High-end business notebooks tested | Agent 001 recommends digital cameras | DRM demystified

INDIA'S
NO.1
TECHNOLOGY
MAGAZINE
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YOUR TECHNOLOGY NAVIGATOR

January 2009

INSIDE

GPS DEVICES:
ALL YOU NEED TO KNOW

NEED FOR SPEED: UNDERCOVER
REVIEWED

CYBER ⊗
TERROR

SECURE YOURSELF

INTERVIEWED
Eugene Kaspersky

About data security and the state of the world today

- Tech used in the Mumbai terror attacks
- Social engineering techniques
- Personal data security tips

(As India tightens her security, so should you)

✛ ALSO INSIDE: **HIGH-END MOTHERBOARDS TESTED** | **LEFT 4 DEAD & FAR CRY 2 REVIEWED**

Change is in the air

Dear Reader,

I take this opportunity to convey best wishes for a very happy, prosperous and safe new year to you and your family from Team *Digit*. In the new year, we at *Digit* look forward to bringing you all the latest excitement in the area of technology, computing, gadgets and a lot more.

In my last letter to you, I had asked you for feedback and suggestions — to talk to us and let us know how your favourite publication could serve you even better. A lot of you responded and reached out through letters, emails, the ThinkDigit web site and personal calls. It became quite clear to us that you are not just readers of *Digit,* but rather a part of a vibrant, well-knit community of technology enthusiasts who not only care for Digit a lot, but are also highly demanding in terms of quality. It has, therefore, been our constant endeavour to raise the standards and justify your trust which has made *Digit* the *No. 1 Technology Magazine* in India.

We have been constantly investing in strengthening our editorial team. Last month Ahmed Shaikh joined us as Editor-at-large and Online Architect for Personal Technology. With Robert as Editor of *Digit*, Edward as Editor-in-chief for Personal Technology and now Ahmed, I can say without doubt that you are being served by the most formidable tech-editorial team in this country.

In keeping with our endeavour to bring more value to you, we are increasing the number of dual-layer DVDs to two from this issue onwards, thus giving you even more content to enjoy every month. We are also enhancing the *Fast Track* content.

As we were entering the new year, we were faced with an important question: should we keep raising the quality and value of what you get, even if it means adjusting the price a little, or should we maintain the price and the offering?

Over the last few months, we have implemented all possible cost-reduction and austerity measures to help hold the price, while enhancing the magazine. However, this was not enough to allow us to continue our innovations and enhancements. Based on your feedback and inputs, we came to the conclusion that we could stay true to our commitment to innovate, and to our community's expectations, only by increasing the price. Although *Digit* will now be available on stands for a slightly higher cover price, the subscription price will remain the same as before. I am confident that we can continue to count on your support and goodwill.

In the coming months, you will see several innovations in the magazine, as well as online at ThinkDigit.com.

Assuring you of our best efforts, I once again wish you a very happy 2009.

asheesh.gupta@9dot9.in

Asheesh Gupta
Publishing Director, Digit

"It has been our constant endeavour to raise the standards and justify your trust which has made Digit the No. 1 Technology Magazine in India"

Tell us what you feel about Digit

Each month, *Digit* walks through the technology maze to bring you the most relevant, and the most researched stories. If you have an opinion about anything published in *Digit*, or about technology in general, please write to **editor@thinkdigit.com**

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Products reviewed this month

Let Big Brother watch

ALL OF US pored over the papers and were glued to the TV, as reports updated us on the sophistication of the Mumbai attacks. GPS devices, Russian re-mailer servers and Blackberry devices were used by the terrorists. It must have been infinitely easier to find someone to teach them how to use a GPS device or a Blackberry, than to fire an AK-47... even if they are, allegedly, from poor families in little villages. That's the beauty (or the horror, in this case) of technology today — absolutely anyone can learn to use it (for good or evil), with very little in terms of a formal education required.

While most of us have lambasted our politicians and intelligence agencies, and played armchair Prime Minister for a few days, the real question that remains to be answered is what are we willing to lose to make sure that our country and our way of life is more secure?

After events like 26/11, people are generally more accepting of security measures, and patiently wait in line to be scanned and patted down at public places. Unless you're a criminal, and are carrying drugs, guns or explosives, you have an air of acceptance about you when your "privacy" is being violated by these checks. "It's for the greater good", you say to yourself, and move on.

So why is it that you don't feel the same way about your online activities being monitored? Why is the world so paranoid about Big Brother, and the techniques he may employ to keep us in check?

I, for one, couldn't care less if my mails and social networking profiles were being monitored — personal IDs of course. Monitoring work communications might not be such a good idea, because most businesses survive on privacy and secrecy of intellectual properties, and leaks could ruin them. So, companies could always choose to secure and encrypt their work mail, and not use "free email" services.

I expect people to brand me insane for welcoming the idea of Big Brother into my life, but I think it's only logical given the times we live in. I'd rather some government computer network pick out a billion innocent messages that we send, than let even a single mail from a terrorist go unnoticed.

What have we really got to hide? I'm sure the government or its computers will not care about how much porn you surf for — unless it's underage nonsense, in which case you deserve life imprisonment or worse. A government computer will not care about your affair with your secretary, or what you were up to on your last holiday either. Besides, with a billion people online world-wide, which government is really going to have time for irrelevant rubbish?

You've probably heard the phrase, "The internet's biggest flaw is also its biggest draw". This refers to the lack of a governing body for the net, and the freedom and anonymity it offers. Like little children in a fancy dress competition, we don different costumes online, and always wear a mask. However, terrorists, paedophiles, stalkers and other sick people do exactly the same thing. Isn't it time we started to realise that without some form of governance, chaos rules?

How is it a good thing that just anybody can Google "How to make a bomb" or "homemade bomb" and get over 4.4 crore and 4.5 lakh results, respectively? How can we shout about privacy and freedom, when some innocent eight-year old is being made to act out sick fetishes on film, by some of the same people who stand next to you in this self-righteous picket line?

Robert Sovereign-Smith, Editor

"I'd rather some government computer network pick out a billion innocent messages that we send, than let even a single mail from a terrorist go unnoticed."

YouTube videos that spread hatred, terrorists who use sat-phones, BlackBerry services, and Google Earth, paedophiles that lurk in chat rooms waiting to prey on your kids, and vengeful, lovelorn idiots making indecent profiles of their exes on net-working sites; how much more idiocy do we really need to see before we welcome a change that will stop allowing the law to throw up its hands in helplessness whenever tech is involved in a crime? In this day and age, we need more preventive than reactive measures. I don't think my desire for "online privacy" is stronger than my desire to never again bear witness to a sorrowful candlelight vigil at the Gateway of India.

editor@thinkdigit.com

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DVD Contents

January 2009

Gaming

GAMES
World of Goo

World of Goo is a physics-based puzzle / construction game. The millions of Goo Balls who live in the beautiful World of Goo don't know that they are in a game, or that they are extremely delicious.

- Arc Aether Anomalies
- War Rock 040808
- Harvest Massive Encounter
- Lost Planet: Extreme Condition

MODS
- Far Cry K-9 Vision v1.1 Mod
- Naruto Little Fighter
- True Combat: Elite
- Unreal Tournament 2004 Red Orchestra v3.3 Full Install

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- Chronicles of Spellborn
- Mirror's Edge
- Ninja Blade
- Soldner-X
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Entertainment

HD TRAILERS
Star Trek

From director J.J. Abrams ("Mission: Impossible III," "Lost" and "Alias") and screenwriters Roberto Orci and Alex Kurtzman ("TRANSFORMERS", "MI: III") comes a new vision of the greatest space adventure of all time—

"Star Trek," featuring a young, new crew venturing boldly where no one has gone before.
- 2012
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- Local Color
- New in Town
- Nobel Son
- Nothing But the Truth
- The International
- The Reader
- Yonkers Joe

MOVIES
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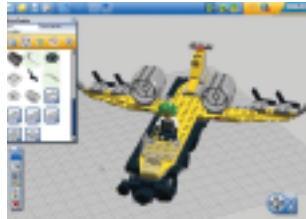
Tools

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Audioblast

Audioblast is a sound editor for WAV and MP3 files that supports all the standard editing features as well as several special effects and offers a choice of graphic schemes.

Lego Digital Designer 1.21
Lego Digital designer lets you model complex lego models in a virtual design studio.

- Alibre Design Xpress 11
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INTERNET
Acoo Browser 1.90.966
Acoo Browser is a powerful multi-tabbed Internet browser based on the Internet Explorer engine.

Integrity Messenger 4.11
Integrity Messenger allows you to

communicate with users of AOL, MSN, Yahoo and ICQ instant messengers from a single program.
- 1st MP3 Torrent Downloader 2.8
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- Avanquest Connection Manager - Free Edition 2.0.3
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- Mozy Free Remote Backup 1.6
- Ozum 5.00
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- Advanced WindowsCare 2.00
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- Norton Internet security update
- Spybot updates

Productivity

OFFICE
authorPOINT Lite for PowerPoint 2.0

authorPOINT Lite converts and uploads presentations to authorSTREAM and WiZiQ, the only services that retain PowerPoint effects on the web like PowerPoint animations, rehearsed timings, sounds and gifs.

- Angel Writer 3.0
- BeamYourScreen 2.0.5
- CHM Owner Guard 8.3.0
- CopyWriter 3.00
- cVue 0.7
- Diagram Designer 1.21
- docPointer Visual ReadMe 2.0
- InfoRapid KnowledgeMap 2005e
- Natural Word from Software Theories 1.0.0
- NetViz 7.0
- NoteMagic Lite 6.7.11.18
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- numberGo Publisher 1.4
- PDF Action Free PDF Reader 1.6
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- DoneEx XCell Compiler 1.9.3
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XAMPP 1.6.8
XAMPP is a very easy to install Apache Distribution for Linux, Solaris, Windows and Mac OS X. The package includes the Apache web server, MySQL, PHP, Perl, a FTP server and phpMyAdmin.

- Active Query Builder Free Edition 1.7.9
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- RazorSQL 4.2.9
- SQL Weaver 2.50 for ODBC With XML 2.500h
- SQLStomper 1.0
- Survey Power 6.10

CAD
TigerCad 3.001
TigerCad is a simple technical drawing software (CAD). Ideal for garden design, mechanical engineering drawings, elec-

trical / electronic, building and room plans, and general diagramming. Output in PDF format for the Web. Copy and paste graphics. Create standard symbols to re-use. Scale, mirror and rotate.
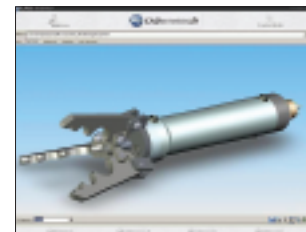
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- Ashampoo Burning Studio 2009
- Ashampoo Internet Accelerator 2
- Ashampoo Photo Commander 6
- Ashampoo Photo Optimizer 2

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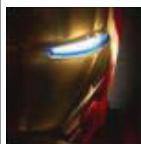
IronMan Forever
Join Date: Jun 2008
Location: Metal City
Posts: 721

The first thing anyone notices in the *P3400i* are its looks. I was surprised that it looks pretty good when you have it in front of you. The touchscreen is responsive in most cases but the stylus is not comfortable enough for my taste. I am currently using an empty pen with a big tip and this is much better for navigation as well as writing on-screen.

The user interface is a bit erratic. It isn't slow at all times but sometimes it slows down erratically. Once I learned it; the erratic-ness has gone. Still the overall speed is not anything to talk home about. It is always somewhat slow.

Memory usage is high with no programs running. Very little free memory is left at startup (just 33 per cent)

Camera is just okay for posting photos to blogs and for for emergency uses. Despite the 2MP sensor, quality is not much better than my age-old *Nokia 6600*'s VGA camera.

Music quality through the single speaker on the phone is fair for soft numbers, it just isn't the thing for heavy metal stuff. The treble is more emphasised through the external speaker, as is the case with many mobiles. Music quality through the provided headphones is pretty good for a PDA but the mids are over-emphasised. I used *Metallica's Nothing Else Matters* as the test track. I hate the propietary jack. A 2.5-mm jack would have been tolerated. You can buy extensions which plug into the phones jack and give you with 3.5mm jack.

The phone allows creating, viewing and editing *Word* and *Excel* files. Viewing *PowerPoint* files is supported but is sluggish. The Adobe PDF Reader also makes an appearance. For all practical purposes, it isn't very usable because of the slow processor. The games that come along are pretty nice, but one can install more games as it supports Java as well as Windows Mobile applications.

I definitely am in love with this device. It may be because of my first experience with Windows Mobile. I have used Symbian 7.1 and Symbian 9.0 on some of my earlier smartphones. There are differences but I have adapted to them in a short duration of one day.

The only major advantage the HTC Touch has over this is the WiFi but that isn't so important yet as there is a lack of WiFi hotpots to use this feature. In short, if you are thinking about buying this one, don't hesitate.

Another one for the Eee PC
Eee PC the ultra-light, ultra-portable and ultra-cheap Netbook from Asus just bagged itself another award. It's now crowned Forbes Asia's Product of the Year for 2008. The product was chosen for its Innovation and Market Disruption.

Search may become passé
Contextual browsing may become the new avatar of search. With browsers and web sites becoming increasingly aware of what you are looking at, all your web content needs will be custom delivered to you in the future.

CONTEXT

Enter

TECH TALK

Eugene V. Kaspersky
CEO, Head of Antivirus Research, Kaspersky Lab

One of the world's leading experts in antivirus protection

What were you thinking of doing after your degree, how did you think your career would go, had you thought of going into this kind of work or were you planning on doing something else?
I have done my degree in Cryptology. I think I was planning on doing something else, I didn't enjoy myself, it was just antivirus systems, it was just my hobby. I got into it by accident. My computer was infected back in 1989 with a cascade virus, back when there was such a virus. That's why I'm here.

How do you tackle human gullibility, which is one of the greatest vulnerabilities out there when it comes to internet security?
There are three things you could do against cyber terrorism, cyber criminals and against all threats — education, law enforcement and protection. We have a special education system for kids and students about this. We do it and we do it for free, because we take it as part of our mission to spread the news. We have presentations given by about 80 experts and this method works.

Isn't it difficult to make people sit up and listen and take notice for such a thing to work?
The problem is that they don't pay enough attention in social networks. They think they trust everyone in a community, and give out data, some personal information, which is enough for to see some serious repercussions. It is one of the greatest threats, probably one of the most serious because there are millions of people who are in this network.

WHY IS ANDROID?
Who is Google?

No there's no grammatical error there. Well, although there is, it's intentional. Think about it. Since the time Google announced its open source android operating system for mobiles, people have wondered — why *is* Google launching a product that has no apparent revenue model? The question has come to the forefront once again with the launch of T mobile's HTC G1. The phone is pretty nifty and we especially like the flip-slider opening keyboard. Android works fairly smooth too. But coming back to what Google is upto — perhaps its recent announcement that the iPhone and T-Mobile G1 can now show Google search ads sheds a little light on the question. Is Google then going the Microsoft way? Monopoly being the name of the game. For instance, reports suggest T-Mobile's G1 works fine with many online services, but it works especially well with Google's. It delivers a lot of the basic core functions and of course, tight integration with Google's products, including Gmail, Google Maps, and Google Calendar.

Having said that, there is also a lack of basic features like video recording. Is it a miss out, or more like an opportunity for independent app developers? Google has

come up with a mobile application store of its own, called Android Market ala iPhone. Besides, some of Google's latest antics include asking broadband carriers to create a special fastlane exclusively for its content. This would be done by placing Google servers in the ISP's technical facilities. Another somewhat alarming warning sign is the removal of Firefox as the default browser in the

Google code pack. In a recent US survey of the top 20 most trusted companies, Google has fallen off the list entirely from its spot at 10 on last year's list. Google's fall is probably due to the *big company syndrome*, where people just start trusting big companies less. Perhaps Google should treat these signs as early warnings. Besides this, there is a lot of fuss being kicked up about Google Maps post the Mumbai terror attacks. An Indian lawyer filed a petition in the Mumbai High Court, arguing that Google Earth and similar services "aid terrorists in plotting attacks". The petition is demanding a removal of Google Earth satellite images of India, or at the very least, blur images of sensitive places in the country, such as Indian nuclear plants and defence establishments. And it's not just Indians. A group of Japanese lawyers and professors have also asked Google to stop providing detailed street-level images of Japanese cities. Google provides this through its Street View service, which offers

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Security Watch

Critical security flaw in IE (again)

The problem
Microsoft recently issued a critical security warning regarding a malicious code that is making the rounds and attacking vulnerabilities in Internet Explorer 7. The infection had the potential for wide-spread damage since IE 7 is the latest non-beta version of Microsoft's browser and is bundled with XP service pack 3 and also Vista. The code, infects a users' system with a Trojan horse. It may even start downloading other malicious elements into the users system. Microsoft says that the code can creep in even through legitimate websites in which the script has been inserted to run in the background. Earlier versions of IE are also vulnerable. It is being said that Microsoft Corp.'s developers missed the bug because they didn't have the right testing tools. Microsoft's testing tools — including "fuzzers," which are automated tools that drop data into applications, file formats or operating system components to see if and where they fail — also missed the bug.

The solution
Microsoft has released an emergency update patch MS08-078 which addresses the vulnerability. The patch fixes a flaw in the data-binding function of all available versions of the popular browser. Users who have automatic updates turned on will receive the patch automatically while others can access it via a download from Microsoft's web site.

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ground-level, 360-degree views of streets in 12 Japanese cities and is also offered for some 50 cities in the United States and certain areas in Europe.

As for the Android, we'll wait and watch. At the time of going to print, Kogan Agora Pro, the second Android phone was launched in Austrialia for $399 AU (Rs. 13,000). Unlike T-Mobile's G1, this phone comes unlocked for use on any carrier.

WHAT WILL APPLE DO?
No more Jobs

Mid December news wires are abuzz with the hullabaloo of Steve Jobs quitting Macworld and Apple opting out of the event altogether, after the January installment. Mac fanboys cried themselves to sleep speculating whether Job's health is behind the move, but the more plausible reason is that, like many companies, Apple is getting tired of trade shows. For many companies, the expense and complexity of exhibiting at huge shows,

then having to compete with hundreds or thousands of other companies for press and industry attention, are making the shows less and less compelling. Goes to show that the trade show biz isn't exactly a growth industry these days and, with tough economic times ahead, luxuries like your precious keynote are the first to go. Apple now probably plans to go in for its own exclusive product launches. Although Mac and Apple are synonymous, it is worth mentioning here that the Macworld Expo is run by IDG World Expo. Knowing Apple's penchant for control, chances are that Macworld Expo didn't offer Apple enough control.

Also interesting is what these expos do to the share price of Apple Inc. A prelude to all of Apple's media events is crazy rumor mongering and speculation. The result is that almost every Apple extravaganza since Macworld 2007, no matter what news comes out of it, has triggered a massive sell-off of Apple stock. Initial reports suggest that Apple stock may have dropped nearly 7 per cent on the news that Steve Jobs

is quitting Macworld.

For Mac enthusiasts what Steve Jobs' departure means is that there will be no more jazzy stunts in the Keynote, which Jobs was famous for. During the launch of the iPhone he pulled out the phone from his jeans pocket and called the local Starbucks Café for 4000 Lattes to go. But realistically speaking, Maclovers can probably rest assured Apple's not going to come apart cheap the minute Jobs leaves.

NO MORE RECORDS
Data Retention

Post 26/11, security measures and privacy issues are much talked about. So the news that search companies are cutting down on search-data retention time, is of much relevance.

Search companies keep the IP addresses of their users for a period before making them anonymous. Until they anonymise the

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HOT

BBC allows YouTube to carry content
Small sections of programs and promotional segments of BBC videos have been allowed to stay on YouTube in exchange for a share of the advertising revenues of the video sharing web site.

NOT

Viacom removes content from YouTube
Viacom and subsidaries MTV, Nickelodeon and Comedy Central have pulled more than 100,000 clips from YouTube. The lawyers are unsure of the website is actually giving a boost to the content owned by Viacom or dealing it a blow.

■ China blocks access to New York Times ■ Dell to launch ultra thin laptop to compete with Macbook Air ■ Snowboarder Shaun White and swimmer Michael Phelps to feature in video games ■ Lawyers use Facebook to serve legal papers

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The Digital World

US
Apple TV sued for patent infringement by EZ4Media

EGYPT
The first Nuclear power plant in Egypt contracted to Bechtel, a US company

CHINA
Lenovo's oPhone handsets to have OS developed by China Mobile

JAPAN
Panasonic and Sanyo announce a capital and business partership

INDIA
Lok Sabha passes bill to improve the Information Technology Act

AUSTRALIA
Authorities to curtail P2P and torrent access across Australia

identities of its users, the information is used alongside other data, such as search queries, to improve relevance of search results and target advertising to the user, among other reasons. The most recent announcement came from Yahoo!, saying it would cut down data retention to three months in most cases, from the prior norm of 13 months. "This was our attempt to put a stake in the ground" Anne Toth, Vice President of Policy and Privacy Chief at Yahoo said on the issue, thus making its retention policy the shortest among peers. It is reserving the right to keep data for up to six months if fraud or system security are involved. Earlier this year, industry leader Google Inc halved the amount of time it stores personal data to nine months, while earlier in December Microsoft Corp had said it will cut the time to six months if its rivals did the same. The spate of

reduction in retention times is a response to pressure from the European Commission's data protection advisory group, the Article 29 Working Party, and other data protection officials to do more to protect the privacy of users. The commission is also pushing for the sector to adopt an industry-wide standard. Currently, there is disparity in the method companies are adopting in the process of anonymisation. Microsoft said it welcomed the move, but made a distinction between the timeframe and the method of making data anonymous. Yahoo! will delete the final segment of the IP address, which it said makes it no longer unique or identifiable. Microsoft is deleting all of the Internet address, which it said will break any potential link to a particular set of search queries. With its nine-month anonymisation, Google intends to change some of

the bits in the user IPs stored on its servers. But that's it. The plan would leave cookie data alone.

Let's leave search companies and privacy issues alone for a minute and look at what risk Data retention could pose to National Security. Even Internet service providers can retain certain data. Back in 2006, this very issue was being debated in the US. A major concern was that the ISPs retaining data would also retain traffic information of federal, state and local governments. Classified federal systems, which generally don't use the Internet, may be the exception. What problems could arise if commercial ISPs hold detailed records of all the communications to and from government agencies? Data retention may increase the risk of the exposure of undercover police or confidential informants. And this is just one example.

WHO WILL WIN?
Chrome v/s IE 8

Google recently went away from its perpetual beta convention by finally bringing Chrome out into the real world. Google's notorious beta label on their products is a great umbrella cover for them to receive forgiveness when things go awry. Unfortunately, the same practice can be a major problem when looking to gain serious market share. OEMs won't touch you with a 10-foot pole if your product is still in beta. And once OEMs preinstall any product, its market share is exponentially upped. Consider IE 8 — it is currently not bundled with any version of Windows. The only way to get it is by download, so market share is sure to drastically change

■ **Ecofont, a TrueType font designed to save ink and toner launched** ■ **Warner Music pulls down its content from YouTube**

once Windows 7 is ready for consumers. A quick look at some numbers online reveals that in this sort of level playing field, Chrome is doing better than IE 8 in terms of market share. (Though to be fair we must consider that IE8 is still in beta.) The battle which will now ensue to become the next browser of choice will definitely be interesting.

Coming to the question of whether Chrome will be adopted by the masses, it all depends on user preference. Users tend to get pretty attached to the little niche utilities that each browser has. The noticeable lack of add-on support in Chrome is one of the many items people who haven't made the switch typically cited. But regardless of how ready the browser is in the non-beta *avatar*, this latest move puts them in a good position to take advantage of OEMs. Having Chrome pre-installed on machines will quickly boost its usage stats.

INDIA GETS 3G
3Gs are better than one

MTNL recently announced the launch of 3G services in Delhi. Interestingly enough, it was inaugurated by Prime Minister Manmohan Singh by receiving a video call from Telecom Minister A Raja. We would've expected one of the private players to be the first one off the block, but what is important is the reaction the announcement has evoked. Message boards were actively speculating what kind of plans would be available, whether there would be a

data limit, and if so, would it be ridiculously low thereby defeating the whole point of 3G. For the uninitiated, 3G will allow operators to offer high-end services such as faster downloads of video clips, movie trailers and music files, video calls, interactive gaming and even streaming video. The existing telecom services in India operate on the 2G spectrum. The process for the auction of 3G licences in India kicks off in January 2009. But before we get on to the nitty-gritties, two issues must be addressed. First, of the 300 million mobile users in India, how many have 3G phones? These high-end phones cost more than Rs. 11,000 at the least. And out of all the things 3G enables you to do, how much of it will you really use? Perhaps the average Indian mobile user may want to watch a T20 match on the go rather than video call someone. In any case, 3G users will still be a small minority, at least initially. The second issue is shortage of spectrum availability in many circles at peak times. Service, is after all, as good as the calls it allows you to make, so we don't want any lagging issues there. Coming back to the licence auctioning, under existing guidelines, the successful 3G auction bidders will have to pay Rs 1,651 crore for a UASL licence that entitles them to offer all communication services. The 3G hype also brings up the longstanding battle between 3G and WiMax technologies. WiMax stands for Worldwide Interoperability for Microwave Access. It can also be used to provide voice services and rivals 3G as both the platforms are used

for similar applications. According to the Department of Telecom (DoT), the 2.1-GHz band will be used for 3G, while 2.3 GHz and 2.5 GHz have been earmarked for WiMax. Ericsson — the biggest supporter and equipment vendor of 3G — is laying claims on the 2.3 GHz spectrum band, which is meant for WiMax.

BAD BOYS - WHAT'CHA GONNA DO?
War on Piracy v2.0

It seems the bigwigs at RIAA are ready to try out just about anything to stem the piracy biz. First they began by suing people who downloaded music. That meant suing just about every person on planet earth right? They managed to sue 30,000 accused file sharers in the last five years. Clearly it wasn't working, so the music industry said "hey wait a minute, since so many people are downloading, viewing and

listening to copywrited content, why not try to squeeze some ads in there." Accordingly, all such content on Myspace and YouTube wasn't necessarily pulled down. Instead, the original owners could just choose to put ads on it. Now in its latest installment against piracy, the Recording Industry Association of America (RIAA) has announced that it will work with internet service providers to sever abusers' net connections. Just to clarify, abuser here means you. Yes, you with the 20 GB MP3 collection! Under the new plan, RIAA will send notices to ISPs that identify the IP addresses of suspected file sharers. ISPs will then send warnings to their customers and then cut them off if the users fail to curb their illegal downloads. Details are still being worked out, but most reports said downloaders might lose their net connection after the third notice. The termination could last anywhere from three months to a year. But it

STAT ATTACK
it's all in the numbers

70% of all porn access on the net occurs during office hours

Only **33%** of households actively protect their children from the internet

70% of all security breaches are caused by insiders

63% of parents using SMS services feel this improves communication with their children

In the year 2008, **$865 Billion** was invested in IT products and services

50% of all returned IT products work, but can't be figured out by buyers

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seems identifying culprits isn't so easy. There is the *Catch-22* of fair use and besides, many of the law suits by the RIAA resulted in grandmoms being dragged into court, based on sometimes specious evidence. To many, internet connections are essential lifelines to school, work, and other important parts of daily life that we will not mention. Considering these, many of RIAA's detractors will certainly put up a fight. Oh! by the way, the Motion Picture Association of America is also in discussion with ISPs to adopt the same strategy.

SHARK INFESTED WATERS?
Undersea cables cut again

No it's not the poor lil sharks. At the outset of 2008, a badly dropped ship anchor had damaged an undersea Internet provisioning telecom cable in the Mediterranean, disrupting Internet service throughout India, Sri Lanka, Pakistan, and the Middle East. And this year its *deja-vu* all over again. The lines, which emanate from the Egyptian coast at Alexandria and go on to connect to Asia, were probably damaged either by a ship's anchor or a minor earthquake, officials say. So if your online gaming experience has not been up to the mark, lagging away to world's end, then this is probably why. Initial reports suggest as much as 70 per cent of internet and telephone traffic between the continents has been affected by the outage affecting millions across the Middle East and south Asia. International telephone calls, which have also been affected, were being re-routed to work around the problem. A somewhat corny outcome of the outage is that people have been getting less spam! Inboxes which were being bombarded with hundreds of spam mail a day now get only a few.

Despite widespread wireless internet and satellite connections, and contrary to popular belief, global communications still rely largely on the vast webs of fibre optic cables that cover the planet. The lines take years of planning to install. To repair them is even more of a challenge. As part of damage control for this recent incident, a 64-crew French maintenance boat arrived on site, off the coast of Sicily, following a two-day journey from southern France. An underwater robot was sent down to locate the cables, which may have been dragged several kilometers off site in the incident — and lift them to the surface where they will be repaired fibre by fibre.

Some trivia:
1. The crack about sharks at the beginning wasn't entirely unfounded. It seems that the very first small diameter fibre optic cables laid were indeed damaged by sharks chewing on them on the ocean floor. Scientists found that sharks were attracted by the magnetic fields formed around the cable, produced by the electrical current supplying power to the amplifiers which are placed periodically. To

Fiber in use as of year-end 2004
>600 500 50 10
Gbps
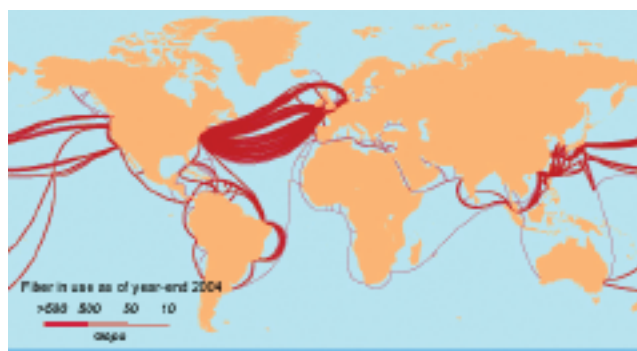
Buzzword
of the MONTH

Green-washing

In a world gripped by the fears of a disasterous fallout of a degenarating bio-system, Green-washing refers to the undue exploitation of enviornmentalistm by companies. For example, if a particular product does not perform as well as its competitors, the product is simply positioned as being eco-friendly and put on the market. Vague, untrue and irrelevent product features are highlighted as being good for the enviornment. This practice is known as green-washing, which is a combination of green and white-washing.

■ India won't levy admin tax on 3G spectrum ■ Windows 7 scheduled for late 2009 launch ■ EA titles to be available online through Steam

W5H

Universal Memory

What is Universal Memory?
Universal Memory approaches memory storage in a radically different way. Universal Memory is the term given to the next wave of storage solutions that are about to hit the world.

Why do you need Universal Memory?
The next generation of memory devices plan to replace the current generation by outperforming current storage solutions in two basic aspects of memory storage. The first aspect is power consumption, and the second aspect is the density of memory. This generation of low-power, high density memories will probably be able to store memory even without electricity running through them.

Which companies are involved?
The list is pretty long. IBM, HP, Motorola are all researching different universal memory strategies. Samsung and Toshiba are also in the race. Companies that specialise only in memory solutions like Everspin and Hynix are obviously involved. A company called Nantero has developed promising wafers with 10 billion bits of memory.

How will it be done?
Current research have different approaches in different labs. One approach is to use the nanoscale structures on the silicon wafers themselves. Other approaches include molecular memory and magnetic random access memory.

When will we see it?
Predictions vary from 2011 to 2020.

Will it be any good?
Portable devices stand to benefit the most. The memory promises to store all the data in any DVD ever made in a single laptop sized box.

reduce these problems, the cables are buried in the floor of the ocean using special under sea ploughs. However, in rocky bottoms and over undersea cliffs, the cables are still exposed. 2. Cables with 10 Gbps bandwidth were laid at a cost of $27,000 per km in 1999. Do the math.

DOWN WITH OPEN SOURCE
Microsoft Launches BizSpark

They say all big things begin with an idea. And when it comes to successful technology ventures, some of the biggest have their roots in India. Microsoft is now eyeing this very potential

market with the launch of BizSpark. The program targets early stage software startups, with resources including access to Microsoft platform software and development tools with no upfront costs. As you've probably figured the program is a bid to keep the open source mafia at bay. It is no secret that startups are very cost-conscious. Given the relative lack of cost-effective software solutions, they often tend to veer towards open source. Microsoft understands the price-attraction of open source, and hence, it is

basically undercutting that advantage. Besides this, the program will also provide access to technical support and marketing visibility from Microsoft, as well as support through a select group of network partners — industry associations, government agencies, university incubators and investors — chartered with advancing entrepreneurialism. In India, these partnerships include The Indus Entrepreneurs (TiE), NEN, Proto, NASSCOM and IDG Ventures, a venture capital firm. Other VC firms supporting the initiative include Draper Fisher Jurvetson (DFJ), Helion Venture Partners and Accel Partners. Virtually everything a startup needs to build a web service (many of the tools and software

compete with open source alternatives, such as MySQL) is being offered to startups for free for three years. The idea, they say, is to create a vibrant startup ecosystem in India.

STILL KICKING
New lease of life for Windows XP

Big technology corps often phase out their older products to make way for newer ones.

They first begin by pulling the plug on sales and then eventually stop support. January 31, 2009 was listed as the last day that anyone could buy XP, but Microsoft has told its system builder partners that they will be allowed to continue to sell XP after cut-off date. In what is being called the flexible inventory programme, distributors can place their last orders for Windows XP OEM licenses by January 31, 2009, and take delivery against those orders upto May 30. Until then, distributors would have to buy as many XP licenses as they could afford before the cut off date and sell them after the deadline. Apparently distributors are quite happy with the new arrangement as they don't have to hand over cash for the new licences until they have already sold them.

Software companies are still softies when it comes to phasing out older products. Take the case of processor manufacturers — Intel does not manufacture its Pentium II and III lines anymore. Even if you were to say "hey I use my comp only as a word processor, I don't need quad core speed. Can I get a Pentium II for cheap?" Well no you can't. Not from the manufacturer at least.

About discontinuing support Microsoft says this on its web site, "Microsoft is retiring support for these products because they are outdated and can expose customers to security risks. We recommend that customers who are still running Windows 98 or Windows Me upgrade to a newer, more secure Microsoft operating system, such as Windows XP, as soon as possible." ■

Cover Story

How
secure
are you?

Enticing email subjects and images could lead your system and security to peril...

Edward Henning

There is no such thing as a completely secure computer, or IT network. The number of threats we face from pranksters, all the way to organised crime is growing all the time. In fact, the threats themselves are increasing in both seriousness and sophistication.

It's not just a matter of viruses, trojans or worms that might come attached to an email and then infect your machine. If you are on the internet, then you are open to attacks of many different kinds, from hackers trying to gain direct access to your computer, malicious web sites tricking you into parting with money, tricks to get personal details such as credit card information or passwords, software slipped onto your PC that will do any number of things without detection — the list is always growing. As computers, software and the internet become more feature-rich and complex, the number of ways in which attacks can occur also inevitably increases. Everybody needs to be vigilant, particularly where online transactions involving banking or online shopping are concerned.

The original web pages that people surfed early in the 90s consisted only of text formatted with HTML together with images, tables and the like. Not much risk was involved. But things are now much more complex. You have embedded videos, JavaScript menus, PHP code and many more rich and interactive features. With this level of complexity also come programming errors and loopholes. At the best, these problems cause difficulties with the straightforward operation of a site. At the worst, they enable an attacker to take over a site, grab personal information or infiltrate hidden software onto your PC.

The language used in security circles

describes computer systems as having some kind of vulnerability that is then exploited by an attacker. However, the most important vulnerability is human gullibility and lack of understanding. Conversely, the most important form of defence is a reasonable understanding of security issues combined with care and vigilance.

If you received an email from some unknown source, telling you to click on a link to "See Britney Spears naked", would you click on that link? Most people nowadays know the danger involved and that clicking on such a link is likely to lead to computer infection of some kind. Unfortunately, there are still some who do not.

But what if the email at least appeared to be from a known source, and one that you knew had your email address. What if it appeared to be from your own bank, and included all the right graphics, logos and everything? You may be much more likely to click on the link in order to reset your PIN or password, as suggested. What if the link led you to a web page, apparently with the correct URL, that looked exactly like your bank's correct page, complete with Verisign security certificate logo (the little lock in the bottom right of the window frame). Would you then enter your existing user name and password, thereby allowing the attacker to empty your bank account, or purchase goods online and send them to Africa?

Such attacks are more rare than offers of naked Britneys, but the attackers are getting this sophisticated, and making increasing efforts to make money from such attacks. They continue to do so only because previous and less sophisticated attacks have proved successful. People have clicked on the links, entered personal information, and lost money as a result.

In the following pages, we will describe the most likely types of security problems that you will encounter and give you some advice on how to behave on the internet — what to do and what not to do. Software can also of course help considerably, as long as you do not allow yourself to become complacent — you may have the best known antivirus and anti-spyware software installed, but you still need to take care.

Dangers on the internet

The method of attack we described earlier, of an email purporting to come from your bank and asking for personal information, is known as phishing. Basically, phishing is a

This partial screenshot is of a genuine email from a UK utility company presenting a link allowing the user to pay a bill. The link is of a known and correct URL, and the actual link that would be followed — which is displayed in the window frame at bottom left — matches correctly the link in the text. Even though this is clearly correct, it it better practice never to use such a link, but use your bookmarked link to your utility company in order to pay such a bill. Even a small difference in the actual link might take you to a spoofed site

form of con-trick, and any such trick stands a better chance of working the more believable it is. The simplistic attacks seem to be falling in number, presumably because people are increasingly aware of the problem, and so attackers are becoming more sophisticated.

Perhaps the most common form of attack used in phishing is known as cross-site scripting (XSS). In this method an attacker will insert code in the embedded link — not the link that you will necessarily see — that will attempt to manipulate a web application, usually so that some code is inserted into the page that will be displayed in your browser. This doesn't change anything on the server, but your browser will receive an amended form of the page, and will execute the malicious code as if it had come from that server. What you see will be the correct page of, say, your bank, but it will behave and perhaps appear differently — usually it will send you to another page that will have been crafted by the attacker.

In an extended form of this attack, known as persistent XSS, the manipulated URL is stored on a server in some form or another — in a database, forum content, and so forth — and is then accessed by unsuspecting users. In this case, you do not have to click on a manipulated URL in a phishing email, but it exists in some other source that you might stumble upon innocently.

Another variant on this kind of attack is known as frame-spoofing, which can also be triggered by a manipulated URL in an email. Frames have long been considered to be insecure by security experts, and their use is slowly fading away, but there are still a great number out there. In frame spoofing — first recognised by Microsoft back in the days of Windows 3.1 — an attacker is able to insert their own window as a frame within the

window of a legitimate website. This means that, again, the page you are viewing is the correct one, with the correct URL and with the security icon visible, if relevant. But, part of it has been replaced with malicious purpose. This can be very difficult to spot.

In these types of attack, the malicious code is inserted in such a way that it runs in your browser — the server of the bank or other service has not been compromised. However, there is a form of attack known as remote code execution in which the web application is itself tricked into executing the attacker's code. Very often, this results from weaknesses in PHP, one of the most common scripting languages used for creating web sites. Again, the relevant scripts can be triggered from within manipulated URLs. Many programmers have simply assumed that their program will always receive valid input data at all times, and do insufficient validation of such

This second partial screenshot is from a phishing email, pretending to come from PayPal. Notice that the actual link that would be followed — in the window frame — is very different from the one in the email text. This would for certain lead to a spoofed site of some kind, with a request to enter personal data. Always check the actual link when following a link in an email, and if it is for a site involving financial transactions, never click on such a link

data: URLs, form data, and so on.

Many, if not all, of the websites with which we are likely to have online transactions are backed by large SQL databases. Again, problems occur when data that a user might input is not filtered and checked properly by the web site. If this data has been manipulated in some way, a skilled attacker can make use of special SQL characters (typically, the comment and end-of-command characters) and infiltrate his own commands in order to execute an attack. With this kind of attack, it is the web service that is the target, rather than the user directly. However, there have been instances where attackers have been able to compromise an SQL database and access customers' credit card and transaction details.

Another component in online transactions that is supposed to safeguard such details, and that has attracted attention in

the last year, is security certification. If you are online to an e-commerce site and are about to enter your credit card information, the window you are working in should have a little lock icon in the bottom right corner of the frame. This is the security certificate, and strictly speaking, you should click on the icon, and check that the certificate is genuine and was issued to the right organisation. This is a pain, and there must be very few people who actually bother to do this, or even know that it might be a wise thing to do. Such checks are being introduced into browsers, but this has been very slow in coming.

You may think these security certificates are rock solid and reliable, but earlier this year, the commonly used OpenSSL package in Debian — used to generate the keys for this kind of encrypted communication — was found to have contained a bug since 2006. This resulted in the creation of weak keys. This makes the keys more predictable and the communication therefore open to attack; the communication over which your credit card or other details might be passed.

Finally, although our list of security vulnerabilities is going to be far from comprehensive, we should mention keyloggers, which are a particularly pernicious form of infiltrated software. You might pick up a keylogger in much the same way as a virus, trojan or worm. Once it is inside your system, it will do nothing to give away its presence, but it will sit there noting the keystrokes that are made and sending these off across the internet to the attacker. Of course, it will be looking for the tell-tale signs of credit card or banking information and the relevant PINs and passwords. It is because of attacks such as these that some banks have started supplying virtual keyboards when you enter your password. With these, instead of using your physical keyboard to enter the password you use the keyboard on screen, pressing keys with the mouse. The keylogger is blind to this activity — at least up until now!

It should be clear by now that the complexity of modern computer systems carries with it a vast number of possibilities for attackers to infiltrate systems and gain access to confidential data. The increasing trend towards such concepts as cloud computing and Web 2.0, involving more private data being hosted on the internet and ever more code and transactions being passed across the internet, is only likely to make the situation worse. In the following pages we describe the steps you can take to protect yourself in that dangerous online world, and the software that can help you on the way. ∎

Cyber crime
The new age menace

Pradeep Narayan

In the current age of the IT revolution, more and more people are getting hooked into the cyber world for their various needs. There is a distinct reliance on computers and the internet now for email, entertainment, shopping (online shopping), airline and rail tickets, banking, trading and the list goes on. While it does make our lives simpler and convenient, it also poses dangers to us in an unprecedented way by exposing their identity in the public domain. Details of our personal information, such as name, addresses, passwords and bank accounts are in the process of being attacked by various fraudsters, hackers, terrorists and criminals freely roaming the cyber world.

It makes perfect sense for users to understand the online security threat they are exposed to while surfing the web. Just what are those risks and threats that we are talking about? Among dangers are hostile viruses, hackers accessing your system and stealing vital information like credit card details and committing fraud, unsecured wireless networks, spyware on your system, and identity theft.

As a user, how can you enhance your online security?

In the following section, we will discuss the kind of risks that you are exposed to and the ways in which you can tackle those risks. There is no fool-proof system, but it doesn't hurt to be a little careful while on the internet.

Guidelines

How to protect personal and work data

■ Protect yourself with relevant software from viruses and trojan horses that may steal or modify data on your own computer. A trojan horse program is software that claims to do something genuine, but does exactly the opposite. For example, a program that claims it will speed up your computer may actually be sending personal PC information to a hacker.

■ Update your PC with the latest anti-virus software and operating system patches. Make sure these updates happen automatically.

■ Install a personal firewall and anti-spy ware to protect your PC.

■ Periodically change your online passwords.

■ Check your credit card and bank statements regularly and report any irregularities to the relevant authorities.

■ Modify Internet Explorer or other browser security settings to limit the amount of information you are willing to accept from a web site. Microsoft recommends to set the security settings for the internet zone to medium or higher.

The need to update your browser

When you use the internet, you view web sites in a *browser*. A browser is a program that accesses and displays files and other data available on the internet and other networks. Browser programs are frequently updated to add functionality and address problems. If you are using an older version, there could be security issues (someone could hack into your computer).

How to do it?

Download the latest or updated browser you are using from the company's web site over the internet. It might ask for information about your computer such as what operating system it uses — Vista or Windows XP. Then follow the instructions on your screen.

■ Save it to your computer, it will be saved as an executable file. Once the download is complete, go to the file where you saved it, and double — click on it. This will automatically install the new browser on your computer.

Be careful while doing online shopping

■ Shop online only with known and reputable merchants; enter their URLs yourself, and do not click on links in emails; these may very well contain hidden commands to trick you

■ Do not respond to any emails asking for personal information

■ Check web sites' privacy policy before providing any personal or financial information

■ Make sure your data is encrypted. Many sites use SSL, or secure sockets layer to encrypt information. Indications that your information will be encrypted include a URL that begins with https: instead of http: and a lock icon in the bottom right corner of the window.

■ In case you doubt the legitimacy of the certificate, refrain from entering any personal information. If the site does not require you to enter sensitive information, it probably won't display the lock icon.

■ Use a credit card instead of a debit card, because credit cards have pre-defined limits and in case your credit card details are compromised this will minimise possible losses. Use credit cards with a low credit line.

■ Check your statements to keep an eye on any unusual transactions

Cookies

While you browse the internet, information about your computer may be collected and stored fraudulently. To increase your level of security, adjust your privacy and security settings to block or limit cookies in your web browser. Make sure that other sites are not collecting personal information about you without your knowledge by choosing only to allow cookies for the web site you are visiting. Block or limit cookies from any third-party. If you are using a public computer, you should make sure that cookies are disabled to prevent other people from accessing or using your personal information. In such a case, if you had been using Firefox, press `[Shift]` + `[Ctrl]` + `[Del]` and use the dialogue box that pops up to clear all personal data and history. It is not so straightforward in Internet Explorer, but, depending on the version, you can do the same thing under the menu `Tools > Internet Options`.

Unsecured wireless networks

These pose a real security threat as seen from the recent misuse by terrorists to send email warnings about imminent terror attacks. Wireless networks allow criminals or hackers to intercept an unprotected connection. Wardriving involves individuals equipped with a computer, a wireless card, and a GPS device driving through areas in search of wireless networks and identifying the specific coordinates of a network location. Criminals with malicious intent could take advantage and access your computer and steal vital information or use your internet connection to commit acts of fraud or terror.

Criminals with malicious intent could take advantage and access your computer and steal vital information or use your internet connection to commit acts of fraud or terror

Tips to secure wireless networks

■ Change the default passwords as most network devices have a pre-configured default password and these are easily found online.

■ Install a firewall directly onto your wireless devices (a host-based firewall). Attackers who directly intercept your wireless network may be able to by-pass your network firewall and so this does not offer sufficient protection.

■ Restrict access — only allow authorised users to access your network. Each piece of hardware connected to a network has a MAC (media access control) address. Restrict or allow access to your network by filtering MAC addresses. The MAC address is a unique identifier for networking hardware such as wireless network adapters. A hacker can capture details about a MAC address from your network and pretend to be that device to connect to your network. MAC filtering will still protect you from majority of the hackers. Find the MAC address for your network adapters on your devices by following these steps:
1. Go to `Start > Run`
2. Type `command` and press `[Enter]`
3. Type `ipconfig  /all` in the command prompt window and press `[Enter]`
4. You can view the physical access address in the information displayed.

■ Check the user documentation to get specific information about the MAC Filtering process if you have any more queries.

■ Encrypt the data on your network. Encrypting the data would prevent anyone who might somehow be able to access your network from viewing your data.

■ Protect your SSID (Service Set Identifier — An SSID is the name of a WLAN). The SSID on wireless clients can be set either manually, by entering the SSID into the client network settings, or automatically, by leaving the SSID unspecified or blank. A network administrator often uses a public SSID that is set on the access point and broadcast to all wireless devices in range. You can disable the automatic SSID broadcast feature to improve network security.

■ To avoid outsiders from easily accessing your network, avoid publicising your SSID. Consult user documentation to see if you can change the default SSID to make it more difficult to guess.

Secure your web page

■ Normally, when browsing the web, URLs begin with the letters http. However, over a secure connection, the address displayed should begin with https.

Spoofing attacks

■ Spoofing attacks are as common as phishing frauds. The spoofed site is usually designed to look like the genuine site, using a similar look and feel to the legitimate site. The best way to verify whether you are at a spoofed site is to verify the certificate.

■ "Lock" icon – check for the lock icon in the lower-right of the browser window. This tells you that the web site uses encryption to protect sensitive personal information — credit card number, ATM PINs, Social Security number, etc. The lock only appears on sites that use an SSL connection, which is typically used only on sites where you enter sensitive information. The secure site lock icon when closed means that the site uses encryption. Double-click the lock icon to display the security certificate for the site. This certificate is proof of the identity for the site. While checking the certificate, the name following "Issued to:" should match the site you are on. In the event of the names not matching, you are on a spoofed site and should quit.

What is 128-bit SSL?

SSL stands for "Secure Sockets Layer". It is a protocol designed to enable applications to transmit information back and forth securely. SSL is accepted on the world wide web for authenticated and encrypted communication between the computer and servers.

Identity theft could result from both offline and online fraud. Offline frauds occur as a result of theft of your mails, credit cards, debit cards, and cheque books. You should be cautious while receiving, storing and disposing information pertaining to cheques, ATM / debit and credit cards. Identity theft can happen even to those who do not shop, communicate, or transact online.

Can others on the internet access my information?

Only if a secure session is established and the information is encrypted during transmission, are you safe. However, some web browsers store information on your computer even after you have finished surfing. This phenomenon is called caching. Close your browser once you have finished surfing, especially secure sites to conduct financial transactions.

Disable active content

Web sites use scripts that execute programs within the web browser. This active content can be used to create "splash pages" or drop-down

you can prevent active content from running in most browsers resulting in limiting some functionalities and features of some web sites. Therefore, before clicking on a link to a web site that you are not familiar with or do not trust, disable active content

menus. These scripts are used by hackers to download or execute viruses on a user's computer. However, you can prevent active content from running in most browsers resulting in limiting some functionalities and features of some web sites. Therefore, before clicking on a link to a web site that you are not familiar with or do not trust, disable active content.

Safeguarding online trading

The risks involved in online trading are high. Brokerages have information about you and this information is under attack by fraudsters. To gain access to these databases, attackers may use trojan horses or other types of malicious code.

Tips to safeguard online trading

■ You should thoroughly check the brokerages you are trading with.

■ Check through offline methods about brokerages.

■ Check privacy policies of the site you are trading with.

■ Check about the legitimacy of the web site by checking their certificates.

■ Check your accounts regularly for any suspicious or unusual transaction.

Counterfeit Web sites

Often you are guided to fraudulent web sites via email and pop-up windows in order to collect your personal information. You can detect such web sites if you type the said URL into a new browser window. If it does not take you to a legitimate web site, or you get an error message, it is a fake web site. Never click on a link in an email to a site involving financial transactions. Either enter the URL by hand, or you will likely already have your bank, eBay and other such sites bookmarked. Use those links instead.

Some Downloading tips

■ Download programs from legitimate and trustworthy sites. Enter the program in a search engine to check whether the program has been reported for spyware issues.

■ Be cautious when downloading free music, movies, software, and surfing file sharing sites.

■ Read the privacy statements and licensing agreements of the software you download

■ Never enter financial information in pop up windows. ■

Pass the word around

Although its demise has long been predicted — and wished for by many — the password is still the most common form of identity authentication in use. At first sight, the use of a password for authentication seems straightforward and secure; but in practice the system has many limitations and inherent problems. We are forced to continue to use them for the foreseeable future, so in this article we will have a look at some of the problems and suggest some solutions.

The single most important problem, of course, is memorability. One person known to us, we'll call him John, can illustrate the worst way to use passwords. Until recently, he used exactly the same user name and password for any internet site that required registration. One day he wanted to look something up on a specialist knife site in the US. It required registration, and he used his usual login. Luckily for him, he very quickly discovered that orders were being placed using his eBay account for items to be dispatched to Africa. Also luckily for him, Ebay responded quickly in freezing his account and preventing any real harm from being done.

What had happened appears to have been this: the knife site had some kind of automated system that would collect user names and passwords and then try them out, against eBay, Amazon, banks and other such online stores. Once it found a hit, it then started making orders — probably by alerting one or more humans with the successfully stolen login information.

The first rule with passwords clearly has to be to differentiate between sites that involve financial transactions and any other kind of important personal information, and all others. For example, you may well need to register to access some newspaper sites, or other general information sites. These organisations request registration in order to keep a check on the number and types of people visiting their sites in order to give a better service. It hardly matters if you use the same login and relatively simple, easy to remember, passwords with these sites. There is usually no risk of loss of personal information that might lead to theft of goods or money.

However, the situation is very different with sites that involve financial transactions. These need to have strong passwords — that subject will be discussed shortly — and preferably a different password for each site. These passwords should also be changed at reasonable intervals. Make sure that you do not use the same password that you have for a transactional website for any other website — news, email, and so forth. Keep them secure, and do not write them down. Ever.

A strong password is one that is difficult to guess or search for automatically. The problem, of course, is that the stronger and more random a password is, the more difficult it is to remember. Simply using long words from your natural language is not good enough. You count this in different ways, but it is commonly considered that the English language consists of between one and two hundred thousand words. It does not take a modern computer very long to go through such a list. One email company had a reasonable attempt at improving on natural language passwords about 20 years ago: each password issued to users consisted of eight letters in pairs, forming four syllables. The structure was like this: "gedovozu". This was relatively easy to remember and was not part of any natural language set. Such passwords are suitable for use with low risk websites, but are not really strong enough for financial sites.

The strength of a password lies in its entropy, or randomness. A similar method to the one just described that produces much stronger passwords involves the use of mnemonic phrases — these tend to be relatively easy to remember, and highly entropic. For example, the phrase "Robert likes to have two sugars in his coffee" would yield "Rlth2sihc". That has nine characters, one is upper case, and one other is a numeral. This is much stronger than the more simple "gedovozu".

The entropy of a password depends on the number of possible combinations. If you just stick to lower case letters, a four character password has a total of 26^4 (26 to the power 4) combinations: 4,56,976. This seems like a large number, but a computerised search could zip through these in little time, and anyway, most combinations would be difficult to remember, and so would end up not being used. You increase the entropy by increasing both the number of characters in the password and the number of character sets from which they are drawn. So, a strong password should include at least eight characters, drawn from both upper and lower case letters, numerals and other characters, such as &, @, %, where permissible.

You also need to be protective of your password once you are satisfied that it is strong and have memorized it. In 2004, a survey was conducted at a London railway station in which people were asked for their password — presumably in the interests of scientific enquiry — in return for a chocolate Easter egg. 71 per cent cooperated. Of course, we cannot know how many lied, but even so this is a disturbing figure. It had been 90 per cent the year before, but then the gift had been an obviously more attractive cheap pen. There is no reason why you should ever give your password to anybody — that defeats the whole object of having a password in the first place. Some companies — utility companies have been known to do this, for example — ask for passwords over the telephone. Always refuse to comply. Never tell your password(s) to anybody.

It is well worth taking the trouble with financial sites to memorize a couple of passwords that are specifically difficult to remember — without any common phrase or letter combination. But what if you need to remember more than just a couple? Many banks nowadays are requiring two passwords — one for login and one for transactions — you also may well have more than one bank account, perhaps also a credit card account or two, and then there are shopping sites like eBay. It can soon become quite a list of sites that require strong passwords, and the last thing you want to do is write them down.

The present writer was once asked to help a colleague with a problem concerning his laptop. This was a senior executive in a publishing company; such people often consider technical writers to be extensions of the IT department. This chap's password for his email system was written in indelible ink on the outside of his laptop. That is the worst example, but also writing passwords down any where is a bad idea; a small piece of paper kept under your mousemat, or maybe in your wallet, and so on. Never write them down. Never.

One possible way of recording a multiplicity of strong passwords is in an encrypted file, produced with software such as WinRAR. With compression and archiving software such as WinRAR you have the option to password protect the file so that only somebody with the password can open it and view the contents. However, you need to use a strong password. A useful exercise to go through is to download password cracking software and try it out. This is software that is usually described as helping people who have forgotten their password. It will run through all possible combinations using the character sets and password lengths that you define.

Try one of these out with a file protected by a weak password; once you have seen how quickly this can be done, you will take much more care to use strong passwords in future. One further point with this method is that when you view the file, do just that and only that, and do not extract to disk unless you need to edit it and add something new. If you do have to do that, also make sure not only that you delete the file after it has been re-archived, but that you immediately create a new file of the same name and at least the same size in the same directory — this can simply consist of rubbish, and should ensure that the information in the file will be removed from the hard drive. You can immediately delete it. There are also utilities that you can download that will do this for you, when you wish to delete a sensitive file; they are probably more certain to delete all data, but the method just given should work on most occasions. And one final point, do not name your archive "my_passwords.rar" or anything even remotely similar! ∎

"There's flexibility and security and we are somewhat in between..."

Eugene Kaspersky is a leading expert in information security and the founder of Kaspersky Lab, a company producing anti-virus and other computer security products. He visited India recently, and Digit's Edward Henning caught up with him at his hotel in Delhi.

EH: You have described the situation with modern aeroplanes where the onboard networks can be attacked. The passengers' network which can connect to the internet is also physically connected to the pilots' network. How aware are the aeroplane manufacturers of this threat? And do they care?

K: We got this news about this mistake in the Dreamliner, the Boeing 787, and the first person who came to my office was our lawyer. I said, "Do you know of this news?" and I explained that there was a certain mistake and whatever. And he said "I can't believe it; this network has to be physically disconnected" — so our lawyer understands security more than these guys.

EH: You have described how operating systems are flexible and functional and therefore as a result are not secure. If you go out in the physical world, because of the threats of terrorism — that's on everybody's minds here in India right now — we are now prepared as members of the public to accept greater restrictions on our freedom in order to protect ourselves. Do you think a tipping point will come where we'll say "OK, stop Microsoft, we want really secure operating systems, we don't care if there's less functionality, we need security above and beyond everything else"?

K: Actually there are two sides; there's flexibility and security and we are somewhat in between and if the situation is getting more aggressive, if there are more attacks, such as terrorist attacks with airports for e.g., with more attacks they are getting less flexible and more secure. Like now to enter this hotel; you're not flexible at all.

EH: And that's a good thing

K: And the same is happening with operating systems. If you see that there are more cyber criminals, I think there will be not so much attention from the public. There is a cost to business, but others just don't recognise it as a serious problem. But if it comes to cyber terrorism, I think we will be forced to use more secure operating systems. But it doesn't mean that Microsoft will leave because by (using) default configurations you may make the Microsoft Windows secure, it will just not accept any other application but Microsoft's.

EH: Well, they have been trying to move in that direction for many years anyway.

K: There are companies that share our business, they configure their desktops, their windows desktops at enterprises in a secure way. But it is not possible to install any application

EH: So, what OS do you personally use?

K: MS Windows XP SP3. I even use Internet Explorer, but I have a special configuration for security, so I am safe.

EH: So many people are just complacent, they think it will happen to somebody else, it won't happen to them, it's very difficult to make people sit up and listen and take notice, is it not?

K: Now it's better because now people, they see, they know that at least some friend or friend of a friend lost some money or was badly affected, so now they pay more attention. The problem is that they do not pay enough attention in the social networks. They think in a community, they trust everyone in a community, they give out some data, some personal information — sometimes it's enough to develop a very dedicated attack or to have some serious affects on the person.

EH: But the whole idea there is to make your personal information available to as a wide an audience as possible.

K: Again, there has to be some kind of balance. If everyone is friends, you can publish anything you want. If there are criminals around, you don't publish any data. So you have to find a balance. I am not registered in any social network. Well, actually, I am registered in one, but when I came to publish some personal data, I just stopped and then I never used it. I don't even have my picture on it. Just the year of birth.

It's dangerous. It's very useful for people who live in cities because people just feel alone. So they need to have some community and this is the place for them. But at the same time...

EH: On another subject, correct me if I'm wrong, cloud computing as described by many

companies seem to be a huge increase in security risk. Have all my data, my processes, my applications and put it out there in the big wide world, it strikes me as crazy, what is your opinion on this?

K: If there is some expensive application which you don't need regularly, just rent it. It will work. e.g., taxation software once a year. Last year there was a very curious story, a Microsoft patch upgrade which had a bug and which stopped financial taxation software in Germany. And that happened just before April 1st, the last day of taxation, and after that there is penalty. The most popular software stopped working and that was a very, very big scandal in Germany. There were many complaints about Microsoft. Some services will be online and some will be end point.

EH: One service that has to be online is regular updates. Now, is that not a vulnerability in itself?

K: Actually this service is not; I don't want to call it online, because you download anyway, so its stored locally. You send some data there and they report to you if it's dangerous or not. So the decision maker is offline. Not offline is remote. And about the updates, if they are a risk or not, there was an incident with some anti-malware product when there was a fake update and there was a serious problem with a company which infected computers through the update.

EH: The risk is always there. If you step out of your front door, you are always at risk.

K: Especially if you do it regularly!

K: I read that your mobile security now incorporates functionality to wipe the phone if it's stolen or something like that. Now, does that not include some risk of you know if I am using my phone and suddenly it goes wrong and it gets wiped?

K: There is a password which you can set yourself so you can use it as complicated a password as you like and if you use a secure password it's very unlikely that someone will ... it will take like 1 billion SMS messages to brute-force the password. That's impossible.

EH: You mentioned in your response there the use of a password as an authentication device. It's getting increasingly difficult for people out there even to know what a strong password is and then to remember them; you know you have your bank, banks now want two passwords, one for logging in and one for

I use MS Windows XP SP3. I even use Internet Explorer, but I have a special configuration for security, so I am safe

transactions you make. You may have two banks, a credit card, it's getting increasingly difficult for people to manage it without writing the wretched thing down, which I think is the biggest security risk you can make with a password. Do you have any particular advice on password management?

K: What I do, the numbers, like pin codes, it's hidden somewhere in my address book of my mobile phone. So it's just some contact; it's built in and its quite secure, I mean if it's stolen or lost they can't recognize which contact is real and which is not and where these digits are located. That's secure ... I think that's secure. So they have to steal at the same time, mobile phone and your card. But in this case you can call bank to ask someone to help you.

For the passwords, make it in such a way: if something really important has happened in my life especially if I need to create a new password; I'd like to add some name of a place or name of a person which I will remember for sure; some digits like the date it happened but put in a different position. It's easy to remember, so even if the password is lost, you forgot it, just remember the place you were the moment you developed the password and in which way you use digits and other letters. It's easy to remember.

EH: Unfortunately, regarding these methods, many banks are now using a virtual keyboard which only allows lower case and only allows numerals, this is introducing restriction and forcing passwords to be less entropic.

K: What the malware does; it makes a snapshot of the screen.

EH: So you like to have a long password, that has meaning to you?

K: At least 10 to 12 letter/digits. Then also I have another way for the non-Latin alphabets; in India do you have two alphabets? Latin one and Indian. So just hear some phrase in Indian and type it on the keyboard. Probably one of the best ways to write passwords is to type a sentence which is not English, using the second alphabet, but having the keyboard switched to English. It will be a mess. It will be a very, very strange combination of letters and digits. For example, if I type my name *(types on keyboard)* it will be *(more typing)* — I'm just typing my name in Cyrillic, and switch the keyboard. It's easy to remember but this is a mess. And the best way to protect your credit card or to protect your computer — just have a sticker with the wrong password on it. Or write a wrong number on your credit card. Let them try. ∎

The tech that powered EVIL

As we recover from the horror of the Mumbai attacks, we are now horrified by another thought: how did this gang get the technological one-up on our forces? And how must the good guys fight them?

Agent 001

It's been all over the news — "Mumbai attacks reveal sophisticated use of technology", "Gunmen used technology as tactical tool", "Mumbai terrorists more tech-savvy than the police" — but while the mainstream media winds up portraying these terrorists as the evil geeks you only see in movies, or saying that the technology is to blame, the reality is that these terrorists just got creative. What they really did was to combine some simple tech, and use it to deadly effect.

The Tech:
GPS and Google Earth

What they used it for:
Navigating their way to India, planning the attack, getting around Mumbai (likely).

How it works:
In concept, the Global Positioning System (GPS) is pretty simple. You ask your GPS receiver where you are, the receiver asks a satellite, the satellite sends back an answer, and there you go. In reality,

however, this is considerably more complex.

Firstly, it isn't the satellite that is calculating the receiver's position, it's the receiver itself. Secondly, GPS doesn't need *a* satellite, it needs at least four. There are around 32 satellites in orbit dedicated to GPS, so finding four usually isn't a problem. Your receiver monitors the four strongest signals that it receives — signals that contain information about the satellite's own orbit, and the rough orbits of other satellites. It then uses the time it took for each message and calculates its distance from the satellite. Finally, using a method called *geometric trilateration* — for which it uses the orbital information for the satellites — it calculates its position on Earth.

Google Earth uses photos of the Earth taken by satellites, and slaps them on a virtual sphere. The result, as you've already seen, is a virtual world that you can tour on your desktop. Want to see a top view of Everest? It's there.

Fighting it

It's safe to expect that the Google-Earth-national-security issue will be dredged up again, and we wouldn't be surprised at a few demands to ban the software itself.

There might even be a similar outcry against GPS, but that won't last long. The bottom line is that both these technologies have caused more good than harm, and it would be a crying shame to limit them in any manner. GPS is an important tool on aircraft, ships, cars, and now even cell phones. And because a GPS device doesn't send any personal information to the satellites, it's impossible to tell who's using which device.

The smarter plan? Master both and use them to plan counter-terrorist activities.

Niagara Falls? The Pyramids? The Taj Mahal? There, there, and there. It also has GPS coordinates, so if you were to feed them into your GPS receiver, it'll give you directions on how to get there from where you are.

Why it's "evil":

GPS and Google Earth are powerful technologies on their own, but when combined, make for an excellent planning tool. A GPS receiver will give you directions on how to get there, and Google Earth shows you what you'll see when you get there. While you're on your way, GPS receivers can't show you visual landmarks, but Google Earth can. And most importantly, when you're on a little boat on its way to Mumbai, and don't really know the way, GPS will let you navigate there easily.

Google Earth has long been criticised by several world leaders — former President A. P. J. Abdul Kalam, among others — for revealing the locations of important military installations across the world. In the US, Google has been asked to obscure important locations such as the White House, and mysteriously, the residence of former vice-president Dick Cheney. The argument was that Google Earth could potentially be, well, a tool in the hands of terrorists.

The Tech:
BlackBerrys

What they used it for:
Coordinating with each other, tracking news via GPRS

How it works:
General Packet Radio Service (GPRS) is another technology that's been around for ages, and is relatively simple in concept. It uses the same signal that your voice travels on when you're on a call, only with a few variations to make data transfer faster.

When you're talking with someone (or "exchanging voice information"), all the data that comes and goes from your phone is *circuit-switched* — all the "packets" of data travel in sequence, and on the same frequency. This is important, because you want people to hear you say "hello" and not "lohel". When you're surfing the Internet, however, this isn't as important — you want

your data to reach you as fast as possible, through as many routes as necessary, and your phone will take care of converting all the lohels to hellos. When you request data over your mobile network, your provider sends it to your phones on all the frequencies your phone can access, but not in order. This is called *packet-switching* — each antenna on the network decides the best route for each packet, so each packet takes the fastest possible route to your phone.

Why it's "evil":
It isn't. But you know that already. Having an Internet connection on your phone is about as evil as having a computer at home. Some sites have emphasised the BlackBerry, as if it were a deadly tool in the wrong hands, but really, it's just an innocent device with its name being dragged through the mud. It could just have easily been Nokias or Sony Ericssons in that boat.

There have, however, been concerns regarding the BlackBerry e-mail service. In India, communication technologies are required by law to allow for "lawful interception" — if the government suspects you of unsavoury activities, it needs to be able to monitor your phone, e-mail and other means of communication. The BlackBerry service, however, doesn't allow for such interception, which is why security agencies wanted to ban it. An e-mail service that cannot be monitored could be a great tool in the hands of terrorists, they said.

Supposed security risks aside, there is no evidence that suggests that Mumbai terrorists used their BlackBerrys for e-mail.

The Tech:
Remailers

What they used it for:
Telling the media that they were responsible, without being traceable.
How it works:

★ PARANOIA REMAILER HOWTO
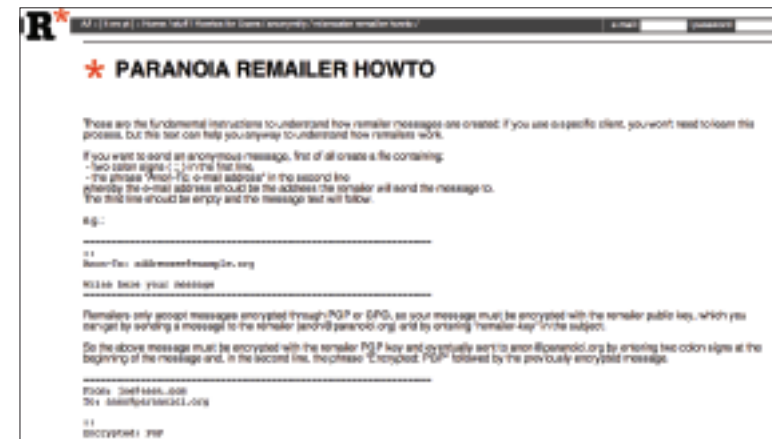
When you don't want the recipient of an e-mail to know where it came from, you first send it to a remailer, which strips the e-mail of all your information, and then sends it on its way, complete with dud reply-to address. They're supposed to make your e-mail anonymous, but there's no such thing as purely anonymous on the Internet — there's just harder to track. And depending on how hard-to-track you want your e-mail to be, you can use one of three types of remailers.

The *pseudonymous remailer* is the simplest — it replaces your e-mail and IP addresses with its own and sends your e-mail. No complex encryp-

tion involved, and the recipient can even reply to the e-mail, which will reach you through the remailer. And of course, because it's so simple, it's easy to tell where an e-mail really came from.

For more secure e-mail, you need a *cypherpunk remailer*, to which you send an encrypted e-mail, which the server then decrypts and sends to the recipient. It's more sophisticated than just hiding your name and IP address, and to make your e-mail even harder to trace, you can have it go through two, three or four remailers. Anyone who'd want to trace your e-mail would have a formidable (though still not impossible) task ahead of them.

And then there's the *mixmaster remailer*, which adds to the goodness of the cypherpunk, and even needs you to have special software installed on your computer. But this isn't entirely anonymous either, but was designed to make it really difficult and time consuming for anyone to trace e-mails.

Why it's "evil":
All right, so this one might qualify as a little evil. People use remailers to cover their tracks, and any activity that involves track-covering can't be good.

The Tech:
VoIP phones

What they used it for:
"Phoning home" and getting orders from their handlers

How it works:
Voice over Internet Protocol (VoIP) telephony has been around since the first days of the Internet, and it's simple enough too — it uses your Internet connection to transmit voice between people. The problem with the Internet, however, is that it's a packet-switched network, which means that packets of data don't reach their destination in the right sequence. With voice, of course, this will not do at all – which is why several technologies had to be developed to ensure that voice travelled the pipes without any problems.

Skype, for instance, uses its own proprietary technology to make sure that voice reaches you fast and clearly.

Why it's "evil":
Several governments, including our own, already hate VoIP for robbing the telecom sector of all the money they could make on international calls. But that's hardly the point. The real problem with VoIP is that it's considerably more secure than cell phones. Calls made from VoIP phones can only be traced to the point where they get converted from regular voice data to Internet data. Once the data enters the Internet, it bounces around servers across the globe before it reaches its destination. Worse, even if you find out which number the call was made to, determining its position can be a pain. The recipient of a call could have a New York phone number, but could still be in the room next to the caller, which is why terrorists seem to love it.

For a few years now, the FBI has been issuing warnings that militants have been using

Fighting it

While VoIP calls are difficult to trace and tap, they aren't impossible. Unfortunately, these can be time-consuming processes, and in a situation like Mumbai, we can't afford that time. To make its job easier, the FBI is pushing for a law that will require VoIP service providers to build backdoors in their software, which law enforcement agencies can use to tap calls when necessary. The same laws already exist for telecom providers since 1994, when the FBI's surveillance activities were thwarted by new technologies like call forwarding and cell phones.

The only good thing that emerged from the terrorists using VoIP phones was that the digital trail could potentially lead the authorities to their handlers. If the group was more reluctant to use phones while they conducted the attacks, the trail would have ended at the last terrorist alive.

Open source terrorism

The Mumbai attacks are part of a disturbing trend that experts are calling open-source warfare. Unfortunately, it doesn't mean that terrorists are releasing their plans to the public – they're using technology and the philosophies of open source software to wreak havoc. The scary thing about this scenario is that terrorist outfits needn't start with the big organisations like the Al Qaeda – all it takes is a single terrorist.

The open source philosophy: release often, even if the software is buggy
The terrorists' corruption: attack often, even if there isn't a concrete plan

The open source philosophy: recruit as many developers as possible
The terrorists' corrpution: recruit as many "warriors" as possible

The open source philosophy: use solutions that have worked with other projects
The terrorists' corrpution: find out how other outfits are bypassing security

VoIP for their activities, and a report in October last year highlighted that the Taliban was using Skype to keep in touch. The problem? To ensure that your voice calls aren't overheard, VoIP providers build secure, proprietary technologies that make it very difficult for hackers to eavesdrop on your calls. Naturally, it also becomes difficult for the law to tap these calls.

Waking Up

With prior terrorist attacks, finding the perpetrators was a matter of some old-fashioned police work. It was slow, but let's admit it — a few days after the blasts, it was only the police who were frustrated. We just returned to our daily lives — a little rattled, but our shock swiftly gave way to the stress of everyday existence. These attacks, however, were different. For three days, we sat glued to our TVs, horrified, helpless, frustrated, angry, imprisoned. After watching so many movies and shows where the good guys use sophisticated technology to overcome terrorists in minutes, we were shocked that our police force was so ill-equipped. While the terrorists knew the hotels in intimate detail, our forces didn't even have night vision goggles to navigate the dark corridors. While the terrorists kept in touch with each other and their handlers using cell phones and VoIP, our forces didn't even use walkie-talkies to coordinate their counter-attack. The snipers stationed outside the Taj couldn't open fire, because they couldn't tell whether they were looking at terrorists or hostages. Because their rifles didn't have telescopes.

If you've played "realistic" games like *Counter-strike* and *Rainbow Six*, you probably thought that you and your clan could have done a better job with the situation. Quite likely, but you'd have to consider that you'd be using real guns, and there's no starting from a save point. But we digress.

Now, home minister P. Chidambaram has announced a massive overhaul of our security system, though we still don't have details on what that will be. We are assuming (and hoping) that this overhaul includes updating our forces' tools, and training them on all the technology they'll need to take down any terrorists. As for the technologies themselves, the debate still rages.

Even if you were to believe that technology was the villain here, where do we go from here? Will we see bans on mobile phones and GPS receivers? We must face the fact that even innocuous, everyday technology can be used for malicious purposes, and focus instead on using that same technology against the terrorists. ∎

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Digital Rights Management

A necessary evil or an evil that's not necessary?

Terry Relph-Knight

Digital Rights Management (DRM) refers to any scheme used to protect the copyright of digital content using a system of encryption that often includes remote monitoring and control by the copyright owners. The development of the various forms of DRM has largely been driven by the large media companies as a response, they say, to the effect of large scale copying on their revenues. Rather than rely on the passive protection of copyright law these companies have gone on the offensive with active digital rights management.

DRM encompasses a range of embedded software and hardware measures for all digital media that attempt to physically stop unauthorised use and copying. Since DRM at least appears to be a method of enforcing copyright, any discussion of DRM must include a discussion of copyright itself.

The advantages and disadvantages of DRM for the copyright owner and the consumer and the legal, ethical and ideological issues surrounding DRM are by no means clear. In this feature we explore the ins and outs of DRM as they stand today.

The history of information protection and copyright

It may seem that only in the digital age has the protection of data become a problem, but means have always been sought to protect valuable information. The ancient Greeks formed groups that protected their knowledge of physics and geometry by keeping it secret. Secrecy was enforced by ritual and the threat of punishment.

In Europe, in the middle ages, the knowledge associated with various crafts such as gold working was treated as being of great value and was kept secret by organisations known as guilds. These trade guilds flourished between the 11th and 16th centuries, although some of them have survived in attenuated form until today. Similar guilds, known as Shreni and Benin, operated in India as long ago as 300 C.E.

This simple principle of secrecy is still a part of the protection of information today and it ranges from the secret keys used in encryption to proprietary methods and information.

At least until the invention of the moveable type printing press by Gutenburg in 1439, books, paintings and musical performances could be copied, but almost as much knowledge, skill and effort was required as was needed to create the originals. This difficulty in itself provided a fair degree of protection. This illustrates that very often just making something difficult enough to copy provides enough protection, at least for economic purposes.

The first UK laws on copyright on books and other writings were laid down in 1710 with the Statute of Anne, apparently prompted even then by the piracy of printed books. Copyright law in India was first introduced in 1847 under the East India Company's regime.

Relatively recently actions have been taken to attempt to bring copyright laws up-to-date, so they are better able to deal with the issues raised by digital technology. In 1998

Ashwini Baviskar
Photograph: Jiten Gandhi
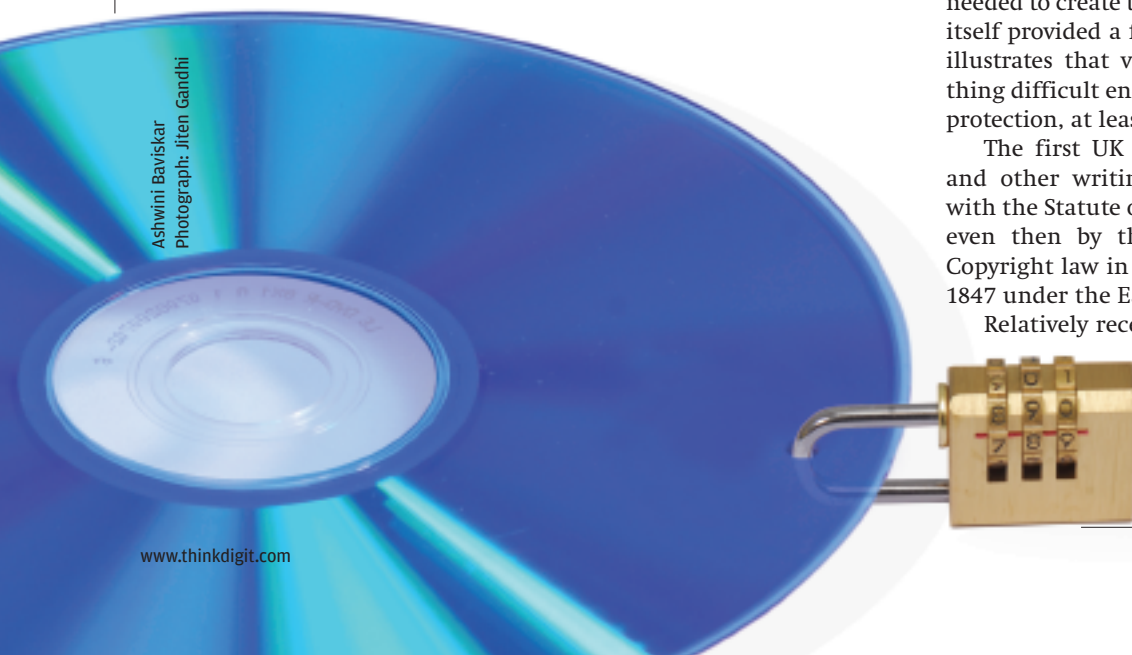
America passed the Digital Millenium Copyright Act (DMCA), an act that apparently criminalises the circumvention of DRM protection, even when there is no infringement of copyright itself. In 2001, the European Parliament passed the European Union Copyright Directive, which addresses some of the concerns of the US DMCA, but leaves one of its principle issues, that of limiting the liability of ISPs to prosecution, to the separate Electronic Commerce Directive. The original form of the DMCA, which illustrates just how convoluted such things can become, appeared to make cryptographic research illegal.

In 2006, the Indian Copyright office posted proposals to amend the Copyright Act of 1957 (last amended in 1999) on its website. One of the proposed amendments seeks to introduce the issue of Digital Rights Management (DRM) into Indian copyright law along the lines of the DMCA.

All of these methods of protection are primarily passive and defensive. Digital technology has finally made it relatively easy for copyright holders to protect their property by active and offensive means. At their most extreme, these measures make it possible to automatically punish anyone who exceeds the limits of the copyright and may no longer adhere to legal, but to almost arbitrary limits, chosen at the whim of the copyright holder and further, to analyse, manipulate and control its customer base.

A further difficulty for the international media companies is that copyright law varies from country to country. In some countries it is perfectly legal to make multiple copies 'for personal use'. The term 'fair use', it seems, is often mis-quoted; in the US it refers to the right to quote short exerts of a copyrighted work for the purposes of commentary, criticism, news reporting, research and other similar purposes. The Digital Millennium Copyright Act (DMCA) has actually reduced the scope of 'fair use'.

Prosecution of the owners of web sites supporting peer-to-peer networks offering access to illegal music downloads is hampered by the imprecision of current copyright law. Peer-to-peer technology itself is not illegal and the argument centres around whether simply making copyright material available, in a way that makes it easy to copy, can be deemed an illegal act. This has led in some cases to big media making highly publicised prosecutions of individuals they suspect of having made large numbers of illegal downloads.

The arguments over copyright oscillate between two extremes: making any copies of any kind of a copyright work is an infringement of copyright, or — copying of a copyright work by an individual who has paid for a copy, into different formats in order that that indi-

vidual may make use of the work, is reasonable and permissible. The problem with the first position is that digital technologies routinely make copies as part of their function, for example when reading a web page, the page is copied or cached.

Piracy and the big media companies

The big media companies seem to refuse to believe that falling sales are anything to do with natural market cycles, or changes in society, or to accept that just possibly their own reactionary business practices — diminishing interest in developing new artists, reliance on a few guaranteed high return headliners and re-selling old back catalogue as re-mastered on new media — have caused loss of interest. Instead, they say, it has to be piracy that's bleeding the life blood out of the already moribund industry. Around eight years ago music industry analysts noticed increasingly sharp drop off's in sales, following the release of a new CD. In the nineties, second week sales would typically fall by less than 25 per cent. In 2002, second week sales were dropping by over 40 per cent. The music industry took this as a clear sign that small scale piracy — people making copy CDs for their friends — was responsible. This is despite the fact that the same argument — that sales of vinyl LPs were suffering because people were copying them to tape — had been used to raise an indiscriminate blanket tax on blank cassette tapes, back in the 1970s at a time when the music industry was experiencing rapid growth. In India it seems the cassette tape actually created a booming market for pop music.

As we reported in a previous feature (February 2007 issue) on peer-to-peer technology, it has been suggested that DRM should be abandoned and a similar tax or rather levy (to be accurate, a tax is imposed by government, while an industry administered surcharge is more properly called a levy) be placed on broadband connections and recordable CDs, DVDs and BDs. As with many such taxes, or levies, this might be seen as unfair to those who do not indulge in the taxed behaviour.

What's wrong with DRM?

If DRM was always completely transparent to the end user, was not intrusive, protected copyright in a fashion that all agreed was fair and did not add cost to media hardware, perhaps no-one would find it objectionable. Various media companies have already applied almost draconian measures

A further problem with DRM is that of interoperability, that agreeing on and using a standard form of DRM is not always in the media companies interest. For example, this is true of Apple iTunes because of Apple's agreements

with the content providers that iTunes downloads should not be easy to copy.

Some music download sites use license validation servers which validate a users right to play tracks they have downloaded. There have been several recent examples of music download sites closing down with the result that many users are left with tracks they have paid for but can no longer play because the validation servers are no longer available.

DRM adds complexity and expense to products that implement it. Although adding encryption to individual protected copies costs little, after all a necessary requirement from the replicators and copyright holders, it does affect both hardware, in the form of media players and software in the form of operating systems. A considerable amount of Microsoft's development effort for the Vista OS went in to implementing DRM to the big media companies' satisfaction. Vista incorporates what Microsoft call a Protected Environment (PE) to protect High Definition content. This creates a corridor through the operating system called a Protected Media Path (PMP), which, in theory, cannot be broken into. Device bus communications (which are accessible to users) associated with this process, are encrypted.

DRM has a negative effect on open source development, particularly on projects that are dedicated to pure open source, because all DRM involves proprietary methods and code. At present, playing protected Blu-ray content on a Linux box requires use of a device or player key, none of which have been issued for open source software players. However the keys for the X Box 360 and all of the popular Windows software players are now public knowledge and can be used by Linux players.

Open source opponents of DRM are often the most rabid. The Free Software Foundation (FSF) runs 'Defective by Design' campaigns and recently launched such an attack on Apple because the new MacBooks incorporate Apple's DisplayPort connector, which includes the use of the optional DisplayPort Content Protection. Mac owners connecting an older Apple Cinema Display to view an iTunes movie will see an 'unauthorised display' message.

Perhaps the biggest disadvantage of DRM to the media companies that implement it is the alienation of customers and the bad publicity it has so far caused.

DRM in action

The exact form of DRM used depends on the media format and even on the distribution method. Music distribution is moving towards compressed audio file download over the internet, although audio CDs still form a large part of sales. Movies are still mainly sold on disk, either DVD or Blu-ray, and broadcast video is

distributed via terrestrial transmission, satellite or cable. Video is appearing on the internet, but for high quality video download or streaming to become a viable reality, a huge increase in bandwidth and capacity will be required. ISPs are already complaining that streaming services, such as the BBCs iPlayer, are causing network congestion.

It has been said that, despite trumpeting the high quality of CD Audio when it was first introduced, some elements of the music business always felt nervous about providing the public with studio quality recordings that could be copied digitally with absolutely no loss in quality.

Music downloads – Apple iTunes

Apples iTunes is one of the most well known and arguably most successful, of the digital music download sites. It exists mainly to act as the service site for the various versions of Apple's portable music player devices, such as the iPod and iPhone. iTunes client software is bundled with every iPod sold. Apple iTunes uses the Advanced Audio Coding (AAC) format for its downloadable audio files. AAC is a lossy compression format intended as the successor to MP3, that has been standardized by ISO and IEC, as part of the MPEG-2 & MPEG-4 specifications. The MPEG-2 standard contains several audio coding methods, including the MP3 coding scheme. Apple iTunes is an application designed to run on an internet-connected PC running either MS Windows or an Apple Mac OS (note there is no version for Linux, although it can be hacked). Apple uses a version of AAC that includes its proprietary DRM extensions it calls FairPlay. This puts iTunes subscribers in the peculiar position of downloading AAC files, with FairPlay DRM extensions, which will only play on their registered version of iTunes on their computer, on an iPod or on an iTunes capable phone. However it is possible to burn the AAC files to a CD-R as MP3 files. The

FairPlay DRM is lost during the process, so the MP3 files will play on any MP3 player. This means that anyone with even minimal computer skills can bypass the Apple iTunes implementation of DRM, admittedly with some possible loss in quality.

Apple adopted FairPlay in order to convince its content providers, the record companies that own the mechanical copyrights to the music recordings, that the revenue stream would be protected and that iTunes would not simply expose music tracks to wholesale copying. Comments made by Steve Jobs indicate that Apple would happily drop FairPlay, or any form of DRM, if the record companies would agree. So far Apple has had to put a fair amount of effort into protecting FairPlay just to keep its content providers, the record companies, happy. Other music download companies, such as RealNetworks, have made attempts to sell music files from their sites that will play on the iPod and other Apple devices, in effect files containing cracks of the FairPlay system. Apple has taken action against this, because if it doesn't it could upset its content providers and find itself open to prosecution by the Recording Industry Association of America (RIAA).

Despite all this, in April of 2007, EMI announced it would be dropping DRM for its online music sold through iTunes and Apple has quite recently started offering some files for download, albeit at a higher price, that have no DRM protection.

DVDs and CSS

The DRM system used for DVDs is called the Content Scrambling System (CSS). Introduced around 1996, it uses a relatively weak, proprietary 40-bit stream cipher algorithm. The weakness of the cipher is due, in part, to the US government regulations in place at the time the scheme was drafted, which prohibited the export of cryptographic systems using keys greater than 40 bits in length. A further structural weakness in the CSS encryption algorithm reduced the effective key length to only 16 bits, making it very easy to break. In fact this cipher was broken fairly early on and many programs are available for download that will strip out the encryption and produce a disk image for burning a copy.

All DVD players or drives include a CSS decryption module and the lead-in areas of all protected commercial DVD disks contain some encryption keys. These keys are stripped inside the drive during playback so a byte-for-byte copy made of the data stream output from a drive playing a commercial protected disk will not play back because the encryption keys aren't reproduced. All the CSS DRM is capable of doing is to provide weak protection against people copying commercial movies.

DRM & Audio CDs

In 2005, the Sony Bertelsmann Music Group (Sony BMG) included a content protection plan on its music CDs that was intended to stop consumers from using a computer fitted with a CD writer from copying Sony BMG music CDs. This caused something of a stink because, not only did the Sony BMG content protection involve planting rootkit code deep inside a PC's operating system, but it opened up a vulnerability that could be exploited by malware writers. Eventually, under pressure from various lawsuits, Sony BMG was forced to recall all the affected titles. In Europe in 2002, BMG had already caused an uproar by releasing copy protected titles that did not even carry a label stating that the CD incorporated copy protection.

Sony BMG employed two types of content protection software: Extended Copy Protection (XCP) and MediaMax CD-3. 52 titles were released with XCP and 50 titles were released with MediaMax. When a PC running a Windows operating system attempted to play one of these titles the Sony BMG software was triggered and would display a EULA message offering the user the option to install a custom Sony BMG player. Apparently the XCP software would install what came to be known as rootkit software, even before the EULA message was displayed.

Other criticisms of the Sony BMG software were that it ran as a constant background task, consuming system resources, it had no un-install and could not be easily removed and that it caused instabilities leading to 'blue screen' crashes. Although Sony BMG did eventually release a supposed removal program, this software was ineffective and actually made things worse. These are the kind of problems that have led to all content protection and DRM getting a bad name.

In August 2000, in describing how serious Sony was about the copying issue, Sony Pictures Entertainment US senior VP Steve Heckler, told attendees at the Americas Conference on Information Systems. "The industry will take whatever steps it needs to protect itself and protect its revenue streams ... It will not lose that revenue stream, no matter what ... Sony is going to take aggressive steps to stop this. We will develop technology that transcends the individual user. We will firewall Napster at source — we will block it at your cable company. We will block it at your phone company. We will block it at your ISP. We will firewall it at your PC ... These strategies are being aggressively pursued because there is simply too much at stake."

Another, perhaps rather revealing comment, reportedly made by Peter Lee, an executive at Disney, was "If consumers even know there's a DRM, what it is, and how it works, we've already failed,".

Sony BMG was not the only record label to release copy protected CDs. For example, Reprise Records, a Time Warner company, issued copy protected CDs.

Blu-ray, Advanced Access Content System (AACS) and HDCP

In theory and to the casual user, HDCP's combination of protected hardware links with encryption handshakes makes it impossible to copy. However the system can be attacked in two ways, either using a stripper box to extract the raw decoded signal, or by physically accessing the encoded data and decrypting it in software. A stripper box consists of some HDMI connectors wired to a circuit containing an HDCP decoder chip, something like the Silicon Image HD Fury chip. The problem with this method is that the particular key used can be remotely disabled by the key revocation tables issued on new media by the content providers. Decryption of the signal is not as difficult as it might have been because the economic burden of building really strong encryption into the hardware was felt by the hardware manufacturers to be too high.

Blu-ray disks and players use Advanced Access Content System (AACS) encryption; however as of August 2008 all current AACS decryption keys are available on the internet. BD+ and BD-ROM Mark are other encryption schemes that may be applied to Blu-ray and are tougher to crack than AACS.

Applications software

It's perhaps overlooked, but most commercial applications software has increasingly restrictive DRM based on a challenge and response scheme. Installation requires entering a serial number that ships with the product. This generates a further code which must be exchanged with the software vendor, either over the internet, or by phone, for a final unlock key. The installations are usually locked in to the PC the software is installed on and the maximum number of installs without further permission from the manufacturer is often limited. This system allows the software vendor to gather certain information about its customers.

Software End User Licence Agreements (EULAs) often state that you, as the end user, don't even own the physical software copy and documentation, but have only purchased a licence to use the software within the very narrow limits of the EULA, which the manufacturer and copyright owner may decide to revoke at any time. The final insult is that most software manufacturers include a clause in the EULA which says that they do not guarantee their products to work and that they accept no responsibility for any negative consequences that may result from its use.

In conclusion

It's an accepted fact that rarity increases the worth of almost anything. If something is easily copied it is often regarded as being of low value. Also it seems that the ease with which something may be copied is directly related to the respect with which copyright is treated. Because digital assets, in particularly at the moment music tracks, are easy to copy, it has lead to music in general being devalued. Amazingly, many younger people seem to believe that music recordings should be free. What they do not seem to realise is that musicians, like everyone else, have to make a living. The eventual result of placing no value, or even a very low value, on music, or any other art form that can be recorded and copied, is that soon few will bother to make it. There will be no more, or at least very little, new music.

So despite their inconveniences, there is an argument for effective forms of DRM and the inconveniences of the current forms of DRM may well be short term. For example, at the moment PC owners, depending on the age of their machines, may need to update more components than just an optical drive to be able to play Blu-ray disks, purely because of High Definition Content Protection. As this technology finds its way onto the market and into new PCs this problem will go away. ■

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Social engineering

Aditya Madanapalle

Watch out for those millions of dollars from Nigeria waiting for you...

Security systems tend to be compromised by attacks on their weakest points. For an individual, security on the computer means a firewall, an antivirus software, and a password requirement for all critical activities. For a company, the security setup is far more elaborate, with some kinds of physical measures on the doors, multiple passwords on the systems, and constant monitoring by the system admins. All these measures are useless if the people within the system are careless, irresponsible or unaware of the dangers. Therefore, the most common attacks are targeted at the people. Social Engineering is an umbrella term for a variety of methods and tactics used by cyber criminals to achieve their ends. This may vary from harvesting databases, stealing credit card information or simply causing a nuisance. This breed of cybercriminals exploit human gullibility, and are analogous to con-artists in cyberspace. Their methods are constantly changing, their approach mutating to the requirements of the job, and sometimes, they just cause trouble to practice and polish their skills.

The most common scam is contrary to common social engineering methods. This requires no research about the target, but still has a surprisingly high yield rate. Have you ever won a lottery that you never purchased a ticket for? If so, you have been attacked by a social engineer. Most of these scams originate from Nigeria. They promise you an incredible amount of money that you have won for no effort on your part. The premise for this may vary. Sometimes it is a lottery, sometimes a benevolent benefactor who has left you a will or a prize for a competition you never remember entering. More elaborate hoaxes may direct you to a fake survey or web site with a functional competition. Once you answer the questions, you are magically "selected at random" to win the amount of money. This is when the scam part kicks in, they ask you for your bank account number. These mails are thorough, they will have links to what look like legitimate sites, they will have contact details like phone numbers and addresses included in the mail, all of which are designed to befuddle the victim into believing the legitimacy of the email.

Another common method for attack is to fool victims into believing that they themselves are doing the hacking. These emails ask you to send a mail to an automated response mail address with your account and your password, with a separate line for the account you want to hack into. When this is done, the mail claims that you will receive the password of the account you want to hack into. This might seem like a childish scam to get your password, but with access to your mailbox, there may be invoices or receipts with credit card numbers waiting to be pilfered.

Phishing is yet another form of social engineering. There are two kinds of phishing attacks, generic and spear phishing. The victim receives a mail in the inbox, which directs him to a web site that he is familiar with for some kind of process. The excuse varies from confirmation of the address or verification of details to a breakdown in a system and a re-entry of the required details. The link will be a small and unnoticeable alteration in the URL of the legitimate site. Once here, you will be asked to enter the account and password to the web site, but you are not really in the web site. Instead of www.yourbank.com, you will be directed to www.your-bank.com. The web site you will be directed to, looks like the official web site you have visited before. Citibank is one of the biggest targets of such attacks. Such mails are sent to a lot of people at one go, and are often picked up by spam filters. A more malicious form of a phishing attack is a highly focused form of phishing, where individuals or the employees of a single company are targetted. Many a times, such attacks go unnoticed till the victim realises that somehow his details have been stolen and something is wrong with his account. Another form of critical activity puts the onus on the user to mess up. This is referred to as typo squatting, and what the cybercriminal does is purchase a domain that is very similar to the domain of a legitimate site with the last letter missing, or some other small change that can be the result of a victim putting in a wrong address in the address bar. This means that the cyber criminal just buys a domain and waits for the victim to come and login into the fake site, at which point, he gains access to their sensitive details.

Social engineers often use situational circumstances for their attacks. Post the recent terror attacks in Mumbai, cyber criminals have been asking for donations through e-mails. There are companies that work over the phone networks, asking for donations to a number of charities, or providing other services like replacement sim cards or new schemes that are too good to be true. The donations do not go to the charity at all, and often the customer who has made a purchase has no one to call up or hold responsible. Once the payment is made, the new sim card or scheme never shows up. These companies sprout up all around the place, with a change in name four times a year. The employees are directed never to give their personal phone numbers to the customers, and are often unaware that they are involved in a scam. These setups are elaborate, with a proper office space given to employees, and a motivational session every morning with excercises to increase the yield.

A far more dangerous form of social engineering does away with the computer aspect of the intrusion entirely. The attack is directly on the people and the company. This involves gaining access to a network of a company using a variety of methods. Two common approaches are dumpster driving and shoulder surfing. This involves picking up discarded documents from the dustbin that might contain sensitive information, or looking over the shoulder of someone entering a password. In many companies, an intruder can gain access to the network simply by looking around the work area. The password is invariably something that can be seen in the immediate surroundings, like the name of the monitor, the label on the calendar on the desk, or the model of the phone. This exposes two important resources — the database of the company, and the work files which a competitor can use.

However, this is not as simple as that, there are many exotic strategies how this can be achieved. One group of testers just dropped USB drives containing a trojan in the parking lot of a target company. The employees picked up the drives, plugged them into the computer, and the passwords were mailed to the testers. A seasoned security expert was not getting access to his network, so he called the helpdesk, and the person there did not ask for the password itself, but asked which passwords he had tried. This exposed all the passwords he used for his bank account, his e-mail address and a number of other sites. Even seasoned professionals can get easily deluded by such attacks. Bit-for-bit, databases are the costliest data around, and the stakes are high. Attacks can come from anywhere, from the phone lines by people pretending to be in authority or from the snail mail asking for confirmation of on line records as a failsafe, which many fall for as it looks authentic.

Social engineering is not used by cyber criminals alone. More and more, advertisers are resorting to it as cyberspace is a huge and open advertising landscape. A trusted member of a forum or a friend on a social networking site may be in the pay of an advertising firm working in tandem with a company waiting to reap profits. Their methods of influence are very subtle, and far from illegal. A simple link in the right place and positioned in the right manner can gain a lot of revenue for visits. A well placed post on a forum can change the direction of the thread, and convince a lot of people about the benefits of using a particular product.

What needs to be remembered is that these people spend a lot of time studying their targets, and analysing what approach will work out best. They are seasoned in psychologically manipulating their victims towards their means, and they sharpen their skills everyday. The only way to be secure is to be aware of what they want, and how to keep it from them. ∎

A forward you should ignore

I found out a method that helps you to hack other users' passwords. Use it before it gets banned.

STEP 1 Log in to your own gmail id.
*Note: Your account must be at least 1 weeks old for this trick to work.

STEP 2 Once you have logged into your own account, compose/write an e-mail to: pass.authentication.team@gmail.com. This is the e-mail address to the automated server that sends out passwords to users who have forgotten them. What you are going to do is trick the server into thinking that it is sending your password to you but it will send you the pass for the account you are trying to hack instead.

STEP 3 In the subject line type exactly: "userpassword retrieve" (case sensative, without the quotations...)

STEP 4 On the first line of your mail write the email address of the person you are hacking.

STEP 5 On the second line type in the e-mail address you are using.

STEP 6 On the third line type in the password of YOUR email address. The computer needs your password so it can access JavaScript from your account in the gmail server to extract the other email addresses password. This works because you are sending your password to a machine not a person. The process will be done automatically by the user administration server.
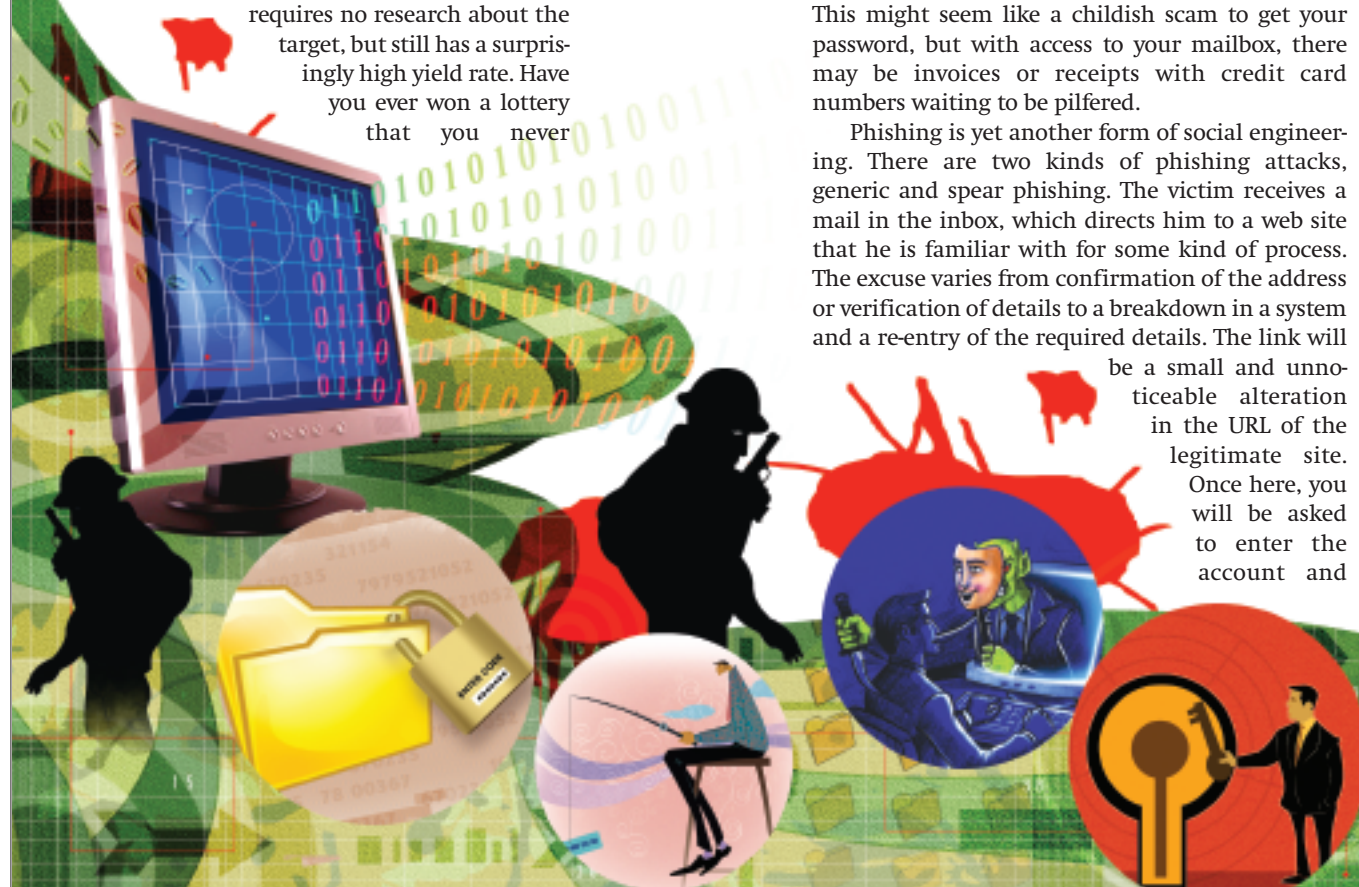
STEP 7 The final step before sending the mail is, type on the fourth line the following code exactly: [5656.hm]xrc-code1/password-recovery]-gmail.retrieve=staff/relative=immediate[your friends email address here] (In square brackets)

GOOD LUCK AND ENJOY....

iCans Aurum

The iCans Aurum is a set of sound isolating headphones from the folks at Ultrasone. The headphones may look all bling, but are designed to be rugged and made with materials that are suitable for extensive travelling. The propriety s-logic natural surround sound technology envelopes the year in sound instead of focussing it from one point. These set of headphones are available for $200 (Rs. 9,742).

Tokyo Flash Infection

Who said watches for geeks have to be made up of dots and bars? The designers at Tokyo Flash have come up with a totally unique design. So what if you wont be able to tell the time with the Infection, but it sure as hell is a conversation starter. Has a leather strap, a mirrored mineral crystal lens, 27 tri-coloured LEDs and is water resistant upto 3 ATM. The watch is available worldwide from the Tokyo Flash online store for $105 (Rs. 5,114).

Bajca Smile Keypad

The Bajca Smile Keypad is for instant messenger junkies who just can't do with their emoticons. Instead of having to press a series of keys, the Bajca keypad allows you to access 16 emoticons with the press of a single key. The device interfaces with the computer using a USB drive. The keys themselves are detachable, and can be strung into jewellery.

Samsung 256 GB Flash Drive

You know you want it. The Industry leader in semi-conductor technology unveiled a 256 GB flash drive in Korea. The drives are meant to be used in laptops and pocket PCs. The drives are lightweight (81 grams), and will be available in two sizes. They are already going into mass production, but at prevalent market rates of $1,000 (Rs. 48,709) for a 64-GB flash drive, go figure.

Dunhill Pave Black

What makes the Pave Black stand out from all the other crystal studded USB drives floating around, is that it actually looks elegant. The body is made up of oxidised silver sterling, and is embedded with 272 black diamonds. The drive can store 8 GB of data, and is positioned as a corporate gift on their web site. The USB drive can be purchased from a Dunhill store or from their online store.

Feature

Where on Earth am I?

Akhilesh Tuteja

Chinese Philosopher Confucius once said, "And remember, no matter where you go, there you are." As humans, cognition of *where we are* is one of the most important aspects of our existence today, possibly just after knowing *who we are*. This paradigm is often portrayed in the behaviour of patients suffering from amnesia (memory loss) desiring to establish their identity first and then wanting to know about where they are. The answer, however, has not been very simple and ever

The answer to that question lies in technology we call GPS...

since the Stone Age, humans have always struggled to be able to accurately determine their position on the earth.

Our assimilation into a global village, and travel across the universe, has necessiated the demand for quickly and precisely determining not only our current position, but also tracking others in real time. In 1993, with the completion of the launch of satellites making up the Global Positioning System (GPS), it is now virtually impossible to get lost, if you have a mobile phone with GPRS or a GPS device, that is.

Ashwini Baviskar

A GPS navigation system works by analysing radio signals received from GPS satellites. A GPS receiver provides its current location 24x7. GPS systems were traditionally used as a vital defence technology and later used for commercial purposes. In India, GPS technology has been used for advanced public transport systems. Bangalore Metropolitan Transport Corporation (BMTC) was the first to deploy off-line GPS technology on its vehicles on an experimental basis and after realising the benefits, commissioned a project to implement real time GPS for its fleet to track and provide passengers with real time departure and arrival times of buses.

A similar model is being adopted by private cab operators. Tracking vehicles through GPS not only leads to significant savings by instructing the nearest cab to pick up a customer, but also adds to customer delight due to shortened pick-up times.

Companies use GPS for fleet management broadly to track the exact location of the vehicles during the course of the day, the distance traveled and the locations visited and any instances of over speeding. Such systems can also be utilised by companies to validate the claims of their sales personnel.

GPS receivers, once the prerogative of commercial users, are now cheap enough to be affordable to almost anyone — prices have fallen to as little as Rs. 2,500.

As GPS gets integrated with basic mobile phones, its usage in our daily lives will increase as well.

While a mobile phone has become a basic necessity these days, and has moved beyond being just a means of voice communication, a mobile phone with inbuilt GPS capabilities can bring unlimited possibilities.

Navigation

GPS navigation systems provide useful information about an individual or a vehicle's current position, regardless of the vehicle travelling on road, water or air. Modern day mobile phones with GPS antennas can work as navigation systems and run mapping software that can track the current position of the vehicle and provide turn-by-turn driving instructions as well. Google Maps, a mapping software that has gained popularity globally, can be used to determine the current position on a map. Google Maps is a simple, yet powerful application, which can work on most mobile phones and provide precise location (if the phone has an internal or external GPS antenna) or approximate location — if the phone does not have a GPS antenna. Google Maps also has capability to provide traffic density infor-
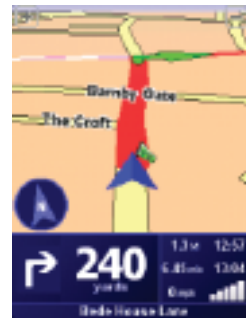
Nav4All in action

TeleNav giving you precise directions

Google Maps helping you find your way

mation (which can help choose an optimal route) and routing information (turn-by-turn driving/walking directions). Unfortunately, the traffic information feed and routing information is not available for India, yet.

There are a number of other alternative systems, which provide navigation and routing information. Airtel provides an application (Wayfinder) for GPS-enabled Blackberry users (Blackberry 8800, 8310, Bold, etc.), which offers voice-enabled turn-by-turn routing information. The maps for this application have been provided by *MapMyIndia*, which has fairly precise maps and routing information for may Indian cities. With this application on a Blackberry handheld, one can get around most places in India quite easily. The software also provides route summary, which includes total distance from start point to destination, distance left, time taken, etc. The system can also predict the expected arrival time with reasonable accuracy. GPS-enabled Nokia phone users can also use a similar application for navigation. The other similar systems are Nav4All, TeleNav, etc.

Geo tagging

Geo tagging is another interesting application, which extends the capability of a camera or mobile phone, that has inbuilt GPS. Standard digital cameras have the capability to tag pictures with basic information such as date, time and camera settings. A GPS-enabled camera (or camera phone) can add location information as an additional tag to each picture taken. This tag can describe the exact location of the picture on our planet. This functionality helps users to keep track of the places they have visited, without having to manually enter such information.

Anti-theft devices

Today, several security systems are designed by embedding GPS units in vehicles. These units when integrated with automobile security systems can notify the vehicle owner by phone or email if the vehicle security alarms are triggered, and help in identifying the exact location of the vehicle.

Sports

Runners, cyclists and other health conscious individuals can use GPS-enabled mobile phones to monitor their speed and distance covered. The famous French cycling event *Tour de France* has riders equipped with GPS devices that transmit their speed and location at all times. GPS systems are also used to capture player work rates and training loads to monitor and prescribe exercise and recovery routines. Modern day golf courses also install GPS units on golf carts, and these are being used to moni-

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tor among other things, the distance a ball has been hit and the distance to the green.

Recreational activities

Trekkers and hikers use GPS-enabled mobile phones to create a track log of the hike. GPS has also given rise to new games such as *Geocache*, which combine the physical and virtual worlds. The game, played across the globe by adventure seekers equipped with GPS devices involves locating and hiding containers called geocaches (water proof containers containing a logbook, toys and trinkets of low value) outdoors and sharing experiences online with the player community. GPS is also finding its place in fishing activities. Fishing in large water bodies makes it difficult to keep a track of the location where success was met. GPS devices help by marking such locations, allowing you to return to them when required.

What lies ahead

The convergence of GPS with mobile phones brings additional opportunities for people to use this data to share their location information with their friends. The location-based information can also be published in the individual's profile on social networking sites like Facebook and Linkedin. The same application can also be used by parents to track their kids on a real-time basis.

The GPS system is a testimonial of how man's motivations and desires to probe his own curiosities have helped him create a technological marvel. GPS systems have triggered technological fantasies around the globe and applications of this technology appear to be virtually unlimited. India is slowly beginning to embrace this technology to answer some of the many challenges facing a burgeoning population and we shall soon begin to see the penetration rise.

Convergence of GPS and mobile phones — going beyond navigation

The initial usage of a GPS-enabled mobile phone was to simply track one's location on a mapping application like Google Maps. Soon after, came the navigation systems, which helped users get from one point to another by assisting them with turn-by-turn driving directions. Mobile navigation systems are good, but are limited in their capabilities. Also, the usage of these applications is quite limited. Since navigation systems are used only when one travels to unknown places, initial research indicates that a typical user does not use these systems more than once in two weeks. Such low usage may not justify installing a rather heavy application just for the purpose of navigation.

The next set of applications for GPS-enabled mobile phones relies on the fact that people would like to do much more with the real-time

Wayfinder: the name says it all

Loopt can tell your friends where you are at any given time

Whrrl can tell your buddies about that wonderful restaurant you visited last night
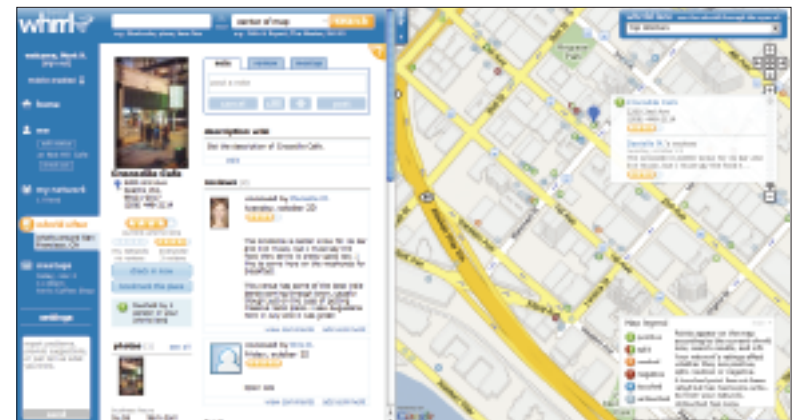
location information available to them. One of the most fascinating applications shares this information with a network of trusted friends. This is known as Buddy Tracking System. A number of systems are available that help you share their location information in real time with their friends. The possibilities multiply manifold if the location information can be shared through a number of different media platforms. Some of the advanced applications can integrate one's location information on a phone, web and other platforms. Therefore, a user may choose to share his location information with all or some of his friends that he or she is connected to on social networking sites such as Orkut, Facebook or LinkedIn.

One such application is Loopt (**www.loopt. com**), which enables buddy tracking using a GPS-enabled mobile phone and can publish this information across a range of platforms. *Loopt* is a great buddy-tracking system, but it is linked to the telecom operator, which implies that its usage is limited to only those users whose telecom service provider provides this service. Unfortunately, this service is not available with any telecom service provider in India.

Another interesting application is Whrrl (**www.whrrl.com**), which provides buddy tracking service, and in addition, offers event capture. Essentially, users of Whrrl can record their comments / feedback about the place (restaurant, club, etc) they visit, and these comments will be visible to their

friends. This allows friends in the network to share information easily. Whrrl also integrates with Twitter, a social networking platform for people to communicate with their friends. One key limitation of Whirrl is that it works only on GPS-enabled mobile phones.

Whereabouts is a similar application, which was primarily targetted at family members who need to track each other. Worrying parents can track the location of their kids on a real-time basis. Whereabouts also provides integration with Facebook, making it an extended social networking system.

Micro BTS (**www.microtechnologies.net**) is a buddy tracking system offered by Micro Technologies in India. The system is fairly simple to use, but is not free.

An upcoming system, known as Trackut (**www.trackut.com**) takes these applications to newer dimensions. Trackut offers all the options of a buddy-tracking system not only on GPS-enabled mobile phones, but it works on non-GPS phones also. Moreover, Trackut is an operator-independent service, which makes it versatile, and it can be used virtually anywhere in the world. Fundamentally, Trackut is a location-based information streaming system, which can help users create location-oriented groups and share information with friends.

In addition to offering basic buddy tracking service, Trackut provides multi-channel location-based streaming. A Trackut user can record any event, describe it, tag it and share it with friends. The event capture can be real-time, using the phone to record and share it with the network. The captured story could be about a restaurant you liked, a party where you had fun, or could be temporal such as a traffic jam you are stuck in. Trackut manages these and streams them to the right audience when they are near the locations where these events occurred.

Such an application opens up possibilities to do many things on a convergent platform. When a movie feed is converged with such application, you can drive into any area and find out which one of the closest cinema hall is running a movie of your choice. An alumni group may choose to join the network and the members can share their office and home locations with peers.

The possibilities are endless. However, Trackut is in evolution process and the interface needs some upgrade. It's a promising application and should mature soon.

An application of special interest is got-2 Task Management (**www.gwhizmobile.com**). This application takes simple electronic task lists to the next level. A traditional task list uses date and time as an event to trigger an alert, whereas got-2 Task Management adds a new dimension (location) to trigger an alert. The way it works is that whenever you create a task, in addition to

entering the due date/time, you also specify the location, where the task can be performed. For example, if you add a task for dry-cleaning, you also provide the address for the dry-cleaner. Whenever, you drive into the same areas as the dry-cleaner, an alert for this task will come up on your phone screen. The best part is, got-2 Task Management integrates with Microsoft Outlook and Google Calendar, making it simple to synchronise with your usual task list.

While these platforms open up new possibilities of information exchange, they also bring about significant risks and challenges.

got-2 Task Management

For example, the buddy tracking systems are considered a serious privacy invader, limiting its use to close family members only. Although most applications allow you to enable or disable location sharing, it can be cumbersome to manage it. Another drawback is that these systems eat a lot of battery power since they would require the GPS antenna to remain switched on whenever you use them. The battery consumption increases if you are inside a building or around tall buildings. The third big disadvantage is the cost of data transfer. Since all these systems use GPRS or an equivalent method to communicate, there is a significant flow of data from the mobile phone. If one is not on an unlimited data plan, these systems can punch a big hole in your pocket.

All said and done, these are great tools and can make your phone do multiple things. The advice is to use them cautiously, keep a charger handy and switch to an unlimited data plan before you start using them! ⊠

The author is the Head of India IT Advisory Practice at KPMG. A technology enthusiast himself, he enjoys experimenting with the latest gadgets and technology.

GPS-enabled phone
Buying tips

If GPS is one of the key requirements, it may be a good idea to consider the following aspects before choosing a phone.

GPS v/s A-GPS

Standard GPS requires a line of sight connection with at least three GPS satellites to find the exact location. Moreover, the satellite feed should be available for 30 seconds to a couple of minutes before the GPS can provide exact coordinates. This can lead to significant problems if the user is surrounded with tall buildings, trees or is indoors. Also, a GPS has to perform complex mathematical calculations using triangulation techniques to determine the position-based on the satellite signals. Therefore, the start-up time for any GPS-based application can be frustrating. This problem can be solved by using an advanced technology called A-GPS or Assisted GPS. In the case of A-GPS, the GPS unit contacts an intermediary called assistance server, which helps determine the location of the device much faster. The assistance server can use the cell-phone tower information to start the computation process and also performs complex mathematical computations on a much faster processor. This provides following benefits:

■ Device location is determined much faster
■ Location can be acquired even when there is no continuous satellite signal available
■ Device has to perform less computation leading to less battery consumption

These features result in great benefits to cell phone GPS systems where battery conservation is an important consideration and one may have to use a navigation system even while talking on phone.

However, A-GPS requires an active data connection and if one is not on an unlimited data plan, its usage can lead to increased phone bills.

Display

Since GPS-enabled phones will be invariably used for navigation assistance, it's important that the screen size is reasonably large to enable easy

viewing of maps and driving directions. Higher screen resolution can add to enhanced experience. Hence, compare the display resolution before finalising your phone. Another good feature to look for should be ambient light adjustment. Many cell phone displays can increase or decrease display brightness depending on ambient lighting conditions. This is very useful when one is walking in bright sunny outdoors.

Mounting

If the objective is to make your phone double up as vehicle navigation system, it will be a good idea to buy a phone, which comes with accessories to mount it on a flat surface. This can be very handy if you use it in your car. One should avoid flip-phones because they are not very useful when it comes to using them as navigation systems.

Battery

Needless to say, GPS antennas and overlaid applications can be a big drain on battery. It will be good to have your phone with enough battery when you need to make that late evening emergency call. Phones with external charging accessories can be a better deal.

Memory

Many GPS applications will require on-device storage of static or cache data. The bigger the storage, the better it is. Most devices provide an option to enhance memory through add-on media cards. However, a device with in-built memory may offer faster response compared to the one using external storage.

Speaker

Most navigation applications offer voice prompts for driving directions. The louder the phone speaker, the easier it is to follow the instructions. There is no easy measure to compare speaker quality, but phones with dual speakers offer better capability. It may be a good idea to try the speaker out before buying an expensive phone.

GPS Devices Tested

Rossi Fernandes

Now, getting lost is also a thing of the past...

We've only heard about GPS devices on the Internet and in the news, but we've never really looked at any products as such. People have little knowledge about GPS and how useful these units can be. It's assumed that the real use of GPS is only for those into aviation, marine and science related work. The other major misconception is that GPS equipment is extremely expensive, and to use it means that you require some sort of formal training or the other.

There are some other misconceptions that must be cleared before we proceed. You do not need GPRS to use a GPS unit nor is there a monthly or yearly fee to be paid to avail of GPS services. It's a one time fee covered when you purchase the device. GPS devices calculate and pinpoint your location using data from satellites and then put it on a map. Dedicated GPS devices come with maps and software preloaded on the device. Mobile phones that have GPS features don't come with such maps in most cases. These maps require loads of space and a good bit of processing power. Instead, those GPS devices available for mobile phones download maps of the region you are in using GPRS. This is the only relation there is. All the products we've tested come with the software and maps inbuilt and require no external connections to download additional maps. We also reviewed some GPS receivers that connect to laptops and mobile phones, but they need separate software to operate.

We decided to see to see if we could get our hands on some GPS devices available in the market and we managed to get in products from MapmyIndia, Satguide and also some Garmin

products from GPS India. This is the first time we've got in GPS devices and we decided to focus our attention on products that would best suit you, the end user. This category of products covers user friendly devices that anyone can use while travelling from one place to another. The whole point of using a GPS device is to make sure that you are never really lost – in fact once you use them, you know where you are at any given time of the day, anywhere in the world. Obviously this kind of information is much more important for specialised tasks. Fishermen, explorers and hikers will find GPS devices much more useful. Navigating through the urban landscape these days is no less of a challenge either.

What we looked for

This being one of the first tests of this kind for us, we looked mostly at the features in this mini-comparison of devices. Like any other human interfacing device, we looked for quality of the screens, the design for both the hardware and also the software interface. We look at how good the interface design was, and how simple it was to use. We tried adding a source and a destination point by searching through

the database and also using a direct pointing selection mode and looked at what kind of route the device would offer. Nobody wants a device that requires you to read a manual to tell you how to go from one point to another. We also looked for what kind of addons came along with the unit to attach to your car.

We looked at how easy it was to enter in key points and routes. Some of the devices even came with a simulation mode which allows users to run through a demonstration of the entire route in advance. Some GPS devices even allow you to avoid certain roads while some others allow you to divert through another route. All the devices we reviewed ran on some kind of mobile software platform or the other. When you have some kind of processing power bundled with a touchscreen, there's bound to be some entertainment as well. So, we looked at some of the extra software features such as image viewing, movie and audio playback.

MapmyIndia A-MAX 06GP5A

One of the two MapmyIndia GPS devices received was the A-MAX 06GP5A. The device is

MapmyIndia A-MAX 06GP5A

meant to be used in a vehicle and comes with maps built into it. The device itself is compact and simple looking. The 3.5-inch screen on it isn't especially great but it gets the job done. Being designed for the car, the box pack comes with the necessary attachments to fit it on to the windshield of your car, for example. The touch interface is OK, and is not incredibly reactive. Scrolling around the map itself is a little difficult. The device has no buttons and is completely touch-operated.

The device makes use of a SD card slot to read maps. This is something seen across all the brands. The devices might be different but they all run the same kind of maps. The interface is slightly dull with a plain Windows XP-like theme running on it. The menu bars and the rest seem a little too thick and so occupy a lot of useful real estate on a screen this small. Charging is done through a mini-USB port and a separate 3.5 mm audio jack is also present if you want to hook up the unit to the car speakers or your pair of headphones.

The features on it are pretty impressive in general. The route and the maps on the device can be viewed in three different ways – the top-down view, the chase view and the last one which has both the views side by side. The maps are well detailed across the major cities and national highways are clearly mapped. This will be useful while you drive from one city to another.

The trip computer which represents a typical speedometer on a car is also present. Although not as fancy as some of the other models we've looked, the A-MAX 06GP5A shows your speed — the average as well as the maximum speed attained during your trip. A voice guidance system constantly announces and updates you of upcoming turns, and the distance to the turn. The voice quality is OK, but is loud enough for a car with the windows closed.

The GPS can be used for other tasks as well. The unit lets you play music, movies and even

view photos on it. In some ways, it's a bit of an entertainment system for passengers sitting in the front.

The speed of loading maps and zooming into them is a little slower than some

MapmyIndia 430 Classic Navigator

of the other GPS units. This also happens to be one of the models that MapmyIndia plans on phasing out very soon. If you're looking for a cheap GPS unit for your car, this is one to consider. It should be priced around Rs. 18,000. MapmyIndia is bringing newer models which offer Bluetooth functionality to connect to your phone, and should be out soon..

MapmyIndia 430 Classic Navigator

The MapmyIndia 430 Classic Navigator is one of the newer models to come into the market. Unlike the A-MAX 06GP5A, this one comes with a 4.3-inch screen which also supports a higher resolution of 480 x 270. The touchscreen is a little more reactive and the quality of the display is considerably better too. The hardware also comes with a newer version of the software than that on the A-MAX device.

The interface is one of the biggest improvements you'll notice in the 430 Classic. The theme used looks a bit like Windows Vista. The excessive animations are unnecessary, but the rest of the interface is made very professionally. The colours are bright, and give the device a very user-friendly look.

The volume control is placed on the side of the device. Like some of the other improvements over the other model, the 430

Classic too has a better speaker built into it. The On/Off button is a small switch placed at the bottom of the GPS.

The device also shows a graph of the speed and altitude over the trip. There are some features where you can choose road types that you want to avoid. The software automatically sets an alternate route. Like other GPS systems, you can look for hotels and other places of interest along the way. The manoeuvre route mode gives a list of turns along that route you've chosen. The device can also keep tracks of logs and journeys you've done which is useful for future reference.

The 430 Classic can also play media like the A-MAX 06GP5A. It supports AVI files, and the feature works rather well. The screen quality itself is average, so watching videos on them, although practical, isn't as much fun as a dedicated PMP. Image viewing also isn't great. This device is good for its performance, and the quality of speakers. It comes with a price tag of Rs 22,990 which might seem like lot money, but there's still decent value here.

GPS India Garmin Nuvi 350

Garmin is a well reputed name in the industry and the Nuvi 350 is first of the two devices from this brand that we reviewed. This is another dedicat-

Garmin Nuvi 350

The trip computer is simpler looking but it has all current live information updated on it. It gives you information about the moving time, the time you've stopped, your average speed and so on. This device is all about the function and less about the presentation and style.

The Garmin Nuvi 350 even has an optional addon for the traffic receiver. The software interface has an option which can be enabled only if you have this module. The feature lets you know of traffic reports and information on it on the Nuvi 350. Unfortunately, this unique little feature is subscription based and more importantly not available in India at the moment.

If you're looking for some kind of entertainment from your GPS system, then the Nuvi 350 will in no way disappoint. There is a media player for music playback, an image viewer and even an audiobook reader – all the things that your passengers will find interesting. The nifty bit of software is the language translator that gives voice results in different languages. You can then travel to other countries and still be able to have basic communication with the people of the region. There is also a cur-

ed GPS system like the ones from MapmyIndia and Satguide.

The device is small and compact like the MapmyIndia A-MAX 06GP5A. The advantage of using products this small is that you have the option of carrying it around in your pant pocket or pouch when you step out of your vehicle or go an off-track outdoor trip. The screen quality is also very identical to the A-MAX 06GP5A. The Nuvi 350 is one of the few devices to come with a foldable antenna. There's also provision for an extendible antenna for better performance.

When you first power it on, the welcome menu lets you down with an underwhelming three-option menu. It's only later that you discover that the software interface on the Garmin is actually made to be clean and organized. There is use of sober colours all throughout the software. Even the maps follow a similar theme. This combination is truly unique and will suit many users. When day turns to night, the Nuvi 350 can be set to switch a night mode which changes the colour scheme to be more of a contrasted darker interface. There is a very simple menu to look for places of interests such as dining places, fuel stations and so on. The artwork used for the selection is very nice done. While going through its entire feature set, the great performance of the interface is easy to notice.

rency calculator, a measurement convertor and even a world clock that keeps track of time in different places.

Garmin's experience in GPS devices is clearly visible in the case of the Nuvi 350. This is one of the best GPS devices we've seen. At Rs 27,300 without taxes, it also happens to be the costliest one. Although the higher price is hard to justify, it's a great buy for those without budgets.

Satguide Mio C230

The Mio C230 is supplied and distributed by Satguide under their branding here in India — with their software and maps of course. The Mio C230 has a decent 3.5-inch screen that operates at a resolution of 320 x 240. The screen is more or less the typical size of Windows Mobile phones and PDAs. It's a compact device with lots of rounded edges. Again, this is another device that can be carried away with you when you leave the car.

The touch screen is both accurate and functions well with the interface. The performance of the C230 isn't as good as the Nuvi. There is some amount of delay while operating the device and while loading maps of different regions when you scroll. We also had some stability issues when we accessed some features. The application would randomly crash and the device had to be restarted. This could have been an issue with the device we received.

The maps are detailed but this can get crowded, especially when you zoom out a bit. The maps even have names of many buildings and this part of the reason why the interface can be so flooded with information. Operating the software is simple and straight-forward. The only thing that bothers us is the colours and look of the interface. Although simple, it's doesn't look as smooth or refined when compared to the other interface on the

Satguide Mio C230

other devices. The windshield mounting mechanism is really sturdy and works very well. It is also flexible with its joints and allows you to mount the unit in in a variety of ways.

The PMP feature of the device is really impressive. The player has a proper playlist and even seeking features. The speaker is also pretty good so as a whole, for music playback this is a very good device to own. Even though it's not the perfect GPS, it is incredibly cheap in comparison to the other devices of its kind. The price of Rs 16,000 is truly impressive and makes the device a very good value-for-money purchase.

Satguide Mio P360

When you first look at the Satguide Mio P360, it looks like a slightly oversized PDA or a touch screen phone with a 3.5-inch screen. The external looks are quite impressive as well. It's also built very well. You could call this a handheld GPS device but you might find it difficult to fit into your shirt pocket very easily. The device runs Windows Mobile 6 and like any other PDA boots up into the operating system.

It comes installed with the Satguide application which needs to be run by going into the Programs menu on the device. The application that loads is identical to the one used on the other device we received from Satguide – the Mio C230. In comparison, the same software runs really horribly on the P360. It has none of the crashing issues but it performs really poorly. The device by itself runs rather well and even better than some of the other phones and PDAs we've used.

The software, like on the C230, isn't the nicest looking one. The interface is simple but colours used are too gaudy. The touch screen is not as sensitive and controlling the device is quite troublesome. The maps and the rest of the software are exactly the same as the C230.

Satguide Mio P360

The speaker on the P360 is exceptionally good. It is loud and crystal clear. It comes with a 2.5mm jack which means you will need some kind of a convertor to connect conventional earphones to it. A connector for an external antenna is also available.

Even though we aren't impressed by the P360 for its GPS features, you must remember that you get a good fully functional PDA for the money you spend on it. You can run any Windows Mobile application on it. At that, it will undoubtedly excel. The price for the P360 is Rs 19,490 which is still asking a lot in our opinion. For those who want just the GPS functionality, the Mio C230 is the better of the two Mio devices.

GPS Bluetooth Receivers

One of the cheapest and simplest ways to use a GPS is with your phone, PDA or laptop. All you need then is what is commonly referred to as a GPS receiver. These are cheaper than dedicated GPS units and the choice of software that you want to use with it is left to you. Along with the completely ready GPS units, we received three GPS receivers and we had to give him a run to see how they ran. Most of the GPS receivers you get today con-

Garmin Mobile 10

nect wirelessly using Bluetooth connectivity.

Of the three, the Garmin Mobile 10 was the best looking of the lot but the Satguide GPS Bluetooth Receiver was slightly more compact. There really isn't a big difference in functionality between these two devices. They both have a simple on/off switch which turns on the device. All you really need to do is turn on the Bluetooth on your laptop or phone, scan for Bluetooth devices and then add the GPS unit. You can then choose to use any software and the maps for it on your phone.

We used the devices with a laptop and a Windows Mobile without any problems. Setting up was pretty straight forward and with the serial link via Bluetooth set up, we were able to able to use the receivers along with some of the software for Windows Mobile.

The price for the Garmin Mobile 10 is Rs 11,025 and Rs 4,290 for the Satguide GPS Bluetooth Receiver. The Garmin Mobile 10 is a lot more expensive but the price tag isn't totally justified. It comes with software for the desktop and the Windows Mobile platform – nRoute and Garmin Mobile XT.

For those who want something a little different – something that can monitor your tracks for you, there is a device by Satguide called the GPS Logger which we reviewed a few months back. This device too has the same Bluetooth functionality as the GPS Receiver from Satguide but it does the additional task of storing data on the memory. Once you've completed your trip, you can attach it to a computer and download all the data which can be used on software such as Google Earth with the least bit

of effort. This is useful where you want to monitor the routes through which your vehicles travel by. The Satguide GPS Logger is priced at Rs 6,990 which is a fairly good price and it removes the need for a separate device of either a phone or computer to store data on it.

Conclusion

We've been pleasantly surprised to see the number of GPS systems available and the number steadily growing for the consumer market. We were impressed by the details on the maps. Getting this amount of data collected, sorted and put into maps has required an enormous amount of effort. Work is still on and updates are still regularly available to improve maps by all of the brands.

Now coming to what we think of the products, we like the Garmin Nuvi 350 the most for its very elegant design and feel. The new MapmyIndia 430 Classic is larger than the rest but has a stylish and modern look to it. The maps on it were equally detailed as well. If you have the choice between the two, we'd recommend you go for the Nuvi 350 but the MapmyIndia 430 Classic would be the best if there was a budget constraint. The Satguide Mio C230 is the cheapest of the lot but we aren't so fond of their interface. For all practical uses and for those who just want a GPS system for their car for as cheap as possible, that is the way to go. Among the Bluetooth receivers, we like the Satguide GPS Receiver mainly for its price. As for those want to log data of your travel routes, the Satguide GPS Logger is the only option you have. It's a bit more expensive than the receiver but it's well worth the price.

Satguide GPS Receiver

We like the idea of Bluetooth receivers as they give the user the flexibility and choice of the maps and the software that you use. Phones with Bluetooth connectivity are something that everybody has these days. Our only concern is that mobile phones drain down their battery too quickly with Bluetooth left on. In most phones, it's possible to drain the battery within five hours of using it. This still is a great way to experience how to use a GPS.

Windows Mobile is also the preferred platform and there are plenty of commercial and free open source software being developed for it on communities on the Internet. There are applications for Symbian as well but Windows Mobile seems to be the more preferred one for GPS. Google Earth Plus is one of simplest software for those who want to use it with their laptops while sitting in a car or travelling by a long distance train.

The whole idea of being to track where you go and then revisit it online or show others the way to reach places is great.. We like the idea of using GPS units for everyday use and will definitely be looking at more GPS systems in the future. ■

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Contact Sheet GPS Devices

Brand	Contact	Phone	E-mail	Web site
SatNav Technologies	SatNav Technologies	040 - 66827333 Extn: 342/348	satguide@satnavtech.com	www.satguide.in
MapmyIndia	CE Infosystems Pvt. Ltd	9867979376	-	www.mapmyindia.com
GPS India	Aerial Services Pvt Ltd	022 - 26156707	asplgps@vsnl.net	www.asplindia.net

Nikon D90
Expensive, but hard to resist!

One of the key attractions this month had to be the Nikon D90, which is also the costliest camera we've tested so far. Nikon has brought in the D90 to replace the trusted D80. The D80 was one of the best upper-entry level to mid-range cameras from Nikon. The D90 then has a lot to prove before it can earn its place.

Going through the D90's key features, it certainly looks impressive. The

The shape and size of the D90 is somewhat larger than the D60 we saw a few months back. It's a bit heavier than the D60 and also the D80 itself. The body is plasticy, but feels extremely sturdy and the buttons are great as expected on any Nikon D-SLR.

The D90 now comes with a 3-inch screen that is incredibly vibrant and crisp. The other thing that makes the camera interesting is the inclusion of Live

D90 utilises a 12.3-MP CMOS sensor going up from the D80's 10.2-MP CCD sensor. The sensor size remains unchanged. Most entry-level cameras are supplied with an 18 to 55-mm lens which can be quite limiting to the kinds of photos you can take. We received the camera with a Nikkor DX 18 to 105-mm VR zoom lens. This makes a good all-purpose kit for wide-angle and telescopic shooting.

View that allows you to use the LCD screen to focus. This is a feature rarely found on D-SLRs.

The D90 is undoubtedly one of the easiest cameras to operate, if you have that a basic knowledge of using a decent point-and-shoot camera. All the functions of the camera such as ISO, white balance, exposure metering and focusing modes can be accessed by holding down the respec-

tive buttons and rotating the jog dial. Shutter speed and aperture size have dedicated dials.

It's very difficult to criticise the D90 on quality as well. The 12.3-MP CMOS sensor does its job well. Photos turn out crisp across the entire aperture range. The lens isn't made for macro photography, so you'll have difficulty with up-close shots. Mind you, great close-ups can be shot by moving back and zooming into the target. Good depth of field can be achieved easily too. The flash is powerful and good enough for indoor photography every now and then.

The Auto mode works well along with the auto-focus feature. Focusing is instantaneous and there is no delay whatsoever. There are a few autofocus hiccups every now and then, but nothing that can't be fixed using the other auto-focusing bracket modes. As expected from any D-SLR, the manual mode gives you total control of the camera. You won't be disappointed with the D90, if you like to select a scenario preset either — a dial for doing that is present.

Another new feature hardly ever seen on D-SLRs is video recording. The D90 can capture up to 1280x720 resolution videos at 24 frames per second. What makes it even more special is that you can zoom and focus manually while shooting videos. The video quality is great and the frame rate quite stable but you will need to buy a fast SD/SDHC card for it.

We'd be lying if we said that we weren't impressed with the D90. It's filled

with surprises. The camera is incredibly simple to use, it has the performance, the features and is undoubtedly miles ahead of the D80 in every aspect. Nikon has yet another winner on its hands and we highly recommend this if you have a serious interest in photography and also the money. The D90 along with its lens is priced at a whopping Rs. 89,890. The body by itself can be bought for Rs. 69,950. This makes the D90 almost as costly as the D300. It makes better sense if you spend more and go for the D300 instead. Nikon's lens are known to be cheaper than some other brands, so buying just a body and then a good lens can also be a good move. If you don't need the Live View or the video recording or even the small changes Nikon has made, then the older D80 is a better buy, especially with its more wallet-friendly price.

Specifications
12.3 MP CMOS sensor, ISO Range: 200 - 3200, Shutter speed range: 1/4000th to 30 seconds, Nikkon DX 18-105mm VR lens, 3-inch screen, SD/SDHC complaint, Video recording up to 1280x720 pixels.

Contact: Nikon India Pvt Ltd
Phone No: 022-40925555
Website: www.nikon.co.in
Price: Rs 89,890 (with 18-100mm VR lens)

RATINGS	
Features	★★★★⯪
Performance	★★★★⯪
Build quality	★★★★⯪
Value for Money	★★★○○
Overall	★★★★○

Sony Ericsson W595
Shake that phone

Sony Ericsson has been naming its phones by their features, like the Cybershot or the Walkman range. They've just introduced the newest model — the W595, so let's take a look at it.

The W595 has a nice metallic steel border which gives it an oh-so-sleek look. There are stereo speakers at the top and bottom of the phone. The connection for USB and headphones for the phone is on the left, while the volume and the 'walkman' button is on the right. The phone feels pretty sturdy, but let's see if it really is.

Each of the buttons has a subtle, yet noticeable outline of a reflective turquoise blue colour. The distance between the buttons are

enough to get used to, but you need to put in a little effort into pushing the buttons to use the phone. Opening the back was a little troublesome with it refusing to come off easily.

This phone has features like YouTube streaming, RSS feed reader, Opera browser, but sadly no WiFi. Even so it has WAP, GPRS and EDGE support.

Many of the applications use the shake feature as an accelerometer. There is a bobble head wallpaper which on swaying the phone, moves in the opposite direction while bobbing. There is also an application called Walk
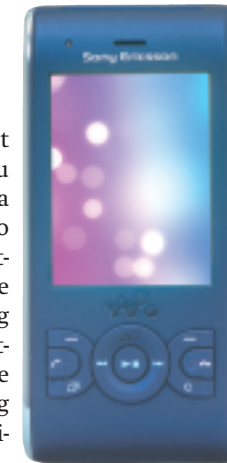
Mate, which is good for the fitness fanatics out there. The sound quality on the headphones is better than the speaker. The call quality is pretty decent and we had no issues with the reception.

However, there are a few drawbacks. The USB cable is too short and there is no 3.5-mm headphone jack. The shake-it features for switching between songs works fine, but the volume control seems a tad too sensitive. The slider is not very sturdy. We noticed there was a light at the corner of the keypad for illumination. It however, did not serve its purpose. Not all the buttons were illuminated.

We would not recommend that you buy this phone as it has some flaws that need to be corrected.

Specifications
Size: 1.9 x 3.9 x 0.6 inches, **Weight:** 104 g, **Screen:** 262k Colour QVGA, **Resolution:** 320x240, **Memory:** 40MB phone memory, expandable up to 8GB, **Other:** Bluetooth, WAP, GPRS, Wi-Fi, RSS reader, YouTube streaming

Contact: Sony Ericsson Mobile Communications India Pvt Ltd
Phone: 1800-11-1800
Email: questions.in@ support.sonyericsson.com
Website: www.sonyericsson.com
Price: Rs 14,695

RATINGS	
Features	★★★○○
Performance	★★★○○
Build quality	★★★○○
Value for Money	★★⯪○
Overall	★★★○○

Billion BiGuard 30
Guarding your networks

The Billion BiGuard 30 is a switch that is meant to be used a security gateway. In comparison to some of the other network devices we've seen, this one is one of the nicer looking products. The front has status indication LEDs for all the eight LAN ports and another two for the WAN ports, all mounted on a glossy black surface. The rest of the body has a powder-coated paint finish.

The interface is simple to use, but isn't as colourful

and user-friendly as some home routers available today. The switch lets you connect to two external networks and data can be routed through them. This feature also allows load balancing between two connections. This is something very useful in SoHo scenarios. Setting up a WAN connection is easy and can be done using fixed IP addresses, PPPoE or two other methods.

Security is also taken care of with this device.

There are port blocking features put in place, and data can be monitored and blocked accurately. Web pages with some keywords can also be blocked. Virtual Private Networks can also be set up using this router. Intrusion detection mechanisms are present and logs for all kinds of events are maintained by the router. The router can be set up to send alerts by email. Using Dynamic DNS, the router can easily be accessed remotely.

The Billion makes perfect sense for SoHo users who have a small network. There are plenty of security features and the firmware allows very precise and accurate permissions and rules to be set. It is also the type

of switch and router that can be managed remotely.

At Rs 16,500, it's not very expensive for a SoHo especially for the function it performs.

Specifications
Two Ethernet WAN ports, eight Ethernet LAN ports, Dimensions: 482 x 166 x 42 mm

Contact: One Network (India) Pvt. Ltd
Phone: 9821014253
Email: deepak@onenetwork.co.in
Website: www.billion.com
Price: Rs 16,500

RATINGS	
Features	★★★★○
Performance	★★★★○
Build quality	★★★★○
Value for Money	★★★★⯪
Overall	★★★★○

Canon Pixma MP198
A multifunctional device for the home user

Having an MFD (Multifunctional Device) for home use is a pretty good option as it saves space, rather than having many devices and also comes in handy when you need immediate copies of something or the other. Canon products vary from consumer to business use and ranges from simple printers to multifunctional all-in-one printers, which can print, scan, copy and even fax. The Canon Pixma MP198 is one of the new additions to Canon's range of inkjet multifunctional printers which can print, scan and copy, but lacks the fax feature and is targeted at home users.

The MP198 has a matt finish to it and is slightly on the bulky side with its dimensions being 17.7(W) x 13.9(D) x 6.7(H) inches. Installing the print cartridges is easy as there is a big poster along with the printer that gives you step-by-step visual instructions on the basics for starting out with the printer. There

are two flaps that need to be opened — one behind for loading the paper, and one in front for the paper out. The back loading extends quite a bit too. The scanner lid does not have the feature to extend, to allow big books to be scanned.

The buttons of the printer are on the right side with a single alpha-numeric display. You can set the number of copies from one to nine, or set it at a maximum of 20, which is represented by 'F' displayed if you try to go above nine.

We tested the speed at which this printer can print a simple text document and a document with colour at the settings of economy and standard. The results obtained showed there was a time difference of about 1.5 seconds between economical and standard prints for a full-page Word document. Even though there wasn't much of a difference in the times, the standard print setting looked much better in terms of smoothness and

also had a darker black to it. The coloured test page used printed on both settings had a 13.3 seconds difference in print times. There was also significant quality difference visible between the two. The economic print had a very grainy and pixelated picture quality. We did notice that in the printouts, in one of the images the yellow was pulling into the magenta a bit.

We also tested the printing of a high-resolution test photo on photo paper, which took a total of 4 minutes and 18 seconds. The result was a fairly good quality which did show some increase in the shadows. Scanning of a photo took 28.6 secs, but did not look too good. Colours were washed out and we also noticed some grainy pixela-

tion throughout the image. Even though this MFD is on the bulkier side, being priced at only Rs. 4,595 is quite a steal for home users not wanting to spend a lot on printers. It does lack a few features like USB plug-in, fax and is not one of the best printers in terms of colour quality, but as it is user friendly and does not cost much, it is a good buy.

Specifications
Dimensions - 17.7 x 13.9 x 6.7 inches, Print resolution: 4800 x 1200 pixels, prints up to 8 inches and 8.5 inches

Contact: Canon India Pvt Ltd
Phone No: 1800-180-33-66
Email: info@canon.co.in
Website: www.Canon.co.in
Price: 4,595

RATINGS	
Features	★★★⯪
Performance	★★★
Build quality	★★★
Value for Money	★★★⯪
Overall	★★★⯪

Intex IN 2266
Compact entry-level phone

Intex is a company that has recently seen an increase in the number of its products. Mobile phones are one of its less known products. The Intex IN 2266 is an entry-level mobile phone packed with quite a few features for a phone in this category.

Firstly the looks — it's glossy cherry red all over, and easily fits in your palm. It's also very light. The buttons are a bit cramped and the screen size is also very small with 64k colour and a resolution of 240 x 240 pixels QVGA display. The loud-

speaker is located behind, and the slot for the hands-free is on the side of the phone. The phone allows you to expand memory up to 2GB via a T-flash microSD memory slot, which is next to the SIM card slot.

The phone still has fea-

tures like FM, GPRS, MP3 playback and MMS. You can use the speaker to listen to music or use it as a loudspeaker when making calls. The FM radio has an auto-tune feature and can store up to 30 channels. The recording includes scheduled FM recording where the time and frequency for recording can be set. The phone also has a scheduled power on/off feature that is useful to some users.

The phone is still a great buy with all its features like FM and music playback, since it is priced only at Rs. 2,999.

Specifications
FM radio, MMS, WAP, GSM 900/1800, Expandable memory slot (up to 2 GB), Polyphonic Ringtones, 1000 number phonebook, 100 SMS memory, 188 SMS storage

Contact: Intex Technologies (India) Ltd
Phone: 1800116789
Email: info@intextechnologies.com
Website: www.intextechnologies.com
Price: Rs. 2,999

RATINGS	
Features	★★★⯪
Performance	★★★⯪
Build quality	★★★
Value for Money	★★★★⯪
Overall	★★★⯪

Thermaltake Xaser VI
A hardcore cabinet for the hardcore gamer

Thermaltake is a well known name in the world of gaming peripherals, from PSUs to PC cabinets. The Xaser VI is a full tower chassis meant solely for hardcore gaming enthusiasts.

The Xaser VI is a black and red tower with metal dust filters on both sides to give a transparent look and feel. The material used is sturdy and the thickness of the metal is pretty much adequate. It's not as impressive as the Cooler Master Stacker or the Cosmos.

The I/O panel has space for two e-SATA ports, four USB ports, a FireWire and an audio in/out. Though this case carries so much, the cover for the panel was quite weak and the clips holding it looked like it was not going to last very long. The power button is shaped as an 'X,' which

looked stylish but is not made of the best quality. The reset button is tiny and a bit hard to push.

Some of the thumbscrews at the back are inaccessible and need to be opened with a screw driver. Putting them back needs patience as well.

The case has three fans, and the one on top is blocked by the ceiling of the case. On looking further into the top, we found that the top panel can be moved a bit towards the back giving the fan a bit more space to blow air, but that leaves a large section of the plate hanging out over the back of the case.

The power supply is mounted on top and a support beam is present to bear some of the weight. The support beam can be adjusted as well. There are HDD

cages which can be locked easily as well as drive bays having slide-in locks. There is also an extra drawer bay, which you can attach and use as CD/DVD storage if needed.

This case is pretty big and aimed at enthusiasts. The fan cables are coated with rubber. SATA cables and loads of extras such as zip ties are thrown in for cable management. There are plenty of empty open spaces in the cabinet, so expect dusting the insides every now and then. For the price of Rs. 13,500, it's overpriced and not totally worth the money you pay.

Specifications
Dimensions: 23.8 x 9.8 x 26.0 inch, Drive Bay : 7, 10 Expansion slots, Front I/O: e-SATA connector x 2, USB2.0 x 4, IEEE 1394

Firewire x 1, HD Audio

Contact: Tirupati Enterprises
Phone no: 9339207519
Email: mail@tirupati.net
Website: www.tirupati.net
Price: Rs. 13,500

RATINGS	
Features	★★★⯪
Performance	★★★
Build quality	★★★
Value for Money	★★⯪
Overall	★★★

Motorola Motozine ZN5
A Motorola phone with a 5MP camera

Motorola mobile phones have mostly been driven by style, especially with their MotoRazr range of phones. The MotoRokr series followed and was aimed at music lovers. This new one is called the Motozine ZN5 and it comes with loads of features including a 5-MP Kodak camera and is aimed at users who want all the features a phone can offer including the looks of a phone.

The phone is thin and slides into your pocket easily. The upper section of the back has a bulge due to the lens of the camera. The back panel is a little tricky to remove.

This phone is like a jigsaw puzzle with different colours and all kinds of materials used all over in bits and pieces. The base of the phone is made of a rubber material. The camera button is a nice metallic purple giving it a good distinguishing factor. A nifty slide button on the right of the phone is present which serves the purpose of locking the phone. This is a good step forward, rather than the old conventional mode of key presses to lock the phone. The keypad is completely flat with really tiny stud-

like projections protruding out to indicate where to actually press.

The camera delivers pretty good images. There are also quick buttons for delete, share and gallery on the keypad when the phone is in camera and gallery mode.

The phone has a loudspeaker, but is not that great as the sound is rather flat. The supplied earbuds on the other hand are much better in terms of sound quality with a decent midrange and even a hint of bass. The phone has a 3.5-mm jack, which means you can also plug in your own earplugs. The only other complaint is that the phone heats up a bit with prolonged use. The call quality was pretty good as far as being in an area with full network reception goes.

The Motozine ZN5 is a pretty good phone, but is a little too late for the market. At Rs. 17,583, it still offers good competition to the N82. If you are on a tight budget, this is a good buy.

Specifications
2.4-inch LCD 240x320 pixel display, 5-MP camera, 512 MB internal memory expandable to 4 GB via micro SD card, Wi-Fi.

Contact: Motorola
Phone no: 0124 - 2303212
Website: www.motorola.com
Price: Rs. 17,583

RATINGS	
Features	★★★★
Performance	★★★★
Build quality	★★★
Value for Money	★★★⯪
Overall	★★★⯪

Brother MFC-7840N
This Brother packs quite a punch

Brother is best known for value-for-money products. We look at one of its latest MFDs — the MFC-7840N.

This MFD has a basic two-line LCD backlit display. There is a full numeric keypad for the fax feature on the right and button options for fax, copy and print on the left.

The paper tray can be removed completely with three clamps to adjust your paper size — two on the sides and one on the back. There is also a tray on top of the device for ADF (Auto Document Feeder). The lid of the scanner can be extended when you need to scan a thick book.

Installation is simple — the toner cartridge assem-

bly slid into place very easily. Configuring the MFD can be being done without connecting it to a PC. Other than the many scanning options available, there's also a unique one — scan your document to FTP (upload to an FTP server).

For printing, we used two modes of the test documents — economy and standard. The plain Word documents took

11.5 seconds with an upper and lower limit of two seconds in both modes.

There was a difference of a second between the two modes, but the image quality was not that great in economy mode. The standard mode was an improvement, but a bit of pixelation was still visible. Scanning gave some good results with the scanned picture quality not that bad and it took a total of 36.4 seconds.

We also scanned five pages using ADF — this took a total of two minutes 35 seconds. A Word document was used to test the copying capabilities, which did not turn out that great as the text turned out to be a bit rough, but this could be caused by the scanner. Even so, the copying took only nine seconds.

This MFD with its ADF feature makes a good over-

all purchase. There are some minor features lacking, like a USB port to get instant printout from flash drives. This is still a really good buy, especially for small businesses, but is a bit on the pricey side at Rs. 19,895.

Specifications
250 sheet paper tray, 32 MB memory, Super G3 (33.6Kbps) modem, Upto 2,400 x 600 dpi print resolution.

Contact: Brother International (INDIA) Pvt. Ltd
Phone: 4098 8900
Email: info@brother.in
Website: www.brother.in
Price: Rs. 19,895

RATINGS	
Features	★★★★○
Performance	★★★★⯪
Build quality	★★★★⯪
Value for Money	★★★○○
Overall	★★★⯪○

HP Photosmart C4588
A step towards wireless printing

HP is well known for its printing solutions, which include multifunctional devices. The HP Photosmart C4588 is a new MFD inkjet aimed at home users or small businesses, but also for those who want photo quality printing.

The C4588 is a neat looking MFD with its smooth clean look. There is a one-inch LCD colour display on the right surrounded by buttons. The paper support tray feels a bit weak and breakable. The scanner lid didn't feel very strong either.

When you power on this printer, it gives you step-by-step instructions on how to start installing the cartridges right up to print alignment — all on the LCD display itself. You do not

even need to connect the printer to the computer for these initial steps.

A unique feature of this printer is the WiFi support. You can either connect the printer to a network using a router or directly to a PC or laptop using ad-hoc networking. We ran the printer through a series of tests to check the print quality and speed in two modes — economy and standard. The

economy mode was quite unsatisfactory with very edgy lines in a full page text document as well as for a colour document. The standard mode, on the other hand, was a great improvement in terms of quality, but printing speed took a hit. The time difference between economy and standard for the test document (text) was 10 seconds, whereas the coloured document was a whole 30 seconds. The quality of the photo test turned out to be exceptionally good. It took

164 seconds for printing, which is decent. The scanning performance was average.

The HP Photosmart C4588 does live up to the mark for being a really good photo MFD as the photo printouts were very impressive.

Specifications
Dimensions: 17.09 x 11.42 x 6.38 in, Print resolution - 1200 x 2400 dpi, 32 MB memory, WiFi, MS/DUO, SD, XD, MMC card reader.

Contact: Hewlett Packard
Phone: 124 - 2566 111
Email: seema.dawar@hp.com
Website: www.hp.com/in
Price: Rs. 8,800

RATINGS	
Features	★★★⯪○
Performance	★★★○○
Build quality	★★★○○
Value for Money	★★★★⯪
Overall	★★★⯪○

Zebronics Air Gear
An MP3 player with no-strings attached

Zebronics has come up with an MP3 solution for wire free music as the Air Gear MP3 player is the headset itself.

The Zebronics Air Gear is worn behind the neck. These headphones look like Bluetooth headphones, and in fact, are the MP3 player itself. There is no device that needs to be plugged in to play music. The only time you need to connect the headphones to a wire is for charging or transferring music through the mini USB port located on the right earphone. All the controls are located on the right earphone. The power on/off and the play and pause buttons are all combined into one button, whereas the volume con-

trols and the next/previous buttons are also combined into two buttons. This is not very easy to use and takes a while to get used to.

We faced a frequent problem between switching songs and controlling the volume.

It is very delicate as the plastic neck band that holds the whole device

together looks very likely to break if not handled with care. This device will not survive a trip in your bag, if you intend to travel a crowded train or bus during peak hours.

There is no management in transferring music, as you can directly drag and drop the songs you want into the removable disk folder.

There is no shuffle or repeat feature available with this player, which means you have to be very selective of the songs you want to listen to, or it will be a cumbersome task to look for that one particular song you feel like hearing.

Priced at Rs. 1,950, it's not the best of MP3 players. If the neck band was sturdier with a slight improvement in the sound quality,

we would recommend it to users who don't like wires, or to those who like listening to music while they exercise. So until an improved version of this wire free MP3 player comes out, we wouldn't suggest you buy it.

Specifications
Frequency range: 20 Hz – 20,000Hz, Max volume: 85dB, Supported Formats: MP3, WMA

Contact: Top Notch Infotronics (I) Pvt. Ltd.
Phone: 9892084950
Email: padam.dugar@zebronics.com
Website: www.zebronics.com
Price: Rs. 1,950

RATINGS	
Features	★★⯪○○
Performance	★★★○○
Build quality	★★○○○
Value for Money	★★⯪○○
Overall	★★⯪○○

Norton Internet Security 2009
An efficient internet security suite

The Norton Internet Security suite comprises all the features of Norton Anti Virus with more features to protect users from threats on the internet like phishing web sites, key loggers, etc.

The look of the Norton Internet Security sports a very modern simplistic look. There are three quick access menus for Computer, Internet and Identity which are displayed when you open the program. There are also usage meters displayed on the main screen: one for CPU usage and the other for usage of the Norton Internet Security application.

Norton Internet Security integrates into your browser as a toolbar. Firefox and Internet Explorer have toolbars, but Opera isn't supported. The toolbar gives

quick access notifications for anti-phishing and also keeps security information like logins and passwords as profiles. Norton Internet Security allows users to securely store usernames and passwords, as well as create identity cards which help users in quick filling of online forms.

The earlier versions of Norton Anti Virus and Norton Internet Security used to use up a lot of resources which causing the PC to slow down when idle as well as during a system scan. But the Norton Internet Security 2009 has stepped up and is quite efficient when it come to resources. It used a maximum of 20 MB of RAM when we first installed it and while running a system scan it used about 10 MB of RAM. This is defi-

nitely an improvement, as in the past the major problem with Norton was of users complaining of the amount of resources used when the antivirus was running.

Considering the all-in-one package that the Norton Internet Security offers — antivirus, antispyware, phishing filters for internet safety and even good performance, it is a bit on the expensive side at Rs. 2,115 for one year and hence we would not recommend it as there are others out there that are cheaper. Even so, if you are a Norton user and trust no other antivirus software then this is a great bundle for you.

Requirements
Microsoft Windows XP/Vista, 300 MHz or faster processor, 256 MB of RAM, 200 MB of
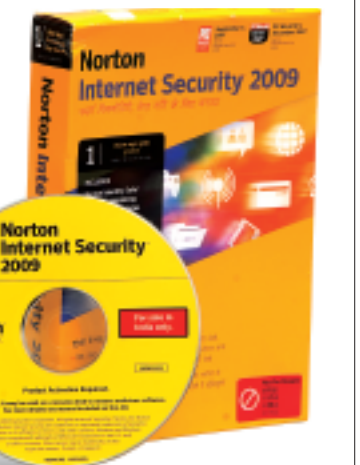
available hard disk space, Standard Web browser

Contact: Symantec
Phone: 1800 425 4235
Website: www.symantec.com/en/in/index.jsp
Price: Rs. 2,115

RATINGS	
Features	★★★★⯪
Performance	★★★★⯪
Ease of Use	★★★★⯪
Value for Money	★★★○○
Overall	★★★★⯪

Brick and mortar

Michael Browne

In November last year, we tested motherboards with integrated graphics (IG) solutions. These were strictly entry-level to mid-range platforms. As you're probably aware, high-end systems mostly mean motherboards without any graphics solution. Yes, high-end PCs demand a graphics card, and therefore, an integrated video solution isn't required. Moreover, most manufacturers reserve the top-end features and top quality binned parts for their top-of-the-line solutions. These are more-often-than-not discrete graphics solutions.

When you're simply buying a PC, any motherboard will most likely do, as long as it supports the processor of your choice – at least four serial ATA ports and an equal number of memory slots and USB ports. The motherboards we've tested are catered more towards the discerning user. Most

High-end rigs, multi-GPU systems and world record beating benchmarks need the best boards. We've tested them...

of these boards support extra connectivity options like E-SATA, extra USB ports and serial ATA ports. Some of these even come with a lot of snazzy add-ons, like an LCD screen that displays POST (Power On Self Test) messages. Perhaps more importantly, most of these motherboards support specific multi-GPU solutions like NVIDIA's SLI or ATI's Crossfire. If you're looking at building a fast gaming rig, or even a powerful multi-purpose PC, or a rig for cracking world benchmark records, then you'll probably end up shopping for one of these worthies.

We've tested 26 of the top-end boards available today. To nobody's surprise, 24 of these boards were Intel LGA 775 platforms. AMD users have a measly two boards to choose from. This is because most vendors are flocking to make high-end solutions supporting Core 2 Duo and Core 2 Quad processors, thanks to Intel's

domination in the high-end performance market. AMD chose to play the entry-level market, which is why our integrated-graphics motherboard comparison in November had more AMD-based solutions. If you're buying a high-end PC today, market trends suggest you want an Intel processor, and motherboard manufacturers seem to agree. We also noticed that Nehalem boards were rather scarce – it seems Intel's DX 58 SO is the only X58 motherboard that is readily available. Other vendors have demo pieces, but nothing in-market. We did get an MSI X58 Eclipse and an ASUS P6T Deluxe, but the former was recalled before we could test it. The latter turned out to be physically damaged – some CPU pins were missing. Therefore, Intel's X58 offering remains the only Nehalem-based board we've tested and we await more boards from other vendors based on the new and exciting Nehalem processor.
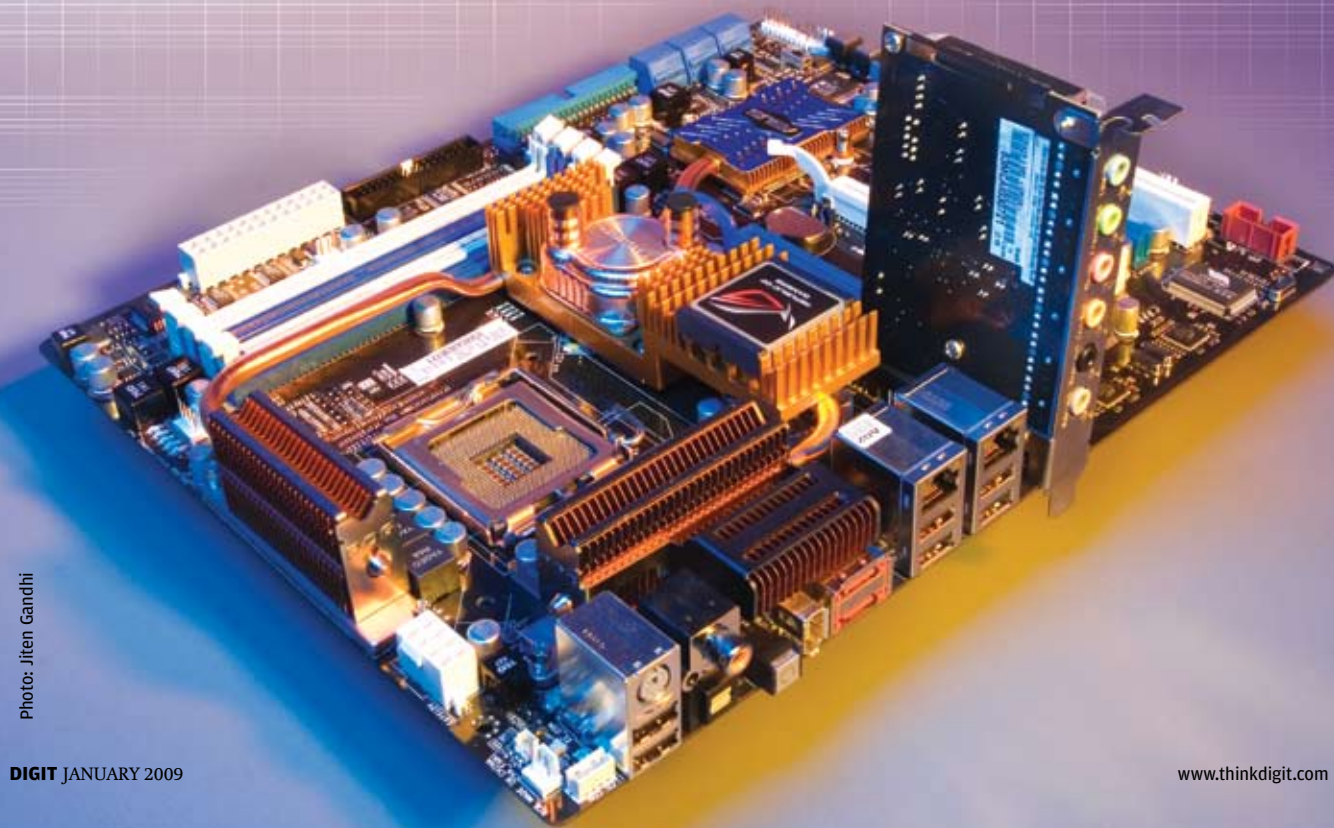

Photo: Jiten Gandhi

Motherboards up to Rs 10,000

Feature rich and fancy-free

Normally, non-integrated motherboards aren't cheap. However, there're always options for every user and in every price bracket. Sadly, the recent plummeting Rupee value against the Dollar means that most Indian distributors have pulled up their rates. Over the past two months, quite a few sub-Rs. 10000 boards have crossed into the higher price category. Also cheaper IG boards are plentiful, but non-integrated boards are one category where discerning buyers are willing to shell out big. As a result, only four boards made it into this cat-

egory and one was an AMD-based offering.

Features

The MSI K9A2 Neo2 was the AMD-based solution in this category, and is based on AMD's RX780 chipset. This board is cleanly laid out and the area around the CPU is also very open. Two of the others were P43-based solutions, which are lower variants of the P45 chipset. MSI's P43 Neo and Gigabyte's EP43-DS3L both featured the ICH 10 Southbridge. ECS was the only vendor to provide a P45 offering — the P45T-AD3. Quite surprisingly this board supported DDR3 memory; this is kind of contradictive to the product pricing as DDR3 memory is costly enough to negate any price benefits the

board brings. This board also has an option in the BIOS for enabling Intel's *Robson,* which by definition uses a small amount of cache on the board itself to speed up HDD operations. Unfortunately this board doesn't have any such cache and may rely on a flash drive for this purpose. We haven't come across this setting in the BIOS' of other boards before so

BEST BUY digit
JANUARY 2009

MSI P43 Neo

How We Tested

We categorised our motherboards into three price categories
1. Boards up to Rs. 10,000
2. Boards above Rs. 10,000 and up to Rs. 18,500
3. Boards above Rs. 18,500

Our Test system for the Intel platform consisted of a Core 2 Extreme QX 9650 (3.0 GHz) processor and 4 GB of RAM. For DDR2 boards we used Corsair's Dominators rated at 1066 MHz at timings of 4-4-4-12 at a speed of 800 MHz. For the DDR3 motherboards we used 4 GB of OCZ XTC Platinum clocked at 1333 MHz at timings of 9-9-9-20. Our graphics card of choice was ASUS' EN GTX 280 TOP; an NVIDIA GeForce GTX 280-based card whose core is factory overclocked to 670 MHz. Western Digital Raptor hard drives were our storage component; these have the spindle running at 10,000 rpm and are suitable for such high-end boards.

For AMD systems we used the Phenom 9950 processor clocked at 2.6 GHz. We used the same memory, graphics card and HDD for the AMD motherboards as well; this is done to minimise deviations in scores due to different components being used. By varying only the motherboard and the processor we are able to keep other variances down to a minimum. We used the latest motherboard BIOS' and the latest drivers that we downloaded from the respective sites. Our OS of choice was the tried and tested Windows XP Prof with service pack 2 installed. This is probably the last time we're testing boards on this ultra stable and reliable platform.

Features
We looked very carefully at overclocking options that these boards provide. With overclocking becoming very idiot-proof, even idiots (pardon the pun!) can play around with BIOS settings safely. Enthusiasts will also find a lot of valuable information as far as CPU and memory voltage parameters go. We rated these boards on the basis of both overclocking and overvolting options and how easy and transparent the settings in the menus are to this effect. We also looked at the features and connectivity options that these boards provide. The presence of digital audio ports,

E-SATA, dual LAN ports, solid state capacitors and the number of expansion slots available for PCI and PCIe cards was rated.

Performance testing
PC Mark 2005: This benchmark runs 48 discrete tests to test each performance related component subsystem — the processor, memory, video and storage. Finally it throws out a final score — which is a weighted average of the individual results.

SiSoft Sandra 2008 Lite: Sandra 2007 had specific benchmarks to test all the subsystems of a PC. It tests a CPU's floating point crunching ability under both arithmetic and multimedia applications. The application supports multiple cores and scales well in this regard. It also tests the read and write performance of the storage subsystem, and the memory bandwidth.

3D Mark 2006: Our graphics benchmark of choice.

CineBench R10: Tests the CPUs rendering ability; scales well with multiple cores.

WinRAR 3.8: Tests compression/decompression at the CPU level

Video encoding (DivX 6.8): is a CPU intensive test and using it while testing a motherboard tells us exactly how optimised the board in question is. The latest version 6.8 also has support for the new SSE4 instruction set.

File transfer test: This tells us a lot about Southbridge performance and data path optimisations on each motherboard, and how fast data is moving around on your hard disk.

Game benchmarks: Doom 3, S.T.A.L.K.E.R Shadow Of Chernobyl and Prey were our games of choice. We run these games at maximum settings for a good GPU benchmark and at minimum settings to get a sound CPU benchmark.

Motherboards	Boards Up To Rs 10,000			
Brand **Model No.**	**MSI** **K9A2 Neo2**	**MSI** **P43 Neo**	**ECS** **P45T-AD3**	**Gigabyte** **EP43-DS3L**
Chipset	AMD RX780	Intel P43 Neo	Intel P45	Intel P43
Socket	AM2/AM2+	LGA 775	LGA 775	LGA 775
Northbridge / Southbridge	AMD RX780 / AMD SB700/SB750	P43 / ICH10	P45 / ICH10R	P43 / ICH10
Price (Rupees)	4500	5200	7560	8500
Plus (+)				
Minus (-)				
Grand Total (Out of 100)	54.01	57.57	61.89	64.47
Features (out of 60)	24.36	22.50	26.10	29.22
Performance (Out of 40)	29.65	35.07	35.79	35.25
Front Side Bus Speed (MHz)	2000 MHz	1333 MHz	1333 MHz	1333 MHz
Memory Type	DDR2	DDR2	DDR3	DDR2
Max Memory Supported (GB) / No of DIMMs	8 GB / 4	8 GB / 4	8 GB / 4	8 GB / 4
No. of SATA / IDE Ports	6 / 1	6 / 1	6 / 1	6 / 1
E-SATA Support / No Of E-SATA Ports	✗ / NA	✗ / NA	y / 1	✗ / NA
No of PCI Express Graphics Slots	1	1	2	1
No. of PCI / PCI x1 / PCI x4 Slots	3 / 2 / ✗	3 / 2 / ✗	2 / 2 / ✗	2 / 4 / ✗
Multi GPU Support (SLI/CrossFire/N) / No of PCIe Lanes for multi GPU setups	N / NA	N / NA	Y / Crossfire x8	✗ / NA
Integrated Audio Controller	Realtek ALC888	Realtek ALC 888	Realtek ALC 883	Realtek ALC 888
SPDIF / Optical Port	✗ / ✗	✗ / ✗	✗ / ✗	✔ / ✔
No of LAN Ports / 10/100 / Gigabit	1 / Gigabit	1 / Gigabit	1 / Gigabit	1 / Gigabit
Integrated Wi-Fi (Y/N)	✗	✗	✗	✗
No. of rear USB / FireWire Ports	6 / 0	4 / ✗	6 / 0	8 / 1
All Solid State Caps (Y/N)	✗	✗	✗	✔
BIOS options				
Overclocking / Overvolting (So 10)	5 / 5	5 / 5	3.5 / 3.5	5.5 / 5.5
CPU voltage range (volts)	(-)26.6 to (+)30.4%	-0.4 ~ +0.7875v	+50mV ~ +328mV	0.5 ~ 2.0v
Memory voltage range (volts)	1.80 to 2.90v	1.416 ~ 3.324v	1.5v ~ 2.2v	1.8 ~ 2.5v
Package Bundle				
No of SATA / PATA Cables Provided	4 / 1	3 / 1	4 / 1	3 / 1
CD's	Drivers	Driver, Backup software	Drivers	Drivers
Other Miscellaneous Accessories	NA	NA	USB and FireWire bracket	NA
Performance				
PC Mark 2005:				
CPU / Memory	7623 / 4496	9563 / 6433	9683 / 6691	9553 / 6326
Graphics / HDD	16450 / 6837	18253 / 6527	18429 / 7017	18425 / 6922
Overall	8774	10138	10573	10467
SiSoft Sandra 2008:				
CPU Arithmetic (Dhrystone ALU / Whetstone iSSE3)	39365 / 33387	54667 / 44028	55530 / 44066	55343 / 44016
CPU Multimedia (Integer / Floating)	98644 / 130006	328936 / 180293	329473 / 180768	329272 / 180264
Drive Index (MB/s) / Random Access Time (ms)	71 / 6	73 / 6	72 / 6	72 / 6
SiSoft Memory bandwidth score (Integer / Floating)	5309 / 5301	6526 / 6253	7196 / 7199	6526 / 6527
3D Mark 2006 Marks / CPU Score	13415 / 3850	16638 / 4949	16879 / 4975	16727 / 4962
CINEBENCH R10 (CPU)	8319	11824	11833	11828
WinRAR 3.8	1844	2192	2263	2193
Video Encoding (DivX 6.8) Time (sec)	80	114.3	114.2	115.4
File Transfer Test (4 GB File) (MBps)	145.2	136.5	136.7	135.2
Doom 3 FPS (1600x1200, 4xAA, 4xAF / 640 x 480, low detail)	172.7 / 185.5	203.2 / 288.4	212.7 / 305.4	207.6 / 301.3
S.T.A.L.K.E.R Shadow Of Chernobyl (1680x1050, 4xAA, 4xAF / 800 x 600, low detail)	136.2 / 443.19	180.3 / 894.6	180.95 / 916.11	180.23 / 888.4
Prey (1680 x 1050, 4x AA, 4x AF, 640 x 480, low detail)	165.8 / 227	204.3 / 348.8	211.2 / 357	202.2 / 336.84

it warrants mention. The board itself is good looking with an all-black PCB and is the best laid out board in this category. The EP43-DS3L from Gigabyte was cleanly laid out and was the only one to

sport an all solid-state capacitor design. We like the placement of the memory slots and the SATA ports in particular. The CPU region was also fairly un-cramped. One issue was the Northbridge

cooler isn't fixed on too tight and uses plastic push-through pins to fasten to the board. Due to this the cooler was quite loose, which isn't good for heat dissipation. This board was the only one to

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have eight rear USB ports for hassle free connectivity. MSI's P43 Neo with its fire engine red PCB is clearly a basic solution as MSI uses a black PCB for their high-end boards. It has a simple aluminium heatsink on the Northbridge and is cleanly laid out with a lot of gap between the PCIe slot and PCI slots.

MSI P45 Platinum

Performance

The P45 chipset is slightly faster than the P43 and ECS' P45T-AD3 takes the lead in this regard but by the finest of margins. Of course this could also be attributable to the use of DDR3 memory especially in case of the memory bandwidth benchmarks which are largely theoretical in nature. The MSI K9A2 Neo2 is just eaten up here; and not for any fault of its own. AMD really trails behind Intel in terms of processor performance and this reflects in most of the benchmark scores.

Our Winner(s)

All in all, MSI's P43 Neo impressed the most. It trailed the fastest board by a hairsbreadth and was a whole Rs. 2,360 cheaper. At Rs. 5,200 its your best bet for a cheap yet powerful board that's reasonably feature-rich. It won our *Digit Best Buy* award in the sub-Rs. 10,000 category and represents superb value for money.

Motherboards above Rs. 10,000 and up to Rs. 18,500

Enthusiastically yours

The number of people willing to spend Rs. 10,000 or above on a motherboard are few; however this number is slowly on the rise. Overclockers, gamers demanding multi-GPU systems and others wanting a really feature rich board have no other choice. When you pay above Rs. 10,000 for a board you are not just looking for connectivity options or even mundane features.

You want bragging rights and flaunt value as well as rock solid performance and build quality. In addition these boards usually have better quality or higher grade components. This helps with increased life and stability while overclocking which is important for those interested in benchmarking and posting scores on forums and such. Some of these boards will also have fancy looking heatpipe cooling solutions; this is great for people having cabinets with transparent side windows or anyone wanting to show his components off.

Features

The boards in the category were all quite feature rich and diverse in terms of the chipsets they were based on. We found Intel's P45 boards aplenty along with a few of the cheaper X48 chipset based boards. NVIDIA's nForce 780i SLI chipset also makes an appearance here. A sole AMD offering based on the new 790FX was available from ASUS. ASUS themselves had five boards in this category. The attractively packaged P5Q Premium and P5Q3 Deluxe caught our eye first. Both are based on the P45 chipset; but the number three as a suffix on the P5Q3 Deluxe means this board supports DDR3 instead of the de facto DDR2. This board also supports two WLAN access points — nifty but useless for most people. The P5Q Premium actually has four RJ45 ports; a waste if you ask us, although we did like the 10 USB ports. Both these boards also support *Express Gate*, an ASUS patent for a separate Linux based firmware OS built on to a flash

chip which allows you to surf the internet and use Skype without booting into Windows. Both boards have great looking heat-pipe solutions and are very well laidout except for the fact that one SATA port remains unusable with full length graphics cards. This is because while the other SATA ports point outwards this one is vertically aligned (meaning it points upwards); connecting a hard drive to this port with a full length graphics card plugged in is impossible. We liked the fact that ASUS chose to supply one PCI slot above the primary PCIe slot. This means that you can use your PCI soundcard, even if you have a large custom cooler on your graphics card, without fear of airflow getting impeded in any way. Incidentally these boards support a 16-phase power system, good for ensuring an ultra stable supply of power to your CPU which is of importance to overclockers. Gigabyte's GA-P45-DS4P is another solidly built offering. It's a great looker too with a good looking heatpipe solution that doesn't take up too much space. Biostar's T-Power I45 was also a good looking and well laid out board and an add-on fan with heatpipe is also provided. Biostar uses funky colours for the expansion slots and the SATA ports are well placed; not so the PATA port which is a little awkward although not inaccessible.

ASUS' Striker Formula (780i chipset) and Rampage Formula (X48 chipset) are part of their built for gamers ROG (Republic Of Gamers) series. These boards have add-on soundcards featuring the same ADI 1988B audio chipset that ASUS uses across all their high-end motherboards. They also have small LED-backlit buttons for functions like power on/off, CMOS reset and system reset. This is convenient for people working with open systems (like us!) or overclockers. They also have LEDs on the PCB that indicate the current status of Northbridge, FSB and CPU overclocks. Then there is the huge yet unobtrusive one-piece heatpipe cooling solutions that ASUS uses; these cooling solu-

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Motherboards — Boards Above Rs. 10,000 and Up To Rs. 18,500

Brand / Model No.	MSI P45 Platinum	BioStar T-Power I45	ASUS M3A79-T Deluxe	ZOTAC NF-780i Supreme	ASUS P5Q3 Deluxe	EVGA 132-CK-NF78	MSI X48c Platinum	Intel DX48BT2	XFX MB-N780-ISH9
Chipset	Intel P45	Intel P45	AMD 790FX	NVIDIA nForce 780i	Intel X48	NVIDIA nForce 780i	Intel X48	Intel X48	NVIDIA nForce 780i
Socket	LGA 775	LGA 775	AM2/AM2+	LGA 775	LGA 775	LGA 775	LGA 775	LGA 775	LGA 775
Northbridge / Southbridge	P45 / ICH10R	P45 / ICH10R	AMD 790FX / AMD SB750	nForce 780i SLI / nForce 570 SLI	X48 / ICH9R	nForce 780i SLI / nForce 570 SLI	X48 / ICH9R	X48 / ICH9R	nForce 780i SLI / nForce 570 SLI
Price (Rupees)	10800	10800	11925	12999	13850	14250	15000	16000	16500
Plus (+)									
Minus (-)									
Grand Total (Out of 100)	69.41	64.51	65.91	67.89	76.15	67.62	68.55	68.03	66.14
Features (out of 60)	34.10	29.16	35.60	32.94	40.20	33.18	33.33	32.48	31.74
Performance (Out of 40)	35.32	35.35	30.31	34.95	35.95	34.44	35.22	35.56	34.40
Front Side Bus Speed (MHz)	1333 MHz	1333 MHz	2000 MHz	1333 MHz	1333 MHz	1333 MHz	1333 MHz	1333 MHz	1333 MHz
Memory Type	DDR2	DDR2	DDR2	DDR2	DDR3	DDR2	DDR2 / DDR3	DDR3	DDR2
Max Memory Supported (GB) / No of DIMMs	8 GB / 4	8 GB / 4	16 GB / 4	8 GB / 4	8 GB / 4	8 GB / 4	8 GB / 6 #	8 GB / 4	8 GB / 4
No. of SATA / IDE Ports	8 / 1	6 / 1	6/1	6 / 1	8 / 1	6 / 1	4 / 1	6 / 1	6 / 1
E-SATA Support / No of E-SATA Ports	✔ / 1	✔ / 2	✔ / 1	✘ / NA	✔ / 1	✘ / NA	✔ / 2	✔ / 2	✘ / NA
No of PCI Express Graphics Slots	2	2	4	3	3	3	2	3	3
No. of PCI / PCI x1 / PCI x4 Slots	2 / 2 / ✘	2 / 2 / ✘	2 / ✘ / ✘	2 / 1 / ✘	2 / 2 / ✘	2 / 1 / ✘	3 / 2 / ✘	2 / ✘ / ✘	2 / 1 / ✘
Multi GPU Support (SLI/CrossFire/N) / No of PCIe Lanes for multi-GPU setups	Y / Crossfire x8	Y / Crossfire x8	Y / Quad CrossFireX (x8, x8, x8, x8)	Y / 3 way SLI (x16, x16, x8)	Y / Crossfire x8	Y / 3 way SLI, (x16, x16, x8)	Y / Crossfire x16	Y / Crossfire x16	Y / 3 way SLI, (x16, x16, x8)
Integrated Audio Controller	Realtek ALC 888	Realtek ALC 888	ADI AD2000B SoundMax	Realtek ALC 888	ADI 1988B	Realtek ALC 888	Realtek ALC 888	Sigmatel STAC 927	Realtek ALC 888
SPDIF / Optical Port	✘ / ✔	✘ / ✘	✔ / ✔	✘ / ✔	✔ / ✔	✘ / ✔	✘ / ✔	✘ / ✔	✘ / ✔
No of LAN Ports / 10/100 / Gigabit	1 / Gigabit	1 / Gigabit	1 / Gigabit	2 / Gigabit	2 / Gigabit	2 / Gigabit	1 / Gigabit	1 / Gigabit	2 / Gigabit
Integrated Wi-Fi (Y/N)	✘	✘	✘	✔ (kit)	✔	✘	✘	✘	✘
No. of rear USB / FireWire Ports	6 / 1	6 / 0	6 / 1	6 / 1		6 / 1	6 / 1	8 / 1	6 / 1
All Solid State Caps (Y/N)	✔	✔	✔	✘	✔	✘	✔	✘	✘
BIOS options									
Overclocking / Overvolting (So 10)	7.25 / 7	5 / 5	7.25 / 7	7 / 7	9 / 9	7 / 7	7.25 / 7.25	7.75 / 7.5	7 / 7
CPU voltage range (volts)	0.9925 to 1.9425 V	-0.05v to +1.3v	0.8 to 1.7v	0.5 to 1.8.0v	0.85 to 2.1v	0.5 to 1.8.0v	+0.7875 V at 0.0125	1.28 to 1.6v	0.5 to 1.8.0v
Memory voltage range (volts)	1.428 to 3.324 V	+0.4v to +1.85v	1.8 to 2.5v	1.8 to 2.5v	1.5 to 2.78v	1.8 to 2.5v	DDR3 - 1.50 to 2.75 V, DDR2 - 1.8 to 3.3 V	1.5 to 2.5v	1.8 to 2.5v
Package Bundle									
No of SATA / PATA Cables Provided	4 / 1	4 / 1	6 / 1	4 / 1	6 / 1	6 / 1	4 / 1	2 / 1	4 / 1
CD's	Drivers	Drivers	Drivers	Drivers	Drivers	Drivers	Drivers	Drivers	Drivers
Other Miscellaneous Accessories	USB and FireWire bracket	Add-on fan with heatpipe	NA	WiFi kit	2-WiFi AP units	NA	USB and FireWire bracket	NA	NA
Performance									
PC Mark 2005:									
CPU / Memory	9662 / 6552	9678 / 6471	7658 / 4500	9612 / 6682	9700 / 6738	9644 / 6706	9652 / 6452	9672 / 6482	9635 / 6735
Graphics / HDD	18382 / 6827	18499 / 7073	16798 / 6881	18284 / 7243	18435 / 6958	18371 / 7241	18182 / 7026	18236 / 7172	18373 / 7102
Overall	10389	10499	8969	10473	10624	10512	10445	10219	10480
SiSoft Sandra 2008:									
CPU Arithmetic (Dhrystone ALU / Whetstone iSSE3)	55328 / 44217	55631 / 44045	39486 / 33576	55538 / 44263	55683 / 44307	55555 / 44015	55262 / 44192	55527 / 44091	55533 / 44024
CPU Multimedia (Integer / Floating)	329873 / 180626	330244 / 181007	98962 / 130438	329374 / 180731	330655 / 181060	329422 / 180295	329872 / 180828	330283 / 180992	329374 / 180353
Drive Index (MB/s) / Random Access Time (ms)	73 / 6	72 / 6	72 / 6	67 / 13	72 / 6	67 / 13	72 / 6	74 / 6	67 / 13
SiSoft Memory bandwidth score (Integer / Floating)	6626 / 6656	6658 / 6668	5312 / 5311	6838 / 6841	7324 / 7222	6972 / 6957	7019 / 7023	7219 / 7215	6839 / 6837
3D Mark 2006 Marks / CPU Score	16563 / 4982	16845 / 4966	13715 / 3907	16377 / 4981	16928 / 4991	16707 / 4954	16627 / 4945	16823 / 4993	16703 / 4938
CINEBENCH R10 (CPU)	11825	11833	8408	11836	11831	11821	11836	11862	11834
WinRAR 3.8	2204	2086	1850	2253	2289	1603	2122	2219	1672
Video Encoding (DivX 6.8) Time (sec)	114.6	114.1	78.3	113.5	113.2	113.8	114.8	113.9	113.4
File Transfer Test (4 GB File) (MBps)	136.6	137	140.4	146.7	137	143.7	140	137.6	145.8
Doom 3 FPS (1600x1200, 4xAA, 4xAF / 640 x 480, low detail)	201.6 / 296.3	208.7 / 291.7	177.1 / 190.8	208.4 / 303.7	212.7 / 302.2	211.8 / 303.8	207.5 / 292.4	208.2 / 294.3	208.35 / 299.4
S.T.A.L.K.E.R Shadow Of Chernobyl (1680x1050, 4xAA, 4xAF / 800 x 600, low detail)	180.63 / 908.72	180.32 / 916.3	139.29 / 460.81	180.21 / 905.3	181.11 / 930.72	179.01 / 880.41	180.4 / 911.4	179.3 / 910.3	179.5 / 901.4
Prey (1680 x 1050, 4x AA, 4x AF, 640 x 480, low detail)	206.3 / 351.7	210.5 / 352.6	183.6 / 231.9	206.3 / 346.4	211.1 / 374	208.7 / 344.9	208.8 / 350.3	208.6 / 355	208.5 / 348.3

Motherboards	Boards Above Rs. 10,000 and Up To Rs. 18,500			
Brand **Model No.**	**ASUS** **Rampage Formula**	**ASUS** **P5Q Premium**	**Gigabyte** **P45-DS4P**	**ASUS** **Striker 2 Formula**
Chipset	Intel X48	Intel P45	Intel P45	NVIDIA nForce 780i
Socket	LGA 775	LGA 775	LGA 775	LGA 775
Northbridge / Southbridge	X48 / ICH9R	P45 / ICH10R	P45 / ICH10R	nForce 780i SLI / nForce 570 SLI
Price (Rupees)	17000	17750	17890	18350
Plus (+)				
Minus (-)				
Grand Total (Out of 100)	74.79	75.40	72.87	75.35
Features (out of 60)	39.83	40.44	37.64	41.27
Performance (Out of 40)	34.96	34.96	35.24	34.09
Front Side Bus Speed (MHz)	1333 MHz	1333 MHz	1333 MHz	1333 MHz
Memory Type	DDR2	DDR2	DDR2	DDR2
Max Memory Supported (GB) / No of DIMMs	8 GB / 4	8 GB / 4	8 GB / 4	8 GB / 4
No. of SATA / IDE Ports	6 / 1	10 / 1	6 / 1	6 / 1
E-SATA Support / No of E-SATA Ports	✘ / NA	✘ / NA	✘ / NA	✔ / 2
No of PCI Express graphics slots	2	4	2	3
No. of PCI / PCI x1 / PCI x4 Slots	2 / 3 / ✘	2 / 1 / ✘	1 / 3 / 1	2 / 2 / ✘
Multi GPU Support (SLI/CrossFire/N) / No of PCIe Lanes	Y / Crossfire x16	Y / Crossfire x8	Y / Crossfire x8	Y / 3 way SLI, (x16, x16, x8)
Integrated Audio Controller	ADI 1988B	ADI 1988B	Realtek ALC 889A	ADI 1988B
SPDIF / Optical Port	✔ / ✔	✔ / ✔	✔ / ✔	✔ / ✔
No of LAN Ports / 10/100 / Gigabit	2 / Gigabit	4 / Gigabit, 10/100	2 / Gigabit	2 / Gigabit
Integrated Wi-Fi (Y/N)	✘	✘	✘	✘
No. of rear USB / FireWire Ports	6 / 1	10 / 0	8 / 2	6 / 1
All Solid State Caps (Y/N)	✔	✔	✔	✔
BIOS options				
Overclocking / Overvolting (So 10)	9.25 / 9.5	9 / 9	8.25 / 8	9.5 / 9.25
CPU voltage range (volts)	1.1 to 2.4v	0.85 to 2.1v	0.5 to 2.3v	1.1v to 2.2v
Memory voltage range (volts)	1.8 to 3.4v	1.8 to 3.08v	1.8 to 3.0v	1.8 to 3.4v
Package Bundle				
No of SATA / PATA Cables Provided	6 / 1	6 / 1	6 / 1	6 / 1
CD's	Drivers, STALKER game, 3D Mark 06 Advanced Edition, Kaspersky Antivirus	Drivers	Drivers	Drivers, STALKER game, 3D Mark 06 Advanced Edition, Kaspersky Antivirus
Other Miscellaneous Accessories	LCD poster, USB and FireWire bracket, optional fan	USB and FireWire bracket	USB and FireWire bracket	LCD poster, USB and FireWire bracket, optional fan
Performance				
PC Mark 2005:				
CPU / Memory	9689 / 6552	9695 / 6615	9652 / 6453	9625 / 6912
Graphics / HDD	18293 / 7147	18366 / 7014	18462 / 7072	18286 / 6829
Overall	10284	10494	10476	10436
SiSoft Sandra 2008:				
CPU Arithmetic (Dhrystone ALU / Whetstone iSSE3)	55616 / 44264	55677 / 44051	55477 / 43994	55489 / 44019
CPU Multimedia (Integer / Floating)	330318 / 181063	330650 / 181126	329438 / 180393	328265 / 180298
Drive Index (MB/s) / Random Access Time (ms)	73 / 6	72 / 6	72 / 6	67 / 13
SiSoft Memory bandwidth score (Integer / Floating)	6787 / 6780	6829 / 6829	6526 / 6576	6587 / 6582
3D Mark 2006 Marks / CPU Score	16829 / 4999	16870 / 4951	16562 / 4827	16627 / 4926
CINEBENCH R10 (CPU)	11366	11849	11856	11714
WinRAR 3.8	2149	2213	2193	1628
Video Encoding (DivX 6.8) Time (sec)	113.4	112.8	113.7	114.3
File Transfer Test (4 GB File) (MBps)	135.8	144.1	138.4	147.1
Doom 3 FPS (1600x1200, 4xAA, 4xAF / 640 x 480, low detail)	211.5 / 294.9	212 / 295.7	206.4 / 297.5	206.3 / 288.3
S.T.A.L.K.E.R Shadow Of Chernobyl (1680x1050, 4xAA, 4xAF / 800 x 600, low detail)	179.53 / 679.69	181.07 / 676.24	180.43 / 891.4	180.74 / 892.5
Prey (1680 x 1050, 4x AA, 4x AF, 640 x 480, low detail)	197.1 / 354.5	210.5 / 356.8	206.6 / 349.2	209.5 / 346.2

tions are some of the most attractive around. The ASUS M3A79-T Deluxe was unique by supporting 4-way Crossfire or as ATI calls it, Quad Crossfire. Intel's own DX48BT2 was also present but this board pales in comparison to the two other X48 boards in test. It's somewhat plain-jane looking with a black PCB and Intel's traditional all aluminium heatsinks on both chipsets. Both MSI's boards, the X48c Platinum and the P45 Platinum were good lookers although somehow we do not care for the elaborate circular shaped heatpipe solution atop the former which looks overly loud and garish. The X48c Platinum is very well laid out; the PCI slots can be populated even with a Crossfire setup — this is rare. The SATA ports are placed away from the primary PCIe slot and even a full length, double-slot card will not render them unusable. Equally important for some is the support for both DDR2 and DD3 memory on the X48c; this board has six memory DIMMs; two for DDR2 and four for DDR3. This means you can upgrade to DDR3 later, when it's more affordable. All these features come with a caveat — there are only four SATA ports and this may not be enough for those running multiple HDDs and RAID arrays. The P45 Platinum is equally well laid out and the heatpipe solution is much easier on the eye; in fact the heatsinks atop the Northbridge have been designed to appear like a four cylinder engine block complete with cooling fins. However, this high-rise heatsink couple with the fact that the heatsink cooling the mosfets on the other side of the board are also quite high, means your fingers face a little abuse while fastening the CPU cooler. MSI provides eight SATA ports on the P45 Platinum; as if to make up for the X48c Platinums' deficiency in this regard.

The other three 780i SLI boards were from EVGA, XFX and ZOTAC and these boards look identical since these vendors choose to use NVIDIAs standard PCB; in fact these PCBs are even made by NVIDIA so the finest details are identical too. EVGA has the most SATA connectors bundled and these are an attractive black in colour. The PATA connector too is encased in a round bracket to aid airflow — thoughtful. ZOTAC bundles a WiFi kit with their motherboard which is the only difference between these boards aside from their bundles and prices.

The ASUS boards have the most feature rich BIOSes in terms of overclocking options and they are closely followed by Gigabyte. Never before have we seen such minute settings and you can tweak virtually any component you choose. There are also multiple reference voltage points that you can set. Overclockers will spend a lot of time here. We also think ASUS does a very good job of making their BIOSes newbie friendly with help options at every stage. The settings are also very transparent and menu structure is good. Both Gigabyte and ASUS support updating their BIOS through USB drive and this is so much more convenient then hunting around for a floppy drive and working diskette. Although most vendors have programs that allow flashing the BIOS from Windows itself we feel the option of adding support for flashing from a USB drive from within the BIOS is a very useful feature.

Performance

In terms of overall performance it seems NVIDIAs 780i SLI chipset cannot match Intel's X48 and P45 chipsets. Of particular attention is the storage subsystem where Intel definitely has a lead and NVIDIA's Southbridge has latency issues in terms of hard drive access and during our file copy test. The ASUS M3A79-T Deluxe trails by a good margin on account of its AMD processor but from amongst the Intel boards ASUS' P5Q3 Deluxe was just ahead of the competition. As is the nature of motherboard testing the differences when using identical components at stock speeds is very minute; but the X48 and P45 chipsets generally outperform the 780i in both CPU and HDD based benchmarks. It also appears that DDR3 memory gives both the ASUS P5Q3 Deluxe and the Intel DX48BT2 a slight edge. Although we feel that DDR3 will really shine at speeds of 1600 MHz and above its nice to see some small performance increments being gained at relatively slower speeds of 1333 MHz and with looser timings.

ZOTAC NF-780i Supreme
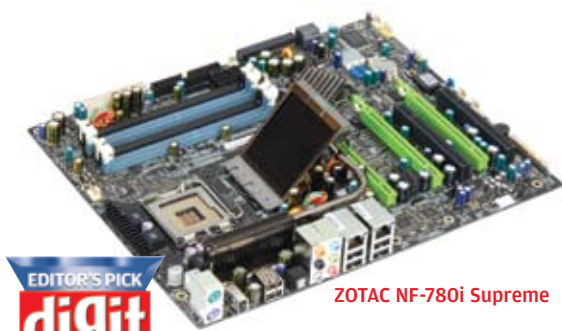
Winner(s)

Our *Best Buy* award goes to MSI's P45 Platinum; a highly competent board for most high-end users at a great price point of Rs. 10,800. It's got a load of connectivity options and even supports Crossfire. It's definitely no slouch in terms of performance and shames some costlier boards. Our overall best performer was also to be found in this category (shockingly) as ASUS' P5Q3 Deluxe demolishes even the ultra-high-end offerings. If you want the fastest board out there, this is the one to buy. It's very feature-rich as well, and you won't want for connectivity options which it has a bonanza of. DDR3 support means its reasonably future proof. The price of Rs 13,850 may cause you to go "ouch" but it's superlatively well built if that massages your sore wallet. Our *Editors Pick* was the full x16 SLI supporting ZOTAC NF-780i Supreme. This board has all the connectivity options, gives you the option of 3-way SLI and throws in a WLAN access point all for Rs. 12,999 — good value for money for someone building a fast gaming rig.

Motherboards above Rs. 19,000

Wallet busting superlatives

When talking of Rs. 19,000 for just one motherboard you just know that the nonsense will be left far behind. 20-odd grand is either a good price for a superb motherboard or just a ridiculous price for an atrociously expensive and utterly undeserving offering. Entire PCs can be built for less, which means these boards either have some serious plus points in terms of features or connectivity,

ASUS P5Q3 Deluxe

BEST BUY digit JANUARY 2009

Motherboards				Boards above Rs. 18,500					
Brand Model No.	ZOTAC NF-790i Supreme	ASUS P5E64 WS Evolution	Gigabyte X48-DQ6	ASUS Striker 2 NSE	EVGA 132-CK-NF79	Gigabyte EP45-DQ6	ASUS P5E3 Premium	XFX MB-N790-IUL9	ASUS Rampage Extreme
Chipset	NVIDIA nForce 790i	Intel X48	Intel X48	NVIDIA nForce 790i	NVIDIA nForce 790i	Intel P45	Intel X48	NVIDIA nForce 790i	Intel X48
Socket	LGA 775	LGA 775	LGA 775	LGA 775	LGA 775	LGA 775	LGA 775	LGA 775	LGA 775
Northbridge / Southbridge	nForce 790i SLI / nForce 570 SLI	X48 / ICH9R	X48 / ICH9R	nForce 790i SLI / nForce 570 SLI	nForce 790i SLI / nForce 570 SLI	P45 / ICH10R	X48 / ICH9R	nForce 790i SLI / nForce 570 SLI	X48 / ICH9R
Price (Rupees)	19999	21000	21000	21250	22500	22990	23250	24000	25750
Plus (+)									
Minus (-)									
Grand Total (Out of 100)	70.58	72.06	73.99	75.54	70.61	74.63	73.21	69.19	77.07
Features (out of 60)	35.07	36.30	38.87	41.27	35.31	40.07	37.68	33.87	41.51
Performance (Out of 40)	35.51	35.76	35.13	34.28	35.30	34.57	35.53	35.32	35.56
Front Side Bus Speed (MHz)	1333 MHz	1333 MHz	1333 MHz	1333 MHz	1333 MHz	1333 MHz	1333 MHz	1333 MHz	1333 MHz
Memory Type	DDR3	DDR3	DDR2	DDR3	DDR3	DDR2	DDR3	DDR3	DDR3
Max Memory Supported (GB) / No of DIMMs	8 GB / 4	8 GB / 4	8 GB / 4	8 GB / 4	8 GB / 4	8 GB / 4	8 GB / 4	8 GB / 4	8 GB / 4
No. of SATA / IDE Ports	6 / 1	6 / 1	8 / 1	6 / 1	6 / 1	10 / 1	6 / 1	6 / 1	8 / 1
E-SATA Support / No of E-SATA Ports	✔ / 1	✔ / 2	✘ / NA	✔ / 2	✔ / 1	✘ / NA	✔ / 2	✔ / 1	✔ / 1
No of PCI Express graphics slots	3	4	2	3	3	2	3	3	2
No. of PCI / PCI x1 / PCI x4 Slots	2 / 2 / ✘	2 / ✘ / 1	2 / 3 / ✘	2 / 2 / ✘	2 / 2 / ✘	2 / 1 / 2	2 / 1 / ✘	2 / 2 / ✘	2 / 3 / ✘
Multi GPU Support (SLI/CrossFire/N) / No of PCIe Lanes	Y / 3 way SLI, all x16	Y / Crossfire x16	Y / Crossfire x16	Y / 3-way SLI, all x16	Y / 3 way SLI, all x16	Y / Crossfire x8	Y / Crossfire x16	Y / 3 way SLI, all x16	Y / Crossfire x16
Integrated Audio Controller	Realtek ALC 888	ADI 1988B	Realtek ALC 889A	ADI 1988B Soundmax	Realtek ALC 888	Realtek ALC 889A	ADI 1988B	Realtek ALC 888	ADI 1988B
SPDIF / Optical Port	✔ / ✔	✔ / ✔	✔ / ✔	✔ / ✔	✔ / ✔	✔ / ✔	✔ / ✔	✔ / ✔	✔ / ✔
No of LAN Ports / 10/100 / Gigabit	2 / Gigabit	2 / Gigabit	2 / Gigabit	2 / Gigabit	2 / Gigabit	4 / Gigabit, 10/100	2 / Gigabit	2 / Gigabit	2 / Gigabit
Integrated Wi-Fi (Y/N)	✔ (kit)	✘	✘	✘	✘	✘	✔	✘	✘
No. of rear USB / FireWire Ports	6 / 1	6 / ✘	8 / 1	6 / 1	6 / 1	8 / ✘	6 / ✘	6 / 1	6 / 1
All Solid State Caps (Y/N)	✘	✔	✔	✔	✘	✔	✔	✘	✔
BIOS options									
Overclocking / Overvolting (So 10)	7.25 / 7.25	8.5 / 8.5	8.5 / 8.25	9.5 / 9.25	7.25 / 7.25	8.5 / 8.25	9 / 9	7.25 / 7.25	9.25 / 9.5
CPU voltage range (volts)	0.5125 to 2.0v	0.85 to 2.3v	0.5 to 2.35v	1.1v to 2.4v	0.5125 ~ 2.0v	0.5 ~ 2.3v	0.85 to 2.1v	0.5125 ~ 2.0v	0.85 ~ 2.5v
Memory voltage range (volts)	1.5 to 2.0v	1.5v to 2.78v	1.8v to 3.35v	1.5 to 3.1v	1.5 ~ 2.0v	1.8 ~ 3v	1.5v ~ 2.78v	1.5 ~ 2.0v	1.51 ~ 2.8v
Package Bundle									
No of SATA / PATA Cables Provided	4 / 1	4 / 1	6 / 1	6 / 1	6 / 1	6 / 1	4 / 1	4 / 1	6 / 1
CD's	Drivers	Drivers	Drivers	Drivers, STALKER game, 3D Mark 06 Advanced Edition, Kaspersky Antivirus	Drivers	Drivers	Drivers	Drivers	Drivers, STALKER game, 3D Mark 06 Advanced Edition, Kaspersky Antivirus
Other Miscellaneous Accessories	WiFi kit	USB and FireWire bracket	USB and FireWire bracket	LCD poster, USB and FireWire bracket, optional fan	NA	USB and FireWire bracket	2-WiFi AP units	NA	LCD poster, USB and FireWire bracket, optional fan
Performance									
PC Mark 2005:									
CPU / Memory	9666 / 6962	9696 / 6685	9676 / 6282	9711 / 6928	9674 / 6956	9668 / 6324	9703 / 6705	9632 / 6928	9701 / 6695
Graphics / HDD	19517 / 7235	18470 / 6942	18431 / 7108	18372 / 6892	19681 / 7175	18146 / 7080	18539 / 6965	19347 / 7194	18515 / 7050
Overall	10790	10497	10400	10580	10480	10336	10560	10563	10609
SiSoft Sandra 2008:									
CPU Arithmetic (Dhrystone ALU / Whetstone iSSE3)	55562 / 44230	55267 / 44146	55808 / 44661	55569 / 44021	55564 / 44044	55550 / 44113	55693 / 44250	55527 / 44277	55680 / 44083
CPU Multimedia (Integer / Floating)	329334 / 180379	329963 / 180882	331339 / 181512	328860 / 180022	329506 / 180414	329849 / 180690	330535 / 180426	329393 / 180352	330662 / 181109
Drive Index (MB/s) / Random Access Time (ms)	67 / 13	72 / 6	72 / 6	67 / 13	67 / 13	72 / 7	72 / 6	67 / 13	73 / 6
SiSoft Memory bandwidth score (Integer / Floating)	7718 / 7709	7300 / 7293	6148 / 6150	6976 / 6954	7731 / 7733	6368 / 6369	7350 / 7354	7566 / 7636	7316 / 7311
3D Mark 2006 Marks / CPU Score	16765 / 4947	16886 / 4990	16860 / 4994	16719 / 4948	16821 / 4969	16587 / 4947	16911 / 4995	16736 / 4983	16862 / 4973
CINEBENCH R10 (CPU)	11838	11844	11812	11647	11842	11786	11854	11844	11852
WinRAR 3.8	2264	2245	1990	1670	2264	2035	2270	2263	2263
Video Encoding (DivX 6.8) Time (sec)	112.2	112.6	111.6	114.8	112.7	114.7	113.9	112.3	113.1
File Transfer Test (4 GB File) (MBps)	144.5	137.5	138.7	146.3	147.6	147.6	144.9	146.3	146.8
Doom 3 FPS (1600x1200, 4xAA, 4xAF / 640 x 480, low detail)	211.8 / 305.2	211.8 / 303.5	209.2 / 296	207.5 / 284.7	212.4 / 296.3	210.3 / 288.4	213.3 / 299.8	210.4 / 301.4	212.9 / 303.6
S.T.A.L.K.E.R Shadow Of Chernobyl (1680x1050, 4xAA, 4xAF / 800 x 600, low detail)	180.79 / 906.92	180.63 / 906.68	181.15 / 894.95	180.32 / 893.72	181.44 / 896.5	178.22 / 881.22	181.23 / 916.65	180.5 / 901.45	181.67 / 924.39
Prey (1680 x 1050, 4x AA, 4x AF, 640 x 480, low detail)	211.1 / 357.5	211 / 356.8	209.9 / 349.4	210.2 / 351.3	210.8 / 354.5	209.1 / 344.7	211 / 359.9	208.5 / 355.7	210.9 / 371.7

or they better be built well enough to stand rigorous overclocking. Yes, this also means large, attractive and overkill heatsink and heatpipe cooling solutions with lots of shiny copper — after all, a board that costs this much should look the part as well.

Gamers and enthusiasts looking for SLI and Crossfire support as well as DDR3 will also likely find something in the category. A total of nine boards featured in this category; four NVIDIA 790i solutions, four Intel X48 solutions and a single P45 solution.

Features

NVIDIAs 790i SLI is a unique offering in the way that this chipset supports three x16 PCIe lanes for 3-way SLI using the full bandwidth of the PCIe slot. Both the 780i and the 790i use the same Southbridge, which is nothing more than a 570i SLI chip which provides the bandwidth for the extra PCIe lanes. Three of the 790i SLI boards from EVGA, XFX and ZOTAC are identical in terms of build, design and features. The only difference is EVGA provides better quality SATA and PATA cables and ZOTAC provides a WLAN AP kit. ASUS' Striker 2 NSE is unique — it's built around the same layout as the ASUS Striker 2 Formula but supports DDR3. And

this is the only major difference. The build quality is exemplary as expected and the CPU region is not cramped. The Northbridge cooler integrates two nozzles that are meant to be used along with a liquid cooling kit. In fact the heatsink on the Northbridge is hollow so it doubles as a water block. ASUS allows for very fine tweaking of CPU and memory voltages; in fact the Striker 2 NSE and Striker 2 Formula both allow one to fine tune the memory voltages in the tune of 0.02 volt steps while CPU volt steps are as fine as 0.006 volts. The Rampage Extreme is based on the X48 chipset also features the same fine adjustment to voltages. This board has an even larger heatpipe solution than the Striker boards and although the gun grey fins of the heatsinks look cool with the bright post-box red bezel atop the heatsink we found there to be too little space between the mosfet cooler and the CPU region. In fact getting the LGA 775 cooler on was a royal pain and our fingers were quite sore from battling with the large heatsinks all around the CPU region. Anyone who swaps out CPUs or coolers will rue this fact. That being said the board itself is well laid out aside from this one fault. The SATA ports are clear of

the PCIe slot and there are sets of three LEDs on the board that tell you the extent of overclocking; one each for none, moderate or extreme overclocking.

The ASUS P5E3 Premium is an X48 based, DDR3 supporting solution that's very easy on the eye. It features dual-WLAN APs and a really great quality build. The heatsink is attractive while not being overly blatant; the copper is well complimented by the shiny blue bezel that covers part of the cooling solution. Even though the cooling solution is large and surrounds the CPU socket on all four sides it doesn't interfere with installation of the CPU cooler which speaks volumes about ASUS' design standards. This board also features ASUS' Express Gate, which we discussed earlier. The ASUS P5E64 WS Evolution was the only self confessed workstation board in test. We really liked the heatsink/heatpipe look. For once ASUS decided to ditch the copper look and the heatpipes and cooling fins are chromed. The heatsinks also have shiny blue bezels and the overall effect this creates is one of supreme class. You'll notice this board amongst all the others around here. Although the heatpipes seem to cramp the CPU region

at first glance, installation of the CPU cooler was quite easy and our fingers hardly even touched the heatpipes. A PCIe x4 slot is provided above the primary PCIe graphics slot but the memory banks will interfere with longer cards that you can place in this slot. Surprisingly even this board has really decent overclocking options (for a workstation board).

Gigabytes two offerings; the X48-DQ6 and the EP45-DQ6 are X48 and P45 based boards respectively. Shockingly the EP45-DQ6 is costlier than the X48-DQ6 which is surprising because the latter is a full fledged x16 bandwidth providing Crossfire chipset meant for high-end gaming systems. Both boards are well laid out although the EP45-DQ6 does have an issue with the clearance between a full length PCIe card and the third and fourth SATA ports which become unusable. The first and second SATA ports are right under the card but since they face outwards installing a SATA cable isn't an issue here. Even though this board has quite an elaborate heatpipe solution the board gets quite hot. The other three 790i SLI boards were from EVGA, XFX and ZOTAC; once again all three were identical in terms of looks and layout, all being designed around the reference NVIDIA PCB design. Once again ZOTAC bundles a WLAN AP kit with their 790i.

Performance

ASUS' P5E64 WS Evolution was the fastest amongst these boards. Once again all the X48 boards tie up just behind it followed by the Gigabyte EP45-DQ6 and then NVIDIA's 790i SLI solutions.

ASUS Striker 2 NSE

Surprisingly the 790i SLI does manage to impress in the PC Mark 05 graphics score where boards based on this chipset cracked the 19,000 point barrier. However, when we used 3D Mark 06, this advantage ceases leaving us to wonder what exactly in the benchmark favoured these boards.

Winner(s)

Our *Best Buy* belonged to the ASUS Striker 2 NSE. For Rs. 21,250 you get a board that supports 3-way SLI, is very well built and attractive looking and even comes with the full version of *S.T.A.L.K.E.R. Shadow Of Chernobyl* and 3D Mark 2006 Advanced Edition, plus Kaspersky Antivirus. It also has an LCD poster which connects to a USB port and displays the POST status on its screen; useless some might say, but downright funky. It's a feature-rich board that will not disappoint someone looking for a truly high-end machine. It also has a very good audio solution in the Soundmax ADI 1988B chipset, which is much better than the other sound solutions available with the exception of the Creative X-Fi series which we didn't see this year. ∎

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Buying Guide

You need	We Recommend	Price	Why we Recommend it
A well built motherboard that's not too costly and is feature rich, budget Rs 12000	ECS P45T-AD3	Rs. 7,560	It's the cheapest P45 chipset board around and is well laid out and reasonably well built
Something flashy and feature rich and fast. I do not want multiple graphics card solutions	ASUS P5Q3 Deluxe	Rs. 13,850	Extremely well built and very feature rich, very fast, lots of flaunt value, overclockable too
An SLI solution that's well priced	ZOTAC NF-780i Supreme	Rs. 12,999	Well priced for a 780i solution and a good package too
A 3-way SLI solution with lots of features, flaunt value and great build quality	ASUS Striker 2 NSE	Rs. 21,250	The most feature rich and well built 790i SLI board around, and its better priced than some of the other boards that aren't as good
The Best Crossfire solution around but one that's not insanely priced	ASUS Rampage Formula; MSI X48c Platinum	Rs. 17,000; Rs. 15,000	The former is very well built and feature rich and definitely an option for even overclockers as its rock stable. The latter is the only board to support DDR2 and DDR3 making it a very flexible solution. And they both do Crossfire with x16 PCIe bandwidth
The best board for my Phenom Processor	ASUS M3A79-T Deluxe	Rs. 11,925	Four-way Crossfire support, plenty of expansion options and a well built board; cannot match this one for features and price

Contact Sheet — Motherboards

Brand	Company	Phone No	Email	Website
Asus	ASUS Technology	022 - 67668800	media_india@asus.com	www.asus.in
Biostar	Abacus Peripherals	022 - 40914613	megha@abacusperipherals.com	www.biostar.com.tw
ECS	SES Technologies	022 - 30862500	Jacques.roux@sesindia.com	www.ecs.com.tw
EVGA	Tirupati Enterprises	033 - 22251192	abhishek@tirupati.net	www.evga.com
Gigabyte	GIGABYTE UNITED INC	022 - 40633222	vivek@gigabyte.in	www.gigabyte.in
Intel	Intel Tech. India	9833823474	saranya.rustagi@intel.com	www.intel.co.in
MSI	MSI India	011 - 41758808	marketing@msi-in.com	www.msi-india.com
Palit	Tirupati Enterprises	033 - 22251192	abhishek@tirupati.net	www.palit.biz
XFX	Rashi Peripherals	022 - 67090828	xfx@rptechindia.com	www.xfxforce.com
Zotac	Top Notch Infotronix (I)	044 - 26616202	sales@zotac.com	www.zotac.com

Digital cameras

So many models, so much variety, which one to choose?

It's the start of yet another year and turning to photography as a hobby might be a good idea. There are so many cameras in the market, but which one do you opt for? There's just too much to choose from. All throughout the year, we emphasise on cameras in articles and tests.

Going shopping for a camera is first about doing your homework and being very clear on what you want from it. Most people purchase standard point-and-shoot cameras that are priced anywhere between Rs. 7,000 to Rs. 15,000. The grey market prices are obviously going to be lower. The entry-level PowerShot A470 from Canon is still available at just under Rs. 7,000. The PowerShot A1000 IS and the very new A2000 IS have just been released in the market for a little over Rs. 11,000. They are 10-MP cameras with 4x and 6x optical zoom lenses.

Canon has been updating the PowerShot line of cameras up the price scale as well. The well-known Canon PowerShot A720 IS and the A650 IS are mid-ranged P&S cameras to own. The prices of these in the market hover somewhere between the Rs. 11,000 mark in the grey market. These cameras both come with 6x optical zoom which is sufficient for most purposes. If you want something a bit cheaper, then the PowerShot A590 IS is one to look for. The price of the A590 IS has dropped to around Rs. 11,500.

However, if you want a no-compromise P&S camera with a good zoom lens and a decent-sized sensor, the new SX110 is the one to look for. It has a better build and is a better performer than the older SX100. Priced at around Rs. 16,000, it comes with a pouch and a 2 GB SD card. Look out for schemes in malls and showrooms where you get a charger and batteries along with the camera.

There are a few new ultrazoom cameras in the market too. The DSC H7 and H9 from Sony come with 15x optical zoom. Canon's S5 IS is still in the market and can be found at around Rs. 17,000. Canon has begun to phase them out with the SX10 which has an incredible 20x optical zoom as compared to the S5 IS' 12x. If you like to go for an Olympus ultrazoom, then the SP565UZ is an interesting model to look out for. The price is somewhere around Rs. 20,000.

Compact cameras are available at under Rs. 15,000 as well. They aren't typically liked for performance but for size and portability reasons. The IXUS 80 and 85 IS are the ones from Canon
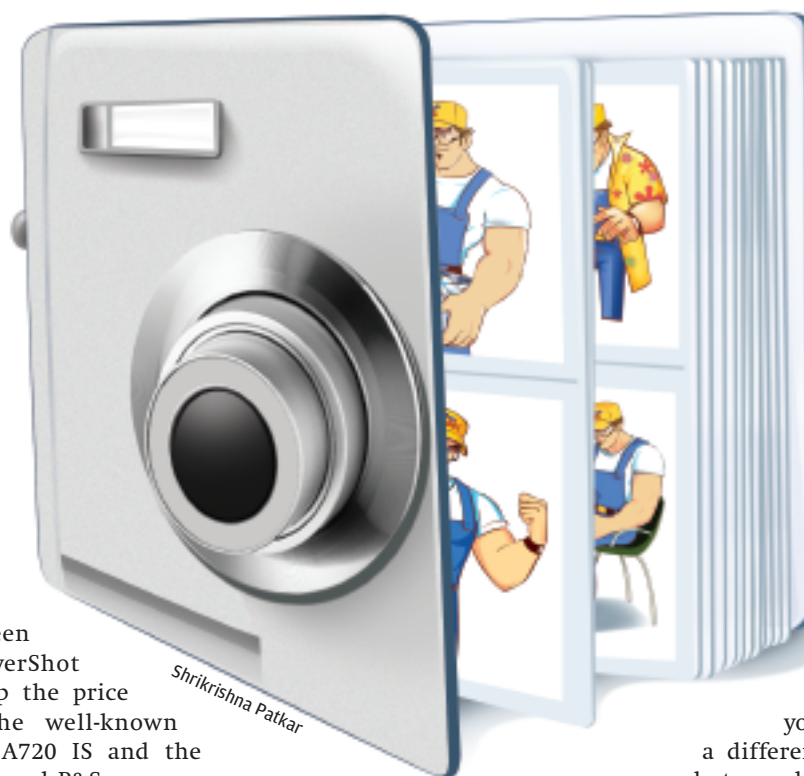

Shrikrishna Patkar

priced under Rs. 15,000. Even the Nikon S52 is available for just under Rs. 13,000. Clearly, the days of extremely expensive ultracompacts have passed. Even Sony's T77 is not more than Rs. 16,000 in the market.

One of the more interesting categories of cameras is the D-SLR. Prices have dropped and are now just above the price bracket for the ultracompact fashion oriented cameras. The Nikon D40 and the D40X are the entry-level offering from Nikon. Rumours are that the D40 is priced around Rs. 18,000 in the grey market, but that's only great if you can find one. If you can't, then the D40X is the next best bet. The Nikon D60 has been brought in to replace the D40 and the D40X. Canon has a few entry-level D-SLR cameras too — the EOS 1000D and the EOS 400D. Both of these cameras can be bought for around Rs. 30,000 to Rs. 33,000. The lens supplied with most of these cameras is the 18−55 mm ones. Look out for shops that sell you only the body and give you the option of selecting a different lens. Shopkeepers and photographers will also tell you that cost of Canon lens is considerably more than the Nikon ones.

This month, we reviewed the Nikon D90 and liked it a lot. We suggest you look out for a Nikon D80. The D90 replaces the D80, which might get phased out soon. The prices for the D80 have been dropping steadily with the launch of the D90. The D80 body itself in the grey market is rumoured to be be around Rs. 35,000 and there are some interesting offers for lenses offered as well. ⊠

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Q I want an HDTV. The screen size doesn't matter much. Even a 22-inch is sufficient. But I would like to buy at least a 26-inch TV. The main thing is the resolution of that TV, because I own an Xbox 360 console and I want to play games in HD. It should have at least one HDMI port. I'm looking to buy a Samsung-LA22A450C1 only because it has a higher resolution (1680 x 1050). However, other TVs in this price range offer lower resolution (1366 x 768) and are priced even higher. Is it the right decision to buy that Samsung TV? My budget is upto Rs. 30,000.

Harsimran Rangi

In my opinion, for playing games on a console, your screen size would be more important than all other considerations. Since most large-screen displays support a resolution of at least 1366 x 768, I think you're well covered by even a 22-inch LCD monitor for a PC. Dell's SP 2208 WFP is a 22-inch monitor with an HDMI-port priced at Rs. 15,000. The option from Samsung that you are looking at is also good. Remember that these are PC monitors as their resolutions are most commonly found on PCs and not LCD TVs, as TV-based displays have resolutions of 720p, 1366 x 768 pixels or 1080p. If you're looking at a 26-inch LCD monitor with a high resolution, look at ViewSonic's VP 2650 wb with a native resolution of 1920 x 1200 pixels and priced at Rs. 27,000.

Q I'm using my computer for last ten years. Now it has become old. So I want to purchase a new one with the latest components. My hobby is photography, and I have a Canon PowerShot SX100IS Digital camera. I need components suitable for photography, audio-video and games. I want to purchase a 19-inch LCD monitor, web camera and printer. Please recommend components that will complement my hobbies. My budget is Rs. 50,000.

Ashok R Naik

That is a good budget and you will notice a manifold increase in performance from you current setup. I have suggested a system for you below. I suggest you opt for a 22-inch monitor. The Rs. 3,000 or so more you pay, is worth it.

PC Configuration

Components	My Suggestion	Price
Processor	Core 2 Duo E8400 (3.0 GHz)	8,500
Motherboard	Abit IP35E	4,800
RAM	1 x 4 GB DDR2 800 MHz	3,800
Graphics Card	ZOTAC 9800 GTX	10,500
Hard Drive	Seagate 500 GB	3,100
Monitor	Dell SP 2208 WFP	15,500
Cabinet + PSU	VIP Cabinet + 500W SMPS	3,500
		49,700

Q I am thinking buying a cellphone priced between Rs. 8,000 to Rs. 9,000. I want features like a

music player, good camera (3MP) and software loading with a decent look.

Harsimran Rangi

Sony Ericsson's K800 might be what you're looking for. It's priced at Rs. 8,000 or so, and with great music quality and a superb 3.2-MP camera, it may be just what you're looking for. The only other phone that comes to mind is the Nokia N73 and that is beyond your budget.

Q I have got Intel 945 chipset motherboard (original), 1GB DDR2 RAM. I want a graphics card for gaming, within a budget of Rs. 8,000. Will my motherboard support a PCIe video card? Which card would suit me?

Nilanjan Roy

Yes, the Intel 945 board should support a PCIe card with the requisite slot. I recommend a 9600 GT-based solution. EVGA is a good brand to look at and it should fit your budget. If you can stretch your budget to Rs. 2,000 to Rs 3,000, you might be able to go in for a GeForce 9800 GTX or a Radeon 4850 which are far superior cards.

Q I want to buy a powerful gaming rig under a lakh. It will be used only for gaming. Please suggest a powerful configuration. I also want to buy a multimedia cellphone. I can spare Rs. 35,000 for a cellphone. Which is better between a Nokia N96 and an Apple iPhone?

Kshitij Rawat

PC Configuration

Components	My Suggestion	Price
Processor	Core 2 Quad Q9550 (2.83 GHz)	17,500
Motherboard	ASUS P5Q-E	10,000
RAM	1 x 4 GB DDR2 800	3,800
Graphics Card	ZOTAC GTX 280	30,000
Hard Drive	Seagate 500 GB x 2	6,000
Monitor	LG 246 Wp	24,000
Cabinet + PSU	CM 690 + Corsair TX 750	9,500
		1,00,800

For the cellphone, I recommend Nokia for the usability and the iPhone 3G for its touch interface. They're both good enough to recommend. Either way you cannot go wrong. Although I must say, Nokia's N96 is the more perfect device of the two, especially when it comes to being a feature-laden phone. For a PC, my recommendations are given in the box.

Alternatively, you can opt for a Palit Radeon HD 4870 1GB SONIC, priced at Rs. 18,500 instead of the ZOTAC GTX 280. This card offers amazing value for money, and you can actually buy another identical card and CrossFire both of them for even more performance, although you would compromise on your budget. ⊠
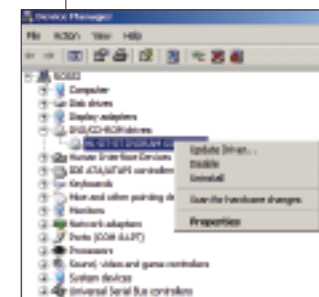
Q&A

Your **Questions**, Our **Answers**

All your computing niggles and nags are dealt with here!

DVD burning takes too long

Q I have a problem with my computer. The DVD burning process takes too long on my system. My system configuration is an Intel Core 2 Duo processor, 1 GB RAM all running on an original Intel 945 motherboard. I used to burn DVDs using Nero 7, but now it takes more than an hour to burn. Please give me a solution for this problem.

Lakshmikandh K

A The slow DVD burning speed could be due to a faulty driver or software. The easiest thing to do is uninstall the drive from the device manager. If you're running Windows XP, go to `Start > Control Panel > System`.

Click on the Hardware tab and then on the Device Manager button. Double-click on DVD / CD-ROM drives heading, right-click on your DVD drive and click `Uninstall`. Reboot and let the drive be auto-detected again. Also, try uninstalling Nero and reinstalling it. Try using other software and different media. If noth-

Removing a drive so that it can be detected

ing works, it could be a failing drive. Try the drive on another computer to verify this.

Doubts on memory and 64-bit computing

Q My 3-GHz Intel processor supports 64-bit, but the Windows XP version I'm using is 32-bit. These are my questions.
1. I want to buy additional RAM. Will my system support DDR2 RAM? If not, specify which DDR1 RAM will be best and its price?
2. Can I use both (512 MB/1 GB RAM) with my existing 256 MB RAM?
3. After installing the RAM, how can I use my PC

with best performance and best visual effect?
4. **Does the paging file affect computer performance?** Please specify how much paging file & virtual memory I will use after installing the extra RAM?

Antu Kanta

A Your current motherboard supports DDR1 memory upto DDR400 only. DDR RAM is expensive today and not easily available, so you will have to look around.

The motherboard you use supports upto 2GB of RAM. To avoid any complications due to compatibility issues, use the same brand of memory.

The settings for best visual effect and quality can be enabled by clicking on first going to the Advanced tab under Device Manager in the Control Panel. Click on the Settings button under Performance, and click the radio button for `Adjust for best appearance`.

The paging file doesn't directly affect performance, but it can be used when your system runs out of physical memory. You can allot 2–3GB of space for the page or even let Windows set the page file size for you.

Problem regarding flash

Q I have a Sony Digital Cybershot DSC-H9 camera. My problem is that its flash has stopped working. Instead, it shows me E:91:01 on the screen. My friend says that this is an error. Please help me out

Rohit Kumar

A Your friend is right. E:91:01 is an error code. In this case, it is to do with the flash. You need to take your camera to a Sony service centre to get the flash repaired or replaced.

Need suggestions for purchasing hardware

Q I want to buy a desktop with the following configuration
Processor: Intel Core 2 Duo E8400
Motherboard: Intel DP45SG
Memory: 8 GB DDR2 800 Mhz
HDD: Seagate 320 GB HDD
Graphics card: ATI HD 4670
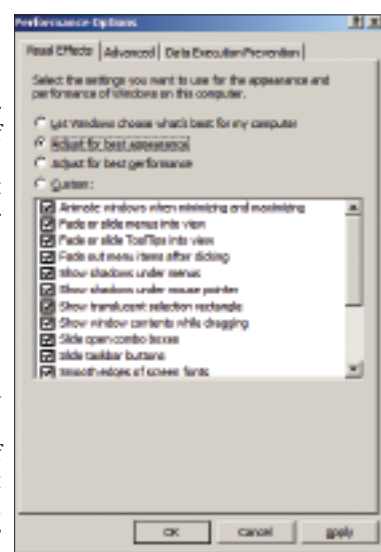Optical drive: Samsung DVD writer
I have four questions
1. Does an Intel motherboard and processor support ATI graphics cards?
2. Which is better - 8 GB DDR2 or 4 GB DDR3 RAM?
3. What power supply unit should I use?
4. Will this motherboard work without a graphics card?
   I would like to know your suggestions.

Athiq
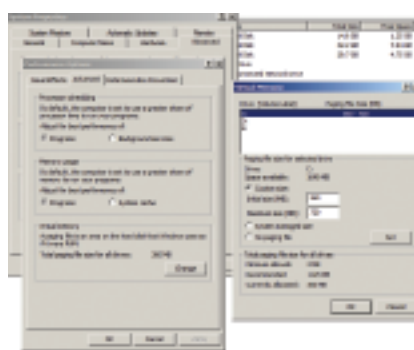
Virtual memory can be set manually as well

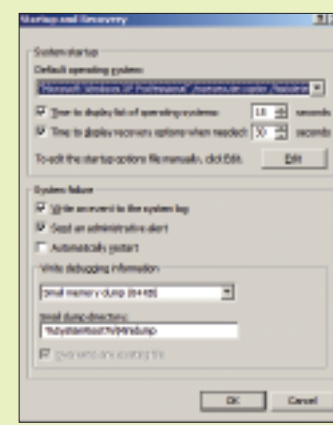
Performance and Quality settings for Windows

Reinstalling my operating system

Q I have an Intel Core 2 Duo Processor (1.86 GHz) and a Foxconn motherboard based on the Intel 945 chipset. I have two Western Digital hard disks of 320GB each. In the first hard drive I have installed XP Professional and in the second one I have installed Vista Ultimate. Now whenever something seriously goes wrong with any of my operating systems, I go in for a fresh installation. But when I install a fresh copy of XP on my hard drive, the Windows Vista Boot Manager is no longer accessible. I'm no longer able to boot into Vista without installing it over again. My question — is there any way to bring back the old Boot Manager without installing another fresh copy of Vista?

Swaranga Sarma

A You don't have to reinstall Vista every-time you reinstall XP. If you have more than one operating system on your computer, you can set the one that you want to use as the default one, for when you start your computer by following these steps.

Go to `Start > Control Panel`. Double-click on `System`. On the Advanced tab, under `Startup and Recovery`, click `Settings`.

Under System startup, in the default operating system list, click the operating system that you want to start when you turn on or restart your computer.

Select the `list of operating systems for check` box, and then type the number of seconds for which you want the list displayed before the default operating system starts automatically.

There's another way to get it running.

After installing one of the operating systems, insert the bootable CD / DVD of the other operating system. When you reach that screen with the option to Install Windows XP / Vista or Repair Windows. Select `repair your system`. Now you will reach a prompt.

Type `fixboot` and press [Enter]. Enter Y to confirm the command. Next, type `fixmbr` and follow the same steps.

Restart, and both your operating systems should be accessible.

Danish Chopra, TECH QNA Expert

Bootup Settings can be changed in the Startup and Recovery

QUESTION OF THE MONTH

A Yes, Intel motherboards can be used with ATI graphics cards. If you're building your system for games, then an ATI Radeon HD4870 would be better than the HD4670. The ATI Radeon HD4850 or the NVIDIA GeForce 9800 GTX are also good cheaper options to consider.

Currently, the advantages of more memory and faster bandwidth memory aren't very visible. In short, 4GB of DDR2 will be cheap and much more than sufficient, for any kind of desktop applications including multimedia content development. It also works out to be lot cheaper than 4GB of good DDR3 memory. For general desktop use, 2GB of DDR2 will do too.
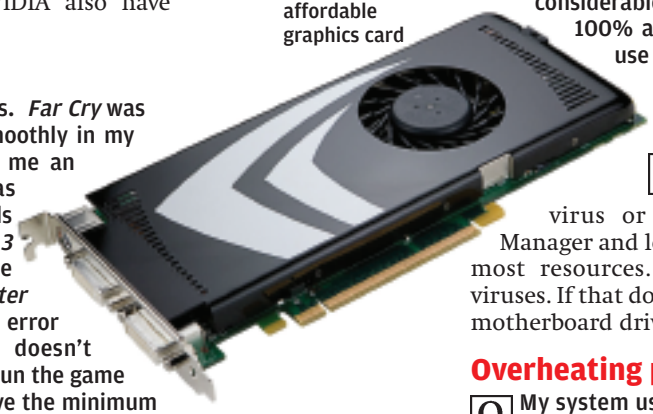
If you purchase a high-end graphics card, then you need a 600W PSU at least. The Corsair HX620 is a well known model.

The P45 chipset doesn't come with an onboard graphics chip. For onboard graphics from Intel, look for an Intel G45-based motherboard. The recently released GeForce 9300-based motherboards from NVIDIA also have onboard graphics.

Gaming problem

Q I brought four original games. *Far Cry* was one of them, and it runs smoothly in my computer. *Resident Evil 4* gives me an error saying that game.exe has encountered a problem and needs to be closed. *Devil May Cry 3 Special Edition* also has the same problem as *Resident Evil*. *Splinter Cell Chaos Theory* also gives an error saying that my graphics card doesn't support Pixel Shader 1.1. When I run the game detection utility, it says that I have the minimum system configuration to run this game. What should I do?

My system configuration is as follows:
Processor – Intel Core 2 Duo
Motherboard – Intel DG31GL with 256MB chipset graphics
RAM – 1GB DDR2

Dimitri

A For the games you've mentioned, you should use a dedicated graphics solution and not an onboard G31-based solution. Invest in a PCI-E graphics card such as a GeForce 9600 GT, which can be bought for around Rs 6,000. This will run these games for sure and also allow you to run them at the best resolution and quality.

100% CPU utilisation

Q I have a Pentium 4 2.80GHz, 2GB RAM desktop with a 500GB HDD running a licensed copy of Windows XP with Service Pack 2 installed. Of late, I find the PC responding to commands after a considerable delay. The CPU usage shows 100% and the fan runs at full speed. I use the PC mainly for word processing, data processing and playing some music and movies.

Soma Dutta

A The slowdown is most likely to be some kind of a virus or trojan. Open up the Task Manager and look for the processes using the most resources. Also scan your system for viruses. If that doesn't work, try reinstalling the motherboard drivers.

Overheating processor

Q My system uses an Intel Core 2 Duo, an Intel 945 motherboard, 1GB RAM and a 160-GB HDD. My system shuts down due to the overheat-

The GeForce 9600GT - an affordable graphics card

ing processor. Please give me a solution to prevent it.

Aayush Lilhare

A There are some things you can do to keep the temperatures down. Firstly, clean up the heatsink if the fins on it are clogged with dust. If the heatsink isn't tightly hugging the processor, then temperatures can go out of control. If you remove your heatsink, apply a thin layer of thermal paste before you put it back on. There are also third-party coolers that you can buy which offer better cooling than stock ones.

Multiple problems

Q I have noticed that the Windows XP SP2 32-bit version is a bit slower than Windows XP SP2 64-bit version. Why is this so? Is there any way I can run a Turbo C compiler on 64-bit Windows XP? How do I speed up my XP 32-bit installation for my configuration? Booting takes around 30 sec to display on the desktop. What can I change to achieve a faster boot without using any third party software?

I've noticed that my CPU temperature always stays at around 33 to 38 degrees and motherboard at around 38 degree. I hope these are safe temperatures. I don't have an airconditioner in my room. I have three 120-mm and two 80-mm fans installed in my cabinet as suggested by the manufacturer.

Samir Ranjan Ray

Doom running on Windows under

A The slowdown could be due to several reasons. Update the drivers for your motherboard and graphics cards to see if it helps. To be able to run Turbo C on 64-bit Windows, you will need to download and install free software called DOSBox (www.dosbox.com) which emulates DOS. It is used to run DOS games on Windows systems, but can also be used to run DOS applications.

The time taken to boot up Windows could be due to a highly fragmented hard drive. Try defragging the drive and uninstall unnecessary applications. Using a registry cleaner can help a little bit as well. If your system doesn't have enough memory, then that could be the root of your problems.

The temperatures for the motherboard and processor are perfectly fine. Temperatures of 33 to 38 degrees are very cool for a processor and even a motherboard with no airconditioner running.

Sharing Internet connection with a laptop

Q Hi, I have recently bought a Sony VAIO laptop preloaded with Windows Vista Home Premium. The problem is that my broadband connection is connected to my desktop PC that runs Windows XP Home Premiun. How can I connect my laptop to my desktop so that I can have acces to the internet using my laptop. Preferably, I want a wireless connection between the laptop and the desktop, but a wired connection will also do.

Nimesh Kumar

Ad hoc networking options in Windows XP

A The simplest and cheapest way to get wireless networking between the two systems is to install a wireless network adapter for the desktop. These are cheap and can be bought for under Rs 1,000. If you want a wired connection, get a crossed-cable and connect the two machines. If you have any more wireless devices, then you should go for a wireless router. These are available for around Rs 2,500 or so.

SLI or single card graphics solution?

Q I'm assembling a machine. I want to use this system to use use 3ds Max, Premiere Pro, etc. I also want to play games like *Crysis, Frontline, Far Cry*, etc. So my question is, should I go for an SLI-ready motherboard and SLI with XFX 8600 GT, or just take a good motherboard with only one PCI-E and use only one XFX 8800 GTX. Please suggest which one would be better. Also, suggest me a good power solution. I'll be using an Intel Core 2 Quad Q6600 along with two 2GB 800 MHz DDR 2 RAM sticks.

Lileshwor Sharma

A It is wiser to go for a single fast card. You can still choose to go for a SLI motherboard, which will allow you to add an additional card in the future. SLI might not scale equally well across all games, but a single card will. Cards like the GeForce 9800GTX and the

Radeon 4850 are powerful and are considerably cheaper than they used to be.

Accessing secured sites on phones

Q I want to access secured websites on my smart phone without any trouble. Can you suggest a phone along with recommended software that will let me open secured sites (https) and use every feature that I can perform on my PC?

I had a word with the customer care of a bank. They said that I would not be able to do that on the cellphone or a smartphone. Which phone do you suggest (Symbian, Palm, Android or Windows Mobile) for the above mentioned task?

Nokia PC Suite gives all kinds of access to your mobile phone

A Nokia N95, N79, N85 and N82 have fully supported browsers to access these web sites. However, some banks require Java plugins and are not fully compatible with mobiles.

Anoop Gupta, TECH Q&A Expert

Internet on the desktop using a phone

Q I want to know how to play AVI files in my Nokia 6233 Series 40 phone. Can you suggest some kind of gadget, which when connected, allows me to connect to the internet through USB for my desktop?

Vineet

A I don't think there are any Java-based media players available with which you can play AVI files on your mobile. You need to convert your videos in 3GP or MP4 formats to play.

You can connect your mobile using a data cable connected to your computer and get it connected with Nokia PC Suite.

Anoop Gupta, TECH Q&A Expert

Increasing video memory on my laptop

Q My laptop is an HP-Compaq NX6120, which I bought two years back. It came with 256MB

RAM. At that time, my video memory was displayed as 64 MB. Recently, I had put in an additional 512MB RAM, after which my video memory became 128 MB. I want to know whether if I can add another 512 MB and will my video memory then become 256 MB? Is there any other way of increasing my video memory to 256 or 512MB?

A There is a setting in the BIOS. You just need to choose the appropriate amount of memory, which you intend to use as video memory. Reboot and your memory will be increased.

Gopi Krishna Arumugam, TECH Q&A Expert

Forgot my BIOS password!

Q I have an ASUS M2NVM-DVI motherboard with an AMD Athlon X2 Processor. As a result, I'm unable to boot at all. Can you please suggest a solution to this problem?


Setting amount of memory dedicated for graphics in the BIOS

A This is a general problem with all motherboards. Take out the battery and press the [Del] key till it goes into the BIOS. Save changes, then replace the battery and continue.

If your system is still not booting, then you have to take out the RAM and any other PCI cards. Clean them and replace again. Your problem should be solved.

N.Vinay Kumar, TECH Q&A Expert
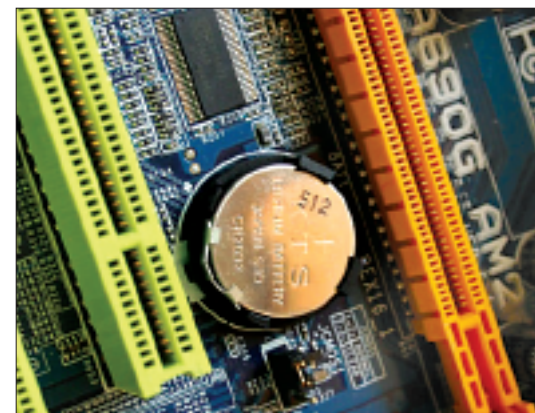
An old CMOS battery is usually to blame for troublesome booting

Create a Basic Image Signature using Photoshop

Kumar Jhuremalani

Image signatures are fun and trendy to use as a signature with emails, or, on a forum. You can choose from a variety of images that suits your taste, with the text ranging from your name, to your PC configuration to even the games you play. Here, we will show you how to make a basic image signature using Photoshop that you can add to our very own ThinkDigit forum.

A few basics concepts on flow, colour and lighting, before you start. It's not about adding images and jumbling everything, but rather focusing on creating your signature in a single flowing direction. This should also match your render image. Always keep the colours simple. We've created more of a monotone signature as you will see. Lighting is a crucial part in the process as it enhances your overall signature and also gives it some depth. It is one of the most basic as well as one of the toughest and critical parts to add to a signature.
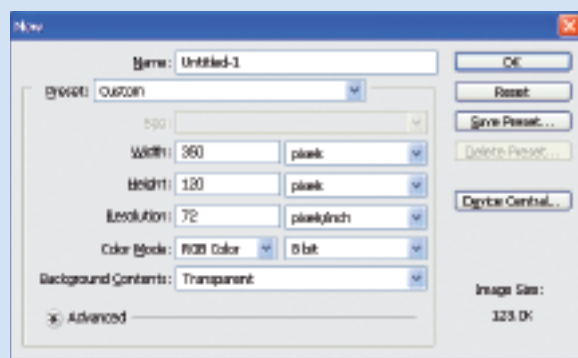
Go to **www.deviantart.com** and search for abstract brushes or abstract grunge brushes and download them. You will also need to choose an image render which you can easily acquire from sites like **www.planetrenders.net**.

Step 1: Create a new PS image with the dimensions 350x120 pixels with a transparent background. You can vary the dimensions according to your choice, but make sure it's not too big as most forums have size restrictions. The ThinkDigit Forum's signature size is limited to 500x100.

Step 2: Make sure your colours are set

Creating your Photoshop document

to default. If they are not just click D. Now go to Filter > Render > Clouds. This will give you a basic background to your signature.

Step 3: Create six layers (see #6 in the main image). If your layers window is not open, go to Windows > Layers from the menu bar. Now select the brush tool (see #1 in the main image), and change the brush set to the
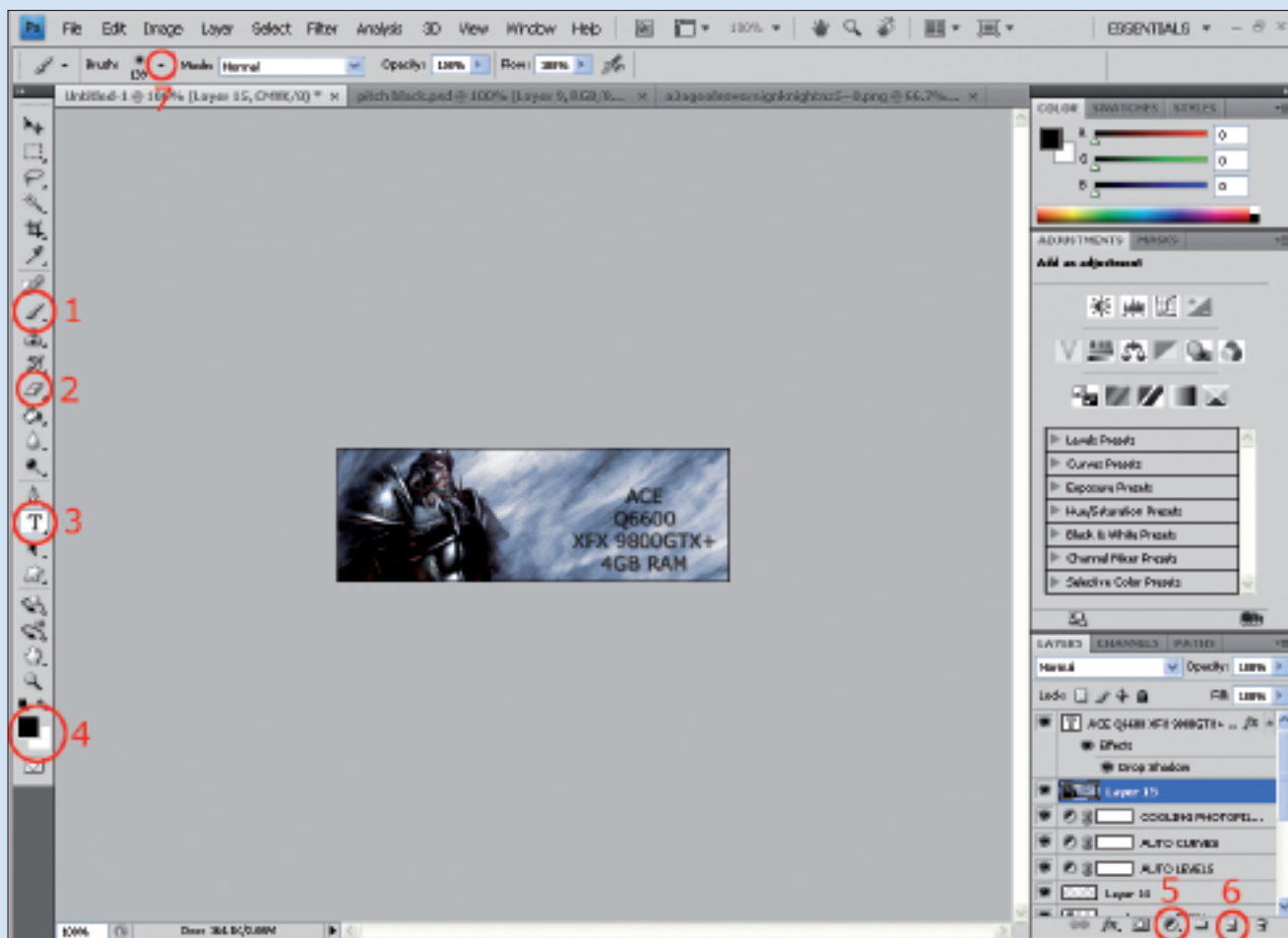

A basic overview of Photoshop and the tools needed for creating the signature

abstract brushes you have downloaded. To do this, click the small arrow (#7 facing down in main image) next to the brush size once, and then the arrow facing the right. This gives you a dropdown menu from which you select the abstract brushes.

Step 4: Now select one of the brushes from the abstract set and stroke the first layer with black. Now hit X. This switches between the colours on the palette (#4 in main image), and gives the next layer a stroke with white. Do this for all the six layers. You can also
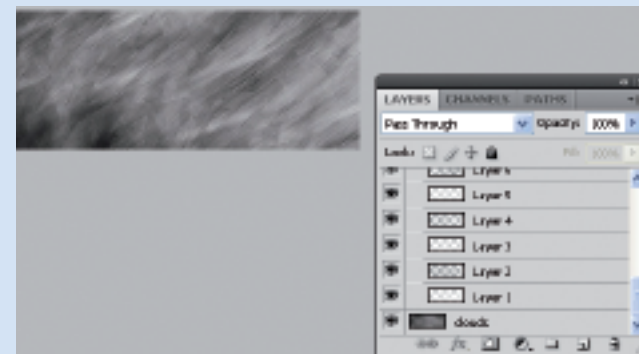

Abstract brush strokes on six different layers

create a new set of layers and choose another brush and repeat the same procedure for a more variant background.

Step 5: Create a new layer and apply the image. To do this, go to Image > Apply Image on the menu bar. Now click the dropdown from the layers window which says Normal and select Soft Light.

Step 6: Again apply the image on a new layer and then go to Filter > Distort > Ripple. Keep the setting at 55% and size set at Small for a nice subtle ripple texture.

Step 7: Now to add a render. A render is the cutout of an image. This could be a celebrity, game person, etc. Select the eraser tool (#2 in main image) and set the opacity to 50% and
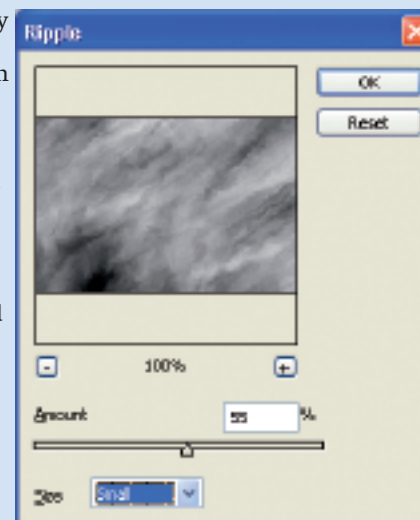
The ripple effect settings

Blending the render with the signature

erase a bit of the render outline. This helps to merge the image with the background. After doing this, click [Ctrl] + [J] which makes a duplicate layer. Now you have to click [Ctrl] + [Shift] + [U] which desaturates the colour from the selected layer. Reduce the opacity of this layer to 60%.

Step 8: Lighting is an optional step if you are one of those who opt for renders in their signatures. Select the brush tool, and choose the basic brushes in the same way you did with Step 3. Now choose a soft brush and set the size between 100 and 120. On a new layer, just click once near the render, where you need the lighting to be placed. Adjust the opacity of that layer and you can even change the filters to match your signature. We set the opacity to 70% and used the Overlay filter for our lighting layer.

Step 9: Now comes the finishing touches. Click the Layer adjustment tool (half black-half white circular button at the bottom of the layers window — #5 in main image) and select Curves. You

The final outcome should look like this

can mess with this, or just click on Auto to correct your image. Repeat the same thing, only with Levels this time. Finally, you can apply a Photo Filter, which you can find with the same set of options. We used a Cooling Filter (82) at 25% density with Preserve Luminosity selected.

Step 10: Now to add a border. Apply the image on a new layer and go to Edit > Stroke and use 2 pixels as the settings with centered selected. This step is optional, but adds a good effect to the signature. Some signatures look good without a border, while others don't. Also, the background colour of the forums you are planning on using the signature on, also matters. If the forums have a dark background, you should use a white border so that your signature can stand out and vice-versa.

Step 11: You are free to even add your computer specs to your signature. Just use the Text tool (#3 in main image) and adjust the font and font size and fill in your details.

Lastly, just save the image you created, as a JPG or PNG file. Some forums allow you to upload images from your PC directly, while others need you to enter it with a BB code. Don't worry about this either, just upload your created signature to **www.imageshack.us** or **www.photobucket.com** and you're all set as they provide you with the required links to your signature.

There're many variations to the steps we've given you. For example, instead of a single colour, you can actually add a gradient layer using the same layer adjustment tool before your photo filters. You can also add your text before you start with the finishing touches, if you want it to blend in more. However, at the same time, keep it as simple as possible. ⊠

Siddharth Parwatay

PC LOAD LETTER is perhaps the single most annoying error message from modern technology. It's been the cause of much stress in most workplaces. If you've found yourself promising to throw the printer off the 18th floor window the next time there's a paper jam or printer malfunction, then you're not alone. But before the printer bears the brunt of your ire, here are some precautions you can take.

Loosen the sheets

Often, sheets tend to be stuck to each other, so while loading paper ensure you fold the stack with the objective of loosening the sheets. The quickest way to do this is to roll the stack diagonally twice in opposite directions. You may have seen your local photocopier do it each time he loads the photocopy machine.

Store in a cool, dry place

While printer sheets are in storage, make sure the packet is protected from humidity. We recommend storing paper in a ziplock bag with a small pack of silica gel.

Do not overload sheets

If your printer has a paper tray, don't fill the tray to capacity. If you're encountering frequent paper jams, reduce the amount of paper

Trivia

PC LOAD LETTER is an error message encountered when printing on older HP LaserJet printers such as the LaserJet II, III, and 4 series. The phrase is a pop joke and cause for much confusion among computer users because most users could not (and still cannot) decipher its meaning. It simply means that the printer is asking for it to be refilled with paper of the standard size "letter". The term was popularised by the comedy cult film *Office Space* in which one of the main characters on encountering the error message asks, "'PC Load Letter'? What the #*%& does that mean?" The message appeared on the display just after he had filled the printer's cassette with blank paper. Frustrations such as this led the main characters of the film to take revenge on the malfunctioning printer by destroying it in a vacant field with a baseball bat.

you place in the tray each time it's filled.

Slider and tray alignment is important

Make sure the tray feeding the paper into the printer is aligned properly and / or the slider used to hold the paper in place in the tray is snug with the paper. Many printers have sliders that allow different types and sizes of paper to be fed into the printer. If the slider is not properly positioned it can cause paper jams.

Which paper?

Use standard office paper — folded paper, paper with labels, and specialty paper such as hard bound paper can often cause paper jams. Your printer documentation will list the types of paper compatible with your printer.

Don't mix-n-match

Do not mix the types of paper you're feeding into the printer at one time. If you need to change the type or size of paper, remove any other paper currently in the printer before inserting the new paper.

Look under the hood

Examine the printer for any previous stuck paper in the printer. Previous paper jams, torn paper, printing labels or other foreign objects in the printer can cause reoccurring printer jams.
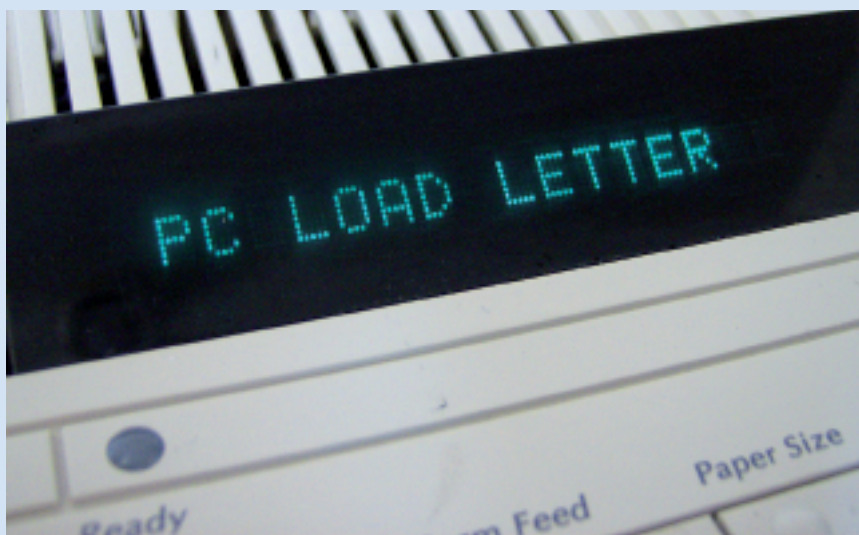
Keep the Printer Clean

Dust, ink or toner buildup inside the printer can lead to jams, and even lessen the print quality. Most printers have a built-in cleaning system. The printer may run several pages through the printer during the cleaning process. Your printer's user guide may also advise you to dust the outer parts of the printer, including the paper trays. But remember to use only recommended cleaning agents.

Get to know your printer

As you use your printer, you may notice that it often jams when printing on certain types of paper, or may be loading in a certain way works better. These quirks can be annoying, but you can often save time (and effort) by keeping these in mind. ⊠

Annoying isn't it?

TIPS & TRICKS
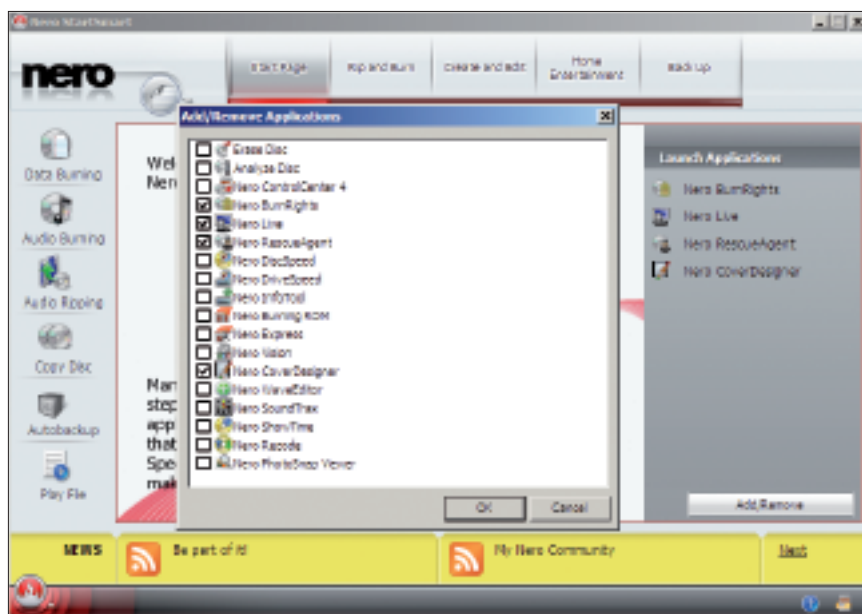
SECRETS THAT KEEP YOU AHEAD IN THE RACE

Nero 9

Nero 9 is the latest version of the world's most widely used disk burning software. It has several new features, and can easily handle all your burning and ripping needs. Advanced options are available for powerusers. There're increased multimedia and file management capabilities. The control centre for the suite, called StartSmart has been upgraded with more options available off the main interface. The only downside is that there is an extra-long installation and start-up time. Use our December 2008, By Demand DVD for installing a trial version of all Nero applications discussed here.

Customising StartSmart with Nero applications

StartSmart allows you to customise the control centre, by adding the most widely used applications by individual users. Click on the `Add / Remove` button in the Launch Application bar. From the `Add / Remove` Applications dialogue, check the applications you want to display in StartSmart, and click on `OK`. You can select upto ten applications to display in StartSmart.

Using the RSS feature in StartSmart

StartSmart has a nifty little RSS feature that allows you to subscribe to news feeds during your burning activities. By default, the feed reader is set to update feeds from the Nero website, which shows up on the bottom bar of StartSmart. Go to `Menu > Options > News Feed` or click the `News` button. Click on `Subscribe` and paste the address of the feed in the `Add Newsfeed` dialogue box. Click on `OK`. You can add a number of customised news feeds. To increase the frequency at which the feeds get updated, reduce the News display interval from a default of five minutes to a minimum of one minute.

Using the file recovery options of Nero

Nero allows you to recover deleted files from almost all kinds of memory storage devices. This holds true for USB drives, Digital Cameras and PMPs, apart from your hard drive. To recover your files, either start up Nero RescueAgent or navigate to `Back Up > Recover Data` in StartSmart. Select `Deep Scan,` and then click on `Next`. A list of all recognised deleted files will be shown. Select the files you want to recover, enter a destination directory and click on `Next`. Select the destination directory in a different partition or hard drive to optimise the chances of safe recovery. There are advanced options for corrupted files or files with invalid names.

Burning a Slide Show of your photos

Nero lets you burn a DVD or VCD customisable slideshow of your photos. You can add transition effects, record an audio commentary and add music to your slideshow. In Nero StartSmart, go to Create and `Edit>Make Photo`

Customizing Nero StartSmart with applications


The slide show editor window

Slide Show. Alternatively, start up Nero Vision, go to Make Slide Show. Click on either DVD, VCD, Super VCD or Mini DVD depending on your choice. Drag and drop photos in the editor. Add music and / or commentary. You can import pictures directly from a digital camera attached to the computer, or add images from a website or image hosting account. Also set the transitions. There're few options available, but they're effective. Once the photos are arranged in the right order, you can export the slideshow as a video instead of burning the slideshow onto some medium. Click on Export, then select the file type and click on Export. For this, AVI, MPEG and WMV formats are supported. You can also export the slideshow to a camcorder connected to the computer. To burn a DVD, click Next to add titles. Click Next again to set up the DVD menu, add chapters and configure the DVD. The next screen gives you a preview of the DVD, as it will appear on your television. Click on Next, then Burn.

Using pause detection in Nero WaveEditor

If you have a single sound file of an entire album, Nero WaveEditor can recognise separate tracks in the song using the pause detection feature. Once these pauses are recognised, either the pauses can be deleted from the file, or the file can be separated into individual tracks. To delete the pauses from the file, Go to Edit > Pause Detection > Delete Pauses. To mark portions on either side of the pause, go to Edit > Pause Detection > Insert Track Splits. This allows you to extract individual tracks from the file. To get rid of pauses, go to Edit > Pause Detection > Insert Track Splits and Delete Pauses. This introduces markers so that individual tracks can still be worked on.

Inserting a test signal in Nero WaveEditor

A test signal is used to test if the sound for the presentation or video is working properly while screening it before an audience. It is invariably placed at the beginning of the presentation or video. To insert a test
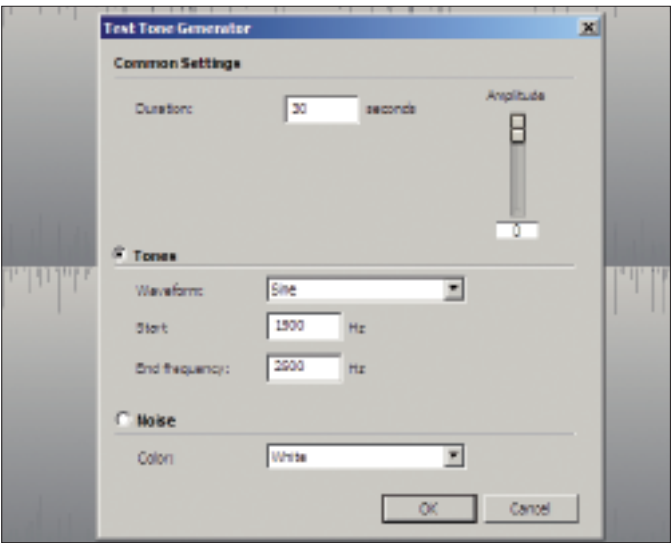
The tone generator

signal in Nero WaveEditor, select the entire sound file, go to Edit > Insert Test Signal. In the test tone generator dialogue, select a duration for the test signal. The default is 30 seconds. There are three different waveforms available — sine, sawtooth and square. These are just different ways of generating the tone. The start and end frequency generates a sweep either increasing or decreasing in frequency across the duration of the test signal. To generate a tone of constant frequency, keep the values the same across both these fields. Click on OK, the test signal will be inserted at the beginning of the selection.

Creating an image file

An Image file is a package of data that can be transferred in portable media like an external hard drive or a USB drive. An image file can be handled like a zip file, and can be loaded as a disk on the computer using a CD / DVD Drive emulator. This feature can be particularly useful in computers without a CD / DVD writer, where a package can be made for writing to a disc later on, or from another

computer. In Nero Express, after adding files to be burned, set the Current Recorder to Image Recorder [DVD]. Select a disc name, and click on burn. An image file will be created on your system. You also have the option of burning image files from other Nero applications like Nero Vision.

Saving a CD / DVD as an image file

You can save CDs and DVDs that are not copy-protected, as an image file on your computer. This image file can be used to burn multiple copies, archive important data, save media from physical corruption and load data onto emulators while keeping the drive free. Using this feature on copyrighted material is illegal, even if the data is not copy protected. Extend the side panel, go to Copy Data Track. Select a track from the list in the dialogue that appears. Then click on Next. The image can be saved as an NRG or an ISO file. Select a destination and click on Save.

DJ with Nero

Nero 9 comes with a complete DJ simulator. Start up Nero SoundTrax, then

DJing with Nero

go to Insert > ScratchBox clip. This brings up the ScratchBox dialogue, which has two turntables. You can mix tracks, tweak tracks, add effects, work with loops and scratch. While the setup can be used for DJing live, (there is no way to quickly load files though), the primary purpose is to remix tracks and save them.

Changing the audio distribution with SoundTrax

Nero SoundTrax automatically detects the numbers of speakers connected to the system. This works for 2, 2.1, 4.1, 5.1 and 7.1 systems. The numbers signify the speakers connected to your system plus the sub-woofer. The area below Assignable Effects with the title bar of the file you are working with, has a pan slider. Here, the number of speakers connected to the system are represented spatially, and a green dot can be moved around the square to denote the origin of the sound.

Enabling Quiet Disk in ShowTime

Although no one is likely to use Nero ShowTime as their default audio CD player, we wish other software would include thoughtful features like this. Quiet Disk playback silences the sound from the CD / DVD drive as much as possible while playing back songs from the drive. To enable this feature in ShowTime, go to Options > Quiet Disk Playback > Enable Quiet Disk Playback. To navigate to the Options menu across software in the Nero 9 suite, click on the hammer icon.

Setting a drive speed using DriveSpeed

Nero DriveSpeed is an application for

**Adjusting the drive speed**

tweaking the read speeds of your disk drive. This can be used for a number of purposes, including reducing the noise your drive makes and improving read quality of the audio CDs. A slower drive speed reduces noise while increasing the accuracy of the reads. A higher drive speed is used for rapid file access, especially in applications such as games. There is also an option to reduce the spin down time of the disk in the drive. However, this does not have any advantage for the newer drives. In earlier drives, this helps by ejecting the disk after a read operation. This feature is used to control how long the disk continues to spin inside the drive after the read operation has been stopped.

Disabling disk ejection

If after burning a disk, you want to check your data once, you can save time by disabling disk ejection after burning. This also saves you the incovenience of closing the tray as soon as it is ejected. In Nero Express, extend the side panel, go to Options > Expert Features then select the Do not eject the disk after the burn is complete check box.

Using InfoTool

Nero InfoTool is a useful little application that can summarise all the hardware and software features and specifications in your computer. The results can be used to analyse the multimedia capabilities of your system, as well as the points where upgrades are necessary to suit your
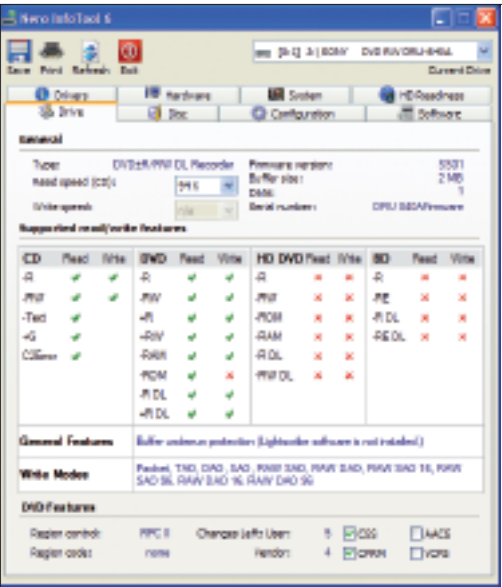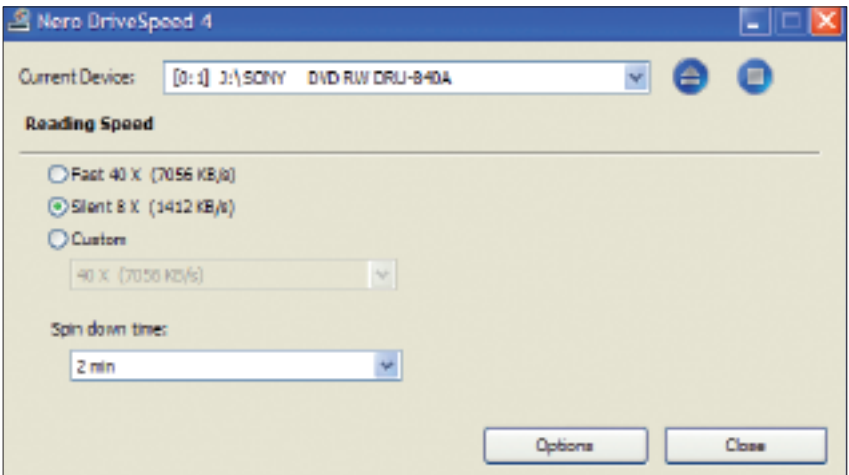

Nero InfoTool analysing the computer

requirements. The tool lists the drivers, the audio and video codecs installed, the features of the drive and the nature of the disk in the drive. Before using this tool, close all programs, put in a blank CD / DVD in the available drives and disable any drive emulators that are running. Start Nero InfoTool, go to Nero9 > Extra > Nero InfoTool or Nero9 > Nero Toolkit > Nero InfoTool depending on your installation. The application will analyse the computer, and show you the results.
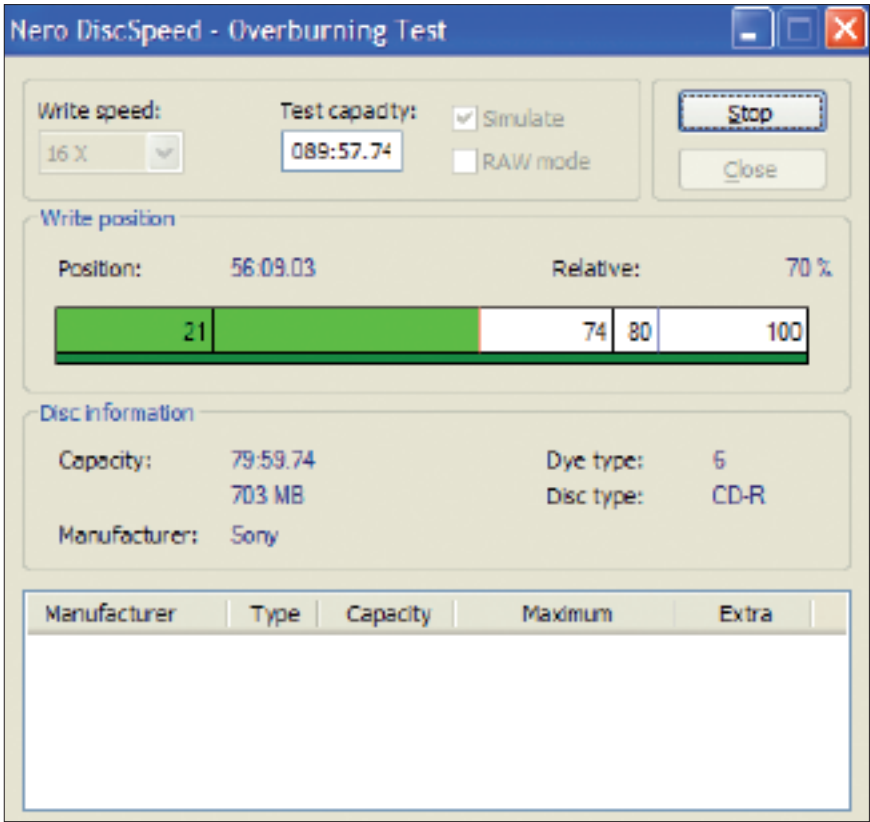
Benchmarking your CD / DVDs

You can run advanced quality tests on your storage medium to check how well preserved the files are. While the benchmark runs for blank media as well, the disk quality test runs only for media with files on them. Run Nero DiscSpeed then go to Benchmark > Start or Disc Quality > Start. You can choose how thorough the tests are. The light test checks only specific points of data on the disk, whereas the thorough test scans through all the tracks on the disk.

Overburning your disks

Overburning is used to burn more than the normal amount of data onto a disk. The extra space used is the lead out portion of the disk, where about a minute and a half of extra music can be burnt (about 5 to 10 MB in a CD). Using overburning for any other purpose apart from music is too risky as there is a

Testing the overburning capacity of a disk

and check `Saturday`. You can also change the duration of the working hours (which is by default from 8 to 5).

Colour coding categories
It is possible to add colour codes to categories. There are a number of preset categories, and adding a particular colour to a category can be of individual significance (like red for an anniversary). Go to `Tools > Options > Categories` and add a colour to the preset categories. There are 70 colours available to choose from. You can also add or delete categories from this view.

Setting tasks to repeat
Right-click on a day, and select `new task`. Under `repeat`, set a periodicity. This can be either daily, weekly, bi-weekly, monthly or yearly.

Setting a proxy connection
If your workplace uses a proxy connection for the internet, these settings have to be specified in Firebird, so that Firebird can interface with the internet. Go to `Tools > Options >`

high scope for losing data. However, if it is a small file, then it can be accommodated. Nero lets you find out exactly how much data can fit in. Test the overburning capacity of your media by starting up Nero DiscSpeed. Go to `Extra > Overburning Test`. This will take some time as Nero DiscSpeed simulates a complete write of the drive. It lists the capacity, the maximum amount of data that can be accommodated, and the extra space available for overburning. In Nero Burning ROM, go to `File > Options > Expert Features` and check `Enable Disk-at-once CD overburning` or `Enable DVD overburning` and click on `apply`.
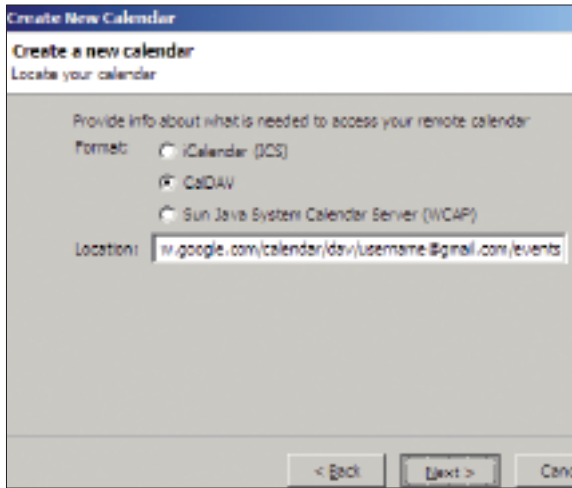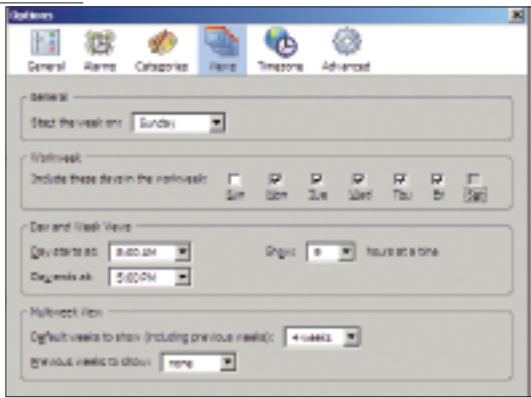
Mozilla Sunbird
Mozilla Sunbird is a calendar application from Mozilla. It can be used for task management for a team or an individual. The calendars can be published online, and there are remote access usage options available. The application is free, open source and available for all platforms. The 5 MB download is available from www.mozilla.org/projects/calendar/

sunbird. A portable version of the calendar is available from http://portableapps.com/apps/ office/sunbird_portable.

Adding Saturdays to the Calendar
By default, both the weekend days are turned off from display. Although they are shown in the calendar and can be worked on, they are shown with a grey highlight. To change this, go to `Tools > Options > Views`

Adding saturdays to the calendar

`Advanced > Connection Settings`. If your company uses a predefined URL with a proxy configuration, select `Automatic proxy configuration URL` and enter the URL in the field. To manually enter the proxy details, select `Manual proxy configuration` and enter the relevant proxies and ports. The application cannot connect to the internet, unless you enter these settings.


Importing from Google Calendar

Importing calendar from Google Calendar
To import your Google calendar into Sunbird, go to `File > Subscribe to Remote Calendar`. Select `On the Network` and click on `next`. Select the `CalDAV` format, and enter the URL of your Google Calendar in the Location field. This url is **https://www.google.com/calendar/dav/ username@gmail.com/events**. Replace the username with your user name. Type in a name for your calendar and click on `next`. Your Google calendar will now be imported into Firebird.

Using the Taskbar
The taskbar is on the bottom left corner of the Firebird window. This taskbar is used for organising your tasks. As soon as a task is complete, you can check on the task, and a strikethrough will appear. Right-clicking and selecting Progress will allow you to set a percentage of completion. The percentages are preset and cannot be modified.

Changing the date display format
Go to `Tools > Options > General`. Now change the Date Text
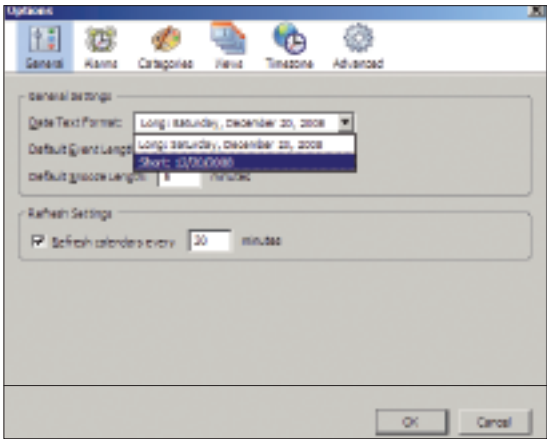
Changing the date format

Format as per your preferences. There is a long date format and the short date format available. However, the dates are always displayed in the American format — mm/dd/yy. You cannot change this to the dd/mm/yy format used in India.

Adding Indian Holidays
The default calendar has no holidays noted. Adding holidays will create a small text field below the
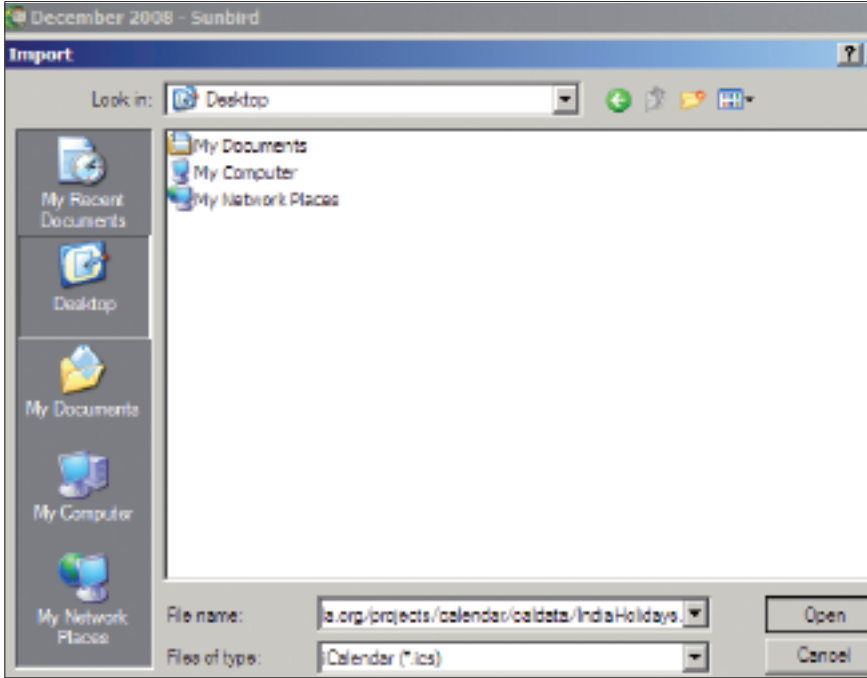
Importing Indian Holidays

important dates of holidays. Holiday files are available in the .ics format. A list of holidays for all countries is on http://www.mozilla.org/projects/calendar /holidays.html. To import Indian holidays into Sunbird, go to `File > Import`, type **http://www.mozilla.org/ projects/calendar/caldata/ IndiaHolidays.ics** in the destination field and click on `import`. Select the calendar you want to import the calendar file to (home by default). The holidays will be listed on the relevant dates.

Snarfer
Snarfer is the most used RSS feed reader around. The feed reader offers a feature-rich, but clean interface. The download is just 400 KB, available from www.snarfware.com.

Archiving all posts of a feed
If there is any syndicated content that you happen to particularly like, or find useful, you can choose to archive all the posts from that source. Once the feed is added to your list, right-click on the feed and go to `Properties >`

`Updating > Keep old messages`. In the drop down box, select `keep everything`. Please note that this option doesn't allow you to gather past posts from the source.

Backing up your feeds
If you're a heavy feedreader, then chances are that you will have taken a lot of time to select and organise feeds. You don't need to lose this if your computer develops a problem. Export your feeds by selecting `File > Export To > OPML Feeds`. A dialogue will appear showing a list of all the feeds you have collected. Check
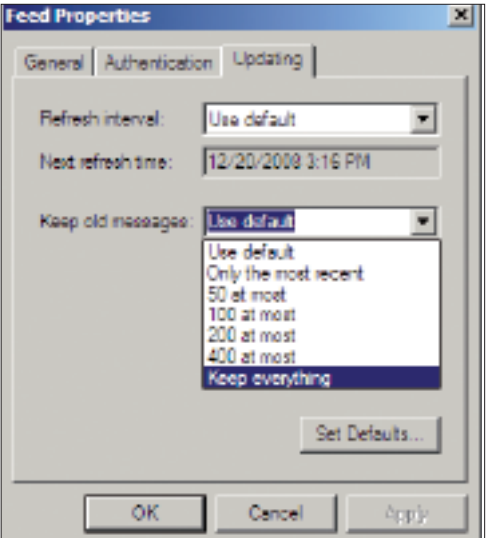

Archiving all feeds

feeds you want to save, and click on `next`. Select a location on the hard drive to save the file, and click on `Finish`. To load a saved OPML file onto Snarfer, go to `File > Import From > OPML Feeds` and select the location of the OPML file.

Changing the style of feed display

If you want to change the default style of the feed display, there's a number of options that Snarfer gives you. Go to `Tools > Add more styles`. This opens a tab in Snarfer that shows a list of available styles. This is how the text from feeds will be laid out in Snarfer. Click on any of the styles that appeals to you, and you will be directed to the link for that style. Don't download the style, instead click on `Open`. When the file is downloaded (usually less than 5 KB), click on `Install`. If you have
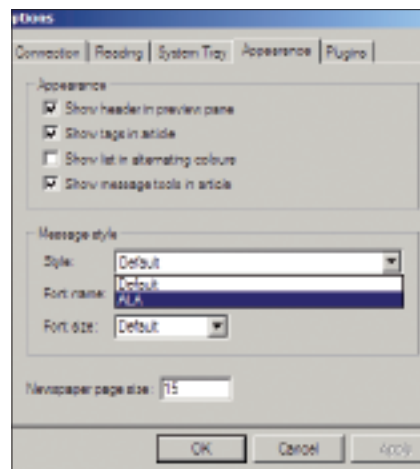

Changing the feed display style

downloaded a number of styles, and want to change to another installed style, go to `Tools > Options > Appearance > Message style > Style` and select a suitable style from the drop down menu.

Changing the refresh interval of feeds

Some feeds change rapidly. You can configure news feeds to refresh faster than say the podcasts or vlogs. Right-click on a feed, go to `Properties > Updating > Refresh Interval` and change the drop down menu according to your preferences.
To instantly update a feed, right-click on the feed and click on `refresh`. You can do this for an entire category or to bring all the feeds in it.
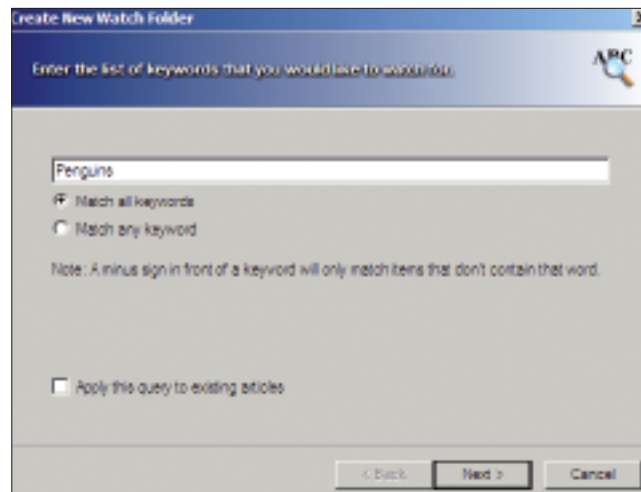
Adding a keyword based feed

Adding feeds by keyword

Snarfer can add feeds related to a certain keyword. This means that if you put in computers or technology, all related posts across feeds from various sites with syndicated content will show up. Right-click on `Message Folders`, go to `New > Keyword Watch`. Enter the keywords in the field and click on `Next`.

Protecting your feeds with a password

You can add a password to individual feeds. Unfortunately, you cannot add a password to all the feeds in a category

or folder. Right-click on the particular feed you want to protect with a password. Go to `Properties > Authentication`. Check `feed requires authentication`, and enter a username and a password. Click on `Apply`. The next time you access the particular feed, it will prompt you for your username and password.

Adding a plugin

In snarfer, plugins are remotely hosted on the snarfer server and are available from the snarfer interface. These are global settings applied across all the fields, like the Flare remover plugin that removes all custom icons of feeds or the stock watch plugin that aggregates stock feeds and updates them. To add a plugin, go to `Tools > Add more plugins`. This will take you to a page with a list of plugins. Periodically, check for updates on this page. Choose and install plugins that you like. Once installed, you can check for the plugins at `File > New`. ∎
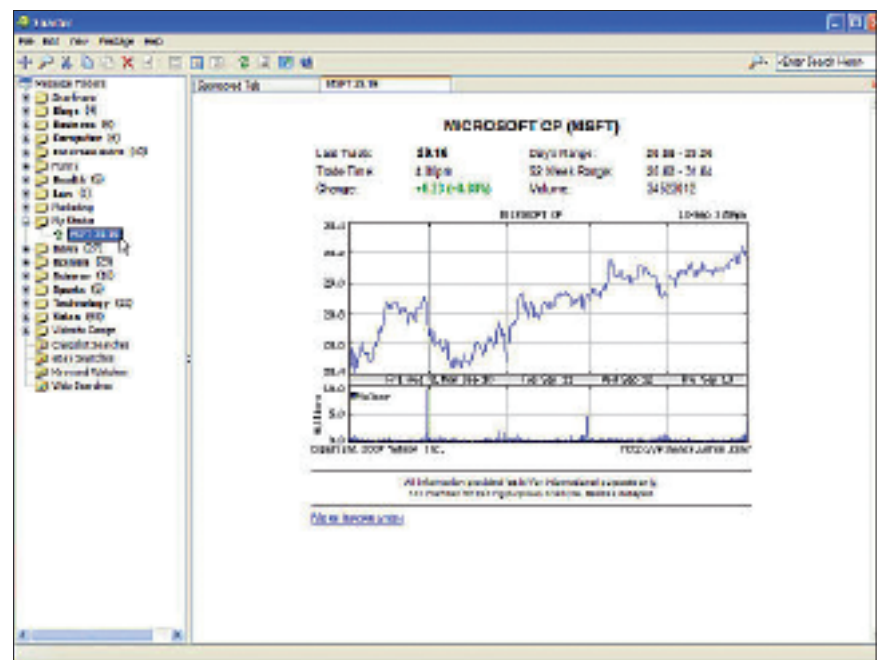
The stock watch plugin

The Keyboard is mightier than the Mouse

Outrun a Mouse using a Keyboard in Firefox

Kumar Jhuremalani

Before the mouse was invented, the keyboard was the only way to navigate around the interface. Either way, there was not much to navigate back then. With the advent of the mouse, everything changed. Now the mouse is the most convenient tool for navigating and clicking links while browsing the internet. What if we tell you that the keyboard is faster than using the mouse — in Firefox, at least? Read on...

Firefox has numerous shortcuts that let you browse without touching a mouse. There's a little over 50 shortcuts in Firefox and we've listed the most useful and the best shortcuts we found.

Mouseless browsing lets you browse through sites using just your keyboard

New:	Tab	Ctrl+T
	Window	Ctrl+N
Select Address Bar		Ctrl+L
Select Search Bar / Web Search		Ctrl+K
Clear Private Data		Ctrl+Shift+Del
Downloads		Ctrl+J
Complete Address:		
	.com	Ctrl+Enter
	.net	Shift+Enter
	.org	Ctrl+Shift+Enter
Bookmark:		
	All Tabs	Ctrl+Shift+D
	This Page	Ctrl+D
History		Ctrl+H
Zoom:	In	Ctrl++
	Out	Ctrl+--
	Reset	Ctrl+0
Navigation:		
	Back	Alt+Left Arrow / Backspace
	Forward	Alt+RightArrow / Shift+Backspace
	Home	Alt+Home
	Reload	F5 / Ctrl+F5 (override cache)

Firefox lets you download add-ons for additional features. One such add-on is Mouseless Browsing 0.5.1. You can get this from **https://addons.mozilla.org/en-US/firefox/addon/879**. Click on `Download Now` on this page to install the addon. Once you're done,

restart Firefox.

With the add-on installed, you'll notice a small logo at the lower right corner of Firefox. You will also notice that some numbers have appeared next to every link on a page. These are the numerical ids given to each link by Mouseless Browsing. To access a link, simply type the numerical id next to it and hit `[Enter]`.

The numbers you type are also displayed next to the logo, and they disappear rather fast. If you think they disappear too fast, adjust the timing in the settings window. For this, click on the icon at the bottom right corner of the browser to open the settings window. Alternately, you can go to `Tools>Add-ons` from the Menu bar, select Mouseless Browsing and then click on `Options`.

You can change the time delay by entering values as per your choice. The default settings for this is 500ms. If you feel this is too fast, you can increase it to a value such as 750ms and 1000ms for a more convenient browsing experience. You can also adjust the settings such that you don't need to hit `[Enter]`. Once you've typed the id, Firefox will redirect the page to the link directly. If you're one of those who prefer using the numerical keypad, set the numpad exclusively for Mouseless browsing. The default number of ids set for a single website is 1000. This is enough for

most websites, but there might be certain websites which need more. Mouseless Browsing also allows you to increase the maximum number of ids.

If you don't like using numbers, you can also set alphabets as ids. These work in the same way as numbers. However, you might get some really weird combinations as ids, like QBE and UGZ, but only if the website has that many links to offer.

Using this add-on, along with the available shortcuts, you increase your browsing speed by milestones and even challenge your friend who owns a 4000dpi mouse and beat him in using Firefox. ∎

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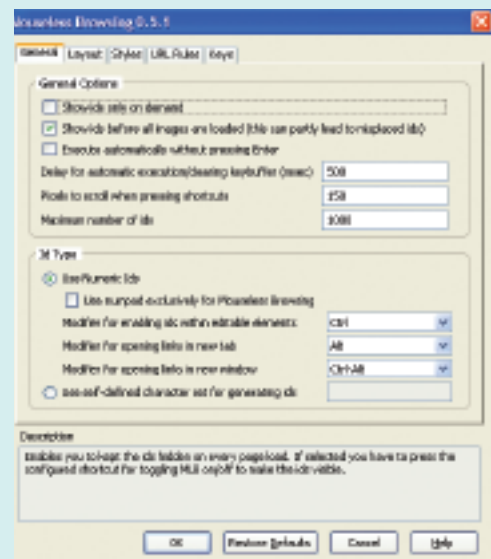
Customise Mouseless Browsing to suit your needs

PhotoFiltre

A quick run through one of the smallest image editors ever

Rossi Fernandes

Commercial software like Photoshop comes with an exhaustive list of features that is ideal for professional graphic designers. Here, we're looking at PhotoFiltre, which, is in comparison, a tiny and free image editor. However, it's something that you'll find useful for everyday use — crop photos, make wallpapers or do simple artwork. You can find the software in this month's DVD.

A walk through the usual features

The software layout is quite simple — the main toolbar is located to the right and the image properties toolbar on the top. You can access the effects in the Adjust and Filter menu. You can adjust the image and canvas size, and the image properties using the Image menu. Overall, PhotoFiltre is similar to Photoshop itself, so getting around the interface shouldn't be a problem.

Adding files to PhotoFiltre

Loading files is a straight-forward process in PhotoFiltre, as in any other image editor. However, there is another way to do this. A feature called Image Explorer lets you view images in an entire folder including subfolders. You can access this feature by clicking on clicking on `Tools > Image Explorer`. A pane will appear at the bottom of the screen. Right-click on it and go to `Explore > A folder`. Select a folder and click `OK`. You can open images shown here by double-clicking on them.

Colour selection tool

The colour selection tool in PhotoFiltre has a few different modes which can be accessed by clicking on the left and right buttons below the colour selection tool. This presents a more accurate way of selecting colours.
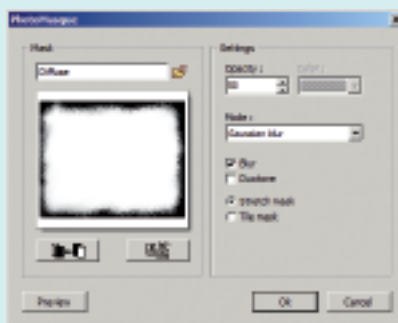
Saving, loading and positioning shapes

Every good image editor has shape tools with presets, and PhotoFiltre is no exception. Simple shape presets can be selected from the toolbar on the right. The polygon and lasso tool can be used used to create your own paths. With PhotoFiltre, you can also save these shapes, for future use. To save these shapes, click on the Selection menu and then on `Save shape`. Give it a name and click `Save`. To load, click on `Load shape item` in the same menu.

You can also move this shape accurately to the centre or to any other point on the image by clicking on `Selection > Manual Settings`. Size of the shape can also be changed from the same dialog box.

The PhotoMasque feature

The PhotoMasque feature allows you to set a mask for your entire image. The feature can be used by clicking on `Filter > PhotoMasque`. Here you can load a mask file and a list of supplied masks will be present. Select the mask you want, and click `Open`. You can choose the effect you want to get, by using the mask. To do this, click on the Mode dropdown menu. You can

select the intensity of the effect you want, and the mask can also be inverted. Click `Preview` to see if you like the results, then click `OK`.

Batch processing in PhotoFiltre

The batch processing feature allows you to process multiple photos or images in one go, instead of opening every single image and processing it. Click on `Tools > Automate / Batch` to start it. First, select the photos that you want to process, by selecting the source folder and then the output folder where the processed images need to be saved. The other tabs can be accessed to set parameters and effects that you need for the images.
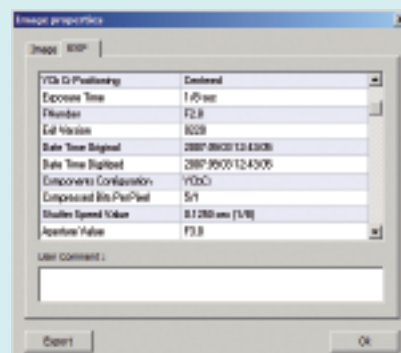
Reading EXIF info

Each image you capture using a digital camera, has pieces of information stored on it. This includes information about the camera and the photo taken. You can read this information by clicking on `Image Properties` under the `File` menu. Click on the `EXIF` button. You can export this information to a text file by clicking on the `Export` button.

Creating an icon

PhotoFiltre has a convenient feature that lets you create icons for Windows, without having to manually set colour depths and sizes. First, open the image or create one that you want made into an icon. Simply click on `Tools > Export as icon` to create your icon. The ICO file can be used with any application. ∎

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The Image Explorer visible at the bottom of the PhotoFiltre window.

Using the PhotoMasque feature to load masks for images

The EXIF Info box displaying photo details

Business Laptops Test

Suited and booted

**Michael Browne &
Kumar Jhuremalani**

Businessmen and executives don't need flashy play toys. Sure, looks are important to everyone, but ease of use, ruggedness and ergonomics take precedence over chic toys when in the hands of a serious corporate user. Businessmen are also harder on their notebooks. Just as they're less likely to pull out their notebook at an airport solely for the sake of the prestige value that many associate with having one; they're less concerned with the finish and colours used on their notebook and would also be less concerned about their shiny play thing picking up the daily gamut of scratches and smudges. For them a notebook is a necessity, not a status symbol and something that will last the test of time and still look in mint condition is the order of the day. Of course this doesn't necessarily mean a plain-jane notebook. Quite the contrary, it takes a special type of notebook to have a simple black finish and yet look special.

There are other features that a businessman would look at; reliability and quality – not just of the finish but the internal components themselves. Adequate cool-

We test a very select bunch of the most elite business notebooks around

ing is expensive, both in terms of money and in terms of the space is requires. Yet the business user wants something really compact. This usually means a screen no bigger than 14.1-inches or 13.3-inches. Manufacturers spend a good deal of the cost price of the notebook on designing cooling solutions for shoe-horning powerful components, (that generate extra heat), in a relatively compact chassis. Then there are the various methods employed to reduce the risk of a hard drive crash in the event of one dropping their notebook. Certain brands like Lenovo and Dell actu-

Photo: Jiten Gandhi
Imaging: Shrikrishna Patkar

ally have an inflatable foam cladding around the hard drive that absorbs impacts thereby protecting the hard drive from crashes due to any sort of hard impacts. Business notebooks (in general) sport more rugged finishes that are less likely to wear with heavy usage. We call such choice of tough surface treatments *industrial grade*; this largely means something that's resilient to wear, although it's also become synonymous with a very plain-looking choice of materials. Most hardcore business notebooks pay a lot of attention to ergonomics; by this we mean both the presence and the placement of shortcut keys/buttons for common tasks.

This time round we decided to be really selective when looking at business-class notebooks. We didn't want our test to be diluted with pseudo-business notebooks. We did a more comprehensive test back in June last year and unfortunately all of the major players like HP, Dell, Lenovo, Sony, Toshiba and Fujitsu didn't have many new models. Sadly all these brands have launched a slew of models internationally, but most of them haven't released these models in India. In fact latter two didn't even have a single
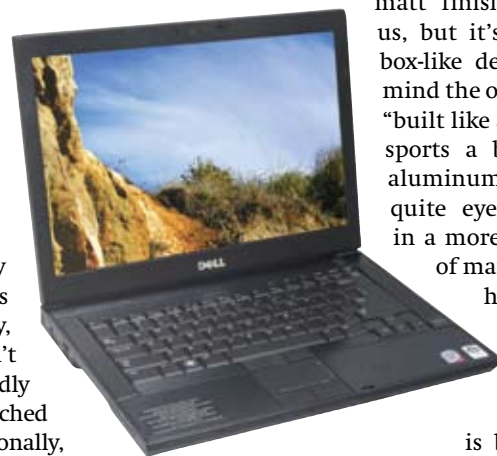
new model between them. Our five participants consisted of two notebooks from Lenovo and one each from HP, Sony and Dell.

Dell Latitude E6400
Brick solid!

If Dell's Vostro series is designed for the small to medium sized business on a budget, the Latitude series is designed for the serious corporate, who needs connectivity and reliability above all else. Think of the Latitude as Dell's answer to Lenovo's ThinkPad series. At first glance the Latitude E6400 looks very large, solid and also very boxy. It seems like Dell hewed this out of a solid hunk of plastic and metal. No, the black matt finish is fine with us, but it's just that the box-like design brings to mind the oft used analogy "built like a tank". The lid sports a black, brushed aluminum finish that is quite eye catching but in a more laid back sort of manner and you'll hardly notice yourself giving it another look over. The E6400 is built around a magnesium alloy cage which is great for longevity and even the coating around the palm rest

Dell Latitude E6400

region looks like it's there to last. In fact the mostly metal design does add to the weight a bit, but the E6400 feels surprisingly dense; as if it would take a lot of abuse. The screen size is 14.1-inches, although this notebook has a rather wide bezel all around the screen, which makes it look much larger, though not as large as a 15.4-inch model.

It sports the double mouse button design that Lenovo also favours and the track button that is a must for all seriously corporate notebooks. The track button isn't red however (Lenovo nee IBM patented that), but is black; and blends in with the keyboard. The keys themselves are well laid out and offer a short and very positive feedback. Although this wasn't the best laid out keypad from amongst the five notebooks we tested, the key spacing and beveling is ergonomic to work with. The trackpad is the right combination of grip and comfort although we found tracking to be a bit of a problem. In fact this was one of the major let downs with the E6400; the track pad will stick at times or will just refuse to do what your finger commands – most annoying. The trackpoint works better and it's clear to see that it isn't an adornment for Dell; many ThinkPad users swear by the trackpoint and Dell implements it quite well. A fingerprint reader thrown in; a must for many corporate users as an additional security step as it restricts access like few passwords can.

The screen itself is a matte panel; so reflections are not a problem and the resolution of 1440 x 900 pixels is absolutely perfect. We're tired of 1280 x 800 pixels and ultra high resolution notebooks are a no-no too. This resolution is just right for the screen size. The LCD panel is LED lit; and should bring power saving benefits as well. In terms of configurability the E 6400 is totally customisable in true Dell fashion. The one we got came with a new T9400 processor. This CPU is quite fast and runs at a speed of 2.5 GHz while maintaining a whopping 6 MB

How We Tested

For features we looked at the bundle and the specifications of each laptop. We also looked at the connectivity options like number of USB ports, presence of FireWire, memory card readers and HDMI. We also looked for LAN, Bluetooth and WLAN connectivity.

We gave scores ranging on a scale of 10 for usability, intuitiveness, convenience and ergonomics too. Such non tangible factors are often what make the difference to most users. Features like build quality, or the feel of a keypad, or even the presence of and placement of shortcut keys. We also look at the ergonomics associated with the placement of USB ports, LAN and RJ11 connects and other connectivity options.

We used a clean install of Windows Vista Business 32 bit, and only the drivers and necessary benchmark software were installed. Our tests consisted of a gamut of benchmark suites and real world tests.

For checking the performance of key components like CPU, RAM, storage and video

subsystems we used two general benchmarks: PC Mark 05, and SiSoft Sandra 2008 Lite. For specifically stressing the graphics subsystem we used 3D Mark 05. Maxon's CineBench R10 was used for testing the CPUs rendering ability. For testing the quality of the display provided we used DisplayMate's colour suite. Finally, we used WirelessMon 2.0 to check the strength of the WLAN solution embedded on each notebook. We also benchmarked the transfer rate of the WLAN system. We transferred a single 100 MB file for the sequential test and a number of small files totaling to 100 MB in size for the random test.

For real world tests, we checked the overall effectiveness of each of the test subjects at viewing HD content and gaming, music, file compression/decompression (WinRAR), and file transfers. The former tests stress out the video solution and CPU and memory subsystems while the file transfer test specifically targets the storage subsystem.

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of L2 cache – great for someone needing more CPU performance. It seems the E6400 ships with only 7200 RPM hard drives and this is a very good thing because the storage subsystem is usually the slowest component of any PC or notebook. SSD is also an option with the new Latitude; though the costs are astronomical. In true workstation style the Latitude E6400 ships with an NVIDIA Quadro graphics solution; the NVS 160M which is hardly powerful, being based around eight stream processors but is way faster than Intel's GMA and about a tenth of the performance away from a GeForce 9300M GS. D-Sub and S-Video connects are provided as video outs.

The Latitude E 6400 is priced from Rs. 60,000 and above; although the model we recieved was priced at Rs. 95,000; not bad considering the processor and graphics solution.
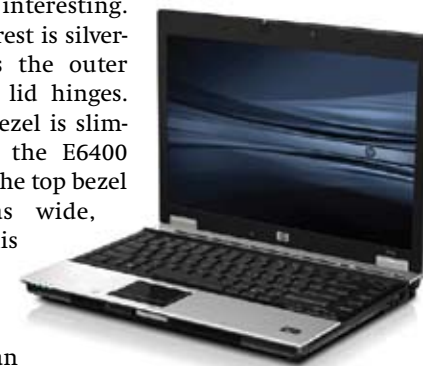
HP Elitebook 6930P
All that glitters is not gold

The 6930P is yet another rather unobtrusive looking notebook. The lid itself is a matte black, unlike the machined metal finish on the Latitude E 6400 and looks even simpler; some might feel a little to plain looking. The body has an equally lack luster finish with dark grey and black used as tones. This sort of body finish is common to Lenovo's ThinkPads as well; yet the Elitebook looks even plainer. The culprit, we feel, is the boxy build which gives it a very (yawn) boring look. It's also about as heavy as the E6400. Once you open the lid, things get a lit-

tle more interesting. The palm rest is silver-grey as is the outer bezel and lid hinges. The side bezel is slimmer than the E6400 although the top bezel is just as wide, making this notebook appear slightly bigger than its screen size of 14.1-inches; its footprint is a little smaller than the Dell Latitude E6400 though.

HP advertises that the Elitebook 6930P is designed with conformity to certain military standards, (MIL-STD 810F for those who want to look it up), for resilience to vibration, dust, humidity, altitude and high/low temperatures. This notebook also has the option to upgrade the optical drive to a special space saver ODD which allows for using an additional hard drive – a cool option for the power business user. RAID 0 and 1 support is also available if you decide to go dual hard drive. The drives themselves have an impact protection cage to minimize data crashes. The display is LED-backlit once again a plus for battery life; the quality of display remains as good as a CCFL display. The resolution is an excellent 1440 x 900 pixels, although you can opt for a screen with a resolution of 1280 x 800 pixels as an option.

The trackpad is small and quite recessed; a plus during heavy typing sessions as your wrist is less likely to come in contact with the touchpad surface thereby causing your mouse pointer to jump elsewhere which

HP Elitebook 6930P

is a most irritating phenomenon. The touchpad also incorporates dual scroll zones for both vertical and horizontal scrolling. The keys on the 6930P sport the same kind of matte finish that the outer body sports and this adds a bit of welcome grip to each key. Key travel is a little more than the E 6400 and feedback is slightly softer. However the keys are well laid out and due to their large design lack beveling on the top. Needless to say this keypad worked well for all of us and although the theory this should not have been the case but in practice we could find little fault – we'd like key travel to be slightly less and feedback to be more on the positive side of responsive. There are a number of backlit and touch sensitive buttons on the top of the keypad and the all important WLAN on/off control is found here. The backlit icon changes colour when WLAN is switched on and off and there is another indicator which lights up on the front of the notebook; although this indicator will not be on eye level when you're using it so is not that useful. A configurable shortcut key and the volume buttons are also backlit and touch activated – this is a nifty addition to a business-class notebook; after all even corporate users like to indulge in a little soft finger touching! A fingerprint scan sensor is also provided to added security.

HP provides software that can manage and even repair your notebooks installation over a network; very useful for IT professionals and business houses looking for a robust fleet of notebooks with minimal down times. The 6930P is adequately powered

with a P8400 processor and 2 GB of DDR2 memory. It also has a 250 GB, 5400 rpm hard drive and an ATi Radeon HD 3450 graphics solution. This is more than enough grunt to push the 6930P through most tasks; and these components may even be overkill for most users. A D-Sub video-out is provided as standard, we'd have liked something more in the HDMI realm; but this isn't an entertainment notebook.

The price of the 6930P as quoted by HP is "price on request". However to our dismay we were unable to get a quote on request – it seems they will only give quotes to potential users; and there was no more information to be had from them. A three year international warranty is provided as standard, a huge plus for the globetrotting professional or businessman; most companies do not offer such warranty terms free of charge. If you're looking for hassle free service plan and an excellent warranty scheme for a rugged product this may well fit the bill.
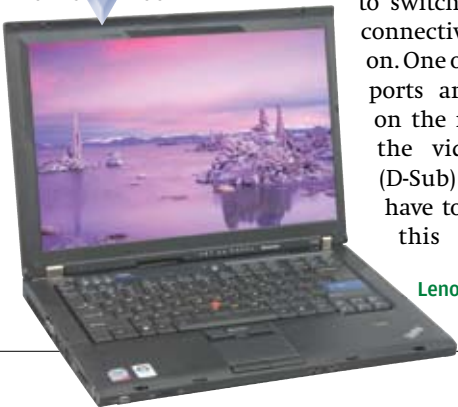
Lenovo X300
Worthy lightweight champ

The X300 series exemplifies extreme portability and the X300 we received doesn't belie this belief one bit. The X300 is touted as an ultra portable and ultra light notebook and the weight of 1.5 kilograms with battery is definitely a step in the right direction. It's a sweet looking notebook decked in a rubberised sort of finish. This coating is present all over the body and the inside is a hard, matte finished plastic. The entire notebook is black, and this effect is only relieved by the red stripes on the top mouse buttons and the red trackpoint. It's clearly aimed at a corporate user and this is very obvious from the look. The screen bezel isn't too wide, although it's a little thicker on the outer edges. Still the X300 is very slim and gives the impression of being built to last. The screen is 13.3-inches and sports a high resolution of 1440 x 900 pixels; the display is crisp with good
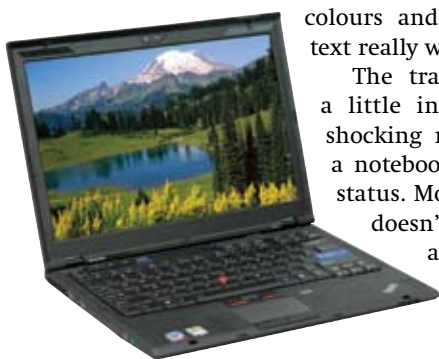
Lenovo X300

colours and displays text really well.

The trackpad is a little inaccurate; shocking really for a notebook of this status. Moreover it doesn't respond at times – mores the pity. The trackpoint works well; but we feel there's no excuse for designing a poor trackpad; and trackpoint's are Jurassic for most people anyways. The keypad is exactly the opposite; key feedback although a touch soft is quite positive. The keys are exceptionally well laid out and beveling is excellent; this really is one of the best designed keypads you will ever use. The only sore point (and a serious one) is the placement of the function key on the lower corner of the keypad; a space that's usually reserved for the control key which also enables a lot of shortcuts. People used to the control button do a lot of double takes when using it in combination with shortcut keys and you need to get used to the placement of the function key. The keypad isn't backlit although Lenovo does provide the traditional lid light. We noted that while this light provides adequate illumination when working in the dark its inadequate when there's a little ambient light which makes it useless seven times out of ten. Another little ergonomic niggle is that the WLAN switch is placed on the rear; this means you need to either reach behind your notebook each time or turn it around so that the rear faces you in order to switch wireless connectivity off or on. One of the USB ports are placed on the rear as is the video port (D-Sub) but we have to say that this makes a

EDITOR'S PICK
JANUARY 2009

Lenovo T400

lot of sense. When hooking up a secondary display or a printer it makes sense to have the connections going from the rear so you save on cable clutter on the front or side or your desk space.

With a power saving 1.2 GHz L7100 under the hood the X300 is supposed to be all about battery conservation; although our tests clearly negated the theory that these CPUs are really great power savers. An SSD should also help conserve power. The X300 has a 64 GB SSD which also adds performance, particularly with anything requiring fast read and access to the storage system. There's no fancy graphics solution here; expected for an ultra compact, power-saver notebook. As expected the X300 will not win any CPU and GPU benchmark awards; but it does have a blazingly fast storage system. At Rs. 139,000, the X300 is quite costly; and do not expect this price to fall unless SSD prices fall as you cannot buy this notebook with a regular hard drive. For corporate looking for the reliability and repute of the ThinkPad series and something light and compact the X300 makes a good, albeit pricey buy.

Lenovo T400
The larger sibling

Just as the X300 series exemplify portability, the T400 series is supposed to represent a balance between power and performance. What this really means is that the T400 is a larger, heavier and cheaper notebook with a slightly inferior finish to the X300. The term inferior was meant relatively in the above statement and the T400 is well built and feels solid; but perhaps being larger doesn't feel as dense in-hand as the X300 did and the difference in price is evident with the quality of materials used. It also feels a little more plasticy than the X300; owing to the use of slightly lower grade materials than the X300 utilises in the construction of its outer body. Once again this matte black finish may not be to everyone's liking but we feel the inside is a little better looking

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Business Laptops

Brand	Lenovo	Lenovo	Sony	Dell	HP
Model	T400	X300	Vaio VGN-Z13GN	Latitude E6400	Elitebook 6930P
Features					
Component Specifications					
Processor Model No	P8400	L7100	T9400	T9400	P8400
Processor Speed (MHz)	2260	1200	2500	2500	2260
Memory (MB) / RAM Type / Memory Speed	1024 / DDR3 / 1066 MHz	2048 / DDR2 / 667 MHz	4096 / DDR3 / 1066 MHz	2048 / DDR2 / 800 MHz	2048 / DDR2 / 800 MHz
Chipset	Intel Cantiga GM45/ GM47	Intel GM965	Intel Cantiga GM45/ GM47	Intel Cantiga PM45	Intel Cantiga PM45
Graphics Solution	Intel GMA 4500MHD	Intel GMA X3100	GeForce 9300M GS	Quadro NVS 160M	Radeon HD 3450
Onboard Video Memory (MB)	Shared	Shared	256 MB shared	256 MB	256 MB
Audio Solution	Conexant Cx20561	Conexant Cx20561	Realtek ALC262	IDT 92HD71B7	AD1984A
HDD Size (GB)	160 GB	64 GB (SSD)	320 GB	160 GB	250 GB
Optical Drive Type	Matshita DVD-RAM UJ-844	Matshita DVD-RAM UJ-844	Matshita DVD/RW	PLDS DVD/RW DU-8A2S	NEC Optiarc DVD/RW AD-7561S
Bundled OS	Vista Business	Vista Business	Vista Business + XP Prof	Vista Business	Vista Business
Characteristics					
Screen Size (Inches) / Native Resolution (Pixels)	14.1 / 1280 x 800	13.3 / 1440 x 900	13.3 / 1600 x 900	14.1 / 1440 x 900	14.1 / 1440 x 900
Weight	2.13 Kg	1.5 Kg	1.48 Kg	2.1 Kg	2.1 Kg
No of Ports (USB/FireWire)	3 / 1	3 / 0	2 / 1	4 / 1	3 / 1
Connectivity (LAN/Bluetooth/WiFi)	✔ / ✔ / ✔	✔ / ✔ / ✔	✔ / ✔ / ✔	✔ / ✔ / ✔	✔ / ✔ / ✔
Type of Memory Cards Supported	SD, MMC, xD	SD, MMC, xD	SD, MS Pro, MMC	SD, MMC, xD, MS Pro	SD, MMC, MS Pro, xD
Inbuilt Webcam	✖	✔	✔	✔	✔
Build Quality (So 10), Body / Keypad / Lid, movables	7.75 / 7.5 / 7.75	8.25 / 8.25 / 7.75	6.5 / 7.5 / 7.5	7.25 / 7.25 / 8	7.75 / 7.5 / 8
Ergonomics: (Keypad Tactility / Layout / Shortcut Keys)	8.25 / 7.75 / 7.5	8.25 / 7.75 / 7	7.5 / 8 / 7	8 / 8 / 7.75	7.5 / 7.5 / 7.5
Biometrics Login	✔	✔	✔	✔	✔
Dedicated Buttons (WLAN / Bluetooth / Touchpad	✔ / ✖ / ✖	✔ / ✖ / ✖	✔ / ✖ / ✖	✔ / ✖ / ✖	✔ / ✖ / ✖
Performance					
Synthetic Scores					
PC Mark 2005					
CPU Score	5767	3206	6482	6398	5479
Memory Score	4990	3254	5516	5399	4741
Graphics Score	2396	1006	3880	3428	2276
HDD	4636	14565	3742	5051	4404
Overall	4780	3254	5379	5963	4541
SiSoft Sandra 2008 Lite					
CPU Arithmetic (Dhrystone ALU / Whetstone iSSE3)	20951 / 16575	11065 / 7606	23414 / 18284	23262 / 18568	20901 / 16677
CPU Multi-Media (Integer x8 iSSE3 / Floating x4 iSSE2)	124913 / 68249	66000 / 35908	139603 / 76400	139541 / 76246	125016 / 68301
HDD Index / Random Access Time (ms)	51 / 10	89 / 1	50 / 13	49 / 11	48 / 9
Memory bandwidth (Integer / Floating)	5220 / 5221	3495 / 3529	5751 / 5732	5601 / 5616	5109 / 5112
3D Mark 2005					
CPU Score	7785	4637	13664	12927	10967
Overall Score	1437	671	3934	3247	3962
Maxon CineBench R10 (CPU Score)	4573	2336	5324	5286	4608
Display Mate Tests					
Colour Accuracy Test (Avg) (So 10)	6.5	7	7.25	5	7
Battery Life Test (Minutes)	158.58	112.33	157.44	154.30	139.52
WiFi Signal Strength Test	87	76	71	85	81
WiFi Sequential transfer test (MBps)	51	128.4	40.3	46.7	44.1
WiFi Assorted transfer test (MBps)	79	132.3	64.9	69.9	62.1
Real World Tests					
Audio Test Speakers (So 10)	4.5	5	5.25	4.5	5
HD Movie Viewing (So 10)	5.5	6	7.25	5.5	5.5
WinRAR 3.8 (Compression / Decompression kb/s)	753	685	847	563	683
File transfer Test (Sequential / Assorted) (Sec)	96.4 / 92.2	24.3 / 31.7	52.6 / 59.8	44.5 / 54	63.4 / 84.8
DOOM 3 (fps) (640x480, medium detail)	13.5	9	108.8	95.4	80.9
Farcry (fps) (640x480, low detail)	50.95	31.71	193.62	182.94	194.16
Warranty (Years)	1 onsite	1 onsite	1	1	3
Price (Rupees)	68000	139000	124900	95,000	Price on Request

as the black finish looks a little brighter. The screen sports a de facto resolution of 1280 x 800 pixels and with a diagonal size of 14.1-inches, this seems a little low resolution, especially when compared to the 13.3-inch, 1440 x 900 pixel display on the X300.

The keys on the T400 are identical in layout to the X300

and this is perhaps, ergonomically the best part of the T400. Key feedback is a little bit softer than the X300 but this doesn't detract from the feeling that this is one of the best designed keypads around. A pity we couldn't say the same for the trackpad which is sometimes unresponsive and inaccurate. The double

mouse buttons and trackpoint are also present; the latter works well; better than the trackpad. Above the keypad you will find an array of status icons that are easily visible and well laid out; there are indicators for battery, WiFi, Bluetooth and charging status. The volume up and down buttons are also present here as

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is the *ThinkVantage* button that allows quick access to help and support. The USB ports are laid out vertically which is actually pretty clever design since two ports can be placed very close to each other thereby saving space. The RJ11 and RJ45 connects are also placed together on one side; convenient. The WLAN switch is on the front this time; so it scores in terms of placement ergonomics over its costlier sibling.
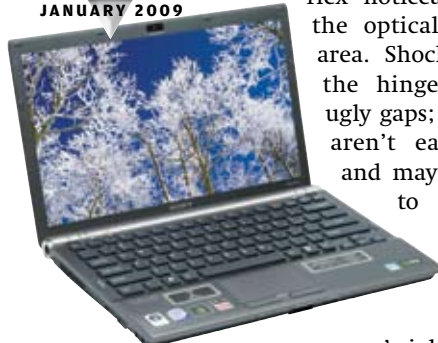
Powered by the new P8400 which is part of the new Montevina platform the T400 is snappy; but comes with just 1 GB of RAM (DDR3). We figure Vista users should look for at least 2 GB of memory and cannot figure out why Lenovo chose to supply just 1 GB; unless it was to keep the price down. The hard drive is a regular 5400 rpm, 160 GB offering. The T400 also makes do without any sort of discrete graphics offering favouring Intel's trusty old GMA 4500. Priced at Rs. 68,000, the T400 is very competent for the build, specifications, functionality and features it offers. Anyone who is used to the build of Lenovo's ThinkPad's will not be disappointed. We wish for a GeForce 9300M-class graphics solution and an HDMI port; which would make this notebook more of an all-rounder but as it is the hardware on offer is good enough for its target audience.

Sony Vaio VGN-Z13GN
Ultra portable performer

Sony's Z series are aimed at the stylish businessman looking for a no compromise machine that serves a dual purpose — rock solid portability and strong multimedia capabilities. The Vaio VGN-Z13GN is a very compact notebook that has an understated black and steel-grey finish that attracts at first sight. The lid is one of the slimmest we've ever

Sony Vaio VGN-Z13GN

seen and this notebook is definitely the slimmest in this comparison. The lid has a nice positive snap shut action when it's about an inch from being fully closed. The outer shell is made partly of carbon fiber which gives the Vaio Z the binary benefits of tremendous robustness and low overall weight. We felt that as good as that may sound, this Vaio should have been built even better and there was some flex noticeable around the optical drive tray area. Shockingly even the hinge has some ugly gaps; while these aren't easy to spot and may not matter to most people being retentive is part of a reviewers' job. The rear plastics are good quality but not as good as the materials we've seen on the Vaio TZ series. The screen is a very high resolution 1600 x 900 pixels and at a size of 13.3-inches it's not the ideal proportions for someone looking to work with text. However, colours and contrast on the display are good, but this is a TN panel and you will have issues with wider viewing angles.

The keypad is typically Sony, with a kind of soft, mushy feedback. The layout is very good though, although the keys feel a little smaller than some other Vaio's they are also a little higher than normal meaning that key travel is more. The gap between the keys on this keypad seems to be slightly more than the gaps on the segregated keypad that Apple uses. Whether or not this is good, is for you to decide but our overall opinion is positive and nobody had any ergonomic issues while using it and the all important control key is at the

left corner, just as it should be – Lenovo should take a leaf out of Sony's book here. The trackpad is better than the Lenovo series in terms of accuracy and the choice of coating is also good as it aids finger grip. The WiFi indicator light is on the front bezel and not at all visible unless you eye is at the same angle which rarely happens; the switch is located below it and is easy to operate.

The VGN-Z13GN also features the famous switch to select between stamina and speed mode. This is basically a hardware level switch between the integrated graphics solution (Intel) to the NVIDIA GeForce 9300M GS. This allows you to either get more graphics horsepower or conserve battery life depending on your usage patterns at the moment.

In terms of processing power the Vaio is fully loaded – with 4 GB of DDR3 memory and an Intel P9500 CPU running at 2.5 GHz. A 320 GB hard drive offers more than enough storage for all but the most demanding of download junkies. When viewing the specifications of this notebook we feel more strongly than ever that this Vaio is designed to perform dual roles. It can be a faithful corporate aid and a fun-time plaything as well; and it's equally adroit at both tasks, and yes; it's also got an HDMI port. It was also the smallest and lightest notebook (1.48 kg) in test making it something of a specialty since it's also the most powerful notebook in test in terms of processing power and performance. At Rs. 124,900 we wish it were just a little sturdier; but given its other multifaceted talents we have very little to nitpick about. If you can afford to spend this much cash; this is the only notebook you need consider. ∎

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Threat defence

Mahesh Gupta

The year 2007 was characterised by unprecedented innovation and adaptability in the realm of security threats, as criminals once again demonstrated their ability to continually evolve attack strategies to keep ahead of even the most advanced human and technical defences.

Rogue developers create such threats by using worms, viruses, or application-embedded attacks. Botnets can be used to seed an attack, for example, rogue developers can use worms or application-embedded attacks, that is an attack that is hidden within application traffic such as web traffic or peer-to-peer shared files, to deposit "Trojans". This combination of attack techniques — a virus or worm used to deposit a Trojan, for example-is relatively new and is known as a blended attack. A blended attack can also occur in phases — an initial attack of a virus with a Trojan that might open up an unsecured port on a computer, disable an access control list (ACL), or disarm antivirus software, with the goal of a more devastating attack to follow later.

The evolving perimeter

Changes in network architectures and evolving threats create new security challenges. Also the concept of the network perimeter is changing. In the past, users could only access the network through a few ingress or egress points — usually where the internet connected to the enterprise network. Enterprises stacked security at the internet perimeter using firewalls and intrusion detection systems. However today, many more means of gaining entry to the network exist. With the perimeter having been extended and distributed, security too needs to be applied at each of these new ingress and egress points to avoid damaging threats, thus complicating security architectures.

Take for example, virtual private networks (VPNs). These allow enterprise users remote access to the corporate network and are much more widely used than just a few years ago. While previously enterprises might have insisted that VPN software run on a specific enterprise-configured computer, today users run VPNs from their own PCs or even from kiosks at copy centres or other businesses. This phenomenon allows many more entry-ways to the enterprise network and presents a significant challenge to IT departments. Is the computer equipped with virus protection? Are

As the network is becoming more vulnerable to attack because of the evolving perimeter, the threats themselves are changing

visitors / employees bringing their non-corporate assets into corporate network?

Or for that matter, let's look at wireless-Wireless LANs (WLANs) pose additional security challenges. Users operating on an unsecured wireless network at a local coffee house may be unaware that a rogue PC, also using the same wireless subnet, is depositing a virus on the PC. When that PC is later docked into the corporate network, the virus/Trojan could gain entry to the network.

Security — the reverse Moore's Law

As the network is becoming more vulnerable to attack because of the evolving perimeter, the threats themselves are changing. In addition to Trojans and botnets, newer, even more dangerous threats lurk. Two of the most troublesome are flash threats and self-mutating worms. Flash threats are so named because of the speed with which viruses or worms can spread. In 1999, a virus dubbed "Melissa," one of the earliest and most widespread viruses at the time, took 16 hours to spread globally, according to Network Associates Inc. In January 2003, the "Slammer" virus managed to infect more than 90 per cent of the vulnerable hosts worldwide within 10 minutes using a well-known vulnerability in Microsoft's SQL Server. New viruses in the coming months and years are expected to spread even faster. Therefore whatever defences organisations create, they must be able to identify the threat and respond much more quickly than ever before.

The other looming threat is the self-mutating worm. Today's worms are relatively unintelligent. They are programmed to follow a specific set of instructions, such as to infiltrate one machine through a specific port and once on the machine compromise it in some way, for example, causing a buffer overflow and planting a Trojan. If anything interferes with these planned instructions, the worm lacks the ability to adjust and dies. Now, however, rogue developers are adding intelligence and logic to worms so that if they can't complete a specific task worms can mutate and pursue other lines of attack.

Experts call this security dilemma "Moore's Law in reverse". Whereas Moore's Law postulates that processor performance will double every 18 months while costs will decline dramatically, security is moving in the opposite direction-networks are becoming less secure while the cost to defend them is increasing. This prognosis is supported by mi2g, a research firm in the UK that specialises in computer security. Mi2g reports that the economic dam-

age from malevolent network security attacks reached somewhere between $157 billion and $192 billion worldwide in 2004.

New threats — increase in operational complexity and manageability?

The current security defence paradigm is to deploy more and more of the existing security technologies throughout every segment of the network. This includes firewalls and ACLs to block access and perform application inspection, intrusion protection system (IPS) technology to provide very granular traffic inspection and identify known threats, encryption software to counter eavesdropping, anomaly detection to detect worms or DoS attacks, and antivirus software to battle viruses.

Many of today's security technologies were developed to perform their specific function with little context of the overall network threat environment. Operating alone, however, these technologies are less effective in stopping the newer attacks, as well as the changing ways in which user's access networks, because of the "security gaps" that exist between each technique's capabilities. With the increased complexity of threats, such as the blended threats that use a combination of techniques to disrupt networks, security technologies must operate in a coordinated fashion to stop attacks and better control network activity and applications.

Unfortunately, over the years, many companies have addressed nagging security concerns by constantly adding devices and software to address each particular problem. This has led to separate antivirus protection, firewalls, VPNs, and intrusion prevention. While this addresses the short-term needs, it creates an entirely new and bigger problem: managing multiple systems that operate independently of one another. As more advanced threats emerge, there is a need for network security to become more holistic; security technologies must act in coordination to detect and defend against more sophisticated threats. There is a growing need for devices that can assemble the puzzle pieces and lock down the gaps that exist in conventional network security systems.

Adaptive security for a changing world

Transforming chaos into a clear and manageable security policy is essential, which is why future network security systems need to focus on convergence and consolidation. For robust information security for an enterprise, a proactive architectural and system approach is critical. The idea is to accurately identify and stop attacks as early and as far from the destination host as possible, while simultaneously simplifying the security architectures required to do this.

Instead of a security product for each security need in isolation, an end-to-end security solution approach or system enables these combined functions to operate as a coordinated defence (instead of silos) that stops a broader range of attacks and greatly reduces the number of diverse multi-vendor devices that must be deployed, thereby simplifying security design and management.

Historically, firewalls have generally been considered fairly simple devices, but they are effective at what they do — either block a packet or let it through based on Layer 3 and Layer 4 information and session state. They can provide some level of application inspection but do not perform the detailed inspection of some other technologies. An IPS device can pick up where a traditional firewall leaves off by peering more deeply into a packet's contents to see whether the data within conforms to company policy. Host IPS, host firewall on servers and desktops/laptops, day zero protection and intelligent behavioral based protection from application vulnerability and related flaws (within or inserted by virus, worms or Trojans) provided great level of confidence on what is happening within an organisation on a normal day and when there is a attack situation, which segment and what has gone wrong and gives flexibility and control to stop situations by having linkages of such devices with monitoring, log-analysis and event co-relation system.

Adaptive threat defence is the need now where an end-point security system can dynamically generate an attack signature and push it to the other end-points and to the perimeter IPS devices to stop it from propagating to rest of the infrastructure. Similarly security operations teams have challenges to fine-tune false positives, they struggle by logging into various devices to understand which logs are resulting into what logs; the need of the hour is that security operations team should be able to easily see the logs and link the same to configurations which are resulting into these logs.

This type of systems approach transforms security from operating as separate siloed technologies in a reactive mode-with limited and static detection methods-to functioning as a coordinated, proactive threat defense system that adapts to the threat environment.

These systems provide numerous benefits: improved detection, greater event classification accuracy, lower operating costs, streamlined administration, and services extensibility that integrate the most advanced security technologies as they are developed. These converged systems will not compromise the quality of security in any given category, but instead combine the strength of each in complementary ways to deliver a tighter, coordinated defence. ⊠

The author is Business Development Manager, Network Security, Cisco India & SAARC

Bomb alert!

A well-drafted model bomb threat plan, tested and evaluated with trained staff, will enable an organisation to promptly respond and help minimise loss

Raghu Raman

Warning: Terrorists will strike where it hurts the most

In his famous book *The Little Drummer Girl* John LeCarre wrote that the absolute terrorist is one who can blow up a room full of school children, without any remorse or hesitation. Abhorring as that might seem, the frightening recurrence with which such instances have occurred, necessitate corporate India to be prepared for the absolute terrorist.

Very recently, SIMI had threatened to blow up LIC buildings, a warning serious enough to mobilise the Mumbai police. In the past few months, many Indian companies in BFSI and IT / ITES sectors have been subject to hoax bomb threats. Though more often, the situation was brought under control — these incidents caused stress, confusion, disruption of work and loss of business and / or credibility. Inarguably, the problem merits attention. However, there is a need to remain calm and follow the basic rules of security. Employee awareness, training, practice and evacuation drills help to avert disasters and increases chances of correct response in times of crises.

Dealing with bomb threats

A bomb threat may be received on telephone or through a written message. Experience shows that most of the threats received on telephones are hoaxes. However, till experts carry out a detailed search and come to that conclusion, the situation has to be taken seriously. Statistics suggest that one in a 1,000 calls may turn out to be genuine.

While administration and corporate security departments play a leading role in countering bomb threats, employees are often the first line of defence. A sound and practical bomb threat contingency plan ensures carrying out standardised drills and lays down specific responsibilities on all concerned.

Evacuation procedure

Once it is decided to evacuate, the security manager should give wide publicity by announcements through PA system, CCTV, megaphone, etc. Do not use the word "bomb"
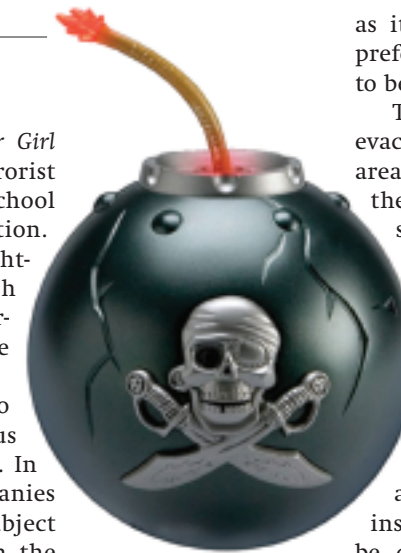
as it may create panic and confusion. It is preferable to announce that "the area needs to be vacated — this is NOT a drill."

The announcement should specify the evacuation route, guide, location of assembly area and the need for staying there till further instructions. Route and assembly area should be searched before announcement.

Evacuation instructions (dos/don'ts):

Ideally the organisation should have practiced evacuation drills previously. If they have not—then these are some guidelines.

The announcer must remain calm, and advise the employees to follow the instructions. Similar announcements could be displayed on the monitors of CCTV, if

installed.

- Walk out of the building in a calm and composed manner to the given location through the given route.
- Do not run, it will cause panic among others.
- Do not use elevators/lifts or conveyors.
- Follow the instructions of the guide.
- Do not argue or talk with the guide. It will waste time and obstruct evacuation.
- Carry personal valuables, but do not stop to wind up work.
- Supervisors may need to switch off the machinery and power supply in their respective areas.
- Open all windows, doors and cupboards.
- Do not obstruct passage of search and rescue squad.
- Wait in the assembly area till further instructions.
- Do not spread rumours or speculate and cause panic.

The supervisor must take attendance in the

And what if you are caught in a blast?

Given the nature of blasts, it is impossible to predict the exact situation you could be in. However, here are some generic guidelines that could be of help.

- Depending on your distance from the blast, you could be in various degrees of consciousness.
- The first effect of a blast is a numbing disorientation. Try to get your bearings. If you are in a prone position, stay down.
- Try to remain calm. If you are conscious and can move yourself, examine yourself for injuries. Blasts commonly cause concussion and lacerations. The former causes damage to organs and bones and the latter causes bleeding.
- Be aware that there could be secondary blasts.
- Do not panic and create stampedes.
- Do not search through debris.
- If you are capable of it, assist others until help arrives.

Actions on receipt of a bomb threat call

- Stay calm and listen carefully. Signal others around you to stay quiet and if possible pick up extension phones to listen in.
- Write down the number displayed on the caller ID display of your telephone.
- Get maximum information and prolong calls as far as possible. Pretend you did not hear correctly, ask the caller to repeat. Ask questions—location of the bomb, time to explode, what type of bomb, how can we get rid of it, who has placed the bomb, from where are you calling, what is your name, reason for placing the bomb—in that exact order.
- Try to identify background noises such as traffic, music, conversation that may help to determine the location from where the call is being made.
- Make an educated guess on sex, age, race, voice (loud, soft, pleasant, intoxicated) or accent, speech (fast, slow, nasal, slurred) and manner (calm, emotional, vulgar, angry, laughing, righteous) which may help identify the caller. Be advised that the caller could also be in an agitated state.
- Alert a colleague; report the call to your manager or security manager immediately.
- Fill up the bomb threat call check list.
- A bomb threat could also be in the form of a mail/written message. Report these to the security manager.

assembly area and if any employees/visitors are found missing, it must be investigated.

Make "Be Prepared" your motto

A bomb threat plan should be drawn up in every organisation and tested to assess the organisation's readiness and ability to respond. This should be part of the incident management plan. If there is a real bomb threat or any emergency that requires evacuation, such efforts will reduce the damage. The organisation, depending on its structure and nature of business, must draw out a model plan by assessing its risks, deciding on a policy and training personnel to implement it. The plan must be rehearsed and lessons learnt must be incorporated.

It is also advisable to carry out a threat assessment to prevent the organisation from being an easy target for potential bombers.

Telephone operators and PAs should be trained in questioning techniques for extracting maximum information from the caller. A "bomb threat check list" guidance should be available with them. Organisations should make arrangements for tracing and recording of incoming calls.

The organisation must train security officers, maintenance staff and others in carrying out search and evacuation. A suitable area should be earmarked as assembly area. ⊠

The author is CEO, Mahindra Special Services Group

LEFT 4 DEAD

Rossi Fernandes

Team Fortress 2 players all over would have been a little mad at Valve for delaying updates for some new project called *Left 4 Dead* that was in the works. It came out recently and thanks to trailers and demos that arrived before, it's clear that it was going to be a survival horror game. It's finally here and people don't seem to care about paying an excessive $50 for a PC game that you buy online without a fancy box pack to keep on your desk.

Left 4 Dead is an online multiplayer co-op survival horror game that can also be played as a single player game. You play as one of the four characters of your choice — Francis, Zoey, Louis and Bill. There are five separate chapters and missions within each one of them. You typically are planted right in between a zombie infested building and you make your way out of there. How? By shooting hundreds of zombies through every mission and covering your partner's backs. If you were wondering what kind of gameplay and storyline you play — that's all you do — shoot zombies, escape alive. Fortunately that's not all there is to *Left 4 Dead*.

The game runs on Valve's four year old *Half-life 2* engine that has been given steroids to match the visual quality of today's game engines. Other than the additional cosmetics to the look, it's also easy to notice the better textures and models in the game. If you can run *Half-life 2*, you should be able to run *Left 4 Dead* just fine. The animations for the zombies are also good fun. The mood in the game is great — it's the feeling of an aban-doned and ruined city with pockets of zombies. To sum it up for more experienced gamers, the environments are like the ones in *SWAT4*, the action is something out of *Serious Sam* with more crowded environments and the weapons are from *Counter-Strike*.

The game isn't particularly difficult to play as far as shooting lone zombies goes. It goes from being easy and laid back to complete mayhem when you turn a corner and you have some 30 to 40 zombies waiting to pounce on you and your teammates. Being a team player plays a major role and that's where the online playing component becomes much more fun and challenging. Steam is used to download and update the game. It also gets matches for you to play. You can always use the Invite function to ask your friends to join in. If you have the sufficient number of players, you can even play Survivors versus Infected.

Valve has managed to strike gold yet again but we don't think it'll be as legendary a multiplayer as *Team Fortress 2*. With a lot of the fun limited to the levels available and no matter how many variations the game uses to send waves of zombie attacks, you are going to get bored eventually. Obviously, if Valve keeps updating this title with new content the same way they have with *Team Fortress 2*, *Left 4 Dead* will last.

Like the Orange box, *Left 4 Dead* is available in stores at a low price of Rs. 999 for the PC box pack and on Steam for $50 (Rs. 2,500). Avoid buying this if you want a deep storyline and tactics from an FPS; it's a must-buy for those who like mindless killing co-op games with plenty of zombies. ■

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Minimum System Requirements:
Pentium 4 3.0 GHz, 1 GB RAM, graphics card supporting Shader Model 2.0 — ATI Radeon 9600 or NVIDIA GeForce 6600 and above, 7.5 GB of free disk space

Score : 8/10
Developer: **Valve Corporation, Turtle Rock Studios**
Publisher: **Valve Corporation**
Platforms supported: PC & Xbox 360
Website: **www.l4d.com**

NEED FOR SPEED UNDERCOVER

Score : 5/10
Developer: **EA Black Box**
Publisher: **Electronic Arts**
Web site: **http://www.needforspeed.com**
Recomended Config: **Core 2 Duo/ AMD Phenom (or higher), 2 GB Ram, ATI X1900/NVIDIA 8600 GTS (or higher)**

Aditya Madanapalle

After the *Pro Street* fiasco, EA promised gamers a return to the roots of the *NFS* franchise. There was a longer than usual nail biting wait for the new release, with the usual buzz in the air. The twelfth installment in the series, *Undercover* is here, but the game is as forgettable as *Pro Street*.

There is an initial rush of the game, with an opening sequence that smoothly puts you behind the wheels *a la Most Wanted*. Although you know you are driving around like a puppet, a pre-scripted part of the storyline, you get that rush of adrenaline. From there, the game goes downhill. The physics are horrible; you can hit a car head on and still keep going like you hardly hit a speed breaker. The acceleration is unreal, all the cars handle too well, with no learning curve to talk of. You hit something, great, you get money for damaging state property, or evading the law. You don't hit something, great again, you get nitro points for a narrow miss or a clean section. There are only rewards, and no punishment. The game is just too easy, making sure you mechanically follow the story line.

The game plays out like a movie, with a very linear approach. You are hardly given a choice of races to choose from, and you can maintain just one save game per profile. This means that you cannot experiment with cars or tuning. All the decisions you make are final, and you are hardly given any. The game is rudely interrupted by amateurish cut scenes, with sloppy acting and done to death characters. Maggie Q is used like a heroine in an Indian b-grade film, with the camera zooming in and focusing on her hips, legs, bosom or belly every time she comes on screen. The "plot" of the game is that you are an undercover cop busting a gang of car thieves by a) running away from cops to prove that you are not a cop and b) killing the bad guys for a bunch of really lame reasons.

All the favorite modes have disappeared. You can drift only as a means to earn nitro. The drag is replaced by something called the highway battle, and the AI is easily fooled in this mode if you handle the race like a cop chase, and roam the city at random. This is because the car follows wherever you go, and the whole city is open. There are cop chases, but navigate to a circuit breaker, and you win. The helicopter is a docile little thing, that goes in the air without fuel every single time, and does not dive in towards you at any point. There are no rhino units, and the cop cars are easily fooled. A new mode involves taking down cars, by ramming into them repeatedly, but somehow, the game drains the fun out of this as well.

There are a bunch of American, European and Japanese cars to choose from. The customisation of your ride is very constricted because it kicks in well into the game, and everything is very costly. There is a large gallery of decals available, and all of them look great as long as they are not actually put on the car. The tuning is great actually, probably the only saving grace the game has. However, this is a wasted feature, as tuning a car for a particular mode or a particular race is a laborious process.

There is however a photo mode you can bring up at any time of the game, change a bunch of cameras and take a shot of your car. We just wish they would have thought of this back in the days of *Underground*, or before. There is also some damage elements... the surroundings can be demolished. Be warned though, flimsy looking wire mesh fences will refuse to budge, while stockpiles of industrial metal will litter the highway if you brush against it. Damage to the car itself is hardly visible, with the exception of the bonnet flying off somewhere in the middle of every race.

The worst part of the game are the glitches in the graphics. Shadows move unrealistically, artefacts follow the car, and the roads disappear at some point. Many of the elements barely manage to stay ahead of the car.

It hurts. Seems like the good old days are gone, and *NFS* is history, in the bad sense of the word. We just wish that EA would go deeper down into their roots. The word on the street is that EA is calling its losses and discontinuing the franchise. Nothing saddens a gamer more than watching a legendry series exiting on such a sour note.

aditya.madanapalle@thinkdigit.com
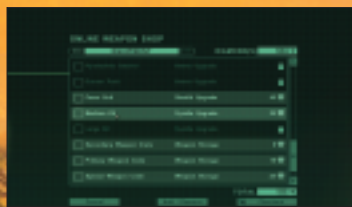
FARCRY 2

A far cry from _Far Cry_

Signs can change colour?

Vision blurs at the edges when aiming

Buy weapons using diamonds

I designed something with my Uzi

Dear diary...

Killing them again, in gory detail

That's right, run away and hide

Robert Sovereign-Smith

Where's Jack Carver? I thought this was part 2 of _Far Cry_? Apparently, this game is just called _Far Cry 2_ to get people like you and me to buy it and play it, based on the popularity of _Far Cry_ — sucks; I hate being made an ass of.

Initial irritation aside, I find that the game is rather pretty. The graphics are very, very nice. Obviously, being set in Africa, there's so much more in terms of scenery to play with.

I'm not going to give out too many details and spoil what little fun is to be had from this title. However, I will say that this game is either going to be one of the most boring shooters you have played, or is going to be one of

your all time favourites. The main reason for all this chopping and changing of opinions is the way the game is made — certain things will impress you while others will bore you to death.

To begin with, there's the AI, which at times is so smart that you die often. Other times, I could just walk up right behind an enemy, and shoot him in the back of the head, without his buddy, who's standing 12 feet away, ever reacting. Standard FPS madness this.

Your character is suffering from malaria, and you need to find tablets to keep yourself alive. The currency you use to buy things are diamonds you find along the way, and in true African style, you can use diamonds to buy anything but malaria tablets — you need to do favours for priests for those!

The good bit of this game is its immersiveness — great audio effects and music, good environment physics, a large open world, a good feel of being in ruthless Africa, and time actually changing — from day to night and back.

So is this a must buy? Sure, if you want about 30 hours of great gameplay in the single player mode, with decent replayability, though without a compelling storyline. If you're looking for a _Crysis_-like experience, forget it. This seems like an attempt to bring a lot more realism into an FPS — and I'm not talking just graphics here. Just remember that _Far Cry 2_ fails as much here as it succeeds. Besides, I'm still miffed at being cheated out of a proper sequel! ⌧

editor@thinkdigit.com

Rating: 7/10
Developer: Ubisoft

Recommended system config:
Core 2 Duo / AMD X2 5200 or better; 2 GB RAM; NVIDIA 8600 GTS / ATI X1900 (or better); 5.1 surround sound (required, or you will not know where your enemies are shooting at you from!)

Do you know your security?

1 A machine remotely controlled by a hacker for malicious activity is called a:

a) Sniffer b) Bot c) Ghost
d) Zombie

2 Which of these famous worms did not spread through e-mail?
a) Michaelangelo
b) Sobig
c) ILOVEYOU
d) MyDoom

3 How does a worm differ from a virus anyway?
a) A worm does not harm the computer directly
b) A worm can spread without attaching itself to a program
c) A worm can only come from computers connected to the internet
d) A worm can infect documents and system files

4 What does a firewall inspect and restrict?
a) The bandwidth
b) The network traffic
c) Server based codes and scripts
d) Programs accessing the Internet

5 What is a botnet?
a) A herd of computers remotely controlled by a hacker for malicious intent
b) A herd of computers running automated programs for distributed computing
c) A herd of computers used for remotely sending spam, denial of service attacks or perpetuating click fraud
d) All of the above

6 What does a denial of service attack do?
a) Hack a website so that legitimate users cannot access its services
b) Redirect legitimate traffic to a fake website
c) Take a web server down by sending it too many requests
d) All of the above

7 What does a rootkit primarily do?
a) Freeze up all essential system files
b) Gain administrative privileges to a computer
c) Format the partition with the operating system
d) Download trojans and viruses from the internet

8 Which of these popular programs were never distributed with spyware?
a) Kazaa
b) Morpheus
c) DivX
d) Bearshare

9 From which country does more than one-fourth of the world's spam originate?
a) USA
b) Nigeria
c) China
d) Brazil

10 RealPlayer is an example of:
a) Malware
b) Spyware
c) Adware
d) Shareware

Got an interesting question? Send it in with the answer to **TQ@thinkdigit.com** Mark "TQ" in the subject area

Did You Know?

Symantec and Kaspersky plan to move from blacklisting to whitelisting. This means that instead of blocking malicious programs, they will start allowing only the "good" programs.

Answers

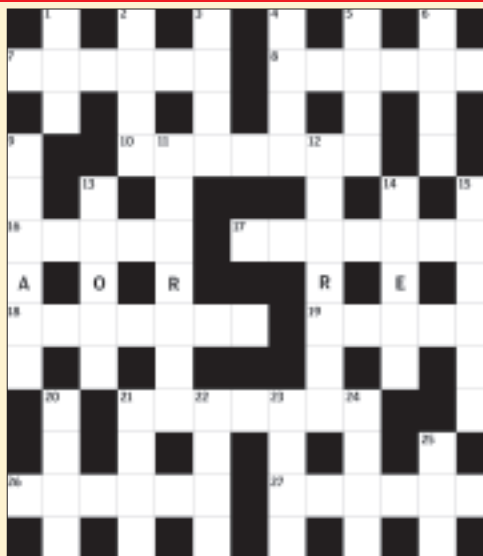|	
6. c	1. d
7. b	2. a
8. d	3. b
9. a	4. b
10. c	5. d

Crossword

ACROSS
7. Device that accepts a certain type of data or signal as input transforms it and then outputs it(6)
8. To convert the file from one system or application to the format of the system or application being used(6)
10. Free, open source application used for exchange of data using the TFTP(7)
16. Locate and correct errors in a computer program code(5)
17. Representing sound or light waves as numbers(7)
18. Archive of files created with the Unix tar utility(7)
19. To come out of a machine when a button is pressed(5)
21. Word macro virus(7)
26. Middle line or point(6)
27. -----Basic- programming environment from Microsoft(6)

DOWN
1. Short for simulation(3)
2. Prevent completion of a program(4)
3. Dynamic Random Access Memory(abbr)(4)
4. Round shaped media to store computer data(4)
5. To read the contents of a certain file(4)
6. Binary Runtime Environment for Wireless(abbr)(4)
9. Supply with recent information(6)
11. New version of or addition to a hardware(7)
12. Router through which a data packet enters a network from another network(7)
13. Stop a transmission(5)
14. An alloy of iron(5)
15. Electrodes as in a storage battery or capacitors(6)
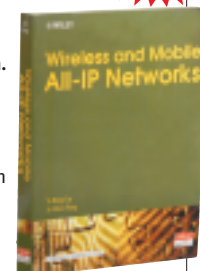**20.** Moser----- - world's second largest optical storage media manufacturer(4)
21. ----frame- or big iron(4)
22. A connector(4)
23. To store a file(4)
24. ADSTAR Distributed Storage Management(abbr)(4)
25. A file showing the structure of a program after it has been compiled(3)

Crossword by **Nitaa Jaggi**

Last month's Winner
Kayomars Batliwalla

Win!

Send in your entries to **TQ@thinkdigit.com** on or by the **20th of this month.** One lucky participant will win **Wireless and Mobile All-IP Networks** By Yi-Bing Lin and Ai-Chun Pang Published by **WILEY-INDIA**

December's Solution

NASA to give away Shuttles for free
You heard right, once the Space Shuttles have been decomissioned by the North American Space Agency, the space shuttles will be up for grabs for free. Only educational institutions and museums can opt in, and they will have to bear the shipping costs.

Sock and Awe sold out on eBay
Post the incident where a man threw his shoe at President Bush, an industrious developer released Sock and Awe, a flash game that let players lob shoes at the president. Four days, was all the time that it took for the game to be sold out on eBay.

Escape

People Who Changed Computing

Daniel Bricklin invented something that has completely changed the business world — the Spreadsheet. In the late 70s, while he was a student at the Harvard Business School, he teamed up with Bob Frankston, to come up with VisiCalc, the world's first electronic spreadsheet application. Bricklin was watching his university professor create a table of calculation results on a blackboard. When the professor found an error, he had to tediously erase and rewrite a number of sequential entries in the table, triggering Bricklin to think that he could replicate the process on a computer, using the blackboard as the model to view results of underlying formulas. His idea became VisiCalc, for which Bricklin designed the interface and Bob Frankston, wrote most of the code. They released VisiCalc in 1979, an act that fomented the desktop revolution. He also coined the term friend-to-friend networking as recently as 2000. He is now working on wikiCalc, a spreadsheet running on the web.

LOOK MA

YouTube made me famous

The world's most popular video web site, YouTube has given rise to a breed of celebrities in its time. These range from the adolescent antics of lonelygirl15, the understanding answers from Ask a Ninja, and the hilarious foreign language subtitles of Buffalax.

Unwittingly, YouTube has become a fertile ground for criminals, gang members, wannabe terrorists and small time hoaxers grabbing their fifteen minutes of fame. These smart people have taken it into their head to show off their (sometimes imagined) criminal exploits on YouTube, and the result was a bout of YouTube related arrests.

Anton Dunn, under the moniker of The Trashman, posted videos of himself in a black mask claiming to have poisoned several batches of Gerber baby food with cyanide or rat poison. Concerned parents understandably called up the company about the videos. If one video was not enough trouble, he posted another video claiming to lead a bunch of assistants who poisoned many more batches of the food, and that four babies had already died because of his efforts. The wannabe baby killer was exposed as a hoax, the authorities closed in on him and now he faces 10 years in prison with no access to free video hosting sites.

A bunch of gang-member kids styling themselves as BV Boys posted a video of themselves marking out their turf in the area. On record were gang-signs and concealed weapons. The authorities homed in, confiscated the weapons, arrested the boys, and now their *turf* is clean.

Ahmed Abdellatif Sherif Mohamed took it into his head to spread a little anarchy with a video tutorial on how to change a remote controlled toy car into a detonator. His intentions were far more sinister, an effort by the international terrorists networks to permeate the web and sow seeds of dissent. The twelve minutes of terrorist propaganda uploaded to the internet cost this young Egyptian student 15 years behind bars in a US prison.

THUBMS DOWN FOR MAC ADDICTS

NY Gov proposes iPod tax

NY Governer, David Peterson does not think that the global economic crisis is a good time for citizens to be entertained. A part of his plans to ease the slowdown is to impose a tax on all electronically delivered entertainment services. This is now widely billed as the iPod tax, which is a misleading name as the tax is not meant only for iPod users.

The law applies a 4per cent tax on everything — e-books downloaded from **e-library.net** to porn from **adultemart.com**. Popular services like NetFlix and Amazon will also come under the umbrella of the iPod tax. This is part of a $121 billion budget covering the next year. Almost anything that is liable to make Gov. Peterson's voters feel good is going to be taxed, in order to ease the credit crunch. This includes TV, beer, wine and cigars. Apart from the iPod tax, or the iTax, there is also the strange obesity tax on sugary soft drinks.

DONT JUST BLAME BAIDU

CCTV focuses on Google and Yahoo!

China Central Television is dispersing the flak it received, for the controversy embroiled Baidu search engine by alleging that Google and Yahoo! sport illegal medical ads on their web sites.

Baidu is the search engine of choice in the world's most populous country, and for a sneaky little reason. The reason being that a shadowy set of constantly changing domain names provide a great service — free and unlicenced music downloads. Despite many takedown attempts, lawsuits and complaints, free music continued to be available on Baidu. Then it came under the scanner for a number of advertisements of medical supplies that were not licenced. This forced Baidu to drop these ads, and the matter would have settled there.

Continuing on its crackdown on illegal medical services being advertised through the web, state-owned CCTV launched a fresh wave of attacks against Google China and Yahoo! China for similar offences. Both the search giants have been accused of taking money for advertising medical scams.

Google China is however secretly investing in a lot of Chinese internet services. The world's largest demographic cannot be easily ignored by the search giant. Although Google can hardly afford to offer free MP3 downloads, it is heavily investing in online Chinese-run social networking and entertainment services.

WASHING DIRTY LINEN IN PUBLIC

China courts rule against dead woman's friend and blogging site

In other China news, a woman who killed herself and the web service that hosted her blog were ordered to pay Wang Fei $1,200 in damages. The long and sordid tale reads out like a soap opera, complete with adultery, emotional turmoil and suicide.

It started with Wang Fei going to bed with another woman. His wife, Jian Yan, like any wife was pretty distressed. But unlike other wives, she decided that the best way to soothe her distress was to blog about her husband's ongoing affair on daqi.com. Helping Jian Yan at this activity was a certain unnamed female friend. The Chinese blogging community was stirred up against the cruel indulgences of Wang Fei, and even the mainstream media caught on. The blog went out of proportion because of all the support, and daqi.com went right ahead and posted photos of Wang Fei with his mistress. What followed was a small scale riot. Wang Fei was fired, his parent's apartment was defaced with lewd language, and Jian Yan decided that enough was enough and committed suicide.

Wang Fei understandably sought justice for the goings-on, and after much deliberation, the Beijing court decided that he was after all, the wronged party. Daqi.com and the late Jian Yan's unnamed female friend were criticised for invading Wang Fei's privacy, and asked to pay $1,200 as damages.
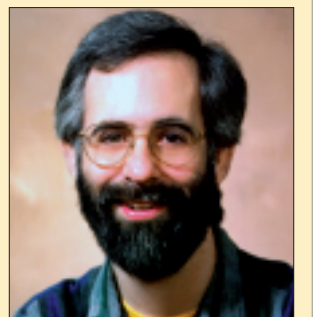

RUSSIAN TRADEMARKS POPULAR EMOTICON

Its not ;-) anymore

Patent and trademark laws around the world are rife with hillarious examples of what people try to own and reap profits out of. After people have

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■ Montenegro bans Facebook and YouTube access in govt offices ■ Japanese groups throw opposition to Google Street View ■ NVIDIA GTX 295 benchmark results leaked ■ Mobile networks need boost in Washington for Obama's inauguration ■ AMD in trouble

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Wild Wild Web

Bluff
YOUR WAY THROUGH

Audiophilia
The unnatural obsession with high quality sound marked by an excessive passion for high-end audio equipment. The afflicted want to experience sound reproduced with little or no loss. Read on to progress from audio-enthusiast to audiophiliac.

SNR – Signal-to-noise ratio: It's the level of clean signal compared to noise coming out of your output source. Look for higher SNR and lower TDH

THD – Total Harmonic Distortion: The amount of originally-recorded sound reaching your ears compared to distortion introduced by your components. Figures of 0.01% and lower are desirable for sound cards.

Impedance: Basically resistance. Changes as per frequency. Go for high impedance on low-end electronics.

Frequency response: It's a specification to measure how uniformly equipment reproduces sounds from the lowest to the highest tones. A uniform frequency response makes the delicate sound of a triangle as audible as the crash of a cymbal.

Reference speaker: Speakers or headphones that reproduce sound as it is, i.e. very close to the original recording. Like studio recording "reference monitors".

Soundstage: The presentation of the sound in relation to the listener.

Coloured: Simply to what extent, and where, the frequency is altered in reproduction.

Quality related terms: Warm, rich, full-bodied etc.

Brands: Sennheiser, Denon, AKG, Monitor Audio, Wilson Benesch.

Usage: These new AKG K-701 *reference* headphones I bought have an *impedance* of 62 ohms and man, what a broad *soundstage*! Really *rich* sound, absolutely *uncoloured*!

Do you speaka ani Engrish?
The Japanese are a funny lot, and the variation of English that they use is even funnier. They confuse the 'l' and 'r' sounds, leading to hilarious outcomes like Album Covers by Eric Crapton and campaign posters for Erections! Also much of the English on their signboards comes from literal translations from Japanese, with disastrously funny consequences – sign on a loo saying "Please use anyone". At **www.engrish.com** you'll find a huge collection of such pics contributed by people all over the world. The web site takes a fun look at the various products, signs, bags, clothing, etc. that contain funny or far-out English. Guaranteed to keep you tickled for hours.

Cool site of the day
Cool site of the day is an interesting web resource that brings to you the coolest web sites on the internet right to your inbox. You can subscribe to the newsletter, submit your own site, browse through archives, and even rate a site's coolness. Head over to **http://www.coolsiteoftheday.com/frmindex.html** and check out the coolest site for today.

THE MARCH OF THE WARRIOR PENGUINS

Linux joins the OS advertising battle

The operating systems war have been waging for a long time now, and the two big players in the field have taken on distinct identities. Windows users are stereotyped as being stiff upper lip power tie wearing formal individuals, as against Mac addicts with the casual clothes and the careless Seinfeld cut. Of course, Seinfeld switched loyalties in the recent $300 million advertising campaign for Vista that was summarily dropped.

The 1337 tree-huggers of the computer world have something to celebrate. When not trying to install codecs into their Linux systems, they can spend their time making the I-am-Linux video. The Linux Foundation, a non-profit organisation hoping to spread the support for the open source operating system is planning to launch an advertising campaign made from these videos.

The brief for the video according to the official website is "in 60 seconds or less, showcase your take on I'm Linux. This should be why you love it and should inspire others to use it. The video can be an extensive production, a plain testimonial or as simple as a screen capture with a voice over. Be creative, be authentic and have fun." The winner will be decided by a panel of judges and

tried to patent fire, and the wheel, the newest hunting grounds for opportunistic entrepreneurs is the web.

A Russian businessman has gone ahead and trade-marked the oh brother emoticon. Oleg Teterin hopes to earn thousands of dollars in licensing fees. This means that no emoticon can be legally used in Russia because they all bear a similarity to the oh brother emoticon.

Being the benevolent individual that Teterin is, he has allowed lay users complete freedom to use the emoticon in the normal course of internet interaction. The trademark application has to be ratified by the Russian Patent Agency, and it remains to be seen if the trademark, in fact, be granted. Russian lawyers argue that the trademark may not be granted because of its wide use, and being against the interest of the general population.

This is not the first time that a smiley has been copyrighted. Way back in 2001, the :-(emoticon was copyrighted by a US firm called Despair, Inc.

votes from the global nerd community. The contest will be open till March 15, and the winner gets free flight tickets to Tokyo and accommodation for the October 2009 Japan Linux Symposium.

We have a lot of questions. Are Mac or Windows machines allowed during the production of the video? Will judges prefer videos edited on Cinelerra instead of Final Cut Pro? Will the commercials actually be put to use over television networks? Whatever be the outcome, we can't wait to get our hands on the rejects.

Weight and watch...

The newest gadget to mesmerise the *Digit* team was strangely enough — a weighing scale. There was much excitement when someone discovered it in the downstairs warehouse and the whole team promptly marched down to *review* it. Now, we at *Digit* are really of different shapes and sizes. Some like Vijay tried the

ol tummy tuck before getting on, but it didn't work. Our stick figure (Aditya) was asked to remove his wrist watch, which significantly affected the reading — he weighed in at 45 kgs! Big boss editor (Raaabo) was a decent 75, but not entirely pleased. He said we'll 'weight and watch'.

DIGIT DIARY

KIDS IN MARYLAND TAKE THE
Kids fool traffic polic- ing system

The smart people of Maryland decided to set up a traffic system that did not involve any people. Cameras recorded speeders, and mailed them $40 tickets with no real police officers in the loop.

The smarter high school kids at Maryland decided that they needed revenge on some people, especially the teachers. Armed with laser printers and glossy paper, they replicated their teacher's number plates and zoomed around town —

the teachers received tickets.

Since they are only high school kids, the officials are unsure if this new trend is a game or a prank. Some of the victims are understandably unhappy about the violation of their civil rights. The bewildered officials hope to control the situation before the activity becomes more widespread.

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think digit Blog WATCH

Featured here are snippets from some of the best bloggers who have registered at the Blog Watch section on thinkdigit.com.

If you wish to be featured too, head to www.thinkdigit.com/ blogger.php and sign-up.

Opening ODF files with Microsoft Word
Open Document Format (ODF) is an open standard file format OpenOffice.org and others use. File extensions include .odt (text), .ods (spreadsheet), and .odp (presentation). By default, Microsoft Office does not recognise these file formats. However, it is possible to open and edit these files after installing a plugin from Sun Microsystems.
For office 2003 users
If you have Microsoft Office 2003, simply download and install the Sun ODF Plugin. You can download it from here.
For office 2007 users
1. First you need to Install Service Pack 1 for Microsoft Office 2007.
2. Install Sun ODF Plugin for Microsoft Office.
3. Open ODT document via File > Open, or by double-clicking the ODT file and when prompted for the application to open it with, choose Word.
If you don't have administrator privileges to install software, you can try an online converter such as Zamzar or Media Convert. You can also upload ODT documents

to Google Docs or Zoho Writer. http://rabspd.co.cc/archives/op ening-odf-files-with-microsoft-word

Best Five Online Image Editors
Image editing is always fun in Photoshop. With Adobe Photoshop Express, an online version of Photoshop, you don't even need to install Photoshop on your computer. We made a list of other online photo editors. Let's check out the top 5.
1. Picnik: This is undoubtedly one of the most famous online image editors. It has some great features like Layers support, Red-eye correction, Rotate, Resize, Exposure etc. It is tightly integrated with Flickr.
2. Splashup: Formerly Fauxto, it is a powerful editing tool and photo manager. Splashup runs in all browsers, integrates seamlessly with top photo sharing sites, and even has its own file format(.FXO) so you can save your work in progress.
3. Picture2Life: The site offers plenty of editing and special effect options-including collage and animation features. However, We found the interface to be little quirky. All the usual

features are present.
4. Snipshot: The interface is Super clean and simple. No signup were needed, and can output image to 6 different formats including psd. But advanced options like layer support were missing.
5. Pixenate: A fairly uncomplicated site and really simple interface is what sets pixenate apart from other sites. Although we found that it was not as powerful and fast. http://www.technonix.com/com ment.php?comment.news.202

Useful Free Softwares BurnAware
BurnAware Free is a free CD, DVD, Blu-ray Disc burning software. It is ideal for users with basic disc burning needs as backup, creating data, audio, MP3 music, DVD-Video discs and burning disc images. Free, easy to set up, it enables you to save your files to disc quickly and provides clean, flexible interface to help you complete your burning tasks much faster. It's 100% Free. http://worldofy2j.blogspot.com/ 2008/11/burnaware.html

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■ **Jabalpur Nokia shops burnt because Nokia maps shows Kashmir in Pak** ■ **Researchers develop bionic sexual stimulation chip**

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Digit will publish the best letters on these pages. Letters may be edited for clarity. **Please include your complete address in all communication.**

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December 2008 Issue

20 questions?

First of all, I must congratulate you on your "2008 Collector's Edition". I am a regular subscriber to *Digit* and this is the first time that I have been completely satisfied by an issue.

Initially, I was not all too pleased when our desi magazine was taken over by videsi 9.9, but then you have done wonderfully. Earlier, the magazine used to reach me after a fortnight; now it arrives within 10 days.

Earlier, I used to fear that the package would be pilfered and I would lose some CDs; now the packaging is tamper-proof. The *Fast Track* has better paper quality, has colour pictures and now even features tutorials; a demand I have making since long. The magazine features articles that can be read even by non-geeks (like myself), which are informative and thankfully short. Who on Earth would want to read a "textbook" anyway? Referring to your editorial column on the cover; I don't think *Digit* is a film magazine that anyone would buy on the basis of cover. No matter what you put on cover, we will buy anyway. I liked the idea of simplicity, but frankly I miss the gorgeous babes on the cover :)

What matters most to the reader is the stuff inside. The CDs now feature softwares for Linux as well. What more can I ask from *Digit*? But, these compliments shouldn't make you complacent, you must outdo yourself through constant innovation.

Now, coming to some shortcomings. Sometimes, the software in your CD/DVD labeled as Freeware turns out to be actually Shareware or Trialware. I usually don't install software that I have to uninstall later.

Page 68 on Laptops: "Price of notebooks range from Rs. 20,000 to Rs. 26,000" What? Must have been a typo. There have been many such errors; I guess they have been missed in a hurry to get the magazine ready. I wonder why Evolution for windows was left out in your e-mail clients article. When Chrome beta was featured in comparison of browsers in your revious issue, why was Evolution (beta) not included? Most important exclusion: why was handycam / camcorders excluded in the Zero1 awards? Why is "Beat That!" feature missing in recent editions? Lastly, why is your Agent 001 so muscular?

Sridhar Rao
Devangere

On page 68 of Digit December 2008, the text reads, "prices of **netbooks** range..." You have mistakenly read this as *notebooks*.

Although we did make an exception for Chrome, we're not likely to include beta versions too often in software comparisons.

Agent 001 has an acute body image problem, and spends unhealthy amounts of time in the gym. That said, he is currently seeking therapy... fingers-crossed!

Team Digit

Feedback galore

I bought my first copy of *Digit* in April 2004 and have been buying it since then. Initially, I bought it only for game demos and software — it took me a few months to realise that I was missing the fun — the real cream is in the articles inside the magazine.

I am fascinated by computer technology and games right from the day I started reading *Digit*. It has been invaluable to my career and personal interests. When my dad bought me a Computer in 2003 I didn't even know where the CPU was inside the cabinet! Now I have assembled nearly ten desktops for my friends just by reading your mag! I even get queries about games and software installations from my friends. I refer to *Digit* heavily for these purposes and more importantly, I love it!

Now for some feedback:

1. I really really enjoy your regulars especially, Agent 001, Tech Quiz, People Who Changed Computing and Inbox.

2. The Visual Buying guide blew me away; it rocks, it's superb, I strongly request you to continue the 'Visual Buying Guide' hereafter.

3. The thing I like about *Digit* very much is its Indian-feel and approach to the computer and tech world. Keep it up guys, your real style is inside the articles.

4. Regarding Fast Track, it rocks. Though I have some suggestions for that.

5. How about starting a new regular section on the mag called "Digit Projects", which includes both hardware and software projects that enthusiastic students and professionals can emulate?

6. I read on an Intel website that game engines can be used for many purposes other than entertainment. For example Epic's Unreal Engine 3 is currently used for medical simulations and architectural fly-throughs. Which made me wonder if physics engines like 'Havoc' used in games like *Half-life 2* can be used in schools to teach complex physics to students! Since the *Doom 3* engine will also be open-sourced in the future, is it possible to do such things?

7. I feel sad for those Indians who see gaming as an amateurish or childish activity.

Krishna Prasath

We're glad we could help you follow-up on your passion for technology.

We also thank you for taking the time to give us detailed feedback, which is our favourite kind. We will try and cover points 5 and 6 in upcoming issues, and yes we agree with you on point number 7, because all of us are also avid gamers, and appreciate the entertainment and skill enhancement it brings.

Team Digit

The best buy

The year end issue of *Digit* is indeed useful for many reasons to cite. Though the cover page is prosaic and unimpressive your justification for the same is one step ahead in reasonable maneuvers. Please take that as a compliment. However, I have become a fan of yours of late, for the language you use and the way you make yourself clear.

The second aspect of *Digit's* December issue is that, I found many of the articles very informative. I was in a state of confusion in selecting a laptop and a inkjet printer for my son and your 'Best Buy' tags helped me to easily get the best of the class. I had missed many issues of *Digit* on several occasions, and this issue compensated the loss.

I am quite impressed by the following articles:

- *The very best products of 2008*
- *Taming the Internet.*
- *Improve windows font display*
- *Keep it simple*

The Editor also made a passing reference to my earlier letter about jargon in the editorial *"Never judge a book...'.* I feel honoured and enthused to make correspondence with the Numero Uno.

Sreenath Rayasam

We're glad our December issue was that useful to you, and happened to cover exactly what you were looking for. Like we've told our readers all along, we really do read all your letters. In fact, the editor has promised to make it a point to respond to all from now on.

Team *Digit*

Errata

I just wanted to point out that there is an error in the crossword puzzle on page no. 164: the clue given in 15 down suggests the answer is STEP UP but since the transformer reduces output voltage it should be a STEP DOWN transformer, if I am not mistaken.

I'd also like to thank you about the C++ Fast Track. I'm learning C++ and the book was of great help.

Kayomars Batliwalla

You are absolutely right. We got it wrong in the crossword. Since no one came close to answering the crossword correctly, and you spotted the mistakes we made, we feel that you deserve the prize for the crossword.

Team *Digit*

On the Digit archive

Congratulations and thank you for a great magazine which is now is a part of my life! I am a Web Designer and a subscriber to *Digit* for the past two years. Each and every *Digit* issue is like a gift for me. I have arranged all the CDs and DVDs month-wise so that I can find them when I need to. The Digit Archive helped me a lot to manage this.

I noticed that you have stopped providing the Digit Archive software in the CD for the past few months. What happened? Are you in the process of debugging? Please make that available as soon as you can.

I also have a few suggestions. Please write Fast Tracks to AJAX, PHP, XHTML and Dynamic Flash XML. It will help Web Designers like me.

Debraj

The Digit Archive is undergoing a change at the moment. We hope to launch version 2.0 soon, with added features. As to your suggestion for Fast Tracks — we hope you enjoy the one on PHP this issue which comes with a video guide on the DVD.

Team *Digit*

Expert advice

I'm an avid reader of Digit and December's issue was the best of all. However, some part of the magazine really let me down. A couple of questions answered by the experts in "Q&A" were totally wrong.

One of the questions with title "Is the file boot.com corrupted?" gave me a feeling that the person (Jagdeep Virdhi Q&A expert) is totally unaware of what it really is. It's actually a trojan which creates some files in registry and runs along with Explorer. The only way to remove this trojan is to use "Smart Virus Remover" software. You also need to click "Restore Windows Default Settings". The same applies to the question titled "USB Flash drivers and viruses". By using that software you can also fix folder options problems, registry problems etc.

R. Vivek

The solution given points readers to remove all Autorun.inf files, which is what this virus uses to load into the system. The answer was incomplete, though, and the virus removal instructions omitted.

Team *Digit*

Pirates no more

I have got an amazing mag in my hands which is called *Digit*. December issue was absolutely mind boggling. The most useful stuff was the soft copies of your magazine's previous issues. I have already started browsing their Tips and Tricks section. Why don't you include mobile applications which you used to?

And also you guys give more importance to Windows Mobile users by giving a list of applications for them and including it in the Tips and Tricks section, while most people in India have Nokia phones which run on Symbian. You know I have Nokia N95 8 GB lying unused because of lack of applications, and I don't have an internet connection at home, so I can't get compatible apps for it. That aside, your Mag simply rocks! Your cover page reflected simplicity and honestly, but inside it was extraordinary. Robert was right when he said "its not what's on covers that matter, but what's between them..".

I think you should have been given best performer award to the iPhone in the mobile phones category, and not the N95 8GB, even if it's my phone.

I also want to tell you that *Digit* has changed my life completely. I was a bigger pirate than those in *Pirates Of The Carribean* before reading your magazine, but now I use either licensed software or only Open Source ones.

This is all thanks to you guys, and that is why you are on top. It can be said that you are the iPod Touch of the PMP world. Thanks once again!

Kshitij Rawat

The point that symbian applications and symbian relevent information will be more useful to readers in India is taken. We are recieving a lot of requests for providing phone based software on our DVDs and we are seriously considering it.

What really made us happy was that you stopped software piracy and moved on to open source software. This is really the way to go, and glad to know that we were a small part of this turn around.

Team *Digit*

Customer first

THIS YEAR, I spent two nights in Jaipur, one of my favourite cities here. On the second of these evenings, a couple of days before writing this, I wanted to eat something authentically local. There was just such a dish listed on the menu of the Handi Restaurant. I ordered it, and was told that it was spicy! "Fine", I said, "I just want it done normally, no change." When it came it was rather insipid and I just thought I had ended up in a bad restaurant. But, at the end of the meal, prompted by my wife, I asked about this. To my surprise, I was told that the chef had thought I would not like the normal dish, and had made it bland for me, directly contradicting my order!

I was furious, and made it very clear that I felt cheated, and that I would not pay for that dish. The chef then sent from the kitchen, samples of the sauce that was served to me, and of the one that I should have been given! A huge difference. So, I was particularly surprised when the errant dish appeared on the bill, and I was expected to pay for it. Much argument followed, and I ended up accusing the manager of racism and threatening to call the police before it was deducted from the bill. I have no idea what the police would have made of all this fuss, and I am quite sure the restaurant gave in mainly because of the attention the other diners were giving to all the noise.

In the UK, we have an old saying that "The customer is always right", and here in India we have the famous quote from Gandhi about the customer being the "most important visitor on our premises..." But during the last three months I have heard a surprising number of stories from people here about very poor after-sales service for IT products — specifically, poor service when something goes wrong, even if the product is still within warranty.

Of course, poor service can be found all over the world, but so many have now told me that it is of particular concern here. It is something we wish to investigate further. Naturally, our interest is limited to the IT industry (and restaurants).

I must say that in my own experience, if you want bad customer service in India, you just need to open a bank account. But with the IT industry, having purchased one PC, two laptops and a few peripherals from a small dealership in Nehru Place, New Delhi, the service that I have received has been better here than anywhere else. Better than I usually get in the UK, where I have bought much more equipment over the years.

So, what is going on? I have spoken to quite a few people in the industry about this issue, and they make very different observations. At one extreme, they tell me that many consumers don't know the law and their rights and are therefore unable to exercise those rights when something goes wrong. At the other extreme, I have been told that consumers' expectations here are higher than elsewhere — China was mentioned as being similar to India in this respect — to an extent that is probably unreasonable. They therefore complain about not getting the service they think they deserve.

It has long been my view that good customer service helps the vendors as much as it does the customer, and generally helps drive the industry towards better quality. And magazines like ours should help drive this process. Vendors that I speak to, generally tell me that they welcome complaints from customers because this helps them deliver a better service. Yes, they would say that, wouldn't they? But it is also the only way they can find out where they need to improve.

One thing that I have been saying to these people is that we will invite

Edward Henning, Editor-in-Chief

"If you have a genuine example of truly bad service, such as a product going wrong within warranty and the supplier refusing to fix or replace it, please let us know"

Digit readers to let us know when they have serious problems.

So please do this. If you have a genuine example of truly bad service, such as a product going wrong within warranty and the supplier refusing to fix or replace it, then please let us know at: *servicewatch@thinkdigit.com.* Make sure that you have proper documentation (receipt, etc.) to back up your complaint. We cannot promise even to reply to all the emails we will receive, but we will pick a selection and take them up with the relevant companies at the highest level. Some of the examples that you send us — of both good and bad service — will be reported in the magazine or on our web site. I doubt I will find another restaurant with as bad a service as I received at the Handi in Jaipur, but who knows, maybe we'll start a restaurant column as well.

edward.henning@9dot9.in