to 1. If you want to stretch the wallpaper, set the value of the 'WallPaperStyle' entry to 2.

Colour of encrypted and compressed files

Windows XP displays encrypted and compressed files and folders in a different colour. To change the default colour, go to `HKEY_CURRENT_USER\Software\Microsoft\Windows\CurrentVersion\Explorer`. Create a DWORD value with the name 'NoViewOnDrive'. Double click this entry and in the dialog box that appears, select the radio button named 'Decimal'. In the value data field you need to enter a number that depends on the drive that needs to be hidden. Use the formula '2ⁿ-1', where n is 1 for your A drive, 2 for B

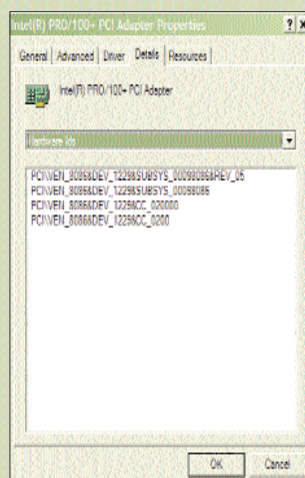
pressed files and folders, create or modify a binary entry named 'AltColor'. Specify its value as mentioned above. For this tweak to work, the 'Show encrypted and compressed folders in color' must be enabled via the folder options window.

Detailed information in the device manager

When this tweak is applied, the device manager in Windows 2000 and XP will show an extra tab called 'Details'. Selecting this tab will provide additional information about the device. Go to `HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Control\SessionManager\Environment`. Here, you'll find a string entry with the name 'DEVMGR_SHOW_DETAILS'; if there isn't one, create it. Assign this entry a value of '1' if you want the system to display the details tab; to hide the tab, assign it a value of '0'.

Prevent access to specified drives

Use this tweak to prevent access to drives to certain users. Remember, once this is applied, the prohibited user can't access the drive by any means. Log into Windows using the user account that you want to restrict access to, open the registry editor and go to `HKEY_CURRENT_USER\Software\Microsoft\Windows\CurrentVersion\Policies\Explorer`. Create a DWORD value with the name 'NoViewOnDrive'. Double click this entry and in the dialog box that appears, select the radio button named 'Decimal'. In the value data field you need to enter a number that depends on the drive that needs to be hidden. Use the formula '2ⁿ-1', where n is 1 for your A drive, 2 for B



Get extra information about system devices

drive, and so on until 26 for drive Z. If you need to hide more than one drive, add the respective drive numbers and enter it into the value data field. For example, to hide drive C you need to enter 4 (2^{3-1}); to hide drives D and E you need to enter 24 ($2^{4-1} + 2^{5-1}$). To apply the change to all users in the system, follow the same method, but use the key `HKEY_LOCAL_MACHINE\Software\Microsoft\Windows\CurrentVersion\Policies\Explorer` instead. To remove all restrictions, just delete the entry.

■ Know your real writing speed in Nero

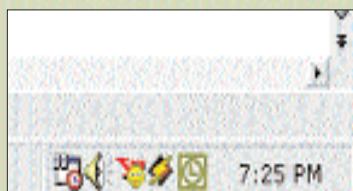
While writing a CD using Nero 5.5, only the average speed is displayed in the burn status dialog box. To force Nero to display the actual writing speed, navigate to `HKEY_CURRENT_USER\Software\ahead\Nero-BurningRom\Recorder`. Under this, open the DWORD entry 'ShowSingleRecorderSpeed' (create one if it doesn't exist). Change the value of this entry to '1' to display the actual writing speed, and '0' to display the average writing speed.

OFFICE



■ Minimise Outlook to the system tray

Outlook 2003 can be minimised to the system tray, but it's possible with earlier versions of Outlook as well. Go to `HKEY_CURRENT_USER\Software\Microsoft\Office\10.0\Outlook\Preferences` and create



You can minimise Outlook XP to the system tray

a DWORD entry named 'MinToTray'. Give it a value of '1'. Restart Outlook for the change to take effect.

■ Give four digits for year in Excel

Whenever a date is entered in an Excel cell, the year field is automatically truncated to two digits. For example, when the user enters the date 9-11-2000 in a cell, it is automatically replaced with 9/11/00. This is bad when spanning across a century, such as records from 1999 to 2003. This tweak makes Excel display dates with four digits for the year field. Locate `HKEY_CURRENT_USER\Software\Microsoft\Office\[Version]\Excel\Options`, where [Version] indicates your Office version (Office XP is

'10.0', 2000 is '9.0', etc.). Create or modify the DWORD entry 'EnableFourDigitYearDisplay' and enter a value of '1'.

■ Change the number of undo levels in Excel

By default, Excel can perform 16 undo operations. You can customise the number of undo levels, but remember that increasing the number of levels results in more RAM being allocated to Excel. Go to `HKEY_CURRENT_USER\Software\Microsoft\Office\[Version]\Excel\Options`. Under this key, create a DWORD value with the name 'UndoHistory'. You can turn off the undo feature by giving a value of '0', use the maximum allowed level '100', or provide an intermediate level of your choice. Remember to select the decimal radio button when entering a value between 0 and 100.

■ Remove attachments restrictions

When an incoming e-mail has attachments such as EXE, SCR, etc., Outlook XP doesn't download the attachments, for security reasons. The complete list of file extensions which aren't downloaded in Outlook XP and 2003 is: ADE, ADP, ASX, BAS, BAT, CHM, CMD, COM,

CPL, CRT, EXE, HLP, HTA, INF, INS, ISP, JS, JSE, LNK, MDA, MDB, MDE, MDZ, MSC, MSI, MSP, MST, PCD, PIF, PRF, REG, SCF, SCR, SCT, SHB, SHS, URL, VB, VBE, VBS, WSC, WSF and WSH.

If you want Outlook to download any of the above mentioned file extensions, go to `HKEY_CURRENT_USER\Software\Microsoft\Office\10.0\Outlook\Security` (11.0 for Outlook 2003), and create or modify the string entry named 'Level1Remove'. The value of this entry is the file extension that it will download; so, add the file extensions that you wish Outlook to download, separated by a semicolon—for example, to force Outlook to download EXE and BAT files, assign the value 'exe;bat'.

Add custom places to the open/save dialog box
In the MS Office Open and Save dialog box, there's a

bar on the right that contains links to common locations such as My Computer, My Documents, etc. Using this tweak, you can add custom locations to this bar. For example, if you often save your work on a network drive, you can add it to the places bar. Navigate to `HKEY_CURRENT_USER\Software\Microsoft\Office\[Version]\Common\OpenFind\Places\UserDefinedPlaces`, where '[Version]' indicates the current office version. Create a sub-key with the name 'PlaceX', where X is a unique number. In other words, name the first custom location 'Place1', the second 'Place2', and so on. Now select the newly created sub-key and create two string entries in it: 'Name' and 'Path'. The value for 'Name', is whatever you want to call that location, and that for 'Path' is the exact path to that folder.

This is because XP tries to get information about the files. To disable this feature, open the registry and go to `HKEY_CLASSES_ROOT\CLSID\{87D62D94-71B3-4b9a-9489-5FE6850DC73E}`. Append a [-] (a minus sign) in front of the '{87D...}' key, so that it becomes something like '-{87D...}'.

Prevent OS being paged to disk

At times, when there's a dearth of RAM, the system will move some portion of the main memory to the hard disk. Obviously, this slows down the system, but there's nothing much that can be done about it. In case your system is blessed with loads of RAM (256 MB or more) and runs Windows NT, 2000 or XP, you can use this tweak to prevent the kernel mode code from being moved to the hard disk. While this will improve system performance, it may affect programs that rely on Windows swap space. So if you notice any eccentric behaviour after applying this setting, revert to the previous setting. Go to `HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Control\Session Manager\Memory Management`. Look for a DWORD entry called 'DisablePagingExecutive'; set it to '1' to disable the kernel being paged. If you face problems, set it back to '0'.

allows you to increase the USB polling interval. For Windows 98 and Me, go to `HKEY_LOCAL_MACHINE\System\CurrentControlSet\Services\Class\Usb\0000`; for Windows 2000 or XP, go to `HKEY_LOCAL_MACHINE\System\CurrentControlSet\Control\Class\{36FC9E60-C465-11CF-8056444553540000}\0000`. Create a DWORD entry called 'IdleEnable' and give it a value of '1'. To revert to the previous refresh rate, give the entry a value of '0'.

Quicker access to network folders

When you open a remote location by entering the computer name in the Run dialog box or through Network Neighbourhood, Windows takes a long time to open the location. Instead, when the complete address of the location is given such as '\\computername\foldername', it opens immediately. Microsoft has confirmed that this occurs when a Windows 2000 system tries to access a Windows 98 system. The system tries to read the scheduled tasks of the remote system—a fairly useless step. To solve the problem, open the registry and delete the `HKEY_LOCAL_MACHINE\Software\Microsoft\Windows\CurrentVersion\Explorer\RemoteComputer\NameSpace\{D6277990-4C6A-11CF-8D8700AA0060F5BF}` key.

Performance



Disable Windows XP support for Zip files

Windows XP comes with in-built support for Zip files, but this can be a curse in disguise. While searching for files, XP automatically searches through Zip files, resulting in a slow search. To disable support for Zip files, go to `Start > Run`, type 'regsvr32/u%windir%\system32\zipfldr.dll' and click OK. If you want to enable it

later, go to `Start > Run` and type 'regsvr32 %windir%\system32\zipfldr.dll'. Disabling support for Zip files in XP does not in any way affect the functionality of third-party tools such as WinZip, WinRAR, etc.

Speed up access to folders with AVI files

Windows XP sometimes takes a really long time to open folders with AVI files.

Increase USB polling interval

By default, Windows checks for connected USB devices once every millisecond. This might prevent the processor from going into power saving mode, which is vital for laptops to conserve battery life. This tweak





■ Turn off support for UnPnP

Universal Plug and Play (UPnP) devices can be connected to any system over the network instantly—like a PnP device being connected to a local system. Windows XP supports this feature, but Microsoft has acknowledged a security flaw. Though there is a patch, it is recommended to turn off this feature—there are so few UPnP devices available anyway. Navigate to `HKEY_LOCAL_MACHINE\System\CurrentControlSet\Services\upnphost` and double click the DWORD entry named 'Start'. To disable support for this service, give it a value of '4'; to enable it again, give it a value of '3'. If

you use any UnPnP devices over your network, leave it enabled.

■ Window refresh rate

All open windows are refreshed at a predefined interval; but when there're too many windows open, and a paucity of memory, they often appear blank—a file copied to a folder may not appear immediately on the window. This tweak allows you to set a faster refresh rate for open windows. Go to `HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Control\Update`. Create or modify the DWORD key called 'UpdateMode'. Assign it a value of '0' for a faster refresh rate, and '1' for default.

ANNOYANCES



■ Menu display delay

When a menu is opened, Windows opens the menu after a small delay. For example, after clicking on Start, the Programs menu takes ages to expand. This is because the 'Menushowdelay' entry has been given a large value. Open the key `HKEY_CURRENT_USER\Control Panel\Desktop` and modify or create a string value named 'MenuShow Delay'. In this entry, give the required delay in milliseconds; the accepted limit is 0 to 999.

■ Disable low disk space warning

Windows XP will show a warning message whenever the drive is low on disk space. For some reason, whether we have an 8 GB or 80 GB hard drive, it's never enough, and this message just gets irritating after a while. To suppress it, go to `HKEY_CURRENT_USER\Software\Microsoft\Windows\`



Stop the annoying low disk space warning

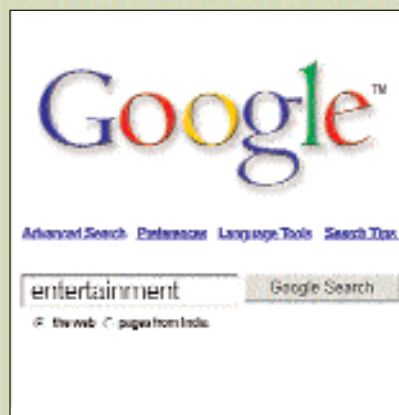
`CurrentVersion\Policies\Explorer` and create or modify the DWORD value called 'NoLowDiskSpaceChecks'. A value of '1' will disable the warning message, '0' will enable it.

■ Disable CD burning

Windows XP comes with in-built support for CD writing. Since this offers limited functionality, power users might not need it. To disable support for CD writing, go to `HKEY_CURRENT_USER\Software\Microsoft\Windows\CurrentVersion\Policies\Explorer`. Create or modify the DWORD entry called 'NoCDBurning'. A value of '1' disables CD burning and '0' enables it.

■ Hide the links folder

Internet Explorer incessantly creates the 'Links' folder under the Favourites section, even if the user deletes it. You can get rid of it permanently by going to `HKEY_CURRENT_USER\Software\Microsoft\Internet Explorer\Toolbar`. Set the value of the 'LinksFolderName' entry as a blank string. Now, open IE and delete the Links folder. It will no longer be displayed under Favourites.



EASE THE TASK



Beep on printer errors

Use this setting to enable the machine to beep every few seconds when a print error occurs. For local printers, go to `HKEY_LOCAL_MACHINE\System\CurrentControlSet\Control\Print` and create or modify the DWORD entry called 'BeepEnabled'. A value of '1' enables beeps and '0' disables them.

For network printers, go to `HKEY_LOCAL_MACHINE\Software\Microsoft\Windows NT\CurrentVersion\Print\Providers\LanManPrintServices\Servers` and create or modify the DWORD entry called 'BeepEnabled'. A value of '1' enables beeps and '0' disables them.

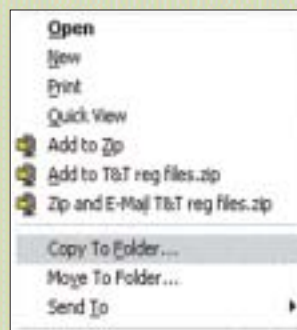
Include Copy to and Move to in the context menu

When you right-click a file, you get a menu called context menu. This tweak shows you how you can add two useful entries to it, namely, 'Copy To' and 'Move To'. Therefore, copying and moving files can be done in 2 steps. To add the 'Copy To' option, go to `HKEY_CLASSES_ROOT\Directory\shell\ContextMenuHandlers` and create a sub-key called 'Copy

To'. Select the key you created and in the right pane, modify the value of the 'Default' entry to '{C2FBB630-297111d1A18C00C04FD75D13}'. Similarly, navigate to `HKEY_CLASSES_ROOT*\shell\ContextMenuHandlers` and create a sub-key named 'Copy To' and give the same default value as above. For the 'Move To' option, duplicate the above mentioned steps, but rename the sub-keys as 'Move To' and the Default values as '{C2FBB631-2971-11d1-A18C-00C04FD75D13}'. Now when you right click on any file or folder—except on the Desktop—you will get these two options.

Start button context menu

Using this tweak, you can open applications from the context menu of the Start button, i.e. by right-clicking on the Start button. Open the registry and select the `HKEY_CLASSES_ROOT\Directory\Shell` key. Create a new sub-key named after the program you want to associate it with, say, Notepad. Now select this key and create another sub-key named 'Command' and set its



Get the 'Copy to' in the context menu

'Default' entry value as the path to the executable for example, 'C:\Windows\notepad.exe'.

Make Google default search page

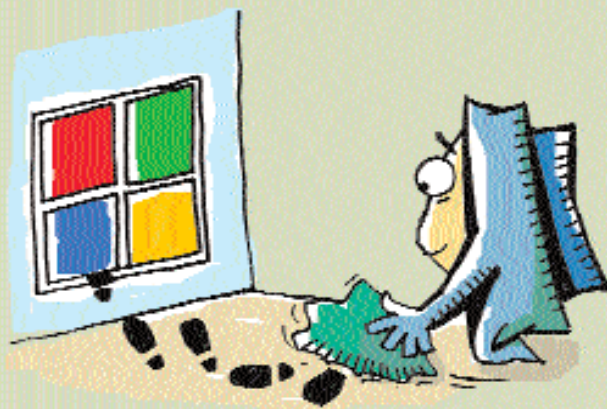
Google-holics ahoy! You can set IE to search using Google as default. Enter the search terms in the address and select the option that appears

below: Search for '<search terms>'. This will take you directly to the results page in Google. Open the registry and navigate to `HKEY_CURRENT_USER\Software\Microsoft\Internet Explorer\Main`; change the value of 'Use Search Asst' to 'no'; change the value of 'Search Page' to '<http://www.google.com/>'; change the value of 'Search Bar' to '<http://www.google.com/ie/>'.

Next, go to `HKEY_CURRENT_USER\Software\Microsoft\Internet Explorer\Search URL` and change the values of 'Default' to '<http://www.google.com/keyword/%s>' and 'provider' to 'gogl'. Then go to the `HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Internet Explorer\Search` key and modify the 'Search Assistant' entry's value to '<http://www.google.com/ie/>'.

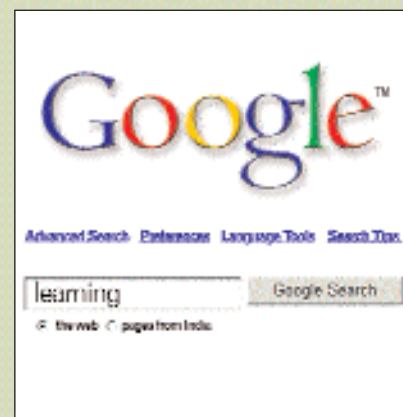
COVERING TRACES

95



Selectively remove cached Run commands

Commands entered in the Run dialog box are automatically cached to be used again later as Auto Complete. You can selectively remove entries from the cached list of instructions. Go to `HKEY_CURRENT_USER\Software\`





- Remove Logoff from Start Menu

Removing typed URLs from IE address bar

The screenshot shows a Windows XP desktop with a 'My Computer' window open. The 'Links' folder is selected, displaying a list of shortcuts. The shortcuts are as follows:

Icon	Name	Path
Document	My Documents	C:\Documents and Settings\user\My Documents
Internet Explorer	http://www.wang.com	http://www.wang.com
Internet Explorer	http://www.safaribooks.com	http://www.safaribooks.com
Internet Explorer	http://www.oxfordjsci.com	http://www.oxfordjsci.com
Internet Explorer	http://www.microsoft.com	http://www.microsoft.com
Internet Explorer	http://www.riverview.net	http://www.riverview.net

from this list go to `HKEY_CURRENT_USER\Software\Microsoft\Internet Explorer\TypedURLs`. In the right pane, you will find the list of URLs ordered with names `url`, `url2`, ...`url25`. Delete the entries you wish to remove. Rename the remaining entries so that the order is maintained. For example, if you delete two entries, rename the others so that they list as `url1` to `url23`.

Off the Shelf



Midnight Club II

Become a member

Midnight Club II hails from the land of consoles. Unsurprisingly, it scoffs, it smirks, and generally looks down upon any-and-all without a good game-pad. So we sincerely ask you to get yourself one.

The illegal street driving that serves as the centre of the *Fast and the Furious* films is very much present in the game, and other elements such as rivals, cops, and one-dimensional women are rendered faithfully. Where a *Need For Speed* throws a set of cars at you, this game will present just one. You have to win the rest, son! Winning the wheels requires overcoming



It's even more fun to actually do it

challenges that members of the club throw at you. Like a good game, the hurdles ramp in difficulty and style, relent-

less in their demand that you get better with every success. No resting on laurels here. The game succeeds in wiggling a car-rot at just the right distance from your salivating mouth—a smudge too far and one would have given up in disgust, a sliver too close and one would have put the game down as too easy.

The offering works and is fun. The graphics serve their purpose—nothing fancy and flashy, but pretty enough to look at. They walk the fine line between offering good looks and being undemanding on your system. *Midnight Club II* is a great game. Give it a try.

Genre: Racing ■ Developer: Rockstar Games ■ Publisher: Take Two Interactive ■ System Requirements: 800 MHz CPU, 128 MB RAM, GeForce2/Radeon 8500, 1.4 GB HDD space, DirectX 9.0 ■ Price: NA ■ Web site: www.midnightclub2.com
Rating: ★★★★★



BloodRayne

Bring an umbrella

Someone, somewhere finally woke up to the fact that sex sells. Someone then read a couple of World War II comic books to get up to speed on 'that entire history and Nazi thing', and *voila!* *BloodRayne* was born—like a Britney Spears video that purports to be sexy and steamy, but only succeeds in coming across as lame and tacky. Be afraid. Very, very afraid.

The story is very erratically delivered. The game takes you from one sub-plot to another via poorly ordered and edited cut-scenes. What is very obvious is the game's sexual overtones. The weapons are the only highlights of this game, but in the end all boils down to light guns, heavy guns and explosives.



Let's go grab a bite....

The voice acting is below par, and the dialogues are quite lame to listen to. The plot is almost non-existent: the only

objective is to kill a bunch of select enemies, be they Nazi officers or supernatural creatures.

However, *BloodRayne* does show some great potential and could have been good if only the developers had put in as much effort into the plot as they have with the 'eye-candy'. The combat animation is good, but combat itself is up to the mark. Game difficulty is polarised—most of the boss fights are unfairly tough and those with lesser denizens are ridiculously easy.

BloodRayne has missed on key elements, which makes it a very uninspiring title. And yes, they're making a movie out of this title. And guess who's financing it—the Germans. Go figure!

Genre: Tactical Shooter ■ Developer: Terminal Reality ■ Publisher: Majesco ■ System requirements: 733 MHz CPU, 128 MB RAM, 2 GB hard disk space, 200 MB virtual memory, 64 MB GeForce2/Radeon 8500 video card ■ Price: Rs 920 ■ Web site: www.bloodrayne.com
Rating: ★★★★★



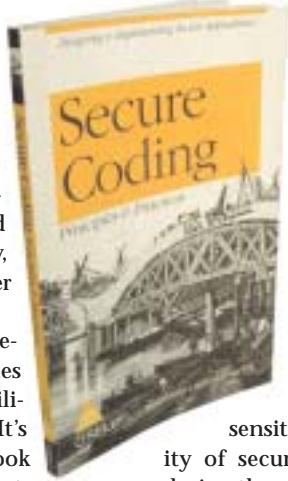
Secure Coding Principles and Practices

A securely detailed description

Secure Coding Principles and Practices covers application security in a holistic manner, placing red flags at different spots through all the phases of application development. It is a roadmap to a life with fewer patch releases.

What endears this book at first sight is a mix of two things. It takes on a relatively less covered, though much stressed aspect of programming. Secondly, it's small enough to cover over two bedtime readings.

The book does succeed in creating a sharp awareness of issues involved with software vulnerabilities and their significance. It's almost stripped clean of any 'cook book' examples with elaborate



source codes. This adds to its appeal, since its relevance as a general reference is bound to apply to all the technologies of the present and the future. The authors have used their experience well to show befitting examples to the ideas and theories laid out in the book.

The book is laid out in just six chapters, each dealing with a separate phase of the classic waterfall Software Development Life Cycle (SDLC) model. The first chapter sensitises you to the responsibility of securing software, mainly by analysing the various ways in which soft-

ware security is undermined. The next five chapters cover principles, theories and potential pitfalls during various development stages, viz. Architecture, Design, Coding, Operation and Automated Testing.

The book gives an interesting insight into how the developers themselves unknowingly become major threats to network security in an organisation. It presents some neat tips on installing a secure setup in organisations where in-house developers share the network with mission critical servers.

Even though the book follows the almost defunct classic waterfall model in a world that has moved on to agile programming and daily builds, the lessons learnt are highly pertinent and can be applied to any development model.

Publisher: Shroff Publishers and Distributors Pvt Ltd ■ **Author:** Mark G. Graff and Kenneth R. Van Wyk ■ **Distributor:** Shroff Publishers and Distributors Pvt Ltd ■ **Phone:** 91-22-27634290 ■ **Fax:** 91-22-27683337 ■ **E-mail:** spd@vsnl.com ■ **Web Site:** www.oreilly.com ■ **Price:** Rs 225
Rating: ★★★★★



Office XP Comprehensive Course

For the IT illiterates

The book title says it all, if you are looking for an introduction to Office XP from the very basics, then look no further. All the concepts required for an office goer are explained using a lot of visuals. Basics are of the utmost importance, this is evident right from first chapter. The good thing is that the authors haven't dwelled on basics alone, they provide just the right amount of information required. There are also practical suggestions—while explaining processors, they cite the Pentium 4, but recommend the more cost effective AMD Athlon for those on a budget.

The book is divided into eight units:

Computer concepts and Windows, Internet Explorer, Outlook 2002, Word 2002, Excel 2002, Access 2002, PowerPoint 2002, and Comprehensive Integration; these units are then divided into chapters. As seen from the unit names, the first two units serve as an introduction to computers. Later, the different applications within the Office XP are explained starting with Outlook 2002.

There are different elements within the chapters such as Quick reference,



Hands-On (Exercises), etc. Each application has been explained with real life example; Word is explained with such examples as creating letters and flyers.

Each chapter has questions and assignments at the end to help a reader grasp the content. Another useful page is the list of keyboard shortcuts that is classified unit-wise. The book comes with a 3.5-inch floppy disk—yes, you read that right, a floppy containing files used in the exercises. A CD with additional content would have been a better idea. In the end, this is a good book for beginners, but won't do much for those already comfortable with Microsoft Office. However, if you are just coming to grips with computers and MS Office, this book is recommended.

Publisher: Shroff Publishers and Distributors Pvt Ltd ■ **Author:** Brian Favro and Russel Stolins ■ **Distributor:** Shroff Publishers and Distributors Pvt Ltd ■ **Phone:** 91-22-27634290 ■ **Fax:** 91-22-27683337 ■ **E-mail:** spd@vsnl.com ■ **Web Site:** www.lappub.com ■ **Price:** Rs 299
Rating: ★★★★★

IT.com in the IT Capital

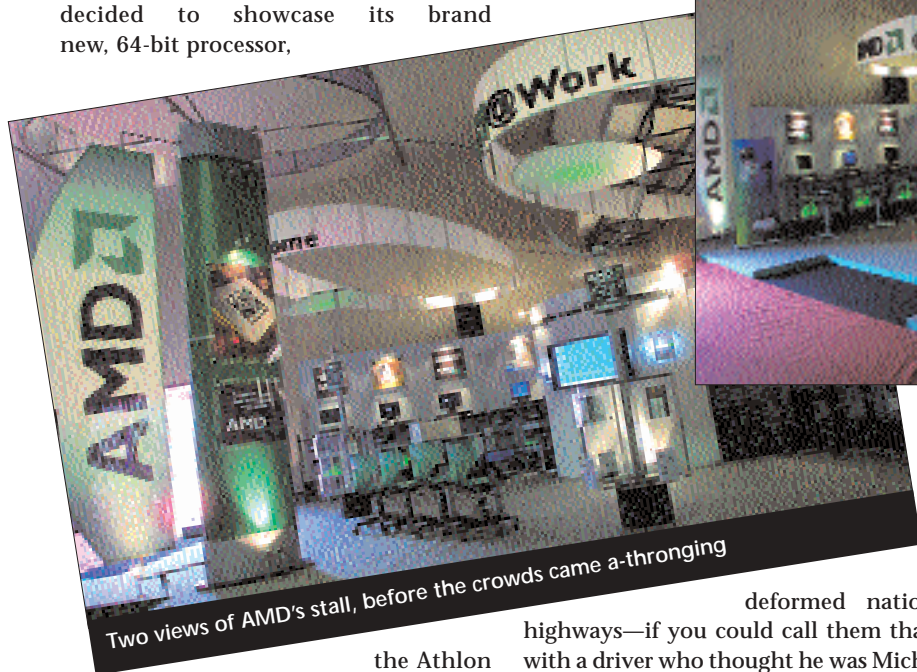
Bangalore! A city of night pubs, bountiful gardens, cool climate, the Anil Kumble Circle, and crazy motorists on two wheelers. Not to mention, the venue of IT.com 2003, India's largest industry expo featuring the who's who of the IT scene, held from the November 1 to November 5 this year.

It was at this event that AMD decided to showcase its brand new, 64-bit processor,

and SKOAR! Magazine?

So off we went to IT.com. Badri and Ahmed represented the editorial team, while Bhavesh, Nabjeet and Raju composed the marketing team. After a gruelling 22-hour bus journey over our great

After accomplishing their mission for the night, the famous five headed back to the local home base—the company guest house—to prepare for a bright and early start the next day.



Two views of AMD's stall, before the crowds came a-thronging

the Athlon 64 FX. AMD planned to include a network of PCs that would host the latest multiplayer games for some great group deathmatching. And who better to conduct this gaming session than Digit

deformed national highways—if you could call them that—with a driver who thought he was Michael Schumacher in the last race of the championship, our visibly shaken group finally landed in Bangalore on the evening of October 31, and headed straight for the venue—things needed to be set up ASAP.

It was a bright and cool Saturday that saw the event being thrown open. After the inauguration, people started to stream into the stall, where Unreal Tournament 2003 had been set up. The main attractions? Multiplayer tournaments with Digit and SKOAR! Magazines as prizes, a massive plasma screen that was playing various game videos, and of course, a couple of shiny-silvery models all dressed up in AMD's corporate colours.

The first two days, Badri was practically deluged by a flood of interested people who wanted a go at the game, attempt to win the prizes on offer, and if they failed to do so, pester Raju for hours in an attempt to get a free copy of Digit. No one expected to see such large crowds with such great enthusiasm. Calling our boys unprepared would be making an understatement. One thing was for sure: if you happened to be agoraphobic, IT.com was not the place to be.

With so many PC enthusiasts at the Palace grounds, we came across busloads of Digit and SKOAR! readers. There was plenty of interaction to be had, and even more viewpoints to share. IT.com presented us the perfect opportunity to meet readers we usually only think of in the abstract. Many thanks to all of you who visited us, we look forward to meeting you again next year! ■



From left to right: Nabjeet, Raju, Ahmed, Badri, and Bhavesh

Who invented the 3 1/2-inch floppy disk?

- a. Hitachi
- b. Sony
- c. Seagate
- d. Phillips

2 IBM's first disk storage device was christened

- a. IBM disk
- b. Disk One
- c. 305 Disk
- d. 305 RAMAC

7 Which optical storage technique allows reading and writing of millions of bits in a single flash?

- a. Holographic
- b. SOI
- c. BluRay
- d. DVD

8 A CD-R has 4 layers. How many layers does a CD-RW have?

- a. 10 b. 6
- c. 4 d. 7

c. 20,000
d. 1,999

12 The first Audio CD album to be marketed was

- a. Billy Joel's 52nd Street
- b. Michael Jackson's Thriller
- c. Beethoven's Ninth Symphony
- d. Santana's Black Magic Woman

13 What is the significance of the IFA show held at Berlin in 1995?

- a. Microsoft promised not to enter the storage market
- b. Seagate launched 15K drives
- c. The DVD format finalised
- d. STA specifications were announced

14 Two standards—Toshiba's SD, and Philips and Sony's MMCD—converged to become

- a. VCD
- b. Bluetooth
- c. Memory Stick
- d. DVD

15 Invented way back in 1857, this is the first machine that could record sound:

- a. Magnetic drum
- b. Abacus
- c. Analytical Engine
- d. Phonautograph

3 Alan Shugart, the man behind floppy disks, started the company that is now known as

- a. Seagate
- b. Sony
- c. Via
- d. Yahoo!



4 The organisation credited with the invention of the first storage drum is

- a. DARPA
- b. IBM
- c. Palo Alto Labs
- d. Engineering Research Associates of Minneapolis

5 Which of the following file systems are natively supported in Linux?

- a. NTFS
- b. WinFS
- c. ext3
- d. None of the above

6 The popular IDE drive interface was originally developed by

- a. Seagate
- b. Intel
- c. Microsoft
- d. Western Digital

9 Red book, yellow book, orange book—what books are these?

- a. Name of CD formats
- b. Other names considered while naming the iBook
- c. Specifications for the laser used in CD drives
- d. The first series of Intel processors

10 What is the linking line between Miltope and Audavi?

- a. Founders of IBM
- b. Inventors of the CD-ROM
- c. Manufacturers of rugged hard disks
- d. Largest IT companies

11 How many tracks does a CD have?

- a. 1
- b. 2,000

Powered by



did you know

While finalising the CD format, the capacity was finalised as 74 minutes of audio so that a single CD could store Beethoven's Ninth Symphony

numberette

The world's first **1GB** disk drive, the IBM 3380 was introduced in **1980**. It was the size of a refrigerator, weighed about **250 Kg** and cost **\$40,000**

digit QUOTIENT

- 1 to 5** Way to go...
- 6 to 10** Good, if you like being mediocre
- 11 to 15** Your next job could be with us!

Got an interesting question? Send it in with the correct answer to quiz@thinkdigit.com

For answers turn to page 71

Across

- 6. CD substrate
- 9. RAID 0
- 10. Microsoft's 8 GB baby
- 11. First DVD movie to break million mark sales

Down

- 1. CD, DVD, now...
- 2. If 7,200 is Barracuda, then 15,000 is
- 3. Apple's CD and DVD burner
- 4. IBM's dusty idea
- 5. 280
- 7. PS2 with a hard disk
- 8. Longhorn

