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Play Safe

You wouldn't give the keys of your house to a stranger, would you? Then why do the same with your PC?

In today's connected environment, it's become increasingly important to adopt safer computing practices than ever before. Sure, we all know the drill: install an anti-virus software, update it regularly, avoid installing any suspicious or unverified programs and shut down any open network shares on your PC.

But do you follow these basic guidelines as meticulously as you should? Or to put it another way, what if these basic guidelines aren't enough anymore?

Consider the ramifications of leaving your computer unguarded for a moment: unprotected PCs are easy targets for propagating and instigating attacks such as the infamous DoS (Denial of Service) attacks and are responsible for the spread of viruses and worms.

In most online attacks, the attacker generally exploits a handful of well-known software vulnerabilities. Couple this with the plethora of hacking tools available online and it would be possible for even a six-year-old to hack your computer.

Okay, so you might be one of those who practise absolutely safe computing methods and avoid clicking or previewing any messages with suspicious attachments. But these infected attachments still reside in some corner of your hard disk—there might come a time when someone will figure out a way to activate these dormant viruses when you visit a rogue Web site.

It's just not enough to update your anti-virus software's data definitions anymore. You need even more comprehensive protection in the form of network firewalls. You also need to make it a habit to install new security patches to defend your PC against certain kinds of worms that exploit well-known weaknesses in Windows and other popular software.

So this will ensure a threat-free existence, right?

No. Even if you take all the appropriate safety precautions, there might be others on your network, or your friends and colleagues who have you in their address books, who aren't as well protected. You might prevent infection or abuse, but you will still be hassled by these problems time and again, to say the least.

There's little you can do to prevent this, except to understand that each of us who uses a PC is responsible in a small way, for preserving the security of everyone around us.

After all, prevention is not only better than cure, it's the only cure!



vinit_aggarwal@jasubhai.com



Vinit Aggarwal

Assistant Editor

“Well-known software vulnerabilities, coupled with the easy availability of hacking tools, make it easy for even a six-year-old to hack your computer”

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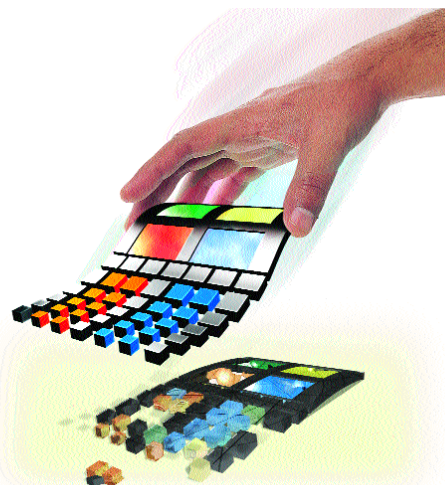
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ON THE CD

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interactive

HIGHLIGHTS

ABBYY FineReader Professional

Size: 33 MB, Type: Trial
Mindware\Software\Office

Astrum InstallWizard 1.90

Size: 2.2 MB, Type: Trial
Mindware\Software\Developer Tools

Backup Plus 7.0.2

Size: 8 MB, Type: Trial
Mindware\Software\System

Book Organizer Deluxe 1.9

Size: 4.0 MB, Type: Trial
Mindware\Software\Home

Fresh UI 4.0

Size: 615 KB, Type: Freeware
Mindware\Software\System

Hitman 2: Silent Assassin

Size: 48.3 MB, Type: Demo
Playware\Arena\Games

ICQ 2002a

Size: 3.88 MB, Type: Freeware
Mindware\Software\Internet

Media Jukebox 8.0.348

Size: 8.7 MB, Type: Trial
Mindware\Software\Multimedia

Moral Minus

Size: 8.03 MB, Type: Trial
Playware\Arena\FunZone

Mozilla 1.1

Size: 10 MB, Type: Freeware
Mindware\Software\Internet

Talking Greeting Maker 1.03

Size: 4.5 MB, Type: Freeware
Mindware\Software\Home

Tobi On The Run

Size: 4.9 MB, Type: Demo
Playware\Arena\FunZone

Winamp 3

Size: 3.4 MB, Type: Freeware
Mindware\Software\Multimedia

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PLAYWARE\ARENA\GAME TRAILERS

The *Game Trailers* section on your Digit CD

brings you video teasers of the latest and upcoming games. Get a sneak peek into the graphics, cool effects and gory creatures even before the game is released!

This month we bring you two Machinima videos—movies made completely using game engines. In



Comedy in Armour, a psychotic captain of the Red Army exterminates the Blue Army in a variety of bizarre but humorous ways. *Hardly Workin'* is a hilarious tale of two wandering lumberjacks and their quest to find employment. It's directed by Emmy award winner Paul 'IllRobinson' Marino and produced by the award-winning ILL Clan.

MUST-TRY SOFTWARE

Sun ONE Studio 4, Community Edition



Sun Open Net Environment (Sun ONE) is an IDE for Java developers. Based on the modular, open source NetBeans Tools Platform, the Sun ONE Studio IDE is ideal for building and deploying Web services across multiple hardware and software platforms. This modular, extensible IDE enables fast adoption of new technologies. It provides a highly scalable and robust foundation for traditional software as well as current Web-based applications, while laying the foundation for the next-generation distributed computing models such as Web services.

Size: 88 MB, Type: Freeware
Mindware\Software\Developer Tools

Paint Shop Pro offers the easiest, most affordable way to achieve professional imaging results! Don't waste your time with high-end professional products that cost a fortune and take a lifetime to learn. And don't settle for slow, cookie-cutter programs that tie you to templates. Retouch, repair, and edit photos with easy-to-use, high-quality, automatic photo enhancement features, create and optimise Web graphics with built-in Web tools and artistic drawing and text tools, design cool animations and much more.

Size: 30.17 MB, Type: Trial
Mindware\Software\Multimedia

Paint Shop Pro 7



America's Army: Operations

Developed by the US Army and a world-class team of Department of Defense experts in simulations and virtual environments, *America's Army* is an innovative, realistic computer game providing civilians with an inside perspective and a virtual role in today's premiere land force, the US Army.

Size: 260 MB, Type: Freeware
Playware\Arena\Games

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WEB SPECIAL



Technology@home

Have you ever wished you had a door that locked up by itself? A vacuum cleaner that you could control from your office? Well, your wishes are on the verge of coming true

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BY DEMAND



You get to choose what goes on Digit Interactive. This month, you have chosen:

- ▶ **Magenta II MultiMedia Tools** (10.13 MB) for Playware
- ▶ **Another War Demo** (232 MB) for Mindware

Expect these on the November 2002 CDs.

WEB SPECIAL

Perfect with Words

Learn the smart moves to become a whiz at working with word processors



VOLUME 2, ISSUE 10

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Another War Demo

Magenta II MultiMedia

hypothesis

iSCSI

■ What is it?

iSCSI (Internet SCSI) adapts the widely used SCSI standard for connecting hard drives to computers over a network connection such as a LAN or even the Internet. By carrying SCSI commands over IP networks, it is used to facilitate data transfers over intranets and to manage storage over long distances.

■ How does it work?

When a user sends a request, the operating system generates the appropriate SCSI commands and data request. IP packets are transmitted over an Ethernet connection. When a packet is received, it is separated into the SCSI commands and the request. The commands are sent to the SCSI controller and then to the SCSI storage device. Because iSCSI is bi-directional, it can also be used to return data in response to the original request.

■ What is its implication?

iSCSI has just been formally adopted and standardised. It builds over existing infrastructure, using SCSI hard disks, Ethernet networks and the Internet. Because of the ubiquity of IP networks, iSCSI can be used to transmit data over local area networks, wide area networks, or the Internet and can enable location-independent data storage and retrieval.

First JPEG, now MP3

The Fraunhofer Institute, developer of the MP3 codec, has announced that it will start charging licensing fees from users of the MP3 decoding algorithm (previously it charged only for the encoders). Red Hat has already removed all software packages from the next Linux release that would fall under the licensing scheme proposed by the Institute.

The fees of \$0.75 (approx Rs 37) per decoder would add up to \$16.5 million (approx Rs 82.5 crore) for downloaders of Winamp from Download.com alone. Fraunhofer also allows a one-time fee of

\$60,000 (approx Rs 30 lakh) for unlimited use of the decoder. Encoders and users of the mp3PRO software are taxed more heavily, with a levy of \$2.50-\$5 (approx Rs 125-250) per encoder. Use of the mp3PRO decoder software plus patent rights requires \$1.25 (approx Rs 62)

per unit or \$90,000 (approx Rs 40.5 lakh) up front.

A consequence of these fees has been a resurgence in interest in competing free audio codecs. The Ogg Vorbis codec is a patent-free, professional audio codec that has been gaining steam recently. In an open letter to Thomson Multimedia, creators of the MP3 licensing scheme, Vorbis.com has stated its unabated glee at their actions, thanking them for the free publicity and noting that traffic to its site has increased substantially since the revocation of the free-licensing status of the Fraunhofer codec.



ILLUSTRATION: Mahesh Benlar

Power-up Mac

Apple revealed souped-up Power Macs in the first major upgrade to the professional system in about a year and a half. The new Power Macs sport faster memory and speedier system architecture. Apple also reintroduced dual-processor systems. Processor speeds range from 867 MHz to 1.25 GHz.

The new systems come with a 167 MHz system bus, but are still well behind a 533 MHz bus for the fastest Pentium 4 systems. Greg Joswiak, Apple's senior director, defends, "Our architecture is tough to compare to

a PC bus, because we don't run everything off the same bus the way a PC does."

The changes also include a move to 266 MHz DDR SRAM and Mac OS X 10.2 pre-installed. The biggest incentive for purchasing a Power Mac would be the dual-processor architecture—Mac processors max out at 1.25 GHz, compared to more than double that for PCs.

Support for a second optical drive and up to four hard drives complete the circle.

The 1 GHz system comes with an 80 GB hard drive, DVD recording drive and 64 MB ATi Radeon 9000 Pro.



Linux wins

In New York's Hudson Valley region, IBM's fabrication plant will be the only one that, when fully deployed, will produce chips using all three of the industry's bleeding edge technologies: low-k dielectrics, copper interconnect and silicon-on-insulator-based transistors. IBM will build chips on 12-inch wafers that pass from station to station in wafer pods on centrally controlled, automated, elevated rails. To run this, Linux was evaluated against a Windows-based system and performed flawlessly for three months, whereas the Windows-based system failed after six or seven days.

Google blocked!

Chinese authorities are feared to have blocked access to the popular search engine, Google (www.google.com). The reason? Google seemingly provides a window to pornography and could also compromise national security. In November last year, the Chinese Government shut down 17,500 Internet cafes for failing to block sites considered subversive or pornographic. Google says it is trying to resolve the problem. Less than a week after

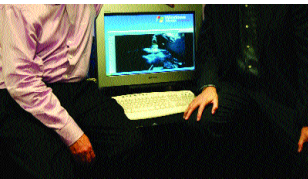
banning Google, even Alta-Vista.com was found to have been blocked in China. These measures come ahead of a Communist Party meeting in November during which the country's leadership is expected to be overhauled. Yahoo! is still accessible though—it is



one of the 130 major Web portals that recently signed a voluntary pledge not to post information that would jeopardise state security and disrupt social stability in China. But there's a humorous twist: someone has set up a Google search mirror—literally! Called elgooG, this beats the Chinese firewall to the outside world. It displays all of the text backwards, requiring you to use a mirror to read it! Check this site at www.all-tooflat.com/geeky/elgoog/.

Released: Windows Media 9

Microsoft has announced the release of the much awaited Windows Media Series 9. It brings advances in usability and performance. Buffering



Bill Gates and James Cameron at the launch of Windows Media 9

time on streaming media has been reduced greatly, while audio and video quality has been increased to television quality. It integrates several online content subscription services, including Pressplay, the joint venture between Sony Music Entertainment and Universal Music Group. Microsoft's Digital Rights Management software maintains copyright policies.

statattack

INFOGRAPHICS: Jaya Shetty



Insecure in a Flash

Macromedia has warned that its Flash Player has a vulnerability that could allow attackers to run malicious code on Windows and Unix-based operating systems. More than 90 per cent of PCs are estimated to be capable of playing Flash content. The file-execution vulnerability, discovered by eEye Digital Security, uses a modified header in a Flash movie file to create a buffer overrun, in all versions of Flash Player earlier than 6.0.40.0. The malformed headers can only be created by editing the file with a binary editing tool, and not with the Flash authoring tool. Not only are browsers affected, but also applications capable of reading embedded SWF files, including e-mail and instant messengers. A programmer has also warned that a flaw in the XML functionality of Flash Player 6, and possibly other versions, could allow an attacker to read files on a person's hard drive. This bug has been fixed in newer versions of Flash Player. The latest versions of Flash Players for all software are available at www.macromedia.com.

Digital signatures

Digital signatures can easily be forged and therefore can't be trusted in Outlook because of a certificate chaining issue plaguing Internet Explorer. SSL certificates can be signed by an untrusted intermediary without warning to the end user. Thus, an attacker can sign an untrusted certificate with a trusted, intermediate one. Neither Internet Explorer nor Outlook check basic constraints and the end user is never warned that the certificate chain is questionable. SSLsniff, a tool written to demonstrate the vulnerability, can be used to intercept a third party's SSL session where the victim and attacker are on the same LAN. Microsoft has begun patching the security flaw; you can find the patches for Windows at www.microsoft.com/technet/security/bulletin/MS02-050.asp.

Encrypted=safe

A curious flaw in a PGP's handling of file names could allow an attacker to run a remote Windows machine as Administrator with a malicious, encrypted archive. File names over 200 characters in length cause a buffer overflow, which, if exploited properly, could allow running arbitrary code on the target machine. This code could give the attacker complete control of the PC. A typical attack would involve sending an encrypted archive to a victim via e-mail. The flaw affects PGP Corporate Desktop 7.1.x. for Windows. A patch has been developed by former PGP owner Networks Associates, and is available at www.nai.com/naicommom/download/upgrade/patches/patch-pgphotfix.asp.

■ New Kodak cameras less dependant on PCs to share photos ■ MSN Messenger for Mac to be released next year ■ Broadband to hit South Pole by 2009

followup

New unbreakable copy-protection scheme

JVC has announced that it will use a CD-ROM copy protection scheme based on collaboration between itself and Japanese company Hudson-soft. The scheme, called Root, records an encryption key when a CD-ROM is created in such a way that an error is generated when any



attempt is made to play back software from copied disks. It will be built into CD-ROMs so that copying to CD-R/RW disks cannot circumvent it. The technology prevents encryption keys being read when copied disks are played back, and JVC hopes to sell mastering units incorporating the copy protection to other manufacturers. The same technique can also be used to prevent copying of DVDs and other media.

snapshot

Of the total
1.6 Gbps of
bandwidth avail-
able in india, over
50 per cent is

Source: The Financial Express

Processor wars

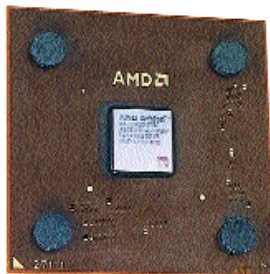
AMD is all set to introduce a four-way product, which will provide a choice of x86-based, four to eight-way servers. AMD has previously shown single and dual-processor configurations of its eighth-generation processor family, running both 32-bit and 64-bit operating systems. The AMD Opteron processor is designed to scale from one to eight processors with no external logic required. This can reduce the cost and complexity of building servers and workstations and increase scalability.

Modern micro-chips in use today are based on 32-bit technology and so far, the maximum frequency the developers have reached on

the Pentium 4 is 3.5 GHz.

Intel, in the meanwhile, is cutting prices on its processors. When it introduced its 2.8, 2.66 and 2.6 GHz Pentium 4s, it notified resellers of the price cuts, which apply not only to boxed desktop chips, but also to notebook, server and workstation CPUs. There are also rebates on boxed motherboards. The biggest drop is

on the 2.53 GHz Pentium 4 using a 533 MHz front side bus, which amounts to a staggering 62 per cent of its original price. Intel is also currently working on Banias, Intel's first processor for laptop computers that it has designed from scratch.



Quakecon 2002

People travelled from around the world to the Mesquite Convention Center, Texas, to what is known as the Mecca of Network Gaming Events. Quakecon (August 15-18) attracts the best of the best



in the online gaming world, and they come to take a shot at the \$1,00,000 (approx Rs 50 lakh) that's at stake. id Software's continued commitment to Quakecon is perhaps best thought of not only as a sign of gratitude, but as a real chance to see the progress that fans have made in playing the games. It also gives

their fans the opportunity to interact with the developers of the software and mods, which of course leads to some very interesting developments.

A variety of sponsors support LAN gaming and have a chance to reach some of the consumers who are the most difficult to nail down. For four days, these sponsors take the time to talk to the gamers and introduce them to their products. The importance of the gamer market is often overlooked, with many people believing the notion that gamers are not professionals. In reality though, they have regular day jobs and many of them are involved in making buying decisions.



heroes

Gaming Icons

Little Mario has made \$7 billion in revenues, Nintendo said, as it announced the latest incarnation of *Super Mario Sunshine* for the Game Cube. Harrison Ford's films have earned only \$5.6 billion worldwide. Nintendo claims Mario to be the 'leading man' of the entertainment industry!

Print media

Ziff Davis Media (publisher of *PC Magazine* and other technology magazines), had filed for Chapter 11, having been one of the hardest-hit by the advertising slump in the industry. It has now announced that 95.1 per cent of its bondholders had approved its financial restructuring, enabling them to avoid filing for bankruptcy.



zeroes

Jaguar, OS X 10.2

Apple's new OS costs \$129 (approx Rs 6,450), and there is no upgrade-pricing plan. If you've bought a new Mac or the earlier OS X before July 17, you pay a \$20 (approx Rs 1,000) 'fulfilment' fee, otherwise you pay the full price.

Windows

Dell Computer is making Windows optional for some of its business desktops. Dell will introduce the n-Series corporate desktop and workstations that ship without Windows or any other operating system pre-installed. These computers will include a copy of a free, uninstalled operating system, FreeDOS. This move is in direct response to a rising demand for PCs without OSes.

Unhappy consumers

Consumer Reports magazine, which recently polled subscribers to its Web site, said that the results show customer satisfaction with technical support is down across the PC industry. "Consumers are particularly concerned with increased time spent on hold as well as dropped calls to technical support," said Mark Kotkin, assistant director of survey research for *Consumer Reports*. The lone bright spot in the survey was Apple, which grabbed the top spot with a score of 74 out of 100 and was the only company to earn

higher marks this year than it did last year. Dell and Gateway were neck and neck with scores of 65 and 64, respectively. HP was fourth with a score of 56, while Compaq Computer received a score of 52.

Customer service has been an area of focus for HP and Compaq, HP spokesman David Albritton said. "We've definitely seen that we've needed to improve over time," he added, and claims that HP's own analysis of customer service data differs from the study. Albritton said the company



has already taken steps, including increased training for customer service workers as well as shifting schedules so more people are on the phones during peak calling times. Other vendors are of a similar opinion, but are quick to put the blame on new, untrained staff and high PC penetration.

Greece bans all computer games

The government of Greece has made a heroic effort to ban all electronic games. Something as innocent as playing *Pac Man* is now a crime with penalties of up to three months in jail and a fine of 10,000 Euros. The purpose is to crack down on Internet gambling, which already was illegal. Improved enforcement of the existing law is all that was needed, but unfortunate-

ly, the Greek government is "incapable of distinguishing innocuous video games from illegal gambling machines,"



according to an article in the English-language *Kathimerini* newspaper.

Earlier the Greek government had outlawed all LAN and Internet games and any kind of game that is supported by electrical, electronic or software means in Internet cafes. If anybody had something looking like a game on the screen, the cafe manager would be liable for arrest.

Audiogalaxy returns

Audiogalaxy (www.audiogalaxy.com), one of the largest sources for downloading hundreds of genres of MP3 music, which had shut down due to piracy claims, is back. It has launched a new subscription service called Rhapsody which gives you instant, unlimited, on-demand access to over 17,000 albums. The service will cost \$9.95 (approx Rs 500) per month, which pays royalties for the music. A Rhapsody subscription features a personal music library to organise music by artist, album, track, playlist or radio station, custom playlists that can be shared and many other features, in addition to Audiogalaxy's powerful music search and editorial recommendations.

snapshot

Internet penetration to cross **11.64 million** in Asia by 2003

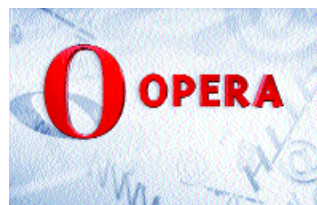
Source: Gartner

A brand new Opera

Opera, the self-described fastest Web browser, is on the verge of releasing a beta version of Opera 7, which will resemble its predecessor only in looks. The rendering engine—the heart of the browser, which interprets and displays HTML pages—has been rewritten from ground up over the past 18 months.

Dubbed Project Presto, the rewritten browser is designed to make Opera both faster and more compatible with the Document Object Model

(DOM), an emerging standard technology that lets scripts such as JavaScript act on individual elements of a Web page.



"There were some things that were difficult to do with the old engine, particularly with

changing elements in pages," said Opera Software co-founder and CEO Jon S. von Tetzchner. "We felt we needed a rewritten engine to have something that works with all the DOM that is coming out."

Tetzchner resisted comparisons to Netscape's gamble in 1998 to cast off its legacy code in favour of a new browser that would be more in line with industry standards and more easily separable into components. "Our old engine wasn't that bad," Tetzchner

said. And indeed the Opera rewrite has proved to be far quicker and less painful than Netscape's, which dragged on for four years before producing marketable results. Opera Software employs about 60 engineers. When Project Presto began 18 months ago, two of them were working on it; now a majority have left the legacy Opera code behind.

In addition to the new rendering engine, Opera 7 will include rewritten mail and news clients.



Xbox pirates

Microsoft may go back on an earlier pledge to not use its Xbox Live online gaming service to crack down on mod chips—chips that modify the Xbox console to run copied game discs and unlicensed software. The new agreement states, “Microsoft may...retrieve information from the Xbox used to log on to Xbox Live as necessary to operate and protect the security of Xbox Live, and to enforce this Agreement.” Xbox hackers seemed unconcerned, saying mod chips offer a number of safeguards, including on/off switches and firmware that can be easily modified to bypass any new security measures. “The newer mod chips can already defeat any attempts by Microsoft to detect them, as they are firmware-upgradeable via a PC parallel port,” writes one mod chip enthusiast, Tony Dalton-Richards. “I don’t think this will affect modding very much,” adds Dan ‘SiliconIce’ Johnson, founder of the Xbox-Hacker Web site (www.xbox-hacker.com). “Mod chips can simply be switched off when the user wants to play on Xbox Live.”



snapshot

Number of cell phone users in India to climb to **10 million** by the end of 2002 and **120 million** by 2008

Source: Reuters

Turok or not Turok

Acclaim Entertainment is on what sounds like the most bizarre branding exercise for their next first-person shooter, *Turok: Evolution*, released on September 1 this



year. If you legally change your name to Turok, you get a shiny new console, a truckload of games, \$785 (approx Rs 39,250) plus the cost of

getting your name changed to and back from Turok!

Acclaim will also award the parents of the first child born on September 1 a \$10,000 (approx Rs 5 lakh) US savings

bond if the child is named Turok for one year, on the condition that it is born in a US hospital.

Acclaim has a similar promotion in the UK, where it is asking five British adults to legal-

ly change their name to Turok for one year, in return for around \$800 (approx Rs 40,000) and the complete Turok game collection.

A new PC rating method

AMD challenges the most common way of rating computer performance, what it calls the ‘megahertz myth’. It has been urging consumers to question the notion that a PC with a faster chip will always outperform one with a slower processor. They argue that a less expensive machine with one of its own 1.8 GHz Athlon XP 2200+ processors can perform

as well or better than a PC using Intel’s 2.26 GHz Pentium 4 chip. AMD says that standard benchmarks tell only part of the story and that trying to juggle all of them only muddles buyers, especially first-timers. “Lightbulbs have better information about them at the point of sale than PCs,” says Patrick Moorhead, vice president of consumer advocacy for AMD.

quoteworthy

“PCs will communicate even more than they do today and cell phones will compute even more than they do today”

An Intel spokesman, when unveiling details about its first processor for laptops, named Banias.

“They (Microsoft) believe they are so big that they can take away what consumers want. They believe their size and momentum can drive an entire industry in a proprietary direction with technologies built by Microsoft. That direction is very much opposite to where most of the industry is going.”

Frank Casanova, Apple’s director of QuickTime product marketing, referring to Windows Media 9 and

tomorrow's technology

Dual-core chips from Intel

Enhancements in chip fabrication techniques have resulted in smaller transistors on processors and this will result in some interesting architectures in tomorrow’s processors. Today’s processors contain a single core with associated processing subsystems such as cache and data controllers. However, with the ability to pack greater number of circuits on chips, fabricators are trying to integrate two

separate cores into a single processor package. The low manufacturing cost, as compared to single-core processors of the same power, will ensure that dual core technology will eventually bring multiprocessing power to the desktop. Since the fabrication will be on the same chip, the speeds will be significantly higher than of current processors.

This is already becoming a reality—processors like HP’s

new RISC-based PA-8800 processor (code-named Mako) integrates two complete PA-8700 cores, their integrated L1 caches and L2 cache controller on a single chip, along with an off chipset of L2 cache SRAMs. It has also been publicly disclosed by AMD that its new Sledgehammer processor will have two cores. Intel is, however, indicating that it would be ready for dual-core Itanium processors only by about 2005.

Missing in action

Hey guys,
I am very disappointed that you have not bothered to include *America's Army* in your Playware CDs. How can you ignore a game which is free for download and is based on the legendary Unreal 3D game engine?! Please don't say that you can't spare 240 MB of space on your Playware CD.
Keith Sebastian
Via e-mail

Hi Keith,
Ordinarily we don't carry such large software since we do have 'limited' space on the CDs and need to cater to a large audience that has varying preferences and needs. Luckily for you, *America's Army* was the winner of the August-September 2002 By Demand poll, and is being included with this issue of Digit. Find it in the Arena section of the Playware CD.

digit

Gaming for a living

Dear Vinit,
I have just completed computer engineering and now want to enter the world of computer gaming. The problem I am facing is the lack of information regarding this field. My first concern is to do something in India and I have contacted many people, including professors at MIT, about the animation field, but they know little. Please suggest something because I am totally confused and there is no guidance.

Jaidev Singh
Via e-mail



Dear Jaidev,
In a nutshell, game development is made up of three streams: design, programming and art. The safest route you could take is by going the animation way (art). A good animator is a very important asset to a game development company. Moreover, the skillset carries over to the film and broadcast industry (ads, serials and the like). Of course, animation is not an easy subject to tackle—it requires sound knowledge of biology, physics and mathematics. Plus you would need to familiarise yourself with 3D modelling packages such as 3D Studio Max and Maya. For more information, check out www.gamedev.net.

digit

Cookie technology

Dear Vinit,
A reader wrote to you regarding advertisements of TV brands and you replied that these are a part of technology and it also reduces your production cost, which is why you are giving them advertising space. Now you are providing space for Britannia cookies since two issues. Are these cookies digital or related to technology in any way?

Pravesh Tabaria
Via e-mail

Hi Vinit,
Though I don't like the increasing number of advertisement pages in Digit, the ads are helpful in keeping me informed about the latest products. But I fail to find a link between Britannia's Pure Magic cookies and technology.

Kunal Datta
Via e-mail

Dear Pravesh and Kunal,
There's no digital technology in Britannia's cookies—they just taste good :-)

digit

The (in)visible player

Hi Digit,
Your hardware test of MP3 players in the September 2002 issue was very good, but you missed out the Mercury MP3/CD/VCD Player, which was advertised just next to the test! Please test it because I want to buy an MP3 player and my purchase is dependent on your recommendations.

Anuj Goyal
Via e-mail

Hi Anuj,
Yes, it did look quite silly to have an MP3 player being advertised with-in the test, especially when it's not being reviewed! But this was a pure and simple logistical error—the Mercury player has been reviewed in this issue on page 82.

digit

Your vote counts

Q. Which amongst these four comparison tests would you like covered in an upcoming issue of Digit?

Linux	Gaming	Mobile Computing
40%	44%	16%

Whew! This was a close one, but then games it is!

This month's question:

"What type of interface would you prefer on the Digit CDs?"

- HTML
- Shockwave/Flash
- Doesn't matter. I'm only interested in the software

Log on to www.thinkdigit.com and vote on it

Behind the times

Dear Vinit,
I always expect the latest versions of free ware software and impartial review from Digit. Time and again, you have stated in your articles that Winamp is the best MP3 player. It is therefore quite shocking that you continue to provide Winamp 2.80—aren't you aware of the new Winamp 3? Not only is it very good, but there are loads of new plugins and skins already available. Why are you still stuck with Winamp 2.8? Is it because you want to promote MUSIC-MATCH? There must be some logical explanation for the lapse.

J. R. Pethe
Via e-mail

Dear Mr Pethe,
We are aware of this. In fact, Winamp 3 was mentioned in last month's article, 'The Enter tainers'. But it was still in beta and there were several warnings on the Winamp Web site. As we don't carry beta software on our CDs, we were waiting for the final release, which incidentally has been included in the Mindware CD this month. The Playware CD still carries version 2.8 to ensure compatibility with the various Winamp skins in the Gallery section.

digit

Snail office

Dear Editor,
In your September 2002 issue you have written about Sun StarOffice 6.0 in the Bazaar section. We have been using this software in our company and there are a lot of problems that we have been facing. First of all, it's quite slow when opening any file. Second, we can't open any DDF files. We have to convert them to CSV before opening them. Third, the mail merge is extremely slow and the system hangs while using it. The only consolation we get is that StarOffice takes less space to save the document. I think Sun should provide some solution to overcome these problems and make this software more user-friendly.

S. R. Tandon
Via e-mail

Dear Mr Tandon,
You are right. StarOffice does have a few problems and it isn't as easy to use as Microsoft's Office XP or even Corel's WordPerfect suite. That's the reason our review wasn't too favourable and we only awarded it an overall rating of B. But StarOffice is ideally suited to those who want a cheaper alternative to Microsoft's Office suite. With respect to the problems you are facing, you can log on to <http://www.sun.com/contact/> and forward your complaints directly to the company.

digit

Short Bytes

Con job

Hi,
The graphics card test (August 2002) was superb. But you missed out one important thing—the top 10 ways to hoodwink your dad into buying that new graphics card! I'm looking to upgrade and can't think of a suitable excuse. Help!

Arjun Ghose

Via e-mail

Dear Arjun,
How about getting a job and paying for it yourself?!

Help is at hand

Hi Vinit,
I read your September editorial on Helping Hands and am planning to work as a bridge to help underprivileged children in India become computer literate. I appreciate your work in this direction.

Uma Maheswaran

Via e-mail

Sound bytes

Dear Vinit,
Your September issue was a wonderful experience, especially the detailed test on soundcards. I am an acoustic engineer and I'm sure that your magazine will make more people aware about the less-heard acoustic industry.

A. X. Devaprasath

Via e-mail

Kudos

Dear Digit,
Your September issue was fabulous, especially the test drive section where you reviewed everything in the PC audio world. 'Smart@work' was also a brilliant idea.

Amit Kundalia

Via e-mail

Head²Head: Cover models?

Hi Vinit,
In your anniversary issue, you used a female model on the cover. At that time you had said that for sleek hardware (like mobile phones) you will use female models, but now you are using female models even for printers. Does Digit have to resort to eye-catching models to attract buyers?

Ajay Datta

Via e-mail

Dear Sir,
You have changed big time in the past few months. What surprises me most is that you show models in place of product shots on the cover. I have always thought people use models when they don't have faith in the product itself. Digit doesn't need models! And yes, I am one of those who think an iMac is hotter than Aishwarya Rai!

Sushubh

Via e-mail



Dear Vinit,
I just renewed my subscription from September 2002 to August 2004. As soon as I received the September issue, I realised that I had made no mistake. I simply can't do without Digit. The cover model Raksha Kapoor was a real cutie. I kept gawking at the cover!

Alok Moghe

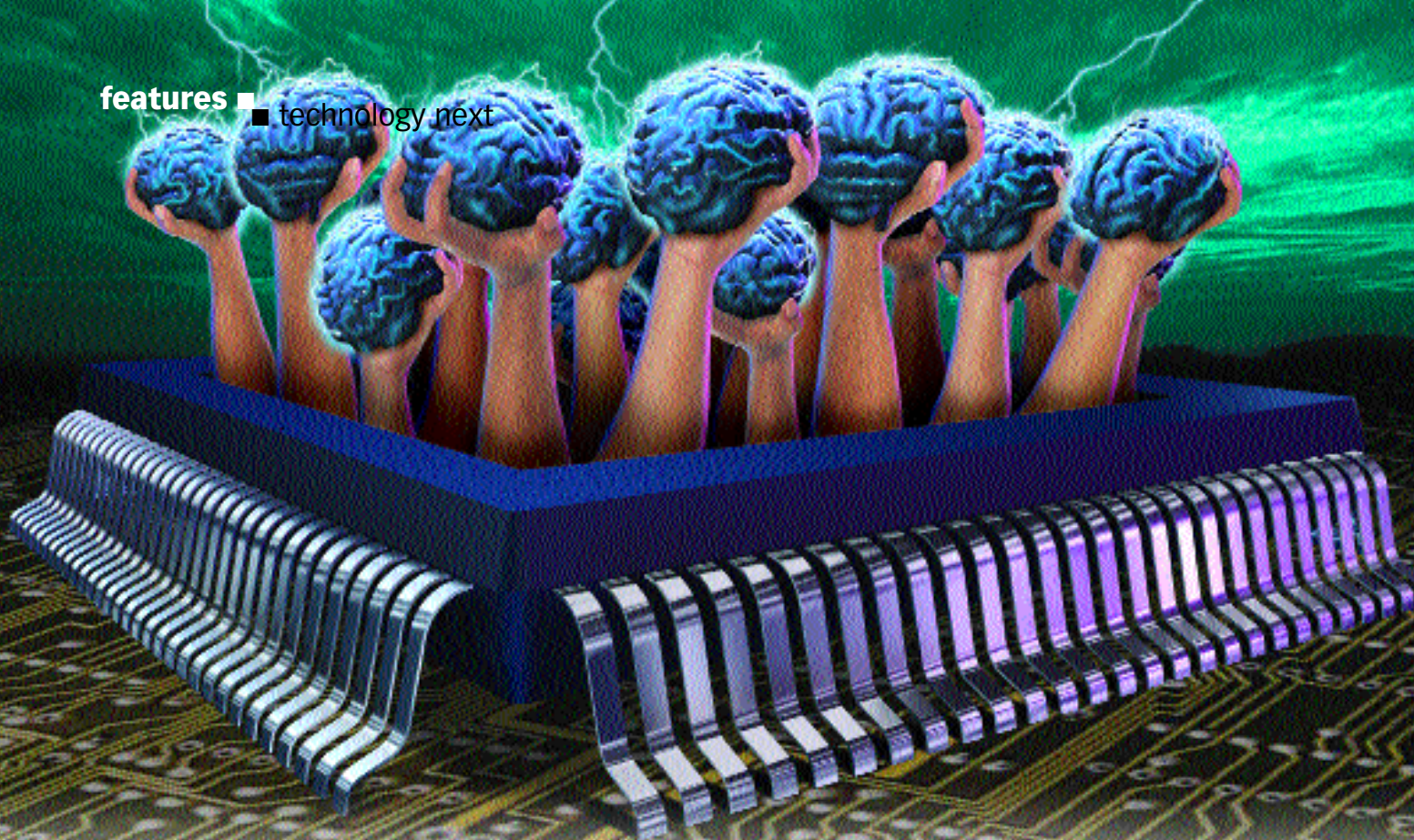
Via e-mail

Hello,
The cover of the September issue is very good and attractive and the model on the cover is damn cute. Her charming face makes the cover very attractive and the green colour adds even more life to the cover. Your anniversary issue's cover was radically different and marvellous, but this one is even better.

Jack

Via e-mail

Send your letters marked 'Readers Letters' to the Digit office:
D-222/2, MIDC, TTC Industrial Estate, Om Sagar Building, Nerul, Navi Mumbai 400 706,
Phone: 022-7629191/9200 Fax: 022-7629224
E-mail: readersletters@jasubhai.com



GRAPHIC DESIGN: Ram

Memory Mat-

Computing at the speed of thought: a look at the next step in the evolution of cheap, fast and dense solid-state memory

First there was the race for greater density, then came the quest for newer technology, heralding an accelerated adaptation of RAM. This almost quick-time implementation of memory catalysed growth in other areas of technology, rushing us to the age of nanosecond computing.

If it were not for these advancements, tiny cellular devices with 500-address memories, PDAs that let you watch movies and MP3 players that store your entire music collection would never have seen the light of day. In more familiar territory, even computer memory has seen numerous architectural iterations—from EDO RAM to the numerous flavours of SDRAM, all the way to RDRAM and DDR.

The need for speed

In the continued quest for the perfect memory, companies are struggling to

achieve the golden balance between factors such as data transfer speed, retention, density and low costs. However, each implementation of RAM has greater strength in some of these areas than others. Today's computers are composed of different types of data storage—the hard disk that stores the permanent data, the RAM (either SDRAM, DDR or RDRAM), which is used to store programs that are loaded and running, and finally, SRAM that is used in high-speed implementations such as the cache on processors.

RAM (SDRAM, DDR and RDRAM) as we know it today, can not retain data once the power has been switched off—this is a definite shortcoming. SRAM is significantly faster than other forms of RAM but is expensive to produce on a very large scale, which is why it is used only in small quantities in computer sys-

tems. Though manufacturers have figured a workaround to the problem of data loss in case of Flash RAM, this kind of RAM has an associated life cycle before it begins to lose its ability to retain data.

While the architecture of each solid-state storage technology differs, they are still fabricated using the same fundamental design. This is the problem that is throttling the power and functionality in today's computing applications—be it on the desktop or on mobile devices, and this limitation is the main driver of the innovations in fabricating newer forms of volatile storage.

The search begins

Considering the overall size of the memory chip market (\$25 billion, (approx Rs 1,25,000 crore) in 2001, even in the face of recession and sagging economies), it is of little surprise that some of the biggest →

names are on the hunt for next-generation memory. While this race has been



in the running for well over a decade, it's only recently that a headway has been made in the implementation of these technologies. Giants such as IBM, Infineon and Motorola are in the lead, being specifically involved in the research of a new form of solid-state memory called Magnetoresistive RAM (MRAM). This type of RAM uses principles of alignment of magnetic particles as the basis for storing zeroes and ones in a digital system. With the advancement of magnetic sensing technologies (that are, incidentally, also used in hard disk drives), smaller magnetic fields are capable of being sensed with far greater accuracy than before, allowing for greater densities in storage system. (See box, 'MRAM: Saying Bye to Bootup?')

Another new solid-state memory

technology is Ferroelectric RAM (FRAM). Though it sounds similar to MRAM, this technology uses principles of electric currents to change the polarity of ceramic crystals (and not metallic materials, as the name suggests), which is the principle element for storing digital information. The advantage is that it retains data even after the power is switched off. These crystals also have significantly lower power requirements, making them ideal for mobile consumer devices. Recent



developments in this field have improved the number of times these chips can store data with lower manufacturing costs and increased densities. David Boudurant of Ramtron says that they are only now beginning to evaluate what they can accomplish from the enhanced manufacturing processes.

One very interesting technology that spells volumes for solid-state storage is 3D memory. Until now, the fabrication process of silicon-based memory consisted of layers of microscopic components being fabricated on two-

dimensional surfaces. With 3D memory, scientists have found a way to extend the fabrication process such that the microscopic components (such as transistors and capacitors) can be stacked on top of one another resulting in significantly higher storage densities per unit area of fabricated silicon. This directly spells lower manufacturing costs per megabyte. This concept has been around

for about a decade, but only now when fabrication technologies have been so vastly improved is it viable to put it to practise. This is possible due to a process called chemical mechanical planarisation where silicon surfaces are prepared for vertical stacking of microscopic components. A form of this process is already being used to manufacture flat panel displays. Prototypes of this technology have demonstrated speeds of the order of milliseconds—faster than today's hard disks, but still way slower than



MRAM: Saying Bye to Bootup?

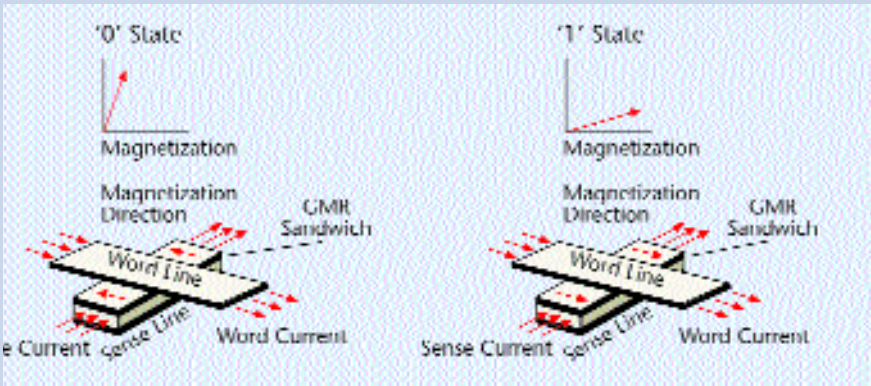
This type of RAM was born out of the same cast as the hard disk drive. Using a phenomenon called Giant Magnetoresistance (GMR), which was first developed by IBM, very small magnetic fields can be stored and sensed reliably and quickly.

MRAM uses the same principle where similar types of GMR materials are used to fabricate arrays of microscopically small magnetic elements. The orientation of the magnetic field in these elements (North or South) determines whether it is carrying a digital zero or one. Each GMR cell is a sandwich made of special metal-

lic materials (like iron and chromium). In an MRAM cell, there are parallel rows of microscopic wires above and below the magnetic sandwiches. The ones above run parallel to the sandwich while the ones below run perpendicular to it, looking much like the weft and warp of a fabric loom. In its normal state, each magnetic element will have an inherent charge in it. If a current is passed through the neighbouring wires, this magnetic orientation can be changed and thus the data can be modified and also written into the element.

While reading data from these elements, a current is passed through the sandwich and the magnetic resistance is measured—a low resistance signifies a zero while high resistance signifies a one. This process of reading does not disturb the magnetic condition of the cell.

The inherent advantage with MRAM is that since it is based on the principle of magnetism, it retains whatever information is contained in it even after power is switched off. Additionally, unlike conventional DRAM, these elements do not need an electric charge to retain the information—it is only needed during read-write processes. Hence, power consumption of these devices is fractional compared to that of DRAM, which needs to be continually refreshed in order to retain data. Finally, with the absence of the delays associated with transferring electricity between the storage elements for retaining the information, MRAM is expected to be up to 30 times faster than DRAM. With these characteristics, MRAM is poised to give rise to a new breed of instant-on computing devices.



PHOTOGRAPH BY JAY A. SHERRY

Ramped up RAM

	MRAM	FRAM	Ovonic memory	3D memory	DRAM	SRAM	Flash
Density	High	High	Medium	High	Medium	Low	Medium
Technology	Giant Magnetoresistance	Ceramics	Crystalline state change due to heat	3D fabrication and chip design	Silicon charge store capacitance	Silicon transistor flip-flops	Charge storing transistors
Data transfer speed	Very high	High	Medium	High	Medium	Very high	Low
Cost of implementation	High	High	High	Medium	Low	High	Medium
Time to implement	2-5 years	3-5 years	4-5 years	3-5 years	Already present	Already present	Already present
Applications	Desktops/portables	Desktops/portables	Embedded systems	Portables, Flash replacement	Desktops and portable PCs	System and processor cache	Portable digital devices
Companies involved	IBM, Infineon, Motorola	Ramtron, Samsung, NEC, Infineon	Energy Conversion Devices, Inc	Matrix Semiconductor	Kingston, Crucial, Samsung, Hyundai	ST Microelectronics, Samsung	Intel, AMD, Sandisk

present-day volatile memory. Another problem is that the data can be written only once, much like a CD-R disk—there is no way data can be modified in this form of storage.

Smaller chip sizes translate into significantly lower manufacturing costs and this subsequently spells cheaper components to the end-user. Consider this case:

In most chip fabrication processes, there are usually about five bad spots in a silicon wafer. If this wafer were used to produce, say, 10 chips, this would imply that five chips would be faulty and would have to be discarded. However, if this same wafer were used to produce 100 chips, there would still be just five faulty chips in the batch. 3D fabrication will use a very small footprint due to the expansion in height of the fabrication process, and therefore this form of memory is expected to be significantly cheaper than other solid-state storage technologies today.

The next radical memory implementation is Ovonic memory. In this solid-state memory, heat is used to trigger a reaction in certain types of crystalline materials. These crystalline materials can exist in one of two chemical states that correspond to a digital zero or one. The factor that causes these states to change is the heat applied to these crystals. However, the main hurdle here is controlling the voltage in these devices—a state change occurs only when the crystalline material is heated

at about 600 degrees Centigrade, implying heavy power consumption. The upside is that the access time of prototypes of this technology has been logged at about 50 nanoseconds—about the same speed as today's DRAM, but slower than MRAM technology.


New horizons

Each of these new technologies has marked a new trail in the fabrication of volatile memory. With the inherent advantages seen in terms of performance and lowered fabrication costs and the plethora of applications these technologies can be put to, they seem all set to edge out the existing solid-state memories into oblivion.

In terms of performance, technologies such as MRAM have already demonstrated speeds that are magnitudes faster than existing solid-state memory standards. Once fabrication processes and yields get further improved, this type of memory will be seen in PC-based applications where large densities and performance is of paramount importance. Its low power consumption will also enable it to surface in portable and mobile devices like PDAs,

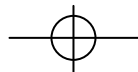
MP3 players and cell phones. Technologies such as 3D memory boast of inherent characteristics such as lower production costs per megabyte and very small footprints. The immediate applications projected by companies involved in these technologies have been in portable applications such as digital camera and PDA memory.

There are a handful of companies that are actively involved in these new memory technologies. Skymoon Ventures, the company that invested in RAM-BUS, is now funding Matrix Semiconductor, a prime pusher of 3D memory. Ramtron has been one of the proponents of the FRAM technology. This company was founded in the 1980s and released its first FRAM chips in 1992. Initial avatars of this technology produced memory chips where data used to degrade over time and could record information about only a dozen times before losing their storage ability. However, the newer iterations are far more stable and have lower manufacturing costs. On the MRAM front, IBM has partnered with Infineon and has already demonstrated chips operating at sub-10 nanosecond speeds.

In order to keep up with the advancements in other areas of computing such as processing and 3D graphics, the need for significantly faster memory that is both denser and lower in cost, is of increasing importance. Companies involved in the development of these technologies are determined to turn high-volume solid-state memory into commodity items found at the same store as your digital camera. This does not seem so far fetched when considering that our SIM cards are nothing but 32 K Flash RAM implementations! We are at the dawn of the revolution in volatile memory and the future can only get faster. 

MARCO D'SOUZA





features ■ droolmaal

Fujitsu PDS-5001▶▶ Bring home the movies

This plasma screen display incorporates a host of advanced technologies to display output from virtually any video source. The outstanding 500:1 contrast ratio produces exceptionally bright and realistic visuals and it also includes Fujitsu's AVM processor, which improves vertical resolution and reproduces natural movement without a stutter. Featuring a resolution of 1366x768 pixels, it displays true 1080i and 720p signals meant for HDTV, 480p signals from a DTV set-top box or computer, and the RGB output from a computer up to SXGA resolution. And with a diagonal screen-size of 50 inches, it's time to say bye-bye to the cinema hall.

Web site: www.fujitsu.com



Home of the future

Technological elves to help you around t

◀◀ eGO cycle2 An ego trip like no other

Made of anodised aluminium, the eGO is an environmentally electric ride with a classic design. The simple controls, wheels and a low centre of gravity make it safe and easy to ride. Its powerful onboard battery delivers enough juice for a 40 km range with a top speed of 37 kmph and the included charger provides a fast 4 to 5 hour recharge. The front suspension ensures a smooth ride and front disc brakes allow it to stop in a dime. It's made to carry 113 kg onboard and an additional 10 kg of trailer cargo—perfect for that quick trip to the grocery store.

Web site: www.egovehicles.com



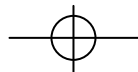
For the ultimate Hi-Fi experience,
PRO FX Audio Equipment
with technology from Denon.



CD-CD-R/CD-RW Recorder
CDR-W1500



DVD Video Player
DVD-1100



Klipsch Quintet Micro Theater

It's dynamite!

These tiny monsters pack quite an acoustic punch, making them the perfect audio companion to your home PC or hi-fi system. With an built-in amplifier that pumps 225 watts, the system delivers awesome surround sound via its 5.1-channel system. Mere 7.5 inches in height, the satellites have built-in swivel stands that let you aim the speakers or mount them on a wall.

Web site: www.klipsch.com



LG Bagless Vacuum Cleaner V-C7070CT

The cleansing touch

The LG V-C7070CT promises to clean up the competition with its stunning looks and plethora of user-friendly features. With a 360 degree swivel hose for deep nooks and crannies, an automatic cord re-winder and filters instead of a dust bag, the V-C7070CT is more than just an attractive proposition. A suction power of 330 watts and seven layers of filters ensure that it keeps your sweet home dirt-free.

Web site: www.lge.com



▲ Crestron TPS-6000 ...and one panel to bind them all

The Crestron TPS-6000 is a home control interface that can be configured to control any device in your home, be it smart lighting, perimeter security, or audio devices. Based upon a 15-inch XGA TFT monitor, the device houses a surprisingly easy to use interface that is touch panel-based. Capable of wireless operation, it can also be ported to other locations in your home. With 16 MB of internal memory, Ethernet connectivity, and WAV playback capability, this device marks the culmination of your home of the future.

Web site: www.crestron.com



Double Cassette Deck
DRW-585

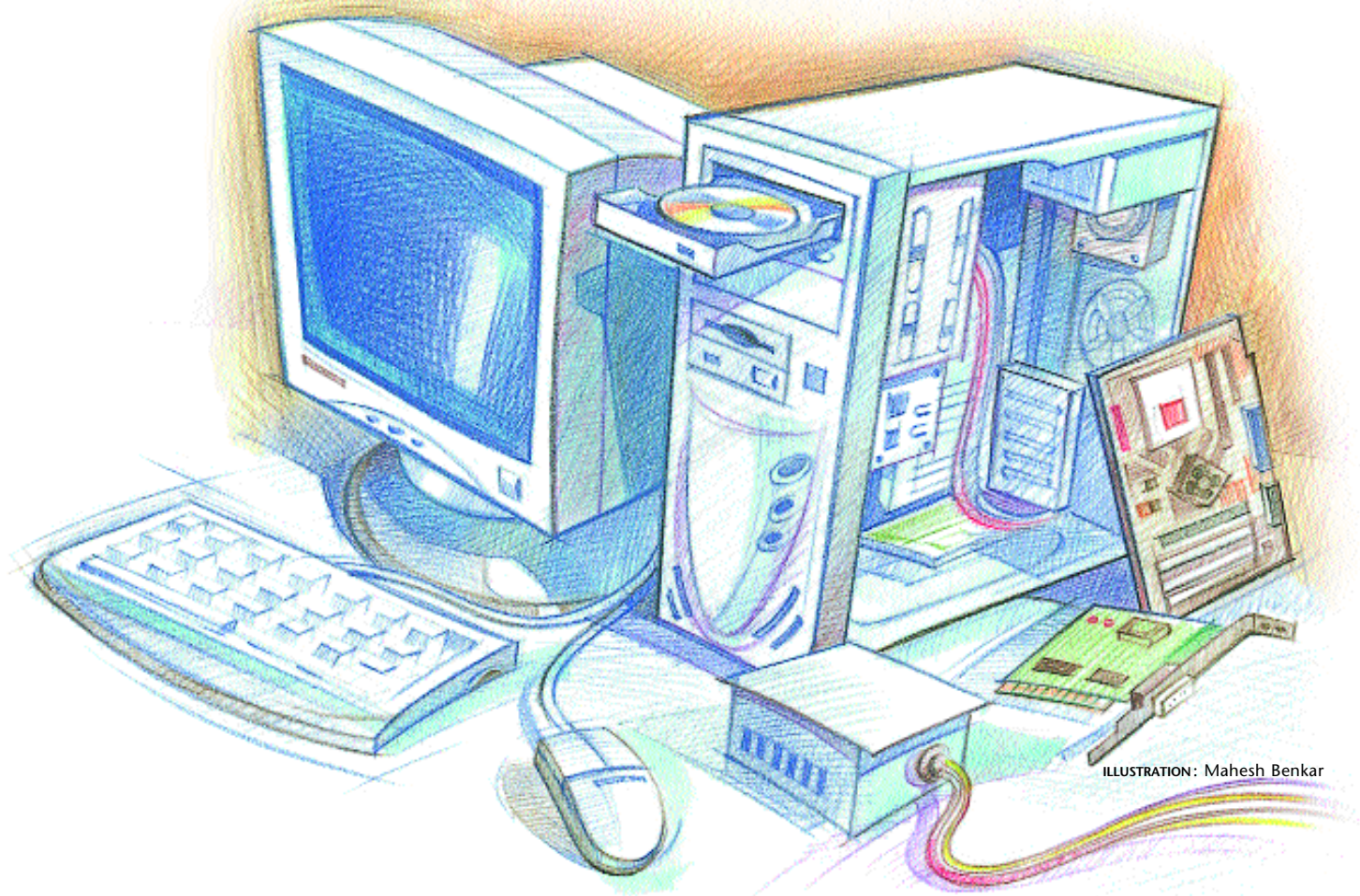


Stereo CD Player
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Made to Order

Looking forward to a machine built exactly to your satisfaction? Here's how to select the right assembler who will deliver your dream machine

A system configuration that reads a Pentium 4, a 7,200-rpm 40 GB hard disk drive, 256 MB of RAM, and sprinkled liberally with an assortment of hardware such as a high-powered graphics card, a 17-inch monitor, 5.1 surround sound speakers, an optical mouse, *et al.* All this at a price that is anywhere between 10 to 30 per cent cheaper than similar configurations of branded PCs.

Local assemblers push their concoctions in your face everyday in the form of newspaper advertisements and handouts at the railway station. They promise you the world, all within your earthly budget. While some deliver their promises, others will try to take advantage of an ignorant buyer.

But take heart—you can be the proud

owner of a computer that rivals the best in its price range and still be assured of after-sales support. All you need to do is ask the

right questions, do a bit of background research and look out for possible pitfalls.

Choosing the Right Assembler

- ✓ Chat with friends and relatives who have purchased computers from the same assembler. You can gain a wealth of inside knowledge from them regarding after-sales support and trustworthiness. Trusty assemblers should not hesitate to provide you the names of a few people who have bought from them.
- ✓ Don't buy from a vendor who tries to overwhelm you with technical jargon.
- ✓ Don't buy a computer from a store where the salesperson makes you feel like you're not worth their time—if this is the

way they treat you while you're buying a system, you could well imagine what after-sales service would be like.

- ✓ Find out if the company has any quality certifications such as ISO 9000—this would spell better quality products and attention to detail.
- ✓ Find out if the vendor has any other branches and what the strength of their after-sales force is. Preferably, choose a vendor that is located within an hour's driving distance from where the computer is installed.

Which assembler?

If you take a walk down Lamington Road in Mumbai or Nehru Place in Delhi, you'll come across a myriad of assemblers—those who are informative and help you with your decision, to those who are nonchalant and indifferent. Assemblers are quite a misinterpreted lot—most of them are perceived as wolves, waiting to swindle you out of your last paisa. However, in most cases, nothing could be further from the truth.



Vivek Louis
OWNER OF AN
ASSEMBLED COMPUTER

“Assemblers want to sell you the fastest moving hardware they have in stock—it is wise to check the price, suitability and the warranties of the hardware offered by a variety of assemblers before going in for a system”

Many buyers have come across assemblers who have been helpful and patient, answering each query.

The trick to finding the right assembler is to not rush through your decision—buying a PC is often a one-time exercise. Take your time making your decision and review a few assemblers. You don't have to go with the system suggested by the first assembler. Go with the one who gives you the best deal, not only with respect to the system, but also in terms of after-sales support (see box: 'Choosing the Right Assembler').

Most assemblers interact directly with the grey market and their *modus operandi* is markedly different from the way MNC brands do business. Profit margins are different for assemblers since they deal in bulk quantities, while access to hardware and a whole range of components enable them to bring the latest hardware into the market faster than most MNC brands. Also, being smaller players, assemblers are capable of offering much more personalised support to their customers than large companies.

The buyer's guide

To get the best out of the assembler, you must be clear about your hardware requirements. Though a little ambiguity is expected if you are a first time buyer, a customer who insists on the buzzwords

of technology without knowing how it will help him can be quite exasperating. "Most people ask for a computer for a given application like surfing. They only know key words like Pentium 4, 3D accelerated graphics, etc and convincing them to buy suitable system configurations and capabilities is very difficult," says Deepak Jotwani, proprietor of Future Shock, a Mumbai-based computer dealership. It's always a learning experience to know which component is compatible with

applications, then you would need to buy the fastest processor, with the maximum amount of RAM and hard disk you can afford. The scenario would be quite different if your priorities were reverse. Then you would do fine with a gigahertz-class processor, 128 MB of RAM with a good integrated graphics chipset such as an 845G-based Pentium 4 motherboard or an nForce-based board with a Duron processor.

Though most assemblers are helpful, it isn't a good idea to only depend on the assembler's suggestions regarding the hardware configuration that would be most suited to your needs. Assemblers tend to suggest only the hardware that they stock and there might be other hardware options that could get your job done at a lower price. With some background research on the best hardware suited to your needs, you can insist on your configuration. If the assembler doesn't have some of the hardware, you can always ask him to source it for you.

Very often, people tend to finalise the price of the system without taking into account the after-sales support and cost of the software. Inquire about the warranty period and the type of warranty (carry-in or on-site), so that you know how reliable your assembler is.

When it comes to software, you'll have to be a little wary. Unfortunately, most assemblers install the software without any regard for licensing issues. Make it a point to choose an assembler who provides you with legal OEM software—doing so makes it easier to obtain after-sales support on the software and upgrades. And it's the legal thing to do!

What do...		
...they say	...they mean	...you need to do
"It has a high-powered graphics card"	A TNT2 or integrated graphics solution that will just barely let you play the latest games	Find out the exact name of the graphics card and see if it suits your applications
"It's the lowest priced system among other vendors"	Sub-standard or very low powered components	Make sure that he isn't selling you secondhand or repaired system components
"Free printer/scanner/mouse bundled"	End-of-life peripherals that are on their way out of the market	Find out if these peripherals meet your need and have after-sales support that you would require later on
"Software installation extra"	Possibly pirated or outdated software with little hope of after-sales support	Go with vendors who offer lower-priced OEM versions of the software and whose cost is integrated into your system price

What kind of Buyer are you?

The demanding buyer

It's a very simple decision for you: you like the very best, cost be damned! You want the latest processor under your computer's hood, coupled with the most powerful graphics card and exotic peripherals such as alien-esque game controllers, blazing CD-RW drives, optical mice, etc. You corroborate specifications of hardware with review sites on the Internet and read every computer magazine in sight. You know your GeForce 4 from your GeForce 3 and know how to get it too!

Possible pitfalls: You often expect more than what your budget allows. Since you're trying to fit the best into your budget, beware of assemblers trying to sell you sub-specification devices. If you've paid for the fastest 40 GB IDE drive, make sure it is a 7,200-rpm drive and not a 5,400-rpm drive. Since you're spending a lot of money on exotic hardware, demand warranties on all the devices. Ensure that the assembler uses licensed or OEM versions of software. OEM versions are lower priced than retail software—negotiate with your assembler regarding the overall price of the system and make sure that this includes the cost of the installed software.



ILLUSTRATIONS: Ram

The price-conscious buyer

You are well aware that the tree outside your house will not sprout money to let you buy a Logitech WingMan Extreme Digital joystick. Money is of paramount importance—you will not spend a single paisa more than you have to and will bargain till hoarse on the price of the mouse! You've been to over 20 vendors and meticulously noted down the price for each piece of hardware in their inventory. You've inquired about their prices in

Singapore and Dubai and have an average understanding of them and what they're suited to.

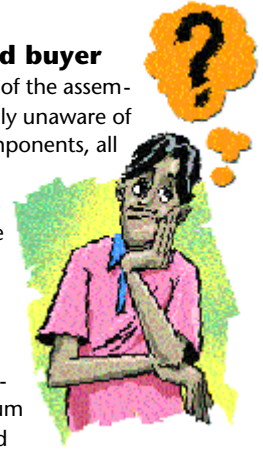
Possible pitfalls: Beware of vendors who try to sell you sub-standard or lower specification hardware. If you've specified the brand, make sure you get exactly that one. Use foreign prices only as a guideline—the scene is completely different after hardware passes through the various tax and custom duties in our country. Since you are on a limited budget, you will not be able to buy a system that has best-of-class processing and graphics power. Settle for one that includes a Duron or Celeron processor with integrated graphics or a card such as the GeForce2 MX 200 or a TNT2.



The confused buyer

You are the light of the assembler's life. Blissfully unaware of the different components, all you know is that you want a computer. You will be the target of the full force of the assembler's marketing babble. Technology buzzwords like Pentium 4, 3D accelerated graphics and 40 GB drives can be baffling—try not to fall prey to the 'an nVidia TNT2 is actually a high-powered graphics card' talk!

Possible pitfalls: You need to look out every step of the way. Beware of eager vendors who insist on closing a deal quickly. Take your time looking around and evaluate how much different vendors are charging you. Do your homework through online sites, other PC-owners and through a survey of different assemblers. The best solution is to take along a 'techie' friend who might know about hardware prices. Or, get a listing of the specifications you would need from a trusted source and then insist on those specifications only. Insist on licensed software and be clear about the after-sales service offered since you'll need it often. Most importantly, see that you have all the documentation with regards to the warranties—verify the type of warranty, the period and what hardware it covers. Remember to have the system checked by a knowledgeable person when it is ready to be delivered to you.




Making the purchase

Once you've decided on which assembler you want to entrust your system to and have finalised on the configuration, it's time for the final step. But before you actually place the order, make sure that you have a clear understanding with the vendor regarding the hardware configuration, warranty, after-sales support and the payment terms. Most vendors accept only cash-down payment, but you should insist on paying a major part of the amount upon satisfactory installation. Also, iron out details regarding the delivery and installation of the system. Make sure that there is a clause

that clearly specifies the date of delivery of the system and that the assembler covers any damage caused to the system during delivery. Plan it such that you personally receive the system and check each and every component upon arrival, all the way from specifications and brand of components, down to the colour! Very often, vendors try to squeeze in surprises at the last minute and refuse to accept a return later. Sign the bill only after you have personally verified that the system is working to your satisfaction and that the specifications match what you had ordered. Also check that the software installed is what you had asked for. If a

PC fails due to faulty components, it usually does so within the first week. Make sure that you have an understanding with your assembler, which allows you to return the system within a certain time-frame after installation in case something goes wrong.

Now that you have the roadmap, buying a PC from your local assembler should be a whole lot simpler. Stick by these ground rules, do the background work, keep a lookout for overzealous vendors and you'll have a system that will stick by you through all your quests in computing. 

MARCO D'SOUZA

How we Test



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

The Digital Media Test & Research Centre (DMTRC) conducts a series of elaborate tests to evaluate the merit of each hardware and software product. To ensure that our readers have all the information they need to make an informed buying decision, engineers at DMTRC evaluate and review the latest hardware, software and technology services in accordance with the most up-to-date evaluation processes and methodologies used around the world.

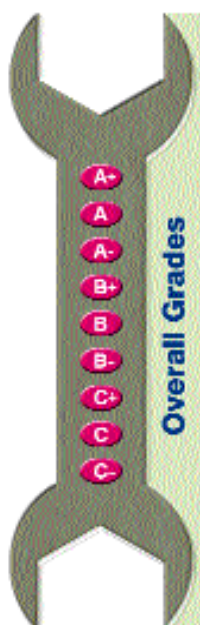
Comparison Tests

We use a dual rating system, the first of which is applied to the Comparison Tests in which we compare the performance of products within a particular category.

Each product is evaluated under different parameters such as performance, value for money, features, warranty and support, 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 an overall grade for each individual product. An overall grade of A+, therefore, indicates that the product is close to perfection.



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 of our tests.

This award represents the best performing product in our tests and doesn't factor in any other parameter such as value for money, features, support, etc. 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 performance and features to its price. The product winning this award offers good performance at a great price.

In Bazaar

The second part of the rating system is used to evaluate individual hardware and software products in the Bazaar section. The evaluation covers parameters such as performance, ease of use, value for money and the build quality/features of the product in question and then arrives at an overall rating.

Here each of these parameters is given a weightage of 25 per cent and 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 an overall score of five arrows signifies an outstanding buy!

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

In Test this Month

Branded PCs typically offer the right mix of price, performance and after-sales support and are thus ideal solutions for the first-time buyer or the corporate environment. This month's comparison test brings us face-to-face with 12 such offerings from companies such as Compaq and HCL. We took an application-based approach to evaluating them. We conducted real-world tests that covered office applications, productivity and gaming, and derived a Suitability to Task Index (STTI) that will help you choose a PC to fit your needs. To add spice to the PC mix, we also took a look at the latest Apple iMac.

Next, we tested three software suites—all-in-one solutions for system security, maintenance and recovering lost data. The suites came from the houses of Norton, McAfee and Ontrack and were evaluated for the features they offered as well as their performance under frequently used-tasks.

In the Bazaar section, we tested some of the latest hardware and software. The latest versions of both Red Hat Linux and CorelDRAW went under the Test Centre knife. The fastest Intel processor, the Pentium 4 2.8 GHz, also found its way among the products we tested, followed closely by possibly the fastest graphics card in India, the Gainward GeForce 4. To round up the range of products tested, we evaluated the ACI Impression notebook computer and a stand-alone disk-defragmentation tool—the Executive DisKeeper.



So you're looking for a computer that offers bleeding-edge performance for your applications, features that will allow for effortless computing, backed up with prompt and efficient service when you need it? We've got the pick of the pack that promise to deliver just that

IMAGING: Ashwin Boricha PHOTOGRAPHER : Jiten Gandhi



Trot back to the last time we did a PC comparison (October 2001)—the top dog then snarled with the combined power of the 1.5 GHz Pentium 4 processor and a GeForce 3 graphics accelerator, and was armed to the teeth with peripherals. In terms of sheer performance, it managed to wow even some of the more stringent reviewers in the Digit Test Centre. Many a megahertz, megabyte and rendered pixels later, the envelope of what's considered to be hot technology is still being pushed further.

The advancements in technology have resulted in quantum leaps in system performance and amazing features—GeForce 4 Ti 4600 graphics cards, searing-fast DDR and RDRAM and of course, the ever spiralling clock speeds of today's processors have brought some serious horsepower onto your desktop, at relatively low prices.

Given their complexity, these products need robust after-sales support and warranties. Customer support is as important as the usual parameters of performance and features—comprehensive, countrywide after-sales support and service spells the difference between a branded PC and a locally assembled one.

Digit Test Process

For a PC to be accepted as branded, it had to fulfil a set of criteria. First it should have a distinctive logo and a national presence with authorised service centres in at least all the major metro cities. Besides, a particular PC model should come with a constant configuration, regardless of where in the country it is sold. A branded PC is also required to include a licensed operating system or a recovery CD that carries the licensed software.

The PCs received in our Test Centre were of the same configuration as those found in the market, with the necessary peripherals, supporting software and documentation included. They were tested 'as they were'—we did not tweak or load additional software into them, except the benchmarking applications. This was done to capture the performance as would be experienced by the end-user. Finally, to complete the picture, we also tested the bundled peripheral components such as printer, scanner, monitor and speakers.

Test methodology

The PCs were tested on four primary parameters: features (30 per cent), performance (40 per cent), value for money (20 per cent) and warranty and support (10 per cent). The weightages allotted to each parameter was used to calculate the overall scores.

Features: The various features of the PCs were divided into four major categories:

a) System configuration and bundled peripherals: We noted specifications such as the processor type, amount of RAM, hard disk type, motherboard, CD/DVD/CD-RW drive, graphics card, motherboard, etc. The better the specifications that a computer boasted, the higher it scored in this category.

b) Build quality: To evaluate build quality, we noted aspects such as the overall layout of the components within the system cabinet, roominess and airflow within the systems through additional fans and ducts and attention to details such as tied IDE

and power cables. We also observed the sturdiness of the CD/DVD drive tray, the quality and feel of the buttons on the cabinet, the mouse and the keyboard, labelled ports at the rear of the system, etc.

c) Upgradability: Here we logged specifications such as the extent to which the processor could be upgraded (the highest clock speed and technology), the maximum amount of RAM that could be added, the number of PCI slots on the motherboard and the number of ports (USB, serial) available in the system.

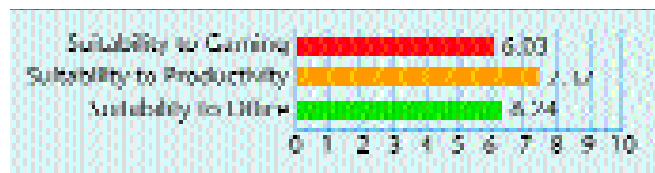
d) Package contents: Since the documentation and software bundle play an important role in the overall value of a branded system, we logged the inclusion or exclusion of components such as the operating system installer CD or restore disk, the various bundled software, driver CDs, manuals, setup guides, etc.

Performance: To determine the overall performance of the PCs, we used a battery of software ranging from low-level tests for the system's subcomponents, to real world applications for evaluating the performance of a machine in specific usage areas.

SiSoft Sandra 2002 SE was the main benchmarking tool for evaluating the system's component-level performance. It examined the performance of components such as the system processor, the hard disk drive and CD/DVD drive (data transfer rates and access times) and the RAM bandwidth. Virtual Dub was used to evaluate DivX video encoding and Audio Catalyst for MP3 encoding. We logged the time taken by the system to process a sample test file in each of these cases. These tests determined the capability of the computers in handling large amounts of streaming data. On the gaming front, we used *Quake III Arena* version 1.31 and *Evolva Scout Bump Rolling* demo for ascertaining the performance of a computer under OpenGL and Direct3D, respectively. The final real world test was related to image processing. Here, we ran a set of 21 filters in Photoshop 7 and logged the time taken to complete the task. This test provided an insight into the performance of the processor, RAM and hard disk.

We also tested a set of important subsystems in the computer and the peripherals that came with it—RMAA was used to evaluate the frequency response, Total Harmonic Distortion and noise in the soundcard and Displaymate was used for evaluating the sharpness and resolution of the monitor. The speakers were tested for music and movie performance.

A special score for each of the PCs, called the Suitability to Task Index (STTI), was finally computed. This index was calculated using a different set of weightages for each of the tests according



The Suitability to Task Index is an indication of the PC's performance in each of the three application areas they were tested in. Higher scores indicate the PC being more suited to that particular application area

to the effect they would have on three prime application areas: productivity, gaming and entertainment, and office and Internet applications. This index provided a clear indication of the performance of each PC in these application areas. For example, the STTI for productivity was calculated by allotting a greater weightage to tests such as the Photoshop filter test than to the gaming tests. Similarly, for gaming and entertainment, a greater importance was allotted to the *Quake III* and the speaker tests.

Value for money: This index was computed by evaluating the system's performance coupled with the features, in relation to the price: the higher this index, the better a product scored.

Warranty and support: Here, we logged specifications such as the type and duration of warranty offered by the manufacturer, the facility of an Annual Maintenance Contract (AMC), presence of a call centre, the average time taken to attend to a system problem and the number of service centres present in the country. We also allotted extra points if the manufacturer offered finance options for purchasing the computer.

How they Fared

Desktop computers used to be chunky devices that were purely utilitarian. But PCs have now evolved to include high-speed processors, faster and larger hard disks, cheaper and faster RAM and supercharged 3D graphics accelerators—all this allows you to use your PC not just for simple computing but also for entertainment and for professional applications. Here's how the PCs in this comparison fared in terms of the features they offer and their suitability to different application areas.

A task as simple as playing an MP3 file requires the processing power of at least a 133 MHz CPU in order to run smoothly. A few years ago, we would have been shocked at a single entertainment application taking up so much processing power. But

Bazaar Buzz

Over 20 lakh PCs are sold in India in a year, a majority of them in the metros. However, due to the general economic slow down, the rate of sale is not as high as expected. Corporate customers, who contribute to a majority of the sales, are resorting to either upgrades or the assembled variety. Government purchases have minimised to the extent that they are practically non-existent. The SoHo and home segment accounts for a major sales chunk. The local dealer market has been slowly regressing due to stiff competition from bigger brands and piracy is rampant with assemblers relentlessly loading whichever operating system and application software on their PCs. However, the recent efforts of organisations such as NASSCOM have delivered very perceptible results in curbing this trend.

MNC brands still command a higher market share than the Indian ones, due to the various bundled applications and their prompt service and quality assurance. This spells advantages, especially for those who place a high premium on quality and service.

The hot favourite MNC brands are Dell, which has excellent upgradability options; Compaq, an eternal favourite with the home segment; and IBM, which is doing well in the corporate world with its PCs specifically tailored for business users.

However, several Indian vendors have developed their own strategies to counter the foreign powers. Unlike last year, where Indian brands were primarily large dealers with a national presence, today after-sales support and service, licensed and free software and peripheral bundles are given primacy by even the local vendors.

Those who didn't make it

In this comparison test, we tried our best to procure all the branded computers available in the market. In spite of our continued efforts, we missed out on brands such as Dell, IBM and Acer. Each of them had varied reasons for not being able to participate in this comparison test, which we respected.

IBM was unable to participate in the test saying that they were uncomfortable with a comparison test between the leading brands of the country.

ACER readily agreed to send their systems of different configurations, only if we carried individual reviews on each of them and did not do a comparison test.

Dell could not participate because their PCs are built as per customer-requests and only after confirmed orders would they bring them from Singapore. This entire process would take around a month or a little over.

Minicomp stated logistic problems for the absence of their PC in our comparison test.

The last brand was **Cerebra**—in spite of repeatedly calling them, we were unable to elicit a suitable response. Hence, they were omitted from the test.



today, an entry-level soundcard such as the Sound Blaster Live! 5.1 DE (available for under Rs 3,000) has the processing power of a 133 MHz Pentium processor and has full Dolby Digital support to boot! A Pentium 4 at 1.8 GHz or an Athlon XP 1800+ processor is now capable of handling tasks that would have required tens of yesteryears' computers to execute in the same amount of time. This explosive advancement in hardware has naturally spawned a whole new generation of usage patterns. Conversely, the usage pattern itself determines the system configurations you need.

Features

One of the most appealing factors in a PC is the type and quality of the components it features. We noted the specifications of the processor, the amount and type of RAM, hard disk, motherboard, etc. We also considered the ease with which a computer could be upgraded and we evaluated the build quality of the system.

System configuration: All the systems were either based on SDRAM or DDR RAM platforms; we did not receive any RDRAM-based systems. Also, seven of the 12 systems were based upon the integrated graphics core of the 845G or 845GL Intel chipsets; we did not receive any based on AMD processors. In terms of system specifications, the system that stood out from the others was the Visualan Lavish. Its core components consisted of a 2.53 GHz Pentium 4 and a 40 GB 7,200-rpm Seagate Barracuda hard disk, with 256 MB of DDR RAM. The video graphics system was also robust, with the ATi Radeon 7500 driving a 17-inch LG Flatron monitor. The Visualan Lavish was also the only system that featured a CD-RW drive with a 32x write speed capability. To help alleviate the clutter on your desktop, this system also featured a wireless mouse.

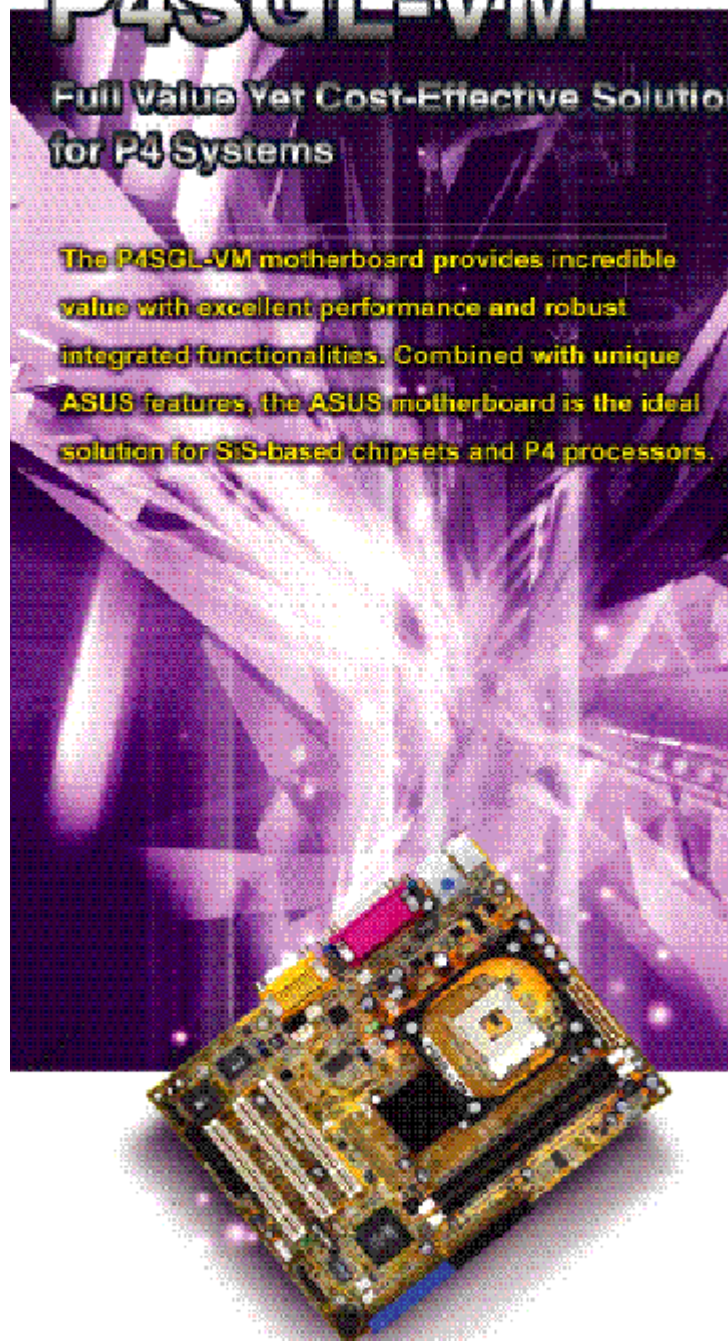
Another noteworthy PC was the HCL Beanstalk 4455. This computer was based upon a 2.4 GHz Pentium 4 with 256 MB of DDR RAM and featured an ASUS V8170 Magic graphics card with 64 MB of DDR video RAM. However, its high point was the two 40 GB 7,200-rpm Seagate Barracuda hard disk drives that were configured in RAID-0 on the onboard Promise ATA/100 IDE RAID



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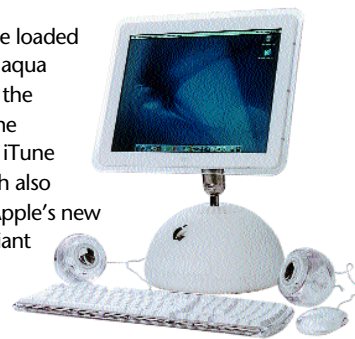
iMac, Refreshed

Apple has always been a trendsetter in the domain of industrial design and it has outdone itself once again with the new iMac. Sporting one of the most innovative computer designs in recent years, the flat 15-inch TFT screen beams a crystal clear display even when viewed from almost edge-on angles. This screen rests on a chrome-plated steel rod that facilitates easy positioning of the screen either horizontally or vertically. The small but powerful Apple Pro speakers look similar to glass snooker balls and deliver a surprising amount of acoustic punch. However, the high point of the design lies in the semi-spherical base, which houses all the system components.

The iMac is powered by a 700 MHz Power PC G4 processor with 256 KB of L2 cache running at full speed, 256 MB of SDRAM that can be upgraded to 1 GB, a 40 GB hard disk, a 12x8x32x CD-Writer and an nVidia GeForce 2 MX graphics card. There is virtually every type of connectivity option on the periphery of the base unit, including FireWire, USB, speaker and headphone jacks, modem and Ethernet ports and an extra VGA output to connect an additional monitor for dual display. Adding to the 'solid ice' looks of the systems is the

operating system itself—it came loaded with Mac OS X, which with its aqua interface, gelled very well with the squeaky clean appearance of the machine. The OS incorporated iTunes for managing music files, which also enables it to be coupled with Apple's new iPod MP3 player. With the brilliant TFT display, QuickTime files looked truly astounding and this, when coupled with the speakers' sound quality, makes watching movies a great experience. The system also included Microsoft Office X along with other goodies such as Roxio Toast 5, Titanium iMovie and VCD creator, which makes it fun and easy to share your experiences with family and friends. Due to its aesthetic appeal and flaunt value, this machine will easily find a place on the desk of top executives and aficionados.

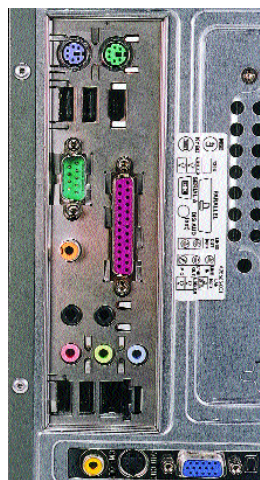
Price: Rs 1,20,700; **Contact:** Apple Computers Intl Pvt Ltd; **E-mail:** indiainfo@asia.apple.com; **Phone:** 080-555057



controller. This storage subsystem configuration resulted in impressive data transfer rates in the performance benchmarks. It also featured a 17-inch monitor and a 16x Pioneer DVD drive that had a slot-in interface. The motherboard had a four-channel integrated sound chip, but the bundled speaker system was a stereo set with a subwoofer—the only thing that stopped it from being suitable as a home theatre system. With four USB 2.0 ports and one FireWire port, there are enough resources for connecting a host of external peripheral devices.

The Zenith Premium Corporate PC also featured a decent set of specifications and came bundled in a small form factor tailored for the corporate world. It featured a 2.4 GHz Pentium 4 processor on an 845G-based motherboard with 128 MB of DDR RAM and a conventional 40 GB, 5,400-rpm Seagate hard disk. It also housed two USB 2.0 compliant ports on its front panel.

The Visualan Celebrity and the Vintron Elixir 1000 appeared on the lower end of the specifications spectrum—both these systems were based upon a 1.2 GHz Celeron (with the Tualatin core) and ran on a dated Intel 810E-based motherboard. These systems used graphics and sound that were integrated into the motherboard and featured 128 MB of SDRAM and standard 15-inch monitors. Their specifications were virtually identical, but the Vintron Elixir 1000 had a 56K PCI modem.



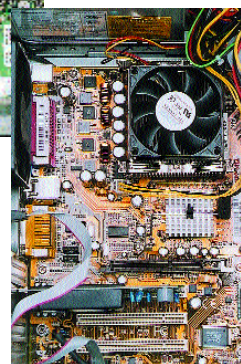
The HCL Beanstalk 4455 has nearly every port—including FireWire!

Upgradability options: The Visualan Wisdom and the Visualan Lavish featured large and airy cabinets with ample room for expansion. Their motherboards had six PCI slots each, out of which only one was used for a PCI modem. In comparison, the HCL Beanstalk 4455 and the Compaq Presario 3705AP featured only four and two slots respectively.

Since most computers were based on the 845 family of chipsets, they were able to support the Socket 478 Pentium and the new Celeron processors up to 2.6 GHz speeds. However, the two systems that were based upon the 810E chipsets had an upgradability handicap—the Visualan Celebrity and the Vintron



The Visualan Wisdom (above) offers plenty of room for adding expansion cards, unlike the Compaq Presario 3705AP (right)



Elixir 1000 were based upon the older Socket 370 interface and the highest they could go was to P-III Tualatin processors—they cannot be upgraded to a Pentium 4.

Some of the Pentium 4 systems here were based upon SDRAM memory, which proved to be the biggest bottleneck in the systems. These included the Vintron Elixir 1000 and 4000, the QMAX Quadrant and the Visualan Celebrity and the Visualan Wisdom. These systems cannot be upgraded to newer and faster forms of memory such as DDR RAM or RDRAM. While SDRAM is suited to non-demanding applications, it can quickly turn into a bottleneck during more strenuous tasks. However, the Visualan Wisdom, like the Qmax Quadrant and the Vintron Elixir 4000, had three RAM slots allowing for a greater amount of RAM to be installed as compared to the other SDRAM based systems. All the DDR based systems had just two slots for RAM but since the density of DDR RAM is greater than that of SDRAM, these systems could accommodate up to 3 GB of system memory.

Build quality: We evaluated the build quality of the PCs by observing the overall construction of the systems and its details.

HCL Beanstalk 4455

Powered by a Pentium 4 running at 2.4 GHz, the Beanstalk 4455 has great features for technology enthusiasts, at a reasonable price. The

processor sits on an Intel motherboard based on the D845 chipset and a 533 MHz FSB (front side bus), giving you extreme power to tackle intensive tasks such as editing movies in real-time. The 256 MB DDR-RAM allows for a snappy system response and makes the resource-hungry Windows XP work very smoothly.

The system comes with a 4x AGP slot on which sits an ASUS V8170 Magic (64 MB DDR) graphics card, which provided decent gaming performance. The 16x DVD drive with a slot interface eliminates the tray-jamming problem faced in most DVD drives. Audio is handled by the onboard sound-card coupled with a powerful 30 watt 2.1 speaker system from Altec Lansing. The system provides users with four free PCI slots, six USB ports and a FireWire port (IEEE 1394) that offers blazing transfer rates for the external peripherals. An onboard 10/100 Mbps LAN card is also included.

The machine implements the storage subsystem using IDE RAID-0, which delivers substantially higher performance than a single hard disk.

On the software front, it comes with XP Plus for Windows XP, Norton AntiVirus 2002, Microsoft Encarta Encyclopedia, School Whiz and Multilingual software. Sporting very powerful core components at Rs 59,990, this computer is suited to both, work and play.

Suitability to Task Index

Gaming	6.03
Productivity	7.37
Office apps/Internet	6.24

In terms of system design and construction, the Compaq Presario 3705AP turned out to be the sturdiest. This system had a tool-free casing where thumbscrews were used to make it easy to open the system for troubleshooting or upgrading. It came in classic black and had two USB ports on the front panel to attach USB peripherals conveniently. Another system that had two USB ports on the front panel was the Dart Emerald.

While the Visualan Lavish sported a very large cabinet, its cables were not organised or tied together. Nor did it have any labelled ports on the back panel to indicate which peripheral goes where—a detail that is useful to novices. Interestingly, this system had provision for two USB ports on the front panel of the cabinet, but not the ports themselves. The Visualan Wisdom too had a similar type of cabinet, while the PCS Orion came without labelled ports or organised cables.

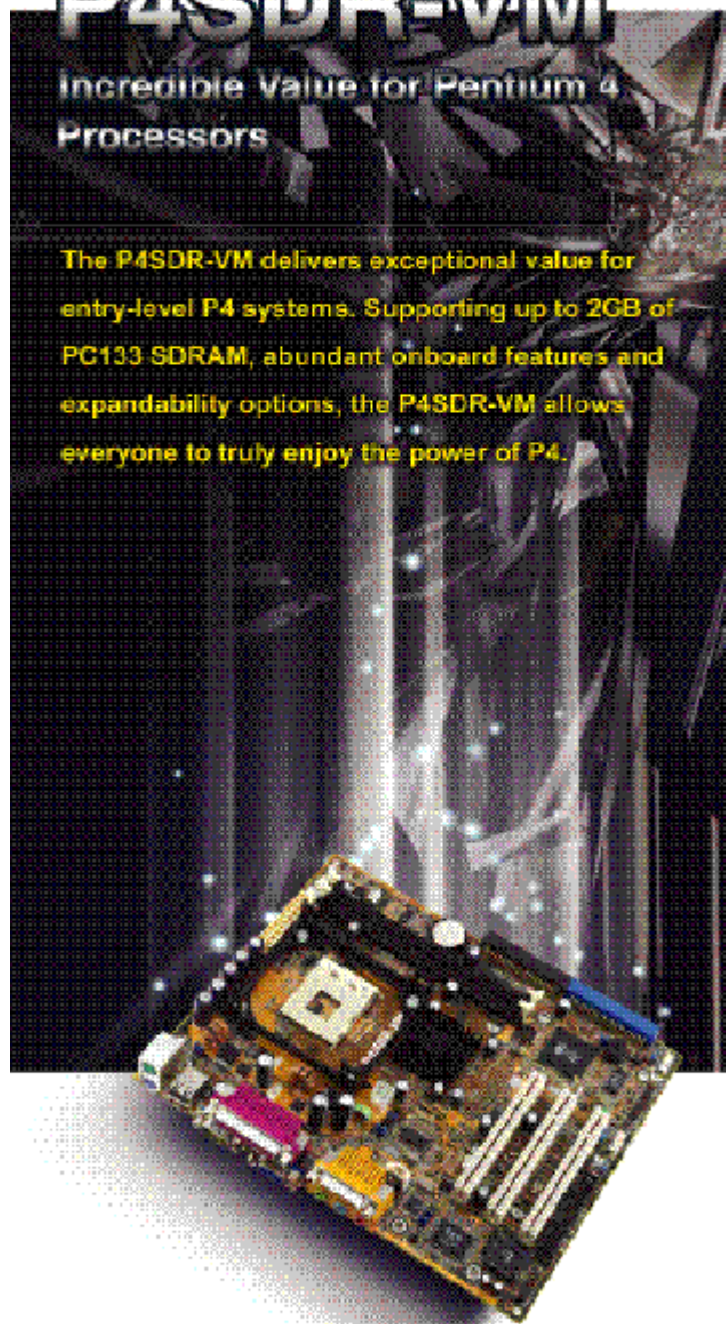
As for the HCL systems, the Beanstalk 4455 featured a very roomy cabinet with adequate airflow. Since the Pioneer 16x DVD drive in this system featured a slot-in disk interface, it is not susceptible to damage like other tray-based CD or DVD drives. The HCL Beanstalk 4458, however, featured a smaller cabinet with unorganised cables. However, this system had two USB ports on the front of the cabinet and a keyboard that included virtually

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The HCL Beanstalk 4458's keyboard offers several shortcut buttons

every type of control in the form of extra shortcut buttons, ranging from audio controls to Web surfing and page navigation controls.

Package contents: Finally, we evaluated the software, the documentation and the manuals that accompanied the system. Here, the Vintron

systems stood out—they included Norton AntiVirus 2000 6.0, McAfee 5.0, Satyam 100-hour Internet Pack, Eudora 5.1, Pegasus Mail 3.1, and trial versions of Front Page 98 and Dreamweaver 4. Also included were utilities such as Winamp 2.7 and Real Player 8. The Visualan Wisdom, with its ATi Rage Pro 128 graphics card, brought along PowerDVD 3.0 and *4x4 Evolution*, a racing game. The Compaq Presario 3705AP also included a good set of software: Norton 2002, Money 2002, Encarta Encyclopedia 2002, Norton Security 2002, Microsoft Works 6.0 along with a 30-hour Satyam Internet package. It also had Windows XP Home Edition loaded and the appropriate CD was also provided.

The Dart Emerald also had a good set of bundled goodies, which included an HCL InfiNet 45-day Internet pack, Simon & Schuster Millennium Encyclopedia, four games (*Odium*, *Septerra Core*, *Claw* and *Shogo*) along with three other entertainment and multimedia CDs. It also had a recovery CD to restore the OS to its factory condition.

Both the HCL machines came loaded with Windows XP Home Edition and the Plus! Pack loaded; they too had CDs to restore

HCL Beanstalk 4458

This black beauty from HCL boasts a good configuration with a very appealing design. A 2 GHz Pentium 4 processor on an Intel 845GL motherboard defines new highs in multimedia entertainment and learning. It comes with a 17-

inch flat monitor and a powerful Altec Lansing 2.1 speaker system.

The 128 MB of DDR RAM and onboard graphics ensure reasonably smooth 3D gaming and movies, and the 40 GB hard disk suits most general applications that do not need excessive storage. The appeal of this system lies in the optical mouse and the functional keyboard that boasts of an assortment of shortcut keys for everything from editing text, to browser control and quick access to your media files. On the expansion front, it can support up to 6 GB of memory but has only two free PCI slots. With four USB ports, you can easily connect devices such as a Web camera, scanner, printer, etc.

This computer represents a good out-of-the-box experience for customers. It comes bundled with XP Plus for Win-

dows and a host of other system applications and utilities—all at a price of Rs 48,990.

Suitability to Task Index	
Gaming	6.32
Productivity	6.49
Office apps/Internet	6.25

the operating system to the original factory condition. The only two computers that were loaded with Windows XP Professional were the PCS Oriion and the Zenith Premium Corporate PC. The PCS Oriion bundled Britannica Encyclopedia with a CD of utilities, one for teaching Internet basics and Web design and one with an assortment of MP3 songs. The Zenith Premium Corporate PC bundled Norton Internet Security Software, Norton



The Zenith PC has two USB ports on the front panel

AntiVirus 2002 (three months of free virus update subscription) and NTI CD Maker along with a few freeware utilities.

The only system that came loaded with Windows 98 SE was the Visualan Celebrity. It included software such as CD Ghost, Genesys, Language Genius, Media Ring Talk, PC-Cillin Antivirus, PC DJ, Recovery Genius and Super Voice along with a few freeware utilities. A system that really skimped on software was the QMAX Quadrant. It included only a 100-hour Satyam Internet package along with the Windows XP Home Edition CD.

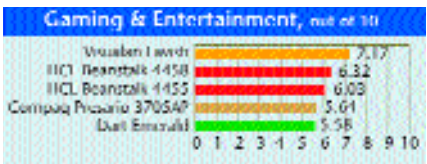
All the computers we received had driver CDs and contained the manuals and documentation that explained the functioning of the system and how to set it up.

Performance tests

Performance was evaluated using an assortment of real world and synthetic applications. To help evaluate the suitability of the various systems to specific application areas, we also created Suitability To Task Indexes for measuring their performance in three target application areas—gaming and entertainment, productivity, and office and Internet applications. This was done by allotting varying weightages to each benchmark depending on the application area.

Gaming and entertainment: Here, we specifically observed the performance of the computers in the gaming, monitor performance, audio encoding, speakers, CD-ROM and soundcard tests.

The computer that excelled in this application area was the Visualan Lavish. With its ATi Radeon 7500 graphics card, a fast 2.53 GHz Pen-



tium 4 processor, 256 MB of DDR memory and a 40 GB, 7,200-rpm Seagate Barracuda hard disk, the PC excelled in gaming and applications involving work with audio and video. In the gaming tests, it pumped out a commendable 74 fps when running the *Quake III* test at a resolution of 1024x768 and in the *Evolva* test, it churned out 50.5 fps.

It delivered a best-of-class score in raw processing, thanks to its 2.53 GHz Pentium 4 processor. Similarly, it performed well in the hard disk and the memory tests due to the fast 7,200-rpm hard disk and DDR RAM, logging 41 MBps in the sequential read/write tests for the hard disk and a shade over 2 GBps in the memory bandwidth tests. When it came to the peripherals, the 17-inch LG Flatron monitor returned good clarity and colour reproduction, and the 2.1 speakers performed adequately during the audio tests. The

QMAX Quadrant

Though the 1.7 GHz is not a top-of-the-class PC, it houses sufficient power to see you through most applications. The 32 MB AGP card delivers playable frame rates for your 3D games, while the 128 MB of SDRAM gives you a more affordable upgrade path if you do not need too much power. With support for 3 GB RAM and two free PCI slots, you have reasonable expansion capability. It comes with a 15-inch monitor that goes up to a resolution of 1024x768 at an 85 Hz refresh rate. The system provides all basic level components that a user would expect such as a PS/2 keyboard, mouse, a 52x CD-ROM drive and two channel audio support. It also has a reasonably powerful stereo speaker system. Completing the package is a 56K PCI modem.

The system is lacking on the software front—it bundles just the operating system (Windows XP Home Edition) and a 100-hour Satyam Internet pack. However, with a price tag of Rs 39,000, it's a decent choice for those on a budget.

Suitability to Task Index

Gaming	3.91
Productivity	5.72
Office apps/Internet	5.29

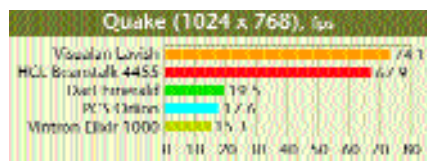
cordless mouse was very smooth and well suited for the accuracy needed in *Quake III Arena* rail-gun matches! Since it has a CD-RW drive too, you can easily copy your home videos onto VCDs and archive your bank of DivX movies and other files. This drive logged a commendable score of 3.48 MBps in the sequential read test.

The Visualan Lavish was rivalled by the HCL Beanstalk 4455 in the gaming and entertainment tests. This PC was armed with a powerful configuration of 2.4 GHz Pentium 4 processor, 256 MB of DDR RAM and the *piece de resistance*—the two 40 GB 7,200-rpm Seagate Barracuda hard disk drives configured in RAID-0. This method of implementing hard disk storage enabled it to achieve a sequential read/write data transfer rate of 43 MBps and 40 MBps, respectively. The graphics subsystem was also very robust with the ASUS V8170 graphics card coupled with a 17-inch monitor, but a faster graphics card would have done this system much good in the gaming arena. For gamers who like to hear the resonance of rockets exploding around them, the 2.1 Altec Lansing speakers did a good job of delivering the audio experience.

Finally, movie buffs will be delighted with the 16x Pioneer slot-in DVD drive. The drive did especially well in the tests, where it logged a data transfer rate of over 3 MBps in the sequential read test. The four USB ports make enough space for

the gaming peripherals you may want to upgrade to.

The HCL Beanstalk 4455 also delivered reasonably good performance



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Dart Emerald

The Dart Emerald sports a 2 GHz Pentium 4 processor combined with an Intel 845GL-based motherboard. It comes with a 40 GB Samsung IDE hard disk and 256 MB of DDR RAM, a part of which is used by the onboard Intel Extreme graphics. There is no AGP port provided on the motherboard and therefore, there is no room for enhancing the system's graphics performance.

The onboard SigmaTEL integrated chipset sings to you through the 2.1 speakers and the AT keyboard comes with a PS/2 converter and features very good tactile response, sans any shortcut keys.

One area where the Dart Emerald makes a mark is in the package contents. It provides you with a number of educational, game and multimedia titles. Also provided are all the necessary driver CDs, along with Windows XP Home Edition. The Dart Emerald is sold with a three-year onsite warranty. At Rs 40,000, it's quite suitable for home users.

Suitability to Task Index	
Gaming	5.58
Productivity	6.93
Office apps/Internet	5.06

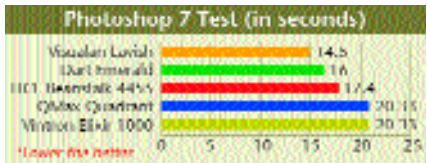
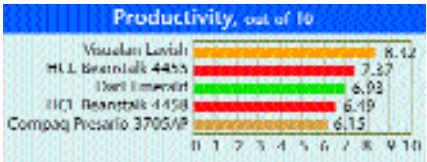
with its 2 GHz Pentium 4 processor, but featured a standard 40 GB 5,400-rpm Seagate hard disk drive coupled with 128 MB of DDR RAM and the integrated graphics of the 845G chipset. It scored reasonably well in the SiSoft Sandra tests and the inclusion of the 2.1 Altec Lansing speakers with this system enabled it to do well in the audio tests.

Understandably, the computers that fell below par in this subtest were the ones based on the Celeron/Intel 810 combination—the Vintron Elixir 1000 and the Visualan Celebrity. Since they featured slower processors and integrated graphics systems that used shared memory, their performance in the gaming and the low-level subsystem tests were among the lowest in this category.

Productivity: For this application area, we looked at the computer's performance in running tasks such as office applications, image editing, video encoding, etc. Therefore, we observed the performance of the computer's processor, hard disk and memory along with real world applications such as Photoshop, Virtual Dub video encoding and the performance of subsystems such as the monitor, CD-ROM drive and soundcard.

Once again, the computer that came out tops was the Visualan Lavish. The components that were responsible for its success were the 2.53 GHz Pentium 4 processor, 256 MB of DDR RAM and the fast hard disk drive. This was clearly seen in the Photoshop test where it crunched through the set of 21 filters in just 14.5 seconds. Also, since Photoshop 7.0 had special support for the Pentium 4's SSE2 instruction set, the performance of the computer in this application was unsurpassed. Even in the video encoding tests, the Visualan Lavish delivered stellar scores by processing the test video file in just 1 minute 3 seconds. The 17-inch monitor was clear and sharp and quite suited to multimedia applications that require attention to detail. The accompanying CD-RW drive burned a complete 650 MB CD in a span of just 3 minutes 18 seconds. All this makes the Visualan Lavish suited to authoring multimedia titles for distribution, image editing and video processing.

Next up, the HCL Beanstalk 4455 did very well in the processor, memory and especially the hard disk subsystem tests. The memory bandwidth of its 256 MB of DDR RAM was logged at a shade under 2 GBps, making it well-suited to applications such as image and video editing where large files are stored and worked upon in RAM. With its RAID-0 implementation of the two 40 GB Seagate Barracuda hard disks, the system delivers brilliant data transfer performance, especially in the sequential read and write tests (43 MBps and 40 MBps, respectively). This implied that it is a good choice for applications such as audio and video



...to Keep the Doctor Away

Since computers comprise an assortment of delicate components, regular cleaning and maintenance is necessary to ensure your system's long life. The following are the main areas you should concentrate on for keeping your PC in optimum shape:

- You hard disk is most susceptible to wear and tear and one of the best ways to maintain it is to nip any problems in the bud. Regular system scans will ascertain that the file system is in good condition and will take care of the minor problems that may arise as a result of crashed programs and hard reboots. To ensure that the space on your hard disk is well utilised, you should defragment it regularly. This arranges the files in contiguous clusters, thus improving performance and freeing up wasted space.
- Hardware manufacturers usually have product Web sites that

- offer regular driver updates that improve performance or iron out hardware compatibility issues and bugs. Update your drivers frequently for a smooth-running system. The same logic extends to patches for software applications such as your operating system, office suites and anti-virus packages. As a precaution, verify that you load the updates and drivers specific to your operating system.
- Don't forget to keep your system clean and free from dust. While not perceived as an immediate threat, dirt and dust are silent agents that cause serious problems down the line. They affect the moving components in your system: from the keyboard keys, to the more critical components such as the fans cooling your system. Covering and cleaning your computer will help ensure that these critical system components do not fail due to a buildup of dust.



good performance in this application area was the Dart Emerald, featuring a 2 GHz Pentium 4 processor with 256 MB of DDR RAM. Since the PC was well geared with a powerful processor and RAM, even with onboard graphics, it managed a very impressive score in the Photoshop test, where it sped through the 21 test filters in just 16 seconds. The 17-inch flat screen monitor produced crisp and vivid images even at high resolutions and refresh rates, making it suited to serious multimedia and productivity applications. In the video encoding tests, the powerful processor enabled it to process the test video file in just 1 minute 15 seconds.

Office and Internet: In this application area, we evaluated the performance of the computers in relatively non-taxing applications such as office suites and Internet browsing. The specific subsystem that decided the performance of the computer here was the processor, the RAM, the hard disk, the CD-ROM drive, monitor and also the speaker and soundcard. Therefore, a higher weightage was given to the SiSoft Sandra subsystem tests, monitor, CD-ROM, the soundcard and the speaker tests. In fact, if you are looking for a computer that is suited to simple office applications, you need to just look at the processor, RAM and hard disk.

Compaq Presario 3705AP

This good-looking computer comprises a 1.7 GHz Pentium 4 processor, 128 MB of DDR RAM, a Maxtor 40 GB hard disk and a very clear and sharp 15-inch monitor. Another very good addition is the JBL Platinum Series speakers that render pleasant sound quality. The chic black colour and the overall design aesthetics make the system stand out in a crowd. The cabinet features a tool-free construction and provides two USB ports on the front panel with audio connections for the mic and headphones. The Compaq Presario 3705AP also bundles a 10/100 base



Ethernet card and a Conexant 56K PCI modem. An AGP port is provided so that the graphics subsystem can be enhanced with a faster graphics card. On the software front, it comes preloaded with Windows XP Home Edition and the necessary driver CDs are also provided along with a recovery CD. The package includes a host of anti-virus, multimedia and educational applications. This was one of the few brands that offered

Suitability to Task Index

Gaming	5.64
Productivity	6.15
Office apps/Internet	6.14

telephonic support and at Rs 50,363 is a good choice for users who like appealing looks and upgradability.



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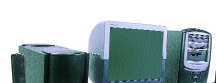
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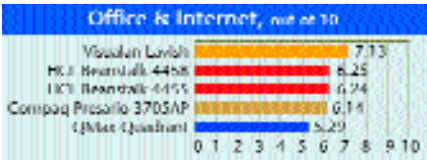
CATEGORY	Compaq Presario 3705AP	Dart Emerald	HCL Beanstalk 4458	HCL Beanstalk 4455	PCS Orion
Features					
System Configuration					
CPU (Manufacturer/Clock Speed)	Intel P4 @ 1.7 GHz	Intel P4 @ 2 GHz	Intel P4 @ 2 GHz	Intel P4 @ 2.4 GHz	Intel P4 @ 1.7 GHz
Hard Disk Drive (Brand, Size, rpm)	Maxtor 40 GB, 5,400-rpm	Samsung 40 GB, 5,400-rpm	Samsung 40 GB, 5,400-rpm	Seagate 2x40 GB, 7,200-rpm	Seagate 40 GB, 5,400-rpm
Memory (Amount, Type)	128 MB, DDR	256 MB, DDR	128 MB, DDR	256 MB, DDR	256 MB, DDR
Graphics (Name, RAM)	Integrated	Integrated	Integrated	ASUS V8170 Magic, 64 MB DDR	Integrated
Motherboard					
Chipset	Intel 845G	Intel 845GL	Intel 845G	Intel D845	Intel 845GL
Slots (PCI, Memory, AGP)	3, 2, AGP 4x	4, 2, ✗	3, 2, ✗	5, 2, AGP 4x	3, 2, NA
Ports	1 Parallel, 2 Serial, 3 USB 1.1	1 Parallel, 2 Serial, 3 USB 1.1	1 Parallel, 2 Serial, 3 USB 1.1	1 Parallel, 2 Serial, 2 USB 1.1 + 1 FireWire	1 Parallel, 2 Serial, 3 USB 1.1
Onboard					
Graphics	Intel Extreme, shared memory	Intel Extreme, shared memory	Intel Extreme, shared memory	✗	Intel Extreme, shared memory
Sound	SigmaTEL C-Major	SigmaTEL	Avanche	SoundMAX	Avance Logic
LAN	Intel Pro 100	✗	✗	Intel Pro 100	Realtek RTL 8139
USB 2.0 (number of ports)	✓ (1)	✓ (1)	✓ (1)	✓ (4)	✓ (1)
Peripheral Subsystem					
Keyboard (Keys, Interface)	PS/2	AT with PS/2 Convertor	PS/2	PS/2	PS/2
Mouse (Interface, Technology)	PS/2, Ball	PS/2, Ball	USB, Optical	USB, Optical	PS/2, Optical
Monitor (Brand, Size, Resolution)	Compaq 5500, 15-inch, 1024x768 @ 60 Hz	Dart Flatvision 43F1, 17-inch, 1280x1024 @ 60 Hz	HCL HCM 770FH, 17-inch, 1280x1024 @ 60 Hz	HCL HCM 770FH, 17-inch, 1280x1024 @ 60 Hz	PCS 38F1, 15-inch, 1024x768 @ 85 Hz
Optical Drive (Speed, Type)	52x CD-ROM drive	52x CD-ROM drive	52x CD-ROM drive	Pioneer 16x DVD drive	52x CD-ROM drive
Soundcard (Name, No. of Channels)	Integrated	Integrated	Integrated	Integrated	Integrated
Speakers (Brand, Power Output, No. of Channels)	JBL Platinum Series, 6 watts (total), 2	MS-431, 800 watts PMPO, 2.1	Altec Lansing, 30 watts, 2.1	Altec Lansing, 30 watts, 2.1	PCS, NA, 2
Modem (Name, Speed, Type)	Conexant HSF V92, 56K, PCI	D-Link, 56K, PCI	Conexant HSF, 56K, PCI	Conexant HSF, 56K, PCI	✗
Extra Peripherals (Printer, Scanner, Web cam, UPS, Spike Buster, Headphone/Mic)	✗	Headset	Headset	Headset	Headset
Upgradability					
CPU	2.4 GHz and above	2.6 GHz or more	2 GHz or more	3.06 GHz or more	1.7 GHz and above
Memory	2 GB	3 GB	6 GB	3 GB	6 GB
PCI Slots	2 vacant	3 vacant	2 vacant	4 vacant	3 vacant
Package Contents					
Operating System	Windows XP Home	Windows XP Home	Windows XP Home (with Plus!)	Windows XP Home (with Plus!)	Windows XP Professional
Recovery CD	✓	✗	✓	✓	✗
Driver CDs	✓	✓	✓	✓	✓
Manuals & Setup Instructions	✓	✓	✓	✓	✓
Bundled Software	Norton 2002, Money 2002, Encarta Encyclopedia 2002, Norton Security 2002, Microsoft Works 6.0, Satyam 30-hour Internet package	HCL Infinet 45-day pack, Simon & Schuster Millennium Encyclopedia, Odium, Septerra Core, Claw, Shogo games, The complete family CD, Entertainment Mania and The Road to Freedom Multimedia CD	Norton AntiVirus 2002, Encarta Encyclopedia (Std), HCL School Wiz, ValueFon Dialer, Ankur Software, HCL Expert Utility, HCL Asset Tracker, HCL Infinet 12-month pack	Norton AntiVirus 2002, Encarta Encyclopedia (Std), HCL School Wiz, ValueFon Dialer, Ankur Software, HCL Expert Utility, HCL Asset Tracker	Britannica, 25-Software Mega CD, New Hits (songs), Millennium Games Vol-3, Internet Basics, Web design and authoring tools
Performance					
Subsystem (out of 10)					
Processor (SiSoft)	5.97	6.97	7.05	8.21	6.03
Hard Disk Drive (SiSoft)	4.55	4.46	4.99	5.61	4.15
Memory (SiSoft)	8.50	8.74	8.59	9.46	8.02
CD-ROM / CD-RW / DVD (SiSoft)	5.78	0.53	5.03	4.54	4.55
Monitor (Displaymate)	6.80	4.6	5.4	5.4	5.2
Soundcard (RMAA)	4.67	8.33	8.83	1.88	Failed
Audio Encoding (seconds)	29	23	25	18	30
Video Encoding (seconds)	95	75	80	66	92
Photoshop 7 Test (seconds)	21.86	16	22.83	17.4	21.1
Gaming					
Quake III Arena 1.31 Demo - 024x768x32 (fps)	10.4	19.5	10.4	67.9	17.6
Volva Bump Rolling Demo (fps)	68.6	80	85.8	32.6	74.7
Suitability to Gaming (out of 10)	5.64	5.58	6.32	6.03	4.44
Suitability to Productivity (out of 10)	6.15	6.93	6.49	7.37	5.43
Suitability to Office apps (out of 10)	6.14	5.06	6.25	6.24	4.97
Warranty and Support					
Warranty (in years)	1*	3*	1*	1*	1*
Number of Service Centres	1000	275	500	500	200
Annual Maintenance Contract (Y/N)	✓	✓	✓	✓	✓
Telephonic Customer Support	✓	✗	✗	✗	✗
Overall Score					
Features (30%)	19.56	19.24	19.72	24.80	19.08
Performance (40%)	24.51	25.89	27.65	27.77	19.63
Warranty and Support (10%)	8.83	6.76	6.18	6.18	4.59
Value for Money (20%)	13.46	17.36	14.87	13.48	15.45
Overall Product Rating	66.36	69.25	68.42	72.23	58.75
Overall Grade	A-	A-	A-	A	B
Vendor Name	AVI Electronics	Dart Computers Pvt Ltd	HCL Infosystems	HCL Infosystems	PCS Industries Ltd
Phone	022-6465522	07104-32565	0120-4520977	0120-4520977	022-8503721
E-mail	aviteam@vsnl.com	rohit@dartcomputers.com	response@hclinsys.com	response@hclinsys.com	enquiry@pcsil.com
Price (In Rupees)	50,363	40,000	48,990	59,990	38,550

Disclaimer: All prices are subject to variation, *On-site Warranty, ** Carry-in Warranty, ^ DirectX not loaded, ^^ On-site within city limits

<div>        </div>						
QMAX Quadrant	Vintron Elixir 1000	Vintron Elixir 4000	Visualan Wisdom	Visualan Celebrity	Visualan Lavish	Zenith Premium Corporate PC
Intel P4 @ 1.7 GHz	Intel Celeron @ 1.2 GHz (Tualatin)	Intel P4 @ 2 GHz	Intel P4 @ 1.6 GHz	Intel Celeron @ 1.2 GHz (Tualatin)	Intel P4 @ 2.53 GHz	Intel P4 @ 2.4 GHz
Seagate 40 GB, 5,400-rpm	Seagate 40 GB, 5,400-rpm	Seagate 40 GB, 5,400-rpm	Seagate 40 GB, 5,400-rpm	Seagate 40 GB, 5,400-rpm	Seagate 40 GB, 7,200-rpm	Samsung 40 GB, 5,400-rpm
128 MB, SDRAM	128 MB, SDRAM	128 MB, SDRAM	256 MB, SDRAM	128 MB, SDRAM	256 MB, DDR	128 MB, DDR
SIS 300, 32 MB, SDRAM	Integrated	SIS 300, 32 MB SDRAM	ATI Rage Pro 128, 32 MB SDRAM	Integrated	ATI Radeon 7500, 64 MB DDR	Integrated
Intel 845	Intel 810E	Intel 845	Intel 845D	Intel 810E	Intel 845G	Intel 845G
3, 3, AGP 4x	3, 2, None	3, 3, AGP 4x	6, 3, AGP 4x	3, 2, None	6, 2, AGP 4x	3, 2, AGP 4x
1 Parallel, 2 Serial, 2 USB 1.1	1 Parallel, 2 Serial, No USB	1 Parallel, 2 Serial, 2 USB 1.1	1 Parallel, 2 Serial, No USB	1 Parallel, 2 Serial, No USB	1 Parallel, 2 Serial, 3 USB 1.1	1 Parallel, 2 Serial, 4 USB 1.1
✗	Intel 810, shared memory	✗	✗	Intel 810, shared memory	Intel Extreme, shared memory	Intel Extreme, shared memory
Intel Integrated Audio	Avance Logic	Intel Integrated Audio	Intel Integrated Audio	Avance Logic	SoundMAX	SoundMAX
✗	✗	✗	✗	✗	Intel Pro 100	Intel Pro 100
✗	✗	✗	✗	✗	✓ (1)	✓ (2)
PS/2	AT	PS/2	PS/2	AT	PS/2	USB
PS/2, Ball	PS/2, Ball	PS/2, Ball	PS/2, Optical	PS/2, Ball	PS/2, Cordless ball	USB, Ball
Microtek 38F1C, 15-inch, 1024x768 @ 85 Hz	Vintron, 15-inch, 1024x768 @ 60 Hz	Vintron, 15-inch, 1024x768 @ 60 Hz	LG Studioworks 563A, 15-inch, 1024x768 @ 75 Hz	LG Studioworks 563A, 15-inch, 1024x768 @ 75 Hz	LG Flatron E700S, 17", 1280x1024 @ 60 Hz	Zenith, 15-inch, 1152x864 @ 60 Hz
52x CD-ROM drive	52x CD-ROM drive	52x CD-ROM drive	52x CD-ROM drive	52x CD-ROM drive	32x CD-RW drive	52x CD-ROM drive
Integrated	Integrated	Integrated	Integrated	Integrated	Integrated	Integrated
Microtek Josh, 820 watts PMPO, 2 HSP 56, 56K, PCI	Vintron, 720 watts PMPO, 2 NA, 56K, PCI	Vintron, 720 watts PMPO, 2 D-Link, 56K, PCI	Mercury SW880, 880 watts PMPO, 2 Motorola SM 56, 56K, PCI	Mercury MS440, 440 watts PMPO, 2 ✗	Mercury SW 980, 36 watts, 2.1 Motorola SM 56, 56K, PCI	✗
✗	✗	✗	Headset	Headset	Headset	✗
2.4 GHz	1.5 GHz or more	2.4 GHz and above	2.4 GHz and above	1.2 GHz or more	2.53 GHz and above	3.04 GHz and more
3 GB	1 GB	3 GB	768 MB	512 MB	3 GB	3 GB
2 vacant	2 vacant	2 vacant	5 vacant	3 vacant	5 vacant	3 vacant
Windows XP Home with media	Windows 98 SE (provided only if you specify)	Windows XP Home (provided only if you specify)	Windows XP Home with media	Windows 98 SE with CD and boot disk	Windows XP Home with media	Windows XP Professional
✗	✗	✗	✗	✓	✗	✗
✓	✓	✓	✓	✓	✓	✓
✓	✓	✓	✓	✓	✓	✓
Satyam 100-hour Internet package	Norton AntiVirus 2000, McAfee 5.0, Satyam 100-hour Internet Pack, Eudora 5.1, Pegasus Mail 3.1, Front Page 98 trial, Dreamweaver 4 trial, Winamp 2.7, Real Player 8	Norton AntiVirus 2000, McAfee 5.0, Satyam 100 Hour Internet Pack, Eudora 5.1, Pegasus Mail 3.1, Front Page 98 trial, Dreamweaver 4 trial, Winamp 2.7, Real Player 8	Norton AntiVirus and Firewall, Adobe Acrobat Reader, Intel LDCM, Utilitiy Management Tool, Easy Tune, PowerDVD 3, 4x4 Evolution	3Deep, Adobe Acrobat Reader, CD Ghost, Genesys, Language Genius, Media Ring Talk, PC-Cillin Antivirus, PC DJ, Recovery Genius, Super Voice	Motocross Mania, 4x4 Evolution, Serious Sam, Heavy Metal FAKK2, Rune games, Nero 9.0, PowerDVD 4.0, Blank CD-RW	Norton Internet Security Software, Norton AntiVirus 2002 (3 months), NTI CD Maker, Intel Active Monitor, Real Player 8.0 with Jukebox 2
5.89	5.47	7.00	5.28	5.47	8.90	6.13
4.49	4.33	4.01	4.71	4.81	6.12	2.32
4.66	2.67	4.71	4.68	2.81	9.75	7.87
4.50	5.08	4.37	4.66	6.38	6.75	4.71
5.2	5	5	5.2	5.2	5.6	5
2.61	5.88	4.34	5.91	4.16	4.88	5.80
28	26	25	30	27	17	62
106	195	100	108	173	63	172
20.33	20.33	22.5	23.26	24.83	14.5	30.56
31.4	15.3	8.4	8.3	13.2	74.1	10.5
12.9	14.4	Failed	Failed	Failed^	50.5	57
3.91	4.29	3.89	4.03	3.97	7.17	4.63
5.72	5.27	5.69	5.54	4.98	8.32	4.71
5.29	4.62	4.95	5.00	4.92	7.13	5.16
1**	1^^	1^^	1*	1*	1*	1*
100	300	300	9	9	9	130
✓	✓	✓	✓	✓	✓	✓
✗	✗	✗	✗	✗	✗	✓
19.08	11.45	13.67	18.76	12.40	23.69	20.35
19.22	20.10	19.92	20.07	18.92	32.51	20.06
6.71	5.12	5.12	3.58	3.58	3.58	6.87
15.11	17.88	13.10	17.70	18.71	11.68	12.51
60.12	54.56	51.81	60.11	53.61	71.46	59.79
B+	B	B-	B-	B-	A-	B
Nebula Technologies Pvt Ltd	Vintron Informatics Ltd	Vintron Informatics Ltd	Visualan Technologies	Visualan Technologies	Visualan Technologies	Zenith Computers Ltd.
022-6730567	011-6810815	011-6810815	022-7686817	022-7686817	022-7686817	022-8377300
pratik@nebulatech.com	corporate@vintron.co.in	corporate@vintron.co.in	sales@visualanindia.com	sales@visualanindia.com	sales@visualanindia.com	
39,000	27,145	39,445	33,750	25,750	74,000	48,925

Decision Maker			
	Gaming and Entertainment	Productivity	Office and Internet
You need	To play the latest games such as <i>Quake III Arena</i> and <i>Unreal Tournament 2003</i> at the maximum settings and with all the effects turned on	To work with applications such as Photoshop and with audio and video editing tools	A computer for surfing the Net and that can run day-to-day applications such as word processors and spreadsheets
Look for	At least a 2 GHz processor, 256 MB of DDR RAM, a 40 GB, 7,200-rpm hard disk, a 17-inch flat monitor, 2.1 speakers and at least a 16x DVD-ROM drive	At least a 1.7 GHz processor, 128 MB of DDR RAM, a 40 GB, 7,200-rpm hard disk, and a 17-inch monitor	At least a 1.2 GHz processor, 128 MB of SDRAM, 40 GB hard disk, 15-inch monitor, integrated graphics and sound
The models	Visualan Lavish, HCL Beanstalk 4455, Dart Emerald	HCL Beanstalk 4455, Dart Emerald	HCL Beanstalk 4458, Compaq Presario 3705AP, Visualan Celebrity
Price range	Rs 40,000 to Rs 74,000	Rs 59,990 to Rs 74,000	Rs 27,750 to Rs 48,990

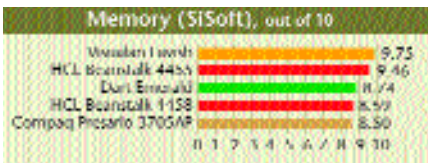
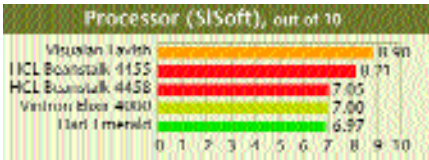
Once again, the computer that excelled was the Visualan Lavish. The two HCL computers competed closely in this category, leading to some very interesting observations. Even though both computers have different specifications, they were equally suited to office suites and Net surfing, as the relevant subsystems that were affected by the tests for this application had nearly similar specifications. Both these systems were based on the Pentium 4 processor with DDR memory, both had a



17-inch monitor with integrated audio. Yet the differences between the Beanstalk 4455 and the Beanstalk 4458 were numerous: the former had a RAID-0 array of 7,200-rpm hard disk drives, while the latter had a simple 5,400-rpm drive. The Beanstalk 4455 had 256 MB of DDR RAM while the 4458 had just 128 MB and even though there was an ASUS V8170 Magic graphics card in the Beanstalk 4455, this made minimal difference in office applications and surfing. Another difference was in the optical drives used—the Beanstalk 4458 had a simple 52x CD-ROM drive, while the Beanstalk 4455 featured a 16x Pioneer DVD drive. The CD-ROM of the Beanstalk 4458 featured a sequential read rate of 2.86 Mbps, while the Beanstalk 4455's

DVD drive featured a transfer rate of slightly over 3 MBps. The sound system of the Beanstalk 4458 delivered a very commendable score of 8.83 out of 10, but the Beanstalk 4455 fell significantly under par, managing a score of just 1.88.

Armed with the Pentium 4/DDR combination, the Compaq Presario 3705AP proved to be a good performer for office applications. Despite the fact that it had only a 15-inch monitor, the display was sharp and clear. Its processor enabled this computer to perform well in the SiSoft Sandra sub-test. Its DDR memory also managed a good data transfer rate of 1.7 GBps; particularly impressive was its CD-ROM drive, which managed a sequential read rate of 3.96 MBps, making it the fastest in this comparison.



Buying Tips

- The specifications and associated features of your system configuration need to be suited to your application.
- Verify that a service centre is located close by and you fall within the jurisdiction of the service personnel in case of onsite calls.
- Your system should be capable of supporting newer and faster processors, and must contain adequate vacant slots for RAM and enough USB and serial ports for peripheral devices.
- Take into account how many vacant 5.25-inch drive bays your cabinet has for a future CD-RW drive.
- Enquire about the cost of various upgrade components to get a clear idea for a future budget.
- Find out what finance schemes are available and the flexibility options that exist. Preferably, check if the vendor has tie-ups with your particular bank for easy finance.
- Ask the PC vendor for references or phone numbers of former customers. They are usually more than willing to oblige.



Warranty and support

In evaluating the warranty and support of the computers, the brand that stood head and shoulders above the others was Compaq. With over 1,000 service centres across the country, there is ample support for this computer when you need it. It is also the only brand to offer telephonic customer support and a one-year onsite warranty on the Presario 3705AP. Coming in a close second was HCL, with 500 service centres spread across the country. It too offers a one-year onsite warranty. Vintron's service network is spread across 300 service centres across the country and it specifies an onsite warranty on its computers only within city limits. Dart's service network is spread across 275 service centres across the country and it offers a very impressive three-year onsite warranty. QMAX specifies a one-year carry-in warranty and has 100 service centres across the country. The only disappointing brand in terms of service network support was Visualan—it has only nine service centres in India, but does offer a one-year warranty. All the brands had the provision of an AMC after the warranty period.

The Winners!


In this comparison of branded PCs, we saw a spectrum of features and specifications. Some were more suited to high-performance gaming while others were tailored towards productivity and some, though low on specifications and sheer processing horsepower, were suited to general-purpose, non-demanding applications.

In this shootout, the computer that came out tops in terms of sheer performance was the **Visualan Lavish**, which bagged our Best Performance Award. With best-of-class components such as the 2.53 GHz Pentium 4 processor, 256 MB of DDR RAM and a speedy 40 GB 7,200-rpm Seagate Barracuda hard disk, this system had a very strong core to tackle most performance applications. The graphics subsystem was also very strong with the ATi Radeon 7500 graphics accelerator paired with the 17-inch LG E700S Flatron monitor. The roomy cabinet left plenty of room for expansion. This was also the only system to bundle a

wireless mouse and a very able 32x CD-RW drive. In terms of peripherals, it had a 56K PCI modem and an integrated Intel Pro 100 LAN card. It was pre-loaded with Windows XP Home Edition and also carried a CD of the OS. Also bundled were numerous games such as *Motocross Mania*, *4x4 Evolution*, *Serious Sam*, *Heavy Metal*

F.A.K.K.2 and *Rune*. The package also included Nero 9.0, PowerDVD 4.0 along with a blank CD-RW disk—all for a price of Rs 74,000. Armed with very powerful core components and a good graphics subsystem, this computer marched triumphantly into the gaming and multimedia authoring arena.

Our Best Value Award went to the **Visualan Celebrity**. This computer was based on an older 810E-based chipset and ran a 1.2 GHz Celeron based on the Tualatin core along with a 40 GB, 5,400-rpm Seagate hard disk and 128 MB of SDRAM. It also featured integrated sound and graphics and included a simple stereo speaker system, a 52x CD-ROM drive and a 15-inch LG Studioworks monitor. The bundled software was quite comprehensive and included applications such as CD Ghost, Genesys, Language Genius, Media Ring Talk, PC-Cillin Antivirus, PC DJ, Recovery Genius and Super Voice. Given its meagre horsepower, it cannot handle CPU and graphics-hungry applications well, but at Rs 25,750, is among the lowest-priced systems you could opt for when it comes to general-purpose applications such as office suites and Internet browsing.

Our extensive comparison tests proved that there is more to a branded PC than just specifications. These computers do not stop at offering just speed, but extend the utilitarian value to after-sales support and service. Be it intensive gaming, audio-video editing, surfing or plain keeping tabs of the grocery you will find one that serves your need! 

YATISH SUVARNA, MITUL MEHTA and MARCO D'SOUZA



The Visualan Lavish impressed us with its awesome processing and graphics firepower



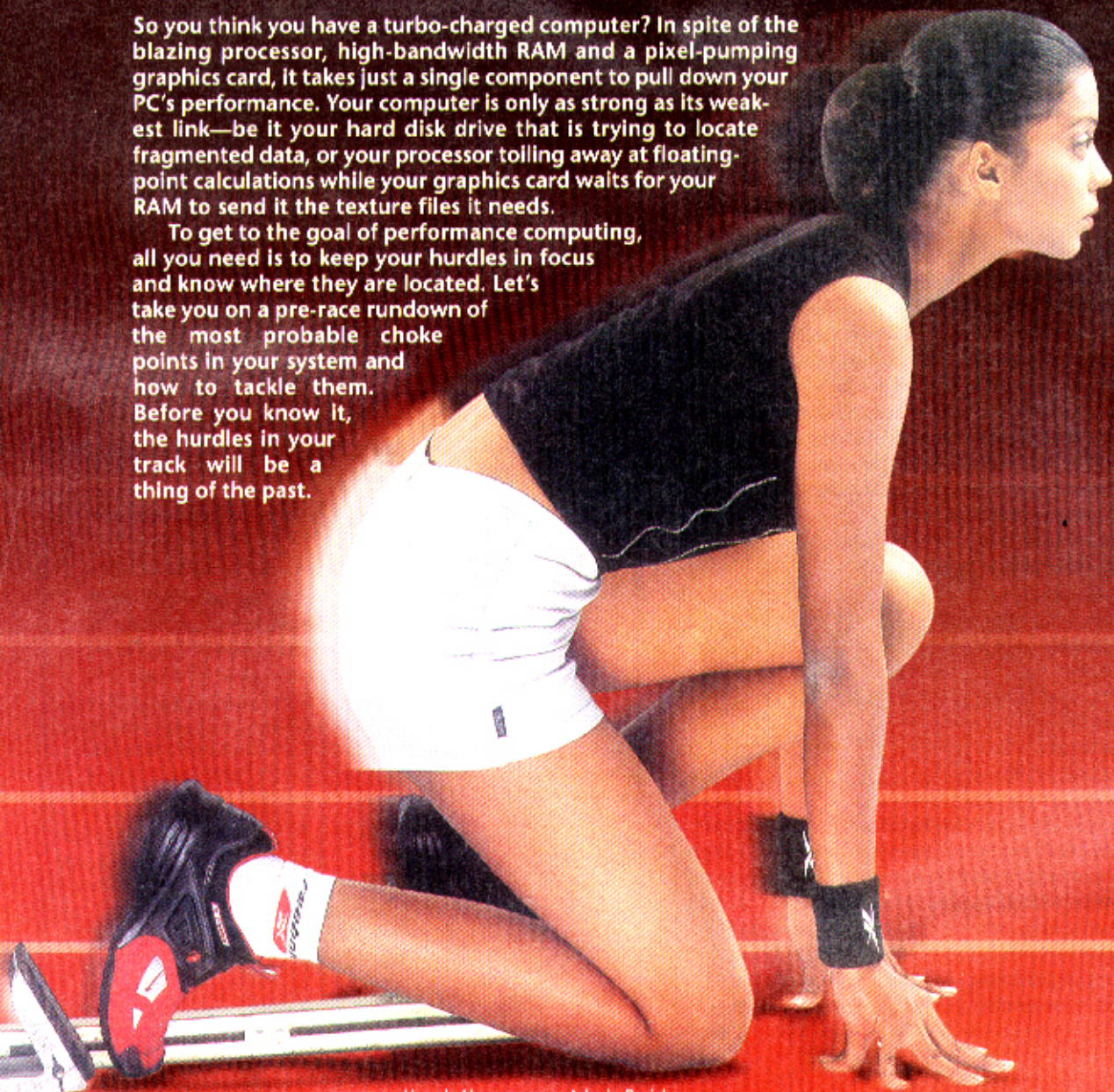
For general-purpose applications, the Visualan Celebrity leads the pack in performance and price

Get Set, Go!

Zoom past those performance bottlenecks. Find out what's holding your system back and how to overcome those hurdles

So you think you have a turbo-charged computer? In spite of the blazing processor, high-bandwidth RAM and a pixel-pumping graphics card, it takes just a single component to pull down your PC's performance. Your computer is only as strong as its weakest link—be it your hard disk drive that is trying to locate fragmented data, or your processor toiling away at floating-point calculations while your graphics card waits for your RAM to send it the texture files it needs.

To get to the goal of performance computing, all you need is to keep your hurdles in focus and know where they are located. Let's take you on a pre-race rundown of the most probable choke points in your system and how to tackle them. Before you know it, the hurdles in your track will be a thing of the past.





PROCESSOR

From wasted clock cycles to inefficient programs, there are many ways your processor can slow down your PC

The veritable brain behind your computer, the processor is the first component associated with the speed of a computer. The common fallacy is that the speed of a processor (and eventually the computer) is solely dependant on its megahertz (MHz) rating—the higher the rating, the faster the various sets of data and instructions are processed. Clock speed does play an important role in determining the processor's speed, but it is not the only factor that affects its performance. There are several other subcomponents in a processor that can spell the difference between your computer taking 10 seconds more to boot up, or your 3D model taking 1 minute more to render in 3D Studio Max.

The bus speed supported by your processor is also an important determinant of your processor's speed. For example, when the Pentium 4 processor was first launched, it was based upon a 400 MHz system bus. However, in its newest iteration, the Pentium 4 uses a 533 MHz system bus. This means that data would move between system components much faster and you would see the benefits in applications such as Adobe Photoshop, which make heavy use of the three most important subsystems—the processor, the RAM and the hard disk. Therefore, if you upgrade to a processor that supports higher bus speeds, you would benefit not only from the increase in the processor's frequency, but also from the faster data transfer rates between the computer's subsystems.

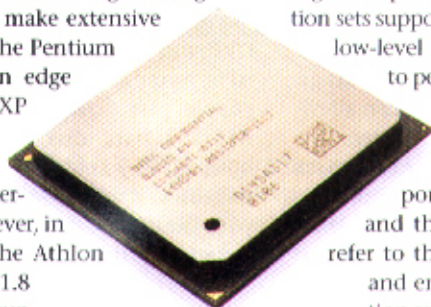
Ever wondered why even though you have roughly the same system configuration as your friend, the applications seem to run faster on his computer, the only difference being that he has a different brand of processor?

One reason is the amount of cache the processor carries.

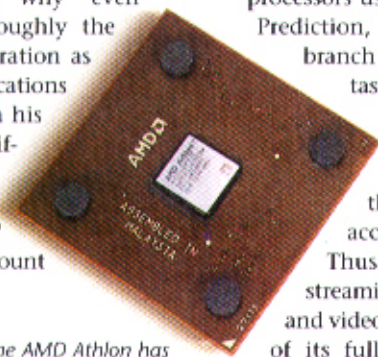
The two types of cache are Level 1 (L1) and Level 2 (L2). Cache is defined by its size and the speed it is running at. For example, in games like *Quake III* and image editing applications that make extensive use of L2 cache, the Pentium 4 would have an edge over the Athlon XP due to the greater amount of cache (512 KB versus 256 KB). However, in MP3 encoding, the Athlon XP running at 1.8 GHz would outrun even a 2.4 GHz Pentium 4! This is due to another processor subsystem, the integer and floating point units. It is here that all the actual calculations take place and with the Athlon XP having three floating point and integer units each, compared to the Pentium 4 which has only one of each, the Athlon XP would definitely come out tops.

Among the Intel and AMD clans of processors, two perceptible routes of processor design have emerged—Intel designs its processors with longer pipelines (a section of the processor that is fed with a flow of instructions) to allow for higher clock speeds; AMD still uses shorter pipelines, which means it will not be able to touch clock speeds as high as Intel. In a practical situation, when both the processors need to choose which branch to take while executing a task, the length of the pipelines comes into play. All newer processors use a technique called Branch Prediction, where they guess which branch would be most suitable for a task, before the actual decision point. In the event that a wrong choice is made, the Intel processor would face the biggest performance hit on account of its longer pipelines. Thus, the Pentium 4 is ideal for streaming applications such as audio and video authoring, but will fall short of its full potential performance in non-streaming software such as office applications.

We often come across terms such as MMX, SSE2, 3D Now!, SIMD, etc when talking about processors. These are the instruction sets supported by the processor, i.e. the low-level language the processor uses to perform tasks such as addition, multiplication, data movement, etc. Different brands of processors support different instruction sets and the terms mentioned above refer to the various implementations and enhancements to the instruction sets of popular processors from Intel and AMD. Sadly however, these hi-tech sounding acronyms have meant precious little in real world terms. For example, when MMX-enabled processors were launched, people thought that all their applications would magically run faster. In reality, unless the applications you use specifically state support for these instruction sets, you will not perceive any difference in their speed of operation.



Intel's Pentium 4 processor boasts of higher clock speeds



The AMD Athlon has six number-crunching pipelines

Tips & Tweaks

- Verify that your processor's L2 cache is enabled in your BIOS.
- Load specific patches for your applications, which tap into special instruction sets on your computer. You can find them on the respective application sites such as Adobe and Discreet, for example, where they have specific support for newer processor technologies with each new iteration of their application software.
- See that your processor has adequate cooling in terms of the CPU fan and system airflow. Use a large heatsink with a good quality CPU fan and ensure that the airflow in your system cabinet is optimal. This prevents lockups and application crashes caused by excessive heat generation. Older processors such as those based on 0.18-micron fabrication processes generally use higher core voltages and therefore tend to generate more heat. Special care needs to be taken with these processors.



MOTHERBOARD

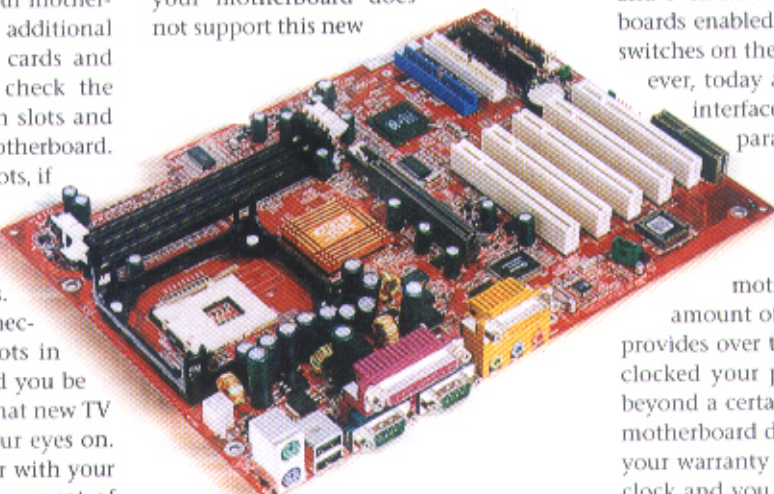
The motherboard has numerous points of control, and these offer many pathways for sapping the horsepower out of your computer

This miniature city of components and interconnections forms the physical, as well as the electronic infrastructure on which the rest of your system is based. Being such a complex component, there are numerous settings, tweaks and considerations that can alleviate any throttle points in your system.

If you are the kind who loves to pack your system with the latest components, you have to make sure that your motherboard is capable of supporting additional components such as add-on cards and memory sticks. You should check the number of free PCI expansion slots and RAM slots available on your motherboard. When it comes to expansion slots, if you want speed and compatibility, it is advisable to stay away from motherboards with the older ISA slots. Make sure that you have the necessary number of free PCI slots in your system. Only then would you be able to buy components like that new TV tuner card that you've got your eyes on. Another very important factor with your system's overall speed is the amount of RAM in your system. With just a simple RAM upgrade, you could garner anywhere between 20 and 40 per cent increase in your system's performance. Added RAM gives your applications more room to exist in and minimises the need to page to your hard disk—a definite bottleneck.

One important consideration while upgrading your processor is whether it will be compatible with your motherboard. The latest processors incorporate technologies and capabilities which require specific support from your motherboard. With both Intel and AMD having moved over to the 0.13-micron technology, their newer processors have different voltage and power requirements compared to older predecessors. This requires special support from the motherboard. Therefore, if you need a faster processor, ensure that your motherboard either supports it implicitly or that there is a BIOS upgrade available for it on the manufacturer's Web site.

There is a wide range of interfaces on motherboards that decide which types of internal and external components you can add to your computer. Your CD-ROM, DVD and hard disk drives are all connected to your motherboard's IDE channels. If you've just bought a new 7,200-rpm ATA/133 hard disk drive and haven't noticed any perceptible performance increases, it could mean that your motherboard does not support this new



This city of components can either boost or buck your system's performance

IDE technology. Even though your hard disk will work fine on an older interface, you will not see a performance increase unless your motherboard also supports the new technology. Another classic case is when you buy a brand new 'USB only' printer and find out that you cannot connect it to your computer, as the motherboard doesn't have the necessary ports. Mice, keyboards and gaming peripherals are based on a number of interfaces—make sure the one you plan to use is supported by the motherboard.

Gaming enthusiasts who are constantly on the lookout for a graphics card upgrade will face a definite roadblock if their integrated graphics motherboard does not have an AGP slot; the only way out is to upgrade the motherboard to one that does. Also, make sure that the

motherboard supports an AGP standard such as AGP 4x or higher. This is the speed that most of today's graphics cards are based upon. Upcoming motherboards will be based on the AGP 8x standard but this is still some time away from becoming mainstream.

Every motherboard offers methods by which you can set parameters such as your processor's clock speed, its bus speed and even its core voltage. Older motherboards enabled this through tiny thumb switches on the motherboard itself. However, today all motherboards offer an interface in the BIOS where these parameters can be modified.

An easy way to experience a speed up is to overclock your CPU.

The overclockability of a motherboard is dictated by the amount of control the motherboard provides over these features. If you overclocked your processor but couldn't go beyond a certain speed, it's because your motherboard does not allow it. However, your warranty becomes void if you overclock and you need to be careful so that you do not damage your processor or motherboard.

Tips & Tweaks

- Load the latest chipset drivers from the company Web site to ensure peak motherboard performance and to resolve known issues with your board's chipset.
- Enable performance settings from your motherboard's BIOS: set System BIOS to cacheable and enable 'Passive Release and Dynamic Bursting' for the PCI bus.
- Use tools such as Motherboard Monitor or the utilities bundled with your board that let you monitor aspects of your system such as processor temperature and fan speeds. This helps trap potential bottlenecks before they escalate into more serious problems.



RAM

Whether it is in terms of size or bandwidth, memory can spell a world of difference in the response time of your applications

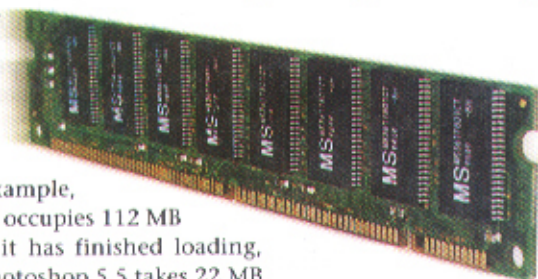
The centre stage for all your programs, RAM is where your OS' core and other applications are loaded. The unsaid rule of thumb states that the more RAM there is, the happier your programs are, giving you a smoother computing experience.

When you launch a program from your hard disk, a large part of it is loaded in RAM itself. The executable code occupies space in RAM with the amount varying from one application to another. For example, image editing software heavily depends on RAM for holding image files temporarily while you work on them. This slows down the other programs. For example, Windows 98 SE occupies 112 MB of RAM when it has finished loading, while Adobe Photoshop 5.5 takes 22 MB with no image files opened! Therefore, if you open too many applications simultaneously, after a certain point, all the useable part of the RAM will be utilised. After this, the temporary information gets saved on the hard disk, drastically slowing down your system since hard disks transfer data much slower than RAM. Therefore, if you are used to running many applications simultaneously, the more RAM you have, the smoother your system will run.

RAM is packaged in various densities, ranging from 64 MB, all the way to 512 MB per module. One bottleneck faced if you choose two modules of smaller size over one large module is the utilisation of precious RAM slots on your motherboard. This will hinder future upgrades

since you would have no more free slots.

Over the past two years, various types of RAM based on newer technologies have cropped up. The most popular RAM is SDRAM (Synchronous DRAM). In its 133 MHz version, it sports a data transfer speed of 1.064 GBps. This has since been superseded by faster technologies such as RDRAM and DDR SDRAM. For example, PC800 RDRAM has a data transfer speed of up to 1.6 GBps while PC2100 DDR SDRAM boasts of a transfer rate of 2.1 GBps. However, the type of memory you have or can

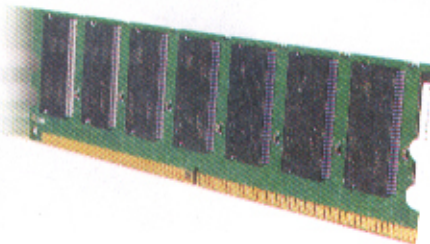


SDRAM is a dated technology and can slow down today's applications

upgrade to is also dictated by the type of motherboard/chipset combination you have—not all motherboards support all types of RAM interchangeably. There are physical differences in their form factor and construction, due to which they can only accept RAM modules of one type. For example, the i850 motherboards from Intel are based upon RDRAM while their i845 and i845D motherboards are based on SDRAM and DDR SDRAM respectively. Even though RAM is close to a thousand times faster than your hard disk drive and most other components in your system, the one component that outpaces RAM in terms of data

handling bandwidth is the processor. And it is this very component to which RAM is practically married! Therefore, if you are running any of the new processors such as the 2 GHz+ Pentium 4s or AMD's

Thoroughbred processors, it would make



DDR is going through many iterations and is fast becoming an industry standard

sense to pair them with the fastest RAM. This would be RDRAM with Intel's P4s and DDR SDRAM with AMD's Thoroughbreds.

Finally, an often-missed specification, known as Column Access Strobe (CAS), is another potential bottleneck. CAS defines the maximum time taken (in clock cycles) for the RAM to reach a piece of data inside it before it is ready for transfer. Imagine trying to locate a shop that sells magazines. CAS is akin to the time taken to reach this shop—once you're inside the shop, it would take you less time to take a set of magazines out of the shop (the RAM's data transfer rate). For example, 133 MHz SDRAM is available in three CAS flavours—2, 2.5 and 3 clock cycles. Naturally, the lower the time taken to access the data inside it, the quicker is the response of the RAM.

Tips & Tweaks

- Buy more RAM. Today's applications and operating systems such as Windows XP need at least 256 MB of RAM to run smoothly.
- From the BIOS, enable the lowest CAS setting that your RAM supports. Also set it at the highest bus speed setting of the RAM you are using—change it to 133 MHz if you have such RAM.
- Enable bank interleaving from the BIOS if your motherboard supports it.
- Close any large applications you do not need so as to conserve memory for other important programs.



RDRAM represents the best you can get in bandwidth, but its high latency is still a problem



HARD DISK

Hard disk drives are one of the most common choke points in your system. Find out what makes them walk or zoom

When it comes to storing large quantities of data and still keeping the cost per MB down to a few paise, there is no other storage device like the hard disk drive. Born out of a marriage of fields as diverse as electronics, mechanics, nanotechnology, aerodynamics and even chemical engineering, hard disk drives are true triumphs of modern engineering.

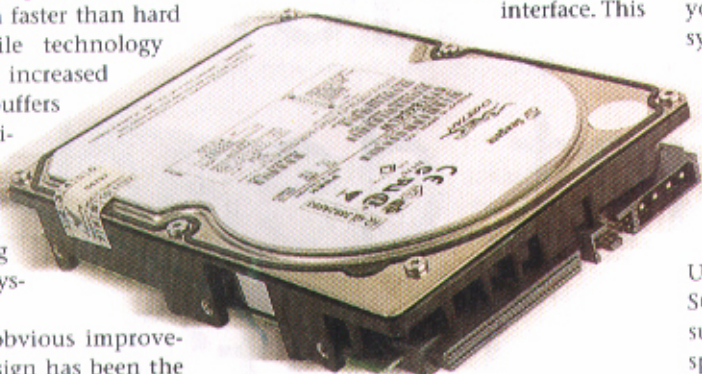
Components such as processors and RAM shuttle data much faster than hard disk drives, and while technology advancements such as increased spindle speeds, larger buffers and greater storage densities have improved hard disk performance, they are still the devices that can bog down the rest of your system.

One of the most obvious improvements in hard disk design has been the increase in spindle speed. The transition from 5,400 to 15,000 rpm has ensured that hard disks can meet the expectations of demanding applications such as image and video editing. For example, you may have noticed that your hard disk's LED indicator blinks wildly while you were playing *Soldier of Fortune 2*. This is because today's games with their bandwidth-sucking video cutscenes, huge virtual worlds and megabyte-sized character textures stress on the sequential and random read/write capabilities of your hard disk. Ideally, 7,200-rpm drives are best suited for home and office applications. If you have a slower hard disk, you will lose out on significant performance boosts, whether it is in terms of faster boot up times and application launches or smoother gaming.

Another very important component of your hard disk is the onboard buffer. This is the memory which holds the information that is being read or written on to the hard disk's platters. Today's hard disks come with anything from 2 MB to 8 MB of buffer memory. Since the buffer

comes into play during the entire operation of your hard disk, a drive with a larger buffer will exhibit speed increases across the board.

One of the most neglected features is the interface of the hard disk. Almost all of today's IDE hard disks are of the ATA/100 and ATA/133 variety. So when you finally buy that new 7,200-rpm drive, the performance jump will be noticeable only if it is coupled with the right interface. This



A hard disk's rotations per minute (rpm) is the prime reason for speed. Drives with higher rpm, say 10,000 rpm, will supercharge your data-intensive applications

means that the data can be transferred at a theoretical rate of 100 MBps in the case of ATA/100 and 133 MBps in the case of ATA/133.

Apart from the fact that these rates are never really seen in real life (practically optimum rates are in the range of 32 to 36 MBps in the fastest 7,200-rpm drives), if you do not use the proper cables to connect these hard disks to your system, you will lose out on all the performance benefits associated with new hard disks. You will notice the speed improvements only if you use a compliant 80-wire, 40-pin cable. Of course, your motherboard needs to support the same ATA standard that your hard disk is using! Using these new hard disks on an older system such as a 440BX-based motherboard would completely throttle its performance. You will also need to add

an additional IDE card that features this new interface if you want to see the associated performance increases with newer hard disks.

On the higher end of the scale, SCSI hard disks offer further increases in data transfer speeds and they also break past IDE's restriction of having a maximum of two hard disks per channel—SCSI allows a maximum of 15 devices on a single chain. However, even though you have a SCSI hard disk in your system, the response of your applications may not be much higher than that of a new system with one of the new IDE hard disks as newer

IDE hard disks have managed to surpass the data transfer rates of some of the older flavours of SCSI such as Wide SCSI and Fast SCSI. Unless you have one of the newer SCSI hard disks based upon standards such as Ultra160 boasting of 10,000 rpm speeds, you would not really perceive much of a speed difference compared to some of today's ATA/133 7,200-rpm IDE drives. Also, SCSI hard disks are more expensive to implement compared to IDE and with the enhanced expansion capabilities of the SCSI standard, they are better suited to corporate applications for use in workstations and servers.

Tips & Tweaks

- Regular scanning and defragmentation of your hard disk keeps it healthy and enables it to operate at optimum levels.
- Enable the DMA setting on your hard disk within Windows if it isn't already enabled.
- Set the PIO/DMA setting in the BIOS to DMA for all your hard disks.
- Using two hard disks together with a RAID controller card configured in RAID-0 will deliver up to 40 per cent increase in the data transfer speed.



OPTICAL DRIVES

Whether it is a CD-ROM or a DVD drive, optical storage is the choice for data portability. But it can bog down your system if not configured right

When it comes to supplemental data storage, nothing has quite revolutionized portability like optical storage drives. Whether it is the CD-ROM, the DVD or the CD-RW, the convenience, portability of the media and comparatively low costs have been responsible for the immense success of optical storage devices. While the underlying technology behind these drives is primarily the same, where the surface of the CD media is coated with special dyes and lasers are used to read and write information to it, there is little else in terms of technology that differentiates these drives from one another.

Also, the performance increases of these peripheral devices has not been as dramatic as that of graphics cards or processors. However, with most of today's software and games being made available on CD-ROM, it is important that your optical drive is configured to its best working level.

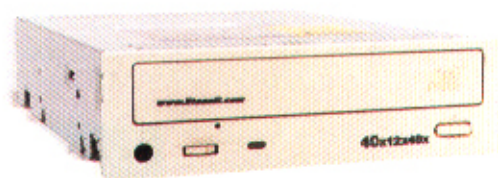
If you've ever loaded an application such as Microsoft Office, you will notice that the process of reading files from the CD-ROM drive sometimes takes ages—you could easily take a 20-minute coffee break! Like your hard disk drive, CD-ROM drives also operate in one of two modes—Programmed Input Output (PIO) or Direct Memory Access (DMA). The latter is more efficient and speedy and therefore, if your CD/DVD drive is not set to DMA within Windows, there will be a loss in performance while installing large applications, watching VCDs or DVDs, and while playing games.

A very common misconception with CD and DVD drives is the correlation most users draw between the 'x' factor and the drive speed. In

most CD and DVD-ROM drives, a higher 'x' factor only represents the maximum data transfer rate your drive is theoretically capable of. In real world terms, even some of the fastest CD and DVD-ROM drives exhibit data transfer speeds approaching 7 MBps. With the vast majority of drives, a data transfer rate of 4 MBps is normal. With most optical drives today, a technique called Constant Angular Velocity is used. Here, the spindle of the drive spins at a constant rate throughout the operation, meaning that the data transfer speeds near the hub of the disk are lower than at the rim of the disk. Constant Linear Velocity (CLV) overcomes this situation by keeping the linear velocity constant along all areas of the disk and the drive's actual rotational speed is changed depending upon the location of the read head over the disk. These drives give uniform data transfer speeds during the course of their operation.

Did you find the playback choppy and jerky the last time you watched a VCD or DVD, even while using a powerful computer? The reasons for this could be manifold. If you've connected your CD or DVD drive as a slave to your hard disk, the VCD and DVD playback could be adversely affected each time data is simultaneously accessed from the hard disk since both devices are on the same IDE cable. It could also be that you have not enabled DMA for your drives. With DMA disabled, your DVD drive will call upon your main processor for every single data transfer request. Therefore, if your processor is already busy with decoding your DVD video stream, it would result in your DVD drive not being able to pull out data fast enough, leading to a jerky playback.

Yet another factor that affects optical drives is a dirty laser pickup lens. Since they usually have retractable trays, there is an access point from where dust particles in the air can reach the innards of the drive, causing problems. The common



CD-Writers can take up a significant amount of system resources if they're not configured correctly

symptoms of this are poor speeds during CD-based applications, the inability to read media and sometimes even the rejection of a CD or DVD.

CD-RW drives expect to be fed with data in a constant flow in order to write a CD-R or CD-RW reliably. Now this is where problems can occur—have you ever been plagued with failed CD writes even though you've bought the fastest 48x CD-Writer? This could be attributed to an interruption in the flow of the data to the drive because the hard disk or processor is busy performing a processor-intensive action (such as playing MP3s) while a CD is being written. When the CD-RW drive fails to find the data in its buffer, the condition is known as a buffer underrun. It is safer to refrain from doing anything else on your PC while a CD is being written so as to ensure that there is no external disturbance during the write process.

Tips & Tweaks

- Make sure you enable DMA for your optical drives from the BIOS and within Windows.
- Enable any buffer underrun protection methodologies supported by your CD-RW drive during writes.
- Housekeeping chores on your optical drive such as running a pickup lens cleaner every couple of months, will help ward off problems in the long run.
- Keep a lookout for Flash updates to your drive's firmware—this can elicit additional functionality and also iron out any known bugs in your drive's firmware.



Though it is among the fastest optical drives available, in real world terms, DVD drives exhibit data transfer rates approaching 7 MBps



GRAPHICS CARD

A properly configured graphics card can spell the difference between you being the fragger or the frag-ee!

Arguably one of the most tweakable components in your computer, this is one device where any kind of bottleneck or chokepoint becomes instantly noticeable—if your graphics card dropped frames and slowed down game-play during a *Quake III* deathmatch, you'd know about it faster than you could say fragbait!

For most of us, the most economical choice of graphics subsystem is that which is integrated in the motherboard itself. While purists would smirk at this approach, there is nothing to beat integrated graphics if you're on a budget. However, if you have a system with an integrated

graphics solution such as an Intel 815 motherboard or even the newer 845G chipset based board, your F1 Ferrari in that latest racing game may well respond like a Morris Minor! This is because your integrated graphics chipset doesn't have the processing horsepower to cope with the demands of today's games and applications. Onboard graphics are probably the least suited to intensive gaming and graphically demanding applications, as they just do not have the necessary power to deliver when it comes to pushing millions of pixels per second or swapping megabytes of environmental textures as seen in most new 3D games. At the very least, if your system does have integrated graphics, an AGP slot would give you the leeway to expand to a faster solution at a later date.

3D games today use enormous amounts of texture, vertex and model information, all of which require large amounts of memory to run. Since the

magic of 3D games is because they are 'realtime', all this texture swapping and polygon pushing has to happen at least at 30 fps. This calls for an extremely fast Video RAM. The most commonly used type of RAM on today's graphics cards is DDR RAM and it comes with 32 MB,

64 MB and in some cases even 128 MB of dedicated video memory on the card itself. An integrated graphics system does not

come with inbuilt memory and borrows it from your main system. This sharing of memory degrades the performance of a system using integrated graphics, as the RAM on your motherboard is significantly slower than RAM integrated

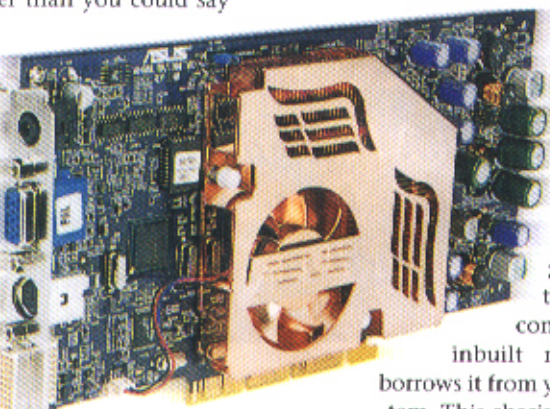
with the new-generation graphics cards.

As with processors, the whizbang features of the latest graphics cards need to be supported by the games you play. Therefore, while terms like TNL (Transform and Lighting), EMBM (Environmental Bump Mapping), Programmable Pixel and Vertex Shaders represent path-breaking technologies that promise greater levels of realism, you also need games that actually make use of these technologies. If you find that the mud on the 4x4 truck is not as realistic as you thought it would be with your new GeForce 4 card, it could mean that the game itself is not aware of the new multi-texture processing capabilities of the card.

Your graphics subsystem also needs to adhere to APIs (Application Programming Interfaces) such as DirectX or OpenGL. All games are built around either of these APIs—if your graphics card is not able to even launch the game, it could mean that the drivers do not

support these APIs. Newer driver updates for the graphics card will fix this. There are also numerous tweaks that can help extract a little extra performance out of your graphics card.

Lastly, even though your motherboard features an AGP slot, it does not necessarily mean that it is equipped to run tomorrow's graphics cards. AGP slots also have different standards that dictate how fast the AGP interface operates. The most popular interface right now is AGP 4x, which is practically standard on all motherboards and sports a bandwidth of 1 GBps. Future iterations such as AGP 8x will scale to higher speeds to provide room for the increasing bandwidth requirements of next-generation graphics cards.



Even with the formidable GeForce 4 graphics card, there are potential bottlenecks that can throttle your fps

Tips & Tweaks

- Always check for updates for your graphics card's drivers from the manufacturer's Web site. This gives you added functionality, improved performance and additional features, and quells bugs.
- Disable the 'Sync to Retrace' setting from your graphics card's driver if you are getting sub-par frame rates.
- If you are using a slower graphics card, try disabling environmental effects such as fog and smoke, and reduce the level of detail for the textures, characters and geometry to get those extra frames per second, albeit at the cost of graphical realism.
- Most graphics cards' drivers have a setting for enabling a function called anti-aliasing. While this setting reduces the effect of jaggies on screen (especially at lower resolutions), enabling this feature will lower your frame rates. Experiment with this setting and enable it only if you still have playable game speeds.
- On systems with integrated graphics chipsets, you can assign a greater amount of system memory as graphics memory—do this by increasing the AGP Aperture Size in your CMOS.



MONITOR

A well-configured monitor will give you clear and sharp images—otherwise, it's bleary eyes and headaches for you

Your window into a world of movies, graphics and images on your computer, the monitor is one of the least regarded devices of your system, considering the fact it is your only portal to the outcome of that sea of digital information in the beige box. Therefore, the performance of your monitor can play a subtle, yet significant role in how efficiently you can work in the long run.

Have you ever felt the need to have more information packed onto your screen so that you don't have to scroll so much through your spreadsheet? The factor that can facilitate this is the resolution of your monitor. The resolution is simply the number of horizontal and vertical pixels that can be drawn on your screen—the higher this number, the greater is the amount of information you can perceive. Therefore, simply increasing your screen resolution will give you the ability to view more in applications such as spreadsheets, word processors and even Web pages. However, increasing resolution does come with a trade-off—a decrease in refresh rate.

If your monitor is operating at anything less than 75 Hz, the human eye will be able to perceive a flicker in the display. While this may not be apparent at first, staring at such a display for hours on end can cause serious eye fatigue. The

specifications of all monitors state the maximum resolution supported at a given refresh rate, because they have a fixed video bandwidth—an increase in display resolution will result in a corresponding reduction in the refresh rate

since the video bandwidth always remains constant. Therefore, if you run your monitor at its highest possible resolution, you will be also running it at its lowest refresh rate, which could cause eyestrain.

Even though monitors have a significantly higher resolution as compared to television, nothing beats watching a movie on a larger screen. With the resurgence in newer forms of multimedia, life-like gaming and the pro-

liferation of DivX and DVD movies on PC-based home theatres, the days of the 15-inch monitor are gone. While it is not a direct bottleneck (Microsoft Word will still take the same amount of time to start!) having a larger screen is definitely a big advantage.

Over time, a monitor's display gets slightly distorted due to ageing of the picture tube and other electronic components. Therefore, you need to have an adequate number of controls that allow the different aspects of the display to be controlled. Besides the horizontal and vertical size and position, there are numerous other controls that can manipulate how the display looks and fits into the frame of the screen. This would include parameters such as raster rotation, trapezoidal correction, parallelogram correction, pincushioning and pin-balancing. The presence of gamma correction and colour temperature controls also ensures that the display is as lifelike and balanced as possible.

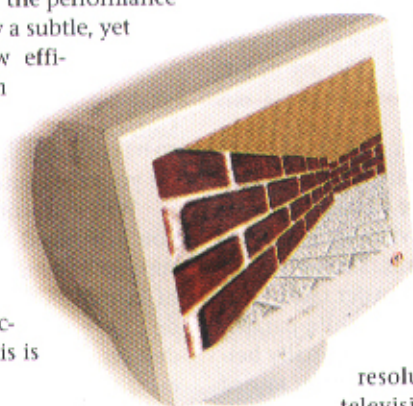
The renewed interest in TFT monitors

has also raised questions with regards to which of the two technologies is better. While there is no definite answer, each technology exhibits specific advantages in certain areas. While CRTs offer the advantage of smaller dot-pitches and higher resolutions, TFTs exhibit inherently better brightness and contrast levels allowing for much more vivid images. Also, TFTs are lighter and have form factors and footprints that are significantly smaller than in their CRT counterparts. On the other hand, one of the two most prominent disadvantages with TFTs is the display 'response time'—the time taken for the TFT pixel elements to switch on or off. This results in varying levels of ghosting in TFTs, especially where there are fast-moving images as in movies and gaming. TFTs are also much more expensive compared to CRTs. However, TFT prices have been on the decline and a time is predicted where LCD technology will become as economically viable as CRT display systems.

Tips & Tweaks

- Whatever resolution you use, your monitor's refresh rate should be at least 75 Hz. Anything less could result in eyestrain after prolonged use.
- The lighting around your workspace should not be significantly brighter or dimmer than the brightness of your monitor. This helps minimise eyestrain.
- Keep your monitor away from electrical components such as transformers and switching devices as they affect the display and could even be detrimental to the picture tube in the long run. Degaussing it occasionally can reduce the colour patches but refrain from doing this too frequently.
- Since the monitor is probably the last component you would ever upgrade, it makes sense to buy the largest monitor you can afford when buying a new computer.

The larger the picture tube, the greater is the refresh rate and resolution



TFT monitors offer greater brightness and contrast levels as compared to CRT monitors





MISCELLANEOUS COMPONENTS

We often ignore them, but your PC's cabinet, sound system and input devices play a significant role in your PC's speed and stability

While your processor, graphics card and hard disk steal the limelight in terms of technology and performance, there are other components that play a role in boosting performance but are usually ignored—such as

your system cabinet, input devices, speakers and even the power supply. These components won't affect your frame rates or the time taken by Photoshop to start up, but they do facilitate smoother work and allow your computer to be upgraded with

newer and more powerful 'centre stage' devices. Let's take a look at some of these devices, peripherals and external expansion interfaces and understand how they can affect your system's performance and upgradability.

External Bus

With the explosion in the popularity of devices such as scanners, CD-Writers, digital cameras and the like, the need arose for an umbilical cord that would connect them to your computer, speedily and reliably. Due to their relatively low speeds and virtually non-existent expandability, serial, parallel and game ports could not keep pace with the onslaught of new devices that were introduced for home and office computers. Newer standards that would allow these devices to be connected to the computer at high speeds and yet leave room for expansion were needed.

The answer came in the form of USB and FireWire—both these plug-and-play technologies were born to create an external expansion route for newer portable devices and peripherals. While devices such as keyboards and mice do not really require this increased bandwidth, other devices such as scanners, printers, MP3 players, external storage devices and CD-Writers place greater demands on the speed of the port. For example, in its present version, USB 2.0

allows for data transfer speeds of up to 480 Mbps while FireWire allows a speed of 400 Mbps—both are ideally suited to bandwidth-hungry devices such as scanners and digital cameras. Similarly, serial ports have a paltry transfer rate of just 115 Kbps, while parallel ports are marginally better with a transfer rate of 1.5 Mbps.

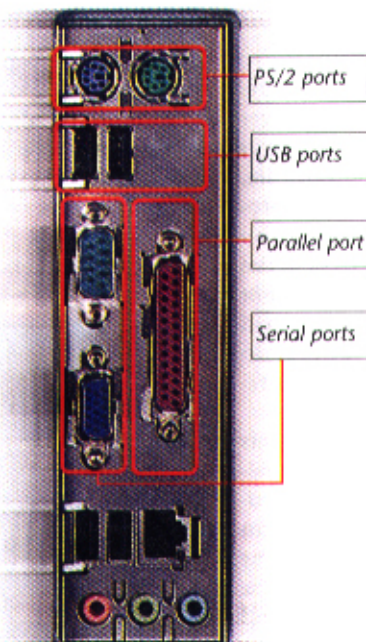
Sometimes, a simple little device such as a PS/2 mouse could be a cause for heartache when, after you've bought it, you discover that your old Baby AT format motherboard does not even have a PS/2 port! Even today, if the temptation to buy one of those new PDAs is just too high, you should check if your computer is equipped with the interface needed for the device. Many older computers have only serial and parallel connectors

and no USB connectors. Therefore, while you could still use a PDA on the serial port, the paltry 112 Kbps maximum transfer rate will leave you tearing your hair out each time you try to synchronise your mail with your PDA or download images from your digital camera. Interfaces such as USB also alleviate expansion problems since they allow devices to be daisy-chained to one another—USB allows up to 128 devices

to be connected this way to a single port on your computer!

When it comes to new interfaces, you also need to ensure that your OS supports them. While recent iterations of Windows (Windows 98 SE onwards) do have inherent support for USB devices, make sure that there are patches or updates available for newer technologies such as USB 2.0. This would be especially relevant with operating systems such as Linux where you would require patches and driver support for these interfaces.

Some of the newer motherboards also feature support for new-generation wireless interfaces for portable devices such as Bluetooth, Infrared and WiFi. If you have an especially generous relative abroad who has sent you a Nokia 7650, ensure that your computer can support it either inherently or through expansion cards if you want to utilise the full potential of the device.



Tips & Tweaks

- Make sure that your serial ports are set to operate at full speed from within Windows. Set the transfer rate to 57600 bits per second.
- Using a PS/2 or USB mouse will give you much smoother control, as the sampling rate of these ports is much higher than that of a serial port.
- If your USB device does not work even after checking connections and compatibility, enable the setting 'Assign IRQ to USB' from the BIOS.

Cabinet

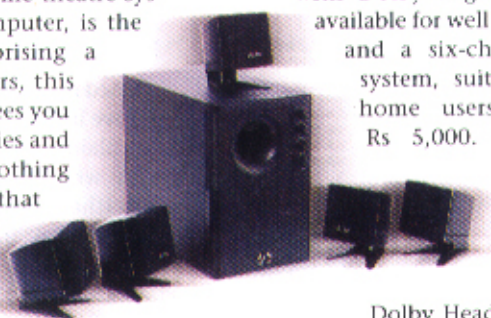
Perhaps the most ignored system component is the trusty system cabinet—most of us spared it a serious thought only at the time of purchase, when we chose its colour and shape! The fact is that the system cabinet dictates how many drives you can have in your system, whether you can add additional ports and even how cool your system remains. If you find that after your recent CPU upgrade, your system has begun heating up, especially after long periods of use, it could mean that your processor is running slightly hotter than it should. Choosing a larger and roomier cabinet would free you from this problem. Larger cabinets also have the facility for adding cooling fans to dissipate heat within the cabinet.



Also a part of your system cabinet, your SMPS is the powerhouse that delivers clean power of varying voltages to the various components in your system. By default, most SMPS units have a power rating of 235 watts. While this is suitable for most computers, the moment you add more peripherals or a faster processor, you will begin to load the SMPS. If you have just installed an Athlon XP 2100+, a GeForce 3 graphics card and a 40x CD-Writer and are raring to go, only to find that your system has suddenly become very unstable, it could simply be due to your older SMPS being overloaded.

Audio System

Another component that most people don't give due attention to, unless they are building a home theatre system around their computer, is the audio system. Comprising a soundcard and speakers, this is the subsystem that sees you through all those movies and MP3 songs. There's nothing more outrageous than watching *The Fast and the Furious* on a pokey little stereo speaker system. The good news



is that upgrading to a more serious audio system is more affordable than ever today with Dolby Digital soundcards available for well under Rs 3,000 and a six-channel speaker system, suitable for most home users, starting at Rs 5,000. Even if you have a stereo soundcard, you can use a technology such as Dolby Headphone to simulate surround sound from two channels.

Input Devices

Finally, we come to the input devices on your computer system. Your keyboard and your mouse are the two things with which you are in almost permanent contact with while using your computer. They are your interfaces to all the power that lies within the beige box.



In fact, Microsoft Windows Me even goes

so far as calling them 'human interface devices'! When you bought your keyboard and mouse, if you simply settled for one that had the most number of buttons or funkier colours, you're probably feeling the repercussions now as you try to get the hang of the keys. This will adversely affect your productivity as you will take longer to type and navigate your way through the Windows interface. In this case, it is you who are the bottleneck in your system! Choosing comfort and functionality over design and colour is indeed a wise choice when it comes to input devices.

MARCO D'SOUZA

Tips & Tweaks

- When buying a new cabinet, see that it has at least three 5.25-inch drive bays to allow for further addition of devices such as a CD-RW drive.
- See that your cabinet has enough room for additional cooling fans.
- You can also modify your casing and add additional fans to achieve greater levels of airflow within the system to facilitate more efficient cooling.
- To keep the components free from moisture, place a packet of silica gel inside your system cabinet.

- Four-channel soundcards are now available for as low as Rs 800. Teamed up with a sub-Rs 2,000 four-channel speaker system, this is a great 'bare minimum' when it comes to home theatre on your computer.
- If given a choice, go for a speaker system that features a digital input as this gives a much better sound quality compared to analogue inputs, especially in the case of surround sound audio.
- Keep your soundcard driver and DirectX versions updated as this ensures that your soundcard is operating with the highest efficiency and audio quality.

- Before buying a keyboard or mouse, insist that you try it out for comfort. A mouse should fit in your hand comfortably—take this into consideration especially if you have large or small hands.
- Clean your mouse rollers and dust the keyboard with a brush as often as you can. Dust buildup can cause your input devices to function erratically and this can get really frustrating!

TO SERVE AND PROTECT

Software to keep your PC in tip-top condition, protect it from intrusion and recover lost data

Like it or not, the computer has become an integral part of our daily lives. We depend on it to perform mission-critical tasks, we turn to it for keeping in touch with our friends and family, we use it for entertainment and for storing records and appointments. Then when we need it the most, it gets infected by viruses, or attacked by hackers and Trojans, and promptly crashes. Time and again, the PC has demonstrated that it is not to be taken for granted. Even while working with simple Word and Excel documents, you had better be quick on that [Ctrl] + [S] draw or be ready to lose your work. These inevitabilities are etched in stone and will invariably cause frequent loss of data or hair, maybe both.

But a solution is right around the corner, which will go a long way in preventing problems and reducing the post-catastrophe heartache. The solution is in the form of a system suite—a collection of tools and utilities that keep a tab on the health of your computer, protecting it from viruses and attacks, even as they help maintain and recover critical data and important files. We have evaluated three such suites: McAfee Utilities, Norton SystemWorks 2002 and Ontrack SystemSuite 4.0 to help you decide on the best one to count on.

How they fared

We identified three distinct scenarios under which one might run a system suite: to enable system security, for system maintenance and for the purpose of a system recovery. We based our analysis of a particular suite on its performance under the three usage groups. The first case, security, is offered via anti-virus and

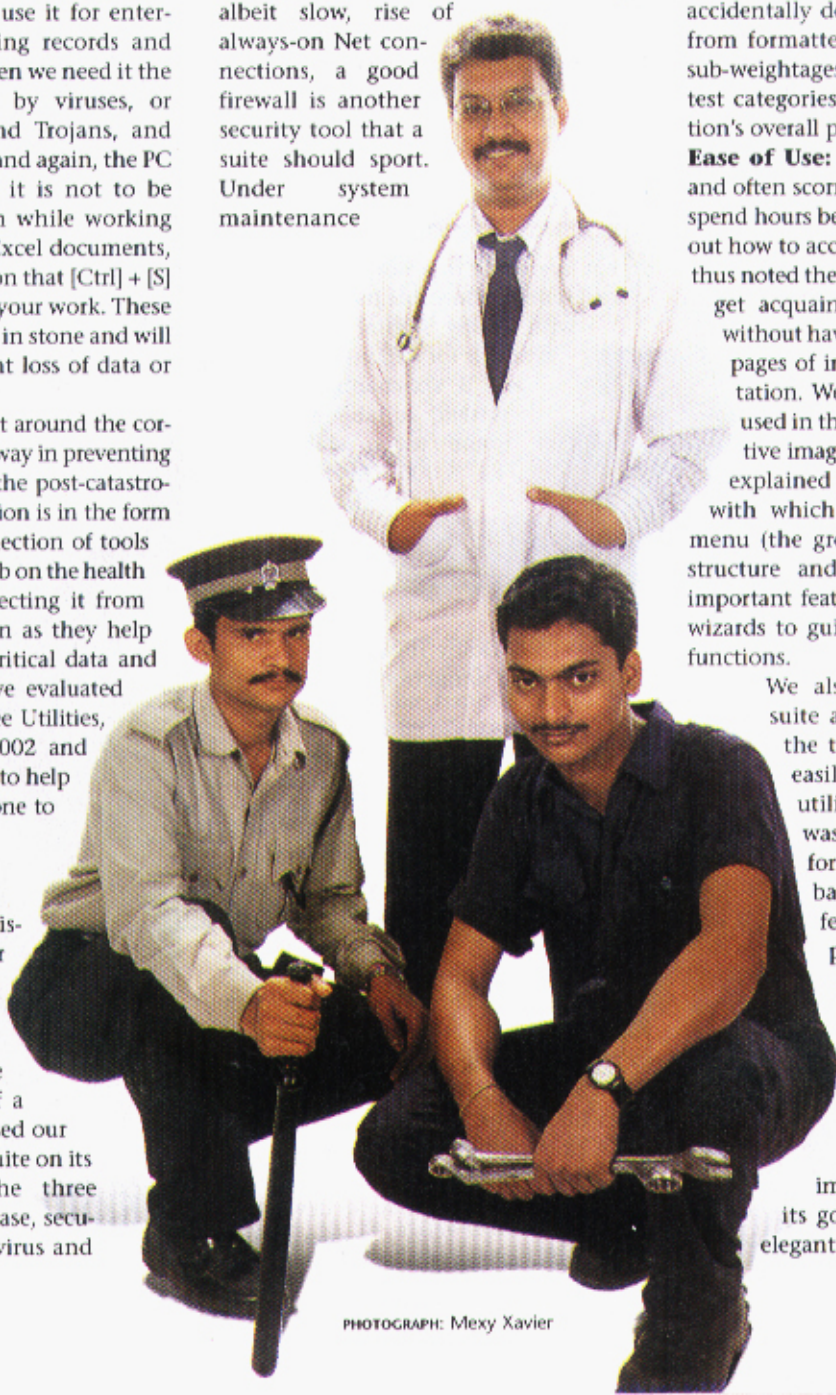
firewall tools. The presence of a robust anti-virus software is arguably one of the most important inclusions in a system suite. Thanks to the ever-increasing popularity of the Internet and the steady, albeit slow, rise of always-on Net connections, a good firewall is another security tool that a suite should sport. Under system maintenance

fall utilities that defragment your hard disk and scan it for errors. Registry cleaners and data backup tools are also included here. Finally, system recovery tools are those that prevent system crashes, restore accidentally deleted files as well as data from formatted hard disks. There were sub-weightages accorded to each of these test categories to ascertain the application's overall performance.

Ease of Use: Manuals are seldom read and often scorned upon. A user need not spend hours bent over a manual to figure out how to accomplish a certain task. We thus noted the ease with which a user can get acquainted with a system suite without having to pore over pages and pages of instructions and documentation. We noted whether the icons used in the applications had descriptive imagery or popup tool-tips that explained their function; the ease with which you could navigate the menu (the grouping of features, menu structure and intuitive placement of important features); and the presence of wizards to guide you through different functions.

We also checked whether the suite allowed you to customise the toolbar so that you could easily access frequently used utilities. Ontrack SystemSuite was the only one that allowed for customisation of the toolbar. Ironically though, this feature is very awkwardly placed within the interface (inside the SizeManager under Optimize and Maintain). Thankfully, you will have to hunt for this feature only once in the beginning.

The Ontrack suite impressed us the most with its good-looking interface and elegant menu structure, making it



PHOTOGRAPH: Mexy Xavier

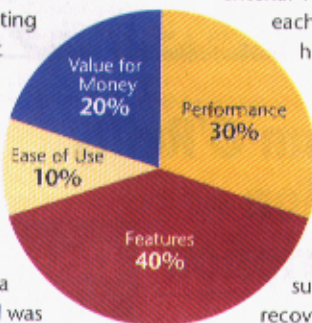
Digit Test Process

The test bed used to evaluate the system suites consisted of a Pentium 4 2.0 GHz processor on an Intel 845GBV motherboard, 256 MB or DDR RAM and a 40 GB 7,200-rpm hard disk. The OS was Windows 98 SE. We split the hard disk into two partitions—the operating system resided on the first partition, while the second partition was loaded with data for our file recovery and data recovery tests. The first partition was in a fragmented state, as it was created from an image of a hard disk in active use and was used for the defragmentation tests.

We evaluated the System Suites based on performance, features, ease of use and value for money.

Performance: To evaluate each suite based on the extent of resources that it consumed, we measured the time taken for a system to boot up, both before and after installing a system suite. Moreover,

the difference in CPU and RAM utilisation was noted down using the Windows System Monitor and a third-party utility—Cacheman 5.11, respectively. Defragmentation of a hard disk was the second criteria. We noted the time taken by each package to defragment the highly fragmented primary partition. The faster it was, greater were the points awarded to it. We also noted the decrease in the size of the system registry by running the registry optimising utilities that came along with the suites tested. Finally, the data recovery options were tested on the basis of file recovery and format recovery tests. To test the former, we deleted files from the second partition and then used the suites to recover them. Marks were awarded in accordance with the number of files successfully recovered. To test format recovery, the second partition was formatted. The data recovery tool was then run and the amount of data recovered was logged.

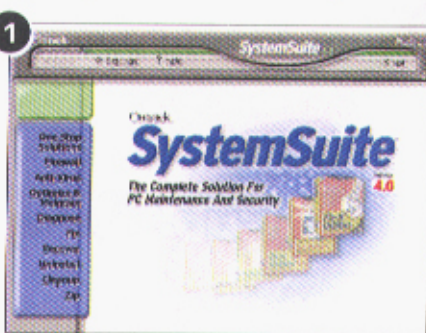


Features: A system suite is basically a set of tools bundled together and a greater variety of tools helps you perform more tasks and eliminate the need to separately buy utilities. We also considered the support offered by the developers. The FAQs available on the vendor's site, along with online help (e-mail contact of the support person) and real-time chat facility were all regarded as value-adds.

Ease of Use: The accessibility to the various features of the application was evaluated. This included descriptive icons, intuitive menu structures, presence of wizards, etc. The ability to create a bootable rescue disk and the number of OSes supported by a suite was also given due consideration.

Value for Money: This is a factor of the performance and features offered by the System Suites as compared to its price. Therefore, the greater the performance and features and the lower the price, the higher will be the value for money offered by each package.

a snap to get the job done. The interface is very well designed—the icons are big, sporting the now fashionable aqua look a



1. Ontrack SystemSuite 4.0

2. McAfee Utilities

Both McAfee and Ontrack have a legible interface with clear text and icons

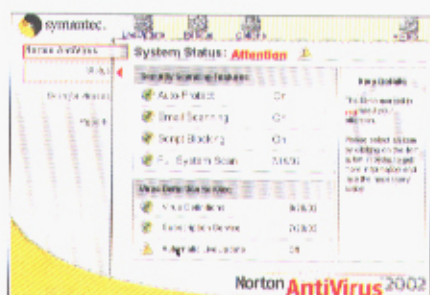
la Mac OS X and are very functional. McAfee similarly sports a very well-designed look that is easy on the eyes—it's quite similar to that of Ontrack. Although the icons used are not very self-explanatory, you will not have to devote much time to understand what each one stands for.

Norton has a very simple interface that gets the job done quickly and efficiently.

System security: The bane of the Net has been that it poses a significant security risk to both end-users and corporations alike. To secure your system against these malevolent entities, you need anti-virus software. Anti-virus tools not only check your mail for viruses, but also scan the machine on a regular basis to detect the presence of viruses and most of them accomplish this by protecting your system through all of the possible ports of entry—via e-mail, shared files and removable drives.

All the suites came bundled with a fully featured anti-virus utility. Norton SystemWorks 2002 offers free updates of virus definitions for one year while Ontrack SystemSuite 4.0 bundles VirusScanner Pro.

A firewall is as important for protec-



Norton offers free annual virus definition updates

tion from Trojan and hacker attacks. Only Ontrack SystemSuite 4.0 offered a firewall—from Sygate Technologies—but it offers very basic protection.

Permanent data erasing is another security feature that is a must for those who have critical and sensitive files on their system that need to be reliably deleted. Office users in particular will find this feature enticing—if your PC has been transferred to someone else at work, this utility will be handy in preventing others from accessing your deleted data. The Ontrack suite was the solitary provider of this important feature.

System Maintenance: A computer system tends to slow down after continuous

usage as one tends to install and load numerous applications. These applications, even after being removed, leave behind a garbage of stray entries in the system registry, leading to fragmentation of hard disk data and in some cases, lost clusters are formed on the hard disk due to repeated crashes or faulty uninstalls. Specific tools in a system suite help prevent these problems and even correct them if something goes wrong.

We first tested the defragmentation tools bundled with the system utilities. The DiskTune utility in the McAfee Utilities suite performed admirably and left the competition behind in this comparison. It took just 12 minutes 48 seconds to defragment 1.7 GB of data on the test hard disk. This is one of the fastest times logged by any suite we tested, allowing you to effortlessly defragment your hard disk as often as once a week. Norton



Defragmenting a hard disk takes a lot of time. Start the process just before you go off to bed or when you leave office for home

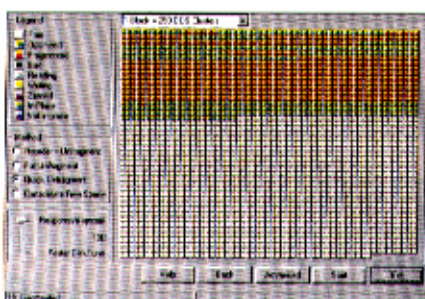
want of space. The program can then be restored with all its settings intact, whenever desired. The best thing about this utility is that you need not install it—it can be run from the CD itself, saving precious hard disk space.

Next up was the test of the registry cleaners. To evaluate their effectiveness, we directly deleted the folders containing Microsoft Office XP, Adobe Photoshop 6.0, Cyberlink PowerDVD and Roxio EasyCD Creator from the test hard disk, instead of taking the recommended route of uninstalling them first. Thus, stray registry entries of up to 0.7 MB were created—these strays were then used to test our suites.

Norton Utilities did find a rather large list of stray entries, but there was no automated deletion process. You will thus be forced to delete each entry manually—this could be a very time consuming task. As such, the interface does not allow you to select an entire registry set, so that it can be cleaned at one go. Hence, you would be forced to regularly check for stray registries, since if the list gets long, the task of cleaning becomes an ordeal. This is a huge drawback, hence we didn't give Norton any points in this test. McAfee offers a wizard to help clean the registry and at the end of the process it presents the old and new registry size and number of registry entries cleaned. However, the system was unstable after the registry was optimised using the McAfee Registry Wizard.

System Recovery: System crashes are like changes in the weather—totally unpredictable and inevitable. There is very little one can do about a crash apart from figure out a means to minimise its effects. Crash protection tools are primarily meant to avoid a system crash. They come into action when the application detects a level of instability in the operating system, usually due to a program error (just before the dreaded blue screen or a page fault error). They offer

you some time to save valuable data after this frustrating event, so that files are not lost. Crash-Protector and CrashProof from McAfee and Ontrack, respectively, effectively guard you against any OS misdeemeanours. Surprisingly, Norton disappointed us by not bundling an equivalent utility



Defragmentation utilities such as McAfee DiskTune shown here, help increase system performance by reducing disk access time

SystemWorks 2002 performed poorly and logged the highest time—21 minutes 39 seconds. Thus, a 20 GB hard disk will take more than 3 hours to be defragmented using the Norton suite. The JetDefrag utility in the Ontrack suite managed to complete the task in 15 minutes 9 seconds—a very respectable time.

Uninstall utilities are an extension to the Add/Remove utility which is found by default in Windows. CleanSweep, bundled with Norton suite, is the only utility that removes installed programs, and also helps clean up leftover Internet files and other temporary and residual data on the hard disk. This utility can also back up uninstalled programs if you so desire—a nifty feature if you are forced to remove a program for



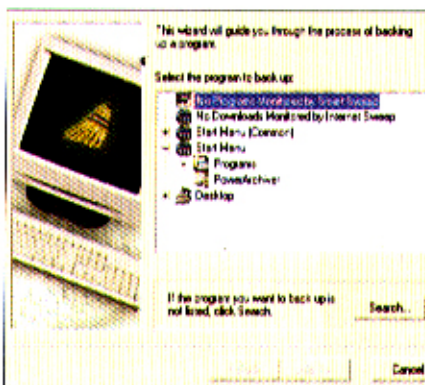
Use a permanent data-erasing tool to delete critical or confidential files; but use the tool wisely

Defrag Demystified

Data is stored on a hard disk in chunks called sectors. To access a file, a sector is read by a searching mechanical arm that houses a read/write head. For optimal disk performance, this searching motion should be minimal. To ensure this, it is imperative that data files be stored in a sequential manner. However, over time, deleting files, installing and reinstalling software causes the data sectors to be scattered over the surface of the disk in a non-contiguous manner, leading to what is commonly termed as 'disk fragmentation'. The result is a predictable increase in the time taken to access data, directly leading to a decrease in system performance. This is where a 'defrag' utility steps in—it functions by gathering the scattered data sectors into contiguous and disk-friendly chunks. A good defragmenter may attempt to optimise things further by placing application and operating system data close to each other, thus minimising disk movement, decreasing data access time and shaving load times off an application. Additionally, a defragmented disk makes it easier to retrieve lost data.

that accomplished this level of functionality.

A bootable disk is another great feature that lets you start the system despite a hard disk failure. This is done via the software CD or by creating a rescue disk.



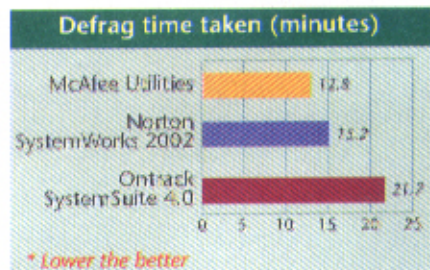
Norton CleanSweep backs up program settings and system files

A disk of this nature lets you boot the system and restore it to a safe state. Roxio GoBack 3 in the Ontrack suite and SystemSaver from Norton are system restore utilities that provide this functionality. McAfee, sadly, did not bundle any such utility.

SCORE BOARD



	McAfee Utilities	Norton SystemWorks 2002	Ontrack SystemSuite 4.0
Features			
Security			
Virus protection	VirusScan	Norton AntiVirus	VirusScanner Pro
Firewall	✗	✗	NetDefense Firewall
Permanent data erasing	McAfee Shredder	✗	DataEraser
Maintenance			
Disk defragmentation	McAfee Disk Tune	Speed Disk	JETDefrag
Scandisk	DiskMinder	Norton Disk Doctor	DiskFixer
Registry cleaning	✓	✓	RegistryCleaner
Registry repair	✓	Quick Fix	RegistryFixer
Registry backup & restore	✓	✓	✗
Registry optimising	✓	✓	RegistryDefrag
Uninstall utility	✗	Norton CleanSweep	Uninstall
Automatic data backup utility	✓	Backup Wizard	System File Backup
Zip/Unzip utility	Zip Manager	✗	Zip
File manager	✗	✗	PowerDesk 4 Pro
Recovery			
Format recovery	✗	NA	EasyRecovery
Recover data from virus attack	✗	GoBack 3	EasyRecovery
Hard drive crash recovery	✗	GoBack 3	EasyRecovery
Utility for restoring deleted files	✓	✓	EasyRecovery
Crash protection	Crash Protector	✗	CrashProof
System restore	✗	GoBack 3	SystemSaver
Bootable rescue disk	✓	Bootable CD	Bootable CD
Compatibility & Support			
Help and documentation (Scale of 5)	4	5	5
Online help	✓	✓	✓
FAQs	✓	✓	✓
Online chat	✓	✗	✗
OS supported	Windows 95/98/Me	Windows 98/Me/NT/2000/XP	Windows 95/98/2000/XP
Ease of Use			
Use of self explanatory icons (Scale of 5)	4	4	5
Ease of menu navigation (Scale of 5)	3	4	4
Quality of Wizards used (Scale of 5)	4	5	5
Customisable toolbar	✗	✗	✓
Performance			
File recovery (Scale of 5)	3	5	3
Format recovery (Scale of 5)	0	5	5
Defrag.time	12 min 48 sec	21 min 39 sec	15 min 9 sec
Decrease in Registry size	Nil	NA*	0.14 MB
CPU Load	6%	8%	11%
Memory utilisation	3.4 MB	19.1 MB	51.1 MB
Increase in bootup time	4.6 sec	14.63 sec	9.62 sec
Overall Score			
Features (40%)	22.8	27	37
Ease of use (10%)	6	7	9.6
Performance (30%)	15.2	20.4	19.6
Value for money (20%)	15.58	7.02	16.78
Overall rating	59.58	61.42	82.98
Overall grade	D	B	A
Vendor name	Network Associates	Tech Pacific	Ontrack
Phone	NA	022-5960238	NA
E-mail	custserv_APAC@nai.com	jitenrag@techpac.com	sales@ontrack.com
Web site	www.mcafee-at-home.com	www.norton.com	www.ontrack.com
Price (Rs)	1,950	5,400	2,698



Data loss is the most serious fallout of a hard disk crash. Coming in a close second is the anxiety caused by an accidentally deleted file or, heaven forbid, an entire disk partition. This happens due to the fact that Windows, by default, does not have any data recovery tool and the special tools that advertise data recovery are often out of the reach of most of us. Therefore, a data recovery utility bundled with a system suite is a blessing. When it came to recovering deleted files, the Norton suite ruled the roost. It recovered every file emptied from the Recycle Bin during our tests. Ontrack and McAfee did fairly well, successfully restoring three of the five files deleted. We formatted an entire partition to evaluate data recovery in this case and were able to recover every bit of information from the deleted partition using both the Norton and the Ontrack suites. McAfee did not have this feature at all.

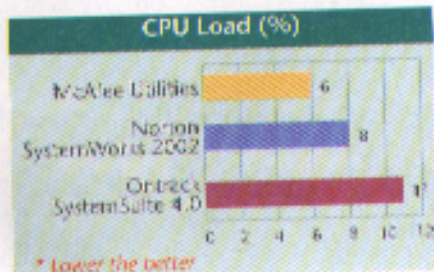
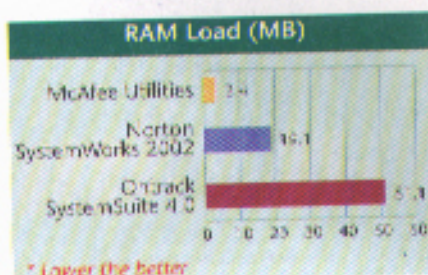
An auto-backup utility is a neat and hands-off way to back up critical data at regular intervals of time. The Ontrack suite comes with the System File Backup tool that backs up only critical system files and therefore doesn't qualify as a full-fledged backup utility. Norton Backup Wizard goes one step ahead of the pack—it archives infrequently used programs and compresses them. These can then be shifted to another computer, saving valuable hard disk space. McAfee Quick Copy, on the other hand, moves or copies the data (files, folders, etc) to any specified location either on a local drive or another computer on the network. However, there's no automatic scheduling feature, making its efficiency subject to the frequency with which the update is carried out.

What it all leads to

If you share your system with others or if you store mission-critical data on your computer, it makes sense to invest some money and allot a few resources for a system suite—they offer to keep your system as good as new and free from viruses and



* Does not allow multiple selection of stray registry entries



These graphs represent the load on the CPU and system memory after you've installed the system suite

intruders. The data-security that they provide is another benefit.

Jack-of-all these suites might be, but the best of the bunch was **Ontrack SystemSuite 4.0**. It keeps your operating system optimised for faster and better performance and also keeps the hard disk in perfect shape, letting you access programs faster and helping avoid any data corruption or loss due to disk failure. It also has good support over the Net and has regular updates for viruses, making it best suited to a variety of users. The limited set of features offered by McAfee, along with the low system resources required to run it, makes this suite ideally suited to the home user who does not have very critical data and only occasionally connects to the Internet. Norton, which is the most

expensive suite, missed out on some of the basic utilities such as a firewall, but was very strong on the anti-virus front, automatically updating virus definitions. It also has a very detailed documentation bundled alongside, making most tasks easily understandable for the user. It still lags behind the Ontrack suite in terms of the number of utilities bundled.

The winner!

The Ontrack SystemSuite 4.0 is a comprehensive package for maintaining the safety and smooth operation of your system. It has a friendly and accessible interface and packs in a tribe of essential utilities. What made it stand out from its competition was the bundling of utilities such as a firewall and a useful and effective

registry cleaner. While the firewall is underpowered for a corporate environment (it can only block ports), it nevertheless offers adequate protection to a home computer.

The registry-clearing feature is also great—the utility scans through the registry and presents the user with a list of stray entries, which can then be deleted in one shot. The



Ontrack SystemSuite 4.0: the complete package

suite also includes recovery tools that can save a lot of heartache in the event of data loss. The EasyRecovery utility included recovers not only permanently erased files but is also capable of recovering data from a formatted hard drive or partition—all of this for under Rs 3,000. Although it doesn't have a local vendor in India, this software can be purchased over the Internet without any hassles or sacrifices on the support front.

ANUSGAR PARGAWALA AND AHMED SHUKH

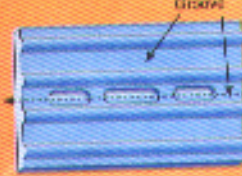
For Excellent AUDIO PLAYBACK performance



Well-shaped
Recorded Pit

Other Inferior
Recording Layer

Super AZO
Recording Layer



Audio players are designed to track the center line of each embossed pit.

NOT well-shaped recorded pit of this CD-R results in tracking error. The laser-head unit of audio players cannot trace the soundtrack properly.

The well-defined recorded pit of Super AZO makes tracking more precise. User can enjoy high-fidelity sound without having to compromise on its quality.

**MITSUBISHI
CHEMICAL**

Super AZO CD-R shows excellent performance with audio players as well as CD-ROM drives.

It is not only due to the high reflectivity but the well-shaped recorded pit formed in the Super AZO recording layer combined with its high sensitivity and wide power margin that enables all audio players to track easily.

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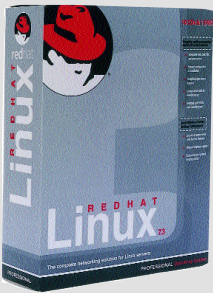
Bazaar

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

Red Hat Linux 7.3

It costs a measly 11 grand!

Red Hat's latest version is a complete Linux package consisting of three base installation disks, one documentation CD, and StarOffice 5.2, Server and Productivity Application CDs, and a visiting card sized System Administrator's disk. All this also comes neatly packed within a single DVD. The package also includes three detailed manuals, including a Getting Started Guide, Reference Guide and Customisation Guide.



We installed Red Hat on a PC with a Pentium III 1.2 GHz processor, an 815EE chipset-based motherboard, 256 MB SDRAM and a 20 GB hard disk. We did not face any hardware compatibility issues with the onboard audio and video, and the monitor (Samtron SSE) was detected effortlessly. The base installation can range between 1.5 GB to 3 GB depending on the packages

you wish to install. After asking the standard questions about the keyboard, language preferences and mouse, Red Hat 7.3 offers a variety of installation classes including Server, Workstation, Laptop, Custom and an upgrade option for previous versions of Red Hat.

Once you've selected the class of installation, the next step is disk partitioning, which is handled by the powerful Disk Druid utility. Ironically, this utility is available only during disk partition. Disk Druid supports only ext2, ext3 and vfat (Virtual File Allocation Table) file systems, whereas Fdisk supports more than 80 different file types, including FAT16, BSD, DRDOS and HPFS.

The next few installation steps take you to the Boot Loader Configuration screen, where you can choose either GRUB or LILO to set up the Bootup Menu. Next, you configure the network and firewall. Here you can specify a default security level, trusted devices and types of incoming connections and ports, among other things. The last few installation steps include selecting the language, packages and configuring your video card and monitor.

For office productivity, you have KWord, KSpread and Kpresenter for word

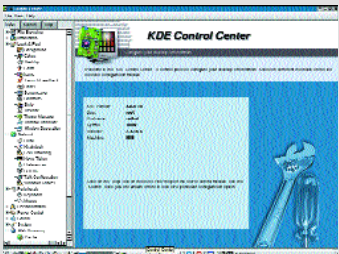
processing, spreadsheets and presentations, respectively. If software development is your forte, Red Hat packs around 75 programming tools and languages such as Perl, Guile, Python, etc.

The core Red Hat 7.3 distribution is based on the 2.4.18-3 kernel, and provides patched versions of popular Linux software with some interesting new additions. It includes glibc, XFree86, KDE, GNOME, emacs, Ghostscript, BIND, Sendmail, MySQL, PostgreSQL, PH and Apache.

Connecting to the Internet through dial-up was easy. We managed to set up a generic 56K modem, configure connection parameters and connect to the ISP in just a few minutes.

This distribution has a lot of features mimicking Windows such as screen-savers, desktop themes, sound support, multimedia, etc. It has X-Chat for chatting and supports audio CDs with a Winamp-like application called XMMS. On the

Price: Rs 11,435
Contact: Red Hat India Pvt Ltd
Phone: 022-2853452
E-mail: info-india@redhat.com
Web site: www.redhat.com



Use the KDE Control Center to configure the GUI

browser front, Netscape, Mozilla, Galeon, KDE's Konqueror and GNOME's Nautilus complete the package—Konqueror and Nautilus are more like file managers that happen to understand URLs. Konqueror helps users to view even the hidden Windows folders whereas Nautilus does not.

With its treasure box of applications, Red Hat 7.3 caters to everyone, from home users looking at an easy-to-use Windows replacement OS, to those looking for a powerful Web server OS.

SPECIFICATIONS

System Requirements:
Pentium class processor, 650 MB disk space, 32 MB RAM

Red Hat Linux 7.3		B+
Performance	▶▶▶▶▶	
Ease of use	▶▶▶▶▶	
Value for money	▶▶▶▶▶	
Features	▶▶▶▶▶	
OVERALL		▶▶▶▶▶

Mercury MP3-VCD Player

Entertainment in your palm

The sleek and rounded translucent front of this MP3 and VCD player is bound to attract your attention. It has an aqua coloured front panel and you can see the media spinning within. It also houses chrome-plated control buttons for Play, Volume, Rewind, etc. The LCD screen does not support ID3 tags and displays information such as the track number, time, Electronic Shock Protection (ESP) status and mode (repeat-one, repeat-all and random). The player has a DC 5V power connector, earphone jack and Video and Line Out jack with labels clearly indicating the function of each. The player offers good audio quality across the board, be it a song with heavy instrumentals or vocals. The bundled earphones delivered all the frequencies very well. The player comes with an RCA cable (audio and video cable) for connecting to the TV to play



the VCD. The sleek looking remote lends that extra comfort of operating the unit while enjoying a movie. The power adapter and bundled rechargeable NiMH batteries translate into money saved.

On the negative side, the documentation is meagre on information and is not of much help. No carry case was bundled with the player, which makes it susceptible to scratches and damage from impact. All in all, at just Rs 5,000, the Mercury MP3-VCD Player is a good solution if you don't wish to spend big bucks on a full fledged VCD system and also want mobile audio.

SPECIFICATIONS

Supports MP3 and VCD formats; plays CD-R and CD-RW media; 50 second shock protection buffer; infrared remote control; repeat one/repeat all/random play modes; 32, 44.1 and 48 KHz sampling rates

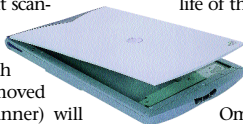
Mercury MP3-VCD Player B+	
Performance	▶ ▶ ▶ ▶ ▶
Build quality	▶ ▶ ▶ ▶ ▶
Value for money	▶ ▶ ▶ ▶ ▶
Features	▶ ▶ ▶ ▶ ▶
OVERALL	▶ ▶ ▶ ▶ ▶

Price: Rs 5,000
Contact: Visualan Technologies
Phone: 022-8202688
Fax: 022-8368514
E-mail: sales@visualanindia.com
Web site: www.kobian.com

Canon CanoScan N1240U scanner

The slim beauty

The latest offering from Canon in the CanoScan series is the N1240U, an ultra slim and silent scanning device. The Z-lid (the lid which can be removed from the scanner) will allow you to scan larger, three-dimensional objects with extreme ease. The device derives power through the USB port and has a built-in



power saving mode that will not only save on electricity bills, but will also enhance the life of the device.

The package includes a whole bunch of applications such as Omnipage Pro 9, Arcsoft Photobase and PhotoStudio 2000, which make it easy for OCR-ing documents or for scanning images. The scanner was recognised

immediately on the Windows XP Professional system and its drivers were installed from the bundled CD.

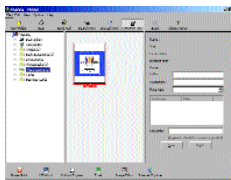
The CanoScan N1240U took 100 seconds to scan a full colour image (A4 size) at 300 dpi, which is quite slow. At 22 seconds, its preview time is also not too impressive—a scanner in its price range should take about

Price: Rs 9,995
Contact: Canon India Ltd
Phone: 011-6806572
E-mail: brijesh.verma@canon.co.in
Web site: www.canon.co.in

ViciDocs Pronto

File it up

Ever wanted an application that could manage and archive your hardcopies as well as electronic documents in a



common repository? ViciDocs Pronto could be the solution for you. The program uses MS Access for managing its database and allows you to capture documents via an attached scanner. It comes with a built-in viewer which supports 150 file formats including Word, Excel, PDF and AutoCAD's DWG. This means that the documents can be viewed and printed from within the database even without the native application.

Customisable templates with pre-defined fields such as date, author, keywords and so on, make document

Price: Rs 12,000
Contact: ViciSoft Technologies P Ltd
Phone: 040-7743168
Fax: 040-7743167
E-mail: info@vicisoft.com
Web site: www.vicisoft.com

10 seconds to preview an image. Though slow, the scanner's colour reproduction was bright and vibrant.

SPECIFICATIONS

1200x2400 optical resolution, USB interface, 48-bit colour depth and a CD containing ScanGear, OmniPage Pro 9, Arcsoft Photobase and PhotoStudio 2000

CanoScan N1240U B+	
Performance	▶ ▶ ▶ ▶ ▶
Build quality	▶ ▶ ▶ ▶ ▶
Value for money	▶ ▶ ▶ ▶ ▶
Features	▶ ▶ ▶ ▶ ▶
OVERALL	▶ ▶ ▶ ▶ ▶

management child's play. Advanced users can create their own databases with customisable fields. The application also provides shortcut keys to some of the major Office and Internet applications such as Word, Excel, PowerPoint, Internet Explorer and so on, making it easier to work with.

The interface is a little tough and the preferences option only provides very basic View and Import preferences settings. Another feature lacking is that in the Metadata View, you can only access files till the root folder level of ViciDocs—any other folder is inaccessible.

To conclude, here is one application that began as a great concept but was let down by a poor interface and has a long way to go before it makes for a good purchase.

SPECIFICATIONS

System Requirements: Windows 9x and above, Pentium II class processor, 32 MB RAM, 30 MB disk space

ViciDocs Pronto B-	
Performance	▶ ▶ ▶ ▶ ▶
Ease of use	▶ ▶ ▶ ▶ ▶
Value for money	▶ ▶ ▶ ▶ ▶
Features	▶ ▶ ▶ ▶ ▶
OVERALL	▶ ▶ ▶ ▶ ▶

CorelDRAW 11

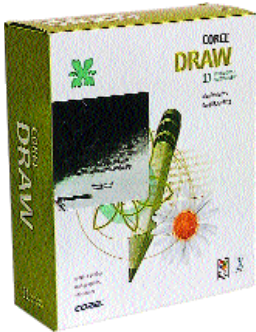
All the vector power you need!

Over the years, Corel has gradually evolved into an extremely powerful vector based illustration software. Although version 11 isn't essentially different from its predecessor, it does include new tools and enhancements that lend the programs a little more power and make them easy to use. Adobe Illustrator is the only rival to CorelDRAW in the market as of now, but Corel scores as an illustration program because of its powerful drawing tools and brilliant interface. The program makes it easy to create your own toolbars, menus and macros, then save that customised work space for specific tasks. For example, if you make lots of graphs, you can create an interface that puts all the important graph tools within easy reach.

CorelDRAW's cross-platform support and vast range of import/export filters are pretty impressive. The filters let you port files to and from other design programs, including Photoshop, Illustrator and Visio. When exporting a file to Photoshop, the layers remained intact.

A new set of 'Three point' drawing tools has been added to version 11, viz. 3-Point Ellipse, 3-Point Rectangle and 3-Point Curve tools, which enable users to

create and position angled or slanted shapes using very few mouse clicks. The New Polyline and improved Pen tools also simplify the process of drawing curved and straight lines, making it a breeze even for first time users. Shaping has also been greatly



enhanced in this version, with new menu items including Simplify, Front Minus Back, Back Minus Front joining Weld, Trim and Intersect. Each of these tools gives you more control over the shape and placement of the objects in your document, thereby giving you more flexibility. It also gives you four different options to create a single closed path from multiple paths with either straight lines or curves, thereby helping to preserve the appearance of objects while creating them quickly. The Barcode Wizard makes it easy for you to make your own personalised barcodes.

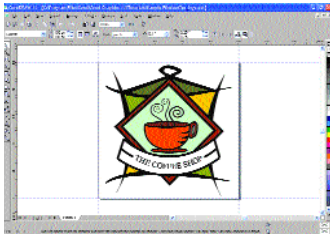
Although version 11 claims to have added a feature that lets you copy text from elsewhere and

paste it without losing the font and formatting, when we tried to copy text from a Web page, the formatting, as well as the font size was lost. However, you can convert paragraph text to curves and then apply effects such as drop shadows, without losing any formatting. Smudge and Roughen brushes have also been added to allow users to edit the curves of an object to give a wavy look. Unfortunately, these tools aren't as effective as those featured in Adobe Illustrator 10.

Just like the initial versions of Macromedia Flash, version 11 has 'symbols' that allow you to save your objects in the form of symbols and add them to the central library to be used later. This feature is a boon for artists who need to import images to reuse them. You can drag and drop a symbol into any document as many times as you want. Earlier, if you wanted to reuse objects such as arrows or call-out boxes, you had to save each image to a new file, then copy and paste this into your illustration. Symbols are faster and easier to use and don't significantly bloat file size.

Bundled with the drawing program is a revamped Web graphic and animation program called RAVE. This program lets you create interactive rollovers and generate 3D vector extrusions that add depth to your animations. If you find it difficult to create vector-based animations in

Price: Rs 26,500
Contact: Trifin Technologies
Phone: 011-6486447
E-mail: trifin@vsnl.com
Web site: www.corel.com



CorelDRAW 11 has a user-friendly interface and sports the new XP-inspired look

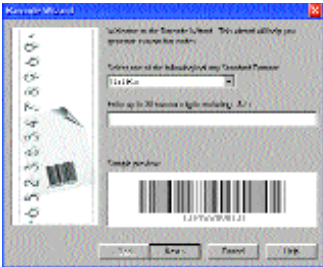
high-end software such as Macromedia Flash, you can easily create them here. But make no mistake, RAVE is not a true professional animation software and will need to ramp up quite a bit before it can compete head on with Flash.

With its fantastic drawing tools such as pressure-sensitive brushes, excellent filters that let you seamlessly import and export more than a hundred file formats and a user-friendly and customisable interface, CorelDRAW 11 is a great tool for artists. Even with all the fancy new features, CorelDRAW remains easy to use for novices and professionals alike. The incorporation of a few new tools and the enhancement of already existing ones speed up productivity as compared to the previous releases. But if you are already accustomed to using version 10, the new release does not give you enough reasons to upgrade.

SPECIFICATIONS

System Requirements:
Pentium II class processor,
200 MB disk space, 64 MB
RAM, monitor supporting resolution of 1024x768

CorelDRAW 11	
Performance	» » » » »
Ease of use	» » » » »
Value for money	» » » » »
Features	» » » » »
OVERALL	» » » » »



The Barcode Wizard, a cool addition, helps you create and edit barcodes

Epson Stylus C41SX printer

Print me pretty

The C41SX, the latest budget printer from Epson, has a cool contoured look and a great colour combination. The package includes five photo quality and three economy mode photo papers. As it has only two buttons and two LED indicators for the printer and ink status, it's easy for the new user to find his way around the printer. But one glaring drawback is the outdated parallel interface—as a result, it could not be auto detected on our test PC running Windows 2000 Professional.

We printed a combination of documents, including a full A4-sized colour photograph, a text document and a combination document which had varying fonts, colour bars, concentric circles and so on. The C41SX took just 52 seconds to print the text document, while it took 1,910 seconds (31 minutes, 50 seconds) to print the colour photograph—almost

twice as much time as taken by the slowest printers (Olivetti ArtJet 12 and 22) in our Printer comparison test in July 2002! The colour photograph was reproduced with a slight haze and the colours suffered in terms of richness. However, the combination document reproduced amazingly sharp results—even minute differences in the font sizes and colour bars were easily distinguishable. However, a big shortcoming was that the software did not show the ink level, a feature found in most printers available today.

The Epson C41SX is a good buy if price is a bigger concern for you than speed. Others, who need a more feature-rich printing device, had best look elsewhere.

SPECIFICATIONS

Parallel port, 1440x720 dpi, 12 KB input data buffer

Epson Stylus C41SX	
Performance	▶▶▶▶▶
Build quality	▶▶▶▶▶
Value for money	▶▶▶▶▶
Features	▶▶▶▶▶
OVERALL	▶▶▶▶▶

Price: Rs 3,950
Contact: Epson India Pvt Ltd
Phone: 080-5321266
E-mail: vasu@eid.epson.co.in
Web site: www.epson.com

Mercury HT4500 speakers

Sound aloud

The satellites of this discrete five-channel surround sound system are rated at 6 watts RMS and the subwoofer is powered at 20 watts RMS. The package includes sturdy speakers in a smooth black finish, speaker stands and the necessary cables for connecting the speakers to the respective connections. The subwoofer stands very firm and does not get dis-

lodged even at high volumes. The speaker performed well in our sound quality tests. It handled the low and high frequency sounds with ease. This was especially noticeable in the gaming tests where the intense music and the various sound effects were clearly reproduced.

If you already possess a DVD

player and a 5.1 channel soundcard, then this speaker would complement them well—the panning effects and the punch of the bass sounds in the movie quality test were pretty good. In our sound frequency test, the speaker was able to reproduce sounds from 30 Hz to 15 KHz without any distortion.

The sound quality in the ultimate treble test was up to the mark, but in the ultimate bass test there was considerable jarring and loss of bass at maximum volume levels.

Price: Rs 4,200
Contact: Kobian India Pvt Ltd
Phone: 080-5566626
E-mail: rohit@kobian.com
Web site: www.kobian.com

Gainward GeForce 4 Golden Sample

Go 4 gold

The Golden Sample cards from Gainward impressed us with their truly outstanding stability and performance at significantly overclocked settings. The card is built using specially chosen, hand picked components and hardware tuning techniques to offer a level of performance not ordinarily attainable by other cards made using run-of-the-mill chips and components.

We tested the card using a Pentium 4 2.8 GHz processor along with 256 MB RDRAM—even at the default clock speed, the card scored higher than what we had seen earlier. But what really hit us was the sheer power of the card to sustain performance through the high quality and anti-aliasing tests. It ran *Quake III Arena* at maximum quality settings, with 4x anti-aliasing enabled at a resolution of 1024x768 (32 bit high

All in all, this speaker set is a good choice if you already possess a 5.1 soundcard or if you plan to upgrade to one.

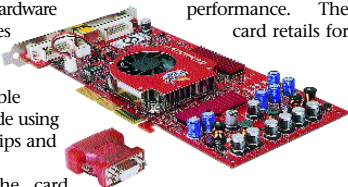
SPECIFICATIONS

5.1-speaker setup; power rating of 6 watts RMS per channel for satellites and 20 watts RMS for subwoofer; Front In, Rear In, Centre/Subwoofer In connectors; includes power adapter, speaker stands and cables; 30 Hz to 15 KHz frequency response range

Mercury HT4500	
Performance	▶▶▶▶▶
Build quality	▶▶▶▶▶
Value for money	▶▶▶▶▶
Features	▶▶▶▶▶
OVERALL	▶▶▶▶▶

colour, 32 bit texture depth) at over 100 fps!

We also overclocked the card and got it to run stably at 320/725 MHz (the default being 300/640 MHz), giving us a 10 per cent increase in performance. The card retails for



Rs 24,195, which is way lower than the other available GeForce 4 Ti4600 cards in the market. All said and done, it is by far the fastest card we've ever tested.

SPECIFICATIONS

nVidia GeForce 4 Ti4600 chipset, 300 MHz default core speed, 2.8ns 128 MB high-speed DDR SDRAM/SDRAM, 640 MHz (DDR) default memory speed, two DVI to CRT connectors

Gainward GeForce 4	
Performance	▶▶▶▶▶
Build quality	▶▶▶▶▶
Value for money	▶▶▶▶▶
Features	▶▶▶▶▶
OVERALL	▶▶▶▶▶

Price: Rs 24,195
Contact: Mediatech India
Phone: 022-2396696
E-mail: sales@MediatechIndia.com
Web site: www.gainward.com

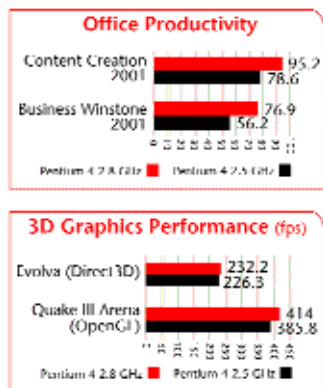
Intel Pentium 4 2.8 GHz processor

Intel's fast new baby

The latest offering from Intel falls just short of the magical 3 GHz mark with a clock speed of 2.8 GHz. Technology-wise, it is no different than its predecessor but with its speed advantage of 300 MHz over the P4 2.53 GHz, top performance is something you can expect out of the box.

We matched this speed demon with equally powerful components, so as to prevent any bottlenecks. The processor sat on the Intel D850EMV2 mainboard and was accompanied by 256 MB of SDRAM, a GeForce 4 Ti4600, a 17-inch Samsung 75E monitor, along with a clean-formatted 20 GB, 7,200-rpm hard disk. The OS used was Windows 2000 with Service Pack 2 and other patches duly applied.

The first part of our test included some games benchmarks—we ran a timedemo on the retail version of *Quake III Arenapatched* with version 1.30. The test was run in three different settings: Normal,



High and Maximum (1024x786x32x32). Here the Pentium 4 2.8 GHz posted a very good score of 434.2 fps in the normal mode. There was barely any difference in the score in the high quality mode—the average frame rate achieved was 414 fps. This means that if you intend to buy the next generation GPU based GeForce 4 card, it would be best complemented by the P4 2.8 GHz processor.

We ran Content Creation

Winstone 2001 as our next test. As this test is mainly processor and memory driven, it helps to measure core-processing power. Here the P4 2.8 GHz posted a record-breaking score of 95.2 in the content creation benchmark, which shows that the processor can easily handle image editing, video editing and multimedia applications, which are CPU hungry. To further stress the processor, we used Winstone 2001, a system-level, application benchmark. Here the P4 posted a score of 76.9 posted by the P4 truly reflects its

Another high-processing

Price: Rs 32,500
Contact: Nebula Technologies
Phone: 022-6730567
E-mail: pradip@nebulatech.com
Web site: www.intel.com

power domain is video encoding. We encoded a standard MPEG-2 format video sequence using VirtualDub 1.4. The DivX codec used was version 4.02 and the settings for audio and video processing in VirtualDub were turned to full. The video compression bit rate was set at 900 Kbps. The processor took just 1 minute, 21 seconds to encode a 51 MB video file.

If you already own a 2 GHz processor, there's no need for you to upgrade to 2.8 GHz right away. Besides, to exploit the full potential of this processor, you would definitely require up-to-the-minute supporting hardware.

SPECIFICATIONS

2.8 GHz clock speed/512K on chip cache, Northwood core (0.13 micron)

Pentium 4 2.8 GHz		B+
Performance	» » » » »	
Build quality	» » » » »	
Value for money	» » » » »	
Features	» » » » »	
OVERALL	» » » » »	

LITEON 48x12x48 CD-Writer

Low on price, high on speed

This CD-Writer takes backups of your important data and Audio CDs at the never before offered speed of 48x, which translates to a theoretical transfer rate of 7,200 KBps. With such high speeds at your disposal, the only roadblock is an inappropriate burning medium. It normally takes a long time for the latest media to trickle down to the market—we got hold of 48x media from Princo.

We created an array of files of different sizes ranging from 1 KB to 100 MB and burnt them on to a 650 MB CD. The Writer managed to complete the task in just



2 minutes 54 seconds. It also burnt a 700 MB ISO file in just 3 minutes 10 seconds. We were just as impressed by the audio burn test scores—we burnt a 640 MB Audio CD that contained 14 files and the CD-Writer took 2 minutes 45 seconds to burn this CD. We also conducted a couple of read tests to evaluate its performance as a normal CD-ROM drive. Here we used the previously burnt CD and copied

the files from it on to the hard drive. Here too the LITEON performed well by finishing the task in just 2 minutes.

The Writer features good build quality and the tray and button do not feel tacky. The package includes Nero CD burning software along with two blank media, out of which one is a re-writable CD. The necessary screws and the

Price: Rs 4,795
Contact: Media Tech
Phone: 022-2396696
Email: sales@mediatechindia.com
Web site: www.liteon.com

audio cable are also provided. All in all, the LITEON 48x CD-Writer is a good choice for those who demand speed. And the attractive price is the icing on the cake.

SPECIFICATIONS

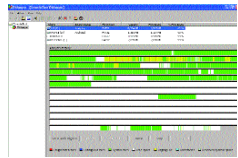
48x (write), 12x (rewrite), 48x (read); ATAPI-E/IDE interface; supports up to Ultra-DMA Mode2 33.3 MBps; 80 ms (typical) access time; 2 MB buffer memory

LITEON 48x12x48		A
Performance	» » » » »	»
Build quality	» » » » »	»
Value for money	» » » » »	»
Features	» » » » »	»
OVERALL	» » » » »	»

Executive DisKeeper Home Edition v7.0

Destined for defrag

If you are tired of the slow Windows defragmenter, try DisKeeper 7.0. It lets you exclude specific files and folders from the defragmentation process. Its frag-guard feature prevents MFT (Master File Table) and the Windows swap file from fragmenting, hence



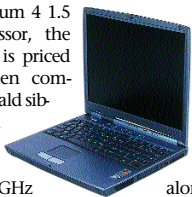
improving performance. It also monitors their extent of fragmentation, triggering an automated defragmentation operation during bootup when their level of fragmentation exceeds a preset threshold. This application is extremely light, runs as a background service and consumes around

Price: Rs 1,560
Contact: Crystal Solutions Pvt Ltd
Phone: 022-5953112
Fax: 022-5953113
E-mail: sales@crystalonnet.com
Web site: www.diskeeper.com

ACi Impression notebook

Beauty in the beast

Using a Pentium 4 1.5 GHz processor, the ACi Impression is priced quite steep when compared to its Emerald sibling (reviewed in September 2002), which sports a P4 2.0 GHz processor and is almost Rs 20,000 cheaper. The laptop comes in an attractive leather case and the build quality is quite sturdy. The 14.1-inch TFT screen is powered by the nVidia GeForce 4 420 GO. This graphics card supported an astoundingly high resolution



3 MB of RAM. You can also schedule multiple partitions for defragmentation at one go.

The interface is plain and uncluttered. The help and documentation is detailed and explains the process for installation, and provides a glossary of more than a hundred terms used with disk fragmentation.

This application is meant for users who simultaneously work on multiple applications. Home users may not find this application worth their money since a software suite would take care of their defragmentation needs and much more for a similar price.

SPECIFICATIONS

31.1 MB install size; supports Windows 98/Me/2000/NT/XP
System Requirements: Any Pentium processor based PC running Windows 9x and above with 32 MB RAM

Executive DisKeeper v7.0 B	
Performance	→ → → →
Ease of use	→ → → →
Value for money	→ → → →
Features	→ → → →
OVERALL	→ → → →

of 2048x1768 but the screen panning makes it slightly cumbersome to use. It has a Hitachi 2.5-inch 20 GB hard disk drive, a Toshiba DVD-ROM drive along with 256 MB DDR memory, making it one of the most powerful laptops available. Its most individualistic features were blue LEDs instead of the usual orange and yellow, and an MMC slot along with a FireWire port and three USB ports.

However, there were a few

things amiss—the Windows key was placed inconveniently at the top right hand corner and the lock had to be jostled with to be opened, increasing its chances of wear and tear.

In the tests, BatteryMark 4.01 ran for 105 minutes (approximately 3 hours in real life). It scored 53 in Content Creation 2001, as compared to the average score of 45 by most laptops; Business

Price: Rs 1,04,999
Contact: Allied Computer International (Asia) Pvt Ltd
Phone: 022-6366800
E-mail: sales@aci-asia.com
Web site: www.aci-asia.com

Mercury Pocket DV Camera (4 in 1)

Smallest camera with a tripod

Ever wanted to have a device that could record voice, click still images, record video and act as a PC camera? Mercury Pocket DV Camera (4 in 1) is one device that gives you all these options. It has a USB interface and can record video up to a size of 640x480 at as high as 30 fps. The camera has a small LCD display that is quite helpful in understanding the various modes and using the camera optimally. It comes with a small tripod and another big plus is the applications bundled with the camera—there are two CDs filled with utilities such as Ulead Photo Express 4.0SE, Ulead Photo Explorer, Ulead Cool 360 and Ulead Video Studio. The bundled software offer quite a lot of features that complement the camera—you can easily control brightness, hue, saturation, contrast, etc, using the software.

Price: Rs 4,000
Contact: Visualan Technologies
Phone: 022-8202688
Fax: 022-8368514
E-mail: sales@visualanindia.com
Web site: www.kobian.com

Winstone 2001 failed due to compatibility issues.

The notebook comes in a metallic blue and grey combination with a neatly designed front panel—a delicate combination of beauty and speed.

SPECIFICATIONS

Pentium 4 1.5 GHz processor, 256 MB DDR RAM, 20 GB hard disk, 8x DVD-ROM drive, 14.1-inch LCD TFT Screen, GeForce 4 420 GO graphics processor

ACi Impression B	
Performance	→ → → →
Build quality	→ → → →
Value for money	→ → → →
Features	→ → → →
OVERALL	→ → → →



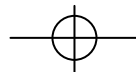
When not attached to the PC, its 16 MB on board SDRAM is sufficient to store around 3 minutes of video or around 200 images. However, there is no flash or aperture focus, so you might not be able to get the best pictures at night or even on a cloudy day. Another shortcoming is that the picture settings (brightness, hue, etc) can't be saved—you need to set it afresh every time.

Overall, this is a nice little device if you are interested in sharing videos and still images on the Web.

SPECIFICATIONS

128 MB onboard SDRAM memory; still camera, PC camera video mode, AV recording mode and voice recording mode; captures at a resolution of 640x480; package includes USB cables, installation manual, tripod stand and two AA batteries

Mercury Pocket DV B+	
Performance	→ → → →
Build quality	→ → → →
Value for money	→ → → →
Features	→ → → →
OVERALL	→ → → →



test drive ■ undercover

Dare to go lower

Agent 001 sets out in search of the cheapest deal on PCs

People are always talking about how to build the most powerful PC, but what about those on a shoestring budget? Wait! Make that a single-fibre-of-a-shoestring budget! What is the absolutely cheapest functional machine that you could possibly put together? Forget about shattering fps records in *Quake III*, or working on massive image files. If 99 per cent of your daily applications revolve around word processing and the Internet then you're in for a surprise.

Gone are the days when the lowest entry-level computer meant shelling out Rs 30,000. Hardware costs have plummeted, much to our delight. Follow me as I mosey over to the friendly neighbourhood hardwarewallas and find out what system components can be scrounged together to help us build the cheapest possible computer but still has more than adequate processing power, decent storage and memory. And remember, all these are brand new components!

The October heat can be really sweltering and no matter where you are shopping, remember to pack a cap—hardware shopping could sap you out (and no, the cost of the cap is not included in the system)! Since my finances did not allow a cross-country travel allowance, I headed for Lamington Road, the first, last and final frontier for hardware shopping in Mumbai.

My quest had me traverse six dealers over 3 hours in the post-monsoon morning sun. Eager dealers tried to push a whole assortment of goodies down my throat—all the way from Duron, to Celeron and P-III

processors, bundled with the usual range of peripherals. At each estab-

needs. Next up, I settled for a stick of PC133 RAM. There a brands to choose from and if you particular about names such as or Crucial, you can buy it for Rs 1,200.

For the motherboard, I didn't from the trusty Intel 810E as from HIS. The board came with ed graphics and sound (so I don't

spend any extra there picked it up for Rs 2 the hard disk, I de a Seagate U8 40 GB about Rs 4,150.

might, I couldn't new drive I 40 GB. Wo so good. I my shoppe for a lit 10,000 b For ti tor, I against ev sidering a monitor; after budget mongers ha

a standard! The cheapest er I could find was from Mic Rs 4,700 and this suited my n fine. For the cabinet, I settled o Baby AT box at Rs 850—no shiny colours here. The only C available at a low price range 52x drives and I chose one fro ton that cost me Rs 1,150. My V key keyboard and three-button serial mouse cost Rs 300 and respectively. I finally sealed the with a pair of simple stereo costing Rs 350, and a trusty modem from Lancer for Rs 450 finally add Rs 500 for the m (though I doubt if I'll ever 1.44 MB Sony floppy drive.

All done! I've got the buildi for a fully functional Office tion/Internet surfing comput plete with a 500 MHz processor RAM, a 40 GB hard disk, and M 8.2 (courtesy of the Digit June 2) for a shade under Rs 20,000!

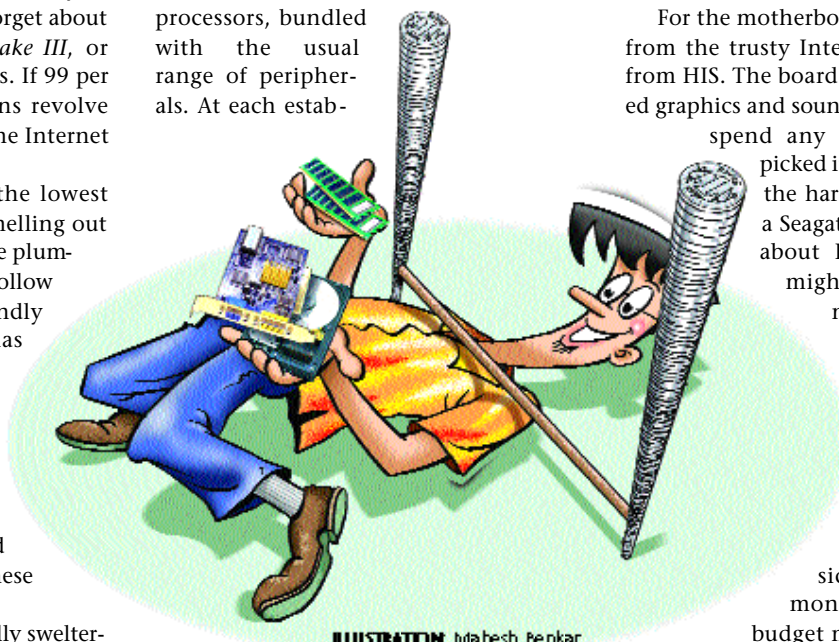


ILLUSTRATION Mahesh Benkar

lishment, it took repeated efforts to drive home the point that I was on an absolute rundown budget and wanted the cheapest hardware. Finally, after much probing into their inventory, it paid off and I came across some very interesting options, at

the most amazing prices!

First up, the core system components: the processor, motherboard, RAM and hard disk. I found that the most inexpensive processor is the 500 MHz Cyrix MIII available for a cool Rs 2,100! While this processor wasn't made to shatter any speed records, it definitely suited my humble, everyday

The Shopping List

Component	Brand	Price (Rs)
Processor	Cyrix MIII 500 MHz	2,100
Motherboard	HIS 810E	2,850
RAM	Generic PC133 128 MB	1,200
Hard disk	Seagate U8 40 GB (5,400-rpm)	4,150
Cabinet	Generic Baby AT	850
Keyboard	Vesta 104	300
Mouse	Mercury 3-button scroll	150
Monitor	15-inch Microtek	4,700
Speakers	Generic stereo speakers	350
CD-ROM drive	52x Krypton	1,150
Modem	Lancer 56K PCI	450
Floppy drive	Sony 1.44 MB	500

Note: The prices could vary over time and geographical locations. Please use them as a guideline and not as a thumb rule.

SPAM-PROTECT

Your Inbox

A look at some anti-spam organisations that have come up with radical new ways to help fight unwanted mail that clogs up our inbox everyday

The Internet has shrunk our world, bringing people across continents together at a click of the mouse. But in most cases, our mailboxes contain more unfriendly, unsolicited e-mail than a congenial note from the friend across the ocean. Spam is growing to become one of the largest and most annoying problems faced on the Net today. It is also big business for the bulk mailers—they can send out millions of messages every day and make thousands of dollars in the process.

Unwanted e-mail is not only irritating, but also harmful—hoaxes offering weight loss pills and holiday discounts clog mailboxes, causing important messages to bounce back. Companies lose unimaginably large amounts of money. Studies conducted on the Internet show that spam costs businesses close to \$10 billion (Rs 5,00,000 crore) every year, just for the bandwidth! Add to this the cost of anti-spam measures in terms of software and manpower to manage the software. Internet Service Providers (ISPs) suffer the most: the spam affects them in the form of

outgoing messages as well as incoming mail. It also drastically slows down networks and many a small ISP has been known to shut down because of huge amounts of spam.

Over the years, hundreds of ways of avoiding spam have been suggested and adopted. However, these were all dependent on the end-user. Using unintelligent filters in your mail client, understanding the methods of bulk mailers and adopting practices to discourage them, and using third-party spam-blocking software

from the list and sometimes, just reading the e-mail is enough to let spammers know that yours is an active e-mail address so that they can bombard you with even more messages. It is just not possible to cultivate disciplined practices to discourage spam across millions of users. Thus, some amount of spam always manages to reach your mailbox.

Spammers use software known as e-mail harvesters, which crawl Web sites just like search engines, and gather any e-mail addresses found inside them. To protect

“ It only takes one sucker in 10,000 to make a spam operation economical ”

— Jason Catlett, President of Junkbusters, an anti-spam organisation

are some of the most popular means suggested. However, spammers have always managed to stay a step ahead and circumvent all such means. Simple things such as clicking on any of the links in a mail, replying to it, trying to unsubscribe

their sites, many administrators have installed anti-harvesting scripts. However, not all servers implement good security measures and spammers are always able to acquire huge lists of e-mail addresses from corporate sites, forums, newsgroups,

Spam Magnets

Dear Asha,
I no longer complain that nobody sends me e-mail. Ever since you showed me how to use the Internet, I've posted my e-mail address at various newsgroups and forums. Also, I've signed up with Hotmail, Yahoo! and many others, and have chosen the option to make my e-mail address public. There are so many other sites on the Internet that require me to sign up—they are so nice, not only do they send me regular news about themselves, but also hand out my e-mail address to others.

Now I get so much e-mail everyday, it takes me around three hours just going

through all of them. The Internet has really helped to get me recognised. There are several large companies offering me jobs from home. They say others who have worked with them have made millions of dollars! And then there is this poor leper who has been rejected by society. There's no one to help him. I sent him Rs 500 yesterday.

The Internet is a great window of opportunity for all of us. In fact, I'm going to put up your address too, at all the sites I visit.

Cheers and take care!

Bhola



RBL and matches headers in the reported spam against this. Also, if it detects the URL of a site several times in the message body, it considers that as advertisement and classifies the mail as spam. Once identified as spam, it sends a report to the administrator of the originating address, with guides to a few possible actions that he can take. Reported sites are not necessarily added to the Blocking List—this depends on the nature of the spam, the quantity and frequency of reports against the site and other such factors.

In most cases, the identified spammer is just an innocent bystander. Professional bulk mailers look out for open servers from where they can freely send mail. For example, VSNL users may remember that earlier anyone could send e-mail using any of the VSNL SMTP servers. Later, they closed open relay and allowed mail to be sent only from an authorised VSNL connection. In fact, professional bulk mailers maintain entire lists of such networks so that they can jump from one to another when one implements tighter security features or to avoid anti-spam organisations. Thus, anti-spam organisations have also started maintaining lists of open-relay

etc. For example, on a bad day, the Beijing Express E-mail Address Extractor (www.zstools.com) harvests over a thousand addresses in just 15 minutes!

Now spam-haters and anti-spam organisations have launched a new battle against bulk mailers capture the spam before it reaches the user. Pseudo-intelligent filters are set up on the server itself, which simply gobble up what they think is spam. This way, the user forgoes the daily irritation and does not encourage spammers.

The weaponry

Several ways of identifying and blocking spam have evolved with the new spamming techniques—all of them based on rules determined by the developers of anti-spam software, and logic, which are updated according to the practices of spammers. How aggressive the preventive measures are depends on these rules and also on what the software does with spam—whether it simply deletes the mail, or notifies the sender and intended recipient or moves it to a separate folder for the recipient's scrutiny.

Four years ago, Microsoft tried to block unwanted e-mail by filtering out incoming messages from Outlook 98 that contained certain text, such as a string of exclamation marks or the phrase 'for free'.

Today, spam blockers are getting more intelligent. Hotmail has signed up with Mail Abuse Prevention System (MAPS, www.mail-abuse.org), an organisation formed to crack down on spam, which maintains a Realtime Blackhole List (RBL). This list contains details of sites and ISPs that support sites that send out spam. Any mail coming in to a Hotmail

mailbox is analysed against this list and if the addresses match any of the spammers, it is identified as spam, and sent to the Junk Mail folder. Lately, Hotmail has been applying the filter to outgoing mail too.

Hotmail has been handling spam with an iron hand. It simply blocks out mail from and to certain ISPs and several users are now realising that they have been losing important mail. For example, the US-

“ If Microsoft, one of the largest technology companies, can say who we send e-mail to, that really puts constraints on freedom of ”

— Ben Johnson, a frustrated Hotmail user who lost many important messages

based ISP Media3 Technologies is listed on the RBL because it hosts half a dozen spammers. However, it also hosts sites such as Peacefire.org, which recently alerted its members that Hotmail users have been unable to reach them for five months! On the other hand, many users are happy because the spam to their inbox has been drastically cut down since Hotmail adopted spam filters.

SpamCop (www.spamcop.net) is a free service for blocking spam, which uses several kinds of logic to identify spam. Anyone can sign up with SpamCop and members can report any mail they receive as spam, as per the guidelines on the site. The mail is read by an automatic parser on the site that checks whether the mail actually seems like spam. SpamCop maintains a Blocking List similar to the

servers—ones that allow anyone to send mail from their networks. These usually end up being the innocent bystanders.

Apart from just reporting e-mail abuse, ISPs and administrators can also configure their mail servers to link up to the SpamCop Blocking List and have all mail screened against the SpamCop systems, thus reducing the amount of spam on their networks. This again is similar to the idea of MAPS—to capture spam at the source to avoid encouraging spammers.

Spamhaus.org maintains the Spamhaus Block List (SBL)—a list of verified spammers, spam gangs and spam support services. The Register of Known Spam Operations (ROSKO, www.spamhaus.org) is maintained by Steve Linford, who estimates that about 90 per cent of all the spam is from just a hundred-odd large spam organisations. This list is intended to help cut down spam drastically. Linford also suggests that shutting down sites that

info A study by Jupiter Media Metrix predicts that by 2006, an average user will receive nearly 1,500 unsolicited e-mails annually

Filters@Hotmail



Hotmail was one of the most spammed e-mail services on the Internet, until they implemented strict anti-spam measures. The simple reason for this is dictionary-based spamming software. These software use a 'must-be' logic to send mail. Common names and names with an incremental index at popular e-mail services become a very strong target. Thus, the software assumes that addresses such as john@hotmail.com and john27@hotmail.com will definitely exist. If a message bounces back, the software simply won't send a mail to it for a few months. If you have a Hotmail address, it is very likely that you've been getting a lot of spam on it.

Hotmail's Junk Mail filter is definitely effective, but not a 100 per cent solution. Setting up the filter is as simple as enabling it from the Mail Options. Hotmail saves all e-

mail identified as spam in a folder called Junk Mail, where you can review all of it at one go and, if required, move some to another folder.

A much more effective way to keep unwanted e-mail out of your mailbox is to fill up the Contacts list. Add all the people that you want to receive e-mail from to the Contacts and set the Junk Mail Filter to Exclusive. This way, only people in your contacts will be able to send you e-mail and everything else will be blocked. An easy, though not very nice, way of adding contacts to the list is by sending an e-mail to everyone you know—on sending the e-mail, Hotmail provides the option to add the addresses to your address book.

Next, you may want to define a Safe List. E-mail from addresses and domains in this list will be able to reach your inbox. For example, if you receive various



Use the Exclusive filter at Hotmail to keep spam at bay

newsletters from ZDNetIndia.com, you can add it to the safe list. Once you have the Contacts and Safe list ready, simply switch to the exclusive filter and you're done. Remember to update your contacts list regularly.

offer spamware—software that helps spammers, such as e-mail harvesters, bulk mailers, open-relay sniffers, etc—itsself will cut down spamming drastically because it is these tools that make spamming very easy.

SpamNet (www.cloudmark.com) is a relatively new service with a convincing concept—compile information from users and users' habits to identify and eradicate spam. The concept is based on the fact that users don't like spam, yet do nothing about it because spammers are only more encouraged by any action taken. Thus, SpamNet provides a plugin that works through Outlook 2000 and XP (they promise to release plugins for other mail clients soon). When you receive a mail, you can mark it as spam or an authentic message. The information is reported to SpamNet where it is analysed against similar responses from thousands of users (SpamNet already has over 50,000 users). A positive response from a user improves the quality rating of the site or source of the message, while an abuse report goes against it. Also, each user is scored according to the number of valid reports and this score factors into the score of the domain. Finally, this real-time list is used to filter out spam as it zips across the Internet, trying to get to your mailbox.

info

Havoc Systems, a spam organisation, started sending over 50 million spam messages per week in mid-2001. They sell e-mail databases at \$129 (approx Rs 6,450) for 15 million addresses!

So what does all this mean?

Spam is just as ugly as politics—nobody likes it, most don't do anything about it and a few make millions from it! Large organisations (and gangs) are built around the spamming business and even some ISPs have tied up with them (they treat their own anti-spam policies as very, very fine print), making big bucks in the process. Those who haven't, lose out on not only money, but also make huge losses in terms of bandwidth wastage. Again, all anti-spam activists agree that e-mail marketing is definitely good for business. They suggest that only the opt-in kind of marketing, where users explicitly choose what they want to receive, should be allowed. Spam practices that assume that if a user does not opt out means that he agrees to receive future mailers, should be discontinued. In fact, on May 30, 2002, the European Parliament passed a law stating these rules, making them effective across the European Economic Area.

However, having seen and suffered the failure of all anti-spam practices and laws over so many years, many organisations and activists have taken radical steps. Hotmail implements probably the strictest algorithms on spam—if it smells like spam, it is

deleted irretrievably. Also, rather than using a per-message or per-site logic, Hotmail blocks out entire ISPs known to support spam. Thus, if any mail is sent from or to that ISP even on a non-abusive site, it is deleted. These policies are over and above the MAPS system that Hotmail uses. E-mail identified by MAPS as unsolicited is moved to a Junk Mail folder for the user's scrutiny.

A lot of subscribers to various e-mail services have realised that they are losing important messages irretrievably. Anti-spam organisations maintain that they simply have to be radical. Even with their strictest measures, some amount of spam still manages to sneak through. Users, on the other hand, maintain that this does not justify loss of important messages. At the same time, there are tens of thousands of users who are very happy with the new anti-spam practices. Feedback from some indicate a cut in spam between 75 to 100 per cent!

Server-based anti-spam software is still in a nascent stage. Several services such as SpamCop and SpamNet are working hard towards getting a clean list of spammers and authentic marketers, but this can only develop over time. We can help them develop faster by providing them with more accurate feedback. There is no fool-proof solution to spam, but these services seem quite capable of controlling it to a very large extent. ■

VEER KOTHARI

insight ■ workshop

For a painless reinstall

**Need to reinstall
Windows? Here's how
you can avoid starting from scratch**

Every Windows user, at some point or other of his system's life, goes through the agony of reinstalling the operating system. Yet, the real pain lies not in reinstalling Windows—on today's systems, it takes just half an hour to format the drive and install the operating system again. What's tedious is restoring the system to a usable state—getting all the correct drivers for the hardware, installing all applications and tweaking the system, all the while pray-

ing that you haven't lost any data when formatting the hard disk!

But worry not. Help is at hand. We

show you smart ways to ease pain and smoothen out the reinstallation process by saving application settings that will help pick up from where you left off your system crashed on you.

Readme.1st

Given that there are so many flavours of Windows in use today, as well as the variety of applications we use, it is not viable to cover every possible combination in this article. Thus, the article largely focuses on Windows 98, Office 97 and Internet Explorer 5, though alternatives for other platforms are mentioned where relevant. However, application architectures have varied only slightly over the last few versions, so you can generally apply the same rules across different platforms—only some file locations would have changed or some dialog boxes would have been updated. For example, Outlook Express stores e-mail in different locations across different versions of Windows.

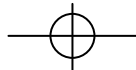
After you've installed Windows, the first thing you'll be asked for is the drivers. Though Windows will find most of the drivers for common hardware on the Windows installation CD itself, it will often not get the correct ones for hardware such as the graphics, network, sound and SCSI cards.

If you have your old Windows installed on a different partition or a different folder, installing drivers becomes very simple. Windows stores all driver information files in \Windows\Inf, with the files for third-party hardware in a subfolder named 'Other'. Thus, when asked for a driver, simply point the Hardware Wizard to this folder and it will pick up the correct driver information file. It will ask for a lot of support files (usually SYS and DLL files); these should be located in the \Windows or \Windows\System folder of the older installation. If you can't



Point the Hardware Wizard to the older Windows installation

locate them, they are either on the Windows Setup CD, or in a subfolder System or System32 folders. Use Windows 'Find' (Start > Find > Files or Folders) to locate the required files and again, point the Hardware Wizard to the correct location. Once you have all the hardware installed and your system is up and running, you can connect to the Internet and download the latest updates of all the drivers.



Microsoft

If you frequently customise Office applications to suit your needs—especially Word and Excel—you will certainly feel the pinch when reinstalling if you haven’t backed up the configuration settings. Usually, one remembers this only after one starts using it again, when it is too late.

There are several ways to back up Word settings. You can simply copy the templates from the Templates folder and copy them back after reinstalling. Thus, you can prevent the headache of recreating all templates from scratch. To find out where the templates are stored in Word, either click **File > Save As** and change the ‘Save as’ type to Document Template, or click **Tools > Options > File Locations**. Taking a backup of templates will not only copy the styles, headers, footers, text and images in the template, it will also copy the document properties, toolbar settings, shortcut keys and macros that you have created. Templates also store all your AutoText entries.

Similarly, taking backups of Excel templates will save characteristics of workbooks and worksheets such as the number and type of sheets in a workbook, cell and sheet formats, cell styles, page formats and print area settings for each sheet, repeating text such as page headers and row and column labels, data, formulae, graphics, etc. The templates also store custom



toolbars, macros, hyperlinks and ActiveX controls on forms, protected and hidden areas of the workbook, calculation options and window display options.

Apart from template settings, you can also back up AutoCorrect lists and custom dictionaries in Word. Word stores AutoCorrect entries in an ACL file. Typically, the filename is the name of the user logged on to Windows. Thus, if you log on to Windows as Administrator, you should be able to find a file named Administrator.acl that stores the list. The dictionaries are stored in DIC files. The default dictionary is named custom.dic.

All versions of Office can be set up in such a way that it is possible to automatically install with custom selections without filling up dialog boxes. You can select the type of installation, components, installation folders, etc. For Office 97, the tab-delimited STF file specifies where and in what order files are copied and what registry entries are created. The INF file contains descriptions of Office files, which are used by the STF file to determine which files to copy. The instructions in the Setup.1st file provide installation parameters. For Office 2000, installation settings are read from an MST file and running setup with the /qb- parameter suppresses all dialog boxes—you will not have to click



Automatically back up Office settings

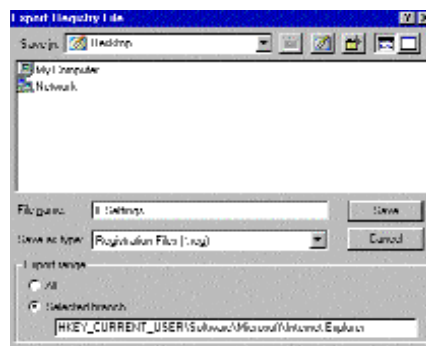
anywhere through the installation process. Note that these will not restore any customised settings, but are great for repeat custom installs.

Almost all program settings for Office are stored in the Windows Registry, HKEY_CURRENT_USER\Software\Microsoft\Office. You can export this key to a file and later import it back to the Registry after reinstalling the same version of Office with default settings. Microsoft included the perfect tool for Office 97 and XP. Called the Save My Settings wizard, it takes a backup of almost all settings and saves it to the Web or local file. You can later restore these settings with the same wizard. The tool is bundled with Office XP; for Office 2000 you can download it from <http://office.microsoft.com/downloads/2000/o2ksmsdd.aspx>.

Internet and E-

How many of us have lost our bookmarks after reinstalling Windows? This is one of the first things you miss when you start browsing. To back up favourites, simply copy the files off the Favorites folder. In a single-user environment, this is located in the Windows installation folder; otherwise you will be able to find it within the user’s profile.

If you customise Internet Explorer quite a bit (security, connection, browser behaviour, etc), you would want to save its settings too. Most settings are stored in the Registry. You can take a backup of the HKEY_CURRENT_USER\Software\Microsoft\Internet Explorer branch. To do this, open the Registry Editor by running regedit, navigate to this branch and click **Registry > Export Registry File**. When you want to restore these settings, first make sure that



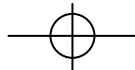
Save IE settings from the Registry

the same version of Internet Explorer is installed, then double-click the registry file that you took a backup of. Reboot the machine and the settings will be restored.

What all should you save when backing up e-mail? This is the most common

dilemma most of us face. You don’t just mail store itself, but all mail items such as identities, rules and filters. If you use Outlook, you will be able to save Outlook settings in a PRF file. Outlook stores the Personal Address Book in PAB files, the Outlook Bar shortcuts in FA files and message rules in RWZ files. Names are stored in NICK and NK2 files, print settings in an OutlPrnt file, and settings in Outcmd.dat and system views are stored in Views.dat. Macros are located in VbaProject.otm files. Send/Receive group settings are in SGR files. Signatures are linked from RTF and TXT files, templates are saved as TPL files and Junk and Adult Senders lists in files named Junk Senders.txt and Senders.txt.

You can back up the Account se



Cloning Windows

Tools such as Symantec Ghost (www.symantec.com) clone entire partitions and even hard disks, but these programs cost. You can do the same without installing any additional software. Basically, you need to copy the files to a different location and copy them back when necessary. For fast and easy copying, you should have a hard disk with at least two partitions and a friend who will let you use his computer when your Windows crashes.

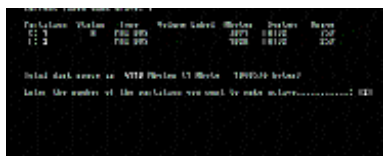
While in Windows, close all open programs, open Command Prompt and switch to the folder where you want to make the copy. Here, type the following command:

```
xcopy c:\*.* /e /c /r /h /y /k
```

This will copy all the files and folders from the C drive to the backup location. By doing it from Windows, the copy operation itself is faster than copying while in DOS and, more importantly, all long filenames are preserved. Using XCopy allows you to copy all folders and subfolders, maintain file attributes and ignore errors (copying using Windows Explorer will throw up an error if it tries to copy the swap file and it will stop copying).

To restore this image, you will have to be able to access the hard disk from Windows. Thus, if you don't have Windows installed on another hard disk or a different partition, you'll need to attach the hard disk to another machine. Run the same procedure as above to copy the files.

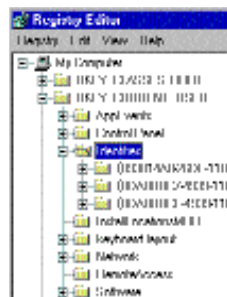
If you do not have access to another machine, you can still have a working backup. Simply dedicate a partition to hold this backup, so that you copy



Use Fdisk to switch from a corrupt installation to a working backup

the files to the root of that partition. You can boot to DOS and use FDisk to switch the active partition. When in trouble, just boot off that partition instead! Thus, you will never have to reinstall Windows.

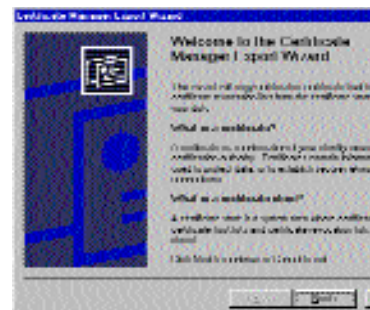
by saving the HKEY_CURRENT_USER\Software\Microsoft\Office\Outlook\OMI Account Manager\Accounts branch from the Registry. All mail is stored in PST files. As with other Office programs, you can use the Save My Settings Wizard in Outlook 2000 and XP, though it may not back up all your settings.



Outlook Express stores all information in the Windows Registry

C:\Windows\Application Data\Identities. Simply copy the folders to another location; they can later be imported into Outlook Express. The Address Book is stored in a WAB file, typically in C:\Windows\Application Data\Microsoft\Address Book. All

There are fewer things you need to back up in Outlook Express. All mail is stored in DBX files (one file for each mail folder) in a separate folder for each identity. On Windows 9x you will be able to locate the folders for all identities in



The Certificate Manager Export Wizard takes care of all your digital certificates

account settings and rules are stored with the identity information in the Windows Registry, under the HKEY_CURRENT_USER\Identities key. Simply copy this branch and later restore it and Outlook Express will start functioning just as before.

If you use stationery in your e-mail, you will find the files in \Program Files\Common Files\Microsoft Stationery. If you have digital signatures, open **Tools > Options > Security > Digital Signatures**, select each digital certificate and export it to a file. Remember to export the private key too, along with the public key. You can import them back from the same window.

OS Set-



Windows is not as simple to restore to the original look and feel as applications, especially if you tweak it quite a bit. Windows stores some settings in the Win.ini and System.ini files in the Windows folder, while many others are distributed across the Registry.

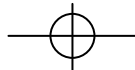
If you modify Windows settings directly from the Registry itself, you should export these registry keys to a folder as you modify them—to apply the same tweaks, simply double-click each file. Another simple way is to use a third-party tool such as Tweak UI, which makes standard tweaks a breeze. Thus, when you reinstall Windows, you can change all those settings in just a matter of minutes.

The fastest and most effective way to restore Windows to its original state is to maintain backups of the entire Registry—this will not only save Windows settings, but also settings of all programs that use the Registry to store their settings. It is extremely vital that the backup be taken when the system is functioning perfectly. After a fresh installation of Windows, after all your most-used applications are

installed, you should take the first backup. Next, go on to changing system settings and customising applications and another backup. You should update the backup every time you install a program or change some settings or upgrade software—changes that you know you always want on your PC. When you decide to restore the settings after reinstalling Windows, first reinstall all the programs that were installed when the backup was taken, then reboot to DOS. You can then replace the Registry with the one you saved in your backup using the /c switch with regedit. Thus, if you have a file named backup09.reg stored in D:\Backups, you would use the following command:

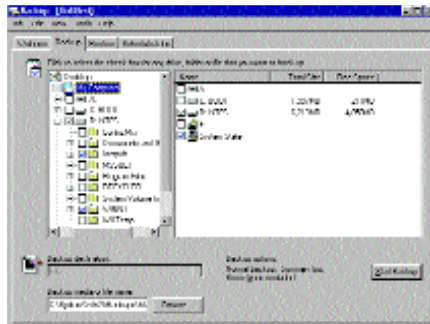
```
regedit /c d:\backups\backup09.reg
```

Windows 98 includes a tool called Registry Checker that, by default, takes daily backups of the Registry. This utility keeps only the last five backups by default, but it also maintains one backup of the Windows installation. You can restore the system from the backups by running scanreg /r from DOS. Along with the registry utility also saves and restores the W



and System.ini files. Windows Me and XP use restore points, while Windows 2000 uses the Backup and Restore Wizard to save system settings. With restore points, you can take a snapshot of the entire system and save it to a restore point, which can later be used to roll back the system to that state. Thus, technically you would never require to freshly install Windows again. Backing up the System State on Windows 2000 will save all system settings to a file. As with registry backups, remember to set restore points or save system settings after every critical update or change. Unfortunately, restore points take up a lot of disk space, so it may not be possible to keep many of them.

If your Windows installation is set up for multiple users, simply exporting the



With the Backup and Restore Wizard, you can mirror an entire Windows 2000 installation

registry from the Registry Editor will not suffice. You should take a backup of the files that hold the registry, i.e. the System.dat and User.dat files in the Windows folder, and each User.dat file in the

Windows\Profile\<ProfileName> folder. To restore these files, copy them back to the correct locations while in DOS.

If you have a lot of fonts, copy them from the Windows\Fonts folder. Windows Explorer will only display the fonts that are installed on your machine; there are other font files here that are actually installed, you will not be able to see them. Thus, again it is best to copy these files to a different location using the Command Prompt. Your files on the Desktop are pretty straightforwardly copy them to a different location unless multiple users login to Windows. The same goes for your browser's bookmarks. If you have multiple users, you should remember to back up all files under the Windows\Profiles folder.

Understanding Program Structure

Most programs store settings in one or a combination of three possible ways: a file in the program's installation folder, a file in the Windows folder or in the Windows Registry. Again, typically most programs that use the registry store settings under two keys: HKEY_CURRENT_USER\Software\<Vendor Name>\<Program Name> and HKEY_LOCAL_MACHINE\Software\<Vendor Name>\<Program Name>. Very few programs use other ways to store settings, such as a file in the root of the C drive or one in the System folder. Most programs also use INI files, though there are some programs that use different

extensions for their settings files.

Thus, if you use Winamp, you will notice that it stores all its settings in a file named Winamp.ini, in the same folder where it is installed. WinZip, on the other hand, dumps it all in the Registry. As we have already seen, Windows and Office both use files as well as the Registry, and Internet Explorer and related tools (Outlook Express, MSN Messenger, etc) do not use any files and save everything in the Registry only. By understanding how different programs work, you can individually save settings for the ones you customise.

However, if you are using software

such as Photoshop, you don't want to do with just saving the settings. You may be more bothered about the plugin settings (brush styles, shapes, etc) and any files you may have downloaded, saved or created. These are all located in individual folders within the Photoshop installation folder, unless you modified their location. Plus, if you have been reading up on Photoshop tips, you may be storing fonts in the Photoshop folder—this way, Windows does not load the fonts every time you start Photoshop and though the fonts are available on the hard drive, the system runs a much faster load. Remember to copy the fonts to a

Precautions

Backup and restore operations are very easy, but be careful to use backups from a time when you were sure that the system was stable. Also, ensure that you are restoring settings for the same version of the application as when the backup was taken. This includes minor updates. For example, if you've backed up settings of Office 97 SR2, it is not advisable to restore them on an Office 97 installation without installing the Service Release first. Do not procrastinate in taking backups—every time your system successfully accepts an update and the PC works fine for a while, update all relevant backups. Finally, be very careful when working with the Registry.

Reinstalling Windows the Smart Way

All versions of Windows can be customised to be installed with predefined settings and without any dialog boxes popping up. Called Batch Setup or Unattended Install, this was originally designed for cloning installations across a large number of PCs, say, in an organisation, but is just as useful for reinstalling on your own PC.

When you install Windows 98, it creates a file named Setuplog.txt in C:\. This itself can be used as a batch file. However, there are better ways of creating batch files on your own. On the Windows Installation CD itself, you will find a batch file creation tool in Tools\Reskit\Batch. Simply install and run this.

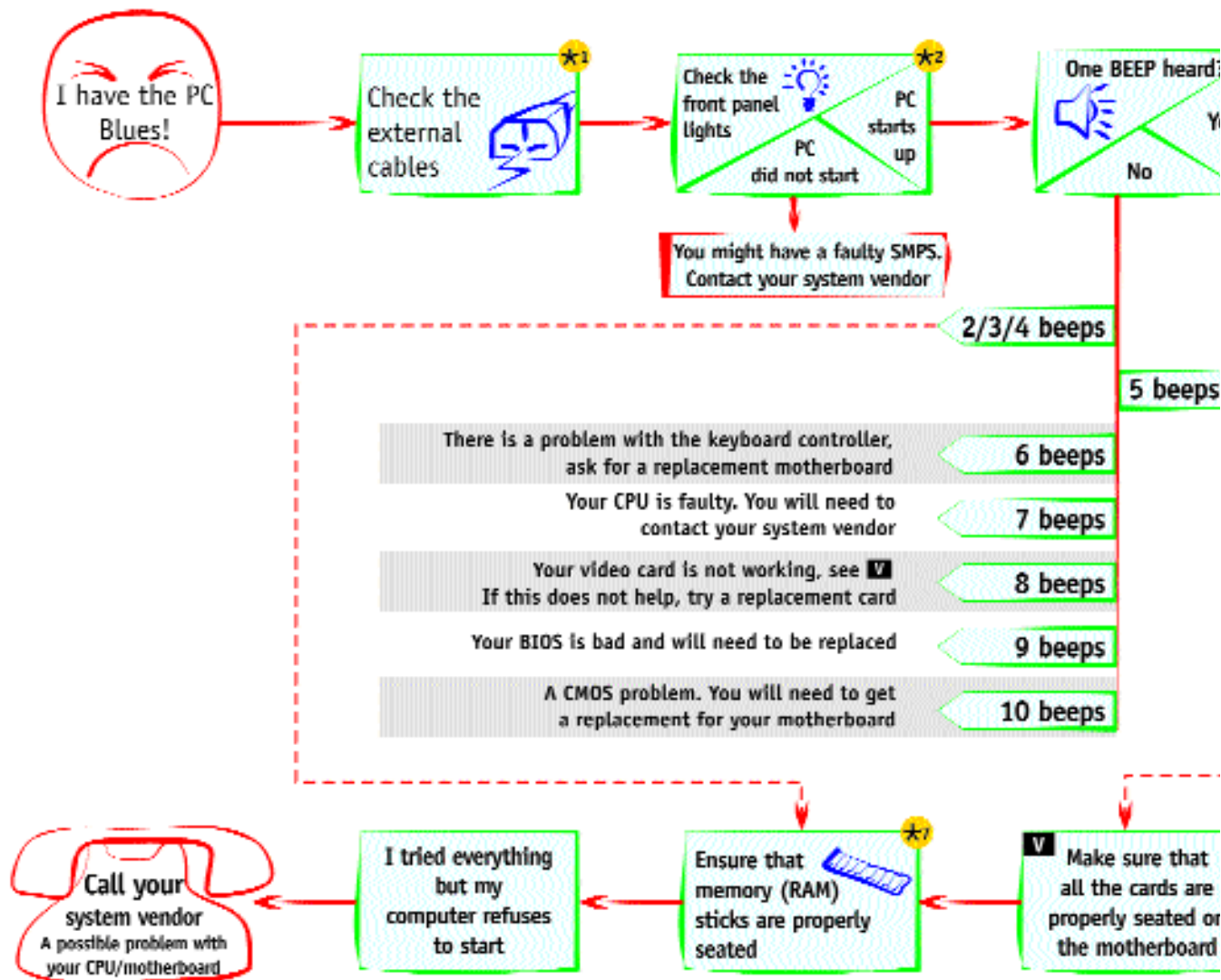


Automate Windows installation

You can save all installation settings in a file called Setuplog.txt. To use a batch file with the Windows 98 setup, simply type **setup batchname** at the DOS prompt.

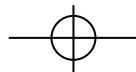
VEER

Reviving your



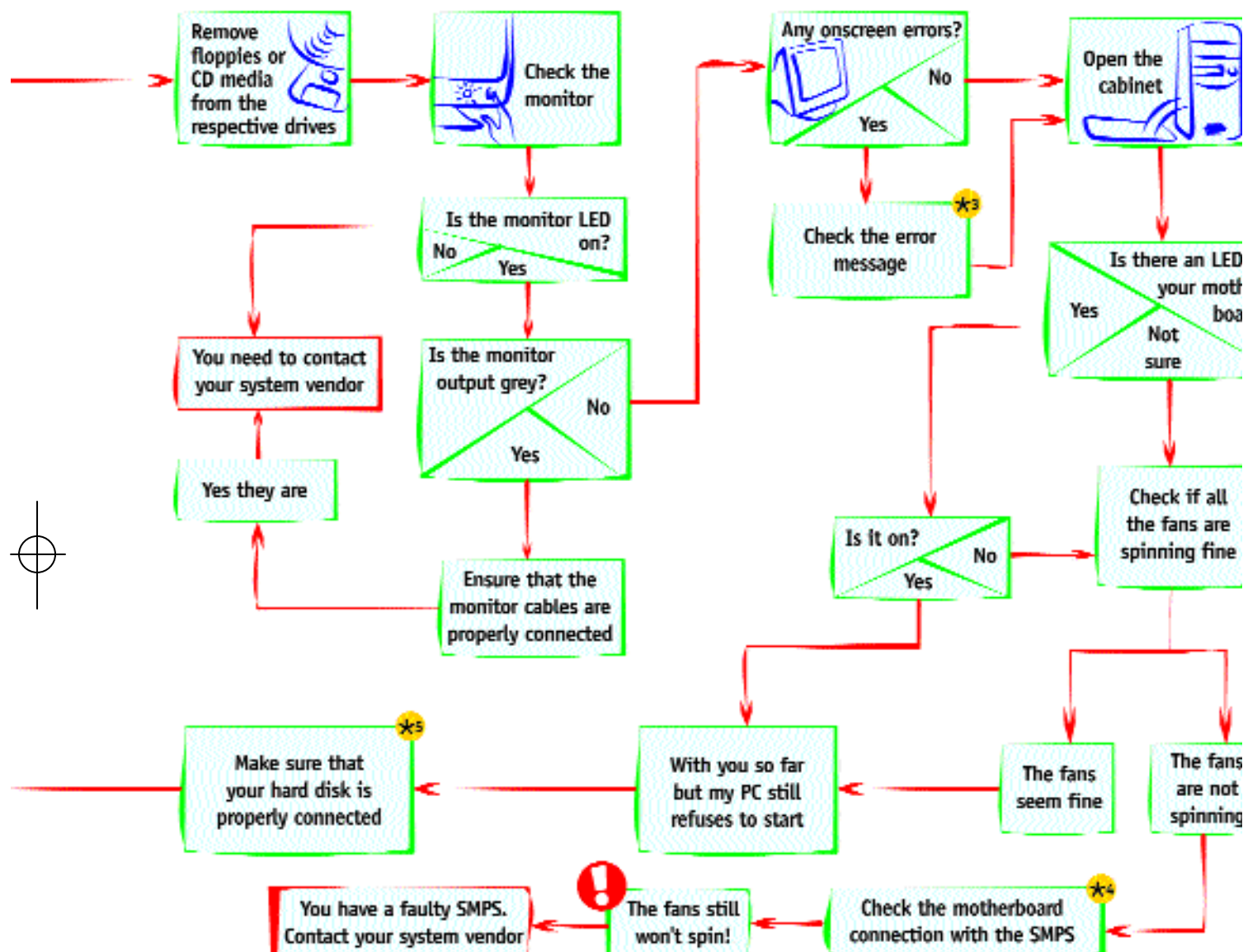
Look here for additional information:

- ★1 Check for blown fuses. Ensure that ALL external cables are properly connected.
- ★2 Ensure that the hard disk access indicator and the PC power indicator on the cabinet are lit.
- ★3
 1. If there is a keyboard error, try reinserting the keyboard wire. If this doesn't work, you will need to get a replacement keyboard.
 2. If the system does not boot from your hard drive, do the following to make sure that the hard disk is properly configured:
Restart the PC and press (Delete) to enter the BIOS. Check the boot order: boot from the primary master drive first. Use the 'Autodetect' feature and choose the parameter against which there is a YES featured—if your hard disk is not detected here, you will have to open
- ★4 Check the AT/ATX supply cable connecting the power supply (SMPS) to the motherboard.
- ★5 Ensure that your hard disk data and power cables are properly connected. If they are, swap the power cables with another cable. Do the same with the data cable.
- ★6 Try changing positions of the PCI cards and RAM modules, since the slots might be damaged.
- ★7 If you have more than one RAM module, try inserting them one-at-a-time. Also see ★6



Dead PC

A step-by-step guide to resurrecting your computer



Suggestions:

CPU problems

If you have eliminated all the suspects, except the CPU, do not attempt to remove the chip yourself. A CPU, especially one made by AMD, is extremely delicate and is best handled by the system vendor.

! Dirt/dust problems

The fans inside the cabinet might not work due to dust. The SMPS in particular, is a dust magnet; clean it frequently for problem-free running.

Memory problems

If you have several RAM sticks and have bootup problems, one of them may be faulty. Remove and reinsert each individually to eliminate the faulty one. The slot where a module sits may also be faulty; relocate the module to another slot. This holds true for any PCI slot too.

Static electricity precautions

Before opening the cabinet, ground yourself—touch anything metallic barefooted. Also use an anti-static mat or a wrist-pad if you can.

insight ■ netreturns



DREAM JOB

Cast the World Wide Web to net the job you want

Like a good hairdresser, a good job is rather hard to find and the current economic scenario has not made things any easier for the hopefuls. A scouring of the classifieds within dailies, a shuffle of pages in the employment newspapers, a frantic 'try-to-get-me-in' phone call to a friend or relative—all these are routine acts for a job seeker. And getting a job is just half the battle; with work satisfaction always an illusory goal, the search for 'something better' is never quite over.

This is where the Internet comes in—it takes your worth as an employee and grants it greater visibility. It is like moving from page 3 of a newspaper to a lighted billboard on a busy highway. So you stood within the top 10 per cent of your graduation batch? Log on to a job site and tell the world about it. If you have more than 14 years of hard-earned experience in the IT field and are in search of a better payscale, don't apply to two or three companies, go the whole mile and apply to 300 of them! Advertise yourself—sooner or later, your

credentials are bound to catch the right eye and then, who knows? So let's mouse our way through the best job sites that the Internet has to offer.

Opening new doors

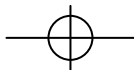
A job site aims to offer a unified portal to getting the job of your dreams. As Joy Ghosh, vice president of marketing and sales of JobsAhead puts it, "In the traditional job market, jobseekers are handicapped by lack of information on available opportunities, especially outside their geographical location. The Internet gave a huge opportunity to bridge this information gap." The Internet is akin to a bridge between the job seeker and the awaiting opportunities. Dhruv Shenoy, vice president of marketing at Monsterindia, explains further: "Traditionally, the job opportunities a person could seek were constrained by geography. A person in Delhi could access only jobs advertised in newspapers of Delhi or through placement

agencies based in Delhi. Today, a job in Shillong has access to the same job seeker in Delhi or any person, any in the world! The equation has thus been equalised, helping talented professionals their choice on the employer rather than the other way around."

Blurring geography is just one of the benefits of a job site. The other large benefit is the database of both companies and job seekers. One of the major recruiters that such a site accumulates is a very large database has been the golden key for many a job seeker, a fact that Rajan Jha, a computer graduate, attests to: "I was fortunate to discover an online job site as I completed my graduation. By setting a simple query, I was soon inundated with very viable and attractive offers." Today, Parids world is a major software company—that he thanks the Internet.

Shenoy explains the reason for the success of such a service via Monsterindia: "In 1994, Monster was a simple job site which listed jobseekers

info Roughly 20 per cent of Internet users use the Web to search for a better job



The Interview Centre and the Salary Centre are two must-see resources that Monster India has to offer

jobs, without any of the sophisticated search functionalities. Over the years, the job board has evolved into a technologically advanced suite of tools that help the jobseekers and employers find each other exactly as per their requirements."

While all major sites offer a search service, what they differ in is the level of control afforded to a job-surfer. Thus, while JobsAhead lets you search on the basis of job location, experience and the category, Monster India filters your search according to whether you want a temporary post, a contract offering or a full-time job. Most of these sites also let you post your resume online for free. naukri.com hosts a feature called the Resume Manager that stores and forwards jobs pertaining to your qualifications and experience via e-mail that it terms as 'Job Alerts'. Thus, all the relevant jobs find their way straight to your mailbox. Moreover, by choosing a privacy option, you can make the entire process as confidential as desired, safe from the prying eyes of your current employer



The Placement Agencies Directory of JobsAhead promises to furnish complete contact details on 1,000 placement agencies

and colleagues. Monster India and JobsAhead offer the same facility, albeit named a little differently.

It's a fishpond out there

The constant flow of resumes is accumulated into a dynamic electronic database, which is bait for companies on the lookout for fresh and bright talent. As Ghosh explains, "Since our resume database is in an electronic format, a million resumes can be searched through in a minute, as compared to a traditional hard copy format. Also, one can keep the database fresh by constant updating. Hence, we provide a very high quality sourcing base for candidates across categories, levels of specialisation and seniority." It is thus a self-sustaining cycle—a job seeker posts his resume because he knows that recruiters frequent the site, while employers visit the job site as they recognise it as a pool of potential employees.

So are online job sites in direct competition with agencies that take the offline



Dhruv Shenoy

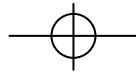
VICE PRESIDENT-MARKETING, MONSTER INDIA

“Today, talented professionals can choose the employer, rather than the other way around.”

route? We ask Ghosh and this is what he has to say: "Traditional recruitment channels were limited by their reach to local audiences as well as access to database of jobs. The Internet provided a low-cost medium for recruiters as well as job seekers to increase their reach exponentially beyond their physical presence. But the same agencies are our biggest customers. While we give access to a high-quality sourcing base for candidates, placement agencies bring in their expertise in candidate screening and client relationships."

It is a symbiotic relationship that Shenoy attests to: "While both the recruitment agencies and Monster India are in the same business, we go about our jobs in a slightly different way. The core function of the Monster India site is to provide a ready database of professionals to employing organisations. The recruitment organisations go beyond just sourcing talent. Their value to the employers comes from the fact that the agencies also screen and shortlist the candidates. Moreover, we

1 col AD



Pressing the Right Buttons

Monsterindia: If you are looking to immigrate to a foreign country, try Monsterindia's Global Gateway. You just need to identify the country where you are being offered a job, or would like to get one. This section will then help you with details on Visa requirements and immigration assessment, employment issues, labour policies, occupation demands, economic status of



Head to the Global Gateway for immigration information

the country, and a helpful assortment of tools and resources. The tool that stands out is the Visa calculator, which provides a preliminary indication of your eligibility to work in a foreign country on a temporary or permanent basis.

JobsAhead: The highlight of this site is certainly the Career Booster, a paid service for the prospective employee (at a price of Rs 2,000). Over a four-step process, Career Booster presents a unified and comprehensive package for the job seeker. The first step involves an expert panel writing an appropriate resume for you. The document is then sent to 800 placement agencies across India, exposing you to what the site claims, are more than 10,000 jobs. The third phase involves highlighting the resume on the site, guaranteeing it more



The Career Booster handholds you through the nuances of job searching

visibility. Additionally, the fourth step also offers a comprehensive directory covering names, addresses and telephone numbers of top placement agencies.

naukri.com: This site offers what it calls 'Value Packs'—custom made solutions are suited to the needs of every type of employee. Therefore, the Freshers Value Pack, customised for professionals with two to three years experience, offers a resume development service by an expert panel. The resume is then displayed for a period of one year on the site and sent to 300



Value Packs are custom made for professionals and freshers

entry-level recruiters—all this comes at a price of Rs 1,600. It offers similar solutions to both IT and non-IT professionals: IT gurus can send across their resumes to 1,500 international recruiters, while non-IT professionals can avail of the facilities of 1,000 domestic placement consultants.



Free Resume Assessment is a walk-in service provided by naukri.com for residents of major cities such as Mumbai, Delhi and Kolkata

outsourcing our services to traditional organisations—worldwide recruitment consultants form a significant chunk of our client base. In fact, the segment of recruitment consultants happens to be the second biggest segment of clients on Monsterindia, after the Information Technology segment."

Take a chance

Job sites are, of course, not a one-stop solution. Posting your resume on a site need not guarantee a suitable post or for that matter, a job. Like Parveen Mistri, a fashion

designer with three years experience found out, such a site does not touch every employment sector. "My resume was online for more than six months. Every day saw a cycle of excitement while checking my mailbox, followed by moments of

trepidation upon the realisation that I had nothing but junk mail to delete. It got emotionally taxing and I stopped frequenting that mail account. Thankfully though, I got a decent job via a newspaper ad." This scenario is not unknown to Shenoy. As a matter of fact, he lists it as a potential drawback on the part of job sites. "Today, we can say that the only limitation (and definitely not a hurdle) we have is the acceptance of the e-recruitment concept in some of the traditional sectors such as pharmaceuticals, healthcare and banking. But as companies start talking about their successes of recruiting on the Internet, we expect the mindset to turn positive." We asked Shenoy whether Monsterindia saw the growth rate of the Internet as another bottleneck in the making. "Although on an overall level the

penetration is seen as low, there is significant penetration within the workforce population. There are two reasons for this in most offices today, Internet connectivity is not as rare as it used to be. Additionally, the ever-growing popularity of

has made sure that people at cyber centres more often means that the Internet population in India is growing at a phenomenal rate. But we see the relatively small penetration today as an opportunity for the immediate future.

The fact of the matter is even though Internet penetration as a whole is low, it is significant in the sectors that count, making it a very

source for candidates amongst the graduates and such. Job sites should be accepted as an additional facility while hunting jobs and not as the source for potential employment. By multiplying the benefits offered by such and then maximising on them, the dream job can be alleviated from being unattainable to a distinct possibility.

AHMED

info JobsAhead connects 1 lakh jobs from more than 5,000 recruiters across the country to over 10 lakh job seekers every month

30 Minutes Expert

All the music you can't leave behind

Here you are, the proud owner of a newfangled portable MP3 player, but alas! All your favourite music is trapped inside old Audiocassettes. Or maybe the convenience of having your entire music collection of tapes in a compressed MP3 audio format is just too tempting. Whichever way, converting that old ABBA cassette into an MP3 memorial is just a hop, skip and jump away.

What you will need

- A cassette player. The sound quality achieved will depend on the capability of the chosen player.
- A soundcard with a Line In jack inside your computer.
- The MUSICMATCH Jukebox software, featured in the Digit Mindware CD, September 2002. A free trial can be downloaded from www.musicmatch.com
- About 1 MB of free hard disk space for every minute of music that is to be recorded.



Getting it together

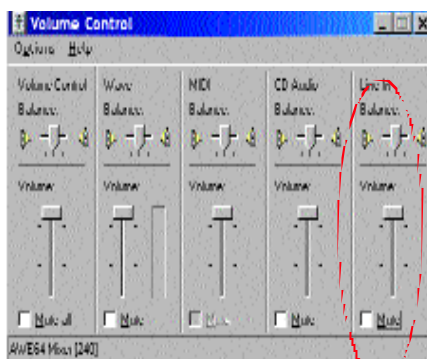
Connect your cassette player to the soundcard in your computer. This can be done in two ways: if the player has a Line Out port, use a stereo to RCA cable (the one with a red and a white connector at one end and a single-pin stereo jack at the other) to connect it to your computer. If the Line Out port is absent, use the headphone port to connect it to the card—a simple cable with 1/8-inch headphone plugs on both ends will do just fine. You can buy this cable from an electronic shop or if you are feeling adventurous, you can make one yourself. All you need to do is locate two pairs of old headphones. It is important that at least one of them has a good wire. Cut off the plugs from both the pairs and extract a length of wire from one of them. Connect the two plugs with the

wire and voila! You have the required cable! Next, ensure that the bass, treble and loudness levels on the player are all set to zero—this is called normalisation and it will give you the best quality audio by minimising the sound distortion.



Set the controls

Double-click on the little speaker icon next to the clock on the lower right of your screen to bring up the Volume Control. You need to ascertain two things: that the Line In control is not muted and that the volume level for the same is not set to zero. If the speaker icon is missing on your system, go to **Start > Settings > Control Panel > Multimedia Properties**. Here, select the 'Show volume control on the taskbar' checkbox. Note that the soundcard must be correctly installed for this.



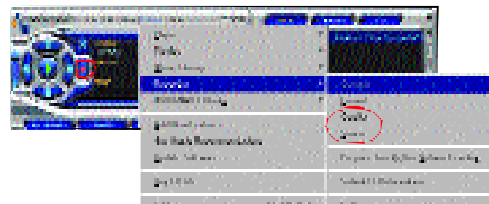
Make sure that the Line In column is not muted and its volume is not set to zero

Set the player's volume level to about one-third the power level and press Play. If the setup is correct, you will hear the music flowing from your PC speakers. If you do not hear any sound, check the Volume Control settings and make sure that the cable is connected firmly to the Line In port of the soundcard.



Sound check

Now that you have connected your player to the computer and prepared your system, do a test run to ensure that everything is working as it should. In MUSICMATCH Jukebox, go to **Options > Recorder > Source** and select Line In.




The two options to look for are highlighted above. Also note the Record button

Then, go to **Options > Recorder > Quality** and select MP3 (128 kbps). Press Play on the cassette deck and click on the Record button of the Jukebox. Wait until the indicator at the bottom of the MUSICMATCH window shows around 30 seconds of audio, and then press Stop on the software.

Play the created test file (find it in your MUSICMATCH Rips directory) to get a handle on the quality of the recording. If the output of the recorded file is too soft, play around with the volume level on the player, and the Volume Control on the taskbar till you get the clearest sounds possible. Repeat this step to get 30-second test snippets of the cassette, until you are satisfied with the quality of recording.



For the record

Once you are satisfied with the sound quality, repeat the process outlined under 'Sound check', only this time, continue for the duration of the cassette. Now you don't have to worry about those squeaky tapes! 

AHMED SHAIKH



Enabling Java with IE6, fixing Windows startup errors, discoloured monitors, installing modems—find all your answers here

Quick View

Q. I use Windows 98 SE and have Quick View installed on my PC, but when I right-click any file, the Quick View option doesn't appear. Please tell me how to enable this for all files.

Varun Kumar Arya
Via e-mail

A Quick View is by default associated with the file types that the program can view. If it does not appear on common file formats such as DOC, RTF, EXE, etc, you can uninstall and reinstall Quick View. You can do this from **Control Panel > Add/Remove Programs > Windows Setup**.



Installing Quick View

Select Accessories and click Details. If this does not help, open the Registry Editor by typing **regedit** in the Run dialog box (**Start > Run**) and expand HKEY_CLASSES_ROOT*. Under this, create a key named 'shell', create another key named 'QuickView' under shell and finally create a key called 'command' under this. Double-click the Default value and enter

C:\Windows\System\Viewers\quickview.exe as the new value. You will now get the Quick View option with all file types, but two such options with the file types that were originally associated with Quick View.

Downloading with Opera

Q. I have just begun to use Opera 6.03 as my default browser. Whenever I download a file, it opens a window called Transfers. If I disconnect and want to finish downloading later, there is no way to get back to the Transfers window after restarting Opera. Thus, I start downloading some other file to get this window and then resume downloading the previous file. Please tell me if there is any other way by which I can open the Transfers window without such a hassle.

Rohan Naravane
Via e-mail

A To open the transfers window in Opera, click **Window > Special > Transfers**, or use the shortcut key combination [Ctrl] + [Alt] + [T].

Discoloured monitor

Q. My monitor shows a yellowish shade around the corners of the screen. It disappears after 10 to 15 minutes, but reappears randomly. Can you tell me what is the reason for it and suggest a solution?

Rohit
Via e-mail

A This usually happens due to the magnetic field of the speakers mounted

on the monitor and can happen with any monitor if the speakers are placed too close to it. Though the speakers on the monitor may be shielded, this effect does tend to develop over time. You will have to degauss the monitor to get rid of the discolouration—your monitor may not have a built-in option for degaussing, but a service person will be able to do it for you.

Installing modem on Windows 2000

Q. I have a problem installing a modem in Windows 2000. When the modem is detected, it is automatically installed as a PCI communication device. Even if I uninstall it, it is again detected and installed. Please help me.

Roshan Patel
Via e-mail

A Instead of uninstalling the modem, update the driver with the actual driver of the modem. Open **Control Panel > System > Device Manager** and double-click the device to open its Properties. Under the Driver tab, click Update Driver and instead of letting Windows 'Search for a suitable driver', select 'Display a list of known drivers'. Click Have Disk to select the correct driver for the modem and install it.

Sloppy floppy drives

Q. I have an assembled Pentium III 600 MHz PC on an Intel 440 ZX board running Windows 98 SE. I have two floppy drives—1.44 MB and 1.2 MB. Though

the machine functions normally, the system detects only one drive when I boot from the hard disk, but detects both drives when I boot from a bootable floppy. I have changed five motherboards, five floppy drives and cables and reinstalled Windows many times, but the problem persists. How do I solve this?

Shrikant
Via e-mail

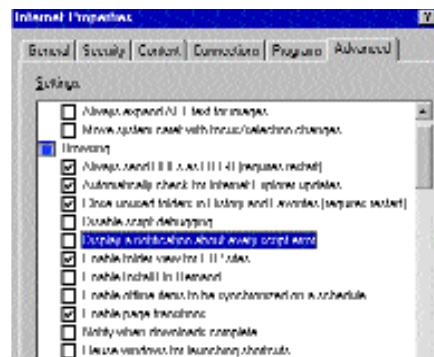
A If the drives are connected and configured correctly in the BIOS, they should appear normally, no matter which device you boot from. The floppy drive cable has a twist towards one end. The drive ahead of the twist is Drive A, and the one behind the twist is Drive B. Once connected this way, make sure they are configured accordingly in the BIOS. Press [Delete] to enter the BIOS settings when the machine is booting and configure the drives under Standard CMOS Setup. Once this is done, boot to DOS from the hard disk (hold down the [Ctrl] key while Windows is booting) and see if both drives are available. Next, boot to Windows. If the drives are not available in Windows, add the drive from **Control Panel > Add New Hardware**.

JavaScript errors

Q. When using Internet Explorer, I get various script errors. What should I do to get rid of them?

Mahesh Bhattarai
Nepal

A Script errors occur when Web sites don't use correct JavaScript or VB Script. The browser does not understand how to handle these wrong scripts and throws up an error. To avoid the error messages,



Disable script error reporting

open **Control Panel** > **Internet Options** . Under the **Advanced** tab, uncheck the box next to 'Display a notification about every script error'.

Missing Java applets

Q. I have a P-III 866 MHz PC with 128 MB RAM and a 20 GB hard disk running Windows XP. Internet Explorer doesn't have the Java Virtual Machine (JVM) and every time a Web page has an applet, it asks for downloading the JVM. I've tried changing settings in Internet Explorer but to no avail. I have just installed Java Development Kit 1.2 and it requires me to add the path of the bin folder to the environment. I made



Playing VCDs

Q. I have a Pentium II 300 MHz PC with 64 MB RAM and a 36x Creative CD-ROM drive. I use Windows Me. I can't play VCDs on my system. The computer doesn't recognise the .dat files. I have tried many VCD playing software such as Jet Audio, Windows Media Player 7.1, PowerDVD, VCD player, etc. Kindly suggest a solution for the problem.

Abhijit Joshi
Via e-mail

A You have not mentioned exactly how you are trying to view the movies—whether you are playing it from a VCD or have copied only the .dat files on to your machine. If you have copied the movie files, it will not play as a VCD on any of the software you are trying to use. However, you can simply drag and drop the .dat file onto Windows Media Player and it will start playing the movie—Windows Media Player recognizes and plays back the .dat files, but not as a VCD.


Hiding items in Control Panel

Q. How can I hide a Control Panel item?
J Velmurgan
Via e-mail

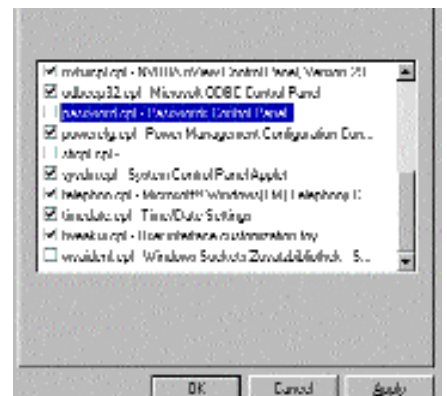
A You can hide Control Panel items by adding their entries to the C:\Windows\Control.ini file. If it's not already there, add the line **[don't load]**. Below this, list out the filenames of all items that you wish to hide, followed by **=no** (e.g. **joystick.cpl=no**). An easier way to do this

changes in the autoexec.nt file, but that didn't help.

Gautam
Via e-mail

 Microsoft has removed support for Java from Internet Explorer 6 bundled with Windows XP. However, you can still install the older JVM from www.microsoft.com/java/. Also, Sun has released a JVM for Internet Explorer 6 on Windows XP, which you can download from <http://java.sun.com/get-java/default.html>.

You can add environment variables in Windows XP from **Control Panel > System**. Under the Advanced tab, click Environment Variables and add the path of the bin folder to the Path variable.



Use Tweak UI to hide Control Panel items

is to download Tweak UI from <http://www.microsoft.com/networkstation/downloads/PowerToys/Networking/NTTweakUI.asp> (this works with all versions of Windows). Run Tweak UI and deselect the items you wish to hide under the Control Panel tab. Here, you can even see the filenames against the actual names represented in the Control Panel.

Startup errors

Q. I have a Celeron 200 MHz processor, a 20 GB hard disk and run Windows 98 SE. Every time I boot, I get the following error message: 'Error starting program. The LITSCAN.DLL file is linked to missing export MFC42DLL.6467'. On clicking OK, the message disappears and the PC works as usual. Please let me know what to do.

Narendra
Via e-mail

Automatic starter

Q. I have a Pentium III 600 MHz computer with 128 MB RAM and a 17.2 GB hard disk. I have installed Windows 98 and Windows XP. Recently, I connected a Panasonic KX-FM 131 fax machine to the COM1 port. The device is working perfectly, but whenever I shut down the system, the computer displays the Shutdown screen and then reboots. Even if I simply turn on the main power switch, the computer starts on its own. When I removed the modem, it started working normally again. I tried switching the modem to COM2, but the problem persists. I also have a



Motorola SM56 PCI internal modem connected as COM4. Can you please help?

Rajesh
Bangalore

A This is indeed a weird problem. Boot the machine and enter the BIOS setup by pressing the [Delete] key. Check the BIOS to see if options such as Wake on (or Power on) Ring or Wake on (or Power on) LAN are enabled. If they are, disable them and see if the problem is solved. If not, check if the BIOS has other Power on options, such as by a particular key-combination. Disable all such options and check if the problem is solved.

Mass mailing

Q. I use Outlook Express 6 with all updates and patches applied. Whenever I send messages to many recipients, several of the messages bounce back with a note from the Webmaster stating 'Too Many Recipients. Delivery Failed'. However, if the list is small, the messages are dispatched promptly. My ISP is Dishnet, Chennai. Please help.

V. Ravchandran
Chennai

A This is not a problem with Outlook Express. This is a setting commonly used by ISPs to prevent spam—they assume that if an e-mail is sent to a number of people, it must be spam. Usually the limit is 20 recipients, beyond which messages will be bounced back with errors. You can work around the problem by sending mail to a lesser number of recipients. If you need to send mail to a large number of people regularly, use a mass mailing software such as Bulk Email Express Free (www.bulkemailexpress.com). Software such as these usually send out individual messages to a list of recipients, and can optionally personalise each message too.

CD writing speeds

Q. I have bought a new Sony CD-Writer. My computer's configuration is Pentium III 933 MHz processor, 256 MB RAM and a 20 GB hard disk. The CD-Writer takes around 10 to 12 minutes to write 650 MB of data at 32x write speed. Can you tell me how I can decrease the time taken? Does the speed depend on the software used? I use Nero Burning ROM 5.5. Should I change the software?

Sanjay
Via e-mail

A No matter what speed you set the Writer to write at, it will not write faster than the media's maximum speed, or the CD will not be written correctly. Commonly available CD-Rs max out at 16x, with some going up to 24x write speeds. Nero is a pretty good CD writing software and automatically detects the maximum speed of the disc, thus preventing damage to it. Unless you get faster CD-Rs, you will not be able to write at faster speeds.

Can't open Hotmail

Q. I have a problem with certain sites such as Hotmail and Indiatimes mail. When I enter the sign-in name and password, the same page reappears. This also

A The program that is trying to run (most probably LiteStep), is referencing a DLL file, mfc42.dll. This DLL is probably the wrong version. To correct the error, simply reinstall the program. If the problem still persists, try downloading the file from <http://www.webattack.com/help/missingfiles.html> and copy it to the folder where the program is installed. It is possible that the mfc42.dll file version on your computer is incompatible with this software, so you may have to try out a few versions to determine the correct one.

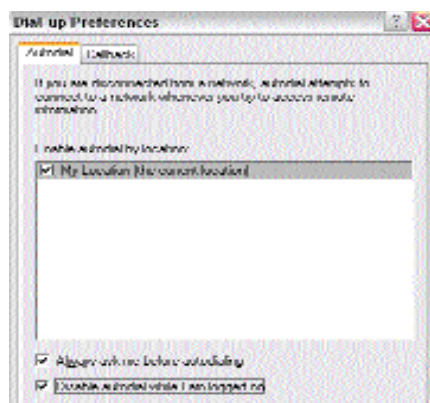
Mystery caller

Q. I use Windows XP. As soon as Windows starts, it begins dialling the Dial-up connection. Even if I close it, it comes up in a few seconds, not allowing me to work. Even if I login to the Internet and sign out, it keeps redialling! Please make this stop.

Pius
Kathmandu

A You can disable automatic dialling entirely. Open **Control Panel > Internet Options > Connections** and set it to 'Never dial a connection'. To connect to the Internet, you can simply double-click the Dial-up connection and manually connect to your ISP before you begin browsing.

If this does not help, open **Control Panel > Network Connections** and click **Advanced > Dial-up Preferences**. From here



Disable automatic dialling in Windows XP

you can disable automatic dialling for the connections.

Deleting unwanted e-mail

Q. I have two e-mail messages that I can't recognise. These may be viruses, which may activate if I click on them, since they would be displayed in the preview pane. I use Outlook Express. How can I delete them without viewing them?

Nabeel Ahmed
Via e-mail

A You can simply turn the preview pane off to not display the message. In Outlook Express, click **View > Layout** and disable the 'Show preview' pane. You will now see only the message list, from where you can delete the messages without viewing them.

FAQs

Windows 2000 boot options

Q. I have a Celeron system with 128 MB RAM, a 40 GB hard disk and three operating systems—Windows 98, Linux and Windows 2000 Professional. When the system boots, the Linux Loader gives me the following options: linux, hda1, hda2. When I select hda1, I get the options: Windows 98, Windows 2000, Windows 2000, i.e., Windows 2000 appears twice. How can I remove one of them?

Anoop Abraham

Via e-mail

A. Initially, the Linux Loader (LiLo) controls the boot process and gives you the options to boot to Linux or another operating system. When you select hda1, the Windows Flexi Boot Loader takes over and gives you the boot options that are configured in the Windows 2000 setup. You can modify this by editing the boot.ini file in the root of the boot drive (C). The options will be listed one below the other. All you have to do is delete the extra entry and save the file.

OpenGL missing

Q. Whenever I try to play *Soldier of Fortune I or II*, I get an error message that reads 'GLW_StartOpenGL()—could not load OpenGL subsystem'. I use a SiS graphics card on a Pentium 4 1.60 GHz PC with Windows XP. Please help.

Atul

Via e-mail

A. SiS graphics cards do not have support for OpenGL, which is required for games like *Soldier of Fortune* to run. You will have to upgrade to a more high-end graphics card, such as one of the GeForce series. Refer to the Test Drive on Graphics Chips in the

August 2002 issue to pick the right card suited for your needs and budget.

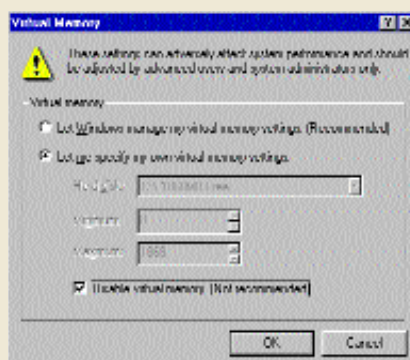
Scandisk repeats itself

Q. Scandisk and Disk Defragmenter never run completely on drive C of my PC. It keeps restarting, with a message that Windows or another program is writing to the drive. The C drive only contains the OS, Windows 98. I disabled Norton AntiVirus Auto-Protect. I cannot understand what program is running. How can I find and stop it?

Ajit Kanungoe

Via e-mail

A. The program that's running is Windows. You can't stop it, but you can prevent it from accessing the disk. Windows uses a swap file to temporarily store data when it runs



Disable Virtual Memory

out of RAM. It needs to constantly access this data, thus it is always accessing the drive. You can disable virtual memory from **Control Panel > System > Performance > Virtual Memory**. However, remember to enable it again after you finish running Scandisk and Disk Defragmenter, or you can expect a lot of blue screens and system crashes.

If cookies are disabled, the page will not know that you are logged in because it does not get this information from your machine.

To enable cookies in Internet Explorer, open **Control Panel > Internet Options** and under the Security tab click Custom Level. Under the Cookies section, enable 'Allow cookies that are stored on your computer' and 'Allow per-session cookies'.

Registry Checker

Q. I have a Pentium III 500 MHz PC running Windows 98 SE. Every time I start Windows, the Registry Checker runs, asking whether I would like to take a backup of the registry. On other PCs, the Registry Checker runs transparently, without prompting. How can I make my PC do that?

Swatilekha Doloi

Via e-mail

A. It is possible that someone has manually modified the settings for the Registry Checker on your PC.

To correct it, open the Registry Editor (click **Start > Run** and open regedit). Navigate to **HKEY_LOCAL_MACHINE \ Software \ Microsoft \ Windows \ CurrentVersion \ Run** and locate a string value named ScanRegistry. Its value should be **C:\Windows\scanregw.exe/autorun**. If it is not, modify it to this and the problem should be solved.

No more Windows

Q. I have Windows 95 installed. Is there any way to stop loading Windows without pressing [F8] at startup?

Vemuri Sreenivas

Via e-mail

A. Yes, there is a way to prevent the Windows GUI from loading automatically and make the system to boot to DOS instead. To do this, edit the **C:\msdos.sys** file and change the value of BootGUI to 0. When you want to load Windows, type **win** at the command prompt after it boots to DOS.

Send your computing problems to sos@jasubhai.com or write to Digit, D-222/2, Om Sagar, MIDC, Nerul-400 706, and we may answer it here!

happens when I try to download pictures from Webshots. I don't get this problem on other computers. I can download e-mail from Hotmail using Outlook Express.

Swati

Via e-mail

A. Your browser is probably set to not accept cookies, or you have some

software running that disallows cookies from being stored on your machine. Most sites that require logins work either with session cookies (temporary data files) or cookies (permanently stored on your machine). These files store information on your machine, which the Web server can access—this is one of the ways of transferring your information from one Web page to another.

tips & tricks

Smart@home

Quick and easy answers to some of the most common questions asked while using the PC at home



ILLUSTRATIONS: Mahesh Benkar



Advanced File Organizer, AVG Anti-virus 6.0 Free Edition, Birthday Reminder, Book Librarian, Book Organizer Deluxe, CDCoverPrint, FinePrint, FlashGet, FreeCard, FreeRIP MP3, Greetings! for Word, HandyBits Voice Mail, HJSplit, Iconoid, ICQ 2002a, MP3 Studio, OpD2d - Direct to disk audio recorder, Paint Shop Pro 7, Personal budget template, Personal financial statement template, Recipe Organizer Deluxe, Talking Greeting Maker, Trillian, Virtual Original CD Emulator
Plus Tips and Tricks to get your work done more efficiently in the office.

Find them all on the Digit Mindware CD.

7



2 FastForward
INTERACTIVE
LEARNING CDs



Essential Handbooks are brought to you by

SAMSUNG
The Age of PC Personal Company

I tried recording sound with Sound Recorder. It cuts off after 60 seconds. What's the best way to create songs on my PC?

Sound Recorder is a rather crude program. If you keep hitting the Record button every 60 seconds, Sound Recorder will keep appending the audio and you will be able to record more than just one minute. A better way to record sound is to use a free utility such as Direct to

(www.mgshareware.com) to convert it to an MP3. Software such as VOB2Audio (www.digital-digest.com/dvd/downloads/vob2audio.html) can save sound clips from DVD files. A convenient way to rip audio, irrespective of the source, is to use software such as MP3 Studio (www.nicolasoft.com). This records any sound passing through your soundcard, so if the movie is playing, the sound can be grabbed to an MP3 file.



How do I create and print inlay cards and song lists for my CDs?

Today, many CD writing applications are bundled with an inlay card printer that lets you make jewel case covers. You can also make your own, using Microsoft Word. All you need to do is place text boxes of the correct size, enter your list and other details into it, and print. For a song list on the back of the jewel case, you can place three text boxes next to each other. The first and last ones can be of 11.8 cm height and 0.6 cm width, with the text direction (*Format > Text Direction*) set to vertical. These will appear on the spine of the jewel case. Between these, you would have an 11.8x13.8 cm text box. This goes behind your jewel case for the song list. Similarly, to design an inlay for the front of the jewel case, use a text box of size 11.96x12.6 cm. Print all of these out and cut them along the borders. If you find Word too cumbersome or limiting, there are

hundreds of other tools such as CDCoverPrint (www.alienaus.com/software/cdcp0.shtml), which you can use to print jewel case inlays.

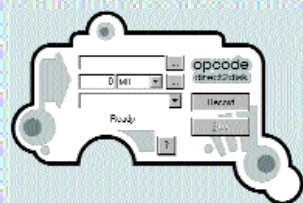
I have such a large hard disk, but games don't run if I copy the CD on to it. How do I avoid having to put in the CD every time?

Many games, encyclopaedias and other similar CDs require the CD to be in the drive for them to work. This is either because the software

inal CD Emulator (www.ztekkware.com), which can emulate CD-ROM drives for data as well as audio CDs. All you need to do is install the software and configure which folder on your hard disk you want it to emulate as a CD. Thus, you can copy entire CDs to your hard disk in separate folders and have them all appear as different CD-ROM drives. This software effectively fools the application into thinking there is an actual CD-ROM drive with the application CD in it. Another advantage with this is that of speed—being on the hard disk, the program will run much faster than if the program disk were actually in the CD drive.

I need to send this file to my friend, but there's no point burning a CD for such a small file and it won't fit on a floppy.

To share large files, you can split them into smaller chunks and use a set of floppies or the Internet to transfer

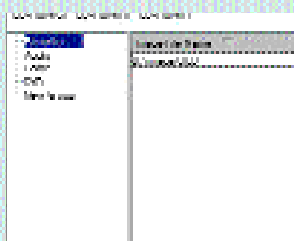


Direct to Disk audio recorder

Disk Audio Recorder (<http://www.opcode.co.uk/opd2d/default.asp>). With almost all such sound recording software, you can capture as much audio as your hard disk can hold.

Can I extract a song as an MP3 from a movie?

To extract sound clips from a movie, you will need a video editing software. For VCDs, a software such as VCD Cutter (www.sellerclub.com/~vcdcut/) or VirtualDub (www.virtualdub.org) will work just fine. In either software, cut out the length of the movie that you want the audio clip from, then save the audio from it. If saved as a WAV file, you can use a free utility called FreeRIP MP3



Emulate CD-ROM drives from your hard disk

needs to access resources from the CD or it is a measure taken to prevent piracy. There are several tools available, such as the Virtual Orig-



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them. There are several ways to split files. You can use a file-splitting utility such as HJSplit (www.freebyte.com/hjsplit/) where you simply have to specify which file is to be split and how large each piece should be. The files can be joined back to the original using the same utility. However, this means that the person you are sending the files to should have the same utility (you could include it on one of the floppies). Another way of splitting files is to use a compression program such as WinZip or WinRAR. Almost all compression programs allow you to split the output file into multiple files of a particular size, which can later be joined back together. You can make a self-extracting archive so that the program does not need to be installed anywhere else.

You can use a service such as Yahoo! Briefcase (briefcase.yahoo.com) to store your files. This allows you to store up to 30 MB of data, with a maximum limit of 1 MB per file. You can share these Web folders with your friends for them to download the files.

I wish dad was here to celebrate Sunita's second birthday. But he won't be coming to India before Diwali.

Today, you can share all your magic moments with your friends and family, with several options available on the Net. You can scan photographs, group them into albums and put them up on the Web for others to see.

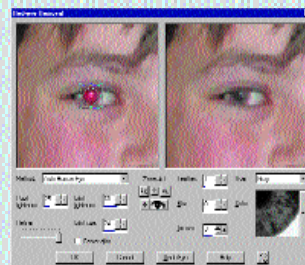
Contrary to popular belief, you don't need to know a thing about making Web sites for this. There are several services that create photo albums for you—all you need to do is select the photos from your PC. Both, Yahoo! and MSN provide free photo albums online. You can send out an e-mail to your kith and kin with links to the photographs and they can see them from anywhere in the world. Some services such as Ofoto (www.ofoto.com) even allow visitors to order prints. Thus, if they see a photograph they like, the site will have it printed out on photo-quality paper and mail it to them! For more details on how to share your photographs online, refer to Digit, August 2002.

I often end up red-eyed in my photographs. How do I touch them up?

Often, photographs may need some digital imaging to look better, regardless of whether they've been taken through an analogue or digital camera. Typical corrections include removing the red eye effect (you may have noticed that the eyes of people in many photographs have a red spot), changing brightness and contrast settings and smoothening or sharpening the images. The latter enhancements are pretty straightforward and can be done with most image editing software, but removing the red eye effect usually gets to be a problem. Red eye occurs when the camera flash reflects off the subject's retina since the pupils are wide open because you're shooting in

low light. It also commonly happens with contact lens users.

There are thousands of image-editing tools with which you can add various effects to your images. The



Removing the red eye effect

easiest way to eliminate the red eye is by using an automatic red eye tool, if your image editor has it. Paint Shop Pro (www.jasc.com) has a great semi-automated process for eliminating the red eye effect. Start by opening a photo you want to work on. From the Paint Shop Pro menu, click **Effects > Enhance Photo > Red-Eye Removal**. On the Red-Eye Removal dialog box, zoom in to the eye. Set the Method to Auto Human Eye and select an appropriate hue and colour. On the editing window, use the selection tool to draw a circle to cover the red portion. Similarly, select the other eye and click OK on the Red-Eye Removal dialog box to apply the changes.

If you're using an image editor that doesn't have a red eye remover, there are still a few ways to tackle the problem. For instance, you can use the Magic Wand tool to select the red in each eye and then paint the selections

a colour that looks natural for that subject. Another way is to use the Paintbrush tool. Resize it till it is just about the size of the eye. Set the foreground colour to the natural eye colour and click once in the centre of the eye. Now set the brush size to about two pixels and change the foreground colour to white. Again, click in the centre of the eye to give it a glint.

Note that you don't have to do a perfect job to create a fairly convincing eye—the detail is so small in most pictures that simply eliminating most of the red is enough to improve the picture.

The online photo albums are nice, but I want to profile something more. How can I quickly create my own Web site?

There are various sites that allow free Web hosting. Not only can you put up your own pages on the site, but most of them also have cool templates and wizards that allow you to create pages in just a few clicks, without requiring any knowledge of creating Web pages at all. Yahoo! Geocities (www.geocities.yahoo.com) is one such free service where you can build a free Web site.

If you don't want the automatic or template-based sites, you can still create your own site fairly easily. Web development tools today are no different from word processing tools. In fact, you can use

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Microsoft Word itself to make your Web page; Dreamweaver (www.macromedia.com) is a far better software for making HTML pages, though. These don't require any knowledge of HTML and you simply type the text, put in the images and the software writes the HTML for you. Once you have all your pages, you can upload them to your Web site and you're done. All free Web hosting services allow you to upload files from a friendly Web-based interface, so you can upload files just as you would select attachments for e-mail.

How can I receive e-mail from Web-based services in Outlook Express?

It is possible to receive Hotmail messages in Outlook Express. To set up the Hotmail account, click **Tools > Accounts** in Outlook Express and click **Add > Mail**. Follow the wizard and enter your Hotmail address when asked



Outlook Express automatically configures Hotmail accounts

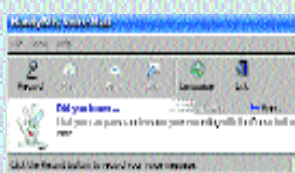
for the e-mail address. Outlook Express will automatically set up the account and synchronise the folders.

Apart from this, you cannot receive Web-based e-mail on a mail client. If the mail service supports POP or IMAP access, only

then can you configure it to your mail software. Free services such as Fastmail.fm (www.fastmail.fm), SubDimension.com (www.subdimension.com), and MyRealBox (www.myrealbox.com), among others, that allow you to use the service using Outlook or Outlook Express, over POP or IMAP. You can get the details of the SMTP and POP3 servers from each site. In your mail client, when configuring the account, choose the appropriate protocol (POP3 or IMAP) and enter the SMTP server address for the Outgoing mail server and the POP server address for the Incoming mail server. Earlier, Yahoo! used to allow POP access to e-mail, but now it is a paid service. If you subscribe with them for POP access, you can receive Yahoo! mail over Outlook or Outlook Express, too.

How can I send voice messages by e-mail?

Sending voice messages by e-mail is fairly simple. All you need is a soundcard and a microphone. You have to record your message to a WAV or MP3 file using a sound recording software and attach it to your e-mail. Make sure that the file doesn't get very large though. To reduce file size, you can reduce the quality at which it is recorded. Using the MP3 format also ensures small files. Also, record in single-channel (mono) mode using 8-bit samples at 11 KHz if the software allows you to choose the settings. These settings are adequate for voice. The recipient can play



Send voice messages using HandyBits Voice Mail

the sound file directly from the mail client or download the attachment from a Web-based e-mail service.

You can also use free software such as HandyBits Voice Mail (<http://download.com.com/3000-2369-6606638.html?tag=lst-0-7>) for this. All you need to do is record and send. It offers high compression of voice messages, though it records sound to WAV files, allowing your messages to be played on almost any computer.

I've heard that most viruses today spread via e-mail. How do I ensure that my PC is safe?

There are some ways to identify and avoid infection due to viruses that are spread by e-mail. Usually, such viruses are attached to the message itself. On double-clicking the attachment, the virus activates and infects the PC. From then onwards, it starts running off your system. Though most such viruses do little harm, they send themselves out to others in your address book, sometimes with large attachments. Thus, you should avoid opening attachments from your e-mail, especially if you are not sure who sent it to you and for what purpose. Since these viruses spread through the address book,

you cannot trust the sender's address. If it seems important, check with the sender whether it was intentionally sent to you.

Some viruses that spread by e-mail may use JavaScript within the message to either run malicious code or open a Web page that can run malicious script. To avoid encountering such e-mail, turn off message previewing in your mail client—if you don't view (open) it, the script cannot execute. Delete mail with suspicious sender addresses and subject lines without viewing them.



AVG scans your hard disk and monitors your e-mail for viruses

Avoiding viruses is not the final solution. Virus developers keep learning new tricks every day, so you should install a good anti-virus software on your system and have it running at all times. AVG (www.grisoft.com) is a good free anti-virus package that can keep a tab on not only your hard disk, but your e-mail too.

How do I make the most of my dial-up connection?

Dial-up connections end up costing a bomb if you add the cost of the ISP and, more significantly, the telephone bills, especially if you have to keep redialling. If you use



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your Internet connection primarily for e-mail, there may be some things you can do to reduce the amount of time you have to be online. To begin with, type your e-mail offline in your mail client. That way, when you connect, all you have to do is send and receive messages without staying online for too long. If you use Web-based e-mail, login to your account and open up all the messages you want to read in new windows (hold down [Shift] as you click the link). Once they are all open, you can disconnect, read them all offline and type replies to them in Notepad. Then connect again, paste the reply to each message and send them.

If you download files and software from the Internet, you must install a good download manager such as Download Accelerator Plus (www.speedbit.com) or FlashGet (www.flashget.com). Download managers are much better than using your browser because these programs split up files into several parts while downloading. A single-stream download will never be able to efficiently utilise the available bandwidth, so the software downloads the file in multiple streams. Also, usually these software can reliably check if the same file is available elsewhere for download and will get the file from the fastest server available. If for some reason the download stops midway, the software can resume downloading from that point

instead of downloading the entire file all over again.

I have so many images, sound and video clips. Can I organise them so that I can find them easily?

What you need is a media organiser. You may already be using one of the best tools for organising media files—the Microsoft Office Clip Gallery! This tiny tool catalogues all kinds of media files, segregates them into categories and associates keywords and descriptions with them, which you can use for powerful searches. You can add your own images, sound and video clips to the gallery and tag them as you want. You



Clip Gallery organises media

don't necessarily have to run this catalogue from an Office application—it is an independent utility that can run on its own. If you have Office, you should be able to find it in C:\Program Files\Common Files\Microsoft Shared\Artgalry. Run Cag.exe from here to run the Clip Gallery.

There are also some cool tools available for download. Advanced File Organizer (www.softprime.com) is easy to use and it can catalogue files and folders in hierarchical categories. You can tag every file with your



own keywords and descriptions, making it very easy to search for them later.

There are so many mouth-watering recipes available online. Yet, I can't find the right one for an occasion.

Recipe Organizer (www.primasoft.com) is excellent for managing and organising all your recipes into several categories. Apart from the ingredients and preparation method, it also stores the preparation time, serving size, an image of the dish, etc. If you want, you can even define other information about the recipe that you want to save. The next time you have a Hawaiian party, you will be able to find the right recipes in a flash. If you are comfortable with Excel, you can set up a similar functionality in Excel. Enter different properties of the recipes in separate columns and you can use Excel's powerful Sort and Filter functions to quickly locate recipes of certain kinds.

How do I make greeting cards on my PC?

You can use Word to make greeting cards on your PC and it's fairly simple once you get the hang of it. Basically, you need to set up the page so that it prints like a card. Begin by setting the page margins to 1.78 cm and the orientation to landscape. Centre the paragraph alignment and draw a straight line down the middle, along the cursor. Keep the [Shift] key pressed to draw the straight vertical line. This will serve as your guide for placing other objects on the card. Now you can place text boxes, images, WordArt, etc. on the page to make up the contents. The only thing you need to be careful about is to not get too close to the borders—you would be printing on both sides of the paper and you wouldn't want anything bleeding over the fold. Once you've created the inside of the card, create a copy of the page and make the outside.

The front

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CD ROM DRIVES

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comes on the right side and the back on the left. Once it is ready, delete the vertical guide and print the card on two sides of the same page. Fold it down the middle and your card is ready to send.

There are also hundreds of software available to make greeting cards. There are two ways in which they work—they let you create your card with the normal front, back and inside views for printing (the software takes care of the orientation of the card when printing) or they create cards that you can send by e-mail. These are normally self-executable so that the recipient doesn't need to install any software to view them. FreeCard (www.pcwww.com), and Talking Greeting Maker (www.4dev.com) are some free software for making cards. Greetings! (www.eplumsystem.com) is a plug-in for Word that allows you to easily create cards from Word itself without the manual process.

Unlike ICQ, MSN doesn't automatically save a history of my chat messages. Is there any way to log my chat sessions in MSN?

MSN Messenger has one major shortcoming—by default it does not save the chat messages. You can use an add-on called Messenger Plus to log all your chat sessions automatically, so that you can dig them up later for future reference. Alternatively, you can use a unified messaging software such as Trillian

(www.trillian.cc). Trillian allows you to chat over several messaging services (Hotmail, Yahoo!, ICQ, AOL and IRC), and also logs chat sessions for each of them and has many additional features such as skins, custom Away messages, etc that are present in some IMs.

How can I have my PC keep track of birthdays?

Keeping track of birthdays is as simple as using a reminder or scheduler program. If you already use Outlook, you can set up each birthday as a task with the appropriate date and configure it to be recurring every year. You can set up an alert for it as per your convenience. Thus, the birthdays and anniversaries



Use recurring tasks in Outlook for birthday reminders

can actually be planned among your other tasks, making this a very useful solution. If you don't use Outlook, you can still use any other free utility to remind you of special occasions. Free tools such as Birthday Reminder (www.harshal.da.ru) manage birthdays and anniversaries quite well.

I have so many books and my friends often borrow them. Keeping a track is too taxing.

There are several software to help you set up a library at

home. Book Librarian (www.turbosystems.com/winprod.htm) can organise and manage your library, track borrowers and due dates. Book Organizer Deluxe



Set up your own electronic library

(www.primasoft.com) has powerful searching, reporting and labelling capabilities. You can even associate scanned images with the books.

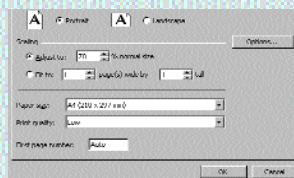
The cartridges for my printer cost too much. I wonder why they run out so fast.

Printing can be quite expensive depending on the kind of printer you have, the number of pages you print and also the print settings. You can't really do much about the first one unless you are buying a new printer. You can reduce the number of pages you print in several simple ways. If you print from Office applications, you can reduce the number of pages used from within the software. Word, by default, uses large page margins that you often don't need. Reduce the margin size to use a larger area of the page for printing. Word also has a built-in function to reduce the page count. Go to the Print Preview mode and click on the Shrink to Fit icon on the toolbar. Word will try to fit the document on one page lesser

than the current count using automatic calculations. In Excel, you can set the zoom percentage at which a sheet is printed. Lowering this value can reduce wastage drastically. PowerPoint, too, allows you to print multiple slides per page.

There are some software such as FinePrint (www.single-track.com), that let you print multiple pages on a single sheet from any application. FinePrint installs itself as a printer driver, so you just need to print to this virtual printer and enter the number of pages that should be printed per sheet. You can preview the layout and print from here to your printer. Each page is resized to the defined area and formatted accordingly. This is excellent when you want to just read the content and don't need a final proof.

Print settings can contribute quite a bit to printing expenses. If you don't need great quality prints, print in Draft or Economy mode. This reduces the amount of ink used and increases cartridge



Reduce the zoom percentage at which Excel sheets are printed

life. Also, if you don't need colour, print in greyscale—colour cartridges cost more than black ones. Set these as default settings by clicking **Start > Settings > Printers** and



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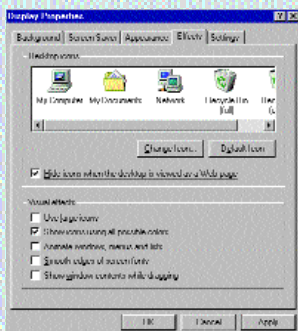
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opening the properties for the printer. Changes made here will reflect in all applications, so change all settings to the most economical ones. You can change the settings back to higher quality as required from each application.

The wallpaper looks great, but these icons look patchy on it.

Icons on the desktop usually ruin the look of the wallpaper. The most obvious solution is to change the background colour of the desktop so that most of the icon labels may blend into the wallpaper. This can be done from **Control Panel > Desktop > Appearance**. However, getting the right colour is quite cumbersome and usually you will



Hide icons to get rid of patches from your desktop

not get uniformity across the entire screen. Another option is to hide the icons. In the Display Properties, under the Effects tab, enable 'Hide icons when the desktop is set as a Web page'. Thus, when the desktop is set as a Web page (using Active Desktop), no icons will be displayed. Yet

another way is to edit your system's registry and disable your desktop altogether. Go to **Start > Run** and type **regedit**. Navigate to the registry key **HKEY_CURRENT_USER\Software\Microsoft\Windows\CurrentVersion\Policies\Explorer**. Here, create a new DWORD value called **NoDesktop**. Edit this value and change it to **1**. The next time you reboot Windows, your desktop icons will have disappeared! To undo this, simply delete the registry key you added. A better solution is to use software such as Iconoid (www.sillysot.com) to overcome the problem. This software can make icon backgrounds and labels transparent, so there will be no patches. It can also save and restore icon positions for different screen resolutions.

Sometimes the CDs that I write are not read by some CD-ROM drives and other players. This happens with various CDs—data, MP3, audio, etc.

Burning CDs is quite simple with the applications available today. It is largely Wizard driven—you just need to select what kind of CD you want to write and the source files and you're done. However, sometimes you will find that the CD-Rs are not read by all drives and players. This has to do with either the CD itself, or the way it is burnt. You may have noticed this behaviour more with CD-RWs than with CD-Rs. VCD players are more tolerant than most other players, but

they can be quirky too.

The first thing you should try is lowering the writing speed. Many older drives and players cannot read CDs burnt at high speeds. This is especially true with Audio CDs. With data CDs, if writing at lower speeds does not help, the CD-ROM drive's lens may require cleaning. Also, you may want to turn off real-time processing features in the CD writing application. Thus, when burning an Audio CD, use uncompressed WAV files for the source and use MPEG-1 video files for VCDs. This will not only reduce chances of errors when writing the CD, it will also decrease the odds of the burn process failing due to buffer underruns.

When burning MP3 CDs for an MP3 player, first convert all your MP3 files to one bit rate (96 or 128 Kbps) to ensure that none of them are encoded with very high, very low or variable bit rates. Although relatively new players can read these formats, many of the older ones cannot. They have minimum and maximum bit rate limits and some of them don't understand variable bit rates. If nothing works, you will have to change the kind of CD-Rs or CD-RWs you use for burning.

Three of us share the computer. How can we have different settings?

Different users on the same PC would like to have different settings for the desktop, the location where their files

are saved, separate e-mail settings, etc. Windows NT, 2000 and XP are already configured for multiple users and Windows 9x can be made to provide similar functionality. Different users on Windows 9x would have their own desktops, Start Menu items, themes, My Documents folders, History, Favourites, etc. Hence, each user can have his or her own profile and you won't have to change the settings every time you want to use the PC. The settings can be locked



Configure Windows to save multiple user profiles

by a password so that other users can't change them.

To set up multiple user profiles in Windows, open **Control Panel > Passwords > User Profiles**. Enable 'Users can customize their own preferences...'. When a new user logs on, a folder with that user's name will be created in **\Windows\Profiles** with all the personalised settings.

For multiple e-mail inboxes, you can set up multiple identities in Outlook Express. Each user's e-mail would be under his or her own identity, which can be protected by a password. You don't have to waste time sorting

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DESKTOP PC's

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the mail into separate folders. To set up multiple identities in Outlook Express, click **File > Identities > Manage Identities** while in the program. Here you can add, modify and delete identities and assign passwords to them. Each user will have a separate view and mail store, as configured by the user when logged on to that identity.

How do I get the best quality scans from my scanner?

The quality of the scanned image depends as much on the scanner as on the scan settings. Usually, you need to be careful with two things: scanning with high quality settings and correcting scan errors (lines and patterns) that are not intended to be on the page. Use appropriate resolutions for scanning—300 to 600 dpi is good for photos. Keep the scan setting at the maximum colour depth that your scanner supports. When you scan content from magazines or newspapers, you will notice a lot of lines on the scanned image. The best way to reduce this pattern is to use the Descreen option in the scanner software. Uncompressed TIFF is the best format to save the scanned images, since it saves the image without any loss in quality. Ghost images (dark areas picked up from the back of the page) can usually be corrected by changing

the brightness and contrast settings. Experiment with these controls to find the best settings for your scanner. Also, place a thick white paper over the document being scanned to reduce this effect.

Always ensure that the glass on the flatbed is absolutely free from dust, fingerprints and other such marks, since these tend to show on the scanned images.

I'd rather work out my finances on paper. The accounting software is too confusing and I don't need to keep as detailed a track as the software does.

You can set up Excel for a basic personal accounting system. All you need to do is to log the relevant income and expenses, use simple formulae for calculating sums and differences and you're done. You can use separate columns for the narration, money transferred, the date and the kind of transaction—that's all you need to track your personal finances. Put in the transaction details under narration, the actual amount of money under money transferred (use positive values for income and negative values for expenses) and you can use the kind of transaction to logically group the sources of income or the kinds of expenditure. These can be logged against the date for each transaction.

That was the hard way. Now here's the easy way: Browse to

microsoft.com/templategallery/ and download a pre-built template for personal finances. All you need to do is change the Dollar notation to Rupees. The Personal Budget workbook is pretty impressive, as is the Personal Finance Statement workbook. There are several other templates available on the Web. The flexibility that Excel offers in terms of sorting, filtering and graphs makes it a very friendly accounting software. Once you get used to it, try some of the advanced functions such as Subtotals, Grouping and Outlining, Consolidation, etc.

Can I send SMS messages from my PC?

Yes, you can send SMS messages from your PC. ICQ has an excellent network that allows you to send SMS messages to most popular mobile services. All you need to do is sign up with ICQ at www.icq.com, download the ICQ client and you're all set.

Login to the client, choose the person you want to send the message to and check the box next to the Send by SMS option. ICQ also lets you send SMS messages from the Web site itself. It also maintains a personal inbox where you can receive messages sent via SMS to your ICQ account.



Send SMS messages from the ICQ Web site

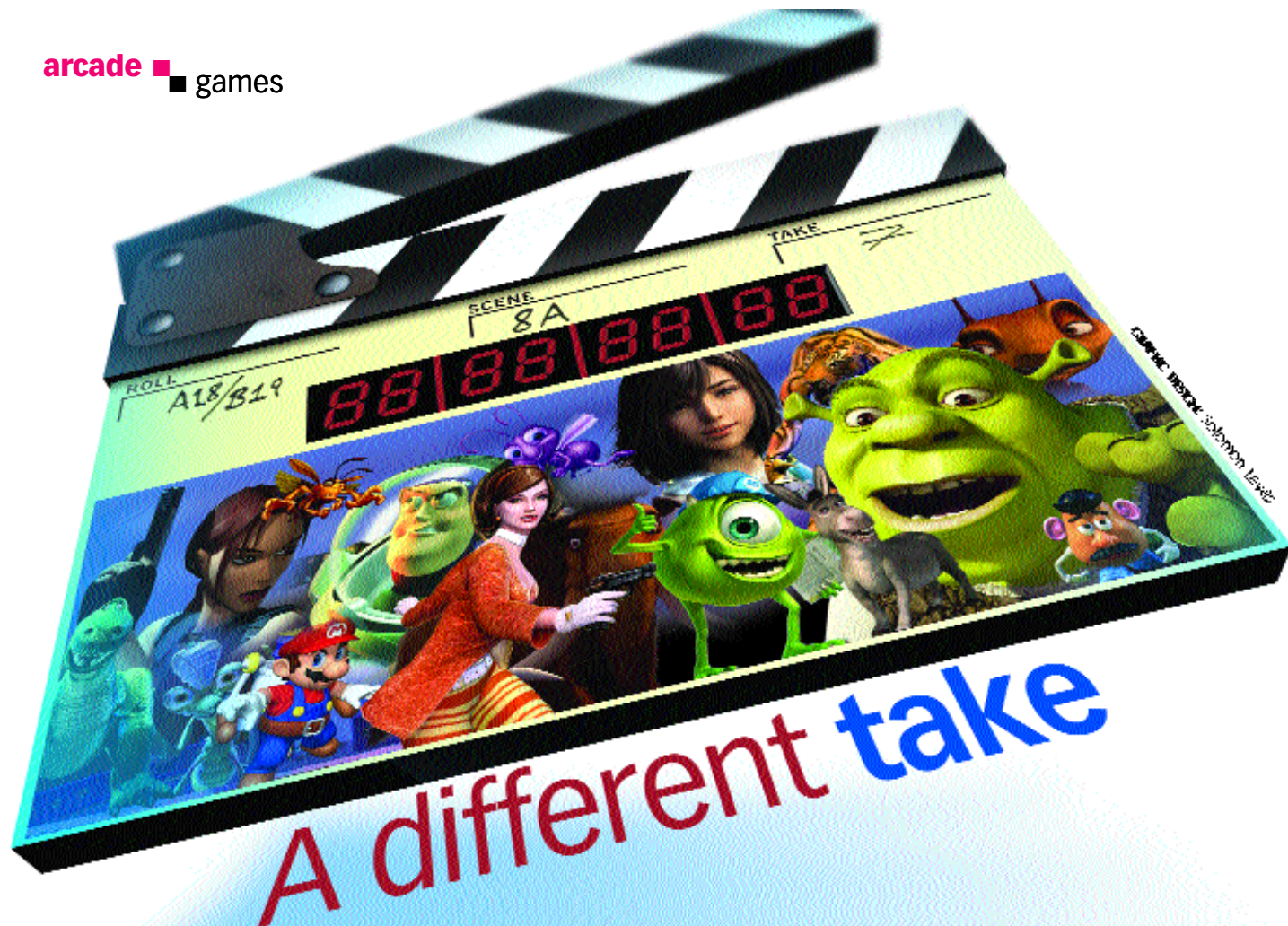
Mobile services such as BPL Mobile allows you to send SMS messages via e-mail, using the format number@service.com for the To address. Thus, if you want to send a message to a BPL Mobile subscriber, just send a plain text e-mail to his mobilenumber@bplmobile.com.



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The next animated movie you see might be powered by *Quake III*!

"God how I hate Thursdays," swore Matt under his breath as he drove into the driveway. "I'm late, the crew must be waiting for me." Sure enough they were all there, three of them hunched up in front of their glowing monitors. They had already booted up *Quake II* and were fooling around on the map that served as their movie set. John sat on the floor, biting his nails, with the sketched storyboards scattered all around him. Hugh, was predictably watching the *Road Runner Show*, his fountain-head of inspiration. Their tired eyes gleamed with excitement.

Matt took the vacant seat and his camera—a Pentium computer running *Quake II* with the help of a 3D graphics accelerator. The map that the game was running looked like a diner: this was the set of their movie; this is where the magic happened. Ben's avatar was seen gleefully bunny-hopping inside the diner, while Paul's character gave chase, axe in hand. "All right guys, settle down. It's show time", whispered Matt. The chase ended abruptly as Paul guided his avatar to the assigned position where Frank's character already stood waiting; Ben took his place behind the counter. "Quiet on the set," said Matt. Someone chuckled; a 'roll tape' started an audiocassette

that contained the pre-recorded dialogues for the movie. Matt readied his camera-control keys, "Action." Ben pressed the [W] key on the

keyboard and used his mouse to deftly move his avatar up to the counter, Frank followed suit and pressed the [T] key, triggering a talking animation that synched perfectly with the dialogue that filled the air. It was going to be a long night, thought Matt, but their movie should be over by the weekend. Maybe Thursdays weren't all that bad after all.

Reel life heroes

Machinima is a movie-making technique that blends the flexibility of computer-generated (CG) animation with the speed and freedom of traditional movie techniques. It is an ingenious means of using a 3D game engine to create a low-budget animated film in minimum time. To a

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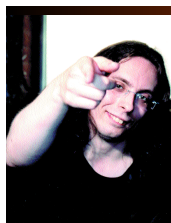


Both *Star Trek: Elite Force* (above) and *Deus Ex* (right) have used Machinima to great effect



Comedy in Armour
Hardly Workin'
Find trailers of
these Machinima
movies on the
Playware CD in Arena\Movies





Hugh Hancock,
Chariman,
Strange Company

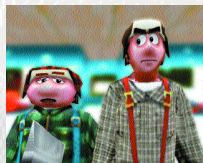
“I don't think that there are any specific show-stopping reasons why Machinima shouldn't achieve a very high profile”

handful of pioneers across the globe, Machinima is life, their calling. The ingredients involved are deceptively simple: a storyboard to flesh out the characters, models and 'props' duly sculpted with the help of 3D modelling tools such as 3D Studio Max, which also serves to create basic animations for the characters involved. The raw materials are then brought together within a game engine of choice and the movie is acted out by either AI bots or 'puppeteers' who control digital avatars. Add the dialogue and music, follow it with

some live editing, and the movie is done! Hugh Hancock, the Artistic Director at Strange Company, has this to say about the benefits of his trade: "In a lot of ways Machinima acts as a combination of the best things about live-action filming, puppetry and CGI (Computer Generated Images). Like film, production is fast and fluid, and there is plenty of possibility to experiment with techniques, different interpretations of the script and ways of shooting. Unlike film, however, Machinima has most of the advantages of animation too: it's possible to change any aspect of any shot down to the finest detail to replay a shot exactly as it was originally created, while making changes to the camera or actor-setup as you go, to shoot a film anywhere you can imagine—the list goes on!"

The technique is slowly gaining popularity as a viable alternative to traditional CG animation. Machinima movies (generally filmed with the *Half-Life* and *Quake II* engine) range from the bizarrely violent *Comedy in Armour*, to the surreal *Ozymandias* and the hilarious *Hardly Workin'*. Moreover, the budget-sensitive game-development industry has also taken notice of this art form. Thus expensive CG cut-scenes have been upstaged by Machinima story-telling techniques, as demonstrated by *Half-Life* and *Metal Gear Solid 2*.

BEHIND THE SCENES



HARDLY WORKIN'

éing: John Olinyk as Larry Lumberjack, Matt Dominianni as Lenny Lumberjack and Paul Jannicola as Cook Carl

It took the ILL Clan nine months of hard work to create this award-winning film. Here's a recap of what went into it:

Pre-production: The motley crew wanted to have Lenny and Larry visit a diner run by Cook Carl, a character from their previous brain storming sessions. To get a skeleton story in place, they used a process made famous by Chuck Jones of *Loony Tunes* fame. As a group, they came up with 'business'; funny bits that they wanted the characters to do. The best businesses were collected and the director and writers put them into a basic storyline. Story boards were then drawn and used to create timed 'animatics'.

Character models were created in 3D Studio Max, Nichimen's Nendo and Q2 Modeler. They were given basic animations that were later bound to hot keys by the puppeteers. Objects and a map of the diner were created using Quark Army Knife. All this was then packed together for use by the *Quake II* engine.

No dialogue was written beforehand, just plot and story points. The improvisers then recorded dialogue based on the storyline, allowing for a lot of freedom for comic material to be generated by the group. The funniest takes were edited together into what became the final sound file, using the animatics as a guide.

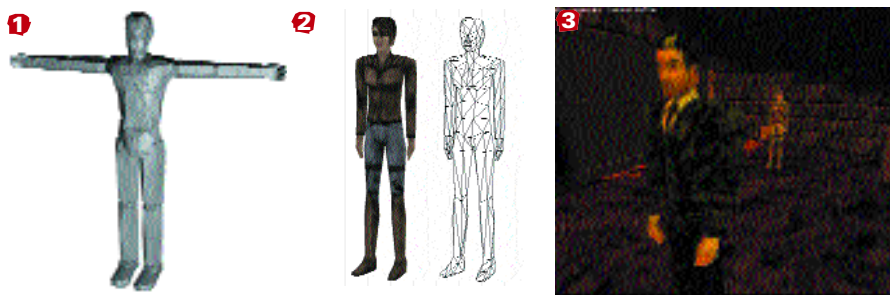
Production: A local area network was set up with a computer for each character used in a scene. The Clan had at the most four character computers and one camera/server machine from which the scenes were shot. A basic camera configuration file was created that allowed the camera to float and keys were bound to zoom in and change its tracking speed. All the scenes were recorded in *Quake II* as demo files.

Each puppeteer bound a set of keys for their characters' basic animation. The sound file for each scene was played back on DAT tape; the puppeteers could thus match the dialogue. The shoot was run just like a film set, with 'rolling', 'action' and 'cut' being called. As needed, props were tweaked beforehand for each scene.

Post Production: Select takes were dumped to MiniDV and a basic edit put together in Final Cut Pro. A shareware called Key Grip II was then used to 'recam', a technique to create and adjust camera angles for a scene after it is shot. This aspect of Machinima is great because the group only had to shoot a master shot during production. Other angles could be recammed afterwards—this was like being able to re-shoot a scene without having to bring the whole crew and cast back. Tweaking the character animation and the time-consuming process of lip-synching also happened in post production.

The team looked at the rough edit and realised that it needed more explanation, so they recorded the Grind-O-Matic commercial segment. Titles and end credits were finally added, and the movie was done!





To star in a Machinima movie, a 3D model must first be created ❶. It is then appropriately clothed ❷ and finally animated ❸

So is this real-time method all set to replace traditional computer animation? "No, I don't think it will," says Hancock. "I suspect that real-time production techniques will be some of the dominant film and CG techniques of this century, but just as theatre hasn't gone away with the advent of film, so I don't think that hand animation will disappear with this real-time revolution."

Frank Dellario, the Producer of the much-lauded *ILL Clan*, holds another view: "Yes and no. Yes, because the newest game engines and 3D cards are focusing not on increasing frame rates anymore but on the quality of the image. Also, once we have the ability to create and shoot Machinima in 48-bit colour vs 32-bit, we'll have the colour range to match the feature film world. No, because companies like Pixar Animation Studios will always use the newest, fastest hardware and software to push the envelope, like they did in *Monsters, Inc* by adding 3 million hair to the character Sulley. They didn't have to do that but they always will, they have to be the best and push what's possible. There were frames in *Luxo Jr* (Pixar's first animated short film, made in 1986) that took 72 hours to render. Today, *Luxo Jr* can be completely rendered in real-time. But *Monsters, Inc* also has frames that took just as long to render, almost 15 years later."

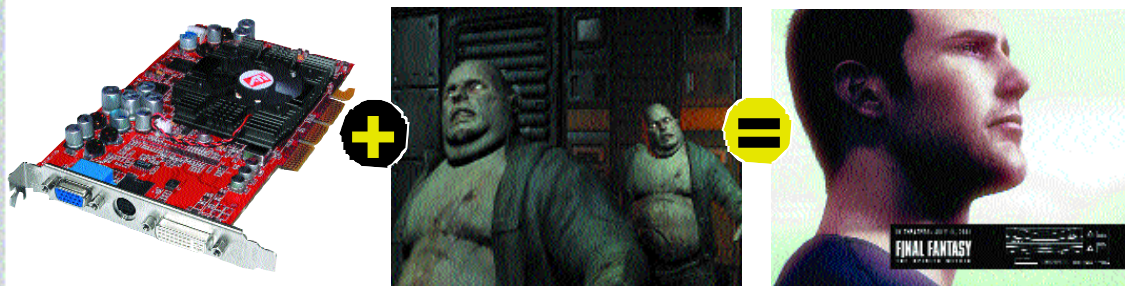
Real life problems

Stumbling blocks have prevented Machinima from gaining support amongst the community of traditional animators and filmmakers alike. Dellario feels that the technique needs to be understood, tried and tested by these groups. "With Machinima, an animation director will have to let go of key-frames and take on the role of a real-time director. He will have to sit

in a room with puppeteers and direct them as actors on a live film set." But there are more practical concerns: "A major bottleneck is the licensing. Engine developers sell very expensive licensing agreements and share a

percentage of profits from the games sold. Makes sense in the gaming industry; but for the Machinima community, they are simply out of league. Another obstacle is the toolsets. About every two years, newer game engines and computer hardware are released. It means having to develop whole new toolsets and/or having to recreate/upgrade our character models and world environments in a new format." Hancock shares Dellario's concern on licensing: "Probably the biggest hurdle at this point is a legal one, but I don't foresee engine licensing being a problem for long, as open-source alternatives are becoming increasingly powerful and viable."

In a way, Machinima is a blessed art form—it feeds off the fast-paced juggernaut that is the gaming industry. Games, as we all know, are at the zenith of technological advancements. If your computer can run the best game, it can pretty much run circles around any other application out there. The symbiotic relationship between game developers and computer hardware manufacturers has sparked off a revolution of late. Next-generation engines like those that power *DOOM III* and *Unreal Tournament (UT) 2003* are riding on the wave of advancement in video cards or programmable graphics processing units (GPUs) from the likes of ATI and nVidia, and promise to bring to shore an experience that will further blur the line between the digital and the real. Needless to say, the boys are excited at the prospect of these new toys. Hancock goes first: "*UT 2003* looks good, will have a lot of support behind it and generally seems like it could be great for Machinima. From what I've heard and seen, the 'Matinee' toolset built into the engine is a very solid offering, although it does seem to be very focused on the 'AI



Take a video card such as the Radeon 9700, add a next-generation game engine such as the one powering *DOOM III* and you can create movies like *Final Fantasy: The Spirits Within* on your PC, courtesy Machinima





*The ILL Clan crew improvise the dialogues for their award-winning Machinima movie, **Hardly Workin'***

actors' approach to Machinima". Dellario explains further: "Its major disadvantage, to me, is the lack of a real-time camera recording feature, without which Machinima loses its major advantage as a commercial production medium."

Does *DOOM III*, to be launched from the much-worshipped id Software stable, get the juices flowing? Hancock says, "Drool. I can't wait. If I had to place a bet on which package would blow the Machinima scene wide open and cause it to explode into the film world, I'd have my money on *DOOM III*." Dellario couldn't agree more: "It's amazing and when it comes out next year, I predict it will be a watershed moment for the Machinima community."



*Frank Dellario,
President, ILL
Clan*

“Because we shoot in real-time, in a 3D virtual environment, we're combining the fast pace of a film shoot with the flexibility”

Not just because of the amazing physics or the attention put on increasing the level of quality, but because of the dynamic lighting ability. Now, a character carrying a flashlight or a lantern for example, will affect the lighting in the environment. This may sound small but it's not. Lighting in any film is one of the major story-telling and artistic tools at a filmmaker's disposal."


The hardware driving this phenomenon is not forgotten, nVidia's next-generation GPU, the NV30 for example, is expected to use 64 and 128-bit colour rendering, delivering accuracy greater than that of *Toy Story 2*. Dellario thinks that the new hardware will advance the ability to create Machinima, letting it compete more closely with what Hollywood creates using large (read expensive)

rendering farms. "Programmable GPUs are where Machinima will get an extra boost. They represent a blank canvas to the teams that create tools for Machinima, allowing them to explore real-time approaches to traditional filmmaking techniques such as wipe, transitions, etc. But more importantly, it will allow them to develop unique approaches that will visually create scenes that are otherwise nearly impossible—real-time or not." The fact that these solutions will take them closer to what pre-rendering currently offers is what gets Hancock excited: "Obviously, the only impact they will have is visually, but that impact will be massive. Certainly, the GPU advances happening at the moment are one of the main things closing the gap between real-time and pre-rendered solutions."

Reinventing the reel

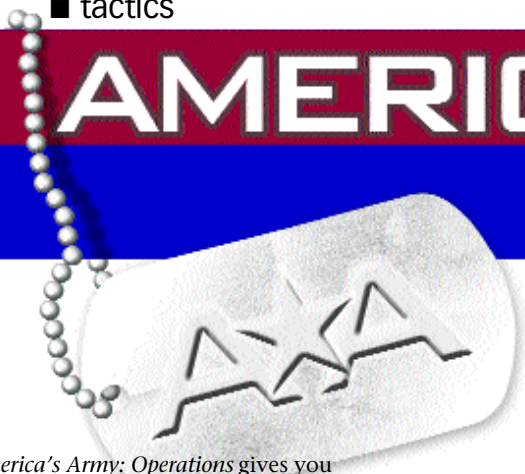
So, what does the future hold for this exciting film-creation technique? Will Machinima, like its mentor, the gaming industry, inundate itself into the cloning vat, merrily stuck in the groove of unoriginality?

"I don't think it's old enough or settled enough to be stuck in a rut at this time," counters Hancock. "Machinima is an astonishingly young art form: we've scarcely even managed to figure out the basics of Machinima creation yet, much less scratched the surface of its possibilities. Over the past 12 months, I've seen people working on Machinima projects ranging from sci-fi epics to abstract pieces, from ultra-real thriller projects to sketch rendered music videos. Machinima at the moment is startling in its diversity, and that's only increasing as users get more familiar with the medium." Dellario ruminates on the query and offers a historical perspective: "There was a lot of activity early on, but that flurry of excitement got buried by reality. It still takes time, blood, sweat and tears to make a film, regardless of what medium you use. A lot of the original community were teenage gamers who've since moved on or lost interest. Now we're in the stage of making this into a legitimate process in the animation community."

To spark a revolution, a concept has to pass this litmus test: it should be cost-effective and it should not force a drastic re-learning of the tools and techniques involved. Machinima seems poised to usher in a new era of animation and film-creation. Will it pass the test and deliver? As a viable alternative to traditional animation, it has already made some inroads into the gaming sector, although it has a long journey ahead. As an art form, let us hope that budding filmmakers discover this tool—the Machinima Film Festival 2002 was recently held to award just such pioneers. The question then is—is Machinima your calling? 

AHMED SHAIKH

AMERICA'S ARMY



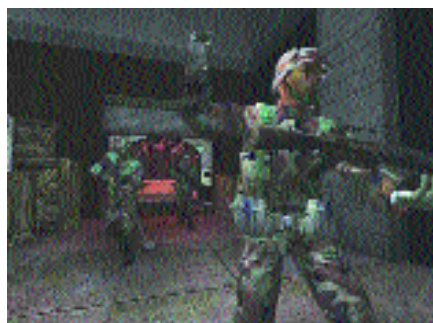
Career counselling for aspiring soldiers

America's Army: Operations gives you a chance to enlist in the US Army, without leaving your warm chair. This online first person shooter is based on the latest Unreal engine and brings alive the mayhem on both the Internet and the LAN. We kick-start you into the game and help you choose the right role within a team, squad or platoon.

AHMED SHAIKH

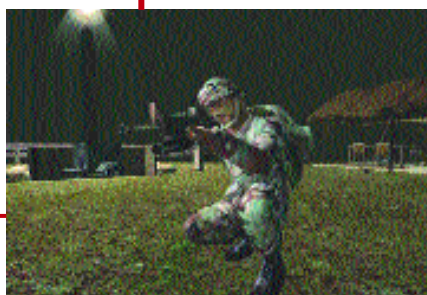
Choose your calling

Depending upon the role that you wish to take in *Operations*, you should select a particular training regime. As a soldier, you are required to finish the Basic Training, completing which you can sign onto any of the other schools. Thus it is the Sniper Training school, if you wish to be a sharpshooter; the Airborne School, if precision air-drops from a thousand miles high catch your fancy; or if you wish to march shoulder-to-shoulder with those elite Rangers, you can do so after passing from the Ranger School. On the basis of how well you do in the school of your calling, you can further opt to take on one of many roles.



TEAM/SQUAD LEADER

The Team Leader is the person responsible for what the team does, or fails to do. The leader is armed with the M16A2 rifle (capable of firing in either semi-automatic mode or three-round bursts) or an M4A1 carbine



GRENADIER

Armed with a single-shot M203, which can be mounted under the M16A2 or M4A1, the Grenadier is a key member of the U S Army fire team. He is capable of delivering accurate fire at point and area targets from medium to long distances



AUTOMATIC RIFLEMAN

The Automatic Rifleman combines awesome firepower with quick manoeuvrability thanks largely to the M249 SAW. This gunner is required to provide long-distance cover as well as assault fire

Join the Army

Step 1: Account setup

From the Operations Main Menu, select the Report for Duty option and then Create a New Online Soldier. This will open your Web browser and connect you to an official Authentication Server, where you can register your name and authenticate it with a password.

Step 2: Sign in

Use the information set up in the first step to login to an appropriate server. This is mandatory if you wish to take part in any Tour of Duty (see Step 5).

Step 3: Basic Training

This is the only offline component of the game and must be completed before attempting a mission. It's a compulsory tutorial that consists of a basic rifle marksmanship course, where you qualify for using the M16A2 assault rifle. An obstacle course introduces you to movement techniques, whereas weapons familiarisation introduces you to the M249 SAW, M203 grenade launcher and grenades. Finally, you get to put your skills to test in a simulated combat environment using MILES (Laser Tag) with real weapons.

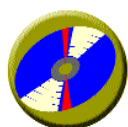
Step 4: Training schools

Some Tours of Duty require you to clear the training schools, i.e. if you wish to become a sniper then you must complete Sniper Training with the required marks.

Step 5: Tours of Duty

In Tour 1, you join the 172nd Separate Infantry Brigade to protect a bridge and an oil-pipeline. In Tour 2 you team up with the 10th Mountain Division to take control of an insurgent camp and rescue POWs. Tours 3 and 4 are in the implementation stages and promise missions with the 82nd Airborne Division and the 75th Ranger Regiment. The tours are meant to be played on a network.

Off the Shelf



The Sum of All Fears

Adds up to a fun experience

After learning that *The Sum of All Fears* (SoAF) was not so much a *Quake*-clone as a squad-based strategy game, our combined senses raced back in time to the painful sessions of playing *Tom Clancy's Rainbow Six*. Thankfully, SoAF does not live up to its name and is both an approachable and an entertaining foray into the world of action-strategy games.

Although based on the movie, SoAF does not cast you as Jack Ryan. Instead, you play the team leader of an elite anti-terrorist squad, whose services are required after America witnesses a nuclear detonation. You and your team carefully navigate through 11 missions all over the world and neutralise hostilities. On the journey, you pick up important pieces of intelligence, disarm and plant bombs, rescue hostages, ransack vaults, and assassinate many a baddie.

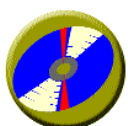


HEART-TO-HEART: Locate friends and foes alike with the help of high-tech heart beat sensors

The inclusion of real-world weaponry is elegantly handled: the MP5s are segregated from the M4s, by both the damage that each deal out and by authentic sounds that accompany them.

Unfortunately, for a squad-based game, both hostile and friendly computer-controlled entities will simultaneously amuse and dumbfound you with their lack of AI. Although the experience thus presented is not very jarring, it is further bogged down by the use of a dated 3D engine. The locales are rarely breathtaking, either in ambience or design; the textures used are similarly ordinary and ditto the animations employed. All of this, of course, means that the game is not too demanding, hardware-wise. Plus the inclusion of a meaty and thoroughly enjoyable multiplayer facet (especially over a LAN) more than redeems the game. If you wish to give your circle-strafing and bunny-hopping skills a rest and yearn for something that does not involve you jumping over exploding rockets, then you owe this game a try.

Minimum System Requirements: 450 MHz processor, 128 MB RAM, 16 MB DirectX 8 compatible 3D card ■ **Genre:** Action-Strategy
Developer: Red Storm Entertainment ■ **Distributor:** Milestone Interactive ■ **Phone:** 022-8381614 ■ **Web site:** sumofallfears.ubi.com ■ **Price:** Rs 1,299
Rating: ★★★★★



Hired Team: Trial Gold

An asinine mettle

Imagine a world where crime and violence are so rampant that the government actually decides to do something about it! In *Hired Team: Trial Gold* (HTTG), such a world does exist and the government creates a strike team to put an end to the anarchy and bring the twin gifts of hope and joy to an otherwise destitute world.

It is a concept that has been attempted before and with better execution. All through the game, you run around the various levels, shooting things that dare wear a different coloured shirt! The maps feel tacky and the weapons are poorly



HAVE WE MET? Hey! I killed you five seconds ago

balanced—a pistol will get you nowhere, while a rifle has a one-shot-kill guarantee, regardless of where you hit the baddie. The

bots have an unfinished Frankenstein-monster feel to them. So don't blame them if they refuse to use the health-kit that lies next to their feet and are unaware of the protective benefits of an armour. Watch them climb over your back, pass right next to you without even a parting shot and gaze in wonder as they float around the world like brain-searching wraiths.

HTTG is a bad cocktail of an extreme effort towards *Unreal Tournament* and *Quake III Arena* and an element of originality is brought only via its interface. Go ahead, play this game, unmake your day.

Minimum System Requirements: 400 MHz processor, 64 MB RAM, OpenGL or Direct3D compatible graphics card ■ **Genre:** First Person Shooter
Developer: New Media Generation ■ **Distributor:** Aladdin Multimedia ■ **Phone:** 022-7895085/7903959 ■ **Web site:** www.nmg.ru/httrial/ ■ **Price:** Rs 499
Rating: ★★★★★



Tony Hawk's Pro Skater 3

Pro-foundly entertaining

So you've checked out those *Extreme Sports* dudes and dudettes wheel over cars, grind over pipes in their entire body-twisting, knee-bending glory. Exciting stuff for sure. *Tony Hawk's Pro Skater 3* (THPS3) takes us one step away from the spectator seat that the television puts us in and delivers an as-good-as-it-gets experience on our computer monitors.

Although this game is available for all the major consoles, what separates the PC version from the rest is the inclusion of some great network play. The online component successfully utilises the skating aspect to put an enjoyable spin on the eight different modes of play. Thus Graffiti calls for you to tag an obstacle or an area by pulling off a trick, Trick Attack pits you against your opposition in a test of skill, Slap! awards points for literally running into other players, Control the Zone is a contest of dominat-



ing an area, and so on. Although play over the Internet is not as solid as it should have been, sessions over a LAN are highly recommended. The single-player element is an outstanding achievement. Included here is the Free Skate mode which offers unlimited skating without

score-tracking—an ideal way to get intimate with a level. But the crux of the game lies in the Career mode where you will earn points and reputation as you unlock new levels, skaters, and tricks.

For a PC title, the graphic splendour is a bit of a hit-and-miss show. The models are greatly detailed and very natural looking, while the animations are convincing and immersive. But what tears away from the visual quality are the textures used—most of them are too uniform and lack detail, imparting a very uninspiring look to an otherwise splendid game. However, where the textures miss, the audio facet makes up with excellent sound effects and a lively soundtrack. The only caveat is that THPS3 would be better approached with a gamepad—if any game deserves to be pampered with that peripheral device, it is this one!

Minimum System Requirements: 300 MHz processor, 64 MB RAM, 8 MB DirectX 8 compatible 3D card ■ **Genre:** Sports

Developer: Neversoft ■ **Distributor:** Milestone Interactive ■ **Phone:** 022-8381614 ■ **Web site:** www.activisiono2.com/tony_hawk/ ■ **Price:** Rs 699

Rating: ★★★★★



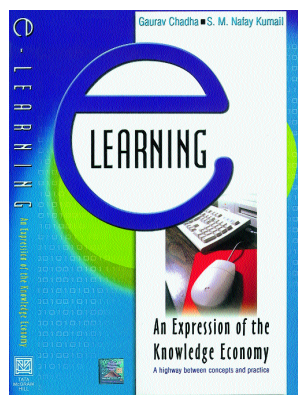
E-LEARNING, AN EXPRESSION OF THE KNOWLEDGE ECONOMY

Economically unknowledgeable

Let us begin by saying: Look for another book, this one holds no value for a professional and is not aimed at the novice. The stated objective of this book is 'the imminent need for sharing the novel ways of learning we (the authors) have created and experienced'. However, it is bereft of any practical experience or novel insights. The book attempts to cover a broad spectrum of the e-learning domains such as the history and development of teaching techniques, analysis of learning models, job roles in e-learning, as well as the technology used to develop e-learning solutions. However, it manages to touch on each topic only fleetingly, and provides

overviews that may interest the novices but leave the professional, whom the book is primarily targeted at, uninformed. Important technologies like XML are dismissed within a few meagre lines and the usage scenarios completely miss the point.

The authors are project managers, yet they repeatedly attempt to make a business case for



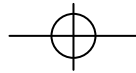
e-learning. The result is a book that is predictably simple-minded, dripping with enthusiasm and entirely lacking in any kind of balanced thought and content. The authors of the book generously state upfront that much of the contained material is repetitive—a candid preview into what's in store for the discerning reader.

The facts and concepts contained within its pages can easily fit into a small booklet and are certainly not worth the time and expense the book demands.

Publisher: Tata McGraw-Hill Publishing Company Ltd ■ **Contact:** Tata McGraw-Hill Publishing Company Ltd ■ **Phone:** 011-5732841/918

Fax: 011-3266427 ■ **E-mail:** bpb@vsnl.com ■ **Price:** Rs 499

Rating: ★☆☆☆☆



arcade ■ digit diary

The Chinese Connection

Going places in the global village

There's more to Digit than just exhaustive research and tests to stay apace with the latest technologies and products, or taking apart the latest high-falutin' devices in the Test Centre and then putting them back together. The job often calls for stepping out of our hi-tech testing labs to attend seminars organised by peers in the media and different segments of the technology industry.

In a similar vein, Hakim, head of our Test Centre set sail for Beijing, China, this month to attend a conference organised by Canon. The three-day-long conference was a great opportunity to understand issues concerning the printer market worldwide.

But the China trip turned out to be a learning experience in more ways than one. On the last day of the conference, Canon had organised a grand send-off dinner for the 60-odd delegates. The Indian delegation, consisting of six people from the technology industry, including Hakim, decided to use the free time before dinner to see something of the Forbidden City.

After an eyeful of sightseeing, it was time to head for dinner, but asking directions was rather tiresome, as nobody

seemed to understand English. Accustomed to being prepared for all eventualities, Hakim had made sure to carry along the restaurant's visiting card and managed to locate the restaurant by relying heavily on sign language and pointing to the card when asking for directions.

any of the other delegates then inquiries in pidgin Chinese about for 60 people from Canon to be the restaurant only led to confusion on the part of the restaurant. The prospect of arranging seating for so many. Finally, they managed to make some headway: it was so that maybe the dinner was being another branch of the restaurant in Tiananmen Square.

More sign language, pidgin and 40 minutes later, Hakim and his companions located the restaurant only to find it closed. One decided to give up easily and decided to call the Canon office and find out where the venue was. As it turned out, they had gone to the restaurant the first time, but the restaurant delegation was late and had reached there after Hakim's friends had left for Tiananmen Square. By now, everyone was terribly hungry and the prospect of another 30-minute dinner was too much. Hakim won over the temptation of going out some more of authentic cuisine and the weary sixsome headed for the nearest McDonald's.



ILLUSTRATION: Mahesh Benkar

By the time they found their way to the restaurant, it was already a little after the stipulated hour. But they couldn't see

When the Cats are Away...

This is a story of the three pairs of shoulders that carry the weight of Digit, or rather a story of when they were away! Vinit Aggarwal, our editor, Sveta Basraon, our features editor, and Shivshankar Pillai, our head designer, midwife Digit through the production cycle every month.

But this month, as each of them got called away, the rookies came out to play! Pillaiji, as we affectionately call him, went on a long-postponed trip to his native God's own country, while Sveta trotted to discover the wonders of Pachmarhi, Madhya Pradesh. Vinit, on the other hand, got called back by a somewhat hostile mother-

ship (read: He decided to go home before he forgot what it looked like. Luckily for him, his driver still remembered the address).

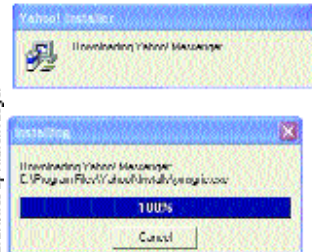
Those who were left to hold up the fort got to play the favourite game of *magazine magazine* with Digit, much to the Marketing department's horror. As soon as our publisher heard of the decreased 'body count', he sent us a reassuring mail on how we could always turn to him for guidance; the consumer service people began practising their 'I'm sorry your issue is late' speech even as the rest of the company cast nervous glances in our direction.

But we had our priorities right—single-mindedly focused on brewing the perfect coffee. Our writer Veer, found the perfect opportunity to put his theory of breeding to test. Job definitions blurred non-existence, so Ahmed metamorphosed into a technical editor, Marco, the head writers supervised design ideas and tweaked around with the layouts, and them about at Mitali's—our ever-smiling copy-editor—whims and fancies.

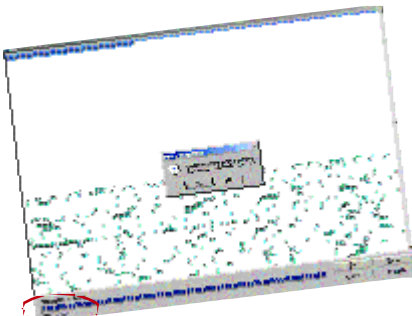
But surprisingly, Digit came out with all pages intact. Moral of the story: never underestimate the power of a pot of coffee!

arcade ■ backbyte

More than you deserve

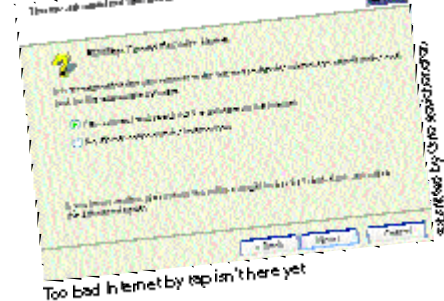


This installation for Yahoo! Messenger seems just about complete at 180 per cent...

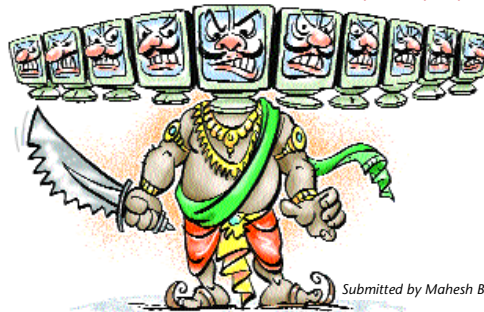


... and Microsoft is just getting there

Internet without modem



Now that's a killer Heads Up Display!



Page not found

Go to an invalid page at www.coolnessdojo.com and this is what you will see:



This page you are looking for looks monkey bait and cannot be displayed. The Web might be imploding, or you may need to jump your browser settings.

Place by the following:

- Click the [\[?\]](#) button, or your Mountain Dew into your keyboard.
- If you typed the page address in the Address bar, make sure that your fat, sticky fingers didn't leak up you.
- To check your connection settings, touch the various cords, jacks and sockets that are going to and from your CPU. If it looks like **blind** or **electrically**, your settings may be correct.
- You and your Network Administrator are obviously helpless. Microsoft Windows can examine your network and jank it all to hell. If you would like Windows to jank everything up, click [Get the Windows Tools](#).
- If you are trying to reach a remote site, make sure you are not running Windows. Click the [My Computer](#) menu, and then right click [Drive \(C:\)](#). On the Menu select [Format](#) and answer you to pretty much everything.
- Click the [Back](#) button if you do not admit defeat.
- Click [Link](#) to look at the webmaster. He obviously should note from 14 year old kids' AOL user pages.

Cannot find server or DNS error
Internet Explorer

Computer Love

Dear Cobol,
The site of you increases the clock speed of my heart. You wear a dress with all the colours of an XGA display adapter, overclocking my eyes. When I first saw you in the first row of the second column of the 10x5 set of seats in the bus, I lost my Control Panel. I stopped communicating with my friend and my eyes were fixed on you. I was caught in the Web of your beauty. I followed you to find out more about you but I crashed and had to reboot. My desktop is filled with icons of your love. I never had a bit of drink or byte of my cookies from the time I Cut and Paste your image in my memory. My Random Access Memory stops responding when your high resolution image flashes through it. My hard disk is filled with your data. I browsed through the library files in my Office for your address but my search yielded no results. I could not contact you earlier because I came down under a viral attack. If possible, I would like to C you in the Procedure division near the PrettyPark where a site is being developed, else I would like to Place a Call to your home. Please don't truncate my love. Do give me permanent access to your heart.
Yours programmably,
Pentium 4

Your chance to bite back!

Highlight the lighter side of computing. Mail your contributions to: Backbyte Digit, Plot D-222/2, TTC Industrial Area, MIDC, Shirvane, Nerul, Navi Mumbai 400 706 or e-mail us at backbyte@jasubhai.com