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August 2008

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NOKIA

A Good Call

TECHNOLOGY
BEHIND
**THE
OLYMPICS**

BlackBerry vs. The iPhone: Take a call

Maybe we can compare Apple's iPhone and RIM's BlackBerry. But to answer the question of which will win is like asking who will win in a fight between Superman and Spiderman.

To start with, the iPhone is not a phone — it is a computer that runs a 400 Mhz processor with 64 or 128 MB of RAM and a 6-12 GB of hard drive — as good as a Mac machine just about a few years back. The new iPhone 2.0 has improved dramatically over version 1—remote wipe, push email, faster browsing on the EDGE network, automatic calendar and contact synching—encompassing all those features that were missed by iPhone corporate users. And of course in the US, it is half the price at twice the speed of the BlackBerry.

The real question is, will it eat away the BlackBerry's market? You know, I think there could be a chance.

No, not because of the price advantage. In fact the price advantage in the US is due to the fact that AT&T has subsidised it to the $200 mark. Think about it, a $200 phone and an iPod thrown in, what a bargain! Yes, you are tied down to AT&T in a two-year contract. In India it will be much higher. Unless the likes of Airtel or Vodafone marry Apple.

If Steve Jobs is to be believed, the new version has even taken care of the security issues. The new iPhone has implemented security policy enforcement, certificate and identities with WPA2/802.1x protocols. It enables access to corporate networks of companies also through IPSec VPNs specially with push mail integrated with MS Exchange. The remote wipe is another interesting feature. Even if you lose your iPhone, you can wipe out all data from it remotely.

So what's happening at the stables of RIM? They seem pretty cool with the hype surrounding the iPhone. They are of the mentality that typing on glass (the iPhone is only touch screen, unless you have a pocket big enough to carry around a portable keyboard) is not a viable option. I think it is only a 'geting-used-to' problem. When people get used to it, there will be more adoption for the ergonomically designed iPhone. So till then you will see RIM touting the physical keyboard as the competitive advantage of the 'crackberry', as a

Sujay Nair Editorial Director

> "The iPhone now comes with advanced security features that will appease the IT managers of corporations who want to put it in the hands of their workers..."

friend of mine calls it. But if you listen harder you can still hear the second part saying—till people get used to typing on glass.

Now another reason I am saying that there is stiff competition to RIM is that what they tout has all been proven wrong. The iPhone now comes with advanced security features that will appease the IT managers of corporations who want to put it in the hands of their workers, it has push mail and most importantly, it is stronger in areas that BlackBerry is weak—music and video.

Now it's left to the consumer... More user-friendly, better battery life, and application availability and portability will be the deciding factors.

editor@thinkdigit.com

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

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Want your product reviewed by *Digit*? Contact our Test Centre at **sanket.naik@thinkdigit.com**

Software On DVD/CD

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Disclaimer: For every *Digit* contest, there will be only one winner, unless specified otherwise. In the event of a dispute, the Editor's decision shall be final.

Products Reviewed This Month

Cell Phones Comparison Test 80
ASUS M930
ASUS P320
Bleu 466x
HTC P3470
HTC Touch
HTC Ty TN II
Intex Aura i2224
Intex IN3333
LG KE770
LG KF510
LG KG195
LG KS20
LG KU990
Motorola Maxx Q9
Motorola Rokr U9
Nokia 5310
Nokia 5610
Nokia 6110 Navigator

Nokia 6500 Classic
Nokia 6500 Slide
Nokia E51
Nokia E61i
Nokia E71
Nokia E90
Nokia N78
Nokia N82
Nokia N95 8 GB
Palm Centro
Palm Treo 750
Samsung D780
Samsung i780
Samsung SGH-i450
Samsung U900
Sony Ericsson K530i
Sony Ericsson K550i
Sony Ericsson K660
Sony Ericsson K850i
Sony Ericsson W380

Sony Ericsson W890

**Multi-function Device
Comparison Test 70**
Brother DCP-350C
Brother MFC-235C
Brother MFC-5460CN
Brother MFC-5860CN
Brother MFC-685CW
Canon MP476
Canon MP610
Canon MX-308
Canon MX-318
Epson RX690
Epson Stylus CX5500
Epson Stylus CX7300
Epson Stylus CX8300
Epson Stylus Photo RX610

Bazaar 58
Acer X1260
ASUS Radeon EAH4870
Canon iR 2022n
Cooler Master NotePal X1
Dell XPS 730
Gigabyte EP45-DS4P
Gigabyte GeForce GTX 280
Gnostice Print2eDoc
HP Officejet H470
HP Pavillion tx2000
Iomega ScreenPlay HD 500GB
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Palit Radeon HD4850
Stellar Black Cat
XFX GeForce GTX 280 XXX Edition
Zotac GeForce GTX 260 Amp! Edition

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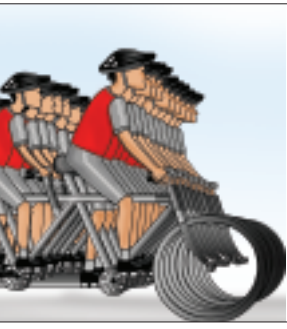(011) 41608655/56/57/58

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Create

NetBeans IDE 6.1

The only IDE you need! Runs on Windows, Linux, Mac OS X and Solaris. NetBeans IDE is open-source and free.

OpenArena 0.7.6 for Windows

OpenArena is a Free Open content package for the id tech3 GPL source code package.

- Java SE JDK 6 Update 7
- NetBeans IDE 6.1
- OpenArena 0.7.6 for Windows
- VertrigoServ 2.21
- EditPad Pro 6.4.1
- MAGIX Samplitude Music Studio 14
- NeverCenter Silo 2.0.6
- Stickman
- TwistedBrush Pro Studio 15.48

TUTORIALS
11 Video Tutorials for Blender

Regulars

ESSENTIALS
.net Framework 2.0
You'll need the .net Framework to run many .net-based applications

µTorrent 1.7.7
µTorrent is an efficient and feature rich BitTorrent client for Windows sporting a very small footprint. It was designed to use as little cpu, memory and space as possible while offering all the functionality expected from advanced clients.

Avast Home Edition 4.8
Avast Home Edition is a Free, complete ICSA certified antivirus software for home (non-commercial) use. You need to obtain a registration key by visiting www.avast.com.

Comodo Firewall Pro
Comodo Firewall constantly monitors and defends your PC from internet attacks. It's easy to install and use and passes the industry's most stringent firewall "leak" tests.

Foxit Reader 2.3
Foxit Reader 2.3 is a free PDF document viewer and printer, with incredible small size, breezing-fast launch speed and amazingly rich feature set. The new version 2.3 includes a multimedia player feature allowing Foxit users to not only read PDFs, but to watch and listen to the audio/video elements coming with PDFs as well.

Free Download Manager 2.5 build 758
Free Download Manager (FDM) is a full-featured download accelerator and manager. Using this product you can easily download a list of files and whole web sites from any remote server via HTTP, HTTPS and FTP.

Java(TM) 2 Runtime
You'll need the Java runtime to run applications based on Java

K-Lite Mega Codec Pack 4.0.0
With the K-Lite Codec Pack you should be able to play all the popular movie formats and even some rare formats. This package is mainly for power users and people who do their own encodings..

Opera 9.51
The most full-featured Internet power tool on the market. The new Opera 9 has BitTorrent, Improved rich text editing, Site preferences, allows you to add your favorite search engines, content blocker, thumbnail preview, Widgets, and also the old useful features like pop-up blocking, tabbed browsing, integrated searches, and advanced functions like Opera's groundbreaking E-mail program, RSS Newsfeeds and IRC chat. And because we know that our users have different needs, you can customize the look and content of your Opera browser with a few clicks of the mouse.

UPDATES AND ADD-ONS
Windows Vista SP1
Windows Vista Service Pack 1 is an update to Windows Vista that addresses feedback from our customers. In addition to previously released updates, SP1 contains changes focused on addressing specific reliability and performance issues, supporting new types of hardware, and adding support for several emerging standards.

Irfan View 4.10 Plugins
All the IrfanView plugins you'll ever need

openSUSE 11
Promoting the use of Linux everywhere, the openSUSE Project provides free, easy access to the world's most usable Linux distribution, openSUSE. The openSUSE Project is proud to announce the release of openSUSE 11.0 – everything you need to get started with Linux on the desktop and on the server.

Productivity

PERSONAL
Ashampoo AntiSpyWare 2

Free for Digit Readers for 180 days, this software is worth Rs 1,300. Ashampoo presents its new protection program Ashampoo AntiSpyWare 2 which offers twice as much protection as the previous version. Having run a full computer scan for possible infections, the program will remove the infected files immediately. A permanent active background scanner will notify you in advance and offer real-time protection for the computer. While connected to the internet the program makes sure that new malware won't have any chance to enter your system through the back door.

PowerUtils 1.9
Made by Digit reader Prasanta Das Gupta (www.powerutilsnet.com), this Excel add-in offers 99 easy ways to accomplish necessary but tedious tasks.

- Easy Time Logs FREE Edition v.2.2.21
- Exstora 2.3
- Free PDF to Word Converter 1.2
- MEMOTXT Scheduler 1.1
- PortableApps Suite Light
- RationalPlan Project Viewer 3.5.0
- Student Loan Debt Consolidation 1.0
- Business Card CD, DVD Creator 3.0
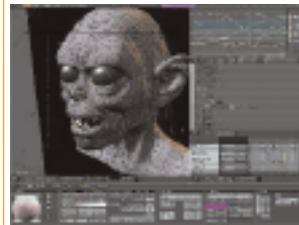- CRM-Express Professional 3.49
- Mathemania 3.0
- NovaMind Platinum 4.2.1
- WinSurvey

Entertainment

HD
Diablo III HD Gameplay Video

Babylon A.D.
Veteran-turned-mercenary Thoorop takes the high-risk job of escorting a woman from Russia to China.

- Disaster Movie
- Star Wars: The Clone Wars
- Tropic Thunder

TRAILERS
Madagascar: Escape 2 Africa

Forever Strong
A talented-but-troubled rugby player must play against the team his father coaches

Taken
A former spy relies on his old skills to save his estranged daughter

X-Files 2: I Want To Believe
To find the truth, you must believe.

Games

Amazing Squares 3.0
Amazing Squares is a version of the classic "falling blocks" game. The game boosts two different playmodes. Standard and psycho. In psycho mode the blocks will be "alive" and move around the screen by them selves, giving you a real challenge.

Chuck Rock Dance
Join Chuck Rock and his Band as they perform Queen`s We Will Rock You. Try to keep up with Chuck by hitting the correct arrows and falling rocks. It's not that difficult!

Crank Deathmatch 1.16.030
Join in on one of the biggest fights of the year as Special Ed and Elmer of Crank Yankers take on Nick Diamond and Johnny Gomez of Celebrity Deathmatch in a knock-down, drag-out, rowdy kind of style!

- Ball Racer 1.5
- Break Free
- Crazy Arcade 1.05
- Dodge Brawl 1.00.012
- Ghostbusters II 1.0
- Gravetaker 2.0
- Halloween Pumpkins 1.6.0
- Hangman by Novel Games 1.1.0
- Hard Streets 1.1
- Kakuro Epic 3.36
- Okoker Sudoku Pro 4.1
- Robocop 2D 1.2b
- Robocop 2D 2 : Robocop vs Terminator 2.0
- Robocop 2D 3 3.0
- Smart Cars 2.1
- Sonic Spike 1.04
- Warzone 2100 2.0.10

Entertainment

TRAILERS

Diablo III Trailer
The game takes place on Sanctuary, a world of dark fantasy. Unbeknownst to most of its inhabitants, Sanctuary was saved some twenty years ago from the demonic forces of the underworld by a few brave and powerful heroes. Most of those warriors who directly faced the armies of the Burning Hells -- and were fortunate enough to survive -- went mad from their experiences. And most of the others have buried their haunted memories and pushed the horrors from their thoughts. In Diablo III, players will return to Sanctuary to confront evil in its many forms once again.

Ice Age 3: Dawn Of The Dinosaurs
The next instalment of the Ice Age Saga, coming in July 2009.

Street Fighter IV - Epic
In its amazing twenty year history, Street Fighter has revolutionized the fighting genre and created a global legacy like no other. Capcom announces the return of four classic "World Warriors" in Street Fighter IV: returning favorites Ryu, Ken, Chun-Li, and Dhalsim.

- City Of Ember
- House Bunny
- The Accidental Husband

Featured

20 Small Games
We've chose 20 of the best small games for you.

Styopkin Font Manager 3.5
Manage fonts easily with this otherwise paid software, which we've made available to you for free!

Ice Age 3: Dawn Of The Dinosaurs
We love the Ice Age series, and in a little under a year part three of this hilarious saga will be released. It's a long way away, but we couldn't resist giving you a sneak peek at one of the funniest animated movies of all time.

Tools

MULTIMEDIA
Styopkin Font Manager 3.5
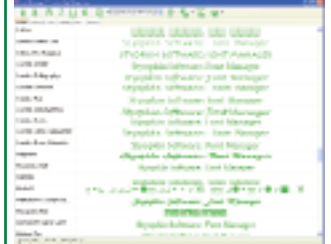
Full Free Software from Styopkin worth RS 1,300 for Digit Readers! Key features: Quickly choose a font among all installed fonts. Select multiple fonts. Search for fonts easily. Choose the right font for the specific text you want to type. View fonts in several sizes at once. Easily find fonts that contain the Unicode subrange you need. View all supported characters, and none of the blank spaces that CHARMAP displays. Easily select and insert a character into your document. View advanced and detailed information about each font - author, URL, license, etc. View fonts that are not installed but are in folders on your computer. Easily install or uninstall fonts. View what a font looks like when printed. Easily print samples of fonts that are or arent installed. And more... A must try software for design professionals.

Inkscape 0.46
An Open Source vector graphics editor, with capabilities similar to Illustrator, CorelDraw, or Xara X, using the W3C standard Scalable Vector Graphics (SVG) file format.

- Styopkin Font Manager 3.5
- AIO Audio CD Creator 1.5
- AIO Video Converter 1.5
- Donar MP3 Recorder 1.6.5
- DVD Ripper Suite 1.5
- DVDSmith Movie Backup 1.00
- E.M. Free DVD Copy 2.20
- ESP Enhanced ShoutCast Player 1.00
- Floola 3.1 for Linux
- Floola 3.1 for Windows
- FLVPlayer4Free
- Free Audio Converter CS 1.0.0
- Gold Media Player 1.5
- Inkscape 0.46
- Kat Player 1.8.0
- KMPlayer
- MP3 Ringtones Player 1.0

- PSP Video Converter 1.5
- VIP Rumor Player 2.0.0
- Vuze 3.1.1.0
- Winamp 5.54 Full
- XAMPP 1.6.7 for Linux
- XAMPP 1.6.7 Lite for Windows
- Active FLV Video Converter 1.5
- Active iPod Video Converter 1.8
- All Video Converter Professional 2.11
- AudioEdit Deluxe 5.01
- CoffeeCup HTML Editor 2008
- Easy FlashMaker (SWF Creator)
- Audio Editor Deluxe
- Super Audio Recorder 8.25
- Ultra Audio Recorder
- Xilisoft Video Cutter

INTERNET
- Gossiper ToolBar 4.5.186.6
- Password Sentinel
- Atomic Email Autoresponder 3.00
- BigAnt Office Messenger 2.38
- Mass Downloader 3.5
- MSN Recorder Max 2.1.2.6
- TOWeb 2.0
- TV Dominator 1.21
- Video2Webcam 3.0.0.2
- WebcamMax 5.0.3.8

SYSTEM
Kaspersky Internet Security 2009
Kaspersky Internet Security 2009 - the all-in-one security solution that offers a worry-free computing environment for you and your family. Kaspersky Internet Security 2009 has everything you need for a safe and secure Internet experience.

- AmoK CD/DVD Burning 1.01
- Core Temp 0.99.1
- Mikro Tik The Dude
- Process Lasso
- Where Is It? Lite 3.93
- WinUpdatesList v1.22
- Innovative SysPack 2.1
- Kaspersky Internet Security 2009
- Stellar Phoenix Windows Data Recovery (v 3.0)
- Vista Manager

For any queries regarding the CD or DVD, e-mail help@thinkdigit.com with "CD/DVD" as the subject. If the subject is not mentioned, your mail might not reach the right person.

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FEATURED TUTORIAL FROM THE DIGIT FORUM (www.thinkdigit.com/forum)

HOW TO: Get old Kirsch forum theme back!

18-05-2008, 11:01 PM

topgear
Fast 'N' Furious

Join Date: Jul 2006
Location: Geek's Heaven
Posts: 935

By default windows formats pen drives with FAT file system, which has it's own limitations. One big issue with FAT file system is that you cannot store a file larger than 4 GB. But nowadays we have to transfer file more than 4 GB such as DVD or dual-layer DVD images. The NTFS file system is more reliable and doesn't have these limitations. So you can transfer a file which is more than 4GB.

Warning: Backup all data from your pen drive before following this procedure.

Plug in your pen drive. Click start and Right click on My Computer. Select `Properties > Hardware > Device Manager`.

Expand Disk Drives & Click on your Pen Drive Name. (In my case it's: Jetflash). Now Right-click on your pen drive name & select Properties. Go to Policies Tab and Select Optimize for Performance.
    Click OK. Close device Manager. Now open My Computer & Select Your Pen Drive (ie Removable Disk). Right click on it & select Format. Click on File system box. And Voila! You see the

NTFS option. Now select NTFS & fromat your pen drive.

Another Method:
You can also convert your pen drive's fat file system to ntfs as you use to convert fat partion to nfts.

Open command prompt. In the command prompt window, type :

`convert drive_letter: /fs:ntfs`

In my case my pen drive's letter is N so it will be :

`convert N: /fs:ntfs`

Note: You can't use this pen drive with under win 9x & me.
To use this pen drive under 9x & me format it using fat file system.
    I've used Windows Xp With Sp3 as my Os. Plz test on Other OSes like Vista and tell me if it works. Also let me know after formatting the pen drive if it is usable under Linux.
    I think it will work, though not sure

Bible online

Parts of the bible are available online, nearly 1600 years after they have been written. High res copies of gospel of Mark, several books of the Old Testament and commentaries related to these works will be hosted by the University of Leipzig which has the custody of the originals.

Twreleased

When an American researcher and his translator were arrested by Egyptian authorities, Twitter turned unlikely rescuer. A post by the student alerted the American embassy and secured his release; a Twitter campaign led to the release of the translator after three months of torture.

Enter

POWER THROUGH PAPER

A Paper Transistor Now!

A team of researchers from Universidade Nova de Lisboa, Portugal, has come up with an innovative way to use paper as the primary component in Field Effect Transistors (FETs).

This technology uses substrates glass or crystalline silicon as a substrate. Similarly, with the help of biopolymers, costs can be further reduced. With cellulose being such a common resource, several studies have pointed to using it as a support material for electronic devices.

The new device, not only functions as the substrate, but also works as an insulator. The researchers have fabricated the devices on both sides of the paper sheet. As a result, the paper acts as an insulator and substrate at the same time. Paper, a known cellulose, also has decent electric insulation and dielectric properties. Therefore, to create the new device, a team led by Elvira Fortunato and Rodrigo Martins from Cenimat/I3N, used a single sheet of common paper as a dielectric layer on which semiconductor oxides were printed.

The findings would most likely be published coming September, which hopefully would boost commercial interest. The new transistor closely resembles oxide thin film transistors in terms of electrical characteristics and way over those of TFTs fabricated out of amorphous silicon substrates. The results suggest that in the near future, disposable electronic devices, paper displays, smart labels, smart packaging, bio-applications, RFID tags and many more could become a reality. Especially, in the case of consumer grade devices where even a few grams count, paper based circuits will be a hit as they will be considerably lighter than all the conventional circuits that current devices like mobiles and cameras are made up of. Being paper, the circuits can be folded, further reducing the size, while being more environmentally friendly at the same time.

STALLMAN BLASTS GATES

Picking On Gates

Richard Stallman, founder of the Free Software Foundation feels that people are paying too much attention to the retirement of Microsoft Chairman and co-founder

Bill Gates. Stallman is of the opinion that people should focus their attention to the unethical restrictions that Microsoft, like many other software companies, imposes on its customers, rather than paying attention to the leadership of the software company.

This is the latest in Stallman's long standing debate against restrictions that prevent software from being shared, modified, and distributed without a license. Now with most geeks turning to open source and appreciating Linux forte, Stallman's call would have many takers and supporters. He criticised the software company for lack of interoperability and said it seems that the main advanced Windows Vista made was to increases user restrictions. Well, it seems true, but he could have been a bit more subtle.

Accusing Microsoft of engaging in anti-competitive behaviour, he targeted Gates' efforts that claim to help the poor. He said only five to 10 per cent of the money from the Bill and Melinda Gates Foundation funds causes, and the remainder is invested in companies for personal coffers. Stallman's fight for free software has become personal for years now. The founder of the GNU Project and Free Software Foundation picked at Gates about three years ago, when Gates defended software patents and used the term *communist* to characterise those who oppose proprietary software. Stallman has named Microsoft, as well as Apple and other software companies, while criticising the proprietary system that he says equates acts of sharing with attacking a ship.

■ **Crackers claim iPhone 3G hack** ■ **Wii becomes top-selling video game console in US** ■ **Formal nod for eight new Indian Institutes of Technology**

Multimedia Woes All Over Again

Problem

There is a new Trojan out there that works by infecting all multimedia files (that would be music and movies) stored on the user's machine. The Trojan spreads mainly through music file on P2P networks with the goal of letting hackers remotely access your system. When the infected music file is played Internet Explorer is launched and a page is loaded which prompts the user to download a codec which is actually a Trojan.

Once the Trojan is on your machine it embeds its malicious code into all ASF (Advanced Systems Format) based multimedia files. The ASF format is used by files such as MP3, WMA and WMV. The interesting thing about this Trojan is that it infects media files already on your hard disk and will convert all the MP2 and MP3 files stored on your PC to WMA. In order to maintain an air of authenticity, after the download is complete you will not be prompted again. The Trojan also has properties of a worm as users who download music from your system will also get infected.

Solution:

Don't download codecs from unknown sites. Update your anti-virus program by downloading the latest virus pattern file and scan your computers. Any decent anti-virus would detect and clean the malware. If you are currently running in safe mode, please restart your computer normally before performing the scan.

FIND ME NOW!

Free Laptop-Tracking System Hits The Streets

No matter what you do to protect yourself, passwords, encryption, biometrics, firewall, and an anti-virus, you still have one major worry and that's theft. The one thing worse than that, is mistakenly losing it, because that makes it *your* fault, and that's naturally worse than anything else.

Once you'd lost or had your laptop stolen, you relied entirely on the good faith of humanity or at the very least, a police force, to recover your device. Researchers at Washington University and California University have joined up to create Adeona that secures laptop data.

Researchers at the University of Washington and the University of California, San Diego, have launched Adeona, an open source service aimed at helping consumers and businesses track the location of lost or stolen laptops. Adeona is an independent system, which doesn't rely on any third party software or a central server. You install it and it works, nothing more to it.

It's designed to answer the needs of corporations and government entities that have seen an increase in personal data breaches because of missing laptops, as well as consumers who are putting more music, photos and memories on to their portable computers.

Initially, the research project was not about delivering a service for people. They were originally looking at the privacy implications of some of the device-tracking systems now on the market. But as they delved further, they realised they were going to develop a client that people would be interested in using.

Interest stems from the fact that existing commercial laptop-tracking products involve someone besides the owner having access to personal data.

Users install Adeona onto their laptops, which then set up encrypted connections to the open source OpenDHT storage servers on the Web. If a user loses a laptop or is the victim of theft, another download and a password allows him to track his device via last-known Internet protocol (IP) addresses and Internet nodes that were used to connect to the missing machine. Users are the only ones to see the information about their laptops.

We do have questions about whether an open source based tracking system would itself be secure, since any developer would have access to source code. The fact that it's open source makes the structure of security visible to the bad guys as well. Corporations don't open source security for that reason.

FOR THE VISUALLY IMPAIRED

Web Access For All

WebAnywhere, developed by a computer science graduate student at the University of Washington is a Web-based screen reader for the Web. It requires no special software to be installed on the client machine. Therefore, it enables blind people to access the Web from any accessible computer with a sound card.
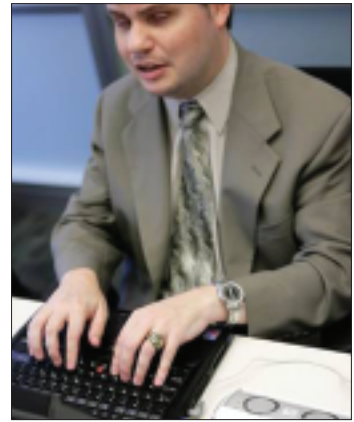
Blind people generally use screen-reader software while using computers. However, these products can cost more than $1,000 (Rs 45,000), so they're not exactly common on public PCs at libraries or Internet cafes. Jeffrey Bigham, the developer of a new free Web-based program hopes his program would let blind people check a flight time on a public computer at the airport, plan a bus route at the library or type up a quick e-mail at an Internet cafe.

To use WebAnywhere, a blind person has to get online. This can be troublesome with computers not setup to be able to respond to voice commands. However, according to Bigham, Web-savvy blind people often know plenty of keyboard tricks and when to ask for help.

Once online, a blind Web surfer can have any Web page read out loud with the help of the WebAnywhere browser. All you need to have are speakers or headphones. The program

The Digital World

UK
Six biggest ISPs agree to get together to fight piracy by implementing measures like sending cease and desist letters to users suspecting of illegal file sharing

CHINA
Du Daobin, a prominent cyber dissident who wrote posts on different Websites criticizing Chinese policies arrested in run up to Olympics

BRUSSELS
EU antitrust regulators accuse Intel of violating regulations by paying stores not to sell PCs that used chips made by rival AMD

RUSSIA
President Dmitry Medvedev wants all government documents to be computerized and easily accessible to the common people

CYPRUS
Schools to punish students who bring mobile phones to classes

BRAZIL
Google signs agreement with Brazilian public prosecutors to combat child porn in Orkut

can skip around the section titles, tab through charts or read the page from top to bottom.

WebAnywhere runs on practically any machine, regardless of the operating system and the browsers are installed. The alpha version released recently, has received significant attention! Professor Richard Ladner, an adviser of Bigham hopes a commercial search engine will adopt WebAnywhere as a module. Ladner hopes Web developers keep blind people in mind when they design Web pages, so that information could be easier to find for everyone.

VISUAL APPEAL
Samsung's New LCDs

Korean electronics manufacturer Samsung launched three new series for its LCD monitors along with digital projectors and photo frames in the domestic market in order to strengthen its IT peripherals business in India. The three series (T Monitor, Myst Plus and

Lime) which comprises eight new models would be priced between Rs 8,100 and Rs 18,000. Samsung which sold nearly 6 lakh units of LCD monitors last year plans to sell 1.2 mn units this year with the launch of the new series.

The Samsung digital photo frame is priced at Rs 9,900. The company also plans to launch Wi-Fi enabled photo frames to enable users to share photographs on the go.

According to Samsung India Electronics VP-IT Business Sanjay Sharma, "Currently, the market for digital photo frames are dominated by the unbranded players who are selling about 1,500-2,000 units per month. With this

launch we plan to capture 30—35 per cent of this market."

The new digital projector in the professional segment is priced between Rs 2.5 lakh and Rs 5 lakh. Additionally, Samsung also plans to launch digital projectors for the home segment. In addition, the company also plans to boost its retail presence too and open ten new retail outlets in next six to eight months, dedicated to its IT products.

YOUTUBERS BEWARE
Copyright Infringement ... Really?

In the ongoing copyright litigation between Google and Viacom, a United States District Court judge for the Southern District of New York has ordered Google to hand

■ BSNL to offer tele-education services ■ Mumbai to Get Exclusive Site For E-waste ■ Google's Knol, Wikipedia's competitor launched

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Photograph **R. Subhadra**

Each month *Digit* will carry a caption for a photo. Come up with something funnier, and beat the *Digit* team at their own game! Entries accepted by the **20**th of this month.

Beat That!

Digit Caption

Sigh...broadband.
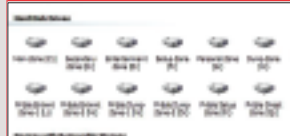
E-mail your caption with the subject "Beat That", and your postal address, to **beatthat@thinkdigit.com** and win

Puzzles For Programmers and Pros by Dennis E. Shasha

Published by

WILEY-INDIA

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over data on every YouTube user, including username, the associated IP address, and a list of all the videos that the user viewed. In this lawsuit, Viacom is seeking more than $1 billion in damages because of alleged copyright violations on YouTube.

A district court judge in New York recently allowed one of the largest media conglomerates in the world to lay hands on our personal data that even we ourselves cannot access. It's a massive 12 terabytes of YouTube user data that the district judge ordered Google Inc to handover to Viacom Broadcasting. The American broadcaster, which is losing young television viewers daily to Internet media—YouTube, needs all this data to prevent the clips of its programming on the net's most thriving community. Skeptics view this as a move to prevent the fan-base

erosion and impact that online exposure provides to discuss, discover and share audience opinions about Viacom's TV shows, music videos and movie trailers.

We all know that viewers would be posting Viacom videos on YouTube without Viacom's permission, and this is rightly a case of copyright infringement. However, it is really impossible to pick on the real crime here, and this is a breach of privacy!

According to the Electronic Frontier Foundation (EFF), this ruling violates the Video Privacy Protection Act of 1988 (VPAA), which forbids the disclosure of personally identifiable rental data without a consumer's consent. EFF goes on to state that because some users on YouTube use their full names as login names, the VPAA applies to YouTube. For most users, however,

the underlying question is what exactly Viacom will do with all this data.

BATSMAN BEWARE!

Weaknesses On Big Screen

Cricket coaches, bowlers and captains watching earlier

matches and working out a strategy to tie down a star batsman of an opposite team is soon to become passe.

A Chennai-based tech company, Frontier Technologies India Pvt Ltd, has proposed using the giant digital screen on the ground to show the strong and not-so-strong points of a batsman in real time so that the bowling team can chalk out appropriate on-the-ground strategies.

■ ATC at Dublin airport brought to its knees by faulty network card. ■ Apple demands Mac cloner Psystar to recall its hardware, cough up profit

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STAT ATTACK
It's all in the numbers

180 mn
Vista licenses sold by **Microsoft** globally

Indian Mobile Companies to spend $12.8 bn on advertising by 2011, up from **$2.7 bn** in 2008

According to a study **40%** *of American gamers are females*

Spending on **Mobile music is expected to increase to $32.2 bn** in 2010 against **$13.7 bn** in 2007

Indian mobile value added services market will be worth $2 bn in 2008

Frontier Technologies have approached the cricket boards of India and Sri Lanka with a proposal and a decision is awaited. They want to do this in the ensuing India-Sri Lanka one day series in Sri Lanka, informed MS Muralidharan, Managing Director, Frontier Technologies. A six member research team is working on this project. He does not expect any problem from the sponsors of a batsman for this proposal.

Technology Frontier will also introduce a 3D animated display on the mega screen during the One Day matches which would provide in video format, the players' performance in the match on real time basis dynamically.

Meanwhile, Technology Frontiers has secured contracts for installation of LED perimeter system and also the digital management rights from two European premier league football clubs based in Romania—FC Brasov and FC Universitatea Craiova. This is the first time an Indian company has penetrated the most exclusive European football club.

The company has written a software programme BRIMHAST which captures every ball movement and the match from the 32 cameras installed on the football ground.

The football stadium contract is for five-year period and the revenue potential is around $5 million over the contract period. Frontier Technology is in talks with an ice hockey stadium for business in Canada. Let wait and watch whether it manages to cross over new frontiers!

Microsoft Envisions The Next-Generation LCD

Attractive yet efficient displays are available these days for your gaming and computing requirements. Depending on your budget, there is a wide range to choose from. Designers at

Buzzword of the MONTH
Bobcat

As the competition in the Mobile Internet Device segment heats up, manufacturers are looking at processors that would be more energy efficient and require lower power than conventional laptop and desktop processors. While Intel has already jumped into the fray with its Atom processor, rival AMD is getting ready with Bobcat.

Named after a species of North American wild cat, Bobcat will be announced in November. For now only the technical specifications have been released—1 GHz core frequency, 128 KB L1 and 256 KB L2 cache with on board memory controller for 400 MHz DDR2 RAM. A 800 MHz HyperTransport Link will be used to connect the 812 pin Bobcat. The power consumption is likely to be around 8 Watts—three times that of the Atom. However, solutions designed around Atom use Northbridge chips like i945, which consume around 6 Watts, while in case of Bobcat, Northbridge is integrated thus making the power consumption almost the same in both cases.

While technically these processors are nearly neck-and-neck, there are doubts whether AMD will be able to gain a substantial market share as they are likely to be released only by the middle of 2009. Besides there is already talk of Atom being released with dual cores. However things are not very rosy for Intel as it has been battling production delays in the manufacture process. We will just watch and see the scene unfold.

■ China warns sites not to display event footage without permission ■ Shape shifting robots used for moving over rough terrain designed at Tufts

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W5H

Cloud Computing

What is Cloud Computing?

Cloud computing is a computing paradigm in which tasks are assigned to a combination of connections, software and services accessed over a network. This network of servers and connections is collectively known as "the cloud."

Why is it so popular?

Computing at the scale of the cloud allows users to access supercomputer-level power. This vast processing power is made possible though distributed cluster computing, often in concert with virtualisation and parallel processing.

Who can use cloud computing?

Using a thin client or other access point, like an iPhone, BlackBerry or laptop, any users can reach into the cloud for resources as they need them.

How does it differ from Desktop computing?

Cloud computing allows users and companies to pay for and use only the services and storage that they need, when they need them.

Which organisations are implementing cloud computing?

Google has an initial edge in cloud computing precisely because of its need to produce instant, accurate results for millions of incoming search inquries every day. Google Apps, Maps and Gmail are all based in the cloud.

Where is it heading?

New advances in processors, virtualization technology, disk storage, broadband Internet access and fast, inexpensive servers have all combined to make cloud computing a compelling paradigm. As a result, cloud computing has the potential to upend the software industry entirely, as applications are purchased, licensed and run over the network instead of your desktop.

Microsoft believe there is still space for innovation and are of the opinion that their telescopic pixel innovation would result in displays with much higher contrast ratios and brighter colours. According to the scientists at Microsoft Labs, liquid crystals used in LCDs cannot completely block light in the off state and are hence unusable in bright light. LCDs transmit only 5 to 10 per cent of the backlight, because of the polariser, which blocks more than 50 per cent of the light.

Also, each colour filter transmits only 30 per cent of the remainder of the light, and there are some additional layers that decrease transmission even further. Telescopic pixels could also solve this problem.

These pixels are designed such that they have a pair of opposing mirrors, which completely contain light within a pixel and produce a perfect black colour. Using an electrical charge, the shape of one mirror can change its shape from planar to approximately parabolic, diverting the light beam to another mirror that will send the beam through the pixel and make the pixel visible on the outside. The researchers claim that this technology can transmit 36 per cent of the backlight, up from about 9 per cent in the most efficient technologies available today. The electrical charge could be applied very quickly, achieve display response times of 1.5 ms, the researchers said.

Considering the fact that there are already about 2 million pixels in today's HD displays and future displays may go more than 8 million (quad HD) or even 12 million (4K) pixels, installing mirrors in every pixels sounds complicated and expensive. However, the scientists said that such a display could not only support a high image resolution, but can be made from relatively cheap materials, and is compatible with liquid crystal display production processes.

In addition to providing brighter computer displays, telescopic pixel technology could help drive forward the development of low-cost, large screen displays. The consumer market is demanding affordable, large, high-resolution televisions and displays, but this goal will be hard to achieve without using a modular approach, in which large displays are created by combining smaller building blocks.

PAY FOR YOUR SINS

Million Dollar Admin

A bail of $5 million is not really exaggeration, but exactly what a San Francisco admin recently got. Forty three year old Terry Childs is accused of taking illegal control of San Fransisco from its FiberWAN network. The network apparently contains city e-mails, payroll, police records and information about prisoners—it was virtually an all-access pass to City Hall. Childs was arrested because he refused to hand over passwords to the WAN system.
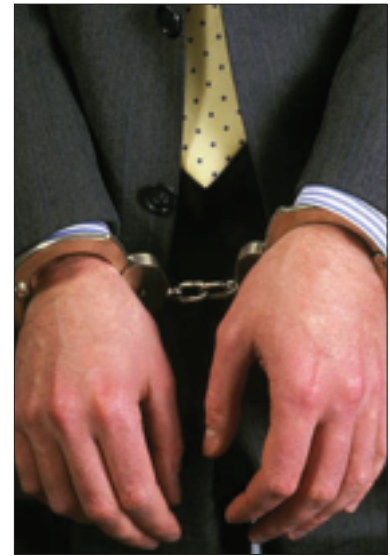
The FiberWAN network system is the major backbone of city government's computing infrastructure, connecting hundreds of different departments and buildings to a central data centre, and to each other. The FiberWAN system carries more than 60 per cent of the network traffic of all city government offices.

According to Ron Vinson, deputy director of the city's Department of Technology Information Services, Childs could have brought the whole network crashing down if he wanted to. However, this isn't the case as of now and the city's network continues to function normally. The reason that Childs' bail was set five times higher than most murder defendants' was because authorities were of the opinion that if released, he could permanently lock the system and erase records. One important fact is that Childs worked as a computer technician with the city for the five years.

Insight

On Parallel Streams

Michael Browne

Not long ago, both ATI and NVIDIA claimed to be a little more environment friendly (read green) than they had been previously, in terms of power consumption of their latest 3D accelerators. The top priority, as *we* know (and conflicting with anything green), is a GPU that is more powerful so that games can run faster and look better. Performance and efficiency are two binaries whose existence together is extremely rare. Looking at NVIDIAs GTX2xx architecture last month, (July 2008), we see something more powerful than their earlier G80/G92, and therefore more power hungry. We rejoice about the former, after all a boost of 30 to 75 per cent is no small matter. Complain as we may about the latter issue, there is very little power saving one can expect from a geometric increase in transistor count (from 754 million to some 1.4 billion). Power issues aside and visual nirvana firmly in sight, ATI was quick to offer the 48xx series a little after the GTX2xx launch. No brainstorm this—after all ATi has had their backs

Can ATI's new architecture do what the HD2xxx and HD3xxx families of GPUs couldn't?

solidly planted against a wall since November 2006 and the G80 (GeForce 8800GTX), which was one architecture that they (ATI) had absolutely no retort to. Their floundering position in the GPU market with failures like the HD2900XT and pseudo failures like the HD3870, while 8800GTX's sold like hot cakes is ample testament to this. ATI did have a fan following in the mid-range segment, but NVIDIA completely dominated the flagship segment, and the performance war gave way to a reign of peace with the mighty G80 trampling ATI's offerings beneath its 128 shader units a.k.a. stream processors.

With multithreading in mind, ATI's new Radeon HD4870 and HD4850 feature a staggering 800 SPs each, unheard of in any previous GPU. There're also plans to launch an X2 version, which is simply a larger PCB which houses two HD4870 GPUs therefore taking the SP count to a colossal 1,600 SPs. In terms of fabrication processes, ATI has a slight advantage with their new series having migrated to a
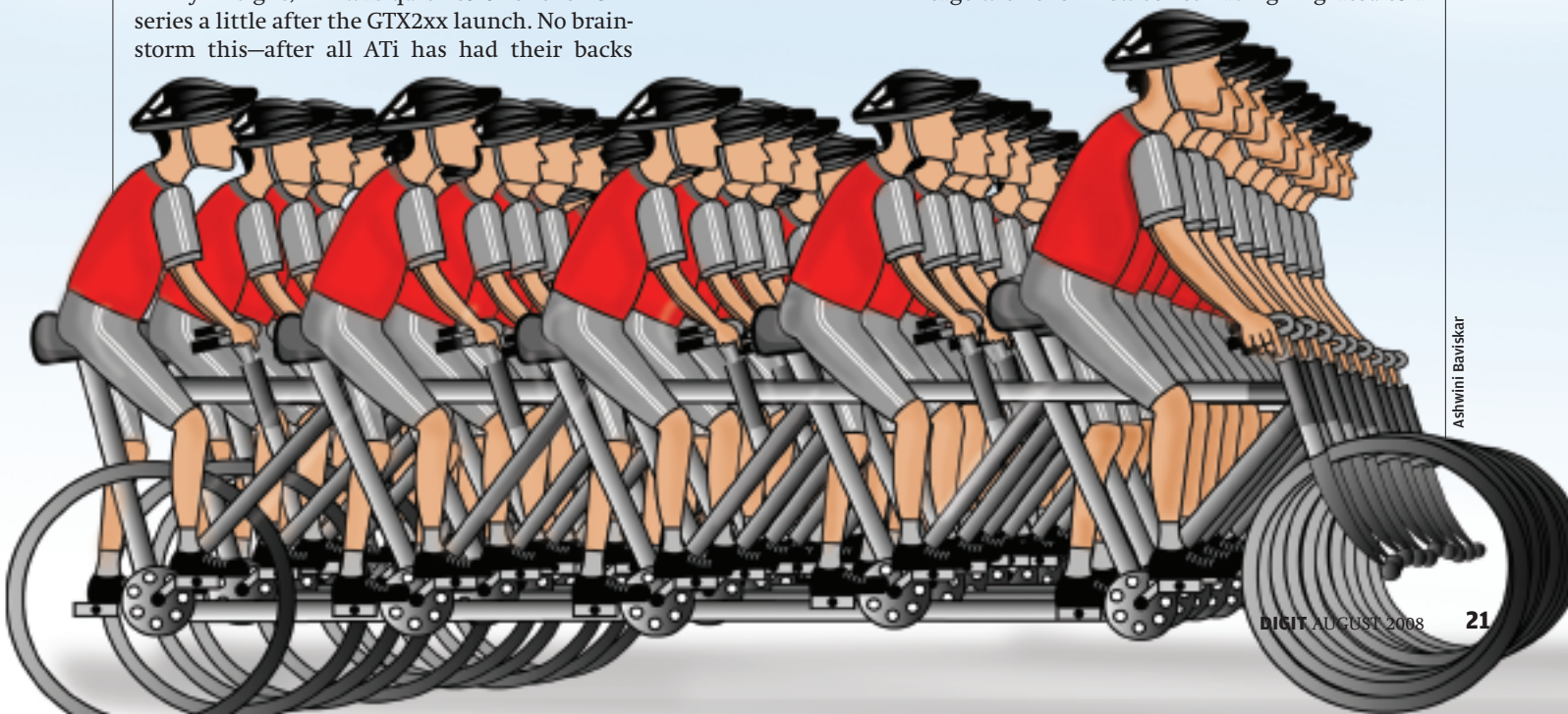
Ashwini Baviskar

55-nm manufacturing process much earlier. Incidentally, NVIDIA's newer GPUs like the GeForce 9800GTX and GeForce GTX280/260 are manufactured on a 65-nm process. A 65-nm core will run hotter than a 55-nm core, not to mention costing more, as more silicon is used per GPU. Note that NVIDIA also plans a die shrink to 55-nm, with their (yet unseen) GeForce 9800GTX+.

Codenamed the RV770, the Radeon HD48xx series has also seen a tremendous growth in transistors up to 956 million, from the previous high of 666 million. Of course the GTX2xx is still the most populous GPU transistor wise with close to 1.4 billion transistors, but this is bigger than anything we've seen from ATI. Opposed to a larger die and older manufacturing process, the RV770 is cheaper to manufacture than the GTX2xx due to the move to a smaller fabrication process.

Do note that we aren't doing any in depth comparisons between the two companies' offerings, and this is strictly a look at ATI's new wonder kid. Correlations, if any, are made simply for the sake of better understanding. Last year (August 2007 to be exact) we took a look at both NVIDIA's and ATI's new architectures—the G80 and the R600 in our insight feature *Riders On The Stream*. It was interesting to note that both companies' approach to SPs was radically different. Instead of the rigid architecture that NVIDIA followed by fixing the number of SPs in relation to the amount of texture processors and memory channel controllers, ATI used a more dynamic approach. While NVIDIA had 128 scalar SPs on their G80 ATI used 64 SPs. We say 64 SPs and not 320 SPs since each of these SP consists of five ALUs, (Arithmetic Logic Units), which is how they arrived at the magic figure of 320 SPs, that is, 64 x 5. By the proper definition of an SP ATI's 320 units on the RV 670 (Radeon HD38xx) cannot be termed as SPs any more than the HD48xx can claim to have 800 SPs as they aren't really independent, scalar processors.

In essence, ATI's 64 SPs are capable of
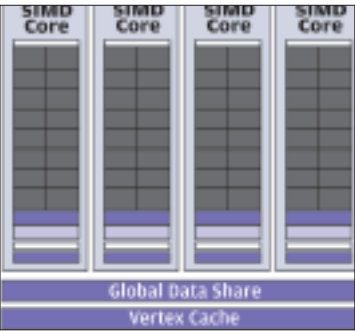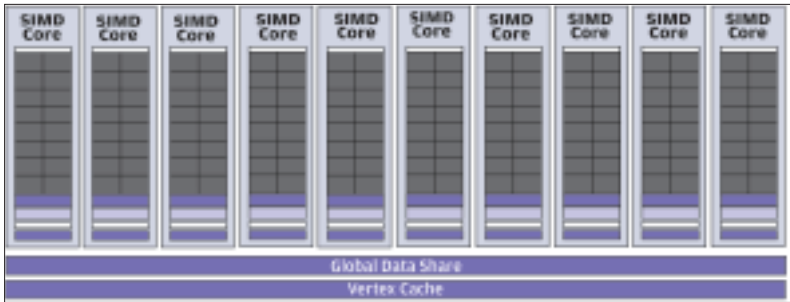
The RV770 (above) and the RV670 (below). 16 SPs make up 1 SIMD Core

working on more complex (read multi-threaded) operations than NVIDIAs simpler SPs. In ATI's case, it's also true that each cluster of 5 ALUs, (1 SP), can only work on a single thread at a time. In case of a complex, multithreaded operation, this setup would be brilliant as one SP from ATI is more powerful than one NVIDIA SP. But in case of simple operations which can be handled by a single ALU, the other 4 ALUs in one SP would be unoccupied or possibly under occupied. In case of a simple operation, NVIDIA nulls the advantage ATI has with a more powerful SP, and it come down to sheer parallelism, where 128 SPs would outperform 64 SPs—a scenario which has occurred often enough in the past, and was reason for the HD3870s failure against the 8800GTX.

ATI's underlying architecture hasn't changed—so 800 SPs on the new HD48xx is really equal to 160 SPs (800/5). NVIDIA too has retained the same scalar architecture. So what has ATI done differently? According to their press releases ATI claims that their execution units on the HD48xx are 40 per cent more efficient than those on their earlier HD3870. There is no way to validate this, but the sheer number of SPs, that is, 160 is definitely enough to make the 48xx series far

NVIDIA's GTX2xx architecture - 8 SPs combine to make 1 SM, 3 such SMs make up 1 TPC. 10 TPCs house 240 SPs in all.

faster than anything else that ATI has marketed before, the previous best being their HD3870 with 64 SPs.

Both AMD and NVIDIA are guilty of using unnecessarily confusing nomenclature and designations on the various parts that their GPUs consist of. Both ATI GPUs, the RV670 and RV770 have an SIMD core (see figure 5). This core consists of 16 SPs grouped together. While the older RV670 had four such SIMD units, the new RV770 drops in an additional six SIMD units, taking the total to ten SIMD units. Besides this increase in the number of SIMD units, (and therefore SPs), the RV770 is identical to the RV670.

NVIDIA groups eight SPs and two SFUs (Special Function Units) into a cluster called a Streaming Multiprocessor (SM). These clusters of SMs are grouped into a TFC or Texture / Processor Cluster (see figure 4). In terms of nomenclature, NVIDIAs referrals to SPs is more accurate since each of their SPs is an independent, pipelined, microprocessor capable of working on a single thread.

While both have different methods of grouping their respective SPs, it is interesting to note that each SP cluster on the Radeon HD48xx has one complex ALU and four simple ALUs, and this *complex* ALU is basically what NVIDIA calls an *SFU*. ATI obviously has more SFUs but whether this significant or not is anyone's guess. Divergently ATI clubs its Texture Units and Texture Cache along with its SP clusters, while NVIDIA pipelines their SPs to their Texture Units and Texture Cache.

For anyone looking at the RV770, it's obvious that ATI has taken a huge jump in the total SP count, and gone with a more brute force approach, something like what NVIDIA did in 2006. In fact, the jump from 64 SPs to 160 SPs is more impressive from a manufacturing standpoint than the jump from 128 to 240 SPs. When you take into account that each of the 160 SPs on the RV770 has five ALUs that handle complex computations, ATI's HD48xx series seem even more impressive.

Another first for ATI and the industry in general is the move to GDDR5 memory on the HD4870, although the cheaper HD4850 cards will still utilise GDDR3 memory. ATI's memory subsystem on the HD4870 offers nearly the same bandwidth as the GeForce GTX 260, but with a much simpler (and cheaper to manufacture) 256-bit bus. NVIDIA uses 448-bit and 512-bit buses, which complicate the PCB design and push costs up. GDDR5 memory on the HD4870 runs at 900 MHz, but due to having two parallel data paths the effective bandwidth is quadrupled, as opposed to GDDR3 or GDDR4, which can only double the data throughput. Therefore, for a clock of 900 MHz, the effective data frequency

becomes 3.6 GBps. We're told that GDDR5 can do as much as 1.2 GHz, which equates to a data throughput of 4.8 GBps. GDDR5 has the advantage of offering ATI more bang for buck as the costs involved with producing 3600 MHz, 256-bit GDDR5 is much less than the cost NVIDIA has to bear for producing 2200 MHz, 512-bit memory.

With DX9 and DX10 and future standards, (DX10.1 and DX11), we're seeing a move from texturing to shader-intensive operations across all game titles. Most games released over the past couple of years already utilise shaders for certain details as a shader is much more flexible and has much less demands from hardware than a texture has, given similar levels of detailing in a given scene. While a texture requires having a reference image that is used for creating elements in a scene, a shader relies on program code. The best possible showcase for shaders, are games like *Crysis*, *S.T.A.L.K.E.R*, *Oblivion*, *Splinter Cell Double Agent* and *UT3*. ATI has geared their RV770 to be a shader-heavy beast, and while the number of texture units goes up from 16 to 40, the ratio of SPs to texture units is 4:1 (160:40). NVIDIA has also woken up to this fact, and the GTX280 has hardly upped its texture unit count from the G80 / G92 days (from 64 to 80 units). For NVIDIA this ratio is 3:1 (240:80), as opposed to 2:1 (128:64) with the G80.

Whether the Radeon RV770 is the better performer in real world games or not, isn't clear. What we cannot dispute however, is that ATI has come back with all guns blazing. The HD4870 and HD4850 do have one very significant advantage over the competition—they are less monolithic in nature, and therefore ATI has more legroom to manoeuvre prices as well as scale performance up or down. We know that NVIDIA can't really up performance of their GTX 280 without a die shrink. The fact is that ATI has finally built a tremendous card just as NVIDIA did with the G80 and the new GTX2xx, and what's more important is they've learnt well from their mistakes with the R600 and RV670. We're told that the successors for both RV770 and GTX2xx are also ready, waiting in the wings to come after two fine competitors have slugged it out.

With upcoming titles like *Far Cry 2*, *Fallout 3*, *Crysis Warhead*, *Dragon Age*, *Dawn Of War 2* in the wings, it seems we'll need all the crunching horsepower we can use. The best part of the RV770's existence is the fact that at last after a year and a half, we're seeing competition in the high and mid-range graphics card segments. We're seeing tremendous price drops, which is good for users as well as the industry because this speeds up adoption of such graphics solutions. ■

michael.browne@thinkdigit.com

Figure 4: A single Streaming Multiprocessor (NVIDIA)
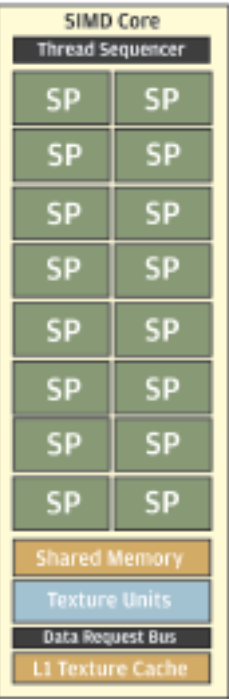
Figure 5: One SIMD core (ATI)

GPU comparisons

	ATI HD 4870	ATI HD 4850	NVIDIA GTX 280	NVIDIA GTX 260	ATI HD 3870	NVIDIA 9800 GTX
Transistor Count	956 million	956 million	1.4 billion	1.4 billion	666 million	754 million
Fab Process	55nm	55nm	65nm	65nm	55nm	65nm
Stream Processors	160 (800/5)	160 (800/5)	240	192	64 (320/5)	128
Texture Units	40	40	80	64	16	64
Raster Operations	16	16	32	28	16	16
Core Clock	750 MHz	625 MHz	602 MHz	575 MHz	775 MHz	675 MHz
Memory Clock	3600 MHz GDDR5	1986 MHz GDDR3	2214 MHz GDDR3	1998 MHz GDDR3	2250 MHz GDDR3	1100 MHz GDDR3
Memory Bus-Width	256 bit	256 bit	512 bit	448 bit	256 bit	256 bit
Amount of Video RAM	512 MB	512 MB	1024 MB	896 MB	512 MB	512 MB
Memory Bandwidth	115.2 GBps	63.6 GBps	141.7 GBps	111.9 GBps	72 GBps	70.4 GBps

Beijing 2008

The Greatest Show On Earth!

Robert Sovereign-Smith

"The Olympics—a lifetime of training for just ten seconds!"

Jesse Owens
At the 1936 Summer Olympics

No, we're not talking about the 1952 Academy Award winning movie!

Once every four years, the world celebrates the only true global sporting event there is—the Summer Olympic Games. With a whopping 4 billion people expected to watch at least part of the events live or on the news, it's by far *"The Greatest show on Earth"*. Whether you watch it for love of sports, or just to cheer your countrymen on, hoping they win more medals than last time—the fact remains, you *will* be watching.

World records are often smashed at the Games, personal bests almost always bettered, and heroes are often created overnight and showered with gifts and praise from their countrymen. Of course, sometimes, the *Goliaths* of certain sports are felled by a lesser known *David* or two, and *Dream Teams* often have nightmares for years to come—caused by losing to minnows or the underdogs. The Olympic Games inspire athletes from all over the globe to perform out of their skin, and brings elation and sorrow to billions worldwide—and this is the draw of it all!

However, while you're sitting in the comfort of your home, watching TV and cheering your country on, or while sifting through the temporarily bloated sports pages to see the previous day's results, try and also understand what exactly goes into the organisation of such an event.

Hidden away, behind all the muscular and sinewy athletes that are splashed on every screen or page, are thousands of professionals—hardware and software, networking, broadcast specialists, cameramen and women, etc. All of these people are involved in the event of their lives, some of them for the first time, some seasoned professionals, all of them unsung heroes, of sorts, who work night and day to ensure that everything works just so.

As most of you will testify, technology is seldom fool-proof, with crashes, bugs and more afflicting our gadgets and PCs on almost a daily basis. Yet, thousands of technology professionals at the Olympics have just one task—ensuring that there are no hiccups. With redundant systems for redundant systems, it's all very hectic and nerve-wracking. Take for instance the 100 m dash, which is an event that almost every sports enthusiast watches with excitement. It is, after all, the quest to be the fastest sprinter on Earth for the men and women who qualify and race. However, imagine telling Usain Bolt to re-run his world record breaking 100 m dash (9.72 seconds), because the timing system was broken, or even postponing events because of technical failure? Unthinkable! Unlike the athletes, who can lose this time and still come back and take the glory four years (or four minutes) later, the companies involved in providing expertise and the equipment might not get any second chances.

Beijing 2008

All through August, the world looks towards China for the 2008 Summer Olympic Games. Already shrouded in controversy because of China-Tibet political problems, this time the Games are bigger than ever before—they will be bigger in the future as well, with new technologies, innovations and more eyeballs watching. As we mentioned earlier, about 4 billion people will watch 10,708 athletes from 205 countries compete for medals in 302 events. It's not like there's this one big Olympic stadium where everything happens either. The games are held across 7 cities, and 37 venues, which makes it a networking and management nightmare.

In Good Company

So who is really looking after all the technology that runs the Games? The worldwide IT partner for the Games is Atos Origin (AO), an international IT services company. They've been handling the Games since Greece 2004, and have partnered with other specialists to provide services to the Olympic Games. AO is a company with annual revenues of 5.4 billion dollars (over Rs 23,000 Crore), and has just one job—to provide a "critical, but invisible, IT system" for the Games. AO oversees the complex designing and building of IT infrastructure in all of the venues at Beijing 2008. They're also in charge of the digital security—physical security for IT equipment—as well as digital security to protect against hackers. After all, hacking the Games would be a crowning moment in any hacker's life. During the Games, AO will command a team

Around 600 Lenovo professionals are working day and night to ensure a successful execution of the Olympics

of over 4,000 IT professionals, making sure that everything goes according to plan, and right on schedule. They *know* they have no second chances!

AO also runs all the various systems associated with the Olympics, the largest of which is the Games Management System which encompasses every last detail such as who has permission to enter which areas of which venue (players, coaches, judges, etc.), managing the transport arrangements of all athletes, coaching staff, media personnel, etc., the entire qualification system for athletes, planning liaisons between medical personnel and athletes (mandatory drug testing, treating injuries, etc.), the human resources requirements for all Olympic officials and volunteers, and much more. From the broadcasting side, AO will also be behind Information Diffusion Systems, which in English means that AO will manage

> **The Olympics remain the most compelling search for excellence that exists in sport, and maybe in life itself.**
>
> **Dawn Fraser**
> Australian swimmer, and three-time winner at the Games

Info2008—a wireless intranet system that's made available to all media personnel and everyone involved in the Games. It's already impressive that this huge repository of information available to anyone with the right clearance at the click of a button, but what's more impressive is that it's available wirelessly, in multiple languages, and is always updated to ensure up-to-the-second freshness of information. There's so much more we could give you in terms of details, but we'd have to span it over three or four issues of *Digit*. Suffice to say, it's mind boggling the complexity of the technology systems that AO and their partners manage.

To give you an idea, all of these systems have undergone roughly 2 lakh hours of testing, to ensure that there are no glitches or bugs!

For Beijing 2008, some of the companies AO is partnering with are Lenovo (all hardware-servers and desktops), Omega (time keeping, scoring and providing results at the venues), Panasonic (all audio visual equipment), Kodak (everything imaging related) and Samsung (wireless communication equipment).

Now we're hardware junkies, so when we found out that Lenovo was providing hardware, we just had to find out more...

Olympic-grade Hardware

We spoke to Leon Xie, the Director of Olympic Sponsorship and Deputy General Manager, Olympic Business Department, at Lenovo (try saying *that* in one breath!).

How much equipment or hardware, exactly, are we talking of here?
Xie: Over 30,000 pieces of Lenovo hardware are being used at the Games. That's 12,000 desktop PCs, 10,000 17-inch flat panel displays, 2,000 15-inch touch screen displays, 2,000 desktop printers, 800 notebook computers, 700 servers, and 5,000 "showcase models". (Showcase models are used in Internet lounges and sponsor partner programs.

Leon Xie, the Director of Olympic Sponsorship and Deputy General Manager, Olympic Business Department—Lenovo

Wow! So how much does all that equipment that you're using cost?
Xie: We do not disclose financial terms of our sponsorships.

Fair enough. What sort of planning goes into a humungous project like this?
Xie: Over the past year, more than 20,000 pieces of Lenovo equipment have been put to the test. Each piece of equipment was configured for the particular sport or system it would be used in during the Games. Next came the actual "in the field" testing at the Good Luck Beijing athletic competitions. These test events were an arduous year-long process that tested all aspects of the hardware in actual sports events to make sure everything worked properly for the Games.

The tests ended only weeks ago in June. Lenovo's computing systems supporting the Games were tested at 42 separate events, including Chinese volleyball club tournaments, World Cup qualifying matches, the Beijing International Marathon and International Tennis Federation events. The testing phase was vital because implementation of the complex Games computer infrastructure will take place literally overnight. The equipment used at outdoor competition venues was specially selected to withstand the high temperatures, dust and humidity of Beijing's summer.

The next and final preparatory phase consisted of two technical rehearsals, conducted by BOCOG and involving all technology partners. The final rehearsal, which took place June 10-12, was an all-hands event. Lenovo and all the partners and their technician teams participated as BOCOG, put the teams through a series of real-life scenarios designed to prepare the entire support team for unexpected emergencies.

So how many venues was all this done in? And what equipment was field tested?
Xie: The physical equipment supporting the Olympic Games and the thousands of personnel who oversee it participated in "Technical Rehearsal 2". The event simulated three of the busiest days at the Games, implementing all the technology and looking for anything that could possibly go wrong.

The rehearsal forced participants to practice managing an array of potential problems and scenarios—missing equipment, slashed cables, security breaches, power outages, etc. The purpose was to ensure the entire team is ready for any and every kind of problem and challenge they might face during the Games.

A total of 35 Olympic venues across 7 Olympic cities (including equestrian venues in Hong Kong) were involved. Nearly 95 per cent of Lenovo's computing equipment at every venue was deployed over the three days of intensive

practice and problem solving. Five product categories were tested, including desktop PCs, notebook PCs, servers, judges' touch screens and printers.

d **How many Lenovo technicians are working at the Games, and how do you prepare them for something of this scale?**

Xie: We have a core team of more than 10 experienced technology professionals who managed the systems at the Torino Games (2006 Winter Games), and dozens of other technicians and engineers who gained invaluable experience there. These experts, along with the rest of the nearly 600-person engineering team, have been involved in training classes for the past few months, where every one of them is trained on operating the PCs and printers to be used at Games. A sub-group was set up that will focus on servers which require an added layer of expertise, and these people received additional training.

The team has so far put in many thousands of man hours of technical services and support through the Good Luck Beijing sporting events and technical rehearsals. Their training involved both classroom lessons and hands-on testing in real-life situations.

d **How big a role do you have in worldwide broadcasting of the Games?**

Xie: Lenovo is involved in the broadcast in several ways. First and foremost, Lenovo will provide 2,000 touch screen displays as part of the Commentator Information System. Media personalities will use these touch-screens to access the Commentator Information System during their broadcasts to get up to the minute biographical and statistical information about any athlete or team. In addition, Lenovo works directly with some of the broadcasters to provide equipment for their on-site operations.

Perfect Timing

Do we really need to tell you what Omega is famous for? They're the official timekeepers for the Games, and with world records sometimes being bested by a millisecond or two, you can bet on how important their job is. Taking a race as an example, Omega has systems attached to the starter's gun, cameras to monitor false starters, and photo-finish cameras at the finish. They also have about 450 employees on-site at the games, 70 of those huge public scoreboards, over 300 smaller scoreboards, and an overall 420 tonnes of equipment—175 km of optical fibre and cables, and 65 generators.

Over the years, Omega has developed a device called Scan'O'Vision, which is a photo-finish camera that is connected to photoelectric cells to click pictures as soon as some part of an athlete's body crosses the finish line. The

technology has been fine-tuned to be able to provide a picture within seconds of the race finishing—very important to please today's impatient TV viewers. It's not just the finish, but also the start of the race that is monitored. Omega builds speakers into each starting block, so that all athletes hear the starter pistol at the exact same time. It also has sensors built into the starting blocks to help calculate the time between the starter pistol being fired (which also has a sensor attached to it) and the athlete reacting. Reactions are gauged by the pressure the athlete exerts on the starting block, and software calculates the acceptable human response time to the pistol. If the athlete begins his race even a fraction of a second faster than what is considered an acceptable reaction time, he or she is penalised for a false start, and the race restarted.

Omega is also responsible for measuring distances—for events such as long jump, shot put, javelin, etc. There's no tape used these days; it's all laser measurement, which is extremely precise. Lastly, Omega has also spent a lot of time modifying their scoreboards to display all letters of the Chinese alphabet—which we know is no small feat.

Omega's starter gun—apart from a sensor to record the exact instant the gun is fired, there's also a mic to carry sound to the speakers on starting blocks

Enjoy!

We wish we could go into more details about the Games and the technology that runs them, but we might never be able to stop. We've tried to give you an idea of how big of a feat it really is to manage the biggest sporting event on the planet, but to be honest, we've probably only scratched the surface at best. However, if possible, while you sit at home and grab your couch handles in excitement as some of the most exciting athletic competitions take place at Beijing 2008, try not to forget the thousands of men and women behind the scenes who are slogging day and night to ensure that everything at the Games works as well as one of Omega's ridiculously expensive masterpieces. Let's give them all a standing ovation and a medal, we say. ☒

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> " I run to be known as the greatest runner, the greatest of all time. I could not eat or sleep for a week after I lost in the [1992] Olympics. I have to win or die. "
>
> **Noureddine Morceli**
> The Famous Algerian athlete, at the 1996 Summer Olympics

From A Hacker's

Diary

Coding the Freedom using V and Grogammer

Aasis Vinayak

I always have this problem with my memory. Keeping up with new syntax and functions has always troubled me. So was the case when I was learning AIML (Artificially Intelligent Markup Language) and the Program E. I really got enticed by the working of A.L.I.C.E and that made me run after AIML. And finally encountered E on the SourceForge server.

I cannot simply neglect languages like TK if I want to make my software user-friendly. I always wondered whether I could write these programs in a single language, and finally convert it to the language that I want. Yet, I have wondered whether I can have such a language.

I spent days trying to work out a solution. The driving force behind the search was simply one idea—to write an algorithm I needed to use my brain, but after I wrote that, I had to use reference books to look for syntaxes and functions. This way, I was hardly using any element of my brain. The result of my experiments was the V language (www.vlanguage.org)—where one can write programs in plain English and convert them to any language they desire.

I remember someone asking me once why languages required syntaxes. As I explained the the need, the conversation made me think about the M-Programmers version of V.

Many of my earlier projects were written in PHP. Employing the same, I further proceeded to come out with a Web version the project Grogammer (www.grogammer.com). The initial deployment of V over this interface is delivered through PHP. There were two reasons why I thought it was very essential to have such a Web interface. First being the fact that Netizens can try out the project even before the libraries are out. And secondly, I may get more developers, especially to add support to new languages, for the project.

For a person to write programs in their mother tongue, I employed some tools that I used for the *Mozhi Search Engine*. Though V eliminates the need to have different programming languages, some of the developers suggested having a version that allows the programmer to write programs using a very simple and short syntax, to shun the pains of typing long lines. However, the M-programmers version still remains (under development), as the need of the hour.

Now we are looking for more developers who are proficient in artificial intelligence (AI) and Artificial Neural Networking (ANN). They can contribute a lot to the upcoming stages, where V can suggest solutions for the problem. Implementation of AI in V will further solve the problem with a preferred syntax for V—in short, you will be able to ask V to do what ever you want it to! V will be able to understand you if you follow grammatical rules—of the language in which you are typing. Some of the developers (in a recent Web-conference) proposed ideas to build speech recognition techniques that could be incorporated into the V platform. Of course, I still have a long way to go before V can be that "*commanding*".

Yesterday, while I was frequently checking the libraries of GNU PDF—another free implementation by GNU!, and conforming to the PDF 1.7 specification—especially the group of specific subsets of PDF conforming to the ISO standards PDF/A, PDF/X and ISO 32000. I was really enticed by some features like annotations and interactive forms used in that.

I have to help a friend from the multimedia production industry in installing dyne:bolic—a Free OS for people in the multimedia side, which has a wonderful collection of tools to record, edit, encode and stream. But I love doing that. One can enjoy the true spirit of GNU only if he is gifted to touch the pulse of the community. Yet, after many days of work, today I succeeded in finishing the stage 3 of Grogammer. ⊠

Write in with any views and suggestions that you have about this column to: editor@thinkdigit.com

> **"The need of the hour is for developers who are proficient in Artificial Intelligence and Antificial Neural Networking"**

▼ **About the Writer**

The writer is the developer of Mozhi (www.mozhi.org)—an Indian Language search engine, and the CEO of The Analyst Magazine (www.the analystmagazine.com) and Free Lecture Notes (www.freelecture notes.org). His research work / publications in Computer Science and Physics are available at www.aasisvinayak.com.

The views expressed in this article are those of the author, and are not intended to represent the views of Digit.

EMERALD
Dreams

Electricity is one of the most important sources of energy that drives us. According to International Energy Outlook 2008, an official energy statistical release by the US government, global electricity generation will nearly double from about 17.3 trillion kilowatt-hours in 2005 to 24.4 trillion kilowatt-hours in 2015 and 33.3 trillion kilowatt-hours in 2030. Even though nuclear power and other means of electricity generation will increase over the period, the most carbon-intensive source—coal—will still dominate, says the report.

Last month, we carried a news snippet underscoring the research initiatives for harnessing mechanical energy into electrical energy that can be used to power your portables. However, on a larger scale there are many initiatives being undertaken to reduce the carbon footprints in the domains of computing, and daily lifestyles in general. It is not only computing that matters, there are these all new breed of hybrid vehicles and electric cars, organic fuels including bio-diesels and natural gases, fuel cells and so on. We at *Digit* delve a bit deeper to give you a sneak peek on how these
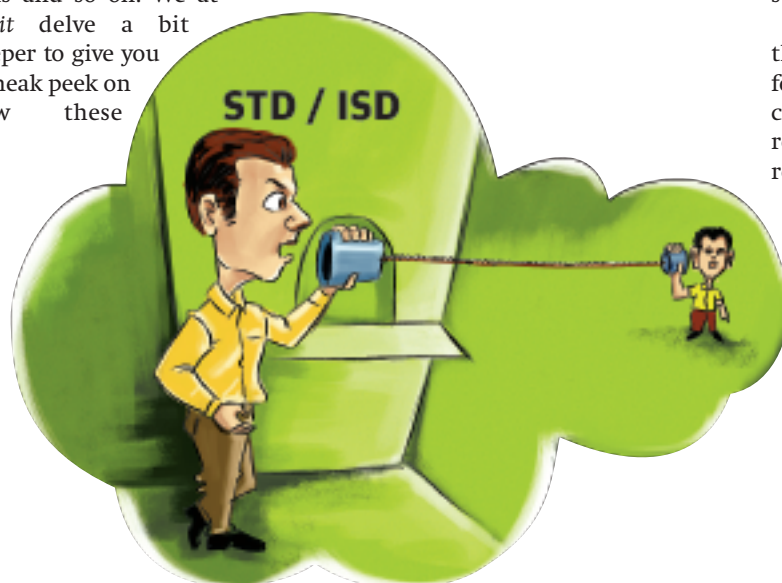
Dragging your processors 24x7? Overclocking your machines? Paying soaring power bills? Read through this section to find innovative researches and their implementation that claims to reduce your costs to nearly one fourth!

greener initiatives will change the face of our technology and reduce our carbon footprints.

As the transistor count of today's microprocessors increases, overheating and power dissipation is becoming a vital issue. As we move towards growing transistor microprocessors, the increasing power budgets of these chips must be addressed. Research carried out at Purdue suggests that after exceeding 35 to 40 W, additional power dissipation increases the total cost per CPU chip by more than a dollar per watt.

Efficient Cooling Systems
Research initiatives for efficient cooling systems are inevitable. Especially when current technologies available for cooling cannot break beyond 200 watts of heat per square centimetre. A Purdue university research team led by Professor Issam Mudawar not only managed to break this barrier, but exceeded it by over five times when they created a way to cool chips that generate more than 1,000 watts of heat per square centimetre.

A fan is an almost inevitable component of the same. However, even if these are sufficient for basic computer applications like business computing and Net surfing, this method is rendered ineffective when the machines are revved by gamers and overclockers.

The new technology is based on a water cooling system as against the conventional air cooled ones. The method implements series of microjets that distributes a coolant in miniscule channels over the top of the chip. The coolant in this case is a hydrofluorocarbon. The heat generated by the chips cause these narrow grooves to heat up, which in turn causes the coolant liquid to vapourise.

One of the biggest advantages of liquid cooling over the conventional air cooled methods is the uniform pattern of cooling

seen in the former. The reason being, while the airflow cannot be kept under control, coolant liquid jets can be maintained uniformly along the length of micro channels. Uniform cooling prevents formation of any hotspots and increases the life of the processors.

Mudawar explains that it is not the superior properties of the coolant that results in such a significant improvement in cooling mechanism, but it is the hybrid nature of the overall mechanism. It's hybrid because it relies on two cooling methods: greater surface area via the microchannels and better circulation via the microjets. The coolant collects at both ends of the channels and is circulated back through the system.

Mini Computers And Applications
Cloud computing is the new buzzword. Not sure what the term connotes? Just turn over the pages to find it explained in the W5H section this issue. Now the question arises—what makes it so popular? Nothing else but greater economy and flexibility.

Zonbu is just one of the products being churned out that function on this concept. In the wake of technological initiatives, products like Zonbu are power miser alternatives that business computing demands. Zonbu works on a Linux platform and considering the minimalist apps that it carries, it doesn't even resort to a fan for its cooling needs. A mini device, no moving parts, energy efficient components and that's all that an Outlook and MS Office user would ever require. On board flash memory as opposed to hard disk based one further reduces its power requirements.

All it requires is a meagre 10-watt power supply and it performs as well as any laptop can perform for the minimal usage that it allows. It can play music, movies, check email, and comes with the Open Office suite. A gamer of course won't go for these mini apps, but a business user and Net surfer wouldn't demand for anything more.

For a comparable output, most conventional CPUs will consume 60-100 watts or more—approximately 4 to 5 times more than what Zonbu does. Zonbu authorities claim that it'll save more than 1,200 kilowatt hours over the course of a year. If you prefer to be more conservative, you can also add on an optional solar panel to power the device for mini applications.

Task Specific Computing
As computing gets more and more task specific, the micro architecture and microprocessors that go into making a computer also are drastically changing. A mobile application wouldn't require a dual core. Similarly a minimalist computer app like Zonbu would neither require a configuration that a gamer would demand. In these transitions there are specific lines of processors hitting the market. Likewise we might see Intel developing multi-core chips for servers and datacentres, and for mobile apps and minimal computing we might see power stingy microprocessors thronging the market.

There is Intel's Atom, the smallest and lowest power consuming processor from Intel. Tests suggest that an Atom based microprocessor exhausts about 32 watts of electricity; around 80 per cent more efficient, on the desktops and laptops of conventional users. Its widespread implementation would mean all the functions of a traditional desktop being catered at much lower costs. It really is worthwhile to let your CPU suck only as much as you require. There is no point in allowing your processor to consume 100 watts when all you would ever require for basic computing is 50 watts. Further advances would ensure that similar low power demanding tasks would be taken care by dedicated hardware designed specifically for that purpose resulting in significant efficiency. This clearly makes it evident that the processor as a 'central' unit will find diminished implementation in the time to come.

Microchips For Portables And Handhelds
In the move towards miniaturisation, it is predicted that PDAs and full-fledged mobile applications might well replace laptops. Even though that seems a bit further away, the total energy consumption by these devices, considering the sheer number of users it has got worldwide, cannot be overestimated. In this regards more energy efficient microchips that could lead to longer-lasting cell-phones and lesser recharge cycles is deemed necessary; especially when it is cognized that these devices amount to a sizeable proportion of electricity consumption.

One of the driving forces for any application has to be the million transistor packed silicon chips that power these devices.

Illustrations: Shrikrishna Patkar

However, as technology has moved further, chip designs have evolved and in another such research initiative, a team led by Anantha Chandrakasan, the director of the research lab at MIT, has managed to develop a new chip design that they claim to be up to 10 times more energy-efficient than present technology. Ten times more energy efficient implies that if your device chips consume 100 units of electricity in a particular time period, being replaced with these new microchips they will be ten times more effective and consume a measly 10 units of power without compromising output.

The efficiency of these chips was already displayed when they were tested on a widely used microcontroller device and the results were quite promising.

Now the question that arises is that how do these chips manage to deliver the same performance at much lower power feeds? The answer to this is the ultra low level of voltage that is sufficient enough to power these new designs. These new chips eat up a mere 0.3 volt of power, which is around one-third the value of what the contemporarily implemented chips consume. The new design implements an efficient DC to DC converter that allows voltage reduction without the need for separate components, and makes it possible for it to work on such a low voltage. Chandrakasan takes it a step further by saying that the team is working to make this voltage requirement further down, so much so that the microchips would work even on the available ambient energy; viz. using one's own body heat or the kinetic energy derived from bodily movements.

According to the researchers, the new chip would hit the market and find its implementation in gadgets in a span of five years while the other issues related to its mass production and cost efficiency are being worked on. According to Chandrakasan, it would be crucial in military applications and tiny sensors where a frequent recharge value results in loss of vital time. The longevity of such devices and other mass communication and networking devices would mean an enhanced user experience as well, without worrying about frequent discharge and running around for a charging socket.

Cash On The Trash!

Moving away from computing and portables, there are significant breakthroughs being achieved in other areas of energy efficient implementations as well. The noise about exhaustible sources of energy resources and their impending death is reverberating loud now. In the meanwhile, without making much noise, there are significant initiatives and research being carried out by individuals who are doing their small bit to protect our planet from peril.

Domestic waste is just inevitable. It is this vast resource which is being tapped by a Nigerian civil engineer Dr Joseph Adelegan—who is generating energy from domestic waste. His unparallel credits have been awarded with adulation and due recognition for his "Cows to Kilowatts" project that generates cooking gas from waste products in abattoirs. The project today provides cooking gas supply to more than 6000 homes in Nigeria.

Imagine the vast amount of LPG (chemically butane) that would be saved if every household worldwide manages to latch on to this novel initiative. It is estimated that Nigeria accounts for over 20 per cent of the world's cassava output and it is in this waste that Dr Adelegan saw the resourceful supply of power. His project "Power to the Poor: Off-Grid Lighting from Cassava Waste in Nigeria," is based on the principle of generating power from cassava.

The system relies on the anaerobic fixed film biogas technology that is different from existing approaches. The septic tank and soak away system and existing biogas technology use the conventional anaerobic treatment process which has several drawbacks such as extremely low efficiency and long retention time. However, the hybrid Universal Anaerobic Sludge Blanket-Anaerobic Fixed Film (UASB-AFF) bioreactor replaces the septic tank and soak away system. It also replaces conventional biogas technology by advanced high rate anaerobic reactor produced by systematic engineering design.

Using this method, Adelegan says he hopes to generate 200 kw daily, which will provide basic electricity for more than 2000 households initially.

Besides computing, technology is seeing a green revolution in other walks of life as well. The list is growing... hybrid vehicles, hydrogen fuels, solar panels and so on. The researchers at MIT are even contemplating artificial photosynthesis. These will definitely leave a long lasting impact on the technology of the future. Be it hydrogen cars or bio-diesels, unwired communication, ubiquitous computing or other aspects, it won't be too long before further groundbreaking research makes the current technology obsolete.⊠

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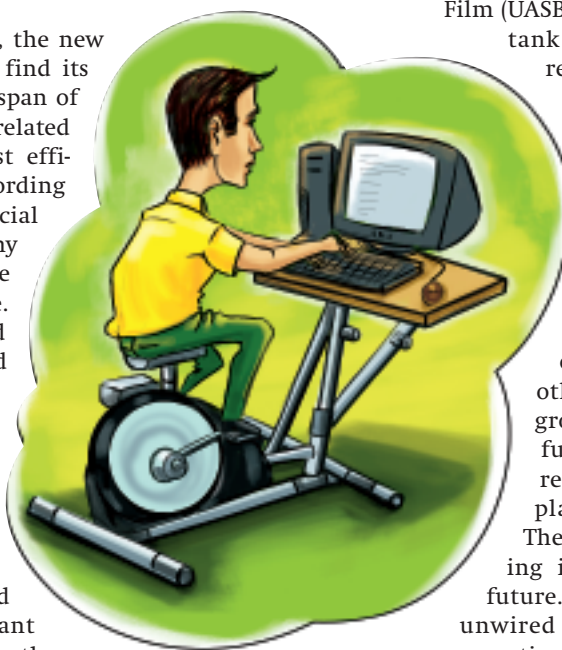
Hasselblad H3DII-50

Hasselblad has now come up with a monstrous 50 Megapixel H3DII-50. A 48-mm Kodak sensor means it takes about 1.1 seconds per frame, but clearly you're sacrificing speed for professional ultra-high quality. It's got a 3-inch screen and integrated CCD cooler. The camera is designed to meet the most exacting demands of high-end professionals and provides full access to all the Hasselblad lenses.

The H3DII-50 camera will be available from October 2008 at a price of $39,995 excluding tax—almost 16 lakh rupees!

Diamond Encrusted Nokia N95

The revolutionary flagship Nokia N95, bursting with multimedia goodness and every conceivable technical innovation, is now available through Continental Mobiles: albeit with a crust of diamonds! A smooth Sterling silver front panel encrusted with 4.42 carat of brilliant-cut, VS1 quality, colour G-H, naturally-mined diamonds, each hand-set and tailored by craftspeople for your delight. This piece is a true statement of luxury and extravagance. Technical excellence combined with the brilliance of natural diamonds. Well, for those who have enough cash to care about and crave for a status symbol, this one wouldn't disappoint a wee bit. All this at £10,000 (approximately 8.5 lakh rupees, plus the shipping of course).
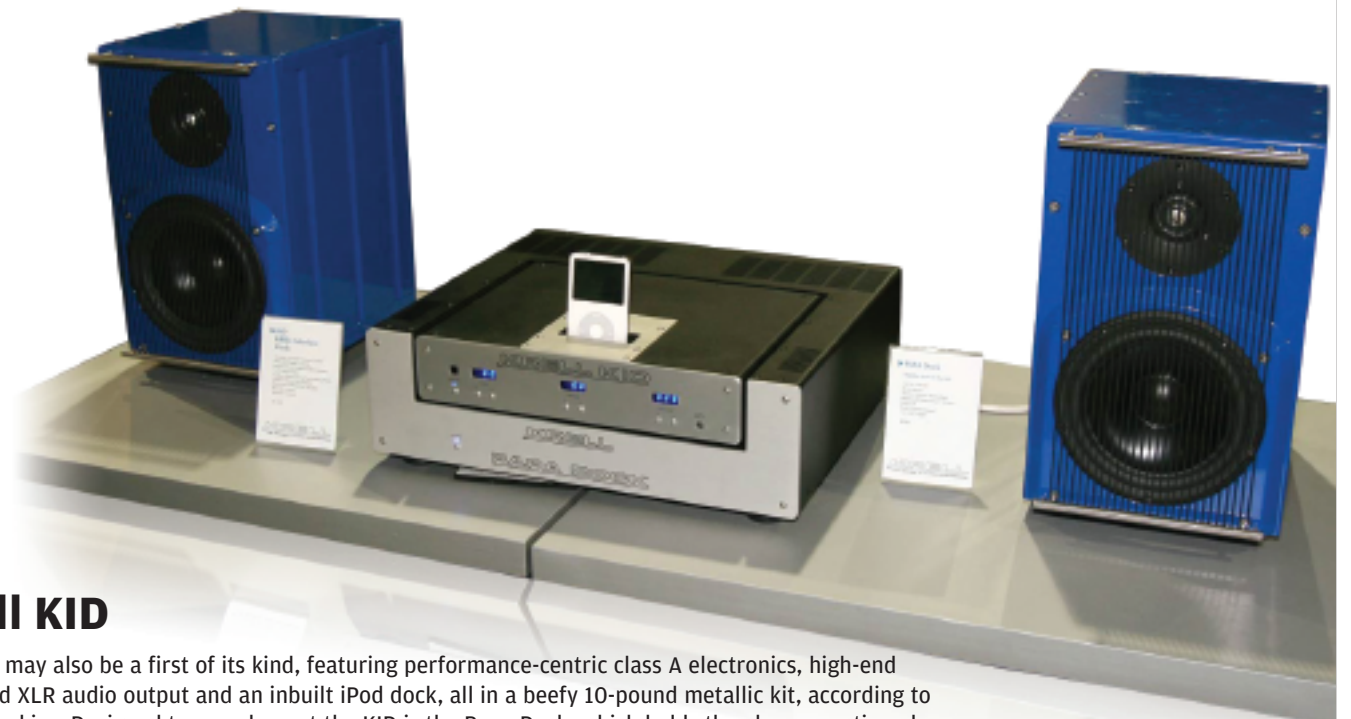
Krell KID

The KID may also be a first of its kind, featuring performance-centric class A electronics, high-end balanced XLR audio output and an inbuilt iPod dock, all in a beefy 10-pound metallic kit, according to Audio Junkies. Designed to complement the KID is the Papa Dock, which holds the above-mentioned deck and provides up to 150 watts of clean high-current amplification for your speakers.

Features include a 40,000 microfarad power supply, physically isolated left and right channels, twelve high current output devices and WBT speaker connectors. The Papa is also auto sensing and powers on when the iPod is connected. So many monies for a system that can only be used with an iPod is too restrictive we feel. Price on the Krell KID is $1,500 and the Papa Dock is an extra $2,500.

So a whopping $4000 on the table for uncompromised audio... has anyone thought that perhaps MP3s don't really offer such quality to begin with?
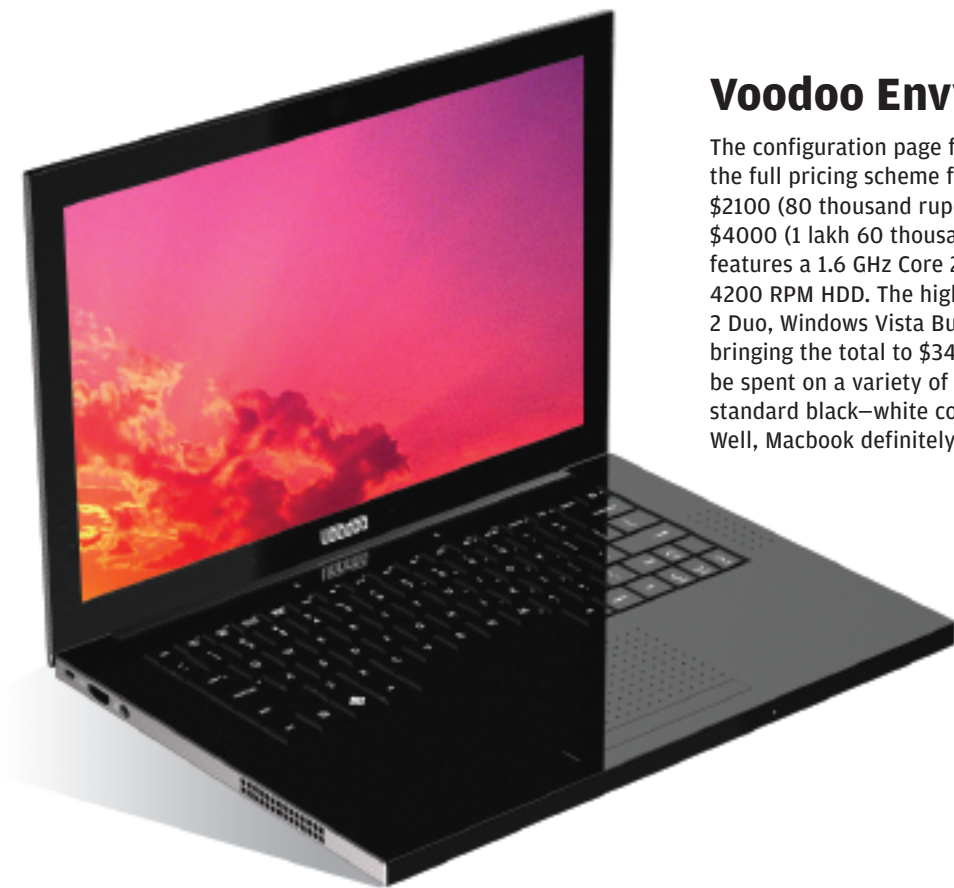
Voodoo Envy

The configuration page for the Voodoo Envy revealed the full pricing scheme for the 133 PC, which starts at $2100 (80 thousand rupees approx.) and goes as high as $4000 (1 lakh 60 thousand rupees). The low end model features a 1.6 GHz Core 2 Duo processor and an 80GB, 4200 RPM HDD. The high-end model has a 1.8 GHz Core 2 Duo, Windows Vista Business Edition and a 64 GB SSD, bringing the total to $3400. Another $600 dollars can be spent on a variety of custom finishes other than the standard black—white costing $500 and flat black $600. Well, Macbook definitely looks cheaper, isn't it?

Game Off!

Q I have a Lenovo laptop, Model No. Y500 77613BQ, bought in the month of July last year. The configuration is:

Lenovo F50X Mainboard, Intel Core Duo T2250 1.73 GHz Processor, 1 GB DDR2 RAM,533MHz FSB, 2MB L2 Cache, Intel 945GM express Chipset-Intel GMA950 with 128 MB Graphics RAM, DVD Burner and I use XP SP2. The problem is that *NFS: Carbon, GTA: San Andreas, Devil May Cry 2 and 3,* etc. don't work, but *NFS: Most Wanted* runs fine. I have tried all the abovementioned games on my friend's computer and they work well. I have updated all my drivers and my computer does not get too hot. My system hangs now and then when I install software or play games. But after 30 seconds or so it starts working properly again. But this is too frequent. Is there any problem with my hardware? Please help me as soon as possible as my warranty will expire by the end of August. Also suggest a suitable antivirus program which is powerful but not heavy on the system.

Abhinav Nair

A Your CPU is quite low-end, and could be heating up when you play these games. You should go to the BIOS and monitor actual temperatures to get an idea of how hot your laptop runs. Running Speedfan (www.almico.com/speedfan.php) on Windows with games running is also recommended. Kaspersky and NOD32 are powerful antivirus programs, but if you do use them, make sure to turn them off while running games or you might have more performance problems than you already have. Our recommendation is Avast!, which is a good performer and low on system resources. You'll find it (and the lates updates for it) on our CD every month.

Get Help Now!

E-mail us your computing problems along with your contact details and complete system configuration to **sos@thinkdigit.com,** and we might answer them here! Since we get many more mails per day than we can handle, it may take some time for your query to be answered. Rest assured, we are listening!

Gone AWOL

Q My disappointing computer is equipped with a Core 2 Quad Q6600, ASUS P5KC motherboard, 2 GB Transcend 800 MHz RAM, 250 GB Seagate HDD, a Sony IDE DVD writer and eVGA GeForce 9600 GT KO graphics card. I have installed Windows Vista Ultimate 64-bit and after several Blue Screens of Death, I managed to install all drivers and updated the BIOS to 18/3/2008 version.

After this, I installed all the updates that came before the Service Pack 1 and later installed *Crysis.* Something has happened since then and I can't open group policy editor, can't launch *Crysis,* can't Add/Remove programs and keep getting a single message every time "A device attached to the system is not functioning properly." Above that the path of the exe file is shown. UAC is active, but isn't functioning. My Quick Heal Security Center doesn't open up, and so on.

Please Help.

Renuka Rajhans

A To begin with, your configuration is a pretty well-balanced system and there should be nothing disappointing about the performance. The initial problems with the BSODs probably had to do with the drivers more than anything else—especially because you are running a 64-bit version of Vista. For the latter problem, try stopping and restarting the UAC from the Users accounts option in the control panel. Your antivirus could also be playing havoc with UAC. Try disabling it and try again.

Automatic Restarts

Q I am facing a problem with my PC. I have Windows XP SP2 running. It restarts automatically after giving the following errors.

```
REPORT BCCode : 24    BCP1 : 001902FE
BCP2 : F78AC544       BCP3 : F78AC240
BCP4 : F762BF54       OSVer : 5_1_2600
SP : 2_0      Product : 256_1
BCCode : 1000000a     BCP1 : 0A040005
BCP2 : 0000001C    BCP3 : 00000001BCP4
: 804E2219    OSVer : 5_1_2600      SP
: 2_0      Product : 256_1
```
Kaushik Mukherjee

More Automatic Restarts

Q I am a regular reader of *Digit*. I have bought a new computer (assembled). It has a Core 2 Duo E8200 (2.66Ghz) with an Intel G33 motherboard. I run Windows XP SP2 without a dedicated graphics card (for now). Whenever I play games or install Vista, in between it shows an error with memory dump and it restarts the computer.

Kindly suggest any remedy for the problem.

Allen Davis

A Your problems are most likely is to do with faulty RAM. Download and run Memtest86+ (www.memtest.org). Faulty power supplies could also be to be blamed.

5.1 Channel System Not working!?

Q I have an AMD Athlon 64 X2 on an ASUS M2N-Sli Deluxe with 2 GB of DDR2 memory and an NVIDIA 7100GS graphics card. I have an Artis s5200 5.1 Channel Audio System. The motherboard has 8 channel support.

Till last month, I was using Windows XP with SP2 OEM. Everything was fine till then and my 5.1 audio system was working properly.

Now I have purchased Windows Vista Ultimate have installed all the necessary Drivers included on the Digit CD/DVD. When I configured my sound system to 5.1 channel on Vista, it worked fine when I checked every channel—rear, front, center and subwoofer. Every channel responded when I clicked on them.
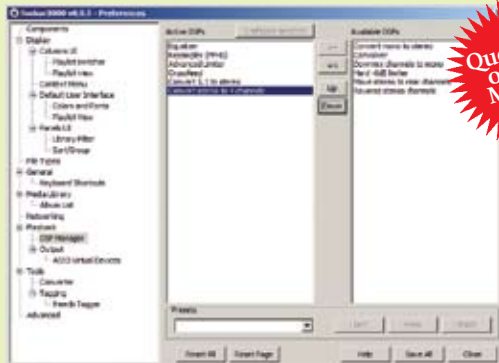
When I play music on media players like Winamp and Windows Media Player, they play the sound tracks only on the front channels. The same goes for games. I have also installed the latest drivers. I have even tried to configure it to 7.1 channels

Foobar2000 allows replicating of front channels to the rear ones

Question of the Month

I have turned the volume up to maximum everything has failed.

Also when I played movies in the *Godfather* game it shuts down due to unknown reasons, says Vista.

Rushikesh

As you know most of the music we listen to is stereo which means only 2 channels work. By default, players like Winamp and Windows Media Player will play the sound only through the front speakers. There is nothing wrong with your system as such. There are some plug-ins which can replicate the sound of the front speakers to the rear speakers as well. Foobar2000 (**www.foobar2000.org**) another audio player like Winamp comes with a plug-in that converts stereo music to 4.1. If you play stereo sound most of the time, then you can try unplugging the 3.5mm cables for the rear speakers from the sound card. If in the games you face the same problem, look for settings in the game as well to set the type of sound setup – headphones, 2.1, 4.1, 5.1 and so on.

The crash in Windows Vista could be due to incompatibility issues of the game or with the drivers installed on your computer.

Request for Linux

Q I have broadband Internet connection and I want to download a Linux operating system. Please give me a solution.

C Satyam

A There are several Linux distributions for all kinds of tasks and users available on the Internet free for download. Some of these can be 100MB in size and some others can fit onto multiple DVDs at times. You should also know that we very often download Linux distributions and put them in our DVDs so you don't have to go through the trouble of downloading them. This month we've given you OpenSUSE 11.0, which is fairly easy for a newbie to get used to.

New System Woes!

Q My desktop system configuration is Intel Core 2 Quad Q6600, ASUS P5N MX motherboard, 2 GB Transcend RAM, 360 GB Seagate SATA HDD, Zotac GeForce 9600 GT, Windows XP SP2. My problem is that when I play games like *Crysis, Assassin's Creed, NFS: Carbon* or any game for that matter, they crash leaving an error message "The program has encountered a problem and needs to close". Sometimes the game even freezes. I have checked my CPU temp in BIOS and it shows 48 degrees Celsius when the computer is idle and it goes upto 58 degrees Celsius while running games.

The same error appears when Firefox crashes. Also sometimes I get a blue screen and the system restarts. Is it a hardware problem?

This happens quite frequently and I have rein-

SpeedFan can detect sensors and display temperatures for components in your PC

stalled Windows XP SP2 some three times so far. How do I check my processor and graphic card temp? I bought this PC very recently. Help me!

Shrey Chauhan

A The Q6600 is in comparison a little hotter than some of the newer Core 2 Duos, but 58 degrees is still a pretty decent temperature. SpeedFan should be able to show you temperatures of your GeForce 9600GT. You haven't mentioned what power supply you own. If your power supply is under 450W, then it is likely the root of all your problems.

This Boot Won't Walk

Q I have a 250 GB PATA hard disk in my PC. I want to connect another PATA hard disk in parallel which has some useful data. When I connect both of them I find a message of boot device error. Please tell me about the jumper settings also.

M K VERMA

A Set the hard drive with the operating system on it as the master and the other hard drive all the data as the slave. For the jumper configuration, you need to look at the top or the back of the hard drive. Next, make sure your boot configuration in your CMOS has been set to the drive with the operating system on it.

Installing Ubuntu is now simpler than installing Windows

The partitioning of a drive is one of the most dreadful moments many users will go through during an installation of a Linux distribution. Space needs to be made, partitions need to be shifted, swap partitions need to be created. All this confusion leaves a lot of the users stranded and people lose data and partitions many a times. Virtualization is the only way of installing Linux without any risks.

Wubi To The Rescue!
One of the new additions in the last few releases of Ubuntu is something called Wubi. Wubi allows you to install Ubuntu on Windows. It isn't just another launcher. Wubi will install Linux on your Windows partitions, into a single folder. That means that there is no need for partitioning.

What Do You Need?
Firstly, you need Wubi which comes along with most Ubuntu releases these days. You can also download the 1 MB executable from **www.wubi-installer.org**. Make sure to download the right version of Wubi for the Ubuntu installation. Wubi can download the entire Ubuntu distribution over the Internet. If you have a fast Internet connection, then you can install Ubuntu without any installation discs. You can also use the ISO file without having to burn it on a CD or DVD. You should also be using the standard desktop version of Ubuntu rather than an alternate disc.

You require a partition with ample space for the distribution. The minimum size for the partition for Ubuntu using Wubi is 4 GB.

Starting The Installation
If you have the downloaded disc image in the form of an ISO file, copy it to the same folder as the Wubi executable. The installation is pretty simple. Double click the Wubi executable and the installer will detect the ISO and start the installation.

This window will ask you to enter a few things. You need to enter a username and password for the OS. Remember this as you will need it to login into the distribution. You also need to enter a size for the distribu-

Installing Ubuntu using Wubi is extremely simple

tion. This will be the space that Wubi allocates for the distribution on the hard drive. Also, choose the location where you want Ubuntu to be installed. A folder will be created in its place with all the necessary partitions as files in it.

Click `Install` and the installation will begin. Ubuntu will make changes to the boot records and an option for booting into Ubuntu will appear the next time you reboot.

Accessing Ubuntu Partitions From Windows
Once you start Ubuntu, you might want to get files that you were working on into Windows. To access files on demand in Windows, you need an application called Explore2fs (**www.chrysocome.net/explore2fs**). Run the application, click on `File > Open Image file`. Browse to the `\Ubuntu\disks` in the location where Ubuntu
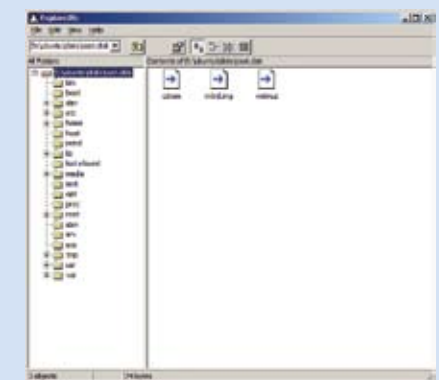
Explore2fs allows Linux file partitions to be read through Windows

was installed. Choose to display all kinds of files and select the partition you want to load. You should be able to view the files in it.

Issues With Using Wubi
There is one problem that some might face while using Wubi and that is that the partition on which Wubi installs Ubuntu is not accessible once you boot into it. If that partition is extremely important and needs to be accessed in Ubuntu, then it is a good idea to create a small partition just small enough for the Wubi Ubuntu installation using a partitioning tool such as PartitionMagic for example. If you want something free, then try GParted (**http://gparted.source-forge.net**). If you have a brand new hard drive, allot a small partition once you have the partitions made for Windows

Gparted is a free disk partitioning tool that can resize partitions as well

and for other data storage purposes. If you don't want to, you can manually mount the partition in Ubuntu.

The other minor issue is with the way Ubuntu is stored on the system. The large virtual disk files will get fragmented over time, so defragging is highly recommended or you might find some minor degradation in the performance of your Linux partition.

Uninstalling Ubuntu
Wubi not only makes installing Ubuntu simple but uninstalling it also made easy. It can be done by removing the program on Windows. Boot into Windows and click on `Start > Control Panel > Add/Remove Programs`. Click on Ubuntu and click on `Change/Remove`. Click on `Uninstall` and Ubuntu will be removed from your computer. ⌧

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Thinkdigit's TECH Q&A Experts

Executables In Nero!

Q I have Vista Ultimate running on my PC, but unknowingly I went and executed an .exe file with Nero Backitup with the option ticked to run all programs with Nero Backitup. Now every .exe file in Vista starts with Nero. I removed Nero and thought that the conditions would roll back but now none of the programs are working. Whenever I click on a program it starts with the Open with option. Please help.

A You can solve it with following steps:
1. Go to My Computer
2. Click `Tools` in menu bar
3. Click on `Folder Options`
4. Click on `File types`
5. In `Register file types` select extension exe. Look at the associated program and you should find it is Nero Backitup.
6. Select the extension and click on `Delete`.
7. Restart your computer

Jagdeep Virdi (Tech QnA Expert)

Q I have a Pentium 4 2.66 Ghz PC with a 915 chipset Mercury motherboard. I have installed Windows XP SP2. But due to electic problems my motherboad is dead. I changed my motherboard to an ASUS 945 chipset P5G-MX. Can I use my harddrive with the same installation of Windows XP. I don't want to format my HDD due to some important data on it. Is there any possible way to use same installation of Windows XP.

A Yes. Of course, you can do it. While installing the OS, you should choose the repair option instead of installing. Then, you won't have to format your drive and reinstall Windows. You can easily get your personal data back.

N.Vinay Kumar (Tech QnA Expert)

Q In my computer a data execution error message pops up when clicking on any file. I want to disable it. Please help.

The Windows XP installer gives you an option to repair existing installation

A If you run Windows XP SP2, then it may be caused by Data Execution Prevention (DEP). Turn off DEP in the XP Control Panel
Go to `Start > Control Panel > System`. `Go to Advanced > Performance > Settings > Data Execution Prevention` tab. You'll see two options in that window click the second option that says `Turn on DEP for all programs and services except those I select`.
When you are finished with that then click the `Add..` button it should be visible at the bottom of the box. Find `C:\Windows\ Explorer.exe` and add it to that list. It will give you a warning just ignore it and click ok. Then, reboot and if you try it everything should work just fine.

Jagdeep Virdi (Tech QnA Expert)

Q I have installed Symantec Antivirus. Whenever my computer starts, it show a message "can't find script to the file virsremoval.vbs". How do I stop it?

A That is a worm virus find the folder where it is residing then use the `cmd` (DOS) terminal to navigate to that folder where the file resides.
In the command prompt, change the file's attribute by typing
`attrib -h -r -s virusremoval.vbs`
Next, delete the file by typing
`del virusremoval.vbs`
Performing these steps will resolve the issue.

Daniel (Tech QnA Expert)

Q I have an Apacer AU524 MP3 player. It cannot be switched on and it isn't getting detected by my computer, which runs XP.

A Your player should show up as a removable device in `My Computer`. To check if it's connected to your pc or not, right click on `My Computer` and click on Manage. Now, click on `Disk Management`, check if you an see a removable drive of the capacity of your player. Select the portable USB drive and right-click on it and go to "change drive letter" then assign a new drive letter to it such as x, y, or z to avoid any conflicts (if there any). If there is no drive visible in disk management, check out the pins on the USB cable and the USB interface on the player for any signs of dirt or damage. There's a high probability that either there is a hardware problem (your player), or with the usb cable, which can be repaired or replaced using the warranty.

Aditya (Tech QnA Expert)

Fill 'er Up!

I'm running out of hard drive space, and fast

We at *Digit* often become victims of storage concerns—we stockpile our DVD content, which inevitably led to a sudden dearth of storage space. A trip to Lamington Road was in order: we needed to pick up a couple of large hard drives, as well as an external 2.5-inch solution.

A 2.5 inch notebook HDD is the *de facto* preference for any sort of portable usage because they function with just a USB connection and don't require an additional power connection like their 3.5 inch siblings—which are also bulkier. When hunting for a portable drive, you can either buy an external solution from Transcend or Western Digital, (the two most widespread brands), or you can buy a notebook hard drive and a separate external chassis for it. Such a chassis is available from brands like Transcend (Rs 700), to smaller brands like Zippy and Tech-Com (as low as Rs 200). I also saw an E-SATA external from Zippy, priced at Rs 800, although this doesn't feature USB. Notebook hard drives themselves are available from Hitachi and WD priced nearly identically, with WD enjoying a small premium in the range of Rs 200 over Hitachi. The prices of Hitachi's 80, 120 and 160 GB 2.5 inch HDDs are Rs 1,950, 2,400, and 2,850 respectively. For larger sizes 250 and 320 GB HDDs are available from WD for Rs 4,200 and Rs 6,500. A better option according to me is to simply buy a readymade external solution like Transcend's StoreJet series or WD's My Passport series. Of the two I prefer WD solutions for being more dependable as well as better looking. They also have an Elite series, which features a bet-

ter finish, a capacity gauge, auto sync and data encryption, automatic data backups and remote access software, although these command a premium of around Rs 3,000 over the regular WD series of the same storage capacity. A 160 GB WD My Passport drive costs around Rs 3,200, while the 250 GB version is priced at Rs 4,600. The 320 GB version is priced at Rs 6,650 and makes sense for only monstrous data hogs. Comparatively, Transcend's solutions are available in capacities of up to 250 GB, and the prices are around Rs 400 less than WD.

For the 3.5 inch solutions, the market leaders are Seagate and WD (not in that order).

Now for the prices—the new Seagate 500 GB 7200.11 series, with 32 MB of buffer was available for as low as

Rs 3,900—amazing! WDs own 500 GB (WD5000AAKS) was available for as low as Rs 3,650, although the Seagate is much faster. The slim 250 GB Seagate (7200.10 family) was available for as low as Rs 2,300, and with a single platter, this HDD is cool and fast—ideal for gaming PCs or even HTPCs. WD's 320 GB (WD3200AAKS) is also available for Rs 2,750 and is an alternative to the 250 GB Seagate. Their 250 GB offering is a mere Rs 2,400, but the cheaper Seagate 250 GB is also much faster, so this one is largely redundant. WDs 640 GB offer-

ing is something new, and built using two 320 GB platters offers one of the highest areal densities available, and is a stunning performer. At Rs 4,600 its very affordable for someone looking for a high-end PC this is a must buy. WD also has a 750 GB offering, that although a bit slower than their 640 GB version offers 110 GB more storage for a mere Rs 900 more (Rs 5500). Seagate has a 750 GB offering of their own, which is supposed to be as fast as the WD 640 GB drive but much costlier at Rs 6,500—not worth the Rs 1,000 premium. 1 terabyte drives have also arrived with WDs 1 TB version costing Rs 9,100, and Seagate 7200.11 series costing around 9,550, although very obviously price per GB is not in favour of such drives, and buying two 500 GB HDDs makes more sense monetarily. WD does have a fast performance series titled *black* (the other two families of drives being blue and green series), however the black series available in only 750 GB and 1 TB capacities with caches of 32 MB wasn't available in our markets at the time of my visit. Maxtor and Hitachi aren't selling much, therefore prices aren't too competitive. I did get the pricing of a Hitachi 750 GB—Rs 6,000.

The cost per GB of the WD6400AAKS is the lowest (best) at Rs 7.19, while the WD7500AAKS comes second at Rs 7.49. Seagate's nearest entrant is their 500 GB 7200.11 series at Rs 7.8 per GB. The 1 TB drives are totally not worth the premium you pay for the extra 250 odd GB.

I picked up 2 WD7500AAKS drives (blue versions)—1.5 terabytes of storage ought to be enough for now, and speed wasn't really that important since these were for backups. I also chose the WD My Passport 160 GB from the same vendor. I managed to get the lot for Rs 13,200. For personal use, I'll wait for the prices of the Seagate 750 GB to fall; that, and the entry of the WD Black series. ⊠

agent001@thinkdigit.com

HDD Price Per GB				
Brand	Model No	Size (GB)	Price	Cost Per GB (Rs)
Seagate	7200.11 ST31000340NS	1000	9,550	9.55
Seagate	7200.11 ST3750330NS	750	6,500	8.67
Seagate	7200.11 ST3500320AS	500	3,900	7.80
Seagate	7200.10 ST3250620NS	250	2,300	9.20
WD	WD 7500AAKS	750	5,600	7.47
WD	WD 6400AAKS	640	4,600	7.19
WD	WD 5000AAKS	500	3,650	7.30
WD	WD 2500AAKS	250	2,400	9.60

Ask Agent 001

Q I am going to purchase a PC in the first week of August. This PC will be used for gaming and video editing, although I may do some programming. My budget is around Rs 55,000. Should I opt for a dual core or a quad core? 2 GB or 4 GB sf RAM? Please suggest a good 22-inch monitor as well. Also, suggest a good cabinet and power supply. What is the difference in performance between DDR2 800 MHz and DDR2 1066 MHz? How much would a good UPS cost me?

Samir Ranjan Ray

My recommendation is as follows:

PC Config

Component	Recommendation	Price
Processor	Core 2 Duo E8400	Rs 8,400
Motherboard	Abit IP35-E	Rs 5,200
RAM	4x1 GB DDR2 800 MHz (Transcend)	Rs 4,200
Graphics Card	GeForce 8800GT (Gigabyte)	Rs 10,800
HDD	Western Digital WD 5000 AAKS	Rs 4,200
Monitor	Dell E2208WFP	Rs 15,500
Cabinet	Cooler Master CM 690	Rs 4,000
Power Supply	Corsair HX520W	Rs 5,300
	Total	Rs 57,600

In case the budget of Rs 55,000 is not flexible, I suggest you opt for a slightly cheaper processor (Core 2 Duo E6750), or even look at 2 GB of RAM in lieu of 4 GB. This will get the job done, but if you can splurge a bit more to purchase exactly what I've suggested, I'm sure you won't be disappointed.

As for your other queries, DDR2 800 MHz memory is not more than 8 per cent slower than DDR2 1066 MHz memory. It is possible to run faster (1066 MHz) RAM at tighter (faster) timings, in which case 1066 MHz DDR2 RAM can even be run at 800 MHz, where it can outperform DDR2 800 MHz memory that runs at looser timings. For a UPS, look at brands like APC and Numeric. I've personally used an 800 VA Numeric UPS for more than three years without any problems.

Q I want to buy a 2 GB DDR2 RAM for my Compaq Presario v3402tx laptop. The RAM details are somewhat like this—PC2-5300 DDR2 SODIMM slot. Please tell me the pricing of 1 GB, 2 GB and both frequencies (667 MHz and 800 MHz).

Abhishek Patel

Look for Kingston or Transcend memory. DDR2 667 MHz will suffice and you needn't look at 800 MHz memory. 2 GB of notebook memory should cost you around Rs 2,600 (DDR2 667) and Rs 3,200 (DDR2 800).

Q I have an AMD Athlon 3000+, MSI RS480 motherboard, 512 DDR1 RAM with 160 HDD. I love playing PC games, so now I'm confused about whether I should upgrade my PC or go with a graphic card, to avoid the upgrade. Please suggest a solution.

Jaidev Jindal

If you want serious eye-candy, forget about your current PC. I'd recommend a processor, motherboard, RAM, and graphics card upgrade. Along with this, you may need to upgrade your SMPS as well. For the motherboard, look at the Abit IP35-E that I've suggested for question 1. Opt for 2 GB of DDR2 800 MHz memory, with either an E6750 or E8400 Core 2 Duo processor. If you want to enjoy games at low to medium resolutions, then look at the NVIDIA GeForce 8600GT chipset-based solutions for around Rs 4,500. For a slightly better gaming experience, the GeForce 9600GT chipset (Rs 8,000) is a good option. The GeForce 8800GT (Rs 11,000) offers the best bang for buck. For the power supply, look at Cooler Masters 650 Watt extreme PSU, which will cost Rs 3,500.

Q I am a Technical Analyst in an IT company. The software I run needs at least 2 GB of RAM. So I need a laptop with considerable processing and 2 GB of RAM at least. I would prefer a good graphics solution, so that I can play games occasionally. I could use a few video connectivity options for viewing movies. I do not have any preference for screen size. My budget is upto Rs 55,000. Anything easily available and serviceable in Kolkata would be a plus.

Sagnik Banerjee

I have two recommendations. One is HP's DV2701 Special Edition, tested in our June issue. At 14.1 inches, it's compact and great to look at. Powered by a Core 2 Duo and a GeForce 8400GS, you also get an HDMI port for large screen connectivity. Another recommendation with a more powerful configuration would be the Dell XPS 1530, which has a better processor and graphics card, but a larger 15.4-inch screen. Both are available with 160 GB HDDs.

Q I want to buy a PMP which can read e-books too. Please suggest if it is wise to buy a gadget with both capabilities, or should I buy two specialised devices? I read about the Cowon D2 in *Digit* and my brother-in-law checked this out, but he didn't like the sound quality. Now I'm confused, so please help me out. My budget is under Rs 12,000.

Sapna

Did he check the sound quality of the Cowon D2 on the default earplugs? Or possibly was the piece damaged in some way? The D2 is one of the best sounding PMPs around and it's impossible not to like its sound quality. Do try to use the D2 with a decent set of earplugs like Creative's EP630 (Rs 800), which will allow the D2 to show its stuff off. I can assure you the award for the best PMP in its category wasn't awarded lightly, and you can go ahead and buy it. It's a very feature-rich device that will be a superb e-book reader. ⊠

> **⬈ Ask Away!**
>
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TIPS & TRICKS

SECRETS THAT KEEP YOU AHEAD IN THE RACE

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THE BAT!

While there is no denying the fact that Microsoft's Outlook is the best e-mail client and works like a charm with Exchange server. The Bat! has its own features that are hard to match and makes for a superb e-mail client, especially if you don't want the complete PIM functions offered by Outlook. Here are some tips for the Bat! .

Creating OpenPGP Key

If you prefer your messages to be encrypted and electronically signed, you need to setup a personal OpenPGP key. Bat! allows you to do so without any fuss.
1. From the main menu, select `Tools > OpenPGP` and then click on OpenPGP key Manager.
2. In the Key manager dialog box, select `Keys` and then `New Key`. Click `Next`.
3. Enter your name and e-mail address and click on `Next`.
4. Your key should be at least 1024 bits.
5. Next select the key pair expiration date—default is one year. If you plan to change it quite often, you may do so by selecting the date from the drop down box and then click `Next`.
6. Enter a Passphrase that should be a mix of alphabets and numeric characters for maximum strength. Click `Next` and then `Finish`.

Adding A Contact To Your Favourites

Though we all mail many people, to some we send a lot of email. The Bat! can be made to differentiate between a normal user and that favourite user who you mail a lot. Here's how you do it.

1. Go to `Tools > Address book`.
2. In the Address book, make sure the Checkbox in the favourite column is checked.
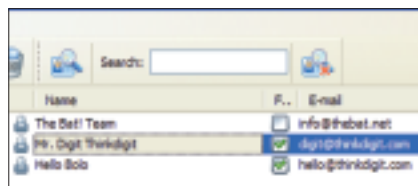
Select a check boxes in front of each contact to be added to your favourites

3. The Favourites column is shrunk and hence is displayed as F.

Exclude Folder From The Bat!'s Mail Ticker

Unread messages, live stock quotes, etc are displayed in Bat! as MailTicker. However, if some folders are not excluded, even spam messages will run across your screen as tickers.

To exclude certain folders, such as Spam, you need to follow the steps given below:
1. Right-click on the folders you don't want to include in the MailTicker and select `Properties`.
2. In the `Properties` page, under `General see Options`.
3. In the first checkbox, `Show unread message on MailTicker` should be unchecked.
4. click `OK` to save the changes.

Forward A Message As An Attachment

The Bat! allows forwarding any e-mail in two ways—inline and as an attachment. The second method retains the original formatting intact and hence proves better when sharing the e-mail.
1. Open the message you want to forward. From the main menu, select `Alternative Forward`.
2. Put in the address of recipient, subject and edit the message. Apart from attaching the message, Bat! also includes as the message inline with the body. Delete it if you want.
3. Press the `Send` button to send your message.

Quickly Showing Messages From One Sender

If you want to display a message from just one sender in the mailbox, there is no need to use the search function.
1. Hold down the [Alt] key while clicking on the name of the sender of your interest in the form Column.
2. To return back to displaying all messages, from the main menu click View display and then select All messages

How To Make The MailTicker Font Bigger

The MailTicker display arrival of new mail on a small ticker that runs at the bottom of your screen. By default, the font size is small. If you want to increase the font size, follow the steps given below.
1. From the main menu, select `Options` and then click on `Preferences`.
2. Under `Messages` click on `MailTicker` to change its properties.
3. Under Font, click on `Change..` button and select the font you like.
4. You can also change other properties of the mail ticker from this page.

Automatically Deleting Duplicate Messages

At times, POP severs can act funny and can send two copies of the same mail. To remove duplicates of the same mail, The Bat! has a ready-made feature:
1. Click on the Inbox, or on the folder where you have multiple messages, and then from the main menu select Folder.
2. Under Folder, select Remove duplicates and that should do it all.

Message Parking

Message parking allows you to flag important messages so that they can't be accidentally deleted. In the message viewing pane, you will come across a column marked P. Click on it to mark the message as parked.

Remind Yourself About An E-mail Later

If you get a lot of e-mails that you want to reply to at some later time, more often than not, you'll forget. You can use The Bat! to remind you of such mails.
1. Right-click on the message you want to be reminded about. From the context menu, select `Specials`.
2. Under Specials, select `Remind later` and select `Tomorrow` or a suitable time frame.
3. In the Advance box that opens, select the appropriate condition that you
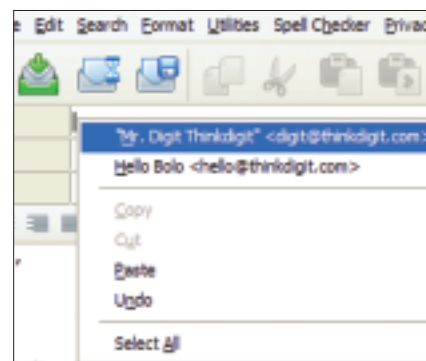
Adding a contact is simple and easy

want The Bat! to follow. For example, select `Not replied`, which will open the message again if you forget to reply within 24 hours.
4. Click `OK`.

Sending Mail To A Favourite Contact

Once contacts are added to your

Adding custom Header lines to Emails

Favourites, you can e-mail them instantly. There are two methods for this.
1. The button for Create a new message has a small downwards pointing arrow—click it.
2. Clicking on the arrow will list all your favourite contacts. Select the one you want to send an e-mail to.
3. You can also press

`[Ctrl] + [N]` to create a new e-mail message. In the `To:` field, just right-click to list all your favourite contacts and then select the appropriate one.
4. This also works with the `Cc:` and `Bcc:` fields.

Add Customer Header Lines To E-mails

There are many applications that uses custom e-mail headers as standardise way of exchanging information. The Bat! allows you to create custom header files, which you may use to test such applications, or just show off your skills.

All e-mails you send already have standard headers such as Subject, To, Cc, Bcc, etc. In order to create a custom you have to precede it with "X-" to make sure it doesn't conflict with any standard headers.

To add custom header lines to e-mails in The Bat!
1. Go to `Options > Preferences`. This will open the preferences dialog box.
2. Next, go to `Messages > Message Headers`. Click `Add` to add a Header field.
3. Type the desired header name under both RFC Name and the Display this header filed as fields.
4. For example let's put `X-Thinkdigit` as our custom header.
5. Make sure `Allow to edit this field` in the Message Editor is checked.
6. Click `OK`, twice. Since The Bat! doesn't allow you to specify standard values for extra headers, you have to make sure you enter a value when you send the mail.
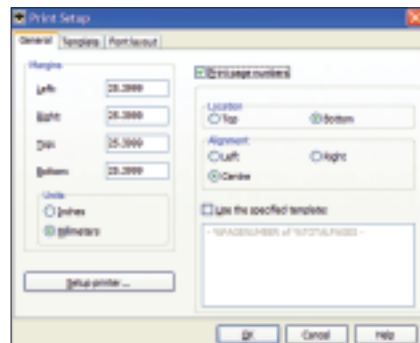
Print E-mails with page numbers

7. When you create a new message, select View from the menu. Click the desired custom header you just created to make sure it is ticked.
8. Now enter the value in the header's field. You can find the field, just below the To: and Cc: field. Scroll the header area if you don't see the Custom field.
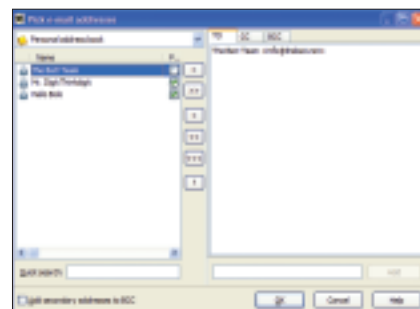
The address picker makes life easier

Adding Page Numbers When Printing An E-mail

To print an e-mail with page numbers, do the following.
1. Select Message from the menu and then click on Page Setup.
2. Tick the checkbox that says Print page numbers and if you want to customise location and alignment you can do so by clicking the radio buttons. Click `OK` to complete the action.

Add Recipients Quickly Using The Address Picker

Repeatedly typing e-mail addresses can lead to errors (person with same first name) hence selecting the right

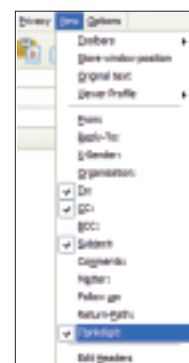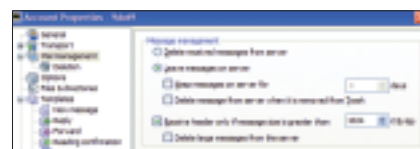**Setting up large message filter**

recipients with a few clicks is recommended. Here's where the Address Picker comes handy.
1. When creating a new message, in the To:, Cc: or Bcc: field, hit `Enter`. This will automatically open the address book.
2. Select the right contacts and use the the arrow keys to add them to either the To:, Cc: or Bcc fields.
3. Click `OK`.

Avoid Downloading Overly Large Messages

Once in a while, we get e-mail with a large attachment that takes forever to download. The Bat! Saves a lot of trouble by making only the header available for messages that exceed a certain size. Here's how you configure this feature.
1. Select `Account` from the menu and then select `Properties`.
2. In the subsequent window that opens select `Mail Management`.
3. Then under Message Management,
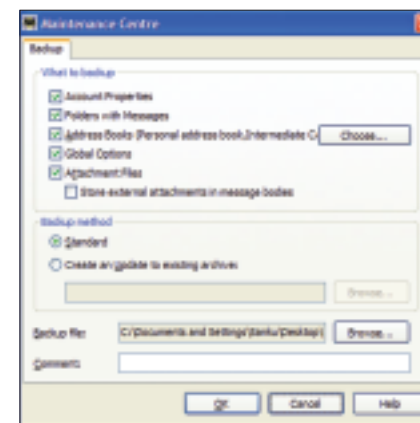
Watch the size of your messages

make sure `Receive header only if message size is greater than` is selected.
4. In the adjoining space, key in the size limit. 1 MB or 1024 KB is a good size to start with. Click `OK`.

Backup Mail, Contact And Other Details In The Bat!

Data backup is important and The Bat! allows you to backup your e-mails, contacts and other data in a very simple manner.
1. From the menu, go to `Tools > Backup`.
2. Make sure the checkboxes next to the type of data you like to include in the backup is selected.
3. In the Backup Method, leave the selection as Standard.
4. Use the Browse button to select the place on your hard drive to save your backup file.
5. Click `OK`, select the accounts you want to include in your backup and click `OK`.
6. If you plan to protect the file, then select `Protect the archive with a Password` checkbox and enter a suitable password in the given field.
7. Click `OK` to complete the action.

Change The Account Used When Sending E-mails

You might have more than one accounts being handled by Bat! When sending e-mails Bat! automatically takes the active account. For some reason, if you want a different account to be used, you can configure Bat! to do so.
1. Press `[Ctrl] + [N]` to open a new message window. In the `message edit window` select options and then click on `Active accounts`.
2. Select the account you want to be used for sending the e-mail. If you
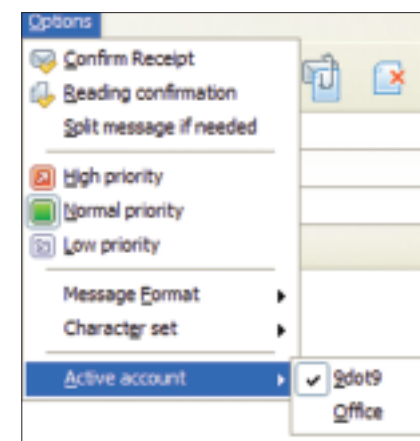
Setting the Active account

haven't typed anything, the change will also reflect in the template used, that is, e-mail signature, etc.

Check All Accounts For New Mail Quickly

If you are accustomed to Microsoft Outlook, you will involuntarily press `[F9]` to check for new messages. But in Bat!, that shortcut doesnt work. Use `[Alt] + [F2]` combination instead. You can also configure The Bat! for automatic periodic checking for arrival of new e-mails. You can do so on a per account basis, which comes handy when one account has high e-mail traffic but the other might require occasional checking.
1. In the folder list, that is, where you see the Inbox, Outbox, Sent mail,etc list on the left hand side of the screen, select the account name.
2. Then select Accounts from the menu and click on properties.
3. In the Properties page, go to Options tab and under Mailbox Checking make sure the checkbox for Periodical checking each is selected.
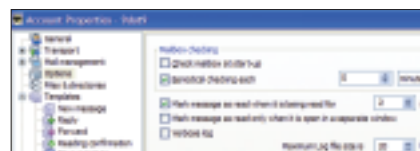
Choose how often you want to check for mails

4. In the field for minutes, give appropriate value. If the traffic is high, set it to check every 5 minutes. Click `OK` to complete and save the change.

Collect All Attachments In A Separate Directory

You can save all attachments received

on a particular account to a separate directory on your hard drive where you can access them directly.
1. In the folder list select the account name you want to apply this feature.
2. Go to `Accounts> properties`.
3. Next, select the `File and Directories> Properties` page, under see the Attachments section.
4. Under Keep attachment Files select Separately in a special directory option.
5. Use the Browse button to define the directory of choice and click `OK`.
6. Repeat steps one to six for all other accounts.

Keep attachments separately

Compose New Message With Bat! In System Tray

The Bat! can be minimised to be in the system tray and yet have some of the critical features available handy. You can compose a new message without displaying the main Bat! interface. When Bat! is in the system tray, right-click on the

Compose mails quickly

Bat icon and then select New Message. This will open the compose new message page.
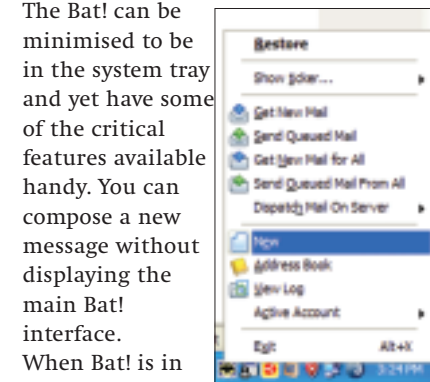
Compress Folders

In Bat! when you delete a message, it is simply marked and not displayed. This particular feature is done to speed up the interface as deleting a message takes longer time than just masking. However, over time a lot of space is wasted, especially if you get a lot of spam. This is how it is done;
1. Select any folder you want to compress, for example, Inbox, Sent, Outbox, Trash, etc.
2. From the Folder menu select compress.

KMPlayer

A 30 minute exploration into KMPlayer—the underdog of free media players

Rossi Fernandes

KMPlayer has been around and it is well known for being an alternative for viewing media in place of Windows Media Player that comes bundled with every Windows operating system. There are other alternatives but they are either too simple or too slow because they too many features. KMPlayer finds itself in between these two. It is also free and can be downloaded from **www.kmplayer.com**. You can find it in this month's CD/DVD.

Switching Quality And Performance Presets

Almost all of the media we view has been compressed to keep the file size small and in this process there is some visible quality loss. While some users would like to use enhancements to improve this, there are always some who need the best performance because of their slower computers. There are presets that can be enabled which can either lower system resource consumption and some which can improve quality. These presets can be enabled by right clicking on the interface and then on Video (Advanced). You can choose from Preset: Speed, Normal and Quality.
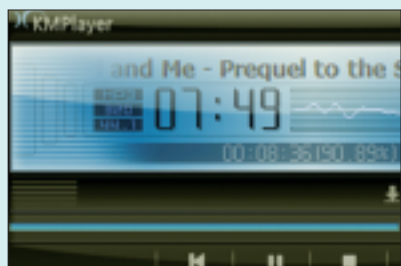
KMPlayer has all the necessary features for being a dedicated audio player

Using KMPlayer as a music player

Like any other media player, KMPlayer can also play audio files of all kinds. When you drag and drop a music folder into KMPlayer, it immediately transforms its interface to something similar like Winamp.

Loading Winamp Plugins Into KMPlayer

KMPlayer can even also pick up Winamp plugins and skins from the Winamp folder. This means you can use visualizations and other effects plugins in KMPlayer without having to sacrifice anything.

Open KMPlayer's Preferences window by right clicking on the KMPlayer interface and clicking on `Options > Preferences`. Click on Plugins. Here you can choose on the type of plugins you want to use—Input, Audio and Video DSP, Visualizations, and so on. Click on the button next to the mentioned path and select the one with the Winamp plugins—`\Program Files\Winamp\Plugins`. The Winamp plugins should be visible in the list. To change the settings for any of them, click on them and click Setup.

Selecting Decoders For Formats

There are times when we might want KMPlayer to handle all the formats and codecs by itself. Some users may have bought commercial decoders and would want to use that. KMPlayer gives easy access and allows users to change decoders for all kinds of formats. Click on Preferences and then on Filter Control. Click on Internal Video Decoder and then uncheck the codecs and formats you don't want KMPlayer to handle, then click on External Video Decoder and select the ones you want to use from the dropdown menus. External decoders not visible can be added by clicking on the External Decoder Search button. Repeat the same steps for the audio formats.

Turning On Image Quality Enhancements

We have talked about enhancements that people like using to improve the image quality in videos. All the filters available can be configured by starting KMPlayer's Preferences window and then clicking on Video Processing. Enabling and disabling of these filters can be done quickly by right clicking on the KMPlayer window and then on the filter of your choice under the Video (Advanced) submenu.

One of the filters worth enable is post processing which has the deblocking features in it. It must be said this is a very CPU intensive filter but its main purpose is reducing pixilation in videos of very low resolutions and quality playing on a larger screen. There are similar features for audio such as normalisation and resampling of tracks.

Colour Correction

Very few monitors give you the perfect colour so some amount of colour adjustments might be required. The adjustments can be made by clicking on Colour Controls in the Preferences window. You can choose from a hardware or software colour correction technique. Once that is done, you can make changes to the colours levels, saturation, brightness, contrast and gamma.
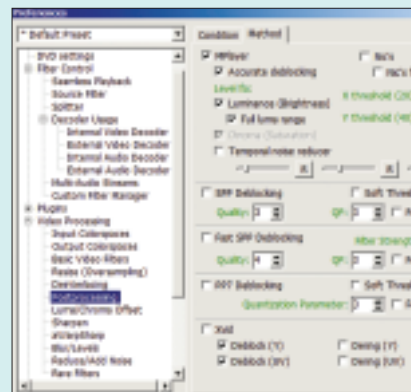
Deblocking is one useful feature that can reduce visibility of pixilation

Capturing Audio And Video

KMPlayer can grab screenshots like any other advanced media player but it can also grab audio and video tracks. This is done by right clicking on the KMPlayer window and then on Capture. Here you can choose to capture screenshots, audio or video. Advanced features such as setting up the codec for encoding while capturing is also available but that requires a pretty high end system. There's even a feature that allows you to create a storyboard out of a video.∎

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This will scan the current mailbox for any deleted mail but are still present unseen and deletes them permanently.

Connect And Disconnect Automatically

Not everyone is online 24 hours receiving mail, especially when you are charged by usage time. Connecting to the Internet automatically to retrieve mail and disconnecting when the messages are downloaded is one useful feature provided by Bat! to configure this feature follow the steps given below.
1. From the menu, select `Options` and then click on `Network & Administration`.
2. Select `Dial-up networking connection` and in the dropdown box select the dial-up connection you want the Bat! to use.
3. Tick the checkbox `Auto-disconnect` after mail transmission and click OK.

Creating A Message Filter From An E-mail

The Bat! has probably the most versatile and powerful messaging filter of all clients and it can be used to automate most mundane tasks. This tip will allow you to create a filter from an e-mail.
1. Click and select the message you want to use as the template for creating the filter.
2. From the menu, select Specials and then click on Create filter.
3. Specify a name for the filter, and then use the criteria on which the message has to be detected, that is, sender, subject and recipient.
4. Select when you want the filter to be applied, that is, Incoming mail, outgoing mail, etc.
5. Select the folder where you want the message to be moved. Click OK to complete the change.
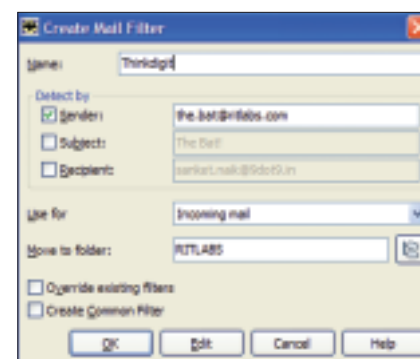
Setting filters is also easy

Perform Folder Maintenance

Folder maintenance refers to routine cleaning and fixing of mail folders which needs to be done to ensure Bat! runs smoothly. Bat! has its Folder Maintenance Centre built-in, which can perform some pre-defined checks and tasks.
1. Form the main menu, go to `Folder>Maintenance centre`, which opens a page with options.
2. On the page that opens all mail folders from various accounts are listed, select the one on which you have to perform the maintenance task.
3. In the `Actions to perform`, tick all the four checkboxes and click on `start`. Once done click on `Close`.
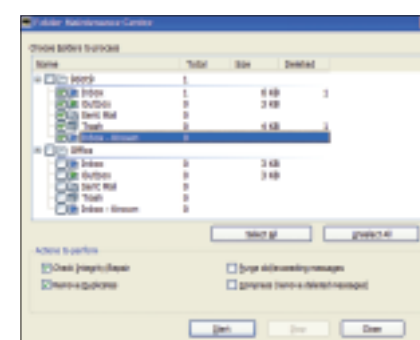
Fixing errors automatically

Reply Without Quoting The Original Message

Sometimes you need to reply to a message without quoting the original message. We often select and delete the message, but Bat! offers a simple solution for this.
1. Select the message you want to reply without quoting the original message by opening it in its window.
2. Select Specials from the menu and click on `Reply Without Quotation` and that should do it.

MOZILLA THUNDERBIRD

The free e-mail client from the makers of Firefox makes an excellent choice for homes and personal use. Here are few tips to make a pro at using it.

Access IMAP Email Inbox Offline

IMAP's flexibility can be extended by making it available offline. This feature comes handy where you are travelling to a place with no Internet access and would need access to you mail. For this you need to tell

Thunderbird to make your inbox to be made available offline.
1. Go to `Tools>Account Settings` and go to the desired IMAP account
2. Select the Offline & Desk Space category and make sure `Make the messages in my inbox available when I am working offline` is checked. Click OK.
3. To go offline, go to File>Offline and then select `Download/Sync Now`.
4. Make sure Mail messages is selected under Download / Sync the following:, also check Work offline once download/sync is complete. Click OK.

Adding Senders Quickly To The Address Book

A dirty, but quick way of building your e-mail Address book is to add e-mail address from their e-mail directly. Mozilla Thunderbird allows doing so in just two mouse clicks, here's how:
1. Open any e-mails you have received and look out for the From: header.
2. Right-click of the highlighted name or e-mail address and from the context menu that appears select `Add to Address book`.
3. Edit the card and enter other relevant information.
4. Click on OK, to save the changes done to the card.

Avoid Downloading Large Messages

If you are on dial-up or slow Internet connection, it is advisable to leave a large message on the server and save
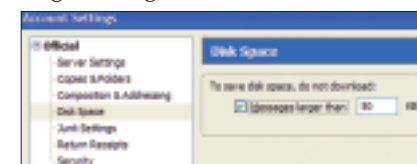
Save time—download only headers

your POP account from getting stuck. Once configured, Thunderbird will truncate large message and will get just the header. If you want to read the full message you can do so later by using the link inserted at the end of truncated message.
1. Go to `Tools>Account Settings`.
2. Go to Disk Space sub-category of the e-mail account.
3. Make sure `Do Not download messages locally that are larger than` is selected.
4. Enter a maximum value for the message size. Default is 50 KB, you can increase it as per your liking. Click OK to save the changes.

MicroTik The Dude
The Dude watches All

Rossi Fernandes

Monitoring networks is required to be done in organisations of all sizes from time to time. A network monitoring utility can also be used by an ISP to pinpoint problems with the network or possible troublemakers. We look at Wireshark and in this 30 minutes expert section, we're looking at MicroTik. Like Wireshark, it too is free and is available for download at **www.mikrotik.com/thedude.php**.

Mapping Your Network
Discovering the network means the structure of the entire network is scanned and a representation of it is displayed on the screen. When you first run The Dude after installing, the first prompt requires you to confirm discovering of the network. To look at the map of the network at any given moment, double click on the Local Map item under Network Maps.

Manually Mapping The Network
If you think that the automatic mapping feature doesn't map your network as you'd like it, you can create your own mapping. You can do this by creating devices and links between using the Add button on the toolbar. Custom background images can be used which can be particularly useful for ISPs mapping their network of customers. A map or a Google Maps snapshot can make things much simpler.

Exporting Maps
For many, just the ability of The Dude to be able to generate a map of the
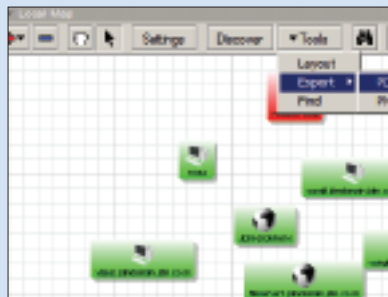
Network maps can be exported to formats such as PDF and PNG

network might be special. The software can be used to export the scanned network structure into an image or a PDF file. Click on the window with the network map on it. Click on `Tools > Export > PDF` or PNG to export the structure.

Filtering Devices List
If your network has many machines on it and you are looking for PCs of a particular kind, say a web server or mail servers, it can be painful sorting and browsing through the endless list. To see the entire list of devices, click on the Devices item on the left pane. On the right top of the panel, you will find dropdown menus for the status and type of device. Set the conditions and the list will be filtered as per your requirements.

Quickly Changing Window Components
All of the features of The Dude appear in panels windows within the primary window. The various modules of the program can be put into any of the panels by clicking on the dropdown menu on the left top of the panel. Modules can also be
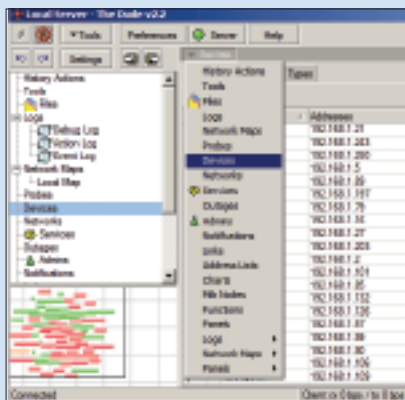
Functions of each of the panels can be changed

dragged and dropped into any of the other panels. A similar list is available for devices and the services running on them which can be found in the Services item.

Backing Up And Restoring Settings
All the settings in The Dude can be saved for use at a later time if any issues or confusion arises. When you are pleased with the way The Dude has been set up, click on the Export button on the toolbar on top. Enter a name for the file and save it. Similarly, importing of the settings file can be done by clicking the Import button. ∎

Getting Notified Of Events
Events in The Dude can be sent to the

Server Configuration
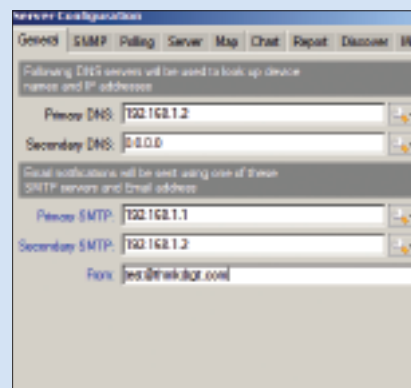
KMPlayer has all the necessary features for being a dedicated audio player

administrator using e-mail and some other methods. E-Mail is one of the simpler things to set up. Click on the Settings button on the interface. The General tab has a section for E-mail notifications. Enter the primary and secondary SMTP servers that you want to use and an e-mail address for the software itself. Click OK.

Another way to communicate with the application is to use the web interface feature. First open up the Settings window by clicking on the button. It can be enabled by navigating to the Server tab and then on the Web Access section. Click on the Enable checkbox and then click OK.

Outage Monitoring
The Dude has a feature called Outages which monitor which services and PCs go offline and at what time. Click on the item on the left panel to view the details. Filters are available to sort out the devices and the current status. The status of the machines is updated across all the maps and lists simultaneously.

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Change Message Priority
You can set priority of your outgoing message to convey its importance. Three levels of priorities are available—Low, normal and high. Here's how you set the priority.
1. In the message composition window menu, go to `Options>Priority`.
2. Select the priority you want to assign to your message.

Check For New Mail And Set Periodical Checks
Though Thunderbird has nice big buttons to Get/Send mails it's better to learn the key combination which lets you

Periodical checks

do it quickly. If your e-mail traffic is high then it's better to automate the checking process.
1. For checking new mail quickly, just press [Ctrl] + [Shift] + [T] and client will automatically connect and pop your mails from the server.
2. To check mails periodically, go to `Tools > Account settings`.
3. Go to the Server Settings sub-category of the desired account and make sure `Check for new messages every` is selected. To check new mails as you launch Thunderbird, also tick `Check for new messages at startup`. Enter the appropriate time interval for auto-checking of mail and click OK.

Creating A Mailing List
When working in a group sending mails to everyone using the To and Cc field becomes tedious, creating a mailing list smoothen the process. To create a mailing list in Thunderbird follow the below given steps.
1. From the main menu select Address
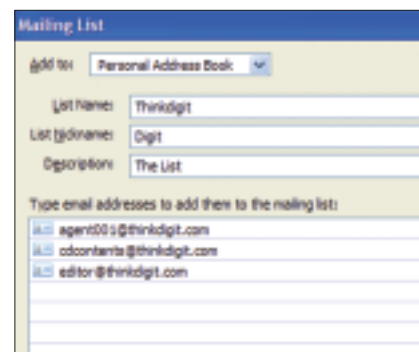
Personalising your address book is also convenient

Book and click on the New List icon.
2. Give the mailing list a specific Name, Nick name and Description.
3. Start typing e-mail address of people you want to be that particular list, that done click on `OK`.
4. Now that you have the list ready, sending an e-mail to the group is very easy. Click on the Write button to compose a new email.
5. In the compose window, click on the Contacts button to launch the contacts sidebar.
6. From the sidebar, the list will be displayed by its name, drag that name in to the To: field and you are done.
7. Compose your mail and send. It will go to everyone present in that list.

Displaying Only Unread Messages
At times, you need to display just the unread messages because we all tend to mark important messages as unread even after reading it so that we can attend to them later. Most of the time we get lost in the sea of read mails.
1. By default, the View Items isn't on the toolbar by default, you need to get it on the toolbar.
2. Go to `View>Toolbars>Customise`.
3. From the customize page, drag and drop View: drop down menu on to the toolbar.
4. From the drop down, select unread to display all unread messages in your inbox.

Exporting Contacts From Thunderbird
You have been using Thunderbird for long and have accumulated important contact details but now you need to transfer them to a different machine. How do you do that? By exporting data that is common to most email clients. Follow the steps;
1. Click on the Address Book button to launch the Address book and then select the desired book.
2. Select Tools and then click on Export. In the File name field give a

Create easy-to-use e-mailer lists
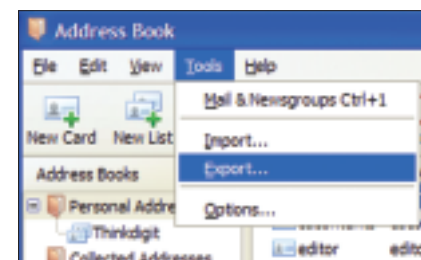
Export contacts at the click of a button

proper name to the address book and in the Save as type field select Comma separated and then click on `Save`.
3. The Comma Separated file will be saved in the location you choose. This file can be open using excel or can be exported in any other email client.

Adding Background Images To Messages
1. First step is to create a new message in Thunderbird. Click on `Write` to do so.
2. In the new message window, select Options and click on Format, make sure Auto-Detect is selected.
3. Left-click on the message body to select and then click on `Format` from the menu in the new message window.
4. Under Format, click on `Page Colours and Background` and in the subsequent dialog box, click on the `Choose File...` button.
5. Select the desired file you want to insert as the background, click `Open` and then click `OK`.

OUTLOOK 2007
Outlook 2007 is the latest version of popular PIM application from Microsoft and comes bundled with Office 2007. This email client is versatile, powerful and is omni-present on 80 per cent of the desktops running Windows platform. Below are some tips that will enable you to exploit its features in the best possible manner.

Colour Categories
Once you have hundreds of mails in your Inbox, sorting them using regular methods become a pain and that's when Color categories come handy. To set a colour category, click in the blank checkbox next to each mail under the Category column. A default colour will be set to the mail. To change this colour, right-click on a mail, click categories and choose a colour. Select a colour and left-click on all the mails you want to set the colour to.
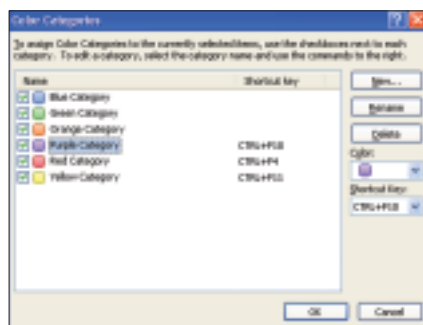
Assigning colour categories

Changing calendar entries

To create shortcuts to colour categories, Right-click on a mail and choose `Categorize > All Categories`. Select the colours you'd like to use. Click on each of the colours, and choose a shortcut for each colour from the drop-down menu on the right. Now you can simply select one or more mails and use the shortcut you've chosen for the colour to assign the colour category to the selection.

Creating A Search Folder
Similar to a favourites folder, Outlook 2007 has something similar

Setting search folder criteria

called as the Search folder; it will filter mails according to some set criteria. To create a search folder, Right-click on the Search Folders icon in the left pane. Click "New Search Folder" scroll down and select the "Create a custom Search Folder" option and click Choose. Start by given a name to the Search Folder. Click on the Criteria button to add keywords. Enter the necessary details and click Ok. Click Ok twice and your search folder will be created. For searching the mails you just access the search folder and don't have to search them manually.

Changing The Time Period For Tasks
When you create new tasks using the text field in the Task window, the task is set for a default time and date. To

extend the task period from the default amount of time, you can always double-click the task and make all the necessary changes there. An easier and interactive alternative is available. First switch to the Day/Week/Month view by selecting `View > Current View`. Here, you will see tasks as highlighted blocks. Click the outer edges of the blocks and drag it till the time you want the task or appointment to be set.

Setting Up Multiple Signatures
Sometimes you require to use different signatures for different purposes. Outlook allows you to create and switch between signatures with a couple of clicks. Click on the Insert tab on the Ribbon, and click on the Signature button. Here, click on the signature of your choice. If you have no signatures created, click on "Signatures…" Click the New button to create a new one. Give a name to the signature and then enter the signature details, and use the formatting tools made available. Once done, click Save, and click New again to create more signatures. Click OK to save them and return to the mail composing window.

Avoid Repeating Text
You probably have our own little ways of saying Hello or Goodbye, or maybe a casual signature, which you follow when you compose mails. Knowing that you use that same set of sentences over and over again, Outlook 2007 has a feature called Quick Parts, which lets you save such sentences so you can use them later. While writing a mail, highlight the text you want to save. Click the Insert tab on the Ribbon. Click on Quick Parts and click "Save selection to Quick Parts gallery". To access any of the selections you saved, click on the Quick Parts button again and choose a selection.

Showing All The Navigation Pane Buttons
The navigation pane at the left is the easiest way to access the various components of Outlook 2007. By default, the number of items is limited to only the two or three prominent features. To show all the features buttons, click on the drop-down icon in the Navigation Pane at the left. Click on "Show more buttons", and an item will appear on the Navigation Pane. Follow the steps over and over till all the items you need are added.
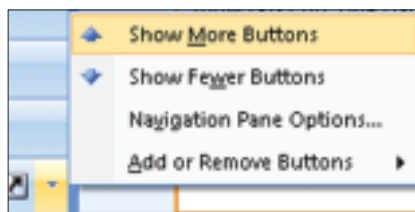
Showing all navigation buttons

Hide Panels
Outlook has traditionally been short of working space due to all the features. Outlook 2007 combats that by allowing you to quickly hide panels that are not required. The To-Do bar and the Navigation panel, which take most of the space, can slide away to a minimal bar with just icons when you click the Minimize arrow icon on each pane. All the features can still be accessed by clicking the little icons in the pane. Clicking the headings for the panes now only brings the panels out temporarily; they automatically go back when you click on something else.

Import And Export News Feeds
Click on the RSS Feeds folder in the left pane. A Web page will load with some recommended feeds. You can click on the links to add any of these feeds to Outlook. To add your own feeds, right-click on the RSS Feeds folder, and click "Add a New RSS feed". Enter the URL for the feed and click Add. If you've been using other RSS feed readers and want to get those feeds into Outlook, first export the feed list to the OPML format using your usual RSS feed reader. In Outlook, right-click on the RSS Feeds folder and click "Import an OPML file". Click Choose and point to the OPML file. Click Next, and choose the feeds you wish to import into Outlook. Click Next again and then Finish to finish the import process.
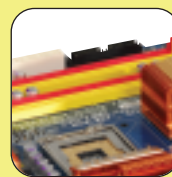
Fury Unleashed!

A brawl between the fastest cards from ATI and NVIDIA

We have the all new GTX 260 with the Zotac overclocked badge—Amp! just like the GTX 280 we received last month. ATI's newly launched Radeon 4870 from ASUS and the smaller 4850 from Palit are also here. Other than these new launches, we also have two GeForce GTX280 cards—one from Gigabyte and an overclocked XXX edition from XFX.

All the cards from all the brands arrived in their standard clothing—no special coolers or fans on either of the cards. The 4850 was the thinnest of all the cards and the only one to consume only a single slot.

The Palit Radeon 4850 was small in comparison but the cooling solution that comes on the card was not enough to cool it sufficiently. We recorded tem-

XFX GeForce GTX 280 XXX Edition

peratures of over 80 C with the air conditioner set to 22 C. The fan and the cooler design are different from the 4870 and the speed of the fan is also quite slow. All the other cards were also quite hot but not as much as the 4850. ATI has been addressing these issues through their drivers and temporary solutions are being released by tech communities.

The GTX 280s shone through all the tests absolutely destroyed the

8800 GTX's that were such a dominating forced for close to 2 years. The Zotac GTX 260 had a decent lead in all the tests ahead of the ATI Radeon 4870.

Our biggest concern is the Palit Radeon 4850. It is a small card, runs extremely hot but matches the 8800GTX and the 9800 GTX. An 8800GT user for example won't find a mas-

ASUS Radeon EAH4870

sive difference if he switches to the 4850. This card falls into the upper mid range category of yesterday and it is most likely to end up in a system that runs all the time. If we are to go just by performance, then if you don't own a sufficiently powerful card, the
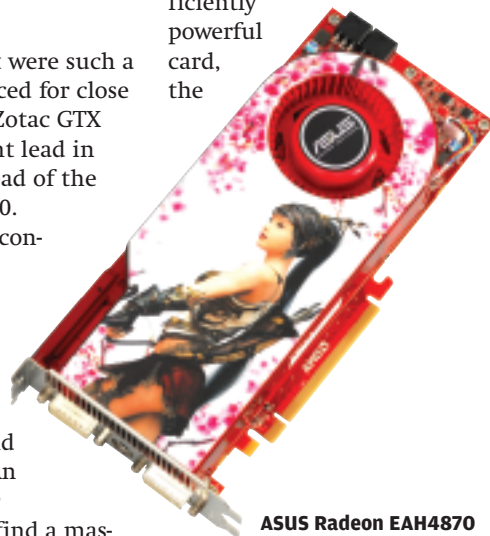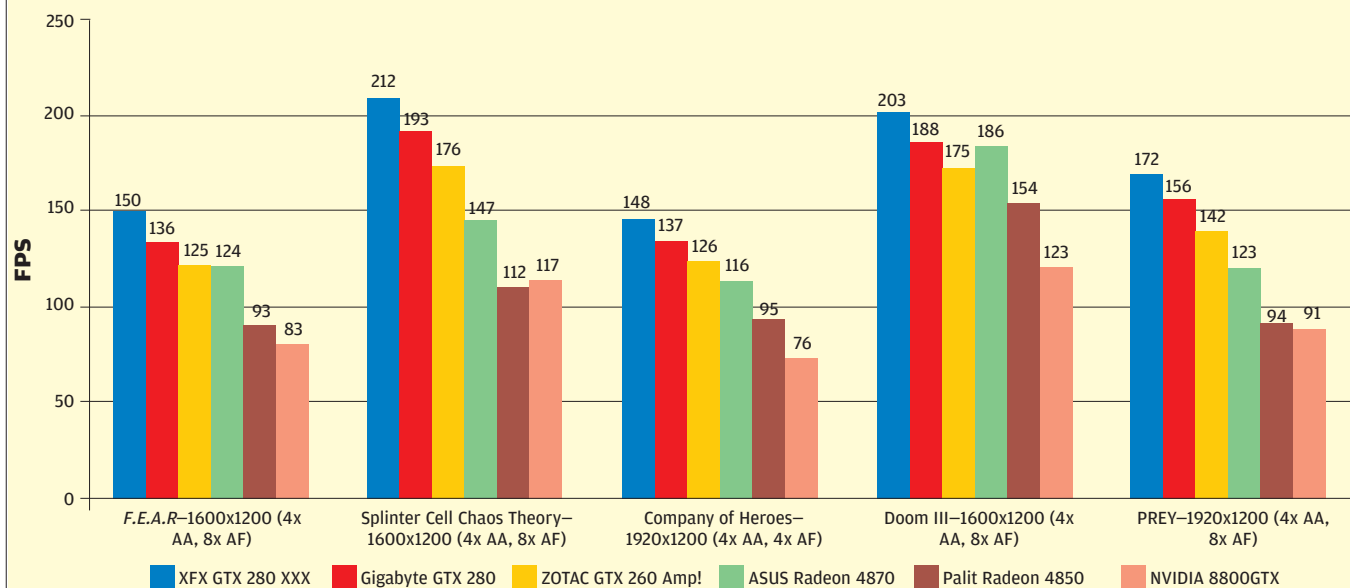
4850 is worth considering. The 9800 GTX is also worth considering as the prices it have been slowly been subsiding with the release of the new cards.

As for the best performers today, the GTX 280 still continue to reign. The XFX GTX 280 XXX Edition's performance in all the tests was identical to the overclocked Zotac GTX 280 we received last month. The XFX card however is more expensive than Zotac. There is no single card in the market today that's more powerful than the GTX 280. One has to remember that NVIDIA has made huge price cuts and those are expected to be reflected soon in Indian markets.

We talked about the performance of the Zotac GTX 260 Amp! and it is only a little more than Rs 2,500 costlier than the ASUS Radeon 4870. The choice between the two is a little difficult. The Zotac GTX 260 Amp! does outperform the 4870 in most of the games by some 10-30 fps. The performance of the Radeon 4870 is not consistent in all the games. For example, there are occasions when the Radeon 4870 even chal-

lenges the Gigabyte GTX 280 in Doom III. If you have the extra Rs 2,000, the Zotac GTX 260 Amp! is a good buy but if you don't, then the Radeon 4870 is still a really good card to buy and will run pretty much all the games with max quality at 1920 x 1200 resolution at a very comfortable frame rate.

This isn't the aftermath of a huge battle and things could change pretty quickly as there is a good possibility of the 4870x2 cards from ATI showing up soon. There is also another way to look at things—all the games out today, with the exception of a few games like *Crysis* of course, run perfectly fine on cards of the calibre of the GeForce 8800GT or the 9600GT at a resolution of 1600x1200 with the details turned up to maximum. That means there is no real need as such for people to upgrade to any of these cards. Even the cheapest of the cards we've tested today—the Radeon 4850 that runs a new game like *Unreal Tournament 3* at 1920x1200 at maximum quality at 86 fps!

Zotac GeForce GTX 260 Amp! Edition
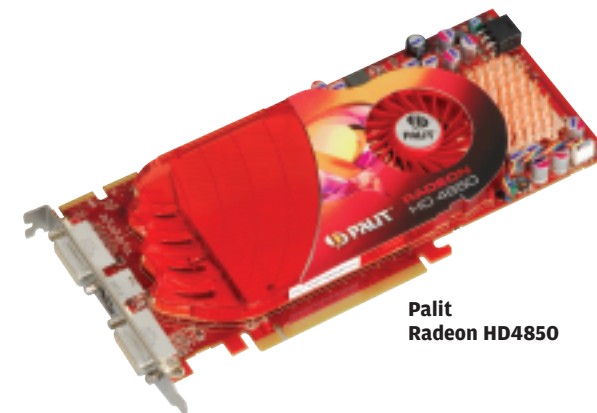
Palit Radeon HD4850

Gigabyte GeForce GTX 280

Benchmarks

	XFX GTX 280 XXX	Gigabyte GTX 280	ZOTAC GTX 260 Amp!	ASUS Radeon 4870	Palit Radeon 4850	NVIDIA 8800GTX
F.E.A.R–1600x1200 (4x AA, 8x AF)	150	136	125	124	93	83
Splinter Cell Chaos Theory–1600x1200 (4x AA, 8x AF)	212	193	176	147	112	117
Company of Heroes–1920x1200 (4x AA, 4x AF)	148	137	126	116	95	76
Doom III–1600x1200 (4x AA, 8x AF)	203	188	175	186	154	123
PREY–1920x1200 (4x AA, 8x AF)	172	156	142	123	94	91

RATINGS					
	XFX GeForce GTX 280 XXX Edition	**Gigabyte GeForce GTX 280**	**ZOTAC GeForce GTX 260 Amp! Edition**	**ASUS Radeon EAH4870**	**Palit Radeon HD4850**
Features	★★★★	★★★★	★★★★	★★★★	★★★★
Performance	★★★★⯪	★★★★⯪	★★★★	★★★★	★★★★⯪
Build quality	★★★★	★★★★	★★★★	★★★★	★★★
Value for money	★★⯪	★★	★★★⯪	★★★	★★★★
Overall	★★★★	★★★⯪	★★★★	★★★⯪	★★★⯪

CONTACT DETAILS					
Contact	Rashi Peripherals Pvt. Ltd	GIGABYTE India Ltd	ZOTAC Intl. (MCO) Ltd	ASUS Technology Pvt. Ltd.	AMD India
Phone	+91-22-67090909	+91-22-40633222	+91-11-46665666	1800-2090365	+91-22-40850772
E-mail	xfx@rptechindia.com	vivek@gigabyte.in	sales@zotac.com	media_india@asus.com	amit.jaokar@amd.com
Web site	www.xfx.com	www.gigabyte.com.tw	www.zotac.com	www.asus.in	www.amd.com
Price	Rs 49,000	Rs 49,425	Rs 23,500	Rs 21,350	Rs 12,000

Gigabyte EP45-DS4P
Gigabyte joins in on the P45 race

Gigabyte's EP45 is the next P45 board we've received for testing after the ASUS P5Q in the June issue. It makes use of an ICH10R south bridge.

The board layout is free of all hassles. The fins are of better quality and are sturdier than we've seen in some of the older Gigabyte boards. There is good heat transfer between the two heat pipes, and the parts of the board don't really get too hot. The SATA connectors are lower beyond the PCI-E slot so there is no problem of cables coming in the way of long cards. The board supports up to 16 GB of DDR2 1200 MHz memory and also has two gigabit network adapters onboard. There are buttons on the board for power, reset and clearing CMOS, and they're clearly visible.

In terms of performance, once again there is little to report. Other than miniscule changes here and there, there's nothing that makes this or any other P45 board stand out. The only places there are some changes are in the video encoding. The Gigabyte P45 did it some two seconds faster than the P35 of last year. PC Mark 2005 was 8557 as compared to 8485 of the Abit IP35-Pro. 3DMarks score was also up by some 200 points.

All the features found on some of the higher-end Gigabyte boards are present including Gigabyte's power saving technology—DES. The board only comes with a single PCI slot which means if you attach an additional sound card, there isn't any space for a wireless LAN card for example.
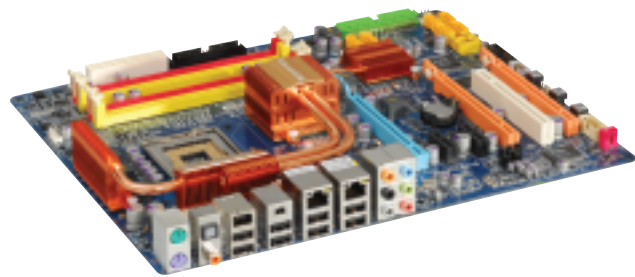
The Gigabyte P45 board is great and there is really nothing wrong with it but the price. At Rs 17,890, it is quite a lot for a board like this. Other than the similar cooling solutions, ASUS' P5Q comes with the unique ExpressGate feature. If it is to be compared with the P5Q-E, that is a better value for money product than the EP45-DS4P.

Specifications
LGA775 socket, Supports 45-nm processors, System bus: 800 / 1066 / 1333 / 1600 MHz, Maximum RAM supported: 16 GB DDR2 1200 MHz, ATI CrossFireX support, ATX form factor.

Contact:
GIGABYTE Technology India Ltd
Phone: +91-22-40633222
E-mail: vivek@gigabyte.in
Web site: www.gigabyte.com.tw
Price: Rs 17,890

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

Iomega ScreenPlay HD 500GB
An external hard drive with playback capability

External drives are great for lugging media around but what if these drives could play it as well—the Iomega ScreenPlay HD happens to do just that. The one we have is a 500 GB version.

The drive is housed in a sturdy abrasive finished monocoque. It can be used as a portable drive too. The device connects like any other external drive using USB. Transfers don't take long and on an average, 20MBps is easily achievable. External power using a power adapter is required to power the device.

Installation is simple and there is support for HDMI which makes the setting up part even simpler. No HDMI cables are provided though.

The user interface is rather disappointing and it looks pretty outdated. The icons and clipart in all the menus look bad too. The remote itself has a thin flat and boring design. We had problems with codecs with some of the HD content we played on it. Standard DivX and XviD files give no such problem. Audio formats were no problem either. The player upscales video to 720p and 1080i. At 1080i there was severe flickering. Loading images is painfully slow at times. Even changing settings requires one to stop all media viewing and returning back to the main menu.

A typical external 3.5-inch hard drive setup would cost anyone somewhere around Rs 5,000. The Iomega ScreenPlay HD 500GB is priced at Rs 10,000. It is still cheaper and simpler to use the ScreenPlay HD than it is to set up a full fledged HTPC. For just additional media playback feature, this is an excessively costly product. If it were priced at say Rs 7,000, it would be perfect and worth every penny.

Specifications
500GB drive, USB 2.0 interface, HDMI support, Supports MP3, AC3, WMA, WAV, OGG, MPEG1, MPEG2, MPEG4, JPEG.
Dimensions: 12.7 x 5.8 x 19.6 cm

Contact:
Neoteric Infomatique Ltd.
Phone: +91-22-40859600
E-mail: sales@neoteric.co.in
Web site: www.neoteric.co.in
Price: Rs 10,000

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

Dell XPS 730
A heavyweight with awkward proportions

With a lot of people depending on systems assemblers to build their systems, the better known branded PC market seems to be dipping. Dell is determined to show their presence and they've gathered up their resources, built a system and have delivered it to our test centre—the Dell XPS 730.

The XPS 730 is a beast and it sure weighs like one. The case is one of the largest we've seen. It towers to around the same height as a Coolermaster stacker or the Cosmos and is built really well—thick metal, a fine and attractive finish and design to top it off. There are flashy bits with multiple little led-like lights staring down from the front border of the case. The same design is at the rear of the case near the connectors—useful while reaching out to the rear of the case and connecting cables and other devices.

The hardware components put into the system are not the latest but still very impressive. The Intel Core 2 Quad Q9300 running at 2.5 GHz. There is 4 GB of DDR3 from the 2 memory sticks. There are some shocking things about the 730 as well. The big one undoubtedly is to do with the motherboard and the graphics card. This system runs on what is most likely a NVIDIA 790i board running two 3870X2s in CrossFire which is very unheard of! Dell has taken it one step ahead and set up a humongous water cooling kit at the bottom of the case. For all these power requirements, an equally power supply of mammoth proportions is used.

The customizations are on the inside as well. The power supply lies at the top of the case and the drives lie in between it and the cards and motherboard below. The space where the hard drives would usually lie now is taken up by the cooler.

The package is complete with a file to hold your discs and the thick user manuals.

At Rs 1,39,000, it's overly expensive to even consider. A similar setup could be built for a much cheaper price but the case and the water cooling are what make it special.

The Dell XPS 730 is a mighty rig and easily one of the fastest readymade systems anyone can buy in the market, but one gets the feeling it isn't the best they could do. The water cooling for example would make better sense if used on the graphics cards than on just the processor and the northbridge. A much larger hard

The massive water cooling unit

The colourful interiors of the XPS 730 exposed

All this hardware adds up to some good performance but definitely not the best. The power of the two cards coupled together allow it match and sometimes outperform the GTX 280. Prey at 1600 x 1200 at maximum quality and 4x antialiasing and 8x anisotrophic filtering can easily run at 185 fps. The small 320 GB Seagate Barracuda 7200.10 drive recorded 85MB/s rates on SiSoft Sandra. The memory benchmarks were far more impressive because of the DDR3 memory.

A rather standard 22-inch E228WFP from Dell is supplied. You get a Dell keyboard and mouse similar to what we've seen from previous Dell systems.

drive is a must on a system of this kind. A Bluray drive and an already overclocked setup could do wonders to the performance.

Specifications
Intel Core 2 Quad Q9300, 4 GB DDR3 RAM, ATI Radeon 3870x2, 22-inch Dell E228WFP LCD, 320 GB Seagate Baracuda 7200.10.

Contact: Dell
Phone: 1800- 425- 4026
E-mail: Online_India@dell.com
Web site: www.dell.com
Price: Rs 1,39,900

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

Acer X1260
Compact, pocket friendly performer

The X1260 DLP projector is a compact little projector from Acer meant for presentation purposes but it is to be seen if it can do anything more than that.

Firstly, the design is compact with a smooth glossy finish. The remote neatly attaches into the projector and the same can be used as a controller for the projector. The blower fan is located at the front of the projector. The controls and the interface are very simple to understand and navigate through. There are even RS232 and USB controller options so you can use the laptop or the computer to control the projector.

It isn't just the interface and design that makes the Acer attractive. It isn't a bad performer either. The colours

are natural but a little bit on the lower side. The display is crisp at all native resolutions. A lot of the clarity even at the resolution of 1024 x 768 depends on the resolution and quality of the media used. Compressed videos look pretty bad but high definition looks pretty stunning. Change in resolutions takes a lot of time. There are profiles for different kinds of viewing and these can be customised and saved.

Surprising, the projector doesn't get very hot as some of the others which is always a good thing. The speaker on the projector isn't very loud though so it's better to use an external one. The remote works well but it doesn't

have a really good range so you need to be very close to the projector for it to work.

The price tag of Rs 55,776 suites it quite well. It performs well and is suited to more than just presentation and with the widescreen resolutions makes a cheap good home theatre display.

Specifications
Native resolution: 1024x768, Maximum Resolution: 1440x900, Brightness: 2000 ANSI Lumens, Contrast Ratio: 2000:1, Aspect Ratios: 4:3, 5:4,

16:9, Inputs: VGA, composite, s-video, 3.5-mm audio connector, Weight: 2.27 kg. Dimensions: 26.67 x 7.87 x 18.8 cm

Contact
Acer India Pvt. Ltd.
Phone: +91-9342931215
E-mail: Ratna_kumar@acer.co.in
Web site: www.acer.co.in
Price: Rs 55,776

RATINGS	
Features	★★★★☆
Performance	★★★★
Build Quality	★★★★☆
Value for Money	★★★★☆
Overall	★★★★☆

HP Pavillion tx2000
Great config, good performance and a touchscreen!

The HP Pavillion tx2000 is a range of mid-ranged laptops and we have one of the new models with us this month. We have seen this range of laptops in one of our previous comparison tests so its interesting to see how things have changed.

The design of the laptop is very modern. All the panels are glossy and so is the 12-inch 1280 x 800 screen. The specs of this laptop are quite high end other than the graphics solution. It still is much superior to most of the entry level laptops. There is a GeForce Go 6150 onboard graphics solution. The processor is a Turion dual core TL-60 2 GHz processor. The touchscreen is probably

what will make this laptop sell more than anything else. It works well and the rotating hinge mechanism allows smooth rotating of the screen so it can be folded back into itself to be a tablet PC. The touch screen works well especially with Vista's features.

With the 3 GB of memory on the laptop, Vista runs flawlessly without any hiccups. Benchmarks clearly show the superiority as well. At 640 x 480, *Far Cry* was able to run at an average frame rate of 65.72 fps on medium quality. *Doom 3* gave 16.7 fps. The Altec Lansing speakers deliver as well but the screen is a little disappointing. Viewing angles aren't good but the colours are alright. High definition videos of 720p and 1080p resolutions run perfectly fine on it. SiSoft displayed a drive index of 55 MBps on the 233 GB WD hard drive.

The laptop with its older technology gets really hot after a while in the top right region and under the laptop. With the glossy solid build and
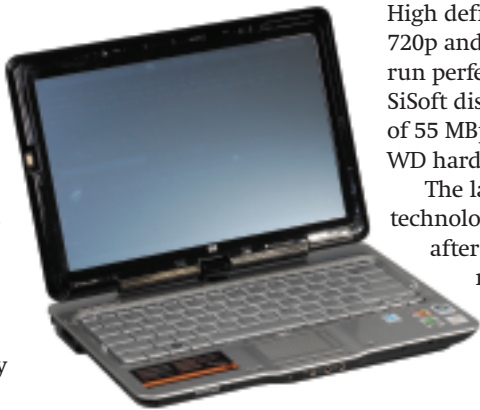
finish, it traps a lot of heat and it can get annoying to use after a while.

For Rs 59,990, it makes an excellent buy for anyone looking for a good compact tablet PC if you are willing to ignore the heating issues.

Specifications
Turion TL-60 2GHz, 3 GB DDR2, 233GB HDD, Vista Home Premium, 12.1-inch LCD screen, Resolution: 1280x800.

Contact:
Hewlett Packard
Phone: +91-124-2566111
E-mail: Diptesh.ghosh@hp.com
Web site: www.hp.com/in
Price: Rs 59,990

RATINGS	
Features	★★★★☆
Performance	★★★★
Build Quality	★★★★
Value for Money	★★★★
Overall	★★★★

Gnostice Print2eDoc
A virtual printer that prints PDF on a PC

PDF is a compact format and it's something most people can't do without. Adobe isn't the only one creating applications for PDF. Gnostice has created software called Print2eDoc which prints a document as a PDF file.

Unlike most other free software, Print2eDoc has many features put in place to make the PDF as customisable as possible. The software has been developed particularly for users using Microsoft Office and other similar applications. Installation is simple and the software puts a virtual printer on your PC. All documents can be printed through it to the PDF format as well as other such as TIF,
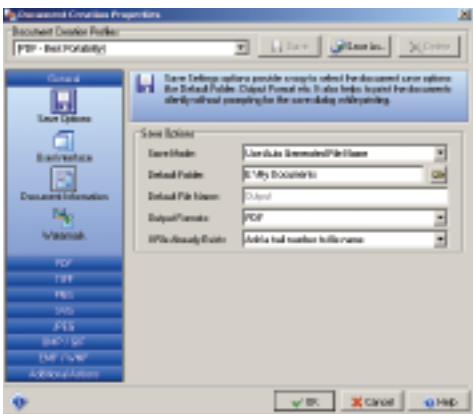
PNG, SVG and many others.

Settings specific to each of the formats are available and these can be saved as profiles to be used later. The core focus however is on PDF file generation. There are options for all kinds of compression and security is handled using

encryption for PDF.

There are also other connectivity and notification features. Once a PDF file is created, it can be immediately uploaded to an FTP server or sent by mail. Support for newsgroup uploading is also available.

The documentation is really helpful with information on every single option and menu. There's even help provided on how to set it up on other Windows operating systems.

The price for the software is around Rs 1,200 ($30). People who require an application to quickly output PDF file from documents of all sorts will find

this very handy. The ability is to upload files as necessary is also very useful. For most users who need PDFs created for home use might not find Gnostice Print2eDoc of much use.

Requirements
Windows 2000 and XP, Hardware requirements: 1.4 GHz processor, 128 MB of RAM, 5 MB of drive space.

Contact:
Gnostice Information
Technologies Pvt Ltd.
Phone: +91-9343770413
E-mail: info@gnostice.com
Web site: www.gnostice.com
Price: $29 (Rs 1,200)

RATINGS	
Features	★★★★
Performance	★★★★
Ease of Use	★★★★☆
Value for Money	★★★
Overall	★★★★☆

HP Officejet H470
Mobile jet

The HP Officejet H470 is one of the few portable inkjet printers to come by. Unlike some of the ultra portable printers that usually are designed to print just photo, the H470 can do pretty much everything a desktop printer can. We go hunting for a weakness in this Officejet H470.

The H470 is much

smaller in comparison than a desktop printer but it can still print A4 size pages just fine. The build quality isn't the best as everything in a desktop printer has been compacted into the cramped space.

When it comes to quality it takes some time but it prints the high quality photo prints rather well. There is some excess saturation of colours but keeps the contrast levels high. The photo quality printout took 4:34 mins to print. Speeds for the standard quality text prints were around 10 sec-

onds. The normal quality text print one took 3 seconds more. The difference in the economical and the standard quality prints are very obvious. The normal prints look thick and display some shadowing.

The economical modes show a good amount of quality degradation. Lines seem edged and aren't smooth. There were signs of colours mixing up and lot of banding issues. There are also protruding edges of colours spilling on the sides of straight lines.

Some of the HP Officejet H470 additional features have wireless networking capabilities using WiFi which is an optional as well through Bluetooth. It also comes with a battery like on a laptop so you don't always have to carry the power adaptor everywhere you go.

Rs 13,899 is a high price to ask for a printer even a compact one like the H470.

There are a few obvious issues with fast prints and if quality isn't what you need but just speed, then the H470 would be perfect. The entire idea of being to carry a printer around in independently is what makes this printer special and if that's what you need, it makes a worthy purchase.

Specifications
Print quality: 1600 x 1600 dpi, cartridges (black and colour) Dimensions: 34 x 16.4 x 8.3 cm

Contact:
Hewlett-Packard India
Phone: +91-124-2566111
E-mail: ashwini-k.aggarwal@hp.com
Web site: www.hp.com/in
Price: Rs 13,899

RATINGS	
Features	★★★★
Performance	★★★
Build Quality	★★★★☆
Value for Money	★★★☆
Overall	★★★

Canon iR 2022n
Gigantic paper printing monster

The iR-2022n is the latest in the workgroup multi-function device from Canon. Aimed at small to medium business the iR2022n supports A3 format. Unlike conventional MFDs which have a printer engine, the Image Runner (iR) class of devices are based on a copier engine. Out of the box the iR-2022n can be used for Printing, scanning, and for copying; FAX unit is available as an option.

It has two front paper cassettes each with 250 page capacity which can be further expanded to 1080 pages by adding two more paper trays. Auto paper and tray selection; automatically picks up the right paper from the right drawer thus improving efficiency and reduces down time. The machine has document management features and printouts from different sources such as print, fax, copy can be set to come out at dedi-cated trays. Other printing features include, Duplex printing, printing of multiple pages on one single page, printing barcodes for tracking documents and electronic collation of documents.

The scanner unit is a standard A3 size PUSH type scanner. To use the scanner, one has to first select the Scan button. The scanner comes with Canon's Colour Network ScanGear which helps in acquiring the scanned image. The iR2022i has an ADF to automate the scanning process.

The iR2022n is equipped with 10/100 Ethernet port and hence can be hooked on to a network. The machine can be remotely administered using the RUI utility. Network settings can be done from both the front console and the remote administration utility.

On performance front, the iR2022n delivers on the printing speed; rated at 22 PPM we got 21 PPM during the tests. While copying, the device delivered 20 PPM. These figures speak for the copier based printing engine. For printing any test document the iR2022n takes no more than ten second on an average. When printing documents containing both text and images the unit takes 13 seconds and A4 size photographs need 18 seconds. When copying, the first page comes out within nine seconds, that's fast.

Print quality is as good as any other laser printer. In fact, copied document also come out equally well. The scanner also delivers good results; final images have good colour saturation and details are faith-fully reproduced.

Priced at Rs. 87,500, the iR-2022n falls on the high side, but given the onboard features, expandability and impressive performance it more than makes up for the price. If you need a heavy duty, high volume, economical (less than 50 paisa / copy) multi-function device with A3 support then Canon's iR-2022n should definitely be on your shortlist.

Specification
22 PPM, A3 support, 256 MB RAM (MAX), 14 sec warm-up, 1-99 sheet multiple copy, support for PCL 5&6 language.

Contact:
Company: Canon India Pvt Ltd
Phone No: 1800-180-33-66
Email: info@canon.co.in
Web site: http://www.Canon.co.in
Price: Rs 87,500/-

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

Cooler Master NotePal X1
Good performance in an attractive package

Cooler Master has released another cooling solution for the notebook that reached us. This new one is called the NotePal X1 and its design does actually look like the shape X in some ways.

This product again hopes to cool down laptops that ever so growing in performance but with the limited space constraints, there is a lack of proper cooling solutions. There is no chance of adding internal coolers, so the best one can do is add external ones. The X1 sits right under your laptop like a docking station. Unlike the previous NotePal P1 we tested, this one has one big fan at the centre of the platform.

The cooler is powered using a USB port and there is a power button next to it. To the side, there is a speed dial to alter the speed of the fan. The fan itself isn't very noisy and the platform is vibration free. The fan helps cool the underneath of the laptop a lot but there's very little difference that you notice on the upper surface. The X1 is light and it can also be placed on the lap while using your laptop without the heat of the laptop getting to you. There are also additional folded pegs that can raise the rear of the platform even more.

Unlike the previous P1, the X1 is lighter but not as solid. It is compact and carried around easily. At Rs 1,400, it's not priced badly either. It's something anyone with a laptop that heats up would like to carry around—not only for cooling but also for a slightly ergonomic positioning.

Specifications
120-mm fan, Speed range: 750—1500 RPM, Dimensions: 365 x 290 x 54 mm, Weight: 0.73 kg.

Contact:
Cooler Master
Phone: +91-9833870302
E-mail: Tanmay_L@coolermaster.com
Web site: www.coolermaster.com
Price: Rs 1,400

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

Logitech QuickCam Communicate Deluxe
Features and performance in a stylish form

When the number of Internet users spiralled upwards, one of the biggest factors was being able to communicate with anyone for free. Other than text chat, voice and video chat were also commonly used. Logitech's new entry in the home video communication section is the QuickCam Communicate Deluxe.

The webcam comes in a simple package. A driver CD and a manual accompany the webcam. The design of the cam is stylish, but similar to the others we've seen from Logitech. For support, a flexible rubber stand extends out from the rear of the cam. The stand is very flexible and allows the camera to point in any direction. A dedicated photo shoot button is placed on the left and the focus dial on the right. The installa-tion is simple, but you have to install the drivers to enable most of its features for the cam.

Video playback is very smooth at 320x240 and 640x480. At 960x720, there is some stuttering that occurs. The quality however is very good all throughout. The audio quality from the microphone is OK, but it picks up sounds from a big area. There are software features for cancelling out the unwanted sounds and it does a fair job.

There are features for reducing flickering of screens while recording videos of them. There are also fun tricks with motion detection and face tracking where a 3d puppet tracks your face and mimics the expressions and movements. There are also image enhancements for improving quality in low light conditions.

Webcams are considered cheap but the Logitech QuickCam Communicate Deluxe is far from cheap at Rs 5,859. Using high resolution and quality requires a lot of bandwidth on the Internet.

Specifications
1.3 MP Sensor, Maximum video capture resolution: 960 x 720, still images resolution: 5 MP (interpolated), built-in microphone, 6-feet USB cable.

Contact: Logitech
Phone: +91-22-26571160
E-mail: kavita_nath@logitech.com
Web site: www.logitech.com
Price: Rs 5,859

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

Stellar Black Cat
Backup, restore and protect

Stellar, a company known for data recovery software and services has made a product for the home users. It has been called Black Cat and is a data backup and recovery software along with an antivirus from K7.

The two software come in two separate CDs. Installation is simple and there is help provided for each one.

Stellar Shield is the major part of the suite handles and creates backups of files on the hard drive. You can select from presets for files and folders of different priorities. In the same place, schedules can be created for these backups. A password lock is provided for security sake. Backups can be restored using an application called Deleted File Recovery Tool. A rescue disk feature lets users create a bootable floppy for data recovery purposes. It acts like a viewer for opening disc images and users can choose which files and folders to extract.

The antivirus is simple and is like any other antivirus software. The interface isn't all that great, but you should be able to find your way around. Feature-wise, it takes care of viruses and spyware. There is no firewall component in this suite. The Stellar Shield application is a little more confusing and everything has to be done manually. Plenty of documentation is provided for both software.

At Rs 950, it is one of the cheaper system security applica-tions. It isn't as complete as the security suites, but for what it does, it makes pretty good sense. The usage could have been more automated without you having to set all the options and settings yourself.

Requirements
Supports Windows 2000 and above.

Contact: Stellar Information Systems Ltd.
Phone: +91-9310823636
E-mail: sales@stellarinfo.com
Web site: www.stellarinfo.com
Price: Rs 950

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

Enhance

Nash David

"A man too busy to take care of his health is like a mechanic too busy to take care of his tools."
—Spanish Proverb

Health is a gift, and good health no less than divine blessing. In our rapidly changing world, disease and illness is as common as the stars in the sky. Besides, although urban India is known abroad for cheap and effective healthcare options, awareness is vital for a healthier society. Good health is synonymous with joy. Mention disease and sickness, and you just can't avoid gloom and despair. We've all been through testing times where a near or dear one is battling a threatening condition, a problem, or is facing a stubborn illness that just refuses to get cured. The result—panic, uncertainty and all the associated rush of emotions.

The average Indian lives in a small town that may not have access to an endocrinologist, oncologist or maybe even a dermatologist. How much do you think your average neighbourhood practitioner could educate you on the Zollinger-Ellison Syndrome? Although critical in the scope of this article, we shall not dwell on statistical proof that indicate the shockingly high number of quacks around—let's just say that all of us need to be aware, equipped and educated on health conditions. While the onus of treatment will always lie with the medical fraternity, it is our duty to be literate in every sense. If not for ourselves, at least for our loved ones, our friends, our relatives, our colleagues, we need to be educated.

Essential online services will let you stay in tune with your body's condition

For probably the first time, we hope you never desperately need the information in this article. However, in case you are in a situation where you want to learn more about a particular condition, look no further. We present you with two valuable sites, filled and over flowing with resources that you would find handy in unfortunate events. The first is Google Health and the second, WebMD.

Google Health
A tool to collaborate your health records, Google Health doesn't stop just there. You will also find valuable information on health conditions, with the recommended general treatment. When you enter the medications that you take, Google Health automatically tells you the potential drug interactions that you need to be careful about. This is valuable information, especially for the next doctor treating you.

Registering
Google Health, like most Google services is free-to-use and requires nothing more than a Google

Google Health's home page

account. If you already have a Google account, then you need nothing more to be set up.

Creating A Profile

To start using Google Health service, go to **www.google.com/health**. Enter your Google ID and password. On the home page, you will see links for notices, drug interactions, conditions, medications, allergies, etc. Enter your details in the section for Profile details. Fill in as much data as you have, so that it helps the next doctor that you visit and gives him as much information as possible.

Conditions

Once you click on Conditions, select all the medical ailments that you suffer from. You can do so by selecting them from the list provided.

Medication

Similarly, after you enter all the conditions and allergies that you suffer from. This will help your doctor to be careful with his prescription, so you do not develop any unfavourable reactions. For example, if you have an allergy to Vaseline, he would avoid cream based preparations, and rather prefer tablets or capsules.
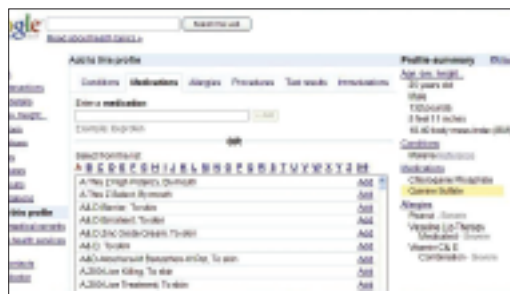
Get all the information you need on medication

Vaccinations

On the link for vaccinations, you can enter all the inoculations and vaccinations that you have undergone, so that your doctor has a history of all prophylactic treatments and courses you have undergone.

The aim of Google Health is not to treat you, but to provide you with an efficient means of storing your health records. Although currently it would not be possible to use it to its
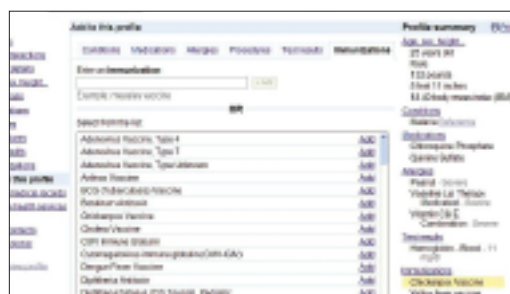
Find out what you can be vaccinated against

full potential, in its present shape it proves to be highly effective in the US, where the site has strategic partnerships with reputed hospitals and clinics. Nevertheless, the pool of resources is still available to you. Besides, if Google decides to tie up with hospitals in a similar way in India, then that would be an added boon that's worth waiting for.

WebMD

The other site that we present to you is WebMD.com. This site from the very view of the home page appears to be one power packed with information and not for a moment does it let you down.

WebMD is a treasure trove of medical information

On this Web site, the most helpful and informative tool is the symptom checker, which approaches your ailment using a graphical interface. Once you select your gender, you get a diagram of the human body, with main sections highlighted when you hover the mouse around. Say, you have a back ache. First select the `back` view. Next, click on the part of your back that's giving you trouble. You will see a list of symptoms associated with the back.

On selecting `ache`, you will see a list of possible causes for your pain. Although this may feel mysterious, just click on any one symptom and all your doubts will vanish. You will see a tab titled overview. This tab tells you about the symptom. Similarly, `View All Symptoms` tells you about all associated symptoms that can be informative.

Well, we do have doctors all around us, then why look online? Certainly, doctors are the final answer to our health woes, but did all the confident support for them just fade away? We need awareness! The intention of presenting this article is to increase awareness of health issues, and to do away with myths associated with diseases. ⊠

nash.david@thinkdigit.com

External Portable Hard Drives
WD Passport Portable (Black)
⊞ Excellent performance, good value
⊟ None in particular

Contact	Champion Computers Pvt Ltd
Phone	+91-11-26214751
Web site	www.championindia.com
Price	Rs 6,500

Internal DVD-Writers
Samsung SH-S203
⊞ Performance, inexpensive
⊟ None in particular

Contact	Samsung India Electronics Pvt Ltd
Phone	+91-11-41511234
E-mail	c.serrao@samsung.com
Price	Rs 1,200

MP3 Player above Rs 10,000
Cowon D2
⊞ Very good performance
⊟ Slightly bulky

Contact	Lipap Systems P. Ltd
Phone	+91-9819917440
E-mail	iaudio@lipap.com
Price	Rs 11,000

Graphics Cards (High-End)
Galaxy GF8800Ultra
⊞ Sheer performance
⊟ Heats up

Contact	Technology and Gadgets
Phone	+91-22-23823331
Web site	technologyandgadgets.com
Price	Rs 35,000

Internal Hard Drives
Seagate 7200.11 500GB ST3500320AS

⊞ Value for money, performance
⊟ None in particular

Contact	Fortune Marketing
Phone	+91-11-2641 4468
E-mail	sales@fortune-it.com
Price	Rs 4,900

Internal Hard Drives
Seagate 7200.11 750GB ST3750330AS

⊞ Class leading performance
⊟ None as such

Contact	Fortune Marketing
Phone	+91-11-2641 4468
E-mail	sales@fortune-it.com
Price	Rs 8,900

Digital Cameras (High-End)
Canon PowerShot A570 IS
⊞ Good overall performance
⊟ Lacking in macro performance

Contact	Canon India Pvt Ltd
Phone	1800-345-3366
E-mail	info@canon.co.in
Price	Rs 13,995

Graphics Cards (Mid-range)
ASUS EN8600GT
⊞ Well priced, fast
⊟ None in particular

Contact	Asus Technology Pvt Ltd
Phone	+91-22-67668800
Web site	http://in.asus.com
Price	Rs 8,800

The A-List

The best products tested so far in different hardware and software categories

2.1 Speaker Sets
Altec Lansing MX5021
⊞ Excellent performance
⊟ Some minor vibrations in woofer

Contact	Rashi Peripherals Pvt.Ltd
Phone	+91-22-67090909
E-mail	altec@rptechindia.com
Price	Rs 7,600

5.1 Speaker Sets
Logitech Z-5500 Digital
⊞ Explosive power
⊟ Too expensive

Contact	Logitech
Phone	+91-22-26571160
E-mail	kavita_nath@logitech.com
Price	Rs 27,995

MP3 Players up to Rs 5,000
Apacer Steno A4351
⊞ Good performence
⊟ Tacky build, Screen quality

Contact	Apacer Technology
Phone	+91-80-25702208
E-mail	suraj_raina@apacer.com
Price	Rs 1,720

MP3 Players up to Rs 10,000
Samsung T10
⊞ Good music quality, nice screen
⊟ Tacky exterior

Contact	Samsung India Ltd
Phone	+91-11-41511234
E-mail	jitendra.c@samsung.com
Price	Rs 6,600

Projectors
NEC VT800
⊞ Excellent performer
⊟ Slightly pricey

Contact	NEC India Pvt. Ltd.
Phone	+91-11-4657 0000
E-mail	enquiries@necindia.in
Price	Rs 92,000

Processors
Intel QX6850 Core 2 Extreme
⊞ Extreme performance
⊟ Expensive

Contact	Intel Tech India Pvt Ltd
Phone	+91-9833823474
E-mail	saranya.rustagi@intel.com
Price	Rs 52,000

LCD Monitor
LG 246Wp

⊞ Great performance and Build
⊟ Bulky, Slightly expensive

Contact	LG Electronics India Pvt. Ltd.
Phone	91 - 120 - 2560900 / 940
E-mail	sanjoyb@lgindia.com
Price	Rs 28,000

Desktop PCs
Sahara 20CK16

⊞ Great performer
⊟ Slightly bulky

Contact	Sahara Computers & Electronics Ltd
Phone	+91-120-4397777
E-mail	info@saharacomputers.co.in
Price	Rs 40,000

AMD AM2 Motherboards
Gigabyte GA-MA69G-S3H

⊞ Well built, feature rich
⊟ None in particular

Contact	Gigabyte Tech India Ltd
Phone	+91-22-30616666
E-mail	sales@gigabyte.in
Price	Rs 6,900

Intel P35-based Motherboards
ASUS P5K Premium

⊞ Excellent enthusiast solution
⊟ Expensive

Contact	ASUS Technology Pvt Ltd
Phone	+91-22-67668800
E-mail	media_india@asus.com
Price	Rs 15,870

Intel Integrated Graphics Motherboards
Gigabyte GA-G33-DS3R

⊞ Very good layout
⊟ Expensive

Contact	Gigabyte Tech India Ltd
Phone	+91-22-30616666
E-mail	sales@gigabyte.in
Price	Rs 9,500

WiFi Routers
D-link DIR-655
⊞ Excellent signal coverage
⊟ Expensive

Contact	D-Link India Ltd.
Phone	+91-22-3061 6666
E-mail	sales@dlink.co.in
Price	Rs 13,500

Multi-Function Devices
Canon Pixma MP 610
⊞ Terrific performer
⊟ Average Scanning quality

Contact	Canon India Private Limited
Phone	1800-180-33-66
E-mail	info@canon.co.in
Price	Rs 15,995

PCI TV-Tuners
Leadtek Winfast PVR2000
⊞ Excellent video quality and software
⊟ Expensive

Contact	Topnotch Infotronix (India) Pvt Ltd
Phone	+91-44-42042565
E-mail	naqui@zebronics.net
Price	Rs 5,500

Mono Laser Printers
HP LaserJet 1020
⊞ Good combination of speed, print quality, and warranty
⊟ A bit slow in comparison to others

Contact	Hewlett-Packard India Sales Pvt Ltd
Phone	+91-124-2566111
E-mail	kakuni.mahto@hp.com
Price	Rs 6,999

Multimedia Cell Phone above 20,000
Nokia N95 8 GB
⊞ Features Galore
⊟ Slider Quality

Contact	Nokia India
Web site	www.nokia.com
Price	Rs 28,000

Multimedia Cell Phone Upto Rs 8,000
Sony Ericsson K550i
⊞ Compact
⊟ Lacks Features

Contact	Sony Ericsson Mobile Comm. India Pvt Ltd
Web site	www.sonyericsson.com
Price	Rs 7,354

Business Device
Nokia Communicator E90
⊞ Extremely powerful
⊟ Heavy, bulky

Contact	Nokia India
Web site:	www.nokia.com
Price	Rs 40,499

Value Executive Phone
Nokia E51
⊞ Loads of features
⊟ None

Contact	Nokia India
Web site	www.nokia.com
Price	Rs 13,000

Office Inkjet MFDs
HP Photosmart C4188 All-in-One
⊞ Good print quality
⊟ No fax

Contact	HP India Sales Pvt. Ltd.
Phone	+91-124-2566111
E-mail	kakuni.mahto@hp.com
Price	Rs 7,999

DVD/DivX Players

Samsung DVD-1080P7
⊞ Great looks and performance
⊟ No 5.1 channel RCA

Contact	Samsung India Electronics Pvt. Ltd.
Phone	+91-11-41511234
E-mail	shailja.m@ samsung.com
Price	Rs 2,990

Mice
Logitech MX Revolution
⊞ Has a flywheel
⊟ Expensive

Contact	Logitech Electronic India Pvt Ltd
Phone	+91-22-26571160
E-mail	response@logitech.com
Price	Rs 8,000

Laptops
Dell XPS 1530

⊞ Well built, powerful
⊟ Heavy

Contact	Dell India
Phone	+1-800-4254026
E-mail	Online_India@dell.com
Price	Rs 49,900

Prepared For Anything

**The day of the standalone imaging solution is over,
and the time is ripe to spring for a new multifunctional device**

Sanket Naik

MFDs, also known as all-in-ones are slowly winning over customers. Versatility differentiates MFDs from other peripheral products, and is a major reason why we think MFDs make more sense than stand-alone products such as printers or scanners.

If we analyse some activities we do on our home computer, it becomes very clear that printing is not our only requirement—scanning and copying are also much needed features. Now that we're using the Internet for booking tickets online, paying bills, getting a statement of accounts and so on, printouts are needed. That's not all—digitising docu-

ments such as bills, policies, legal documents, medical reports, and what have you, require a scanner, and then there's always the need to photocopy a document or two at short notice. Thus, as we move forward in an Internet enabled world, the need for having a MFD is more relevant than it was a couple of years ago.

While MFDs have been around for years now, they haven't been able to make any impact, largely due to technical and economic reasons. On the technical front, earlier MFDs couldn't perform as well as their stand-alone counter parts and hence didn't catch the fancy of consumers. However, the same printing and scanning engines used on stand-alone products are making their way

into MFDs, so performance is no longer an issue. They print fast, produce excellent scans, deliver more than acceptable copies and some can be used for fax as well. With inkjet technology getting better, some MFDs deliver photo-quality printouts and have compliance with technologies such as PictBridge or come with memory card readers for direct printing from digital cameras. In recent years, prices have fallen to an extent that MFDs are proving more cost-effective than stand-alone devices.

Similar to Printers, MFDs are also available in both Inkjet as well as Laser engines. Most Inkjet MFDs fall in the entry level bracket and offer good value for money; however they don't offer

top of the line performance. Laser MFDs are generally expensive, but have slight speed advantage over inkjets and are cost-effective if your printing volume is high. In this test we take an extensive look at inkjet MFDs and also have chosen few Laser MFDs which fit a home user's budget.

We categorised the products in three main categories. The first category consists of products priced less that Rs 7,000. People on a shoe string budget should look at this category. The second category consists of products priced between Rs 7,000 and 12,000. People who want better features should look at this category. The third category consists of products priced between Rs 12,000 and Rs 18,000. These products have all cutting edge features and are meant for technology savvy people.

Entry Level MFDs
In this category we have rounded up products that offer bare minimum multi-function features. Canon's PIXMA MX-308, Brothers DCP-350, EPSON's CX5500 and CX7300 made into this category.

Features
Though MFDs are peripheral devices, they definitely can be designed to look good and Brother has done every effort to impress us with their DCP-350. It is compact, has pearl white finish and sports clean design. Other MFDs from Canon and Epson are boxy, relatively less compact and have unappealing aesthetics.

Canon's MX308 was the only MFD here to have fax capability, but it is also the priciest of them. If you want faxing too then the MX308 offers standard faxing features and offers storing of 50 fax pages in the device runs out of paper.

While Canon's MX308 uses the PC's memory, the Brother DCP-350 is equipped with 32 MB onboard input buffer. Both Epson CX-5500 and CX-7300 have paltry 64 KB of onboard buffer and it shows up in the performance. None of these devices

have automatic duplex printing; however it can be manually done from the driver setting page.

Brother's DCP-350 and Epson's CX-7300 were the two devices to be equipped with both a PictBridge port and memory card reader enabling

CANON MX-308

direct printing from digital cameras. Canon's MX-308 supports PictBridge but lacks memory card reader while Epson's CX-5500 doesn't have any. All devices here had a maximum paper capacity of 100 sheets; good enough for home usage.

How We Tested

The Test Rig
Our test bed for the inkjet MFD tests comprised an Intel Pentium 4 560 3.2 GHz processor, a Gigabyte GA-965P-DQ6 motherboard with 1 GB of Micron 533 MHz DDR2 RAM, an NVIDIA GeForce 7600GT graphics card, and a 120 GB 7200 rpm ATA IV Seagate Barracuda hard disk. We used Windows XP with SP2 as the OS.

Media Used
Text/combi-document printouts: 100 gsm paper from Berga (A4 size)
Photo printouts: 160 gsm glossy photo paper from Novajet (A4 size)

Features
Various features such as PictBridge, memory card readers, fax, input tray capacity, number of cartridge, etc were noted. For the scanner part, the maximum scan resolution, bit depth, scanner type, ADF presence, etc. were noted and rated. For the copier aspect, the ability to work as a standalone device, the maximum number of pages that can be printed in multi-copy mode, reduction or enlarging a copy, and so on, were noted.

The Printer Tests
We used a text document to test the raw

print speeds of the printer part of the MFDs. To test the ability of the MFDs to handle the various aspects of a regular document, we created a combi document with black text interspersed with graphs and images. The quality settings used were Normal and Best for text and combi document, and Best for photo. We clocked the time taken in each case, and analysed the print quality.

The Scanner Tests
We tested the scanners for speed using an average of five previews of an A4 size image. This was done with the scanner fresh out of the box, in order to incorporate the warm-up time. We imported the same A4 size image at 150 dpi and 600 dpi in Adobe Photoshop CS2, and scanned a full text document in B&W mode at 200 dpi. The scanner then underwent a test to determine its colour differentiating abilities using a Kodak IT8 card with different shades of colour–each a little different from the preceding one.

The Copier Tests
We copied the text document in black and white, and the combi-document in colour, and rated the MFDs on their speed and print quality.

All devices here were flat bed scanners and hence are capable of scanning any document. Sadly none had provisions for an Automatic document feeder (ADF) which is still offered on expensive models. Standard copying features were present on all models, while Canon and Brother offered additional features.

Canon's MX308 and Brother's DCP-350 had monochromatic two-line LCD displays while both Epsons made do with seven-segment LED displays. Installing these devices was a breeze, and none of them gave any specific problems. Epson's drivers and software are superior to both Canon and Brother. In Epson, the drivers offer better information about the device and the print jobs given. All devices came be the required software bundled with none falling short of any items.

Overall Brother's DCP and Canon's MX308 came out as the better featured products, while Epson's CX-7300 closing following them. The CX5500 lacks most features but it is also the lowest priced of the lot.

Performance

The printing engine in Canon's MX308 comes from its PIXMA range of printers and as expected, it was quick, without scarificing too much on print quality. Surprisingly, Epson's CX7300 delivered lightning-fast printing speed, even outperfroming the generally faster PIXMA engine—sadly, at the expense of print quality. Brother's DCP-350 wasn't the fastest or slowest, but in the photo printout test took an unusually long time. Epson's CX-5500 lost to almost all printers here and took nearly double the time in each test we put it through.

Canon MX308's scanner performed the fastest. Epson's CX5500 did better in the scanner test and placed ahead of both the CX7300 and Brother's DCP-350—which were separated by a small margin of 2 seconds. When taking copies, Epson's CX-5500 was the fastest, followed by the Brother DCP-350 at second

and Canon's MX308 at third.

Coming to print quality, Canon seems to have got everything right. Be it plain text, infographics or photos, the MX308 is far ahead of the Brother and Epson devices. Lines have no jagged edges, text is pitch black and colour saturation is near perfect. These are the strengths of the PIXMA range of printers, and obviously, it shows. Epson and Brother were on almost equal terms—Brother was ahead in some tests Epson in others; Canon is in a class of its own, though.

In the scanner quality tests too Canon blew the competition away with good colour saturation, nice retention of details without overdoing sharpness. Epson's CX5500 did better than the CX7300 in the scanner test, delivering neutral results which were slightly behind Canon. The scanner unit on DCP-350 does good job but lacks the finess seen in Canon. Although colour saturation is good, the image processing engine over sharpens the image and that results in loss of detail. Scanner units on all these devices are pretty good for scanning text, but Canon has an edge in photographs.

Canon's MX308 impressed us with its all round performance, delivering excellent results in terms of both speed and quality. Brother's DCP-350 takes the

second place here. Epson devices were a mix bag—the CX-7300 doing better in the print quality but CX-5500 performing better in scanning department.

Taking into consideration features and performance and putting price in the equation, Canon's MX-308 works out as the better product and hence wins our Best Buy award. Brother's DCP-350 is equally impressive as the canon but looses out in performance stake.

Mid-range MFDs

In the mid-range category, we have five MFDs—the Epson Stylus RX610, Brother MFC235C, Canon MX318, Epson CX8300 and Canon's MP476.

Features

Aesthetically, Brother's MFC-235C wins our vote as a pleasing device that anyone would love to keep on their desk. Nearly identical to the Brother DCP-350 in terms of design, the MFC-235C adds on a fax unit, but without a hand receiver. The use of dark colour for the lid, and the front panel on a white background gives the MFC-235C its sophisticated look. Epson's Stylus RX610 too is well designed but it's bulky and needs desk space. Canon MX318 is identical to the MX308 but with an attached ADF. Canon's MP476 is modelled over their PIXMA range of printers and is boxy and unappealing.

EPSON CD8300

CANON MP610

High resolution print engines are common in this range of MFDs and all devices here have it thus capable of delivering photo-quality output. Epson's CX-8300 and RX-610 both have just 64 KB of memory, while Brother's MFC-235C is equipped with 16 MB of buffer. This variance in buffer doesn't necessary bog down the Epson devices; can be inferred from performance figures. Canon devices use the system memory and processing to improve printing speeds.

Canon MP476, Epson CX8300 and Epson RX610 are equipped with memory card readers and hence the target people with need for printing photographs directly without needing a PC. These devices also have small LCD screens to help with photo printing—they can be used for previewing the photographs before hitting Print. You can also set the printer setting via this LCD screen.

Brother's MFC-235C and Canon's MX318 are oriented towards small office home office (SOHO) applications and hence have fax capabilities. Neither has a hand receiver, but both have a small numerical keypad for dialling. The Brother MFC-235C can hold up to 170 pages, against the 50 provided by the Canon MX-31. Canon ups the ante by providing an automatic document feeder (ADF) on the

MX318 which is missing on the Brother MFC-235C.

None of the devices in this category have automatic duplex printing support—if you intend to save paper, this is one feature you shouldn't do without. Basic and advance copying features are available in all devices. The Canon MF476 also has push scan and you can use certain features without a PC.

Since Canon's MP476 is capable of delivering photo-quality prints, it comes bundled with a host of software such as MP Navigator EX—a photo enhancing and touch up tool, Easy PhotoPrint EX—a photo printing suite. It also comes with ChromaLife 100 ink tanks—the ink has enhanced weather resistance, so photographs last longer. Epson's RX610 also comes from a similar mould and offers an equally impressive suite of software—however, the Canon is more intuitive and simpler to use.

Performance

In the printer speed test, Epson's RX-610 leads the pack taking the least time to complete the job. However it would be unfair to compare it with other devices which are priced lower than this high speed monster. Doing a fair comparison, Brother's MFC-235C competes directly with Epson's CX-8300 and gets

thrashed. The CX-8300 is faster in all tests and it even clocks better test scores than the more expensive Canon devices. This despite the fact that the Epson devices are equipped with just 64 KB of input buffer memory. Canon devices logged scores that are neither too bad nor exceptional, but when we look at the print quality, the time required is easily justified. In the photo printout test, Epson's RX610 takes the pole and does the job in just 83 seconds; excellent. Both Canon's take around 120 seconds to do the same but return better quality than the Epson. Brother MFC-235C and Epson CX8300 take unusually long time to print the photo.

In the scanner speed test, Both Canon devices complete the 150 dpi photograph scan in just 10 seconds, while the Epson RX610 takes just 2 seconds more. The Epson CX8300 takes more time, but delivers exceptional scan quality. Brother's MFC-235C delivers the goods in the 600 dpi test. In the copy speed test, Brother's MFC-235C and Epson's CX-8300 make it to the top with identical timings. Epson does slightly better by offering marginally better copy quality. Both Canon printers lag the rest in the copy speed test by a substantial margin.

When it comes to print quality, we have high expectations from Canon, and the MP476 doesn't disappoint. Be it colour saturation, detail or sharpness, Canon delivers on all accounts. Only in the photograph did the Canon lose to the Epson RX-610's brilliant output; albeit by a small margin. The photograph from the Canon printer had a hint of yellow, which was missing in the Epson RX-610's output. The Canon MX-308 also delivers good printing quality but a shade below the MP476 and the RX-610.

In the scan quality test, the Epson CX-8300 does an excellent job and trumps both Epson's RX-610 and Canon's MP476. It beats all other devices in all aspects and reproduces images faithfully. The RX-610 comes in at second

place here, followed closely by Canon; Brother stands last. In the copy quality, Canon takes the lead thanks to it's superb printing engine.

Epson's Stylus RX-610 comes out as the clear winner when we add up the performance and features score, but the CX-8300 offers better value at a lower price and wins our *Best Buy* award in this category. If you want a photo quality printer though, then the RX-610 makes more sense. Both Canons impress with their features and performance, but are priced too high.

High-end MFDs

These products offer the best in terms of features and performance that the well-moneyed look for in an MFD.

Features

Brother's MFC-685CW takes the honour for being the best designed MFD. Aesthetically, it's one of the best MFDs we have seen so far. Don't get fooled by its small demeanour—it packs a punch. To begin with, this is the only device to offer Wireless networking out of the box and it supports 802.11b / g devices. It also supports 10 / 100 Ethernet. It features a memory card reader, PictBridge, an ADF, fax (with a hand receiver) and an LCD screen. This entire package is available for not more than Rs 14,000, things can't get better than this!

While the MFC-685CW is clearly a consumer product, the other two devices—the MFC-5460 and MFC-5860CN—are oriented towards office users. Both these devices are near-identical. However, the MFC-5860CN is upmarket and has one additional feature—an extra paper tray that can hold another 250 pages. Despite being targeted at

office users, both these devices offer memory card readers and PictBridge compliance. They support advanced fax features and can store up to 400 pages in the 32 MB of inbuilt memory. Unlike the MFC-685CW, both these devices don't offer hand receivers. Both devices also have 35-page ADFs. However, neither supports automatic duplex printing and that's a definite shortcoming considering that they are office devices. Setting them up on a network is quite simple—you only need to know some basic networking.

Canon's PIXMA MP610 looks appealing. Although boxy, it cleverly hides some nifty features. First, the LCD folds down and hides the operating console. The menu navigation is accomplished using a jog wheel which is intuitive to use. The memory card reader is also hidden behind a small door in the front, with only the PictBridge port visible. This is the only devices to have two paper feeding mechanisms with a selector switch on the operating console. Being consumer oriented it lacks fax capability, but makes up for it via its photo printing features. Importantly, it is the only device in this entire comparison to offer duplex printing, thus saving on paper in the longer run. Though the device lacks any network support it does offer USB and irDA (infrared) with Bluetooth being optional. The MP610 can also print on CDs and DVDs directly and the software suite offered is pretty much similar in functionality as the Canon MP476.

Epson's Stylus RX-690 also offers features similar to Canon's MP610 and is designed along the same lines. The RX-690 is bulky and requires lots of desk space—however, the design is appealing thanks to the glossy black mate-

rial used. The Epson RX-690 lacks fax capabilities but offers advance scanning and copying features. USB is the only interface offered on this device.

Performance

In terms of printing speed, Canon's MP610 takes top spot. It can deliver the first print in just nine seconds. Only in the photograph printout test did it lose to Epson RX-690 by 11 seconds.

Epson's RX690 performs well in the print speed tests, but is behind the Canon MP610 in all tests except the photograph printout. The Epson RX690 betters Brother MFDs by a huge margin, clearly demonstrating its superior printing engine.

All three Brother devices have a slow print engine and hence take slightly longer to print similar documents. Their performance in the photograph printing test is abysmal in contrast to Canon MP610 and Epson RX690.

In the scan speed test, Canon MP610 took the least amount of time and posted the best scores across all categories. It took just five seconds to scan an A4 size photograph at 150 dpi. Epson's RX-690 takes slightly longer than the Canon MP610 but is reasonably fast. The Brother MFC-685CW and MFC-5460CN post similar results and are faster than the more expensive MFC-5860CN. The MFC-685CW posts the second-best score after the Canon MP610 in the 600 dpi, full photograph scan test. Similar results can be seen in the copying speed test too, where it takes second spot ahead of Epson's RX690, but is defeated by Canon's MP610.

Coming to print quality, Canon takes the crown with impeccable printing quality. Colour saturation near-perfect and photographs come out superb. What's really amazing about the MP610 is that it is able to reproduce stunning quality without curtailing printing speed. We expected the Epson RX690 to do better, however the print quality is just not in Canon's class. Brother MFC-685CW, MFC-5460CN and 5860CN delivered reasonably good printouts. Canon tops the copy quality test too, thanks to its excellent print engine. All other devices are on par with each other in this regard.

Epson's RX690 makes up for its shortcomings by delivering exceptional scanned images. Colour saturation, tonal neutrality, details and sharpness all were well within check and the final image was stunning. The Canon MP610 did deliver reasonably good results but was outclassed by Epson's RX690. Brother's scanning unit in all three devices goes overboard with image sharpening and loses out on detail, but delivers decent colour saturation.

Canon's MP-610 is the clear winner here, posting the best scores in speed test and delivering exceptional quality. Though priced on the higher side, it terrific performance makes up for that and hence we give it our Best Buy and Performance award. Brother's 685CW probably offers the best features but gets overshadowed by Canon's sterling performance. ∎

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▽ **Contact Sheet**

	Entry Level MFD's					Mid-Range MFD's			
Brand **Model**	Brother DCP-350C	Canon MX-308	Epson Stylus CX5500	Epson Stylus CX7300	Brother MFC-235C	Canon MP476	Canon MX-318	Epson Stylus CX8300	Epson Stylus Photo RX610
Features	24.14	23.56	18.32	21.64	23.62	25.02	25.08	23.54	24.24
Performance	30.37	36.17	28.23	35.14	29.09	33.86	33.30	32.32	35.82
Price (Rupee)	6360	6595	4999	5999	7200	9495	9795	7299	11499
Warranty (Years / Type)	1 / Onsite	1 / onsite	1 / Onsite	1 / Onsite	1 / Onsite	2 / onsite	2 / onsite	1 / Onsite	1 / Onsite
Pros	Feature rich, Faxing available	Good performer, Feature rich too	Affordably priced	Fast printing speed	Compact and feature rich	Superb print Quality	Has ADF and FAX	Superb value for money	Good performer
Cons	Photoprinting too slow	Relatively bulky	Slow performer	Lacks LCD display	Lacks hand receiver	Boxy and bluky	Scanners lacks punch	Fair print quality	Bulky design
Features									
Printing									
Optical Resolution (dpi x dpi)									
Interpolated Resolution (dpi x dpi)	1200 x 6000	4800 x 1200	5760 x 1440	5760 x 1440	1200 x 6000	4800 x 1200	4800 x 1200	5760 x 1440	5760 x 1440
Input Buffer (MB)	32 MB	CAPT	64 KB	64 KB	16 MB	CAPT	CAPT	64 KB	64 KB
Input / Output Tray Capacity	100 / 50	100 / 25	80 / 25	120 / 25	100 / 50	100 / 25	100 / 25	120 / 25	120 / 25
Output Tray Capacity	50	25	25	25	50	25	25	25	25
Automatic Duplex Printing (Y / N)	✘	✘	✘	✘	✘	✘	✘	✘	✘
PictBridge	✔	✔	✘	✔	✔	✔	✔	✔	✔
Memory Card Reader	✔	✘	✘	✔	✘	✔	✘	✔	✔
Scanning									
Scanner Type	Flatbed	Flatbed	Flatbed	Flatbed	Flatbed	Flatbed	Flatbed	Flatbed	Flatbed
Optical Resolution (dpi x dpi)	600 x 2400	600 x 1200	600 x 1200	1200 x 2400	600 x 2400	1200 x 2400	1200 x 2400	1200 x 2400	1200 x 2400
Interpolated Resolution (dpi x dpi)	19,200 x 19,200	19200 x 19200	NA	NA	19,200 x 19,200	19200 x 19200	19200 x 19200	NA	NA
Bit Depth	24	24	24	24	24	24	24	24	24
ADF (Yes/No) / Capacity (Pages)	✘ / NA	✘ / NA	✘ / NA	✘ / NA	✘ / NA	✘ / NA	Y / 30	✘ / NA	✘ / NA
Copying									
One Touch Copying (Y/N)	✔	✔	✔	✔	✔	✔	✔	✔	✔
Stand Alone Copying (Y/N)	✔	✔	✔	✔	✔	✔	✔	✔	✔
Fax									
Handset Provided	NA	✘	NA	NA	✘	NA	✘	NA	NA
Memory for Storing (Pages)	NA	50	NA	NA	170	NA	50	NA	NA
Broadcast Faxing (Y/N)	NA	✔	NA	NA	✔	NA	✔	NA	NA
Misc									
LCD Panel For Settings (Y/N)	✔	✔	N	N	✔	✔	✔	✔	✔
Menu Interface (So10)	7.5	6.5	5	5	6.5	8.5	6.5	7.5	7.5
I/O Interface	USB	USB	USB	USB	USB	USB	USB	USB	USB
Weight (Kg)	7.3	7	5	6	7.3	6.1	8.6	6	8.3
Build Quality									
Hinges (So10)	7	7	5.5	6	7	7	7	6	6.5
Trays (So10)	7	7	5.5	6	7	7	7	6	6.5
Drivers and Setup									
OS Supported	Windows & Mac	Windows & Mac	Windows & Mac	Windows & Mac	Windows & Mac	Windows & Mac	Windows & Mac	Windows & Mac	Windows & Mac
Driver Interface And Usability (So10)	7.5	7.5	8	8	7	8.5	7.5	8	8
Ease of Setup (So10)	8	7.5	8	8	8	8.5	7.5	8	8
Accessories									
Quick Setup Guide (Y/N)	✔	✔	✔	✔	✔	✔	✔	✔	✔
Bundled Software	ScanSoft Paperport 11SE OCR, Face Filter studio software and Brother Control Centre 3	MP NavigatorEX, CDLabel Print, Easy-Photo PrintEX, ScanSoft Omnipage SE	Epson Print CD, Epson Creative suite, Camera Raw plugin, Epson Image framer	Epson Print CD, Epson Creative suite, Camera Raw plugin, Epson Image framer	ScanSoft Paperport 11SE OCR, Face Filter studio software and Brother Control Centre 3	MP NavigatorEX, CDLabel Print, Easy-Photo PrintEX, ScanSoft Omnipage SE	MP NavigatorEX, CDLabel Print, Easy-Photo PrintEX, ScanSoft Omnipage SE	Epson Print CD, Epson Creative suite, Camera Raw plugin, Epson Image framer	Epson Print CD, Epson Creative suite, Camera Raw plugin, Epson Image framer
Performance									
Printing									
First Print out	29	21	34	30	30	21	21	20	17
PPM (draft)	22	20	20	22	14	20	20	22	24
Point Size Best Quality	52	55	81	30	52	50	57	30	39
Combi Print Best Quality	88	113	423	46	88	123	122	81	57
Photo Printout Quality	495	93	537	86	495	113	114	319	83
Combi Doc Quality (Draft)	6.9	7.4	6.9	6.9	6.4	7.5	7.3	6.9	6.4
Combi Doc Quality (Best)	6.9	7.4	6.9	6.9	6.4	7.5	7.3	6.9	6.4
Photo Printout Quality (So10)	6.5	8	6	7	6.5	6.5	6.5	6.5	7.5
Scanning									
Text Scan (Monochrome Mode-200 dpi) (sec)	13	13	13	13	13	13	13	13	13
Photo Scan (Full Color Mode-150 dpi) (sec)	17	10	14	19	17	10	10	26	12
Photo Scan (Full Color Mode-600 dpi) (sec)	52	60	169	94	47	58	60	96	77
Colour saturation (So10)	5.5	7	6.5	6	6	6	6	7	6.5
Sharpness (So10)	7	7	6.5	6.5	6	6	6	7	7
Details (So10)	6.5	7.5	6.5	6.5	6	6.5	6.5	7	7
Copying									
First Copy (sec)	25	49	22	33	25	51	62	25	49
Quality (So10)	5.5	7	5.5	5.5	5.5	7	7	6	6

	High End MFD's				
Brand **Model**	**Brother** **MFC-685CW**	**Brother** **MFC-5460CN**	**Brother** **MFC-5860CN**	**Canon** **MP610**	**Epson** **RX690**
Features					
Features	29.18	28.02	27.54	27.94	24.14
Performance	29.57	27.31	27.36	43.63	35.61
Price (Rupee)	13650	13,500	16900	15995	12,999
Warranty (Years / Type)	1 / Onsite	1 / Onsite	1 / Onsite	2 / onsite	1 / Onsite
Pros	Loaded with Features	Compacy yet feature rich	Ethernet provided	Terrific performer	Superb scanner unit
Cons	Slow print performance	Slow print Performance	Expensive for features	Average Scanning quality	NA
Printing					
Optical Resolution (dpi x dpi)					
Interpolated Resolution (dpi x dpi)	1200 x 6000	1200 x 6000	1200 x 6000	9600 x 2400	5760 x 1440
Input Buffer (MB)	32 MB	32 MB	32 MB	CAPT	64 KB
Input / Output Tray Capacity	100 / 50	100 / 50	100 / 50	300 / 25	150 / 25
Output Tray Capacity	50	50	50	25	25
Automatic Duplex Printing (Y / N)	✘	✘	✘	✔	✘
PictBridge	✔	✔	✔	✔	✔
Memory Card Reader	✔	✔	✔	✔	✔
Scanning					
Scanner Type	Flatbed	Flatbed	Flatbed	Flatbed	Flatbed
Optical Resolution (dpi x dpi)	600 x 2400	600 x 2400	600 x 2400	4800 x 9600	1200 x 2400
Interpolated Resolution (dpi x dpi)	19,200 x 19,200	19,200 x 19,200	19,200 x 19,200	19200 x 19200	NA
Bit Depth	24	24	24	24	24
ADF (Yes/No) / Capacity (Pages)	Y / 10	Y / 35	Y / 35	✘ / NA	✘ / NA
Copying					
One Touch Copying (Y/N)	✔	✔	✔	✔	✔
Stand Alone Copying (Y/N)	✔	✔	✔	✔	✔
Fax					
Handset Provided	✔	✘	✘	NA	NA
Memory for Storing (Pages)	400	400	400	NA	NA
Broadcast Faxing (Y/N)	✔	✔	✔	NA	NA
Misc					
LCD Panel For Settings (Y/N)	✔	✔	✔	✔	✔
Menu Interface (So10)	7.5	7.5	7.5	8.5	8
I/O Interface	USB, Ethernet, WiFi	USB & Ethernet	USB, NIC	USB, IrDA	USB
Weight (Kg)	8.5	9	10.7	10	10.6
Build Quality					
Hinges (So10)	7	7	7	7	6
Trays (So10)	7	7	7	7	6
Drivers and Setup					
OS Supported	Windows & Mac	Windows & Mac	Windows & Mac	Windows & Mac	Windows & Mac
Driver Interface And Usability (So10)	7.5	7.5	7.5	8.5	8
Ease of Setup (So10)	8	8	8	8.5	8
Accessories					
Quick Setup Guide (Y/N)	✔	✔	✔	✔	✔
Bundled Software	ScanSoft Paperport 11SE OCR, Face Filter studio software and Brother Control Centre 3	ScanSoft Paperport 11SE OCR, Face Filter studio software and Brother Control Centre 3	ScanSoft Paperport 11SE OCR, Face Filter studio software and Brother Control Centre 3	MP NavigatorEX, CDLabel Print, Easy-Photo PrintEX, ScanSoft Omnipage SE	Epson Print CD, Epson Creative suite, Camera Raw plugin, Epson Image framer
Performance					
Printing					
First Print out	29	29.5	29	9	18
PPM (draft)	22	22	22	26	26
Point Size Best Quality	52	56	54	23	39
Combi Print Best Quality	88	92	91	50	57
Photo Printout Quality	495	507	507	92	81
Combi Doc Quality (Draft)	6.4	6.4	6.5	7.5	6.1
Combi Doc Quality (Best)	6.4	6.4	6.5	7.5	6.1
Photo Printout Quality (So10)	6.5	6.5	6.5	7.5	6.5
Scanning					
Text Scan (Monochrome Mode-200 dpi) (sec)	13	13	13	13	13
Photo Scan (Full Color Mode-150 dpi) (sec)	17	17	23	5	12
Photo Scan (Full Color Mode-600 dpi) (sec)	47	85	84	25	77
Colour saturation (So10)	6	6	6	6.5	7.5
Sharpness (So10)	6	6	6	6.5	7
Details (So10)	6	6	6	6.5	7
Copying					
First Copy (sec)	25	155	150	27	43
Quality (So10)	6	6	6	7	6

CALLING FOR ATTENTION

From desirable gadgets to status icons of adolescents, and functional communication devices to conversation pieces—different people have different reasons for buying cell phones. We test the best of them to help you satisfy your needs

Michael Browne

We've been testing cell phones for quite some time now. In fact for us Test Centre blokes cell phones remain one of the tests that involve the most work, and the most fun. Although the fun aspect has always prevailed, the work aspect is something that has seen increments over the past three years or so. The reason—convergence—cell phones have evolved from bricks with number pads to smaller bricks with number pads, to devices with number pads, multimedia capabilities and cameras to the tiny all-in-one computers they've become today. So we have more to test, more aspects to look at and more parameters to grade. No complaints here—double the features—we'll have double the fun!

Just when we thought more features couldn't be crammed on to a device, we see the devices themselves become sexier, something you'd want to own not for the *go*, but the *show*. All brands have become more conscious of consumers needs. Today, a user doesn't just want a cell phone with 8 GB of internal memory, PMP capabilities, 5 megapixel camera, and GPS that looks like a miniature brick. He wants style he demands a work of art—a Ferrari on a Ford's budget. Sounds impossible? Well it isn't, thanks to a little help from our oriental neighbours, who can manufacture at half the costs that we, in India, can. With most brands having moved their manufacturing units to China over the past two years cell phones have become radically cheaper. The falling costs means that vendors can finally push better products through the pipe, as consumers expand their usage patterns. So the features that you paid Rs 20,000 for two years back will be obsolete now, or at best you can get more value for money off a phone that will cost you no more than Rs 10,000 today. That, friends, is more power to the people, and India's booming cellular market with a sale of more than 85 million handsets last year is a strong contributor the 1+ billion phones sold globally in 2007. At just 18 million odd handsets sold in 2003, we've seen a tremendous growth rate of over 400 percent over the past four years, a trend which we fully expect to continue.

Walkie-talkies And Little Else?

Rs 3,500 to Rs 8,000

Basic cell phones may be far from flagships but they rule the volumes game. Falling prices have affected cheap cell phones too, so better technologies have trickled into this price point as well, and these phones are offer a lot to someone making his first foray into the world of cell phones, or anybody looking for something basic. A far cry from the high end multimedia smartphones these little jewels fight fiercely for a market that is at best ruthless, where any lacunae in their performance is fully exploited by other market players.

Features

LGs *KE770 Shine* is easily the most attractive cell phone amongst these minnows. It's very well built with a full metal body, something which belies the price. The

LG K195 - Value Winner

screen is also a mirror finished affair, although at a resolution of 176 x 220 pixels the finish is the only impressive aspect of the display. The keypad is well laid out, although feedback is entirely another matter. Sony Ericsson's K550i and K530i are obviously siblings although the higher model (K550i) has a semi metal body while the other is purely plastic. The K530i does have a larger, more comfortable keypad though. The Intex Aura i2224 is a decent looking phone, but the

How We Tested

We scoured the market for phones costing no less than Rs 4,000, as this is meant to be a more comprehensive look at the cell phone market than our earlier shootout in January this year. For the purposes of comparison we divided the candidates into two main categories:

1. Multimedia Phones
2. PDA Phones

Multimedia Phones were divided into four sub categories:
1. Phones from Rs 3,500 up to Rs 8,000
2. Phones between Rs 8,001 and Rs 15,000
3. Phones between Rs 15,001 to Rs 20,000
4. Phones above Rs 20,000

PDA phones were divided into 2 categories:
1. PDA phones up to Rs 20,000

2. PDA phones above Rs 20,000

Besides rating the phones specifications and features we also paid close attention to the ergonomics factor. We gave scores for keypad layout, keypad comfort, joystick/joypad feedback and ease of usage, menu system and intuitiveness and placement of options, shortcut buttons on the phone and headset and multimedia buttons present on the device. Besides this we also rated the build quality of the device, keypads, and any movable parts, (such as sliders, battery covers etc) and quality of accessories.

Besides the performance of the cell phones as phones, as PMPs and as cameras we also rated their processing speeds. PDAs had a few additional points we looked at such as their performance as PDAs and the utility of the preinstalled and bundled applications.
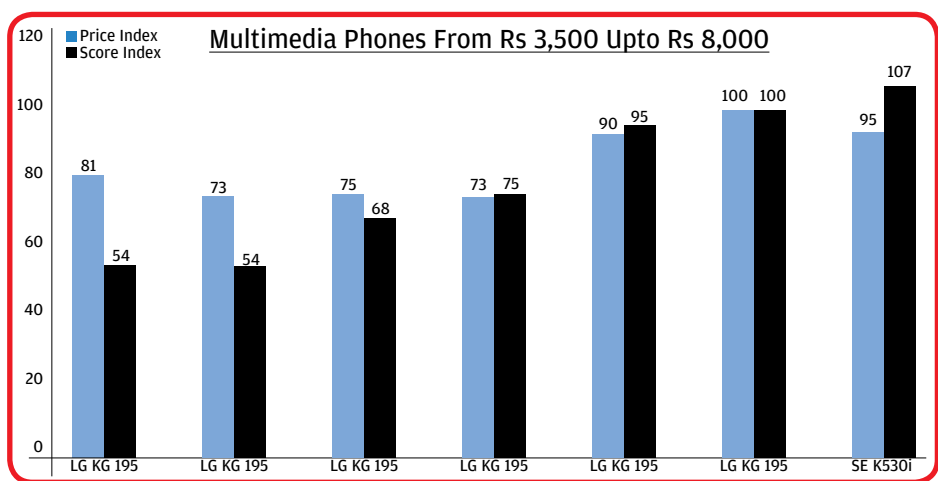
build quality isn't as inspiring. In fact the cheapest phone in the test (LG KG195) is better built, although to be honest this LGs build quality really surprised us, so the Aura i2224 isn't shabby or anything. All these phones are reasonably compact and will fit even the tightest pocket—the KE770 is the slimmest here.

Aside from the LG KE770 and SE's K550i and K530i which have 2 megapixel cameras all the other phones sport lower-end cameras with either VGA or 1.3 mega-pixel sensors. Intex's IN3333 and LG's KG195 had a surprise waiting—these phones can be used in offline mode, unlike many of the higher-end phones, which need SIM cards to be inserted before the menus become available for use. Although of little use to most, this may be significant to some. Bleu's 466x is a simple phone with no frills save one—it has a full 80 minutes of the famous religious TV serial *Ramayana*—although the screen quality or size isn't too great and we feel this little add-on will be ignored by most users, it merits mention.

Performance

The LG KE770 and both Sony Ericssons (KE550i and KE530i) have superior cameras, although at this price point you will get very nominal quality from all these phones. What we liked was the call clarity of these three phones, although the KE770 has very limited potential as a music player owing to lower quality sound than both the SE phones.

In the lower half of this category the Intex Aura i2224 battles with the LG KG195 and loses out mainly because the LG is a better performer all round, although the 0.3 megapixel camera will disappoint all camera lovers who buy the KG195. Bleu's 466x and Intex's IN3333 are decent phones, but not at par with some of the others in this price bracket.

Multimedia Phones From Rs 3,500 Upto Rs 8,000

	Price Index	Score Index
LG KG 195	81	54
LG KG 195	73	54
LG KG 195	75	68
LG KG 195	73	75
LG KG 195	90	95
LG KG 195	100	100
SE K530i	95	107

Who Won, And Why?

Our prestigious *Best Buy* award goes to the LG KG195, which at Rs 3,990, is fiercely competitive at its price point. It even manages to steal the limelight away from costlier models in this category. The fact that it is the cheapest phone in the entire test just goes to show that value and performance can coexist.

Smartphone Entry Points

Rs 8,001 to Rs 15,000

This category is perhaps even bigger than the previous one, as quite a few metropolitan people who go cellphone shopping have their sights on this price range. This is because devices in this price range are mostly smart-phones, and everybody who has seen one or used one, wants to own one. The average college kid, the teenage with an attitude, the executive making a flashy purchase after saving his first 2 months' salary—all these people are likely to be found seeking a phone in this price range. Here's where the features start to emerge, and the phones start to get bigger, crisper screens, better cameras, more memory, not to mention better build quality and keypads.

Features

The Sony Ericsson W380 caught our attention first. A cute clam-shell phone, this one features a high quality matte purple body with some pink shortcut buttons. Now before you think *Playboy* (the pink does resemble the magazines favourite shade) this phone isn't necessarily aimed at females, a fact which may not become apparent the first time you see it. When we saw other colours of the phone i.e. silver and black, we knew for sure that SE has designed something total-ly unisexual. The OLED embed-ded into the front of the phone comes as a shock at first, because looking at the body one expects it to be an opaque fibre, and not translucent. Nevertheless this display is pretty useful when the phone is closed, as it shows you the time, battery status, missed calls, unread SMSes, etc. Besides the utility it's also ultra cool, and adds a little more value. The SE K660 is another excellent looking phone, white with light, fluorescent green trim on the sides. It also feels remarkably solid to hold, and looks like a K850i clone, albeit smaller, and of course much cheaper. Other than the two Sony Ericsson phones the Nokia 5310 Express Music is also noteworthy. It's very slim, in the same league as the sleek Sony Ericsson W890 in this regards, and the body is entirely made of aluminium. The media player buttons on the front bezel, to the left of the screen are very visible, and very usable. Its main shortcoming is the flat keypad that exudes a wooden feedback—SMS junkies beware! LGs KF510

BEST BUY
digit
AUGUST 2008

SE W380 - One sexy clam

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is another sweet looker—made of shiny metal available in glim-mering red and black the KF510 is superbly built and has a great slider mechanism. Also worth mention is the Motorola ROKR U9, which is a cute, oval shaped clamshell phone that looks a little like the Motorola PEBL (named because it resembles a pebble, evidently). We'd give the beauty award to the W380 though, and the best build prize would be claimed by the K660—so that's two for Sony Ericsson. Nokia's 5610 Express Music is also available, but this one doesn't impress with its build too much, although the slider qual-ity is good. Nokia's 6500 Classic is another sleek, slim phone with a decent keypad and good build quality—although we didn't like the battery cover's removal pro-cedure—a simple grab and yank cannot be good for the long run, where some sort of play between surfaces is bound to develop. This phone also has 1 GB of inbuilt memory and no memory expan-sion—a shame considering the falling prices of flash storage. The Samsung D780 is a plain looker, well built, but simple.

The Nokia 5610 and LG KF510 have the best cameras, the reso-lution of both are 3.2 mega-pixels. Both also have excellent screens. With VGA resolution video capture the Nokia 5610 does take the lead when it comes to video shooting.

Performance

LGs KF510 has a superb antenna inside and the voice clarity is testament to this—we enjoyed clear call quality even in zone 2 which absolutely butchers cell phone radio signals. In terms of music quality it lags behind though, and both Sony Ericssons and Nokia's Express Music duo outperform it easily. The KF510 does get back in the camera quality tests—understandable since it does have a better cam-era, and was the only other phone besides the Nokia 5610 to sport an autofocus—which does do wonders for image sharp-

ness. A surprise performer in the music test was the Sony Ericsson W380—this cutie has a great voice too!

Who Won, And Why?

Sony Ericsson's W380 is just too good a phone to pass up—its damn good looking, is suitably feature rich, has great music quality, a very usable key-pad, and it's a clamshell—good clamshells are rare! We're award-ing it our Best Value award, the absolute clincher for it being the fact that it's the cheapest phone in this category at a price tag of Rs 8,195, and the nearest competitor in terms of price is costs around Rs 1,700 more. This phone makes a superb buy for those looking for a phone with-out a good camera. If you want a decent camera phone that also has good music quality then you should look at the Nokia 5610 or the LG KF510, we prefer the LG phone though, its much better built. If by chance neither phone attract and you want something solid (not a slider) then take a look at Sony Ericsson's K660—it's a superbly built, solid little thing and also quite feature packed.

Feature-rich, Fancy Multimedia Phones

Rs 15,000 and up to Rs 19,999

Nokia N78

Wannabe rich-boy's play-toy

Nokia's N78 is another device formed out of the thought process that brought about the N82—a convergence of features, in a nice compact body. Although if you compare features you'll see the N78 bears striking resem-blance to the much older N73 instead. With a 3.2 megapixel camera, a sleek body that's slim and ultra compact and a tiny

Multimedia Phones From Rs 8,001 and up to Rs 15,000

	Score Index	Price Index
SE W380	85	61
SE K 660	93	74
Nokia 5310	83	76
Samsung D780	86	78
Motorola Rokr U9	72	86
LG KF 510	98	91
Nokia 5610	100	100
Nokia 6500 Classic	86	111
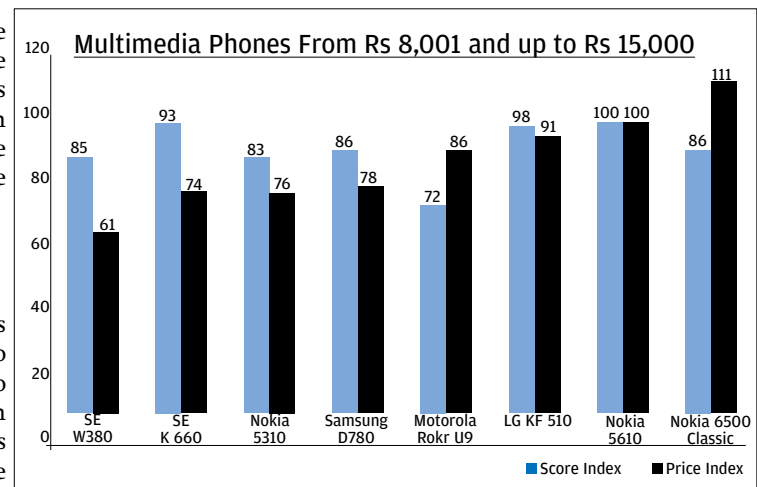
keypad (sadly) the N78 is one of the best looking, best finished phones we've seen. The steel grey finish is absolutely top class, and the quality of acces-sories is also excellent—a very good bundle in all. The phone itself sports a great screen that's unfortunately small—2.4 inches is no substitute for a 2.8 inch screen and once you've used the latter, anything smaller seems microscopic.

In terms of connectivity the N78 has it all—WiFi, GPS, superb MP3 player, great camera as well as a snappy processor to get everything done. While the keypad initially looked tiny, it actually works better than the N82, and despite the keys being little more than oblong ridges, you can use this phone without finger-nails playing a major role in pressing keys.

At Rs 19,999 just a hairsbreadth separates the N78 from the pre-mium, Rs 20,000 plus category of phones—and in that category itself we must say this phone would hold its own. Its not the best all-round phone, and neither does it have the best camera or the best keypad, but for someone looking for something that's down-right handsome, feature rich, and compact you have a definite winner at the price point.

Nokia N78

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Samsung SGH-i450
Samsung on Symbian

Another Samsung, another slider phone—the i450 is however, based around a Symbian S60 platform which is rare for Samsung phones. The slider mechanism isn't the best we've seen and by Samsungs standards is quite mediocre to be honest. Build quality is good, but once again the pizzazz that was present in the costlier phones is curiously absent and sorely missed. The keypad is well laid out and easy to use. The large buttons on the front facia are also rather difficult to misuse, and the menu system is very intuitive—typical Symbian. The high resolution screen measures 2.4 inches diagonally, but uses an outdated panel (256,000 colours). The 2.0 megapixel camera is also strictly included simply for the sake of including a camera—it's only good for the odd shot or so. Music quality is good, and music aficionados won't be disappointed.

Overall, the SGH-i450 is a phone that is overpriced in our opinion, although it's not a bad phone. Sadly the price puts in a league where it gets hammered by some unrelenting competition. Such features and performance can be found for a lot less if you take a look at our tables. At Rs 16,799 you can afford to give this one a wide berth.

Sony Ericsson W890
Walkman on a diet

The W890 is one of the newer walkman phones around. Its dimensions are extremely compact, and the phone is very slim (half the thickness of the N95 8 GB!). The screen although small (2 inches) sports a high resolution of 240 x 320 pixels and at 78 grams the W890 won't damage your shirt pocket. Build

quality is also pretty good, and although metal (quite obviously) hasn't been used in the construction everything feels solid and well put together even after a week of usage.

The keypad is slightly cramped, but taking into consideration that this is a small phone SE has done a commendable job of using every available millimetre of space to prevent the keypad from becoming a serious hindrance to usage. The W890 is a snappy phone, and it has a snappy 3.15 megapixel camera that offers some good results, although not as good as a dedicated camera phone would offer.

In terms of connectivity the W890 is loaded, and WiFi is the only trick it misses out on. If you're looking for a very compact, light phone with good music quality and a good camera for the price point of Rs 15,000 or so then the W890 makes a good buy at Rs 15,495. If the dimensions and weight aren't of any consequence take a look at the next contender.

Nokia 6500 Slide
Heavily armoured foe

Nokia's 6500 has the best slider mechanism we've seen from any Nokia phone barring the *Sirocco*. Its outer body is built out of brushed steel, which exudes a quality feel. Needless to say the phone's heavy, although you'd be hard pressed to find better build quality. The keypad is well laid out, although the buttons are a little flat—we'd like a little more bevelling to impart feedback. The quality of accessories is as good as we've seen, and a TV out cable has been provided; just like the N95 8GB and the N82—both much costlier phones.

The 2.2-inch screen features a high resolution of 240 x 320 pixels and has a rich 16 million colours. Camera and music playback quality are well above par, although not enough to sway a purchasing decision solely on their performance. GPS and WiFi are the only features that the 6500 Slide misses out on. Although it's built well, the look itself is unexciting, and may not inspire interest when compared to its beautiful siblings.

At Rs 15,219 the 6500 Slide makes a good buy for someone looking for a feature-rich, usable and very sturdy cellphone. Expect too much in the way of sex appeal from it and you're going to be disappointed.

Nokia 6110 Navigator
The North Star? Not really...

The 6110 has been graced with the suffix *navigator* mainly because of the inbuilt GPS and the fact that it supports Nokia Maps. While also a slider phone like the *6500 Slider*, build quality of the slider mechanism and the device itself is no match for its superior sibling. The body is made of cheaper, plasticy materials. The keypad is flat, but reasonably well laid out and using it is largely ergonomic.

Sony Ericsson W890

Samsung SGH-i450

Nokia 6500 Slide

Nokia 6110 Navigator

On the multimedia front the 6110 Navigator has a 2.0 megapixel camera that is largely cosmetic. It has decent PMP capabilities and music quality is good, as is video playback, courtesy the crisp 2.2 inch screen that could have been bigger especially considering the GPS function. It's priced identically to the 6500 Slide (Rs 15,219), and has a couple of additions and a couple of reductions. Build quality is nowhere as good, and if cellphone integrated GPS is really your thing there are better, albeit costlier, options. Those who want a good camera phone that's flashy looking, will look elsewhere. It makes a sweet buy for those looking for a cheap, reliable GPS-enabled phone.

The Magnificent Five

Multimedia Cell Phones
Rs 20,000 and above

Nokia N95 8GB
The return of the King

Bulky by today's standards the N95 8GB is a wonderfully functional device that exemplifies the phrase *all-in-one*. It looks slightly dated now, but the mix of rubberised black rear finish and glossy black front finish still grabs attention, as does the beautiful, crisp 2.8 inch screen and the unique 2-way slider. The chrome buttons atop the front add a very PDA-like feeling, but unfortunately the large, gorgeous screen isn't touch capable. The menu button and keypad layout is very good, and with a load of shortcut keys the N95 8GB is very ergonomic. With features like built in GPS and support for Nokia Maps, and a built-in 8 GB of storage, in addition to goodies like WiFi and a 5 megapixel camera this phone has something for everyone. The upgraded battery (1200 mAh) gives more talk time and the signal and voice clarity are absolutely excellent.

When it comes to features the N95 8GB is a phone with

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Nokia N95 8GB

a genuine case of a split personality—it offers nearly everything to almost every possible user. And this is its major strength and major flaw. It's a brilliant device that was the first of its kind and has spawned many. No surprise its price tag is still somewhat high—Rs 28,000. Amongst our complaints and suggestions for improvements are a slightly larger screen (3.2 inches), a better battery, touchscreen, and a Xenon flash for the camera, and the slider mechanism from the Nokia's *Sirocco* series. And can it be a little slimmer? And can we get more than 8 GB of storage? Thanks.

Nokia N82
Next in line

For those who don't have the moolah to buy the N95 8GB, or want something more compact the N82 will appeal. For one it's solidly built, although the keypad is very cramped and will take some getting used to, even if you happen to have long nails. Feature wise it's identical to its costlier sibling, but loses out on the slick double slider and adds a much needed powerful Xenon flash. Although the screen isn't as good as the N95 8GB, what is appreciated is the compactness of this device, and the fact that Nokia managed to fit everything into a shell that is 25 percent smaller in volume.

Although the N82 may have the same hardware but it looks and feels different enough to have a unique personality. For one, its music quality isn't as good as the N95 8GB—which it

will be inevitably be compared to. Secondly, and more importantly, signal and voice quality isn't as good as its costlier sibling, and the keypad isn't much fun either—Nokia needs to take a lesson from some of the Sony Ericsson phones when it comes to designing costly phones' keypads. A small gripe, but a gripe nonetheless. The average college kid will still be happy flashing this phone around, and with its build quality it should weather daily usage well. At Rs 22,499 it's a very good, feature-rich, and hot looking phone—but it's not as usable as its costlier sibling.

Nokia N82

LG KU990 (Viewty)
Mass Appeal

LGs KU990 a.k.a. Viewty is a phone that should get instant attention owing to its rather unique looks. Some may love it, some may hate it—but everyone will notice it. We found the chrome strips down the side and the rear of the phone pretty atrocious—in a bad way. Feature-wise the Viewty has all the good-

ies—decent ergonomics, good build quality and a 5 megapixel camera that actually shoots videos in up to VGA (640 x 480 pixels) resolution. The Viewty also supports WMV and DivX video playback, somewhat of a rarity. A large 3 inch screen dominates proceedings although the Viewty does (shockingly!) without WLAN, and any sort of keypad, or menu buttons, save one very iPhone like menu button. Sad to say device navigation isn't really helped by this lack of interface. The touchscreen does remedy things but finger touch control isn't as good as we'd have liked (the iPod Touch spoilt us silly). The stylus is a saviour of sorts. LGs menu system is reasonably intuitive, and we found no noteworthy complaint.

It loses out in terms of performance to the two shining Nokias, in nearly every test, and we'd like to see improvements in the music player quality, and signal quality tests. As a camera phone the Viewty is good, but not as good as the other five megapixel offerings available. At Rs 20,490 the large touchscreen may be nifty enough for you to skip the Nokia's and pick this up. If you have the moolah, spend a little more and get one of the two above.

Samsung U900
Sick-slick slider

Samsung makes excellent sliders. Definitely true, if the U900 is any indication. Besides being very well built, slim, and featuring a brushed metal body, the U900 has a lovely, (if somewhat small), screen. It's compact too, and very much for the college goer looking for something powerful and chic. The call accept/reject button are large, you could find them with your eyes closed. The keypad seems reminiscent of Motorola phones, some sort of a membrane based keypad

LG KU990 (Viewty)

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Samsung U900

that nonetheless works fine. The most innovative feature is incorporated into the menu button— there is none! What you have instead is an OLED lit pad that is touch and swipe sensitive and works beautifully. The backlight activates according to the feature you select. For example using the *down* backlit arrow on the joypad will cause the down arrow to get highlighted. Although this is little more than a gimmick, it's original, and works well, which is more important.

Samsungs five megapixel camera is easy to use with good menus and options, although its camera isn't as good as the N95 8GB or the N82. The only trick which Samsung may have missed is the presence of GPS and WLAN as features, and for the price point we'd have expected something like this included. At Rs 20,035 the U900 is a good phone for someone looking at something cute, hardy, yet functional. It hasn't got the powerful convergence of features like the N95 8GB and N82, but it looks radically different and is flashy too, like the Viewty. Choose it over the two Nokia's above only if you don't need the extra features they have.

Sony Ericsson provides good PMP capabilities, a good music and video player menu system, and good stereo sound. The camera that the "K" series are famous for is the pinnacle of SE's cameras—5 megapixels coupled with the Xenon flash, although continuous usage reveals a quirky flash. It's every bit as good as the N95 8GBs camera, perhaps a little better on the clarity front, although we'd like our colours to be a little more natural with un-highlighted contrasts. But the K850i's camera scores in one aspect—getting good shots requires less tinkering with settings than Nokia's phones, which give you great quality only when the settings are configured properly.

Sony Ericsson K850i

The colour scheme is cool—shiny black with dark green stripes down the sides and on the joypad—and is an attention grabber. The other thing that will attract you immediately is the compact dimensions of this phone. The only minus as a result of this is the very small number keys on the phone, thanks to which the edges of your fingers will get sore after a lot of SMS typing—a saving grace is that the keypads well spaced out, else this device would be a spectacular failure.

Sony Ericsson K850i
Click, flash, smile...

The K850i targets users desiring a good camera phone— exactly what their K750i achieved some three years back. This is a device that will strike you with its sheer build quality—its like a little rock, and feels exceptionally solid in hand.

For Rs 20,000 the K850i is an excellent little phone. Although its not as feature-rich as the N95 8GB, it's a very different device, focussed more on the user who wants something compact, and more handy to pull off a couple of quick shots. For those wanting a huge feature list look elsewhere. This one focuses on being a *king* of a few trades, and not a *jack* of many.

Going Corporate On A Budget

PDA Phones up to Rs 20,000

This category spanned seven phones. Such business devices represent the lower-end of the PDA/business smartphone market, where price is an important consideration, and features are second in terms of priority. Such phones are sought by those looking for a PDA-like experience for cheap. Such users may or may not have serious business usage in mind, and these devices will shed hardcore business features for a more generalist feature set. Don't expect great QWERTY keypads, and certain advanced features like GPS may be unavailable. Some phones may also have certain hardcore business features and give up some multimedia capabilities. Whatever your requirements are, you'll find a surprising variety of phones here, with a startling variety of features.

HTC P3470
Mediocre looks

HTCs P3470 is a PDA phone based around a Windows Mobile (WM) 6.0 Pro OS. It's rather plain to look at and will garner no beauty accolades. Although build quality is good, nothing is inspiring. The lack of a QWERTY and any form of number pad will ensure that serious PDA users will look elsewhere. Due to this glaring omission the P3470 has ergonomic issues. Its camera and multimedia properties aren't

too fancy either, although the features are available. More importantly the phone lags slightly—this indicates a slower processor. Call clarity is about par with what is acceptable, nothing more.

Although the P3470 is reasonably compact it's nowhere as attractive as the ASUS P320, nor as functional as its costlier sibling the Ty TN II, and for Rs 19,990 we can't recommend it to anyone.

LG KS20
Tasteful design

The KS20 borrows deeply from LGs desire to make hot devices for the young, urbane crowd. Unfortunately, too much of a good thing kills as the proverb goes, and the chrome down the sides of a shiny black exterior may be viewed as garish or tasteful—depending of course on your aesthetic senses. While the device fits the hand well, it also has a couple of glaring ergonomic issues. For one, the joystick's a total pain to use, and navigation is irritating. Although based on WM 6.0 Pro means application support will be very good, the KS20 seems to be more of a lifestyle device than a serious PDA as both number and QWERTY keypads are absent. This also means that the device is quite compact and lightweight, despite retaining a screen size of 2.8 inches.

The camera and music performance was about par, although it takes more to impress. Once again a nifty add-on by LG is the ability for this phone to play DivX

HTC P3470

videos, like the KU990 (Viewty). Video playback was also pretty good, and this makes the KS20 somewhat of a saving grace. Its also one of the few PDA phones to support FM Radio, which is rarity for business devices. At Rs 19,990 the KS20 is a stylish device to be sure, but there are better PDAs and better cellphones available at the same price point, which leaves the KS20 out in the cold.

Nokia E61i
The Incredible Bulk

Nokia's E61 and E62 belong to a family of phones spawned by Nokia's obsession with sumo wrestlers or some other monolithic object. The E61 suffixed with an "i" for a camera, is a bulky device that's quite well built, and features a well laid out, and spacious QWERTY keypad, that was slightly improved ergonomically over the keypads of the E61 and the E62. These phones aren't PDAs in the truest sense, as document creating and advanced editing isn't possible and Nokia themselves prefer the term *business phones*.

Nokia E61i

The screen itself is beautiful at 2.8 inches, and features 16 million colours. Sadly there's no touch functionality which would have been a productive and nifty add on. The beauty of the E61i lies in its simplicity however, and as a business phone to type out mails, or for long hours on call (thanks to the huge battery) it makes perfect sense. The camera itself is no great shakes, and the audio qualities of this phone are limited. However video playback is fun due to the screen. At Rs 18,299 the E61i is quite expensive for the features it offers—which will satisfy neither the diehard business user, nor the diehard multimedia junkie. Also at the price, much better options in each usage sphere exist.

LG KS20

HTC Touch
Touch Flo—no go

The first to utilise the touch flo concept that Apple used for the iPhone and the iPod Touch and quite frankly it wasn't as well implemented as we'd liked. Imitation is the best form of flattery, but only if it's well executed. Needless to say without any sort of keypad, and Touch Flo not working the same magic as it did for Apple, the HTC Touch is a flawed business device. It's well built however, and attractive as the silver menu button is the only relief from the matte black finish across the body. Based around WM 6.0 Pro the device is also slow, which doesn't help. Although voice clarity in-call isn't bad, the multimedia frills are just that—frills—mostly for show and hardly any go.

It's an old device too, and one we tested last year as well. At Rs 16,990 the Touch is no more novel than the concept of *free* home deliveries these days. Resist the urge to touch this one.

HTC Touch

Palm Centro
Memoirs of a bygone era

The Centro is the only device actually based on a Palm OS, and is a refreshing change after all the WM devices floating around. It's a novel concept—create a neat, curvy phone, add a full QWERTY keypad and touchscreen and drop in a Palm OS—which has to be praised for the menu intuitiveness and layout, and transparency of settings. At 2.6 inches the screen is square and features a square resolution of 320 x 320 pixels which is good. A pity that the

Palm Centro

QWERTY isn't well laid out, and although the keys have adequate gaps the keys themselves are small and difficult to use unless you're well accustomed to the keypad. At Rs 13,990 our only issue would be application support and the lack of a really usable keypad.

Nokia E51
Tiny, mighty

When the E51 came out we were very impressed. Strong on paper specifications and a rugged phone that was sleek and stylish. A year has passed and the E51 is still

Nokia E51

charming, although not as hot as we once thought it to be, as countless clones have spawned that surpass its capabilities. The build quality is great, and the phone itself has been well designed. It's got a clear, crisp screen that does seem tiny in comparison to others (2 inches). It's rich in terms of connectivity options although its light on multimedia features. It targets the business user who wants something basic. It still makes a decent buy for someone looking for a good, feature rich phone, but at Rs 13,069 has lost the oomph factor.

ASUS P320

ASUS P320
Small Warrior

ASUS' P320 is a cute phone cum PDA, with a large menu button and little else on an attractive black facia. It's very compact, much smaller than most PDAs, and sports a 2.6 inch touchscreen, which is great for such a compact device. Build quality is excellent and the fit and finish very good. Although the lack of any sort of keypad will detract from its appeal to hardcore PDA fans, we reckon this device is somewhat of a poster child for PDAs/smartphones in general.

WM 6.1 Pro makes its first official appearance in our test labs with this device and full office document creation and editing is supported (although the QWERTY is missed here). With full MS Outlook 2007 bundled, and useful applications like a business card scanner, and Voice Commander 2.0 the P320 is definitely loaded in terms of software. A 2 MP camera and integrated GPS means that the bundle is complete. It's got all the connectivity options (WiFi, Bluetooth etc), although HSCSD and 3G support are missing amongst communication standards. So a good phone, with good features. Shockingly, it's priced at just Rs 12,900, and that's MRP! At the price the P320s a steal, and if you have ever wanted a PDA cum smartphone this may be your best (and cheapest) bet to jump on to the bandwagon.

For The Discerning Corporate-types
PDA Phones Rs 20,000 And Above

Nokia E90 (Communicator)
The brick is back!

Nokia has to offer at least one phone that can also double as a capable club-like weapon. Jokes aside their E90 is one heck of a capable device. It follows the classic Communicator design in being very much like a compass box, and will remind you of the E9500 and E9300. But under the hood lie an entire new set of innards. And the build quality is unmatchable, as is the superb finish. The E90 has two screens—both are very high resolution and both feature 16 million colours. An autofocus 3.2 megapixel camera that actually offers superb quality may have you forgetting that this is essentially a PDA phone and not a teenagers dream gadget. The inner screen is an ultra wide 4 inches, although the phone becomes bulky as a result, and weighs a hefty 210 grams.

The number keypad is well laid out and very usable, and the E90 is very usable as a phone without ever opening the lid! The inner keypad is a QWERTY, and although the keys are well laid out and large enough, the feedback can only be described as clicky and hard to press—not something a corporate user typing out 20 mails a day really wants

Nokia E90 (Communicator)

to hear. And that's the E90s main clientele—the business user. There are seven Symbian shortcut keys available for speeding up regular corporate tasks. Although the outer joypad (D-pad in Nokia speak) works really well the inner one is clicky, which is our major gripe with the keypad and the phone in general. Going by the business users need to travel the E90 incorporates GPS as well.

Thanks to the high resolution inner screen (800 x 352 pixels) web browsing is a real treat, something of a novelty that we haven't seen since the *Imate Jasjar* days. As a business phone the E90 makes a lot of sense, although office document editing features are a little low as are the formatting options. In terms of office productivity Symbian is still not up to the mark for MS Windows based PDAs. Although application support for Symbian is rich, most of the business grade applications are still developed for the Windows Mobile platform, thanks to Microsoft's strong developer support programmes. However thanks to superb multimedia features the E90 gets a little more attractive. In fact attractive enough to recommend to the user who wants something to make a strong statement with. Although we cringe to think of the typical 18 year old college kid sporting an E90, because of the superb look, build quality, features and the sheer image of the Communicator series, this may well be possible. At Rs 40,139 the E90 asks for a lot. Serious business users will want to look at something more of a PDA, and less of a phone.

HTC Ty TN II
Comical name, top of its game

The Ty TN II is a WM 6.0 based device that features a super high quality, matte black finish and a nice looking chromed set of joystick and call buttons. The front bezel is brushed metal which adds a classy, timeless dimension to the visual appeal of

HTC Ty TN II

a phone that already looks attractive. Fit and finish is superb. There's a side slide mechanism that reveals a full QWERTY keypad, that while being compact doesn't sacrifice on usability while offering good key feedback—emails will no longer be a pain. The Ty TN II features GPS, a 3.2 megapixel camera as well as all the usual necessities for a good PDA phone. It's a touchscreen phone as well, and the 2.8 inch screen is large enough for this purpose. The stylus works well, as do your fingers—thanks to the large shortcuts available in WM 6.0 Professional.

While using the QWERTY keypad the screen will even slide upwards to a more comfortable viewing incline, although it's this mechanism that bothers us—too many moving parts inside a heavily used device like a phone is never a good thing. Response in general is snappy and the never seems to run out of steam. As a PDA you get a full office suite, as well an infinite number of free applications available for the WM platform. It's a good phone too, with decent in-call clarity (which could improve), and handling a call itself is a snap courtesy the large menu buttons on the front bezel. Likewise SMS' and mails are a snap with the full keypad. Another plus is the quality of handsfree unit and other

accessories. With Outlook 2007 onboard mail syncing is as easy as apple pie, no! easier.

At Rs 30,990 the HTC Ty TN II is frankly overpriced by a good bit. At a price point of Rs 24,000 or thereabouts this phone makes serious sense for business users. Its advantages include solid build quality, and a top list of features and application support, and a full, functional keypad.

ASUS M930
A little flash and little else...

The M930 drops WM6 Professional in favour of the lower flavour i.e. WM6.0 Standard, which is built ground up to support non-touchscreen devices. Also office document creation is dropped in favour of document reading and editing, and even these editing options are lighter than the Professional version. So the M930 is more a smartphone than a PDA. It's well built right down to the excellent hinge for opening the device to reveal a full QWERTY keypad. This keypad is decent, and exudes good feedback, but the size of the internal screen is what annoyed us—a miserly 2 inches, a shame when you look at all the space wasted inside with a fancy but useless screen bezel. The external screen is larger (2.6 inches) and has a proper, well laid out number keypad. On another note this 'smartphone' is good looking, and the finish is excellent. QWERTY keypad lighting is also top notch. A bundled business card scanner software and Voice Commander 2.0 add some seriously needed value.

ASUS M930

Camera quality and music playback quality are strictly so-so. Signal quality is good, but there are better options available.

ASUS builds some great PDAs. They also build some truly great looking smartphones. This one falls into the latter category—a smartphone, with some PDA capabilities, owing to its full keypad and WM platform. Seriously, straddling a divide between beauty and functionality in the business segment is not easy. This phone may appeal to a businessman, or it may not—depending on exactly what kind of a PDA phone he wants. Hardcore WM users will look elsewhere, at the HTC Ty TN II, which compared to the M930's price of Rs 27,900, starts to make a really sweet deal. If you want something PDA-like and flashy as well then the M930 may be worth checking out.

Samsung i780

This phone although good looking and well built from the front has a cheap plastic rear cover that spoils first impressions. For the rest its accessories are well built. Its got a decent screen (2.55 inches), and based around WM6 Prof. The QWERTY keypad on the Samsung feels good to use and the keys are nicely bevelled, if slightly close together, which makes typing longer emails easier. Full document creation and editing is supported, and Outlook 2007 makes emailing a snap.

On the multimedia front Samsung incorporates a 2 megapixel camera—which is pretty much defacto for cell phones/PDAs these days. In terms of performance we really liked the signal quality on i780, calls were quite clear, even in test zone 2, impressive and a much needed quality for a business oriented phone. Where the i780 seemed to lag was in terms of processing speed, although to be fair, it was no tortoise. At Rs 23,250 the i780 is a fully functional PDA.

Samsung i780

a slightly larger screen, better built body panels, and a better software bundle. As it stands the phone is good, although a little overpriced for what it offers.

Palm Treo 750
A beautiful PDA

The Treo 750 actually looks exactly what a PDA should look like—when visualised in our minds eye. It's got that curvy body that looks hot while not ruining ergonomics one whit. The build quality is great, but not excellent. The finish is a rubberised matte, which wears well. The full QWERTY keypad actually works wonders with its excellent layout and intuitive feedback—you needn't bother about typing out even the longest email, and this will definitely be a point that corporate users will fall in love with. The Stylus is also top notch in terms of build, and combined with an excellent touch screen works well. The entire device is built to fit your hand well, and there's something very, very PDA-like about the Treo 750.

Palm now uses WM5.0 for their entire high-end PDA range and their own Palm OS for the cheaper PDAs. We have to say that WM5 works well on this Treo, although WM6.0 Pro would have

Palm Treo 750

been even better. The 2.6 inch screen is quite clear and a pleasure to work with, somehow the absence of a larger screen isn't so sorely missed here. Document creation and PDF reading are supported and Outlook 2005 makes mailing a no-hassle affair.

Now for the bad—no extra applications were bundled aside from those that are part of the WM5 install. On handsfree call quality is mediocre. We'd like WM6.0 Pro, and a slightly faster processor, and more inbuilt user memory (60 MB is downright insufficient). At Rs 22,990 the Treo 750 doesn't do anything irreparably wrong, but it could do a few more things right (mentioned above). As it stands, it's a mighty useful and functional PDA for business users.

Nokia E71
Lots of steel, but is it the real deal?

This was perhaps the most anticipated phone for us, and we couldn't wait to get hands-on after seeing the images. The E71 is excellently crafted of steel and alloys, and the front is finished in satin polished steel that gives a glass-like feel. The rear cover is pure steel, with some sort of surface treatment to resist oxidisation and is dimpled for

aesthetics as well as to retain a firmer grip. The keypad feels a couple of notches lower in terms build quality and although it's a QWERTY it isn't as well laid out, or as spacious as say the E61/E62. The screen is clear and crisp and smaller at 2.36 inches. The menu icons seem to have taken a Jurassic step backwards from what we're used to seeing on Symbian based phones. Another issue worthy of note is the pathetic keypad backlighting. On a positive note accessory quality is absolutely top notch.

In terms of features the E71 has very few rivals—GPS, WiFi, and an excellent 3.2 camera with autofocus, all this in addition to its decent PMP capabilities and good music quality. But document creation support is still absent, as is the joy of MS Outlook—which itself may be reason enough for corporate users to shy away. The keypad is another gripe—although we understand the need to keep the phone smaller than the gargantuan E61/E62, couldn't Nokia have spent a little more time designing the keypad to achieve a workable compromise? At a price of Rs 22,949 the E71 is a beautiful looking cellphone that may appeal to college goers and SMS junkies more than serious business users. It's well worth the dough you fork out, although it's far from a perfect PDA phone.

Motorola Maxx Q9
When bulldozers meet keypads

The Maxx Q9 follows its namesake when it comes to its dimensions—as a result of which it's really wide, and thicker than Nokia's E61/E62, which isn't very comfortable unless your palms

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Motorola Maxx Q9

Nokia E71

are as large as small buckets. The build quality is so-so, with metal mixed with plastic on the exterior. We didn't like the finish—rubbery matte black seems to be overdone here. Once again we encountered WM6 Standard, and once again we missed the touchscreen. The QWERTY works well, and although the buttons are well laid out, the feedback one expects from a full keypad is missing—and this makes typing a little harder. Still for longer documents and mails the Q9 shouldn't be too bad. As mentioned before document creation and advanced editing is sorely missed from WM6.0's *Standard* version.

It's got a camera that is functional, no more, and the multimedia playback not so good, due to the screen which we feel is a let down, both in terms of screen size, and picture quality. Audio quality was also below par. One saving grace was the call and signal quality which was acceptable (if not good). At Rs 20,270 the Motorola Maxx Q9 isn't a recommendation worthy of anyone looking at a serious business device. Its limited potential in the entertainment realm is enough to bar all recommendations as a multimedia cell phone either.

PDA Cell Phones	PDA Phones Up To Rs 20,000							PDA Phones Above Rs 20,000						
Brand	ASUS	Nokia	Palm	HTC	Nokia	LG	HTC	Motorola	Nokia	Palm	Samsung	ASUS	HTC	Nokia
Model	P320	E51	Centro	Touch	E61i	KS20	P3470	Maxx Q9	E71	Treo 750	i780	M930	Ty TN II	E90
Price (Rupees)	Rs 12,900	Rs 13,069	Rs 13,990	Rs 16,990	Rs 18,299	Rs 19,990	Rs 19,990	Rs 20,720	Rs 22,949	Rs 22,990	Rs 23,250	Rs 27,900	Rs 30,990	Rs 40,139
Plus (+)	Very Compact	Slim, Well Built	Looks, Features	Touch-Flo concept	Great Keypad	Well Built	Built Decently	Full QWERTY	Solidly Built, Beautiful	Very Good Looks	Ergonomic	Well Built, Looks	Rugged, Very Functional	Heavy on Features
Minus (-)	Lack of Keypad	Pseudo Business Phone	Small touchscreen	No Keypad	Wide, Bulky	Mediocre Voice Quality	Misses a keypad	Bulky, Quality, Screen	Cramped QWERTY	None in particular	Plasticy Build	Tiny screens	Slightly Expensive	Bulky, Expensive
Grand Totals (Out of 100)	68.81	66.06	57.84	62.87	66.79	68.27	59.72	62.41	72.42	63.56	67.22	68.92	69.18	73.75
Features (Out of 65)	43.92	45.50	35.20	41.32	45.16	47.30	38.04	38.87	49.34	40.27	43.71	46.07	46.12	49.55
Performance (Out of 35)	24.89	20.56	22.65	21.54	21.63	20.97	21.68	23.54	23.08	23.29	23.50	22.86	23.07	24.20
Features														
Physical Specs														
Form Factor	Bar	Bar	Bar	Bar	Bar	Bar	Bar	Bar	Bar	Bar	Bar	Compass box	Slider	Compass box
Network Bands	2G / 3G	2G / 3G	2G	2G	2G / 3G	2G / 3G	2G	2G / 3G	2G / 3G	2G / 3G	2G / 3G	2G / 3G	2G / 3G	2G / 3G
Screen Resolution (Pixels)	240 x 320 pixels	240 x 320 pixels	320 x 320 pixels	240 x 320 pixels	320 x 240 pixels	240 x 320 pixels	240 x 320 pixels	320 x 240 pixels	320 x 240 pixels	240 x 240 pixels	320 x 320 pixels	400 x 240 / 320 x 240 pixels	240 x 320 pixels	800 x 352 / 240 x 320 pixels
Screen Size / Number of Colours onscreen	2.6 inches / 65K	2 inches / 16M	2.6 inches / 65K	2.8 inches / 65K	2.8 inches / 16M	2.8 inches / 256K	2.8 inches / 256K	2.4 inches / 65K	2.36 inches / 16M	2.6 inches / 65K	2.55 inches / 65K	2.6 / 2 inches / 65K (Both)	2.8 inches / 65K	4 / 2 inches / 16M (Both)
Touchscreen / Dual Screen (✔/✘)	✔ / ✘	✘ / ✘	✔ / ✘	✔ / ✘	✘ / ✘	✔ / ✘	✔ / ✘	✘ / ✘	✘ / ✘	✔ / ✘	✔ / ✘	✘ / ✔	✘ / ✘	✘ / ✔
Dimensions (LxWxH)	99 x 55 x 13 mm	114.8 x 46 x 12 mm	107 x 53.5 x 18.6 mm	99.9 x 58 x 13.9 mm	117 x 70 x 13.9 mm	99.8 x 58 x 12.8 mm	108 x 58.3 x 15.7 mm	118 x 67 x 11.8 mm	114 x 57 x 10 mm	111 x 58 x 22 mm	115.9 x 61.3 x 12.9 mm	113 x 54 x 18.7 mm	112 x 59 x 19 mm	132 x 57 x 20 mm
Weight	105 grams	100 grams	124 grams	112 grams	150 grams	92.5 grams	122 grams	134 grams	127 grams	154 grams	120 grams	158 grams	190 grams	210 grams
Expandable Memory Type / Hot Swappable (✔/✘)	MicroSD / ✔	MicroSD / ✔	MicroSD / ✔	MicroSD / ✔	MicroSD / ✔	MicroSD / ✔	MicroSD / ✘	MicroSD / ✔	MicroSD / ✔	MicroSD / ✔	MicroSD / ✔	MicroSD / ✔	MicroSD / ✔	MicroSD / ✔
Available Colours	Black, Gold	Black, Silver	Obsidian, Glacier	Black, White	Silver, Mocca	Black	Black	Black	White Steel, Grey Steel	Black	Black	Black	Black	Mocha Red, Black
Other Features														
Charging via USB (✔/✘)	✔	✘	✘	✔	✔	✔	✔	✘	✘	✘	✔	✘	✔	✘
Keypad (Regular/QWERTY)	NA	Regular	QWERTY	NA	QWERTY	Regular	NA	QWERTY	QWERTY	QWERTY	QWERTY	Regular / QWERTY	QWERTY	Regular / QWERTY
Address Book Capacity / No of calls in Register	Unlimited / Unlimited	Unlimited / Unlimited	Unlimited / Unlimited	Unlimited / Unlimited	Unlimited / Unlimited	Unlimited / Unlimited	Unlimited / Unlimited	Unlimited / Unlimited	Unlimited / Unlimited	Unlimited / Unlimited	Unlimited / Unlimited	Unlimited / Unlimited	Unlimited / Unlimited	Unlimited / Unlimited
Talk Time / Standby Time	4 hrs 40 min / 265 hrs	4 hrs 20 min / 310 hrs	4 hrs / 300 hrs	5 hrs / 200 hrs	9 hrs / 400 hrs	3 hrs / 270 hrs	5 hrs 50 min / 240 hrs	6 hrs 30 min / 480 hrs	10 hrs 30 min / 410 hrs	4 hrs 30 min / 200 hrs	7 hrs / 400 hrs	4 hrs / 200 hrs	6 hrs / 400 hrs	5 hrs / 330 hrs
No of Profiles # / Customisable *	NA	6 / ✔	6 / ✔	NA	6 / ✔	NA	NA	5 / ✔	6 / ✔	NA	NA	6 / ✘	NA	6 / ✔
Offline Opearability (✔/✘)	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
OS	Microsoft WM 6.1 Prof	Symbian OS 9.2 (S60)	Palm OS 5.4.9	Microsoft WM 6.0 Prof	Symbian OS 9.1 (S60)	Microsoft WM 6.0 Prof	Microsoft WM 6.0 Prof	Microsoft WM 6.0 Standard	Symbian OS 9.2 (S60)	Microsoft WM 5.0 Prof	Microsoft WM 6.0 Prof	Microsoft WM 6.0 Standard	Microsoft WM 6.0 Prof	Symbian OS 9.2 (S60)
Connectivity														
Browsing (GPRS/HSCSD/EDGE/3G)	✔ / ✘ / ✔ / ✔	✔ / ✔ / ✔ / ✔	✔ / ✘ / ✔ / ✘	✔ / ✘ / ✔ / ✔	✔ / ✔ / ✔ / ✔	✔ / ✘ / ✔ / ✔	✔ / ✔ / ✔ / ✔	✘ / ✔ / ✘ / ✘	✔ / ✔ / ✔ / ✔	✔ / ✘ / ✔ / ✘	✔ / ✔ / ✔ / ✔	✔ / ✔ / ✘ / ✘	✔ / ✘ / ✔ / ✔	✔ / ✔ / ✔ / ✔
Connectivity (WiFi/Bluetooth/IR/USB)	✔ / ✔ / ✘ / ✔	✔ / ✔ / ✔ / ✔	✘ / ✔ / ✘ / ✔	✔ / ✔ / ✘ / ✔	✔ / ✔ / ✔ / ✔	✘ / ✔ / ✘ / ✔	✘ / ✔ / ✘ / ✔	✔ / ✔ / ✔ / ✔	✔ / ✔ / ✘ / ✔	✔ / ✔ / ✘ / ✔	✔ / ✔ / ✔ / ✔	✔ / ✔ / ✘ / ✔
Bluetooth Version/A2DP support	2.0 / ✔	2.0 / ✔	1.2 / ✔	2.0 / ✔	1.2 / ✔	2.0 / ✔	2.0 / ✔	2.0 / ✔	2.0 / ✔	1.2 / ✔	2.0 / ✔	2.0 / ✔	2.0 / ✔	2.0 / ✔
Mail Client Support	✔	✔	✔	✔	✔	✔ (MS Outlook 2007)	✔ (MS Outlook 2007)	✔	✔	✔	✔	✔ (MS Outlook 2007)	✔ (MS Outlook 2007)	✔
Accessories														
Bundled Applications on disc / Preinstalled Apps	Voice Commander, Microsoft ActiveSync 4.2	NA	Microsoft ActiveSync 4.2	Microsoft ActiveSync 4.2	NA	MS ActiveSync, MS Outlook 2007, WM Device Center	NA	Microsoft ActiveSync 4.2	Nokia PC Suite	Microsoft ActiveSync 4.2	Microsoft ActiveSync 4.2	Voice Commander 2.0, Microsoft ActiveSync 4.2, Business Card Scanner	Voice	Nokia PC Suite
Overall Build Quality (So 10)	7.25	8.08	7.06	7.13	7.63	7.00	6.75	6.44	8.38	7.56	7.33	7.69	7.94	8.50
Overall Ergonomics (So 10)	6.21	5.68	5.93	5.82	6.54	6.07	6.00	5.93	5.82	6.21	6.00	6.71	6.11	6.61
Camera Specs														
Image / Video Capture Resolution	2.0 MP / 320 x 240 pixels	2.0 MP / 320 x 240 pixels	1.3 MP / 320 x 240 pixels	2.0 MP / 320 x 240 pixels	2.0 MP / 320 x 240 pixels	2.0 MP / 320 x 240 pixels	2.0 MP / 320 x 240 pixels	2 MP / 320 x 240 pixels	3.15 MP / 320 x 240 pixels	1.3 MP / 320 x 240 pixels	2.0 MP / 320 x 240 pixels	2.0 MP / 320 x 240 pixels	3.15 MP / 320 x 240 pixels	3.15 MP / 640 x 480 pixels
Lens Protection / Rear Mirror for Self Portrait / Dual Cameras / Flash (✔/✘)	✘ / ✘ / ✘ / ✘	✘ / ✘ / ✘ / ✘	✘ / ✘ / ✘ / ✘	✘ / ✔ / ✘ / ✘	✘ / ✔ / ✔ / ✔	✘ / ✘ / ✔ / ✔	✘ / ✔ / ✘ / ✔	✘ / ✔ / ✘ / ✔	✘ / ✔ / ✔ / ✔	✘ / ✔ / ✘ / ✘	✘ / ✘ / ✔ / ✘	✘ / ✘ / ✔ / ✘	✘ / ✘ / ✔ / ✘	✘ / ✘ / ✔ / ✔
Camera Settings / Camera Speed and Effectiveness (So 10)	5.5 / 6	5 / 5.5	4 / 6	5 / 6	4 / 4.25	6.25 / 5.5	5.5 / 4.5	4 / 4	5 / 6.5	5 / 4.5	4.5 / 4.5	5 / 4.5	5.5 / 5.5	6.25 / 6.25
Auto Focus (✔/✘) / Zoom (Optical/Digital)	✘ / Digital	✘ / Digital	✘ / Digital	✔ / Digital	✘ / Digital	✔ / Digital	✘ / Digital	✘ / Digital	✔ / Digital	✘ / Digital	✘ / Digital	✘ / Digital	✔ / Digital	✔ / Digital
Multimedia														
Music Formats supported	.MP3, AAC	.MP3, AAC, AAC+, eAAC+, WMA	.MP3, AAC	.MP3, AAC	MP3, AAC	.MP3, AAC	.MP3, AAC	MP3, AAC	.MP3, AAC, AAC+, eAAC+, WMA	.MP3, AAC	.MP3, AAC	.MP3, AAC	.MP3, AAC	.MP3, AAC, AAC+, eAAC+, WMA
Video Formats supported	MPEG-4, 3GP	MPEG-4, 3GP	MPEG-4, 3GP	MPEG-4, 3GP	MPEG-4, 3GP	MPEG-4, WMV, DivX, 3GP	MPEG-4, WMV, 3GP	MPEG-4, 3GP, WMV	MPEG-4, 3GP	MPEG-4, 3GP	MPEG-4, WMV, 3GP	MPEG-4, WMV, 3GP	MPEG-4, WMV, 3GP	MPEG-4, 3GP
FM Radio (✔/✘)	✘	✔	✘	✘	✘	✔	✘	✘	✔	✘	✘	✘	✘	✔
Performance														
Signal Reception and Voice Clarity (So 10)														
Zone 1 / Zone 2 / Handsfree Clarity	7.25 / 6.75 / 7	7.25 / 6.75 / 7.25	6.75 / 6.5 / 6.5	6.75 / 6.5 / 6.75	7.25 / 7 / 6.75	6 / 5.5 / 6	6.25 / 6.25 / 6.75	7 / 6.25 / 6.5	7.5 / 7.25 / 8	7 / 6.5 / 6.25	7.25 / 7.25 / 7.25	6.5 / 6.5 / 7	6.5 / 6.25 / 7	7.75 / 7.5 / 8
Captured Photo Colour / Crispness	5 / 4.5	5 / 3.5	3.25 / 3	4 / 3	4.75 / 3.75	6 / 5.75	5.75 / 5	4.25 / 3.75	6.25 / 6	3.25 / 3.5	5.5 / 5.25	6 / 5	6.25 / 6	6 / 6
Captured Video Quality	4	2.25	3.25	3.5	4	5	4	3	6	3.25	4	4	4.5	6
Audio Quality / Bundled Earphones Quality (So 10)	6.25 / 6	5 / 5.5	5.5 / 5.75	6 / 6	4.5 / 3.5	6 / 5.5	5.5 / 5	5.5 / 5.25	6.25 / 6	6.25 / 6	6 / 6	6.5 / 6	6 / 5	7 / 6
Video Playback Quality (So 10)	6	5	5	5.5	6	5.75	5.5	4	6.25	5	4.5	4.5	5.75	6.5
Processing Speed (So 10)	5.5	7.5	7	6	7.25	7.25	6.75	7.5	7.25	7.25	6.75	7.25	7	7.5
PDA Tests														
Sync Software Interface (So 10)	7	8	6.5	7	8	7	7	7	8	7	7	7	7	8
Productivity (Word, Excel, PowerPoint or equivalents) (So 10)	8	4	7.25	6.5	4	7	6.25	7.5	4	7.5	6.25	6.25	7	5.5
Preinstalled Applications (So 10)	7.75	4.5	6	5	5	6.25	5.75	6.5	7.25	6	6.5	6	6.5	6.5

* - Windows Mobile doesn't have fixed profiles, but infinite customisation of a single profile   # - Includes "general" profile

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Multimedia Cell Phones

From Rs 3,500 Up To Rs 8,000

Brand	LG	Bleu	Intex	Intex	LG	Sony Ericsson
Model	KG195	466x	IN3333	Aura i2224	KE770	K550i
Price (Rs)	Rs 3,990	Rs 3,999	Rs 5,000	Rs 5,500	Rs 6,990	Rs 7,354
Plus (+)	Compact	Compact	Very Compact	Decent Looker	Decent Screen	Compact
Minus (-)	Lacks Features	Poor Screen	Build Quality	Build Quality	Build Quality	Lacks Features
Grand Totals (Out of 100)	47.95	43.21	44.34	42.86	53.01	58.84
Features (Out of 65)	32.48	27.98	29.46	26.55	31.17	36.55
Performance (Out of 35)	15.47	15.23	14.88	16.31	21.84	22.30
Features						
Physical Specs						
Form Factor	Bar	Bar	Bar	Bar	Bar	Bar
Network Bands	2G	2G	2G	2G	2G	2G
Screen Resolution (Pixels) / Size (inches)	128 x 160 pixels / 1.8 inches	128 x 160 pixels / 1.8 inches	240 x 320 pixels / 2.0 inches	176 x 220 / 2 inches	176 x 220 pixels / 1.77 inches	176 x 220 pixels / 1.9 inches
Maximum Number of Colours displayed onscreen	256K	65K	256K	256K	256K	256K
Touchscreen / Dual Screen (✔/✗)	✗ / ✗	✗ / ✗	✗ / ✗	✗ / ✗	✗ / ✗	✗ / ✗
Dimensions (LxWxH)	100 x 45 x 12.4 mm	115 x 46 x 15	104 x 44 x 18.5 mm	107.6 x 46.6 x 11.8mm	105 x 46 x 9.9 mm	102 x 46 x 14 mm
Weight	69.9 grams	75 grams	73 grams	90 grams	79 grams	85 grams
Expandable Memory Type / Hot Swappable (✔/✗)	MicroSD / ✔	MicroSD / ✗	MicroSD / ✗	MicroSD / ✗	MicroSD / ✔	M2 / ✗
Available Colours	Black	Black	Black	Black	Black	Black
Other Features						
Charging via USB (✔/✗)	✔	✗	✗	✗	✔	✔
Keypad (Regular/QWERTY)	Regular	Regular	Regular	Regular	Regular	Regular
Address Book Capacity / No of calls in Register	500 / 10	500 / 20	1000 / 20	500 / 20	1000 / 30	1000 / 30
Talk Time / Standby Time	2 hrs 30 min / 300 hrs	3 hrs / 150 hrs	7 hrs / 500 hrs	2.5 hrs / 200 hrs	2 hrs 30 min / 200 hrs	7 hrs / 350 hrs
No of Profiles # / Customisable *	5 / ✔	6 / ✔	6 / ✔	6 / ✔	5 / ✗	7 / ✔
Offline Operability (✔/✗)	✗	✔	✔	✔	✗	✗
Connectivity						
Browsing (GPRS / HSCSD / EDGE / 3G)	✔ / ✗ / ✗ / ✗	✔ / ✗ / ✗ / ✗	✔ / ✗ / ✗ / ✗	✔ / ✗ / ✗ / ✗	✔ / ✗ / ✗ / ✗	✔ / ✔ / ✔ / ✗
Connectivity (WiFi/Bluetooth/IR/USB)	✗ / ✔ / ✗ / ✔	✗ / ✔ / ✗ / ✔	✗ / ✔ / ✗ / ✔	✗ / ✔ / ✗ / ✔	✗ / ✔ / ✗ / ✔	✗ / ✔ / ✗ / ✔
Bluetooth Version/A2DP support	2.0 / ✔	1.2 / ✔	2.0 / ✔	2.0 / ✔	1.2 / ✔	2.0 / ✔
Accessories						
Bundled Accessories	Charger, USB cable, handsfree kit	Charger, USB cable, handsfree kit	Charger, USB cable, handsfree kit	Charger, USB cable, handsfree kit	Charger, USB cable, handsfree kit	Charger, USB cable, handsfree kit
Size of memory card provided	64 MB	512 MB	512 MB	1 GB	1 GB	64 MB
Overall Build Quality (So 10)	5.38	5.81	4.69	6.63	7.38	6.63
Overall Ergonomics (So 10)	4.61	4.14	4.43	4.96	4.82	4.29
Camera Specs						
Camera Resolution (Mega Pixels)	0.3 MP	0.3 MP	1.3 MP	1.3 MP	2.0 MP	2.0 MP
Video Capture Resolution	176 x 146 pixels	176 x 146 pixels	176 x 146 pixels	176 x 146 pixels	320 x 240 pixels	320 x 240 pixels
Dual Cameras / Auto Focus / Flash (✔/✗)	✗ / ✗ / ✗	✗ / ✗ / ✗	✗ / ✗ / ✗	✗ / ✗ / ✗	✗ / ✔ / ✔	✗ / ✔ / ✔
Camera Settings (So 10)	4.25	3	5	5	5	7
Zoom (Optical / Digital)	Digital	Digital	Digital	Digital	Digital	Digital
Multimedia						
Music Formats supported	MP3, AAC	MP3	MP3, AAC, AMR	MP3, AAC, AMR	.MP3, AAC++	MP3, AAC
Video formats supported	3GP	3GP	MPEG-4, 3GP	MPEG-4, 3GP	MPEG-4, 3GP	MPEG-4, 3GP
FM Radio (✔ / ✗)	✔	✔	✔	✗	✗	✔
Performance						
Signal Reception and Voice Clarity (So 10)						
Zone 1 / Zone 2	6.25 / 5	5.75 / 5	5.5 / 5	5.5 / 5.25	7 / 6	7 / 6
Handsfree Clarity	5.5	5	5	5	7	7
Captured Photo Quality (So 10)						
Captured Photo Colour / Crispness	2.5 / 1.5	2.5 / 2.5	3.25 / 2.75	4 / 3	6 / 5.75	6.5 / 6.5
Captured Video Quality	2	2.5	2.75	3	4.5	6
Audio Quality / Bundled Earphones Quality (So 10)	5.25 / 4	3.5 / 3	5 / 4.5	5 / 4.75	5 / 5	6.25 / 6.5
Video Playback Quality (So 10)	4.5	3	3	3	5	5
Processing Speed (So 10)	6.25	5.5	4.5	5.5	7.25	6.25

Rs 8,001 To Rs 15,000

Brand	Sony Ericsson	Sony Ericsson	Sony Ericsson	Nokia	Samsung	Motorola	LG	Nokia	Nokia
Model	K530i	W380	K660	5310	D780	Rokr U9	KF510	5610	6500 Classic
Price (Rs)	Rs 7,895	Rs 8,195	Rs 9,890	Rs 10,229	Rs 10,500	Rs 11,535	Rs 12,250	Rs 13,419	Rs 14,919
Plus (+)	Compact	Very Cute, Ergonomic	Good Looking, Compact	Very Sleek	Decent Ergonomics	Cute	Built Well	Great Slider	Super Slim
Minus (-)	Lacks Features	Small Screen	None in Particular	None in Particular	Plain Looking	Build Quality	Menu Intuitivity	Looks	Long Body
Grand Totals (Out of 100)	55.64	52.55	57.99	51.41	53.58	44.77	60.95	62.05	53.32
Features (Out of 65)	33.52	32.84	37.34	31.64	33.70	28.15	37.05	40.35	35.57
Performance (Out of 35)	22.12	19.71	20.65	19.78	19.88	16.63	23.91	21.70	17.75
Features									
Physical Specs									
Form Factor	Bar	Clamshell	Bar	Bar	Bar	Clamshell	Slider	Slider	Bar
Network Bands	2G / 3G	2G	2G / 3G	2G / 3G	2 G	2G / 3G	2G / 3G	2G / 3G	2G / 3G
Screen Resolution (Pixels) / Size (inches)	176 x 220 pixels / 2 inches	176 x 220 pixels / 1.9 inches	240 x 320 pixels / 2 inches	240 x 320 pixels / 2.1 inches	240 x 320 pixels / 2.1 inches	240 x 320 / 128 x 160 pixels / 2 inches	240 x 320 pixels / 2.2 inches	240 x 320 pixels / 2.2 inches	240 x 320 pixels / 2 inches
Maximum Number of Colours displayed onscreen	256K	256K	256K	256K	16M	256K	256K / 65K	16M	16M
Touchscreen / Dual Screen (✔/✗)	✗ / ✗	✗ / ✗	✗ / ✗	✗ / ✗	✗ / ✗	✗ / ✗	✗ / ✗	✗ / ✗	✗ / ✗
Dimensions (LxWxH)	102 x 46 x 14 mm	92 x 49 x 16 mm	104 x 47 x 15 mm	103.8 x 44.7 x 9.9 mm	115 x 49.6 x 15.7 mm	90 x 48.6 x 16.4 mm	104.5 x 49.5 x 10.9 mm	98.5 x 48.5 x 17 mm	109.8 x 45 x 9.5 mm
Weight	92 grams	100 grams	95 grams	71 grams	108.5 grams	87.5 grams	91 grams	111 grams	94 grams
Expandable Memory Type / Hot Swappable (✔/✗)	M2 / ✔	M2 / ✗	M2 / ✗	MicroSD / ✔	MicroSD / ✔	MicroSD / ✗	MicroSD / ✔	MicroSD / ✔	NA / NA
Available Colours	Black, Brown	Black, Silver, Purple	White	Blue, Red	Grey, Black	Black, Red	Red, Black	Blue, Red	Black, Bronze
Other Features									
Charging via USB (✔/✗)	✔	✔	✔	✔	✗	✔	✔	✗	✗
Keypad (Regular/QWERTY)	Regular	Regular	Regular	Regular	Regular	Regular	Regular	Regular	Regular
Address Book Capacity / No of calls in Register	1000 / 30	1000 / 30	1000 / 30	1000 / 30	1000 / 30	1000 / 30	1000 / 10	2000 / 20	2000 / 20
Talk Time / Standby Time	9 hrs / 395 hrs	9 hrs / 330 hrs	7 hrs / 300 hrs	5 hrs 20 min / 300 hrs	3 hrs / 250 hrs	7 hrs / 350 hrs	4 hrs / 400 hrs	6 hrs / 320 hrs	5 hrs 30 min / 300 hrs
No of Profiles # / Customisable *	7 / ✔	7 / ✔	7 / ✔	7 / ✔	6 / ✔	5 / ✗	5 / ✗	7 / ✔	7 / ✔
Offline Operability (✔/✗)	✗	✗	✗	✔	✗	✔	✗	✗	✔
Connectivity									
Browsing (GPRS / HSCSD / EDGE / 3G)	✔ / ✔ / ✔ / ✔	✔ / ✔ / ✔ / ✗	✔ / ✔ / ✔ / ✔	✔ / ✔ / ✔ / ✗	✔ / ✗ / ✔ / ✗	✔ / ✔ / ✔ / ✔	✔ / ✗ / ✔ / ✗	✔ / ✔ / ✔ / ✔	✔ / ✔ / ✔ / ✔
Connectivity (WiFi/Bluetooth/IR/USB)	✗ / ✔ / ✗ / ✔	✗ / ✔ / ✗ / ✔	✗ / ✔ / ✗ / ✔	✗ / ✔ / ✗ / ✔	✗ / ✔ / ✗ / ✔	✗ / ✔ / ✗ / ✔	✗ / ✔ / ✗ / ✔	✗ / ✔ / ✗ / ✔	✗ / ✔ / ✗ / ✔
Bluetooth Version/A2DP support	2.0 / ✔	2.0 / ✔	2.0 / ✔	2.0 / ✔	2.0 / ✔	2.0 / ✔	2.0 / ✔	2.0 / ✔	2.0 / ✔
Accessories									
Bundled Accessories	Charger, USB cable, handsfree kit	Charger, USB cable, handsfree kit	Charger, USB cable, handsfree kit	Charger, USB cable, handsfree kit	Charger, USB cable, handsfree kit	Charger, USB cable, handsfree kit	Charger, USB cable, handsfree kit	Charger, USB cable, handsfree kit	Charger, USB cable, handsfree kit
Size of memory card provided	64 MB	512 MB	512 MB	512 MB	512 MB	512 MB	512 MB	512 MB	NA
Overall Build Quality (So 10)	6.38	7.19	7.56	6.63	6.25	6.63	7.06	6.50	6.69
Overall Ergonomics (So 10)	4.61	5.82	5.75	5.75	5.93	4.29	5.86	5.61	5.36
Camera Specs									
Camera Resolution (Mega Pixels)	2.0 MP	1.3 MP	2 MP	2 MP	2 MP	2 MP	3.15 MP	3.15 MP	2.0 MP
Video Capture Resolution	320 x 240 pixels	320 x 240 pixels	320 x 240 pixels	320 x 240 pixels	320 x 240 pixels	320 x 240 pixels	320 x 240 pixels	640 x 480	320 x 240 pixels
Dual Cameras / Auto Focus / Flash (✔/✗)	✗ / ✗ / ✗	✔ / ✗ / ✗	✔ / ✔ / ✗	✗ / ✗ / ✗	✗ / ✗ / ✗	✗ / ✗ / ✗	✗ / ✔ / ✔	✔ / ✔ / ✔	✗ / ✗ / ✔
Camera Settings (So 10)	6.75	5	5.5	4.5	5	5.5	5.5	5.5	5.5
Zoom (Optical / Digital)	Digital	Digital	Digital	Digital	Digital	Digital	Digital	Digital	Digital
Multimedia									
Music Formats supported	MP3, AAC	.MP3, AAC	.MP3, AAC	.MP3, AAC, AAC+, eAAC+, WMA, OGG, ASF	MP3, AAC	MP3, AAC	.MP3	.MP3, AAC, AAC+, eAAC+, WMA, OGG, ASF	MP3, AAC, AAC+
Video formats supported	MPEG-4, 3GP	MPEG-4, 3GP	MPEG-4, 3GP	MPEG-4, 3GP	MPEG-4, 3GP	MPEG-4, 3GP	MPEG-4, 3GP	MPEG-4, 3GP	MPEG-4, 3GP
FM Radio (✔ / ✗)	✔	✔	✔	✔	✔	✔	✔	✔	✗
Performance									
Signal Reception and Voice Clarity (So 10)									
Zone 1 / Zone 2	7 / 6	5.75 / 5.5	6.5 / 6	7.25 / 6.5	6.5 / 6.25	6 / 5.75	7.5 / 7	7.25 / 6.25	6.5 / 6.25
Handsfree Clarity	6.75	6	6.25	6.75	7	5.5	7.5	6.75	6
Captured Photo Quality (So 10)									
Captured Photo Colour / Crispness	6.5 / 6.5	5.5 / 5	5.5 / 5	4.5 / 3.25	5.25 / 5	4.25 / 3.25	6.5 / 6.25	6 / 5.25	4.5 / 3.75
Captured Video Quality	6	5	5	3	3.75	3.5	5	5	4
Audio Quality / Bundled Earphones Quality (So 10)	6 / 6.5	6.75 / 6.5	6.5 / 6	6.5 / 6.25	6 / 5.5	5.75 / 5.5	5.75 / 4.75	6.25 / 6.25	5.25 / 4.5
Video Playback Quality (So 10)	5	6	6.25	6	4.5	3	5.5	5	3.75
Processing Speed (So 10)	6	6.5	6.5	6.5	6.75	6	7	5	4

* - Windows Mobile doesn't have fixed profiles, but infinite customisation of a single profile   # - Includes "general" profile

BEST BUY digit AUGUST 2008   **BEST BUY digit AUGUST 2008**   **BEST PERFORMER digit AUGUST 2008**

Multimedia Cell Phones	Rs 15,001 To Rs 19,999					Rs 20,000 and Above				
Brand Model	Nokia 6110 Navigator	Nokia 6500 Slide	Sony Ericsson W890	Samsung SGH-i450	Nokia N78	Sony Ericsson K850i	Samsung U900	LG KU990	Nokia N82	Nokia N95 8 GB
Price (Rs)	Rs 15,219	Rs 15,219	Rs 15,495	Rs 16,799	Rs 19,999	Rs 20,000	Rs 20,035	Rs 20,490	Rs 22,499	Rs 28,000
Plus (+)	Feature Packed	Superb Slider	Slim, Compact	Great Slider	Superb Looks, Build	Excellent Build	Slick Slider, Build	Well Built	Compact, Very Feature Rich	Features Galore
Minus (-)	Looks Boring	Heavy	None in Particular	Plain Looks	Tiny, Cramped Keypad	Tiny keys	None in Particular	Garish Chrome Trim	Very Cramped Keypad	Slider Quality
Grand Totals (Out of 100)	62.47	63.64	64.49	61.66	69.16	66.71	67.90	64.98	71.57	74.59
Features (Out of 65)	39.20	41.31	41.15	39.05	43.44	41.58	42.98	41.18	45.14	46.80
Performance (Out of 35)	23.28	22.33	23.34	22.61	25.73	25.13	24.92	23.80	26.43	27.79
Features										
Physical Specs										
Form Factor	Slider	Slider	Bar	Slider	Bar	Bar	2-way slider	Bar	Bar	2-way slider
Network Bands	2G / 3G	2G / 3G	2G / 3G	2G / 3G	2G / 3G	2G / 3G	2G / 3G	2G / 3G	2G / 3G	2G / 3G
Screen Resolution (Pixels) / Size (inches)	240 x 320 pixels / 2.2 inches	240 x 320 pixels / 2.2 inches	240 x 320 pixels / 2 inches	240 x 320 pixels / 2.4 inches	240 x 320 pixels / 2.4 inches	240 x 320 pixels / 2.2 inches	240 x 320 pixels / 2.2 inches	240 x 400 pixels / 3 inches	240 x 320 pixels / 2.4 inches	240 x 320 pixels / 2.8 inches
Maximum Number of Colours displayed onscreen	16M	16M	256K	256K	16M	256K	16M	256K	16M	16M
Touchscreen / Dual Screen (✓/✗)	✓ / ✗	✗ / ✗	✗ / ✗	✗ / ✗	✗ / ✗	✗ / ✗	✗ / ✗	✓ / ✗	✗ / ✗	✗ / ✗
Dimensions (LxWxH)	101 x 49 x 20 mm	96.5 x 46.5 x 16.4 mm	104 x 46.5 x 9.9 mm	101 x 52 x 17.8 mm	113 x 49 x 15.1 mm	102 x 48 x 17 mm	105 x 49.5 x 12.9 mm	103.5 x 54.4 x 14.8 mm	112 x 50.2 x 17.3 mm	99 x 53 x 21 mm
Weight	125 grams	125 grams	78 grams	114 grams	101.8 grams	118 grams	112 grams	112 grams	114 grams	128 grams
Expandable Memory Type / Hot Swappable (✓/✗)	MicroSD / ✓	MicroSD / ✓	MicroSD / ✓	MicroSD / ✓	MicroSD / ✓	M2 / ✓	MicroSD / ✓	MicroSD / ✗	MicroSD / ✓	NA / NA
Available Colours	Black, Silver	Steel, Black	Black	White	Grey	Black	Grey	Black, Silver	Black, White	Black
Other Features										
Charging via USB (✓/✗)	✗	✗	✓	✓	✗	✓	✓	✓	✗	✗
Keypad (Regular/QWERTY)	Regular	Regular	Regular	Regular	Regular	Regular	Regular	Regular	Regular	Regular
Address Book Capacity / No of calls in Register	Unlimited / Last 30 days	2000 / 20	1000 / 30	Unlimited / Last 30 days	Unlimited / Last 30 days	1000 / 30	1000 / 30	500 / 40	Unlimited / Last 30 days	Unlimited / last 30 days
Talk Time / Standby Time	3 hrs 30 min / 265 hrs	6 hrs / 310 hrs	9 hrs 30 min / 360 hrs	5 hrs / 500 hrs	4 hrs 20 min / 320 hrs	9 hrs / 400 hrs	6 hrs 25 min / 407 hrs	4 hrs / 430 hrs	4 hrs 20 min / 225 hrs	6 hrs / 280 hrs
No of Profiles # / Customisable *	7 / ✓	7 / ✓	7 / ✓	6 / ✓	6 / ✓	7 / ✓	6 / ✓	5 / ✓	6 / ✓	6 / ✓
Offline Opearability (✓/✗)	✓	✓	✗	✓	✓	✗	✗	✗	✓	✓
Connectivity										
Browsing (GPRS / HSCSD / EDGE / 3G)	✓/✓/✓/✓	✓/✓/✓/✓	✓/✓/✓/✓	✓/✓/✓/✓	✓/✓/✗/✓	✓/✗/✓/✓	✓/✓/✓/✓	✓/✗/✓/✓	✓/✓/✓/✓	✓/✓/✓/✓
Connectivity (WiFi/Bluetooth/IR/USB)	✗/✓/✗/✓	✗/✓/✗/✓	✗/✓/✗/✓	✗/✓/✗/✓	✓/✓/✗/✓	✗/✓/✗/✓	✗/✓/✗/✓	✗/✓/✗/✓	✓/✓/✗/✓	✓/✓/✗/✓
Bluetooth Version/A2DP support	2.0 / ✓	2.0 / ✓	2.0 / ✓	2.0 / ✓	2.0 / ✓	2.0 / ✓	2.0 / ✓	1.2 / ✓	2.0 / ✓	2.0 / ✓
Accessories										
Bundled Accessories	Charger, USB cable, handsfree kit	Charger, USB cable, hands-free kit, TV out cable	Charger, USB cable, hands-free kit	Charger, USB cable, hands-free kit	Charger, USB cable, hands-free kit	Charger, USB cable, hands-free kit	Charger, USB cable, hands-free kit	Charger, USB cable, hands-free kit, pen-like stylus	Charger, USB cable, hands-free kit, TV out cable	Charger, USB cable, hands-free kit, TV out cable
Size of memory card provided	512 MB	1 GB	2 GB	NA	2 GB	512 MB	NA	1 GB	2 GB	NA
Overall Build Quality (So 10)	7.44	8.25	7.13	7.00	8.00	8.00	7.94	6.69	7.94	7.75
Overall Build Ergonomics (So 10)	6.57	6.75	6.54	6.21	6.46	5.68	7.04	6.54	5.89	7.64
Camera Specs										
Camera Resolution (Mega Pixels)	2 MP	3.15 MP	3.15 MP	2.0 MP	3.2 MP	5.0 MP	5.0 MP	5.0 MP	5.0 MP	5.0 MP
Video Capture Resolution	320 x 240 pixels	640 x 480 pixels	320 x 240 pixels	320 x 240 pixels	640 x 480 pixels	320 x 240 pixels	320 x 240 pixels	640 x 480 pixels	640 x 480 pixels	640 x 480 pixels
Dual Cameras / Auto Focus / Flash (✓/✗)	✗ / ✗ / ✓	✓ / ✓ / ✓	✓ / ✓ / ✓	✓ / ✗ / ✓	✓ / ✓ / ✓	✓ / ✓ / ✓	✗ / ✓ / ✓	✓ / ✓ / ✓	✓ / ✓ / ✓ (Xenon)	✓ / ✓ / ✓
Camera Settings (So 10)	5	6.5	6.25	4.5	7.25	7.5	7.5	6.25	7.25	7.25
Zoom (Optical / Digital)	Digital	Digital	Digital	Digital	Digital	Digital	Digital	Digital	Digital	Digital
Multimedia										
Music Formats supported	.MP3, AAC	MP3, AAC, AAC+	.MP3, AAC	MP3, AAC, AAC+, eAAC+, WMA, OGG, ASF	MP3, AAC, AAC+, eAAC+, WMA, OGG, ASF	MP3, AAC	.MP3, AAC++	.MP3, AAC	.MP3, AAC, AAC+, eAAC+, WMA	.MP3, AAC, AAC+, eAAC+, WMA
Video formats supported	MPEG-4, 3GP	MPEG-4, 3GP	MPEG-4, 3GP	MPEG-4, 3GP	MPEG-4, 3GP	MPEG-4, 3GP	MPEG-4, 3GP	MPEG-4, WMV, DivX	MPEG-4, 3GP	MPEG-4, 3GP
FM Radio (✓/✗)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Performance										
Signal Reception and Voice Clarity (So 10)										
Zone 1 / Zone 2	7.5 / 7.25	7 / 6.25	6 / 6	7.5 / 7.25	8 / 7.5	7 / 6.25	7 / 7	6.75 / 6.5	7.5 / 7	8.25 / 7.75
Handsfree Clarity	7.5	7.25	6.5	7	8	7.5	7.5	7.5	8	8.5
Captured Photo Quality (So 10)										
Captured Photo Colour / Crispness	6.25 / 5.75	7 / 6.5	7.25 / 6.75	5.25 / 4.5	7.25 / 7.25	7.75 / 7.75	7.5 / 7.5	7.25 / 7	7.75 / 7.5	7.75 / 7.5
Captured Video Quality	4.75	5.5	6.25	5	6.75	7.25	7	6.5	7	7.5
Audio Quality / Bundled Earphones Quality (So 10)	6 / 5.25	6.5 / 5	7 / 6.5	7.5 / 7	7.5 / 6	7.75 / 7.5	6.5 / 6.5	6.5 / 5.5	7.5 / 6.25	8 / 6.25
Video Playback Quality (So 10)	4.25	4.5	6	6.5	6.5	6.5	6.25	6	6.75	7.5
Processing Speed (So 10)	7	6	6	7.25	7	7.75	7	7	8.5	8.5

* - Windows Mobile doesn't have fixed profiles, but infinite customisation of a single profile   # - Includes "general" profile

A Taste of What's To Come

Instead of giving you a boring conclusion where we spew some more "gyan" about cellphones in general or market trends we're just going to focus on three very special devices that are set to arrive at our shores ~legally~ very soon.

Apple iPhone 3G - is finally coming thanks primarily to Vodafone and Airtel. With a large 3.5 inch screen that sports an ultra crisp 320 x 480 pixels at up to 16 million colours, the iPhone 3G is going to be the next big multimedia revolution. Apple's sound quality is legendary (read iPod), and add to that the brilliant human interface of their finger touch and swipe interaction that we've already discovered to be flawless in the iPod Touch, the iPhone 3G is all set to make a resounding splash. It's available in capacities ranging up to 16 GB, and with goodies like excellent net browsing courtesy the combo of WiFi and their excellent Safari browser, and integrated GPS this is going to take interfacing to the next level. The sad part is it's going to be sold as a voice and data package, and not a standalone device.

Nokia N96—the name brings to mind a superb 2.8 inch screen, slick 2-way slider and 5 megapixel camera, all rolled into one super functional, super feature heavy, converged device. 8 GB of internal memory, great call quality, and unmatchable connectivity. You're wrong—that was the N95 8GB, this is the successor! 16 GB of memory, a satin finished body livered in steel grey and glossy black, and a digital TV broadcast receiver—even more goodies under the hood. From the looks of it Nokia's making their flagship even better—much better. The return of the king? maybe…

Sony Ericsson XPERIA X1—looks like a long phone with a touchscreen at first. Then you see the long 3 inch screen with a massive resolution of 800 x 480 pixels and even more impressive innards like 400 MB of system memory and 256 MB of RAM coupled to a 528 MHz processor. Windows Mobile 6.1 Pro, a 3.2 megapixel camera, GPS and push email support should make this device sought after by playboys and businessmen alike. The integrated QWERTY and 8GB of microSD expansion all promise to make the EXPERIA X1 a unique experience. ■

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Apple iPhone 3G

Nokia N96

Sony Ericsson XPERIA X1

Tech Careers

Going Pro

Bhaskar Sarma

Gaming as a career? You must be kidding! Games are what you come back to after a hard day's mind numbing work at the office. And is it not against the law to have to game for your daily bread? Not review a game, not code for a game—just *play* it?

The Current Global Scene

It is in the West, Korea and Japan that video gaming has come out of living rooms and basements and has been elevated into any other competitive sport like football or cricket. Teams—also called clans—made up of hardcore gamers comfortable in a particular genre like FPS, RPG or racing games compete in gaming conventions. Other pro gamers play individually. Ultimately whether a gamer is playing as an individual or as a team depends on the type of game.

As gamers started playing professionally gaming leagues have been established to conduct tournaments in the model of bodies like FIFA or ICC.

However unlike sports like soccer and cricket there is no single global body to regulate gaming. Some countries have competing leagues while others have one at the national level. Some active leagues are MLG (North America), Pro Gaming League (Canada), Championship Gaming Series, World Cyber Games (South Korea).

Most of these leagues organise tournaments sponsored by virtually all the vendors that make game oriented hardware, from mouse to motherboards to graphic cards to cooler cases. Then there are also vendor-backed gaming leagues like Dell's College Gaming League, launched last month and open to all university students.

In order to broaden the base of gaming even more, many leagues are signing up with TV channels and broadcasting matches live. ESPN, for example, has entered an extensive tie-up with MLG to cover all gaming events organ-

Thought gaming was just an idle pastime? How would you like to make money at it? Can you?

ised by them. This trend is a fact of life in South Korea: computer gaming has already become a mass sport—millions of viewers watch the World Cyber Games on dedicated gaming TV channels while others get their fix from live streams on Web sites.

The World Cyber Games (WCG) is, in fact, the Olympics of video games. Started in 2001, WCG has seen rapid growth, both in terms of scope and visibility. Each country sends it own team to the games where they slug it out with gamers from over 70 countries for medals and glory. During the seventh edition of the games in Seattle last year, 700 gamers, selected from 74 countries from a pool of over 1.25 million gamers competed for $2.7 million in cash and prizes. This year's championship—to be held in November in Cologne, Germany—promises to be even bigger and better than before. The top three countries last year were the US, Brazil and Korea—in that order.

Apart from pitting elite gamers against each other, such events are also great places for companies to launch gameing hardware or demo yet to be released games. That way the companies are able to get customer feedback from the gamers and also the regular users who throng the venue.

The Players

Johnathan "Fatal1ty" Wendel is to gaming what Tiger Woods is to golf, or Lance Armstrong was to cycling. A 26-year-old, he is the most recognisable and has been the best for a long time in games like *Quake*, *Counter* *Strike*, *Call of Duty* and *Painkiller*. He has been featured in plenty of TV shows and magazines. Like any other serious athlete, he practices upwards of 5 hours everyday which might stretch to 10 hours before any important championship. He endorses and also helps companies design hardware like keyboard, mice, headsets, motherboards and cabinets that are customised for gamers. His company also conducts two-week courses in gaming at universities like Stanford and UCLA where for $3,499 a gamer will get tutoring from Wendel himself in *Unreal Tournament 3*. These courses never run empty.

In South Korea, the pro gaming phenomenon has gone to an extremely different level with top players becoming major celebrities. They endorse products from footwear to cereals and have their photos splashed in newspapers and TV. To get a perspective of how popular gaming is, an estimated 17 million of 48 million Koreans regularly play games.

So encouraging the situation there is for professional gaming that many gamers from other countries have settled there permanently to make a career in gaming. PC and online gaming is the rage in South Korea with the most popular games being Starcraft and Warhammer, in which they are virtually unbeatable.

The Indian Scene

As with most things related to computers and the Internet, gaming has not yet caught on in a

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▼ Interview With Gamers

Dhruv Mody

Dhruv 'NOStalgic' Mody was a professional gamer who had represented India in the 2005 World Cyber Games held at Singapore. His forte is car racing and he had reached up to the final 16 in the *NFS* segment during the event.

To pursue pro gaming, he dropped out of college. "You need to devote at least four-five hours everyday to gaming if you are planning on playing at a serious level. I was lucky because my parents fully supported my activities."

After coming back from WCG, Mody became an employee at Games2Win where he was game master for *CTRacer*, their car racing MMOG. Why did he stop playing professionally? "There were various factors. Money was one of them. Also the realisation that right now in India, games are not enough to sustain yourself." Mody, 23, has resigned from Games2Win and is now planning on finishing his graduation.

About his experiences at WCG, Mody is of the opinion that Indian gamers are not up to world standards as they don't have much quality competition. He says that WCG was a great learning experience for him and he is confident that such exposures would go a long way in improving the level of gaming in India.

Yash "Bugg" Mayekar

When we called up Yash he was busy practising for the upcoming Mumbai WCG trials that would be held in the next month. The guy was pepped up and confident of his chances in both the Mumbai and India trials, but was not very sure about Cologne, where the world finals would be held. This is the second time Yash has represented India in the World Cyber Games; last year he was in Seattle as part of the Indian team.

His typical day involves gaming, and some more gaming. Because it is the season, he plays a minimum of six hours everyday with players from around the world. Competing in *Project Gotham Racing* on Xbox 360, Yash also plays FPS games like *Crysis*, where he has won plenty of prizes in gaming events. He won a cool Rs 4 lakh in the Vixture game tournament held in Mumbai last month, while he earns almost Rs 3,000 to Rs 4,000 per week by winning various gaming tournaments organised across Mumbai and neighbouring areas. Not bad for a 20-year-old who gave up college to concentrate on gaming full time.

What's the biggest challenge to gaming in India? "Gamers face opposition from parents. That's one big dampener. I am glad my parents support me." Any other problems? "There is no consistency in the way rules are applied and this lessens the credibility of gaming meets. The organisers need to be savvier and more professional. For example in one event we had to game standing and I had to troubleshoot my rig. Things have to improve."

huge way in India. Gaming has always been informal with LAN parties in the neighbourhood cyber café the extent to which it could be called an organised activity.

However in recent years, as computer penetration increased and broadband connections became more and more widely available, corporates started venturing into organising game events. One of them was Games2Win which organised a team of gamers called Temple of Seven and sent them for international tournaments like the World Cyber Games. However the experiment didn't last long and it was discontinued.

When we asked Alok Kejriwal, CEO of Games2Win what he thought about the gaming scene in India he was quite downbeat. He said that the T-7 experiment's failure has proved that as of now gaming is not sustainable in India.

"Gaming has a long way to go in India before it attains the reach and popularity levels in the advanced countries. In fact I think that gaming as seen in those countries will never catch on in India."

Why? "There are many reasons for this. Apart from the fact that computer and Internet penetration is low in India playing the cutting edge games require plenty of cutting edge hardware mainly in terms of processors and graphic cards which are costly. But the more basic issue is entertainment. Indians have so many avenues to keep themselves entertained, from Bollywood to cricket that they don't really need games to do the job. Indian parents are also not very receptive to games, considering them to be a waste of time and unhealthy."

While all these are valid and commonly cited reasons one thing which Kejriwal mentioned about the reason games won't ever be a phenomenon in India is the weather. His take is that weather in India is generally pleasant and indoor activities like gaming won't ever be favoured over going out and having fun. While this is certainly interesting, serious studies need to be conducted to back up this claim.

So is the situation hopeless? "Not really. We need content that can excite Indian gamers. We need a game that does for gaming what *Ramayana* did for television. Besides, we need better infrastructure and good competition. We are optimistic that the situation will improve in the next five years," says Kejriwal.

Lack of competition is one of the biggest things that hamper Indian gamers from taking on the best of the world. To be great at any game players need to match their wits against human players, not computer bots. And those players need to be equally good, or even better. The same scenario is prevalent in any real world sport too: the quality of your game is as good as that of your

> " The Indian weather is too nice for people to be content with sitting in their houses when they could be out having fun "

Alok Kejriwal
CEO and Founder
Games2Win.com

competition. Indian gamers are unable to get on international game servers mainly because of Indian IPs being banned or because of slow broadband connections that have high ping times. So when Indian gamers go for international tournaments, they come back defeated.

Corporate Games

In spite of all the above mentioned hurdles, gaming in India has slowly but steadily changed from purely a hobby to a means to make some decent pocket money. These days there is a gaming expo or a tournament organised every other week in the metros and sometimes even in the bigger cities. Gaming clans are flourishing and the members spend nights fragging each other in *Counter Strike* or racing against each other in *NFS*.

Some big names like Reliance World and Sify actively promote gaming events where prizes worth lakhs are at stake. Reliance World has its Gamebox National Championships where the total prize money at stake is about Rs 10 lakh. According to Rishikant Nimbark, Product Manager—Gaming, Reliance World is embarking on a few steps to create the necessary infrastructure for gaming. This includes establishing a gaming zone in the network of Reliance World retail outlets spread out across India. Reliance World appears to be gung-ho about the gaming prospects in India and is confident that within a few years with enough exposure Indian gamers would be world beaters.

Another company that is maintaining a positive attitude on the Indian gaming scene is Rapture Gaming. This Singapore-based company organises gaming events like WCG Singapore, E Sports Championships and the Compaq AMD pro gaming league. Rapture Gaming is interested in the Indian pro gaming scenario and this is what Herman Ng, MD of the company has to say, "Indian gamers have a lot of passion and that is really a key to success but in terms of experience and exposure, this is the area where they lose out to the other countries."

Conclusion

For most of us gaming will always remain a hobby. But like many other hobbies today if you are really good at what you do, gaming can get you decent pocket money and also a bit of fame. But if you are one of the best you can earn pots of money and get mobbed in game conventions the world over. You also get the chance to go see exotic places, stay in plush hotels and maybe get yourself featured in magazines and newspapers.

Five years down the line, gaming in India will change for the better. For now, gamers are advised not to burn their bridges and concentrate only on gaming—there always needs to be a plan B. ⊠

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Are You Secure For Sure?

ooking back at the past year, it is evident that the security arena has undergone dramatic changes. Ever evolving spyware and malware have grown in complexity and sophistication. Attackers have been using innovative methods of finding vulnerabilities in applications and networks.

Over and above attacks and increasing discovery of vulnerabilities, there is a dogging issue in compliance and regulatory requirements that are becoming more and more stringent. As Indian enterprises play in the global marketplace, adhering to global standards have become mandatory. Thus enterprises are taking a lot more interest in security initiatives than ever before.
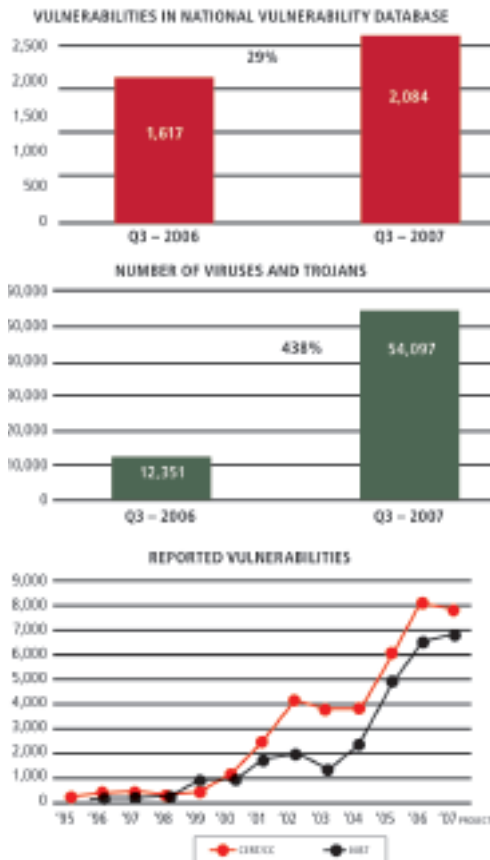
On similar lines, the discussion continued during the recently held NASSCOM security conclave at Mumbai, where President, Som Mittal and Chairman, Dr Ganesh Natarajan expressed their views on importance of information security as a boardroom strategy. Says Mittal, "Security is no more a competitive edge, but mandatory for enterprises today. One of the key aspects companies are forgetting to address is the issue of HR in their security strategy."

New developments are underway, including steep rise in scope and severity of cyber crime activities. We have seen a dramatic increase in data-breaches not only to individuals but also reputable organisations. Government sponsored espionage is also not unheard of. All of these have given birth to new security challenges that are beyond the capabilities of run-of-the-mill security solutions.

Says Alan Paller, a security expert and Research Director at SANS, "The state of cyber crime across the world is beyond imagination. Cyber crimes are not what used to be. Today it is a multi-million dollar industry that uses technology prowess to extort, steal money from businesses and individuals."

Worldwide Threat Landscape

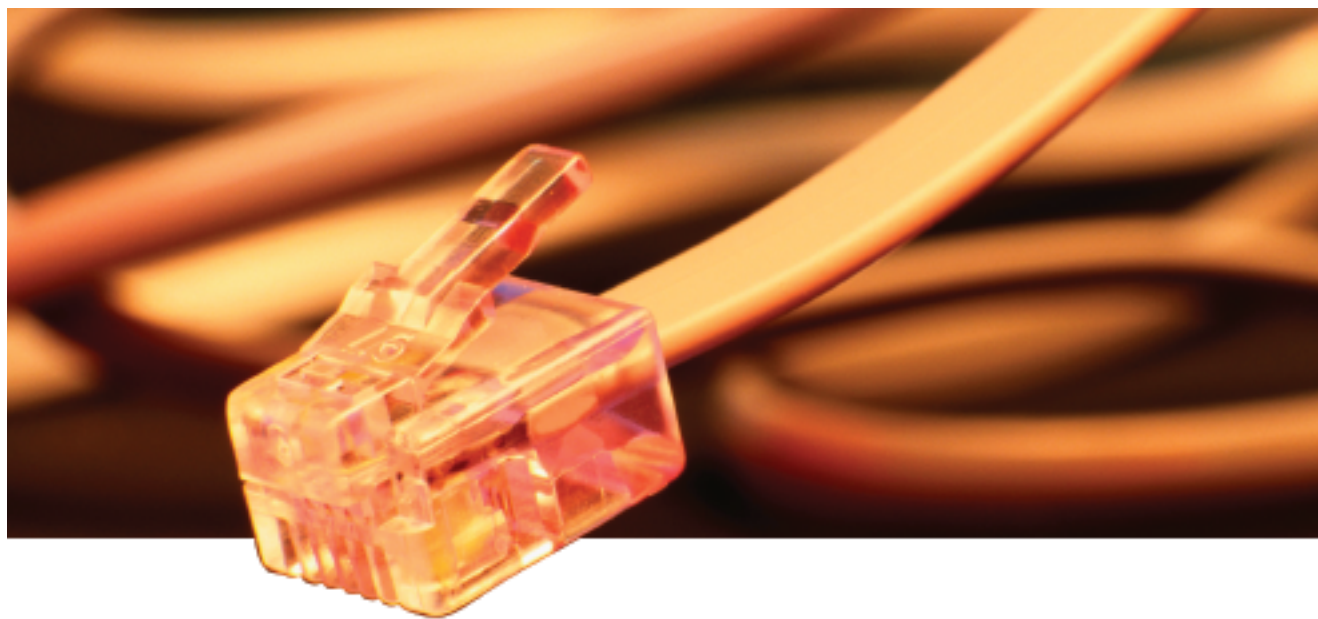The growth rate in vulnerabilities and malware has doubled in 2007 compared with 2006, according to McAfee Avert Labs data. The National Institute of Standards and Technology and the Computer Emergency Response Team Coordination Center have seen a rapid increase in vulnerabilities in recent years.

New security challenges are emerging that are beyond the capabilities of run-of-the-mill security solutions

VULNERABILITIES IN NATIONAL VULNERABILITY DATABASE

NUMBER OF VIRUSES AND TROJANS

REPORTED VULNERABILITIES

Facts:

NUMBER	FACT
253,760	Total threats identified by McAfee Avert Labs (all-time total)
131,800%	Threats identified by Avert Labs solely in 2007
50,000+	Samples analysed daily by Avert Labs
325%	Unique malware identified daily by Avert Labs
53,567	Unique pieces of new malware in 2006
131,862%	Unique pieces of new malware in 2007
246%	Growth in malware from 2006 to 2007

SIP On Call

The successful implementation of any IP telephony solution is a call control protocol that is widely accepted, easy to use and provides all the user features demanded of today's telecommunications services

The move to IP-based contact centers continues to gain momentum as organisations recognise the inherent benefits that can be gained by consolidating multiple contact channels into a single communication infrastructure. Moving from two separate networks to a single converged network provides immediate cost reductions in both staffing and maintenance of hardware and software. Also, deploying new services requires significantly lower investments in time and money than in traditional time-division multiplexing (TDM) systems.

The virtualisation capabilities of IP have resulted in significant cost savings and eliminated geographic limitations by allowing agents to sit at any PC desktop anywhere in the world. This location independence dramatically alters the contact center landscape. Above all else, however, an IP-based contact center facilitates the implementation of new cutting-edge applications that can deliver significant business gains in the areas of productivity, efficiency and customer satisfaction.

Building The Framework

Key to the successful implementation of any IP telephony solution is a call control protocol that is widely accepted, easy to use and provides all the user features demanded of today's telecommunications services. Emerging as a leading contender to fit this bill is the Session Initiation Protocol (SIP), an application-layer protocol for initiating, managing and terminating interactive sessions between one or more users on the Internet.

A key advantage of SIP is that it enables you to build new applications that use standard component-based equipment, which is less expensive and offers greater flexibility for scaling services compared to the TDM environment. Another SIP benefit—interoperability—is derived from the architecture of the Internet that has intelligence located at the edge of the network and devices communicating using standard protocols.

Organisations are beginning to recognise the inherent flexibility of SIP—particularly its ability to integrate well with the Web, email, streaming media applications and existing protocols used on the Internet.

Easily supporting a wide array of endpoint devices and configurations, SIP helps transform the communication paradigm from a device-centric to a user-centric model. Because of its flexible user location and name mapping features, SIP plays an important role in the delivery of rich mobility services such as personal mobility, call screening, forward and transfer, and multiparty calls.

Among the capabilities available in an SIP-enabled infrastructure include:

Unified communications—An SIP session can contain any combination of media (voice, data, video, etc.) and use different communication devices to help people communicate at any time and under their control.

IP-PBX functionality—An SIP-compliant IP-PBX can be used in a single office or multiple office environments, offering flexibility for future expansions.

Web IVR—SIP supports IVR features within a Web page environment, guiding users through options and providing auto-responses to common requests. Web IVR combines the rapid communications of voice with the ease of navigation of the Web to allow users to quickly scan the available links at any level.

Instant messaging (IM)—With support for instant messaging built into the SIP protocol, SIP makes it possible to promote an instant messaging session to a telephone call or video session at the click of a button. With integrated IM, agents can communicate with supervisors and experts while remaining on the call with the customer. This helps reduce talk times and allows agents to serve customers with greater speed, accuracy and efficiency.

Presence—The value of presence to a contact center is clear, and when coupled with voice, becomes even more compelling. Rather than presence being a simple "on" or "off," indicating the ability to receive instant messages, it can reflect a person's readiness and ability to communicate using a variety of different means.

Mobile phones and PDAs—Lightweight SIP client software can be embedded in mobile phones and PDAs so that new and existing services can cross all platforms. By extending intelligence out to devices like PDAs and cell phones, organisations will be able to create a virtual contact center that can effectively leverage a company's resources to their fullest.

The SIP standard only defines the signaling protocol for establishing and controlling sessions; it does not define how applications or features should be built, or how they should be delivered. This opens up the application development process, allowing applications from independent software vendors with expertise in specific vertical markets, spurring greater innovation.

Maximising The Capabilities Of IP

One of the most significant challenges facing organisations considering the move to IP is how to leverage existing systems. More specifically, they must be convinced that they will not only gain new features and functionality, but they will not lose the old applications contact center users enjoy with TDM and advanced CTI routing, including reporting and agent productivity applications. One way to overcome this challenge is to migrate to IP slowly.

The idea of location-independent services in the network means that a company can use a building-block approach for migrating its communications to IP on a site-by-site, group-by-group, or application-by-application basis. Because IP runs on a standards-based SIP infra-
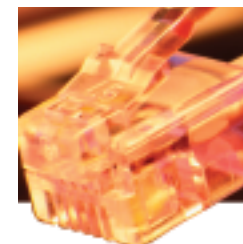
SIP provides the foundation that allows you to do everything that you can do on TDM

structure, it can be seamlessly integrated into the contact center, and organisations can easily make the transition in a phased approach, bringing value to the customer at each new phase.

Key to a successful phased roll-out is identifying those users who can show a near-term benefit in terms of improving business processes and targeting them for early implementation. This enables you to roll out new capabilities first to those people that will see the most immediate benefit, and migrate to others over time. For example, opening a new center in a low-cost region might present a more compelling proposition with IP technologies.

Each organisation needs to develop a migration strategy that maps closely to their overall goals and current infrastructure needs-one that can create a best-of-breed communication solution with reduced total cost of ownership and without sacrificing existing capabilities. The migration process can be initiated at any time and transitioned at whatever pace is desired. The good news is that the benefits of SIP can be leveraged even with a small initial deployment.

A key point to keep in mind when making a decision around IP technology is that it's not an all or nothing proposition-that is, there's no need to migrate your entire environment to a single-vendor IP solution to begin leveraging the advantages of IP. The beauty is that by choosing vendors that support an open standards-based approach, an enterprise can deploy multiple technologies from multiple vendors in different places and use SIP to enable all of these pieces to work together.

By designing a strategy around business needs and taking a phased approach, you can ensure that existing investments are not compromised, and that the implementation will not disrupt current business processes. SIP provides the foundation that allows you to do everything on SIP that you can do on TDM, while establishing the framework to build next-generation applications.

As an open protocol, SIP promotes interaction and involvement between individuals and companies in shaping how IP communications can grow and evolve. While many companies are looking at IP telephony as simply a cost-effective replacement to what they already have, its true value lies in the integration of IP technologies like Web, e-mail, and instant messaging and allowing these to become integral components of new voice services.

This openness of the protocol is expected to continue to drive development of new and innovative products and services. As long as applications that provide real business benefits running on SIP are available now, the technology has the potential to fulfill the vision that integrated communications has long promised. ⊠

Protect Your Network

When implemented properly, an intrusion detection device can provide a powerful and cost-effective solution that complements a firewall in protecting your corporate assets

The landscape of doing business today is significantly different from the landscape of just five years ago. Companies are more connected than ever, with the promise that network expansion will only continue. As a result, companies must grapple with how to keep their network safe, without sacrificing growth or productivity.

Intrusion Detection And Prevention Must Operate In Line

Most of the NIDS (Network Intrusion Detection System) products on the market are unable to prevent attacks because they are "passive," sniffer-based intrusion detection systems. These systems can only "listen" to the traffic. They cannot control the traffic, by either dropping, modifying, steering or delaying packets or by injecting their own packets into the network, when appropriate. It is easy to understand why most NIDSes operate as passive devices. Any intervention with the flow of packets may be dangerous if you can't trust the results of the attack identification. To date, the results of current NIDSes are hampered by false positives and inaccurate attack identification, due to a reliance on single, poorly implemented methods of detection. However, if an NIDS can demonstrate accurate results, it is important to understand why it needs to operate in-line to provide complete protection.

Preventing Evasion

Passive intrusion detection systems will always be vulnerable to evasion techniques. This is due to the fact that passive network monitoring enables traffic ambiguity, making it very difficult to ever provide a reliable intrusion detection mechanism. This section will explain the basics of evading intrusion detection systems; how it is being done in practice and why it is always possible to evade passive intrusion detection systems. After reading this section it will be clear that the only way to stop evasion is to operate an intrusion detection system as an in-line device to eliminate traffic ambiguity.

Evading Intrusion Detection Systems: The Theory

The basic idea behind evasion is to fool the intrusion detection mechanism into "seeing" different data than the target host, often referred to as the "victim." This allows an attacker to attack the host

without being detected. This applies to both signature-based and protocol anomaly-based intrusion detection systems.

To understand the idea, you first need to understand how an NIDS performs TCP reassembly. Application 1 generates information for communication as a stream of data (MESSAGE). The operating system breaks that stream into segments ("TCP segments") and sends them to the network. The receiving operation system collects the TCP segments and converts them back to a stream of data (MESSAGE), which is then presented to the receiving application. Since the underlying network does not guarantee delivery of the TCP segments, the receiver tells the sender which segments have and have not been received. The sender can then retransmit the missing segments.

TCP reassembly, in the context of NIDS, is the process of collecting TCP segments in the order that the sending application sent them and extracting the application data stream from them. When performing TCP reassembly as a passive system, it is easy to look at each and every TCP segment (packet), but it very difficult to perform the TCP reassembly in a manner that is consistent with what the receiver would "see."

Upon receiving a TCP segment, the NIDS sensor needs to decide what to do with it. There are several handling options for the receiver of the TCP segments:

1. *Use the entire segment*—this is the most common scenario

2. *Use part of the segment for TCP reassembly, while ignoring the rest of it*—this happens when the segment overlaps another segment that has already been received, or if part of the segment is beyond the window (sequence number of packets that the receiver is anticipating) and is, therefore, ignored.

3. *Ignore the segment completely*—this happens if the segment was received before or is invalid. Invalid packets include those that have incorrect IP or TCP checksums, invalid TCP flags, old TCP timestamps, as well as many other situations.

4. *Did not receive the segment*—The receiver might not even receive the TCP segment because of network issues (the segment might disappear) or packet settings (such as IP TTL).

The NIDS sensor must figure out how the intended receiver will handle the TCP segment and handle it exactly the same way. If the NIDS makes the wrong decision:

The NIDS sensor will use a segment that the receiver will not, thus seeing data that the receiver will ignore. The NIDS sensor will ignore a segment that the receiver will use, thus missing data. In both cases, the NIDS sensor will be running its checks (either signature matching or protocol anomaly detection) on the wrong data.

The basic idea behind evasion is to fool the intrusion detection mechanism into "seeing" different data than the target host

Evasion In Practice

Now that the basics of NIDS TCP reassembly are understood, the problem of NIDS evasion can be restated:

NIDS evasion happens when an NIDS sensor makes a mistake in using or not using a part or an entire TCP segment for TCP reassembly. Such a mistake will make the NIDS see different data than the sender and receiver of the TCP flow.

In practice, to evade the NIDS sensors, the attacker constructs TCP segments that make it virtually impossible for the NIDS to determine whether or not the "victim" will accept them. If the victim does accept them, it is impossible for the NIDS to determine which portion of the segments it would use. Such TCP segments are referred to as "ambiguous TCP segments."

The attacker then retransmits the same TCP segment with different data, triggering either one of the following scenarios:

The NIDS sensor used the original dummy TCP segment in its reassembly and the victim has dropped it. The second TCP segment, which contains the attack, is ignored by the NIDS sensor (since it has already seen that segment before) and used by the victim (since it ignored the previous one); or

The NIDS sensor ignored the original attacking TCP segment in its reassembly, while the victim used it. The second TCP segment, which is a dummy, is accepted by the NIDS sensor and ignored by the victim.

Constructing Ambiguous TCP Segments

This section presents several different methods for constructing ambiguous TCP segments. While some of these methods may have a way for an NIDS to deal with them, most do not have a theoretical algorithm that would enable an NIDS to determine what the victim will do with the TCP segments.

Effortless Construction Of Ambiguous TCP Segments

There exist some very simple techniques to create ambiguous TCP segments. A good NIDS must be able to eliminate these ambiguities in order to properly interpret the traffic being transmitted. The techniques to create ambiguous segments are:

Invalid TCP checksums—the victim will certainly drop a packet with an invalid TCP checksum. An NIDS that fails to validate the TCP checksum will be accepting packets that are dropped by the victim.

Out-of-window data—a receiver only accepts data within a certain window, called the "receiver window." The receiver will ignore data out this window. However, not being the actual receiver, it is very difficult for an NIDS that's performing a passive reassembly to determine

exactly what the current receiver window is. An attacker can therefore send data that is marginally in or out of the victim's receiver window and confuse the NIDS.

Exploit RFC Interpretations

The various RFCs that provide the specifications for TCP (RFC 793, RFC 1323 and others) are quite complex and leave room for interpretation by the implementer. In addition, some TCP implementations have deliberately or accidentally deviated from the specifications. The result is the same TCP segment can be accepted or rejected by different TCP stack implementations, which gives attackers many opportunities to construct ambiguous TCP segments.

Preventing NIDS Evasion

The good news about all NIDS evasion techniques is that it is relatively easy to detect ambiguous packets. For example, if an intrusion detection system sees two overlapping TCP segments with different content, it is certainly an ambiguity and probably an evasion attempt. However, while detection is possible, it is not feasible to determine what the target host would do with the ambiguous packets. This means that it is impossible to determine whether the target host has been compromised or not. Moreover, when seeing multiple ambiguous packets over the same connection, an intrusion detection device knows that there is an attack but determining which attack is being attempted is impractical. The reason is that there are potentially millions of different combinations for the way the ambiguous packets would be reassembled but only a single combination that reveals the attack. Finding that single combination can take hours, days and even years, which is not practical for a real-time intrusion detection system.

This leads us to the following conclusion: Once an ambiguous packet is received at its target, the intrusion detection system becomes blind and cannot determine which attack is being attempted and whether it was successful or not. Meaning, the only way to avoid intrusion detection evasion is to prevent ambiguous packets from ever reaching their destination. This, of course, can only be achieved if the intrusion detection device is in the path of the data, i.e. running in-line.

Preventing Intrusions

The most significant drawback to a passive intrusion detection system is that it is passive and cannot control whether or not the attack is allowed to reach its target. Therefore, passive systems can really only be used for detecting attacks, rather then preventing them. However, it has been suggested that there are mechanisms available to passive devices that are able to stop attacks. These mechanisms are: Sending
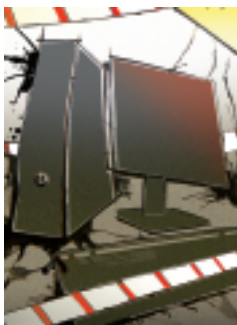
The only way to avoid intrusion detection evasion is to prevent ambiguous packets from ever reaching their destination

TCP resets, Signaling to a firewall or router to block the traffic. This section will explain these mechanisms and demonstrate why they are unable to truly prevent an attack.

TCP Reset

The basic mechanism behind a TCP reset is that the intrusion detection device sends a reset packet to both the client and the server when it detects an attack. There are several problems with this approach. First, it takes a short while for the intrusion detection device to determine that an intrusion has been attempted and that a reset packet should be sent. During that time, the offending segment and, most likely, some of the packets that follow have already been transferred to the target network and reached their "victim." As a result, any reset that is sent upon detection may be too late. The second folly of TCP resets is that they only work for TCP protocols. They do not work for UDP-based protocols, such as DNS. The third, and most significant, problem has to do with the way TCP resets work. A TCP reset must carry a valid sequence number in order for the server to accept it. To be valid, the sequence number has to be within a certain, relatively small "receiver window." A sophisticated attacker can transmit its attacking segments so fast and have the receiver window change so rapidly that a passive device will have a very hard time determining which sequence number to put in its reset packets. Therefore, most attempts at a TCP reset would fail to stop the attack; sometimes it works, but usually it doesn't.

Firewall Signaling

Firewall signaling really is not prevention at all. Instead, it is an active feedback mechanism to the access control system (typically a firewall or a router). Firewall signaling gives the intrusion detection system the ability to tell a firewall what type of traffic should be "blocked" at the firewall. The desired outcome is an adjustment of the firewall policy to protect against future attacks. This sounds like a great idea, but, as it turns out, the danger of this method outweighs its benefits. It is relatively easy for an attacker to spoof the source of its attack and make the NIDS believe that it is being attacked by another IP address. If an attacker, for example, spoofed the IP address of a major Internet Service Provider's proxy server, such as America Online (AOL), and the NIDS signals the firewall to block that IP address, then service to the entire AOL community will be blocked. Sometimes, the attacker doesn't even need to spoof an IP address to achieve this result, they can simply send an attack as an AOL user. This makes the NIDS-Firewall combination an opening for simple, yet potentially devastating, denial-of-service (DoS) attacks. ⊠

Booting Your Business

Agent 001

With computers taking over, setting up a new office is no longer about just desk and chairs. Information Technology forms the back bone of a modern day office and hence should top on your planning list

I get a lot of mails from readers asking how to go about setting up an Internet café or small office. Here's how you go about it. In this article, I will look at two possible scenarios; a small ten-computer café and a medium 25-person office.

Things Before IT

Survey your office area properly before you embark upon setting up the network. Mark out the sitting arrangement before you lay the network nodes.

Software such as SmartDraw (**www.smart-draw.com**) helps in planning the seating arrangements; the trial version is free for download. Microsoft's Visio is another tool that comes handy in this situation. If you don't have access to these tools, humble Excel can be put to good use too (use the border tool to mark out).

Once you have decided on the seating arrangement, make sure to carve out a portion for the back office. This will be where all your network points will terminate to a switch and / or router, your Internet connection will terminate, peripherals such as printers and fax machines will be kept, and so on.

These preliminary steps done, go ahead and get the networking done. Use good quality Category 6 cables for networking. There are many vendors who provide structured cabling solutions—Tyco, Systimax, D-Link, ADC Krone, Panduit and more. Opt for the solution that best fits your budget. The number of people shouldn't determine the type of network—you should be looking at the type of data you'll be using, and how much traffic the network will have to deal with. For a 25-person office, I suggest going Gigabit; it future-proofs your investment too!

Putting IT Up

When putting up your IT infrastructure, you have to think beyond just hardware and software. Let me take your though the planning process wherein we will look at each aspect of establishing a rock solid IT infrastructure.

Power

Having a good, reliable power source is of utmost importance. Getting stable electricity is a problem in many parts of our country, so before you setup up your office, do a preliminary check on the availability and quality of power supply. Always invest in a UPS or an alternative power source—even if your area never sees a power cut, better safe than sorry.

There are various types of UPSes available—Standby, Line Interactive, Standby online hybrid, Standby Ferro, Double conversion Online and Delta Conversion Online. See the table overleaf for a detailed comparison. Line interactive UPSes will work well for a small 10-25 member team, with power requirement not exceeding 5 kVA.

Vendors such as APC, Emerson and Numeric are few players who offer products and services in the UPS segment. Choose the appropriate product depending on your power requirements, generally given as VA or KVA.

Networking

A couple of years back, networking simply referred to stretching lengths of cable across the office floor. However, with the advent of wireless technologies, going wired or wireless is the first hurdle and dilemma most people will encounter.

The decision to go wired or wireless will largely depend upon the type of computers you

A Linksys 24-port switch will take care of all your networking needs

have or plan to introduce. If most of the PCs in your office are going to be desk-tops then I suggest you go for wired networking. However, if most people are to use laptops, then wireless is definitely the answer—primarily for the convenience it offers.

When going wired, think long term—I would recommend going the Gigabit Ethernet way. It will significantly improve network speed and also offer higher bandwidth, thus taking care of congestion. When putting up the network, choose good quality products—don't try to cut costs and settle for anything because it's cheaper than the rest.

Switches are getting cheaper, and hence I encourage buying them over hubs. Vendors such as 3Com, D-Link, Netgear, and HP have good LAN Switches and an unmanaged 16 port Gigabit Ethernet switch won't cost more than Rs 16,000. Pair these Gigabit switches with proper Category 6 (CAT 6) cables to extract maximum benefits. CAT5E can also be used with Gigabit switches, but I still recommend opting for CAT 6 cables.

Deploying a wireless network requires less time than

The Linksys WRT54G is perfect for small wireless 802.11g networks

The D-Link DIR655 is a good 802.11n wireless router

wired network and there are few considerations you need to keep in mind.

To maximise the signal coverage area, wireless devices have to be installed high up. When planning seating, locate a spot such that the wireless device falls in the centre and the client devices (laptops or cell phones) fall within the signal coverage radius. Avoid installing the wireless device near wooden cabinets, metal objects or at desk level as this will lead to attenuation of signal and hence lesser coverage. Mounting the devices high results in signal reflecting off the ceiling thus improving signal coverage.

Most devices come with omni-directional antennas and broadcast signal around the router; good when you put the router in the centre of the room but not ideal when the device is mounted on a wall. You can buy a high-gain directional antenna which will direct maximum signal in the direction you want. There might be situations where some part of your office might not get enough signal, use repeaters to improve the strength. Network security is a concern with wireless networks—ensure your devices use the highest possible security measure possible. WPA2 offers good protection and is available with almost all new Wi-Fi devices.

Vendors such as Linksys, D-Link and ASUS have some real good products. Linksys has two ranges of products—one aimed at home users and other at professional; opt for the professional (WRT) series—the WRT-54G is quite a poplar product. D-Link has come out with

UPS Types and their Characteristics

	Practical Power Range (KVA)	Voltage Conditioning	Efficiency	Cost Per VA	Benefits	Limitations	Good For
Standby	0–0.5	Low	Very High	Low	Low Cost, High Efficiency and compact	Uses Battery during brownout, Impractical over 2kVA	Best Value for Personal Workstation
Line Interactive	0.5–5	Design Dependent	Very High	Medium	High Reliability, high Efficiency and good voltage conditioning	Impractical Over 5kVA	Popular UPS for high reliability, good for harsh power environments and for use with Servers
Standby Online Hybrid	0.5–5	High	Low	High	Excellent Voltage conditioning	Low efficiency, Low reliability, High cost and impractical over 5kVA	Line Interactive provides better reliability and similar power conditioning at better value
Standby Ferro	3 -15	High	Low	High	Excellent Voltage conditioning and High reliability	Low efficiency, Unstable in combination with some loads and generators	Limited usage due to low efficiency and instability issues are a problem
Double Conversion Online	5–5000	High	Low	Medium	Excellent Voltage Conditioning and ease of paralleling	Low efficiency, Expensive under 5kVA application	Well suited for N+1 design
Delta Conversion	5–5000	High	Low	Medium	High Efficiency and Excellent Voltage conditioning	Impractical under 5kVA	High efficiency reduces the substantial life cycle cost in large installations

some real good products and they were awarded in our recently concluded test. The D-link DIR-655 has loads of features, is compatible with 802.11N devices and offers blistering performance.

Personal Computers

When it comes to buying a PC for your office, you can either go branded or get them assembled from your local assembler. Branded PC players do offer some benefits—tighter quality control, extensive after sales support, and if you bargain hard, good corporate discounts. Sadly, the configuration always falls short of performance. On the other hand, assembling your PC gives you the flexibility of building it to your specifications and requirements. Also, for the same price you can always build better performing machine than branded PCs. If you have a trusted knowledgeable assembler then I would definitely say go assembled else you may consider buying branded PCs.

What is an ideal Office PC configuration? There is no one configuration which can be termed as the ideal office PC configuration. The configuration will largely depend on the kind of work which will be done on it. Couple of years ago building a PC was quite simple; plonk a high end processor and add loads of memory to build a high performance machine. However, today this doesn't completely hold true. Most new applications incorporate visual effects and have intuitive interfaces—for example, Windows Vista, Microsoft Office 2007 and so on. Running such visually heavy application requires incredible amount of computation power which the processor can't handle. In other words, a graphics solution is important and can't be neglected.

A reasonably powerful, multi-purpose PC can be assembled within Rs 30,000. But going by general convention, you might be tempted to put in the best possible processor, around 2 GB of memory, an onboard graphics solution, large hard drive, CRT monitor and the regular stuff. Such a system would be inherently fast but will fail to deliver the goods when it encounters graphically taxing tasks. Here, I would suggest you go for reasonably good processor, buy any entry level graphics card from NVIDIA or ATI, put 2 GB of memory and from the money you saved by not buying the best processor buy an LCD monitor. Such a system would also deliver near good performance and importantly will be responsive under graphically taxing tasks.

Having a graphics card also has

An HP ProLiant ML100 series entry-level server for light to moderate loads—a good file and database server

PC Configurations Suitability To Task

Applications Areas	Configuration No 1	Configuration No 2	Configuration No 3
Finance and Accounts work	Very Much	Yes, only if you run Financial Analysis, If so upgrade processor and remove graphics card	Not Recommended
Typical Office work (Internet browsing, Office suites	Very Much	Not Recommended	Not Recommended
Data Entry, Call Centre	Very Much	Not Recommended	Not Recommended
Programming, DataBase	Can be used but not Recommended	Very much Recommended	Not Recommended
DTP, 2D design work (Photoshop, Corel, etc)	Not Recommended	Very much Recommended	Recommended only if 3D work is also done
3D modelling, Audio Video encoding, Media Creation	Not Recommended	Good for AV encoding	Very Much Recommended
Gaming parlours	Not Recommended	Can be used for older games	Very Much Recommended; change graphics card to Geforce series, 8800GT
Internet cafes	Very much Recommended	Not Recommended	Not Recommended

additional benefits. New generation graphic chips from NVIDIA and ATI are completely programmable and hence they can be made to do certain task that only CPUs could do. NVIDIA's CUDA and ATI's Brooke are the technologies are just emerging and hold true potential in days to come. For example, NVIDIA's CUDA is already available and cuts down computing-intensive tasks such as transcoding media from hours to just minutes. Even vendors such as Adobe have released applications which take advantage of this technology to cut down processing time and improve productivity.

Buy LCD displays—they are sleek and save a lot of desk space. They also require less power, and hence reduce electricity bills. Viewsonic, Samsung, LG, AOC and Dell have excellent products on offer.

I am listing three combination of critical components which determine their performance.

Configuration 1: AMD Athlon64 X2 5000+ AM2, Any AMD 780G or NVIDIA 8200 chipset motherboard from ASUS, Gigabyte or MSI, 512 MB DDR II RAM from Transcend or Kingston 160 GBhard drive space and 17" LCD display from Viewsonic, LG, Dell etc. This configuration along with common components should cost you more than Rs 20,500.

Configuration 2: Intel Core 2 Duo E7200 processor, NVIDIA 8200 or Intel P35 Chipset

motherboard from ASUS, Gigabyte or MSI, 2 GB of DDR II RAM from Transcend or Kingston, 250 GB SATA hard drive from WD or Seagate, 17" LCD display from Viewsonic, LG, Dell etc and importantly NVIDIA 8500GT 512MB display card. This configuration along with common components shouldn't cost more than Rs 30,000.

Configuration 3: Intel Core 2 Duo E8400. NVIDIA 8200 or Intel P35 chipset motherboard from ASUS, Gigabyte or MSI, 2 GB of DDR II RAM from Trancend or Kingston, 500 GB hard drive from WD or Seagate, 19" LCD display from Viewsonic, LG, Dell etc and NVIDIA Quadro FX570 card. This configuration along with common components won't cost above Rs 40,000.

Common components include: 16X DVD optical drive from LG or Sony, VIP cabinet and 400W power supply, keyboard and mouse from Logitech.

Servers

Once computers are put on a network, sharing of files and resources ensues. How often and heavily each person relies on such shared resources determines whether there is a real need for a specialised, dedicated server. A server is a centralised computer on the network which accepts requests from clients (PCs) and serves the required data to those clients. Servers can be put to many uses—file sharing, database hosting, mail server, or as a web server. The role it plays generally determines the hardware requirements.

Most small offices often deploy a general PC as a server for storing and sharing files. While it might be okay to do so, I will recommend going in for branded entry level server. Reliability is the word that you should associate with servers. While it is possible to assemble a server using server components, I suggest you opt for branded entry-level servers. Each component right from motherboard to the chassis has to be designed with reliability in mind, which doesn't happen when assembling a server. It's better to look out for branded servers where manufacturers rigorously test every factor that affects reliability. Also, entry level servers for small 25 member team are cheaper than you'd expect.

Dell, HP and IBM are some of the prominent vendors in the server space. They offer all kinds

Dell's PowerEdge 840: An affordable server

Western Digital's 1 TB MyBook is perfect for offline backups

of servers—right from entry-level towers to high-end blade servers. Dell has the PowerEdge series, while with HP you can opt for the ProLiant ML series of servers. In IBM, you can choose the SystemX series of servers. Most servers from the above mentioned vendors are available for under Rs 50,000 with the basic configuration; you may add components later as per your needs.

Once the hardware's taken care of, a server will also require an equally competent server operating system. While Linux has proved its mettle in the server space, you will need an on-site system administrator to oversee matters. Microsoft does offer the Windows Server operating system, but for a small team of 10-25 members, Linux is a better alternative. You will need the help of a Linux expert when setting up initially, but once the system is set up properly, it will rarely go down.

Backup Solutions

Any organisation, no matter how big, should have an active data backup policy. Digital data is volatile and all it takes is one hard drive crash to completely wipe out your important information. You can have both online as well as offline data backup policies to ensure data redundancy. Most small offices use CDs / DVDs to take backup of data—I wouldn't advise it as the only solution, mainly because it's not reliable and not very pocket-friendly.

If you buy a server, implementing an online backup solution is simple and effective. There are many free utilities available on the internet which allows scheduled backup of you data on to the server. These nifty utilities allow complete backup, incremental backup and also restoring of data. SyncBack (**www.2brightsparks .com**) is one such backup client available free of cost (one version prior to the latest). The advantage of having an online backup is that if any client machine crashes, that person can always use some other machine and continue working on already available data.

Apart from having an online backup, you can also have an offline backup plan. There are two ways of doing this—have an external hard drive which you connect to the system only when taking backup. Once the backup is done, disconnect the hard drive—this extends its lifetime. External hard drives are getting cheaper and are now even available with Ethernet ports which improve the data transfer speeds over USB. Maxtor, Western Digital, Seagate and Freecom are some of the vendors offering excellent external hard drive products.

Second option for offline data backup is to use CDs / DVDs. If you plan to take data backup on CDs / DVDs then you may want to have

a look at an application called LANwriter (**www.lanwriter.com**). LANwriter is a centralised data publishing application which can be installed on the server and only authorised users can burn discs. This allows installing only one writer in the office and keeping track of the data that is burned on CDs / DVDs.

The Linksys NAS200 is good for those on a budget

Internet, Email And Security

Even small companies today need a fast Internet connection. As a team of 10-25 members, you can approach vendors such as VSNL (Tata), Bharati, BSNL and MTNL. These vendors have extensive network throughout our country and will get you reliable Internet connections. If your usage is limited to e-mail and Internet browsing, then even a monthly pay-as-you-use scheme will do—in any case, don't settle for anything less than 512 Kbps . Hosting a proxy server is the best way to share your Internet connection. Make sure to block certain files (MP3s, EXEs and so on) if you have a pay-as-you-use scheme. Even an old PC with a Pentium 4 processor, 512 MB of RAM and new hard drive would prove good enough for hosting a proxy server.

For an e-mail solution, you can easily host your own email server, but I recommend Google Apps instead. All you have to do is register your domain and then follow the steps given by Google to activate your Google Apps account. The free standard version gives you 100 e-mail accounts each with 6 GB of space (and counting)—more than enough for any venture.

Guarding your network against viruses is critical, even if you maintain a regular backup of data. Viruses can infect applications, destroy data and spread to every machine of the network, lowering productivity and efficiency of your team. Internet, USB pen drives are some of the prominent entry points whereby machine gets infected. Install anti-virus software on every client machine on your network, including the server machine. Don't blindly install free antivirus tools like Avast or AVG—they're only free for personal use, so using them in a business environment will invite the kind of trouble you don't ever want. Kaspersky, Symantec and McAfee have products aimed at small to medium businesses, and Avast's professional version is also cost-effective and a good performer. If you have a server in place you may also go for centralised solutions where the server will run periodic scans on client systems. Apart from antivirus software, spyware

busters such as Spybot and Ad-Aware can also be deployed to keep malicious spyware at bay.

Back Office

All offices need peripherals such as printers, scanners, faxes etc. While you may consider buying them separately, I suggest multi-functional devices (MFD) to replace them all. MFDs may be a bit expensive to buy, but work out cheaper in the long run. HP, Canon, Epson and Brother have an extensive lineup of products in this category. Before you buy any product, ensure easy availability of cartridges and services.

If you print a lot, them you might consider adding a heavy-duty printer along with an MFD. When you buy a printer, first calculate the average number of pages you print in a month. Although the market offers cheap laser printers, avoid the tendency to put one on each desk—it's better to opt for a heavy-duty mono laser printer with useful features such as double-sided printing, which saves paper. Some new printers also offer advanced features such as keying in a code to retrieve printout—each team member will be given a specific code

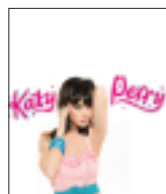HP's DeskJet Pro series of MFDs are killer products for SMBs

which he has to key in for the printer to print otherwise the printer won't print his job; this dramatically reduces paper and toner wastage. HP's LaserJet P4515 is one such model. In case you want colour printouts, HP's Officejet Pro series of printers are definitely recommended.

I hope this guide helps you in setting up a robust IT infrastructure. If you have any specific queries you can e-mail them to me (or anyone from the team) and we'll make it a point to help you out. ⊠

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Lead Feature

CABLE CHALLENGERS

With DTH and IPTV, watching TV is never going to be the same again. We tried to shed more light on how these technologies are going to affect us.

Bhaskar Sarma

From slums to high rises, interior villages to the swankiest locations, one consumer electronic appliance that you'll see in Indian homes is *the TV*. A report from a market research firm pegs TV sales at 1.87 crore units in 2011, with a growth rate of 9 per cent per annum.

In the mid 80s, after the Asian Games had kicked off the television revolution in India, the content provider was the state channel Doordarshan. There were no fights over the remote because apart from the fact that most TVs didn't come with a remote, there was only one channel to watch. The typical Indian family gathered to cry with soaps, watch mythological series in wonder and awe and entertain themselves with an odd movie or two each week.

The situation changed in the 90s as the skies opened and private operators were allowed to beam content into Indian homes. Other factors like TV sets getting better and cheaper and economic liberalisation enabling a whole lot of people to stop worrying about basic necessities led to the boom. Soon there were channels for just about every topic under the sun with a new bunch launched each week or two.

The usual mode of delivery of these channels was cable. The system worked in this way—channel operators scrambled their channels and uploaded them to a satellite, usually a geostationary one. This satellite beamed content to dish antennas, installed in individual homes or a cable operator's office. They are unscrambled, converted from digital to analogue and then piped to individual homes using a network of previously laid coaxial cables. Subscribers plugged this cable to their TV.

New Kids On The Block

Though it seems simple enough in practice there were plenty of hurdles. The channels had no direct contact with the viewer and they had no idea how many people they were reaching out to. Viewers complained about lousy picture quality and suddenly absent channels. The cable operator replaced the crooked shopkeeper as the neighbourhood villain. Besides they were largely fragmented and in a particular area each operated as a monopoly. Also there were some obvious problems like cables and infrastructure that would always be an impediment to cable TV becoming ubiquitous.

Enter Direct To Home (DTH) television. This new technology cuts out the cable operator from the entire viewing chain and gets the viewers all the goodness of clear crisp television without any annoying cables and disturbances in between. The viewers install small dish antennae on their premises. These antennae get the scrambled digital feed from the satellites which is unscrambled by the set top box, converted into analogue and then displayed on the TV.

Another new technology that is catching the fancy of big corporates, content providers and viewers is something called IPTV. An acronym for Internet Protocol Television, television programmes are delivered through broadband cables that are snaking slowly across many Indian cities. There is also digital cable where the cable operator is still involved but features high-res pictures and better sound through use of superior encoding techniques like MPEG-4.
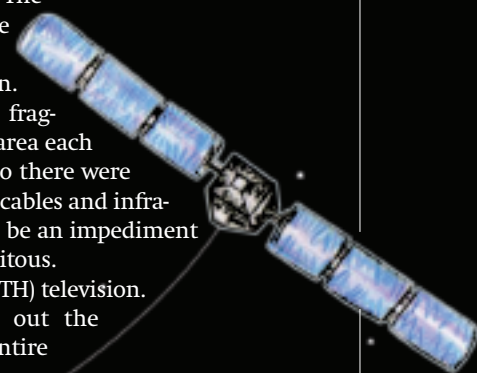
All these digital distribution platforms will see exponential growth in the coming years. According to Ernst and Young by 2010, 28 per cent of India's 10 crore pay TV households would switch to such platforms with DTH garnering the lion's share.

DTH

DTH is enjoying the limelight these days. Anywhere you go you are bound to see small black or white antennae that bristle from rooftops, attached precariously to walls and even hanging from support beams. Moreover, the fact that they can be seen in both lower middle class homes as well as posh localities attest to the fact that DTH is a hit in the Indian market.

TataSky and DishTV are two major players in this sector with south-based Sun Direct coming a distant third. There is also DD Direct, a Doordarshan service but it offers free channels which will be geared more towards promoting education and health. In the next few months other private players like Reliance, Bharti and Videocon will enter the sector, giving viewers more choices and driving prices down. The times are exciting for those living in DTH land.

As of May the number of TataSky subscribers is 21 lakh. The installation cost along with the hardware is Rs 2,499.00. In terms of channels TataSky uses the package system in which channels are grouped together in packages, with varying numbers and costs. For example the cheapest package is the South Starter Pack, with 68 channels priced at Rs 175 per month. Get the full details of the packages from http://www.tatasky.com/channel-packages.html.

DishTV's pricing system is more complicated but offers a wider variety of choices too. Pricing starts at Rs 1,990 and goes up to as high as Rs 3,990. Depending on the package taken DishTV offers a free set top box too. For complete details on pricing go to http://www.dishtvindia.in/Static/pricing.asp.

Both TataSky and DishTV offer services like video on demand, gaming and special channels and are pretty much evenly balanced in this regard. For example both offer movies on demand where a viewer can check a list and then buy to see movies for as little as Rs 30 per movie. It's another thing that the system works more like booking a gas cylinder; the collection of movies is woefully inadequate too.

While DishTV is the market leader in this segment (32 lakh subscribers), its leadership position is likely to be challenged by the newer entrants like BigTV, Reliance ADA Group's DTH arm and Bharti's yet to be named service. However, with more prime time content and better ways of reaching customers (VGA STB for computers and mobile STB for cars) DishTV seems to be better prepared to defend its turf.

While consumer experience with this service is much better than cable TV, viewers still have their long list of complaints. Some include poor viewing experience in case of heavy rains, absence of channels and poor customer service. Besides, a common problem is image quality on 42-inch HD screens. This is expected to be solved when Dish TV and Big TV start to offer set top boxes aimed at HDTVs.

TataSky tends to get most of the rap because of its arbitrary division of channels into packages: often viewers end up buying another extra package over and above their regular package because of only one or two specific channels. Implementing a system where a viewer can choose any number of channels they want and pay for accordingly would not be too difficult and it still doesn't make sense why nothing has been done. We asked both TataSky and DishTV and came up with nothing concrete.

IPTV

In the past couple of years there has been plenty of talk about IPTV where broadband cables are used to supply TV content. IPTV was launched commercially for the first time in India in Bangalore by BSNL in 2007. Since then this new way of delivering content has been tested in different cities across India and has achieved mixed results. IPTV is very different from Internet TV where video content from Web sites is streamed in an uncontrolled manner. IPTV broadcasts are designed to utilise the bandwidth properly so that there are no stutters or lost frames and the experience is akin to that of a normal broadcast.

For using IPTV a viewer needs a broadband connection along with a multi-port modem and a set top box. The encoded TV content comes via broadband in digital format which is transferred to the set top box. Here decoding takes place and the output then displayed on your TV. Using a TV tuner card it is possible to watch these programmes on your computer too.

The biggest impediment to IPTV is the requirement of broadband. Without suitable bandwidth it is impossible to enjoy your favourite programs. In India broadband would not go beyond selected pockets for quite some time unless current policies change. Besides, according to Vikram Advani of IOL, for optimum viewing experience the base station needs to be within 2.5 Km of your home.

That said, in places like metros or in bigger cities where sufficient broadband is available, IPTV would be a smart choice. This is because IPTV brings together three services—telephony, Internet and television. If you have an MTNL Triband Internet connection as well as a landline connection the same cable will be used to carry your landline conversation, bring broadband Internet to your computer and also high resolution content to your television. Businesses can look at video conferencing options.

In terms of customisation and services offered IPTV beats all other mediums. You can select the number of channels you want, and pay only so much. You can record your favourite programs automatically and watch it later at a convenient time. You can also pause, rewind and fast forward "live" programs with a click on the remote. Besides if you already have cable TV you can switch between IPTV and cable, as IPTV plugs into the A/V input of the TV. Rains are not going to play spoilsport, nor do you need to unplug your telephone or broadband connection to enjoy your favourite travel show.

In India apart from established state providers like MTNL and BSNL, Reliance ADAG is planning a foray in this sector. Recently a new IPTV related service called "iControl" has been deployed by Aksh, one of the two companies who deploy these services along with IOL for the state owned companies. MTNL itself has 1.52 lakh broadband subscribers in Delhi and 1.83 lakh subscribers in Mumbai who can be potential clients. Aksh is projecting the turnover from this sector to be at Rs 3,500 crore in three years.

Getting a IPTV connection is not going to blow a hole in your pocket. A set top box for Rs 999 which is refundable and monthly charges of Rs 199 are enough to get iControl on your TV. With more than 170 channels on IOL (maximum capacity 1000) and 122 channels and counting on iControl IPTV is a very good proposition.

Digital Cable

While cable has horror stories digital cable aims to bring a new mode of professionalism into the much maligned medium. Digital cable is being launched by companies like WWIL, You Scod 18 and Digitelly.

Digital cable is an attempt to deliver better content than what is being shown by conventional operators while keeping things simple for end users. Viewers need to simply get themselves a set top box and enjoy much better and crispier picture without running around getting a broadband connection or installing a dish antenna on their windows or terrace.

Behind the scene, however, digital cable is very different from normal cable, with new technologies being deployed. One acronym that is common in the context of digital cable is HITS. (See box)

Right now in India WWIL, of the Essel Group, has got permission to deploy HITS and is conducting field trials at different places in India. Mrinal Sapre, Head Corporate Communications, WWIL says, "Right now we are focussed on setting up our dealer network. We have plans of offering this service even in towns like Varanasi."

When queried about how digital cable plans to hold its own in an India where cable has got a very bad name Sapre replied, "We have taken steps to

▼ **HITS**

Short for Headend in the Sky, this technology combines hundreds of channels into a few channels by using methods like multiplexing and encoding. These compressed channels are uplinked to a satellite from which cable operators can downlink the required channels with a minimum of equipment and supply the content after processing to individual homes. HITS makes efficient use of transponder space on satellites and gives superior resolutions (480p/720i) along with undisturbed viewing in adverse weather conditions too.

bring in more professionalism in this segment. For instance all our customers will not have to call up their local agent if something goes wrong. They will need to ring up our call centre where appropriate steps will be taken to solve their problems."

Digital cable operators like WWIL seem to be targeting the cable market and are not really worried about other mediums like DTH or IPTV. None of the digital cable television providers have released any prices but it is assumed that they would be cheaper than the price for DTH.

Your Choice

For a fairly detailed comparison of all the new services detailed above see the chart below.

Right now DTH seems to be the best way to go if you plan to ditch your cable connection. It has the widest possible user base among the new age contenders and the market is comparatively mature. In case you have not done so yet we would advise you to wait some more time for BigTV's launch when there will be another round of price cuts.

In the final analysis you are the best person to decide what medium to go with. If you were in a rural area you would not be able to use IPTV or digital cable. Even most urban areas would be without these services. If it rains half the year DTH would be useless and you are better off watching cable television (or DD, if even cable is not there). And even if that does not work, you can always take heart in the fact that you are not being dumbed down by the idiot box. ⊠

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▼ **Shootout**

	Cable	DTH	IPTV	Digital Cable
Maximim number of channels	Around 200	Depends on user	Depends on user	Depends on user
Time shift TV	No	No	Yes	Possible
DVR	No	Depends on operator	Yes	Depends on opeator
VOD	No	Depends on operator	yes	Yes
Games	No	No	Yes	Yes
Pay per view	No	Yes	Yes	Yes
Reception issues	Average	Good except in rainy weather	Good	Good
Availability	All over India	All over India	Limited in metro areas	Limited, in urban areas
Infrastructure required	Nothing	Set top box, dish antenna	Set top box, broadband connection, router	Set top box
Triple play(data/voice/video)	No	No	Yes	Yes
Service cost	250-300 per month	Depends on channels viewed	Depends on channels	Depends on channels viewed
Electronic Program Guide	No	Yes	Yes	Yes
Parental Controls	No	Yes	Yes	Yes
Video quality (resolution)	Poor (not DVD quality)	720p/1080i	1080i	720p
No of players	Large	2 existing, few more to come	3 or 4	about 4
Regional content	Yes	Yes	Yes	Yes

Let The Games Begin

Michael Browne

It's been a dry patch for fans of the *UT* series since *UT 2004*, a patch that's lasted more than four years. A franchise can only be kept on life support for so long before people lose interest in it. This is especially true for multiplayer based FPSes—one genre we have no dearth of. Having played all the previous instalments of *UT* and *Quake 3* and *4*, we've always felt that that *UT* series could do with a slight boost in gameplay speed, and after quaking for a couple of hours *UT 2004* seems to run in slow motion.

What *Epic Games* did get right was the game engine—and graphically *UT*

2004 was splendid (it still is). Amazing levels, sprawling, well detailed, and superbly balanced gameplay and weapons—these are the charms. *UT 2004* also introduced vehicle-based combat to the franchise and while it wasn't all that fun, it does add depth over the run-of-the-mill multiplayer FPS.

UT 3 tries to do things a little differently by adding very basic map-to-map shoot 'em up style single player campaign to the already robust multiplayer component the series is famous for. The gist of the campaign is centred around revenge—you and a team fight in various maps and team up with an unmentioned corporation for help. The goal is to take

over more corporations by defeating opponents in various kinds of matches. While the campaign itself is a little lame, it does serve to give you some practice for taking *UT 3* online. And this is where the game will really earn its keep. The online component is serious fun, with a number of gameplay modes, several excellent maps, and a few new weapons added to the list of familiar ones.

Deathmatch, *Team Deathmatch* and *CTF* modes are joined by *Duel*—a one-on-one mode that should be the ultimate test for clan leaders and such. There's a new vehicle CTF mode, which (you guessed it Einstein!) involves using vehicles to capture enemy flags. The vehicles

are varied and you actually depend on them—just get caught in the path of a speeding enemy hoverjet and you'll realise why! And this is the best part about *UT 3*—such gameplay modes aren't really add-ons—they are actually functionally useful and sometimes imperative to survive. One of the bigger and more time consuming game modes is *Warfare*, where you need to connect power nodes to reach the opponents' base. Power nodes need to be captured by your team by firing your link gun at them, and during the 10 seconds or so that it takes, you're vulnerable to enemy fire. This mode requires even better team coordination than the other modes, and also offers some secondary objectives, the completion of which gives your team some desirable bonuses. There is a similar mode called *Onslaught,* which is a scaled down version of *Warfare*. Both onslaught and warfare mode also feature vehicles.

UT 3's maps are beautifully detailed, and the texturing and shader effects are amazing, especially for a game that focuses on a multiplayer component rather than eye-candy. What is even more interesting is the design and structure of the maps—well tuned to each gameplay mode. For example, in a particular map in warfare, there was no way to advance close to the enemy base with vehicle support as the entry points to the interior of the large complex where their lair was quartered had extremely small entrance / exit points. Going on foot was the only way in—and enemies inside had access to vehicles which was an immediate disadvantage for our team. Another Deathmatch map had a double damage in the middle of a clearing, within easy reach, but this open area was surrounded by elevated posi-

tions, perfect for the headshot seeking camper to end your dreams of carnage.

Graphics-wise, *UT 3* is a goodie-laden Christmas tree. Fluid textures are excellent, as are textures on foliage and even ramparts of ancient fortresses look lifelike—although you need to max out settings to get this effect. Character animations are also really well done, with very lifelike weapons, armour and facial animation. The good part is that *UT 3* isn't a graphics hog—and something like a GeForce 8800GT / Radeon HD3870 will render *UT 3* at high resolutions with all bells and whistles—even lower systems should do fine as the game scales really well.

The weapons are a mixture of new and old—the shield gun gets dumped for an impact hammer, and the assault rifle gets the boot for enforcer pistol. The sniper rifle makes a comeback with more head splattering goodness. Certain weapons have also been balanced—the most noticeable being my favourite—*the Bio Rifle*—which does significant damage, and in secondary fire mode, the large ball of green slime it spits out will actually cling to a hapless enemy, all the while chewing through his armour, and ultimately his flesh—ouch! Such animations are also well done, and you'll see him running around with green goop all over him.

Unreal Tournament 3 is a fun, fast paced, (yes, faster than *UT 2004*), shooter, and should not be missed. Fans of the series will probably have turned off their PCs and raced to the nearest outlet that stocks a copy. As for us, we're practising hard in the guise of writing this review—we have a *UT 3* match this weekend, and the winner gets two days off!

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FIFA 08 XBOX

Another year, another FIFA release. First of all it has to be pointed out that there's a big difference between the PC and Xbox versions of the game. The Xbox version has a lot more polished look about it, unlike the PC version which looks pretty much like a port. There is a vibrance about the visuals of the console version that is just lacking on the PC. The colours are a lot brighter and sharper, the turf actually looks like grass. Apart from a few notable players like Ronaldinho and Rooney (both of whom adorn the cover of the game) most players look nothing like their real life counterparts. Gary Neville, for example, like an adolescent and Michael Ballack looks as alike to the real deal as chalk is to cheese.

Onto the game itself and the standard play modes awaited me. The friendly mode and season-long manager mode are still there. In the latter you take control of a club for a whole season and have to manage the entire club, including finances and player contracts and transfers. There's the option to simulate a game you don't want to play and you'll find yourself using it a lot more than you might

have thought. After all, it does get boring to play 40+ games in a season. Nothing really new here, but the *Be A Pro* mode is a real revelation. In it, you'll get control of one and only one player throughout the game, while the rest of your team (as well as the opponents of course) is controlled by the AI. The idea is to take you away from your position as the centre of the game's universe and make you just another cog in the wheel. It can be a frustrating experience at times, particularly when the AI plays a silly pass or loses possession but it's also a surprisingly enjoyable experience. The regular gameplay is where FIFA 08 will earn the most plaudits. The previous titles seemed too arcade-ish and at times completely unreal, but FIFA 08 makes a big move towards being an accurate simulation. Player movements are much more in tune with what you might expect, as are the touches on the ball. Passing and shooting can be a difficult thing to do if you're used to playing the game on a PC like I was.

In game commentary is good. Unfortunately there are a lot of problems when it comes to calling attacking plays. Quite frequently a wild miss will be called a good save by the keeper or a near miss.

Minor niggles aside FIFA 08 was a game of many surprises. I never expected it to be any different from earlier versions. Fanboys aside, you may want to check this one out.

Courtesy SKOAR!

Score: **8/10**
Developer:
Rockstar North
Publisher:
Take 2/Rockstar
Distributor: e-Xpress

The Sports Title Of The Year?

Are you a tiger? Or just a pansy?
Club your way to glory on that journey of discovery

A peculiar characteristic that golf shares with very few other sports is its relaxing nature. PGA Tour uses this, infused with the burning desire to be number one on the PGA circuit. Add one Tiger Woods to the mixture, an arsenal of other pro golfers, a decent catalogue of diverse and challenging golf courses, rich environments, pretty graphics (Yay!), average requirements, involving gameplay and an ear-pleasing background score and you've got the recipe for an involving game (we hope), and a dollar dispenser (EA hopes).

Go get 'em Tiger!

The menus are simple, the music package is sweet. In fact the tracks are worthy of porting to your MP3 player! The actual gameplay sounds, while involving at first, become boring.

On to gameplay modes. There's Tiger challenge—where you get to move up the chain, by defeating opponents on the circuit, your ultimate opponent being the king of the jungle himself (erm the Tiger, not the lion!). Playing custom games is also possible, and the game provides 14 golf courses for this purpose. The most consuming of all the modes has to be the PGA Tour mode wherein, one assumes the khakis of a hack and has to move up the hallowed golfing ranks by playing in tourneys, increasing stat points and earning cash side-by-side to pay for entry to bigger and better tournaments.

PGA O8 gives you the faculty of heavily customizing your golfer in every imaginable way. Money becomes a crucial factor while modifying the non-hereditary characters of your charcacter such as the clothing, the body art and the equipment. And since there is an overkill of options in this department you can satisfy your purchasing thirsts.

PGA O8 is highly addictive in terms of gameplay as are the visuals—the richly detailed golf courses will cause your eyes to roam quite a bit.

Golf is practically nonexistent in India, both in terms of a sport and the popularity factor, thanks to icons like Tendulkar and Leander Paes. That being said exclusitivity isn't a bad thing at all—which is why we recommend you to try your hand at golf.

Courtesy SKOAR!

Personal Best: Hole-in-one from 132 yards out

Note the lush environments

Personal Best: Dropping a putt into the hole from 42ft out

Rating: 8/10
Publisher:
EA Games

Sony's Fat Game
Sony's new game *Fat Princess* has provoked the ire of feminist bloggers over its *negative* depiction of obesity. In this game released for Sony's Playstation Network players have to rescue a princess who is being kept hostage and immobile by the enemy by continuously giving her tasty treats. An attempt at humour gone greasy, we must say.

Escape

People Who Changed Computing

ILLEGAL DEVELOPMENT
Ubisoft's tango with piracy

French video game developer and publisher, Ubisoft, was recently caught in a compromising situation, releasing a pirated hack as an official fix.

Rainbow Six Vegas 2 was patched earlier this month. When the publisher released a new patch for the *RSV2* this month which added play modes and other goodies, customers were eager to update. Unfortunately, the patch also added a check to confirm that a CD was in the PC before the game could play. This was obviously a problem for customers who downloaded the game through the Direct2Drive download service and lacked physical media to validate.

Naturally, this theft prevention tool was not a problem for software pirates. A hacked executable removing the CD-check was soon available, although Ubisoft understandably forbade and punished discussion of the crack on its Web site forums when Direct2Drive customers came for help and advice. However, they soon came up with an official fix.

A Ubisoft employee uploaded a fix to the company's support site that

Whatever Happened To...
Digital Video Express

Digital Video Express (DIVX, oddly enough) was a competitor to the reigning DVD format and was propped up by retail chain Circuit City in the US. Customers needed to buy a special DIVX player which came with a modem, encryption microchip and flash memory and use it to view movies and content. Once 48 hours were up after the play button was pressed, the disks automatically locked down and became unusuable. If the movie was worth seeing over and over again the customer could connect to a central server and pay designated amounts to unlock longer viewing windows.

While on paper the system seemed workable, in practice the format flopped badly, mainly because the cost of the technology was prohibitive. Another thing which might have triggered the collapse was the strong online opposition by various interest groups. This was in 1999 as the technology became unnecessary as torrents and video on demand became popular.

Even though DIVX died out, the idea behind it finally got implemented a little differently in Digital Rights Management. Seems like this one can afford to be smug from beyond the grave.

Last month's winner:
Deodutta Kulkarni

Participate and win next month:
Linux Command Line and Shell Scripting
by Richard Blum
Published by
WILEY-INDIA

Paul V. Mockapetris

In the early 1980s, Mockapetris created the Domain Name System (DNS), the key name registration basis for the Internet. Besides allowing simple domain names, DNS also routes mail,

Paul V. Mockapetris

balances loads across multiple servers, and offers a growing list of new tasks, such as routing VoIP phone calls and suppressing spam. Mockapetris received two bachelor's degrees (in Physics and in Electrical Engineering) from the Massachusetts Institute of Technology (MIT) in 1971, and his PhD in Information and Computer Science from the University of California, Irvine in 1982.
In 1978, Mockapetris joined ISI, where he later created the first SMTP e-mail server.
Mockapetris was program manager for networking at ARPA in the early 1990s, supervising efforts such as gigabit and optical networking.
In 2005, he won the ACM Sigcomm Lifetime Award for his work as an Internet pioneer and the 2003 IEEE Internet award for his DNS work.

was actually a hack written by software pirates to defeat the disc-check.

Officials added that they do not support or condone copy protection circumvention methods like this, and this particular incident is in direct conflict with Ubisoft's policies. Companies that take an iron fist approach to fighting software piracy are generally best served by not lifting a pirate group's code themselves to fix their own product.

Users on Ubisoft's official forum where discussion of these cracks is forbidden alerted the company to the fact that R6Vegas2_fix.zip was actually a cracked version of the executable modified by a pirate group. The file has since then been removed from the Web site. The officials further said that their UK support team has got nothing to do with it and if it is an executable file, then it surely has an

external source.
How about that? They used a file that was, technically, someone else's IP. So they pirated from pirates to defeat their own copy protection. It is popular opinion that by stealing the code, Ubisoft has acknowledged that piracy, at least when it concerns them, does indeed have shades of grey. It is amusing that a company that invests so heavily in security has taken the route of piracy.

ANGRY OLD MAN?
Torvalds Bad-mouths OpenBSD Devs

Linux creator Linus Torvalds has labeled makers of the OpenBSD operating system a "bunch of masturbating monkeys," as part of a wider critique of what he said was self-centred behavior in the

IT security industry.
The row started earlier over a Gmane mailing list, when a developer for the PaX Team, which patches the Linux kernel, accused Torvalds and other top Linux kernel developers of covering up the security impact of bugs by not clearly labelling them as security flaws. Well, that was more than enough to irk Linus and have his version ready. In response, Torvalds wrote that disclosing the bug itself was enough, without having to label each individual security flaw. In an e-mail to the Linux kernel developer mailing list, Torvalds said a section of the security industry was dedicated to finding bugs in software only to publicize their findings and gain notoriety.

"I don't think some spectacular security hole should be glorified or cared about as being any more "special" than a random spectacular crash due to bad
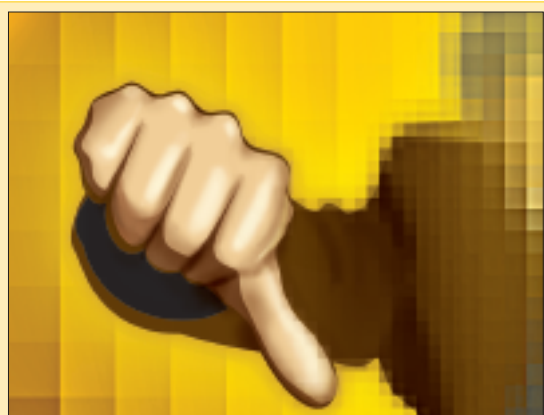
Win!
My Desktop
No Winner!
Better luck next time!

Participate in this contest and win next month
.net Interview Questions
by Nagaraju B
Published by
WILEY-INDIA

Send us your desktop with a description of how you made it to **mydesktop@thinkdigit.com** with the subject **"My Desktop",** and tell us your postal address, too.

■ Tory leader David Cameroon's stolen bicycle appears for sale on eBay ■ LG names their new KF600 phone Bikini   ■ Traffic cops slap parking fine on a Google Street View camera car ■ Fembots in Japan used in TV ads for insect repellant and sunscreen

Bluff YOUR WAY THROUGH

Publishing *Digit*
All the jargon bandied about within these walls...

Kerning: Kerning is the process of adjusting the space between pairs of letters so that they look appealing. Nestling an 'e' under a capital 'T', for example
Tracking: The process of adjusting the space between characters. Unlike kerning, this is indiscriminate and doesn't account for aesthetics
Leading: The space between the lines of text
Orphan: When the first line of a paragraph appears at the bottom of a column, it's called an orphan
Widow: When the last line of a paragraph appears at the top of a column, that's a widow.
Bleed: When an image or text extends beyond the margins of the page and touches the edge of paper, it's bleeding
Blurb: Blurbs are those lines of text that are smaller than the headline but bigger than the text. Blurbs help the readers understand what the article is about
Callout: Text or symbols that are used to identify parts of an image. The text may be enclosed within balloons or boxes
Usage: The current *leading* dimensions for articles in *Digit* are 11pt. In terms of other elements in page design the articles in *Digit* occasionally display *bleeding*. Blurbs for articles are a must, as well as removing *orphans* and *widows*. We use *tracking* and *kerning* to *optimise* space. *Callouts* are done if the visual calls for them.

Wild Wild Web

The New Villains
In an America hit by housing crisis and sub-prime credit crunch, housing brokers have become the favourite punching bag. A canny estate agent and Website creator has put up Web sites like **IHateMortgageBrokers.com** and **AngryMobTShirt.com** where the teeming masses can safely vent their anger and disgust without getting entangled in a court case or going to jail.

These sites work by offering the luckless and hapless a space to sign an online petition demanding better regulation of mortgage industry. And in the great American tradition of tee shirts and capitalism, these Websites sell tees with customised slogans starting from mildly offensive to totally unprintable.

A mob of tee wearing homeless folks marching on to the offices of housing brokers and raising hell? Whee!

Surf Before You Drive
If you are an average motorist, you would have at least one brush with the constabulary over matters like crossing speed limits or jumping red lights. In case you live in the US or UK you would never be forced to cough up hefty fines or grovel before a judge begging for leniency if you ever check out **www.njection.com.**

This Website, which is free for use, lists all the speed traps and red lights in US and parts in London. The information that is put on the Website is user submitted and gathered anonymously. Just before your journey check out the placements on your route or even download them into the GPS of your car for a fee.

Predictably, local bodies are not amused with the idea of forewarning drivers as they are losing a fat amount of revenue in the form of fines. However, for the most part officials are looking at this service in a positive way: motorists slow down in areas with red lights because of the site, so that's good.

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locking," he said.

The Linux creator went on to state that security people are often the black and white kind of people that he can't stand.

Torvalds appeared particularly irked by the creators of the OpenBSD operating system, who have focused on security and auditing when developing their variant of Unix. OpenBSD is known to be used in high-security environments such as the U.S. Federal Bureau of Investigation.

"I think the OpenBSD crowd is a bunch of masturbating monkeys, in that they make such a big deal about concentrating on security to the point where they pretty much admit that nothing else matters to them. To me, security is important. But it's no less important than everything else that is also important!" Torvalds concluded.

Well the comment confirm that Linus never really looked into OpenBSD. Judging the whole project by few vocal whiners isn't really constructive.

We would like to remind you that OpenBSD folks contribute enormously—and not only on the security front. From several projects, the recent highlight is OpenNTPD, which is rather simple and most importantly a working implementation NTPD protocol.

The comments sound like much of the usual chestbeating we are used to seeing to make all the fanboys and girls on the lists swoon; realistically it just demonstrates an ignorance of the OpenBSD project. We don't know what Linus' beef is. He seems to be on the same page with respect to this issue. And the "masturbating monkey" thing? Well that's just plain funny!

PARENTAL NEGLIGENCE
Baby For Sale

If you are a frequent user of eBay, then you are probably expecting to find all sorts of products available through online auction. With all that, a German couple from Memmingen decided to take online auctions on eBay to a whole new level. So, they posted an advertisement to sell their son, claiming he had become "too loud" to keep.

The starting bid was set at 1 Euro, which prompted the boy's 23-year-old mother, Tanja, to claim that the auction was only a joke, despite the fact that the post ended with bold letters demanding that the baby be picked up in person.

The advert, entitled "Baby—Pick up in Person Only" offered shoppers information about the baby's gender and size. It also stated the parents' reason for selling him.

The post, which has been removed from the online auction site in the meanwhile, got no bidders in the two hours and thirty minutes it was displayed. Renee Beck, a police spokesperson in Krumbach, near Munich, stated that the German police are investigating the two parents on suspicion of child trafficking. The German police was aided in tracking down the two parents by eBay officials. The parents

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maintained that the posting was just a joke gone awry.

MAPMANIA
Mapping Out Of Disasters

Modern technology—especially the Internet—has been usually of great help in times of natural disasters like floods or hurricane. The Internet enables the bad news to filter out quickly and keeps the rest of the world informed about how things pan out, as well as speeding up the relief efforts. But sometimes we have to admit, people become too gung-hoish in dreaming up uses for the Internet in situations involving natural disasters.

Consider this idea—a collaborative map of a particular area hit by some disaster like flood or earthquake. On the face of it, the idea seems feasible and lifesaving. After all , what can go wrong if you have an online map hosted on a remote server which would show, in real time the locations of bridges that were washed away 30 minutes ago, roads flooded by a mudslide 5 minutes ago or maybe buildings that have toppled over. Knowing all those details would be definitely helpful when you rushing to save your life, or save others lives. And it is doable too: users would just have to drag red markers on the screen and maybe type a small description. Crowdsourcing at it's best and the end to all those helicopter sorties where rescuers squint from binoculars looking for white flags and what not.

Not so fast there. What this system assumes is that everyone in a potential disaster zone would have Internet connection and a mobile device small and light enough to carry around and people would somehow magically stop and type instead of saving themselves and their valued possessions. The reality is a lot different. First of all, even in the most advanced countries wireless internet access works in the best of circumstances. To expect people to remain online when they are faced with matters of life and death and also when basic infrastructure facilities have been wiped out seems unrealistic.

The folks at sites like GeoCommons and Mapufacture where these maps are hosted and available freely to everybody affirm that maps help in the event of, and not during a particular disaster. However even then, with basic infrastructure utilities like electricity down how effective this system will be across different locations remains doubtful. Even the people behind these services admit that their services don't work as well in the real world as they do in controlled environments.

For India, things would not change for a very long time, no sir. We would be happy if in the event of we getting caught in a flood or a cyclone somebody gets food and shelter for us. We can check our e-mails later. ⊠

Sir Yes Sir!

The funniest thing that happened this month went as follows:
Ring! Ring! (Rohit, our art director's phone)
Rohit: Hello
Caller: Hi, it's Pramath.
Rohit: Yes sir, hello! *(Dr Pramath Sinha is our MD)*
Caller: Hello?
Rohit: Yes sir, I'm sending the cellphone cover right away.
Caller: Cover? No cover, I'm calling about a mobile connection.
Rohit: Huh?
Caller: Vodaphone connection?
Rohit: Huh?
Caller: Sir this is Pramath from Vodaphone!
Rohit: &%@$*#^%!

DIGIT DIARY

Anurag Panda
http://tinyurl.com/6dtsyt
http://dogbuntu.wordpress.com/2008/05/15/making-hardy-heron-as-lts-is-a-tactical-mistake/

Making Hardy Heron as LTS was a tactical mistake
In April Canonical released Ubuntu 8.04 LTS more popularly known as Hardy Heron. It was the eighth Ubuntu version to be released so far but more importantly it is an LTS release which means that it would be supported 3 years for the desktop and five years for the servers.

....Now with such a history of remarkable success that Dapper had, Hardy falls far too short....In fact things that worked in Gutsy did not work in Hardy. In my case for instance Compiz does not work as I made it work in Gutsy.

.. the developers should have released Hardy as a standard release and should have tested, and debugged for six more months and should have released its next version as LTS....For the time being the Ubuntu developers are releasing Hardy 8.04.1 in July and I hope it irons out several bugs and does make Hardy deserving to qualify as an LTS release.

Pallab De
http://tinyurl.com/6x42m8
http://www.pallab.net/2008/07/20/3-websites-and-2-softwares-for-all-your-subtitle-needs/

3 Websites and 2 software for all your subtitle needs
If you are a movie buff like me who watches a lot of foreign movies then this post is for you...

I present before you three websites and 2 software to help you hunt down that elusive subtitle.

Podnapisi.net: This is the first place I visit whenever I need a subtitle. The major advantage podnapisi has above other subtitle services is the awesome search engine.....This is the best option for TV Show buffs, as podnapisi allows you to locate subtitle for a specific episode from a specific season easily...

■ Google's page claims Gears will work with OSX 14 or higher, latest release is OS X 10.5.4 ■ New game allows players to control Bill Gates and Steve Jobs ■ Mexico City police investigate online ads for hitmen services ■ Nintendo says Wii will be in short supply this year for third consecutive years

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Testing Times...

1 Who has recently challenged US to achieve truly clean carbon-free sources of energy within 10 years?
a) Barrack Obama
b) Bill Gates
c) Al Gore
d) Steve Jobs

2 What is the new multi-touch device from Panasonic called?
a) Layer
b) Digital Wall
c) Touch Wall
d) Surface

3 What is Kindle?
a) Portable e-book reader from Amazon
b) Social networking upstart from Indiatimes
c) Facebook application developed for eBay listings
d) Feed aggregator app for Wordpress blogs

4 What is CSIRAC?
a) The first Chinese supercomputer
b) Australia's first digital computer
c) Low power silicon processors designed by Intel
d) Indian Army's Cyber Security Cell

5 Which of these programming languages was invented at Bell Labs?
a) BASIC
b) COBOL
c) C
d) FORTRAN

6 Which company's computers ran the Multics operating system?
a) Digital Equipment
b) IBM
c) Honeywell
d) Compaq

7 Who was Grace Hopper?
a) The inventor of COBOL
b) Bill Gates's first secretary
c) The person who gave IBM the nickname "Big Blue"
d) The designer of the ENIAC computer

8 What does 'refresh rate' refer to when speaking about your computer monitor?
a) How many times the screensaver starts
b) How often you clean it
c) How often the screen's image is redrawn
d) How many beverages you drink while sitting in front of it

9 For which of the things you produce with your computer system might you be concerned about "kerning?"
a) Text output
b) MP3 music files
c) Photos
d) Movies

10 Who created Linux in the first place?
a) Linus Torvalds, at the University of Helsinki (Finland)
b) Lynette Ulrich, at the University of Bonn (Germany)
c) Bill Gates, at Microsoft research
d) Lawrence Ian Nash, from MIT (US)

Got an interesting question? Send it in with the answer to **TQ@thinkdigit.com** Mark "TQ" in the subject area.

One Terabyte (1000 gigabytes) is equivalent to storing a stack of documents that is more than 16 times the height of New York's empire state building.

Did You Know?

Answers

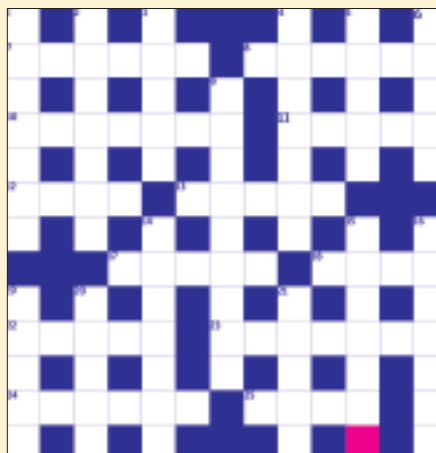|	
1. c	6. c
2. b	7. a
3. a	8. c
4. b	9. a
5. a	10. a

Crossword

ACROSS
7. Small software application, typically in the Java Programming language (6)
8. King of the search engines (6)
10. Aerial (7)
11. The part of a disk which passes under one read / write head while the head is stationary (5)
12. Embedded-Objects Linked Across Systems(abbr) (4)
13. A programming mistake which may cause a fault (5)
17. Short for Telephone Company (5)
18. ----Office- cross-platform office application suite (4)
22. Compact web-browser-promoted usually for hand-held internet devices (5)
23. Another term used for a set-box (7)
24. World's leading supplier of information management software situated in Silicon Valley (6)
25. Moser---- - India's largest optical storage media manufacturer (4)

DOWN
1 Adobe Type------ - A font utility for Macintosh and Windows that enables a computer to print PostScript fonts (7)
2. SPeedy ImplemenTation of SnoBOL(abbr) (7)
3. Java---- - architecture that assists in the development of reusable software components (5)
4. One of the modifier keys on the keyboard—does not generate any character on it's own (7)
5. Synchronous Graphic Random Access Memory(abbr) (5)
6. The layout engine for Netscape Navigator and Communicator 5.0 (5)
9. Seagate's latest high speed and capacity desktop drive with record setting storage density (9)
14. Computer software setting that states what will automatically happen in the event that the user has not stated another preference (7)
15. Search engines programs used to index Web pages (7)
16. To encode data so that only someone with a key can read it (7)
19. Common Business Oriented Language(abbr) (5)
20. Official software (5)
21. Worthless content put in the recycle bin (5)

Crossword by **Nitta Jaggi**

Last month's Winner
Ankit Sud

Send in your entries to **TQ@thinkdigit.com** on or by the **20th of this month.** One lucky participant will win

Build Your Own Security Lab
By Michael Gregg
Published by
**WILEY-INDIA**

Win!

July's Solution

A	P	P	L	E	T	S		S		H		
E		E		A		P	O	R	T	S		
A	R	R	A	N	G	E		B		M		
I		R		S		C	A	L	L	E	R	
O	P	E	N	S		H				L		
H		I		S		I		I	B	E	X	
E		N	O	T	E	P	A	D		C		
D	R	A	G		R		S		E	T		
A					I			S	N	O	R	T
B	L	O	W	U	P		A		T	O		
	P		N		E	C	H	I	D	N	A	
A	U	D	I	O		E		T		I		
	S		X		G	R	A	Y		C		

Radiohead's Laser Affinity

The latest video from British rock band Radiohead features the use of lasers instead of cameras. The video used 3D plotting technologies that collected information about the shapes and relative distances of objects. The video was created entirely with visualisations of that data.
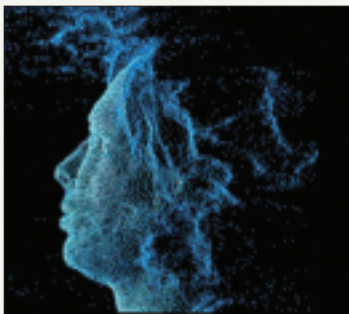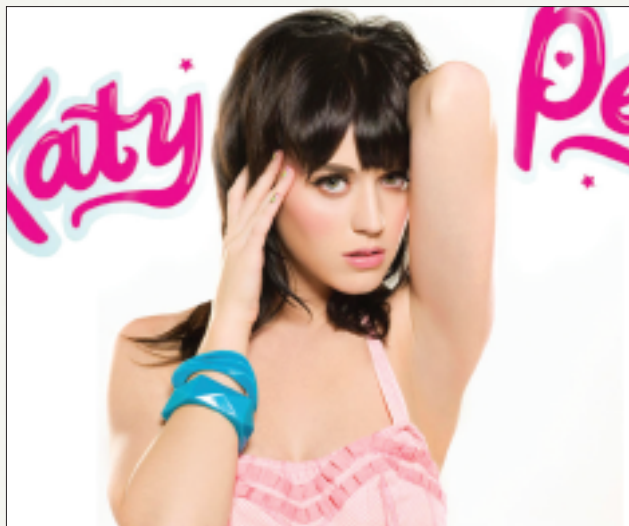
House Of Cards, directed by James Frost of Zoo Films, was created utilising two technologies—Geometric Informatics and Velodyne Lidar. The former employed structured light to capture detailed 3D images at close proximity, and was used to render the performances of Radiohead's Thom Yorke, the female lead, and several party goers. The Velodyne Lidar system uses multiple lasers to capture large environments in 3D, in this case 64 lasers rotating and shooting in a 360 degree radius 900 times per minute, capturing all of the exterior scenes and wide party shots.

Katy Perry's Tech views

Katy Perry is one of those pretty young things to have stormed the pop scene lately with songs about ladies kissing. Just for the folks who don't follow statistics, her hit single "I Kissed a Girl" has sold nearly 1.5 million copies and kicked up plenty of controversy.

However, she seems to be familiar with digital file sharing and video blogging. In an interview with a news Web site, she reveals that she got her first big break not from conventional music labels, but on MySpace. As such, things like Radiohead and Nine Inch Nails going ahead and releasing their music without the aid of a label does not faze or worry her. At 23, she is firmly cued to what the Internet generation wants and is not coy about commercialising her work. The lass is also pretty gung ho about new distribution and business models related to the music industry and feels that the Internet will help a whole lot of talented people to be free from the clutches of corporate suits.

While we can quibble with her musical output, we chose to whole heartedly endorse her technology related observations. You go girl!

The Dark iPod

The late Heath Ledger, who plays arch villain Joker in the latest Batman hit movie "The Dark Knight" was one big tech aficionado. Ledger loved his gadgets, and his iPod the most. Filled with all kinds of music, Ledger's iPod reportedly became popular for its eclectic collection and it did the rounds among the members of the cast and crew who copied the content they liked. This has been revealed by co-stars Aaron Eckhart and Maggie Gylenhaal in a TV show. However, they unwittingly seem to have spilled the beans on something illegal—copying music from other iPods is considered a copyright infringement. We are watching to check whether RIAA starts proceedings against the two actors, or sues the estate of the deceased Mr Ledger for damages—you know they're capable of it!

July 2008

Reading Online

I liked most of your articles. Especially, "Free Ride" on freeware tools was very useful. Also, quite informative was the article "Learning new languages". Regular feature "Tips and Tricks" and "Tech Quiz" were informative as usual. However, I have a suggestion. E-books have become quite popular these days. While you have carried some articles on Kindle / Sony e-book reader, an article on various e-books sites will be appreciated. Compliments on bringing out such an informative magazine in a simple and easy language.

S A EKANT

In the midst of bricks and bats, it's always joyful to receive an encouraging letter as yours. Further, we love to hear from readers who desire to read about specific topics in *Digit*. The problem with ebooks is that what's available for free is quite common–and we've provided to our readers. The "popular" ebooks are usually latest releases that people download from Torrent sites–many of them not even realising that they're commiting a crime by downloading and sharing these ebooks. We will try and give you more free ebooks on a regular basis though.

Team Digit

Time To Give

I am a 14-year-old boy. I had created a media player a week ago. I have been using the PC for the past seven years and have basic knowledge of programming. I used Visual Basic And .Net in my Media Player. I assure you I haven't stolen the codes of any other media player. I request you to donate my media player as freeware to the Digit

team. If there's some procedure to do the same, please let me know.

Kumar Keviv

At *Digit*, we value innovation. Indigenously developed tools are always welcome, and the fact that you're 14 should be more inspirational to our other readers. Send in your player to us, and we will have our technical experts review it at our lab. If deemed feasible, we can provide such software to all of our readers via our CD and DVD. If any of our readers wish to send in software that they have created–especially open source software–please mail the software or the download link to **editor@thinkdigit.com**, or send it via courier in a DVD to our postal address.

Team Digit

Illegible

I am a regular reader of Digit for the past five years. I purchase it every month at nearby news stand. I have collected all Fast Tracks and have kept it in my library. Since I am a retired engineer, I go through them whenever I find time. As usual, I got the July 2008 issue from my book vendor three days back. When I opened the Fast track, I found that the print is not legible from pages 33 to 63. I am attaching a scanned page for your reference. I therefore request you to kindly to replace the book, if possible, for which I will be highly thankful to you. Otherwise, I would purchase another copy from the vendor.

SPSN Murthy
Hyderabad

Our apologies for the faulty copy. We will be sending you your replacement copy

immediately, so please do not purchase another copy. You should consider subscribing to *Digit* and having it delivered to your doorstep.

Team Digit

Thanks!

First of all, let me thank you all for providing the *Fast Track to Troubleshooting II*. I think it will really help a lot of people. Can we expect such Q&A compilations at least once or twice a year? OK! I know I'm being a bit greedy, but can't we demand that much from you?

I've one complaint for you. You kept your promise to provide such Fast Track but you were a little late as a competitor already provided something similar with their June issue. I'm a bit possessive about *Digit*, and was hoping you guys would be the first to provide such a booklet. Anyway, better late than never.

I don't care about what the DVD content, as I can always get the latest software versions from the Net, so, please just keep the magazine content as knowledgeable as ever.

Also, can we expect our copies to reach us within the first week of the month? Please give it a thought.

Rhitwick Biswas

There's a slight correction to what you're saying. Although a competing magazine might have provided something similar to our Fast Track in what seems like the earlier month, please also understand that this was part 2 of our *Troubleshooting Your PC* books. Part 1 was published in March 2006. That's almost 2 years before our "competitor". We're quite aware of what other magazines offer you, and we're quite confident that you will find our product to be more indepth and filled with content.

As for the issues reaching subscribers late, our sincerest apologies. We're working on a way of resolving this with the courier companies, and you should start seeing an improvement from this month itself. We request our readers to write in to **help@thinkdigit.com** and inform us if you have been regularly getting your subscription copies late, and we will solve your problems.

Team Digit

More In Colour

Congratulations for your very first colour version of the *Fast Track* journal.

I love your Fast Track. July 2008 has been one of the best issues of Digit, as the main story was computer games. I always want to know more about computer games.

Can you publish a special Fast Track on game developing, graphics engines, detailed techs of graphics cards, information on some great game studios like 'Bungie'.

This really helps us to gain more knowledge on game development and there will be more Indian games that can stand alongside games like *Crysis*.

Sourabh Mantri

Interestingly, we have been contemplating on doing more stories of "behind the scenes" type. We're not so sure that a Fast Track is best suited for such articles, but you can surely expect more on such topics in *Digit*. Since it's all a part of the same package anyway, we're hoping you won't be disappointed to hear that we will not be covering such topics in the Fast Track. Look out for more articles like the one last month and this month's Olympics story in the future.

Learning To Write

I have been reading your magazine since February 2007. However, this is the first time I'm writing in to appericiate your hard-work. You are doing a fantabulous job. I loved reading your last month's issue, especially the coloured Fast Track. It's nicely made and I liked it. I do not have much knowledge about technology but I still read your mag. Your CD/DVD contents are also good but you can make them better by including more freeware.

I have a question, can I burn a Dual Layered DVD in a normal DVD writer? Is it possible to do so? I want to burn some DL-DVDs like you pack with every issue. How do I do it?

Pankaj Mittal

We're glad that you don't let technology confuse you, because trust us, after reading Digit for a few years you will begin to sound more like a geek. In reply to your question, no you cannot burn a dual-layer DVD in a normal DVD writer. You need to look for the text "dual-layer" on the writer to know whether it can read and write to such DVDs. We do not "burn" our DVDs, and the procedure used to create lakhs of DVDs is called stamping. You can do a Google search and find

out more about the procedure, or perhaps we will include an article on the same, if enough of you readers write in and express interest in the same.

Team Digit

Whoops!

First of all, I would like to congratulate you for publishing such a great and informative magazine. I am a regular reader of your magazine for the past 10 years. I haven't missed a single copy of your magazine from July 1998. You started your magazine in April. I was in Saudi Arabia and I returned in July 1998 and I was looking for a good and informative computer magazine. After I saw your magazine, and from that day I started buying *Digit*.

In your July issue the Fast Track booklet is damaged–some pages are missing from the booklet (Pages 65 to 96) and pages 33 to 64 are repeated. This is the first time in 10 years that I faced this kind of a problem. Hope you will do the needful and replace the booklet.

Baba Tajuddin
Hyderabad

Wow! You got pages 33 to 64 twice and Mr Murthy from the same city (in a letter on the previous page) got pages 33 to 63 smudged. We're trying to figure out the odds of that happening–quite amusing. What isn't amusing at all, however, is the fact that you have got a defective *Fast Track* book. We will be sending you a replacement immediately.

We would also like to thank you for being a loyal reader for so many years, and being faithful to us.

We would also like to inform all our other readers that although we publish complaints from readers in this section, please *do not* write in to **editor@thinkdigit.com** for such things.

If you mail **help@thinkdigit.com**, your problem will be resolved a lot quicker. You can mail any type of feedback to the Editor, and also write in to him in case, for some strange reason, you do not get a response from our helpdesk. The reason for this is that although any mail sent to any valid Thinkdigit ID will be addressed eventually, we do not want you to have to wait for a resolution of your problem because of our Editor's busy travelling schedule.

Team Digit

A Global Brand?

I was moving to class 9 when I read your magazine (Jan 2004) for the first time. It really thrilled me, and for the first time I became aware of what an amazing field computers is. I was confused as to whether I should take computers as a subject in my studies–as it was an optional subject. In class 10, we were introduced to Java, and since even our teachers were new to this language, we turned to Digit CDs and DVDs. It was your CDs that provided me the latest JDK and BlueJ software to practice on, and whether you believe it or not, I was able to complete my course in 2 months, and also developed a logical way of thinking. In class 10, I got 94 per cent and in 12 (C++) I got 95 per cent in computers–all thanks to your inspirational content.

Your magazine has totally changed my vision, and I have become a tech freak now. Whether it's a mobile or a PC, I always consult *Digit* before I buy. I will now buy a Dell XPS laptop, after reading your June issue. From this year, I will be doing BTech in CS or IT. Many friends of mine dream of getting jobs in big MNCs, but my dream is to work with you.

You have raised your standards a lot, but I think its time to change gears, just as I do when riding a bike at 50 Kmph in fourth gear, by switching to fifth gear. I think it is time for you to go to a global stage, instead of being confined to India.

But still, will this be enough as far as progress is concerned?

I would say no. You have a very big name with you *Digit*. Now its up to you whether to make it a huge brand or not. You guys have a very good opportunity with you to start a new era of *Digit*. Who knows, maybe after 10 or 12 years, *Digit* may stand with the leading companies of the world. Whether it is creating hardcore games, essential software, or computer hardware. These are a few field where we lack a true Indian brand, and I believe that you can make us proud. We your readers will always give you all of our support if you decide to undertake such projects–readers of today could be the users of your products tomorrow.

I wish you best of luck for your future.

Anshul Karasi
Dehradun