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DIWALI SPECIAL

INDIA'S NO.1 TECHNOLOGY MAGAZINE

October 2008

digit

YOUR TECHNOLOGY NAVIGATOR

www.thinkdigit.com

Tested: Graphics Cards

Colour Management Explained

The Best of Droolmaal

AgentOO1 Takes You Tech Shopping

What's The Best Browser Today?

Icons of Trust digit 2008

Which brands can you rely on?

We measure users' satisfaction with the top brands

Bazaar : 28 Products Reviewed

Including:

Nokia N96

Acer Aspire One

ASUS EeePC 1000H

MSI Wind U100

Publisher's Note

Our Team at Digit would also like to hear and interact more with you – on mail, at thinkdigit.com, and at Reader meets

Asheesh Gupta Publishing Director, Digit

A Digital Evolution

THE LAST FEW months have been extremely eventful at Team Digit. Our chests swelled with pride at seeing *Digit* emerge once again as the technology magazine read by most readers in India, as per the Indian Readership Survey 2008. Once again we felt very humble thinking about the support and encouragement from readers like you that has allowed us to get here. Once again, we made a commitment to work even harder in delivering greater value, better content and better service to you.

We have taken a big step in this direction with the induction of Edward Henning in September, who has assumed the role of Editor-In-Chief, Personal Technology at 9.9 Media, and will guide the *Digit* editorial team. Edward is a 24-year veteran in technology media, having worked around the world with publications such as *PC User*, *PC Magazine* and *c't magazin für computer technik*. Like so many of us here at *Digit*, he is not a career journalist, but a technology enthusiast who started writing in the UK's *PC User* about a problem he happened to have solved; and then gradually got sucked into the world of publishing. He later became the European Labs director for Ziff-Davis, the publishers of *PC Magazine*, and recently managed the UK online business for Heise, the publishers of *c't*.

Above all, we think of him as an Indian who happened to be born in England. He has spent over 30 years visiting the Indian subcontinent – studying, travelling and working here. He is a scholar of the Sanskrit and Tibetan languages! Interestingly, he was the editor whose data IBM used when it pulled shipments of the early Pentium machines after a flaw had been discovered in the floating point unit; this forced Intel to recall and replace all Pentiums that had been shipped at that time. I am confident that under Edward's stewardship, *Digit* will move up several notches in quality. In the coming months we look forward to bringing you several new innovations and features along with the ones that you have come to like and appreciate in *Digit*.

Our team at *Digit* would also like to hear and interact more with you – on mail, at thinkdigit.com, and at reader meets. We look forward to your continued support and feedback to build and enhance the *Digit* Community.

Vista Woes

TO JUDGE BY the various sources that attempt to assess Linux market share on the desktop, there has been a surge in recent months. To judge by anecdotal evidence, the reason for that surge is pretty clear — Windows Vista. As it becomes increasingly difficult to buy a new machine with Windows XP — still not impossible — users are forced to decide if they wish to put up with the problems associated with Vista. There is plenty of evidence to suggest that many people are becoming Vista refugees and turning to Linux.

All new operating systems have teething problems, and users often react negatively to change, but there is more to the problems faced by Vista, and the most compelling evidence of this is the behaviour of Microsoft. Take the update schedule for Vista and XP. Microsoft recently committed to continue to provide security updates for XP until at least 2014 — and this is just a little longer than the company is allowing for Vista Ultimate. Now things might well change, but if they do not, this means that you will still get such support for XP after it has ceased for Vista. No doubt things will change, but what sort of message does this give out about these two operating systems?

There is no doubt that XP is by far the more popular of the two, and the problems with Vista lie in its design and implementation. So, if they were your products that you were trying to sell to the world, what would you do? What would be the logical approach? Spend lots of money updating the popular XP, enabling it to handle more memory and modern hardware? Perhaps you would throw potentially more money at Vista development and try to address all the issues that frustrate users?

To me, these seem the only sensible approach, but Microsoft instead throws huge amounts of money — $300 million — into marketing; clearly, we poor users have not understood the message. All those problems were because I was simply stupid. Maybe you have seen the Microsoft advert that depicts a ship about to sail off the edge of the world as it was conceived a few hundred years ago? It states: "At one point, everyone thought the Earth was flat. Get the facts about Windows Vista."

So, if you do not like Vista, the message seems to be that you have the intelligence and understanding of a flat-earther rather than a globularist

Edward Henning, Editor-in-Chief

In what business school is it taught that marketing consists in insulting the intelligence of your potential customers?

(yes, that really is the term by which flat-earthers refer to the rest of us). In what business school is it taught that marketing consists in insulting the intelligence of your potential customers? This is quite bizarre, and is unusual even for Microsoft, which has always been keen on getting the "right" message across.

Also have a look at the TV advert entitled "Bill Gates and Jerry Seinfeld — Shoe Circus Commercial". You'll easily find it on the Web. Just how on Earth this is expected to improve the image of Vista, let alone the code base — which is what really matters — is beyond me.

If Microsoft wants to stop the flood of Vista refugees over the open source border, this is certainly not the way to go about it.

Now where did I put those Ubuntu disks?

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 to **editor@thinkdigit.com**

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Advertisers' Index

Client	Page
Abacus	81
AOC	15
APC	Back Cover
Best Western Resort Country Club	91
Canon India	Inside Front Cover
Dell	5
Elent	179
Enjay	152
Fortune	183
i-Ball	11, 147
Kingston	17
Microworld	19
MSI	77
MSI	Inside Back Cover
Nanopoint	157
Palit	69
PlusTek	93
Reliance	21
RSG	177
RX Tech	181
Sagarmatha	175
Samsung	45
Samsung	41
Seagate	23
State bank of India	13
Top Gun	149
Zotac	71

Products Reviewed This Month

Bazaar 96
Acer Aspire One
A-DATA S701 Sport Series S701 2 GB
Altec Lansing VS2521
Antec Three Hundred
Apacer AH225 1 GB
ASUS Eee PC 1000H
ASUS R2E
Belkin Laptop Cooling Pad
Belkin Washable Mouse
Belkin Wireless G Router
BenQ Joybook S32-LE27
Epson Stylus Photo 1390
Intex IT-10500W
Kingston DataTraveler 400 16GB
LG KC550
LG P300
Microsoft Arc
Microsoft Sidewinder X5 Mouse
Microsoft Sidewinder X6 Keyboard
MSI Wind U100
Nokia N96
Panasonic KX-MB262CX
Panasonic KX-MB772
Samsung CLP 315
Samsung SCX-4300
Samsung T190
Samsung YP-S2
Viewsonic VP2650WB

Graphics Card Comparison Test 64
ASUS EAH 3870X2
ASUS EAH 4870 TOP
ASUS EN 3870
ASUS EN 9800 GTX TOP
ASUS EN 9800GT HYBRID POWER
ASUS EN8800GT TOP
ASUS EN9800GX2
ASUS EN9800GX2 TOP
ASUS ENGTX280TOP
ASUS HD 4850 TOP
ATI Radeon 4870 X2
EVGA e-GeForce 9800GT
GE CUBE HD 4850
GIGABYTE GC-N98TZL-1GH
GIGABYTE GC-N98TZL-512H
MSI N9800GTX PLUS-T2D512-OC
PALIT 9800GT
PALIT HD 4870 SONIC
PALIT HD4850
POV GFGTX280
Sapphire HD3870 512MB
Sapphire HD3870 X2
SPARKLE GEFORCE 9800GTX+
XFX GX-260N-ADF9
XFX GX-280-ZDD9
XFX PV-T98F-YDF8
XFX PV-T98UZHF9
XFX PV-T98W-YDQH
Zotac 9800 GTX AMP EDITION
Zotac 9800 GTX+ AMP EDITION
ZOTAC 9800GT AMP! Edition
ZOTAC GTX 260 AMP! Edition
ZOTAC GTX 260²
ZOTAC GTX 280 AMP! Edition

External Hard Drive Test ... 145
Freecom Network Drive 500 GB
Freecom Tough Drive Pro U&F 160 GB
LaCie Little Disk 320 GB
LaCie Rugged 500 GB
Verbatim External Hard drive 500 GB
Verbatim SmartDisk 120 GB
Verbatim SmartDisk 320 GB
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Western Digital My Book Studio 1000 GB
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Western Digital Passport Essential 320 GB
Western Digital Passport Studio 320 GB

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Mobile: +91 99013 00772

Enter

12 Google Unveils The G1

14 Adobe announces CS4

16 Yahoo! amps up its ad system

16 Windows 7

18 BYOC

20 A Memory For Music

20 Google's wireless hopes

22 World record CF cards by Pretec

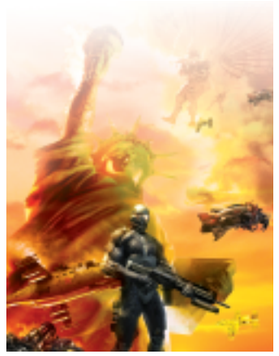
COVER STORY

24

Icons of Trust

Every brand makes promises. And by living up to its promises the brand earns user trust. This third *Digit Icons of Trust* survey looks at how popular technology brands are perceived by users who have had the opportunity to assess and experience these brand's promises

DIGITAL PASSION



64

Test

Visual Wars

DX10 giving your ailing rig a hard time? Invest in one of these bad boys, and watch your games come to life and the frames blur...

47

Tomorrow

Top 10 Technologies to Look Out For

Ten of the most remarkable technologies being worked on today, which are set to bring sci-fi to reality

DIGITAL BUSINESS

153

Data Protection

Protect Your Data

Data deduplication technology is being deployed in both the remote office and in the datacenter to help companies centralise their backup data, reduce storage costs, and improve disaster recovery efficiency

155

Interview

Open Source Will Become More Mainstream

Gerry Messer, President, Asia Pacific and Japan, Red Hat

156

Power

Power Savings

A combination of data-duplication and a multi-tiered storage architecture can be a key enabler of a future to green computing

158

Online Threats

Cyber War Heroes

Malicious Web sites represent the fastest growing threat to a mid-sized business

160

Talent Shortage

People Conundrum

One of the biggest challenges for the SMB sector is the access to talent

161

Security Challenges

Threat Defence

As the network is becoming more vulnerable to attack because of the evolving perimeter, the threats themselves are changing

DIGITAL TOOLS

145

Test

External Storage Devices

12 external hard drives tested, to help you choose what to carry with you on your travels

112 **Agent 001**

Agent001 recounts his buying experiences in 8 categories

83

Enhance

Colour And Computers

Through cameras, scanners, screens and printers, what you see is not always what you get. Here we introduce the theory underlying colour management

89

Main Story

The War of the Browsers

Internet Explorer, Firefox, Opera – and now Chrome. We compare the top internet browsers

DIGITAL LEISURE

163

Mods And Ends

If you're a gamer and are wondering which of the newest and most exciting mods and map-packs are up for grabs, quit wondering, and let us assist you.

Here's where you'll find the lowdown on 20 of the most popular additions to the mod-world, guaranteed to amplify the thrills of your gaming life

Escape

170 Spore Causing Problems

170 Metallica is fine with piracy?

171 Facebook blocks bugmenot. com!

172 Malware popups don't worry users

172 Duke Nukem got more affordable!

173 Yet another Google founder appears

REGULARS

Tech Talk 12
Stat Attack 20
Buzzword Of The Month 20
W5H 22
Agent001 112
Tips & Tricks 137
Whatever Happened To 170
People Who Changed Computing 171
Bluff Your Way Through.....172
Wild Wild Web 172
Blogwatch 173
Tech Quiz 169
Inbox.....180
Tabloid Tech 184

Tools

Griffith for Windows 0.9.2
Griffith is a movie collection manager application. Adding items to the movie collection is as quick and easy as typing the film title and selecting a supported source.

Noise Cradle 1.4
Noise Cradle is a professional audio visualization, able to render 3D visuals in response to audio from any micruphone, audio input device or media player. Noise Cradle is ideal for use at parties, in bars and clubs, and at festivals and other live music events. The ability to import videos, textures and logos allows the user to brand the visual output.

Graphite 7.2 R2
Create 2D and 3D precision wireframe drawings of unlimited complexity and detail. Whether you need a simple sketch, an elaborate architectural design or a precision engineering drawing, Graphite lets creative professionals express their ideas clearly and completely in the fastest way possible.

SteadyHand 2.2.1.1
SteadyHand is a simple program anyone can use to eliminate the shakes, rattles and rolls from their videos. Install it on your PC, and a few minutes later you will be stabilizing your own video footage, just like the professionals do.

MULTIMEDIA
- AlltoAvi
- AnimPixels 1.01
- AudioPaint 1.3
- Claxa 1.0
- Construct 0.97.2
- Desktop Graffitist 1.0.0.6
- DoNaut 2.0.1.1
- DVDFab Platinum
- Easy Frame Creator 1.3
- FinalBurner Free 2.3.0.135
- FurySync 3.0.0.4
- Griffith for Windows 0.9.2
- K-3d
- Lightsmark
- Meda MP3 Joiner 1.2
- MonPiano 2.3
- MP3popup
- Pivot Stickfigure Animator 2.2.5
- Sermonex 1.0.0
- SimilarImages 2006
- SnapIt 2.6
- Spirographer 1.0.3
- Subtitle Workshop 4.0 Beta 4
- swfShrink 0.1
- TagScanner 5.0.
- Volumouse 1.57
- Watermark me UP! 1.0
- Edraw Flowchart 4.0
- Logosmartz 5.0
- quickslideshow
- Schematic 3.19
- Vrindamp 0.0.1

INTERNET

FireTorrent 0.5.3.28
Suitable for novice and advanced users, FireTorrent allows you to download torrents without the hassle of a 3rd party application. The result is a great user experience that is attractive to both people that are new to downloading torrents and advanced users. T

WiPeer 0.72
WiPeer enables sharing files directly among computers, playing multi-player games, chatting, and collaboration over both Wi-Fi and home/office networks.
- Advanced RSS Mixer Professional 3.1.58
- Favorites Town
- FireTorrent 0.5.3.28
- GMDesk 0.99
- Google Chrome
- ieSpell 2.5.1
- LIVECricket 1.1
- Maxthon
- Mozilla Thunderbird, Portable Edition
- Orbit Downloader
- Picasa 3
- Pidgin Portable
- RSS Bandit 1.6.0.1
- Torrent Episode Downloader 0.92
- wiki taxi
- WiPeer 0.72
- ArcSoft Video Downloader 1.0
- EasyDeskTicker 3.0
- eCipher 1.6
- Flash Sound Grabber 1.10
- FlashIt!
- KeyScrambler Personal 2.2.1
- Traymark 1.1
- Ultra Recall
- VaultletSuite 2
- WatchFast 1.0.1
- WhereWasI? 1.50
- Youtube Video Downloader 1.1

SYSTEM
- 3DMark_Vantage_v101_ installer
- AutoEject 1.22
- Cache Monitor II
- Cathy 2.28
- CheckDrive 2008 1.2r
- Compu-Rx 2.1
- Disk Heal 1.46
- DracoSoftware Process Killer 0.9.7
- DriveXplorer 1.0
- Extreme Cleaner 2.1.1
- Find and Run Robot 2.30.01
- HDCopy 2.104
- HealthMonitor 3.1
- ListDLLs 2.25
- Malicious Software Removal Tool
- Memory Check 1.00
- Motherboard Monitor 5.3.7.0
- MyRun 1.10
- Pen Drive Copy 1.0
- PowerOff 3.0.1.3
- ResizeEnable 1.4
- Send To Toys 2.5
- Serious Samurize 1.64.3
- SpeedFan 4.36
- Swift Keyboard 3.5
- TrayEverything 1.2
- TypeAndRun 4.7
- UBCD4Win
- USB FireWall 1.1.0
- Active SMART 2.62.642 Beta 2
- Advanced Serial Port Monitor
- Counterspy
- OnlyDirCopy 2.0
- RoboTask 3.1
- Winxpmanager

ESSENTIALS
- .net Framework 2.0
- µTorrent 1.8.0
- Avast Home Edition 4.8
- Comodo Firewall Pro 3.0.25.378
- Foxit Reader 2.3
- Free Download Manager 2.5 build 758
- Irfan View 4.20
- Java(TM) 2 Runtime 1.4.2.18
- K-Lite Mega Codec Pack 4.1.7
- Opera 11.0
- Silverlight 2.0
- Spybot Search and Destroy 1.60
- VLC Player 0.9.2
- WinRAR 3.71

UPDATES AND ADD-ONS
- Avast
- AVG
- JDK SE 7
- Kaspersky Anti-Virus Update
- McAfee
- Norton
- spybot
- Vista Service Pack

Gaming

GAMES

Deathtrack: Resurrection
Death Track: Resurrection is a successor of the legendary Deathtrack, one of the founders of the combat racing genre.
- Conflict: Denied Ops demo
- deathtrack: resurrection demo
- Fifa 09 demo
- shadowgrounds survivor demo
- Universe at War: Earth Attack

TRAILERS

Warhammer Online Cinematic Trailer
War is everywhere in Warhammer Online: Age of Reckoning (WAR), the new fantasy MMORPG from Mythic Entertainment, the creators of Dark Age of Camelot. WAR features next generation Realm vs. Realm gameplay that will immerse you in a world of perpetual conflict for years to come.
- Fallout 3 HD video
- Killzone 2 Multiplayer Trailer
- Nikopol demo

Productivity

OFFICE

Microsoft Office Compatibility Pack
By installing the Compatibility Pack in addition to Microsoft Office 2000, Office XP, or Office 2003, you will be able open, edit, and save files using the file formats new to Word, Excel, and PowerPoint 2007.
- InstantConference Outlook Add-In 1.0.1.5
- MS Office Compatibility pack
- Classic Menu for Excel 2007 3
- Daisho 2.1
- FlameReader 4.2.7
- Solid Converter PDF to Word 4.0
- WordPerfect Office X4

WEB
- Altova MapForce Enterprise Edition
- Flash Website Design Pro 1.16
- Iron Speed Designer 5.2
- Jcoder Pro 1.0.1
- Titan FTP Server 6.20 build 580

FAST TRACK
- Flash CS3 Action Scripts

CD worth Rs 200 FREE

HTML & CSS Tutor
This classroom in a CD will teach you everything you need to know about HTML (Hyper Text Markup Language) and CSS (Cascading Style Sheets). This knowledge is essential for would-be Web developers, and those of you looking to build a better Web site for yourself or your company. This CD is usually sold for Rs 199, and is free with the Digit October Diwali Special issue. Please send feedback about this CD, and tell us whether you would like Digit to include more content of this type from time to time. You can send your feedback to **cdcontent@thinkdigit.com**.

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Trailers

TRAILERS

The Boy In The Striped Pajamas
The Boy in the Striped Pajamas is a fictional story that offers a unique perspective on how prejudice, hatred and violence affect innocent people, particularly children, during wartime

Fear(s) Of The Dark
Six of the world's most renowned comic and graphic artists breathe life into a wildly inventive and visually dazzling collection of fearful tales

Twilight
Bella Swan has always been a little bit different, never caring about fitting in with the trendy girls at her Phoenix high school.
- Appaloosa
- Felon
- Humboldt County
- Knowing
- Man on Wire
- Milk
- The Spirit
- Watchmen

HD
- Death Race
- Eagle Eye
- Fast and Furious
- Fear(s) of the Dark
- Igor
- Punisher: War Zone
- Quantum of Solace
- Real Time
- Saw V
- Sukiyaki Western Django
- Terminator: Salvation
- The day the earth stood still

Audio-Visual

Portal Inspired Music
A collection of 15 ambient electronic instrumentals written by Hamst3r after having played the game Portal by Valve software.

War Of The Worlds
H. G. Wells wrote The War of the Worlds in 1898, when there was much speculation about life on the planet Mars. The book is considered to be one of the first science fiction novels. In the story, an English gentleman narrates the events of a violent and fast paced Martian invasion
- Mister Electric Demon
- The Just-So Stories - Rudyard Kipling
- The Sleeper Awakes - H.G. Wells

WALLPAPERS
- A collection of wallpapers for desktops of all popular resolutions

AUDIO

MOVIES

Sweeny Todd: The Demon Barber of Fleet Street
A Fleet Street barber recounts the story of Sweeney Todd, a notorious barber who murdered many customers for their money
- Behave Yourself (1951)
- D.O.A
- Dimensions - A walk through mathematics
- Star Wreck - Legacy

Games

FREEWARE

Combat Arms
Experience thrilling firefights with this free online, multiplayer first-person shooter.

Gunbound
GunBound has a turn-based artillery gameplay, bearing properties of two-dimensional games and ballistics-simulation games.

Warmonger
Warmonger is set in an apocalyptic future during full-scale corporate war within the cities of the US.
- Alien Arena
- Gunroar
- Parasec47
- Return to Castle Wolfenstein: Enemy Territory
- Torus Trooper
- Warmonger

MODS

GTA: San Andreas - Gostown Paradise
Gostown Paradise is a scratch-made total conversion for Rockstar's Grand Theft Auto: San Andreas. It needs a 1.0 version of that game to work correctly. Installation is automated to avoid problems, but you sometimes have to map clean depending on your system.
- Command & Conquer: Red Alert 2 AR2 Mod v5.0
- Counter-Strike: Source Fusion Pack Source v1.0
- GTA: San Andreas - Gostown Paradise
- Half-Life 2: Pirates, Vikings and Knights II Beta Client 2.2
- Max Payne True Matrix Mod
- Unreal Tournament 3 - PhysX Mod

TRAILERS

Burnout Paradise
The third free game changing update to the award winning Burnout Paradise lets you take fun to the next level on two wheels.

Requiem: Bloodrayne
Observe the gorgeously grotesque nature of this adult MMO.
- Duke Nukem 3d
- Deadly Creatures
- Spore E3 2008 Trailer
- Wipeout
- X-Blades

Windows

TOOLS

Inkscape
Inkscape is an open-source vector graphics editor similar to Adobe Illustrator, Corel Draw, Freehand, or Xara X

MusikCube
musikCube is an MP3 player for the modern generation. It helps you just listen to what you want to hear, while offering innovative features not seen elsewhere
- Audacity
- Clamwin
- Cygwin
- DVDx
- electric sheep
- Eraser
- Filezilla
- Firebird
- freemind
- frostwire
- GeoShell
- Gimp
- GnuMP3d
- Hydrogen
- Infra Recorder
- Juice
- KeePass Password Safe
- Keynote
- Mediacoder
- Miro
- Mixere
- Mozilla Sunbird
- Mplayer
- paint.net
- peazip
- PhotoRec
- Rss Owl
- Stellarium
- Treeline
- Truecrypt
- xchat

OFFICE
- Archimedes
- BRL-CAD
- bxModeller
- CleanSheets
- DB Browser
- Eclipse Office
- Hipergate CRM
- Life Science Grid
- Openbravo ERP
- OpenProj
- Oxygen Office
- PDFCreator
- Projectivity
- Scribus
- tightVNC
- TurboCash
- YAWL

GAMES
- Armagetron
- Danger from the Deep
- Darwinbots
- FlightGear
- Freecol
- Marathon
- Nexuiz
- Retribution
- TORCS
- Tremulous
- Vdrift
- Vega Strike
- Warzone 2100
- Zombies

Linux

TOOLS

aTunes
aTunes is a powerful, full-featured, cross-platform player and manager, with audio cd rip frontend.
- Adobe
- AlbumShaper
- Chandler PIM
- eLynx
- eMule
- freemind
- Generative Art
- Gimp
- inkscape.jpg
- Jdraw
- Kino
- Miro
- Mumble
- Picasa
- qbittorrent
- Silex
- Skype
- Songbird
- SweetHome 3d
- Synfig
- VisionQuest
- Xournal

OFFICE
- Abiword
- FreeWERM
- Open EMM
- Open QRM
- OpenOffice
- Orange HRM
- Pentaho
- Scribus
- Tutos
- Zenoss Core

GAMES

Glest
Glest is a free 3D real time strategy game, available for several operative systems and that can be modified using XML and a set of tools.
- Armagetron
- FreeDroid RPG
- Glest
- Nexuiz
- Open Arena
- SuperTuxCart
- Tremulous

Distros

MIGHTY
- Foresight Linux
- LinuxMint
- Mandriva
- OpenGeu

MINI
- ByzanineOS
- Coyote Linux
- Damn Small Linux
- FreeNAS

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

Sennheiser PX100

28-03-2008, 03:48 PM

sreenisatish
Right Off the Assembly Line

Join Date: Nov 2007

The PX-100 is an open design supra-aural headphone (not earphone), which look quite simple and humble when you see it. But, inside lies a performance beast. This is my favorite among my headphone collection.

Once you hear the EP 630 – you think music is great and how can it get better? Hear the PX 100 and you'll start to know how better music can get. As these are open cans, they have much more room to play the music and they do a good job here. These are not audiophile grade headphones – not by a long shot – but could be termed as a stepping stone into the audiophile world.

The first thing you'll notice about these phones when you wear them is that they are very light. Fire them up in your player and then, the thing that will impress you is the Bass. They can handle a large amount of bass smoothly and this is probably I love these phones. They have an awesome performance across the spectrum – though a little muddy on the highs for me – but most people wouldn't mind it.

It costs Rs 2690 and is worth every single rupee you pay. The music quality is the best you can get at this price point. It does a good job at movies too. As the bass is good, action movies are really enjoyable. But, the cable length is not really good for movie viewing – but perfect for listening music on your MP3 player.

I have let my friends use these phones – and the first time that they hear it – it always manages to put a wide grin on their face. Most of them are just blown away. Somehow, these are not entirely comfortable for using for a long time – for my ears. Remember – this could be just for my ears – they start paining after long listening – maybe the headphones are putting a tad bit too much pressure on the ears. I am pretty sure that this is a problem with my ears though. Please remember – these are open headphones and so, they leak sound in and out.

You can buy them from a Sennheiser dealer. Use the Sennheiser India site to find a dealer in your city.

Rs 2690 may seem too high for many people for headphones – but consider it as an investment – for enjoying music the way it is meant to be enjoyed.

New Fibre-line Connects USA And China

A 18,000 km high capacity fibre-optic line under the Pacific Ocean was completed. The total cost for the project was $500 million and will serve China, Taiwan, South Korea the most. AT&T and NTT Communications from Japan and have joined hands for this project

Falcon1 By SpaceX Takes Flight

In what is a milestone developement, the Falcon1 by SpaceX became the first privately manufactured space vehicle to orbit the Earth. The Falcon1 managed this feat after three failed attempts, and just when the prospects were looking bleak indeed

Enter

Paul Murphy, Director, Innovation, Microsoft (India), the person evangelising Microsoft's "Indian Innovation Story"

What is the Innovation accelerator programme?
The Imagine Cup Innovation Accelerator Programme was started with the aspiration of enabling a few of the high potential projects that can come of the innovation accelerator programme and giving them an opportunity to see some commercial viability. It is started not in this year only. Over a period of few weeks we take several finalists and we incubate them, they get trained and coaching, specifically around the idea of Imagine Cup student competition and changing it into a business. Imagine Cup has grown considerably almost twice every year, last year 1,85,000 students participated globally in it, 18,000 to 19,000 participants were from India, when we look at the talent in India and all of these things say that India has the potential to be one the best in this world.

What are your aspirations for the Innovation Accelerator programme?
Aspiration for next year is to exponentially increase. How we do it is a two step process, first make sure competition exists, and second is to make sure that they have the right resources so that as they enter they have everything they need to be successful. We are doing massive branding and marketing exercise to invite more and more participation too.

What should budding software engineering aspirants need to do to be noticed by Microsoft?
The imagine cup or the Imagine Cup Innovation Accelerator Programme, neither of these are recruitment vehicles for Microsoft, we are interested in how we can help India to become a stronger knowledge nation economy.

ANDROID IS HERE

Google Unveils The G1

On September 23, Google, HTC and T-Mobile unveiled their long anticipated G1 phone at a press conference in New York. The G1 will be available with the service provider T-Mobile, is manufactured by HTC and runs on the Android platform which is an open source Linux OS.

The importance of this device is two-fold, firstly, the phone is placed in direct competition to the iPhone, is more feature-rich and is much cheaper. Second, and more importantly, the G1 is a step towards the visionary future of Google computing, where the OS, the widgets, the applications, and all the interaction is centred around Google. The G1 blurs the line between what a cell-phone does and the Internet. There is a single button to search through the phone and the Internet, which is useful as it is possible to search for the phone numbers of people through the search engine in America. Instant messaging is available through both the network and gtalk. The browser used for navigating the Web allows for tabbed browsing, and is called Chrome Lite. The phone comes bundled with software to keep track of your carbon footprint, to compare prices from different stores in real time, and many others. Since the operating system is open source, any kind of application can be put in by the user, and is "future-proof" according to Google. The G1 ties in with Google Maps and Street View, it is possible to use the device to look at panoramic images at street level.

As far as specs go, there is a 320x480 touch screen, a sliding QWERTY keyboard, and a trackball for navigation, which makes the G1 more accessible than the iPhone. The phone has WiFi, 3D graphics acceleration and a 3 MP camera. The phone allows for 350 minutes of talk time, and 402 hours of standby on 3G.

The phones are available in brown, black and white. Their prices will depend on the subscription plan. The G1 will be sold from October 24 in the states, from November in the United Kingdom, and early next year, it will be available all over Europe.

TERROR FALLOUT

BMC's Wi-Fi Plans In Trouble

BMC (Mumbai's municipal corporation) has been planning to make a city wide open Wi-Fi network available for some time now. The project, if implemented, would put Mumbai at par with cities like Houston and Philadelphia, which have city-wide wireless networks. The plan would not only allow users to connect to the Internet wirelessly for basic services, it would also enable better e-governance and e-commerce. Moreover, the Wi-Fi infrastructure would be used to monitor streetlights, electricity stations and water meters, saving a lot of cabling and adding considerably to the city's carbon credits.

However, this gracious plan on the side of the BMC, has been put on the tenterhooks by the

■ Microsoft releases new updates for Live Hotmail and Maps ■ San Disk rolls out 16 GB Micro SD HC card ■ Google turns 10

Security Watch

"Clickjacking" The Coming Threat?

A new security threat is emerging in the form of "clickjacking".

This relies upon a combination of security flaws that have been discovered in both Web sites and in browsers.

Because of these flaws, a user could be made to click on a link that is perhaps invisible, or only visible briefly; that would then take them to a forged Web site, a fake bank site, and so forth, in which they may well enter personal information and fall victim to a phishing attack.

The details of this new kind of attack were due to be released at the recent OWASP conference, but the speakers withdrew at the last moment in the interests of "responsible disclosure".

They said that the flaws they had discovered were so serious, that they should first inform the vendors concerned before they made the flaws public – this would hopefully limit the number of people able to mount attacks before the flaws are corrected.

The problems concerned apparently apply to "Web sites in general", but as addressing these would take enormous time and effort, the best defense would lie in encouraging browser vendors to fix the problems in their software.

For more information about clickjacking, you should visit:

http://ha.ckers.org/blog/20080915/clickjacking/

uneasiness of the Telecom Regulatory Authority of India (TRAI). TRAI started looking into the security if the Wi-Fi networks after the terror e-mails post the Ahmedabad blasts – so did everybody. The TRAI considered implementing laws that banned all kinds of open Wi-Fi networks. BMC however defended their plans by saying that authentication, monitoring and logging of all users would prevent abuse of the networks. The BMC plans to implement the Wi-Fi infrastructure with intrusion detectors, and protection of user accounts from being hacked. If the project is implemented, there will be an independent cell like the cyber crime unit to police all activity on the Wi-Fi network.

However there will always be people who abuse the existing infrastructure. The TRAI is not worried only about BMC's plans, there are many free Wi-Fi zones already in the city, and it is possible to drive down the road and detect unsecured Wi-Fi zones from many places. People who use Wi-Fi at home don't take the trouble to secure it for the most part. Stalling the implementation of a clearly useful plan just because of possible terrorist activity, will stop in its tracks all the benefits of such a network.

Security is not the only issue the BMC is grappling with. There are a number of implementations problems as well, the city covers an area of more than 470 sq kilometres. Setting up a Wi-Fi zone across the entire city, monitoring each and every user account, and keeping the setup running would be a big problem. There are also subscription problems, the methods by which the BMC will bear the cost of the service for example. There are also questions about freeloaders. Controlling the use of such a large network is quite a problem.

GREEN GOT GREENER

LED Screen Laptops From Dell

Following up on the eco-friendliness after going carbon neutral, one of the greenest tech companies around has announced that beginning in December, it will start offering LED-lit displays on their laptops instead of the mercury based cold cathode fluorescent backlighting.

The LED backlighting apart from saving power (estimated to cumulate upto 220 million kilowatt-hours by 2010), will also offer a better lighting and contrast, even when light is falling on the screen. These new screens perform much better in daylight conditions than the traditional screens.

The first to undergo the conversion will be the Dell Latitude E-series, and the Dell precision M-series. These lines will start shipping the LED versions of the laptops from December this year. By the end of next year, Dell hopes to offer as much as 80 per cent of its laptop range with LED lit screens. By the end of 2010, Dell hopes to convert all of its laptops to the LED screens. These new laptops will use only 43 per cent of the power used in current screens, and being free of environmental toxins, are totally recyclable. The LED screens also considerably extends the life of the battery, with nearly twice the amount of battery runtime as with typical displays. This is not a compromise in technology, as most green solutions tend to be, instead it is a leap forward.

Dell's other green efforts include the retailing the environmentally friendly PC – Energy Star 4.0, participating in the green grid (along with IBM, Microsoft, Sun, HP and Intel) to standardise benchmarking of processor performance per watt, a payment system that makes every laptop purchase carbon-neutral by donating money to environmental organisations, and a free recycling program for all Dell machines. Dell also introduced the term 'Re-Generation' at the 2007 world environment day, like the 'generation x' for re-users, reducers and re-cyclers.

GOOGLE GETS COMPETITION

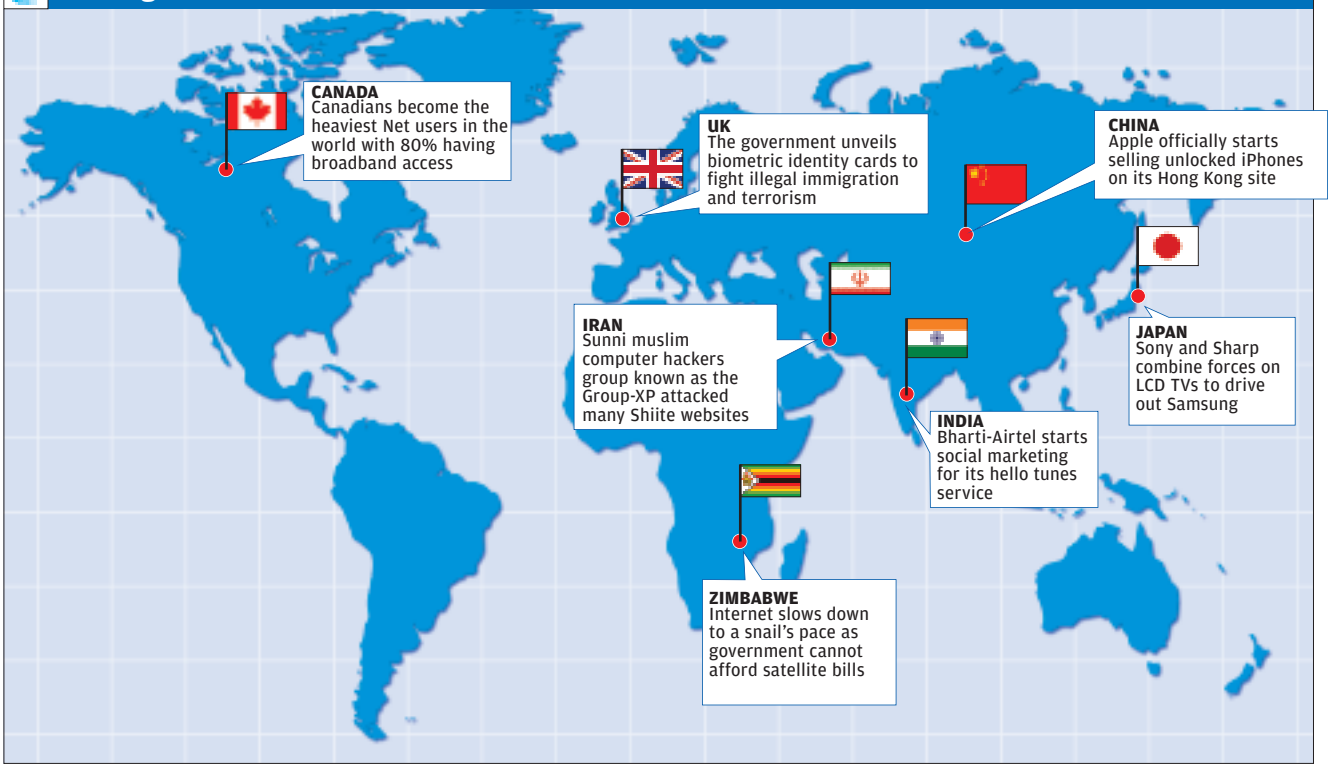
Yahoo! Amps Up Its Ad System

Following close on the heels of the Google deal that made everyone tremble because Yahoo! and Google would achieve an overwhelming

■ UK secret service recruiting on Facebook ■ Nintendo to launch new DS with Camera and MP3 support ■ MySpace launches music store

The Digital World

A Round-up Of Technology News From Across The Globe



monopoly in the market, has worked on its strong points and upgraded its image ads system.

The new system is named apt, changed from amp because of a trademark conflict. At present the platform is targeted at newspaper ads only, and complements Web sites with extremely focused ads that are derived from the surfer's online activities. This focus of the ads means more returns to the advertisers, and more revenues per ad for Yahoo!.

There are many innovations of the apt platform, which will eventually be used by a consortium of more than 750 newspapers. One of the important innovations is the pooling of advertising space across Web pages, meaning an advertiser can purchase Web pages in many domains as a single domain is unlikely to churn out as many customers with such tightly targeted ads.

The apt platform has improved key-word searching algorithms, a better tracking system in place for the advertisers, and support for videos and sound ads.

While previous improvements on its ad system (called the Panama) did little to improve the standings of Yahoo! Stocks, the apt platform may well be the much necessary innovation to help save a sinking company.

LOOKS AND WORKS

Windows 7 Follows Up On Vista

What we all have been waiting for is finally coming with Microsoft planning to debut the Windows Seven. Reports say that on October 28 this next generation operating system will be flagged off by the Senior Vice President of Windows, Steven Sinofsky, at the Professional Developers Conference at Los Angeles.

Windows Seven will make use of the same kernel as Windows Vista, but it will have a whole new look. In terms of new features Windows Seven will not have much to offer, though this also means that it will allow you to use your present hardware. It will also benefit people in many ways — for instance, most external devices will be compatible with it.

This time, Microsoft might just stick to their plan of making good software, instead of building something like Vista again, which has received much flak.

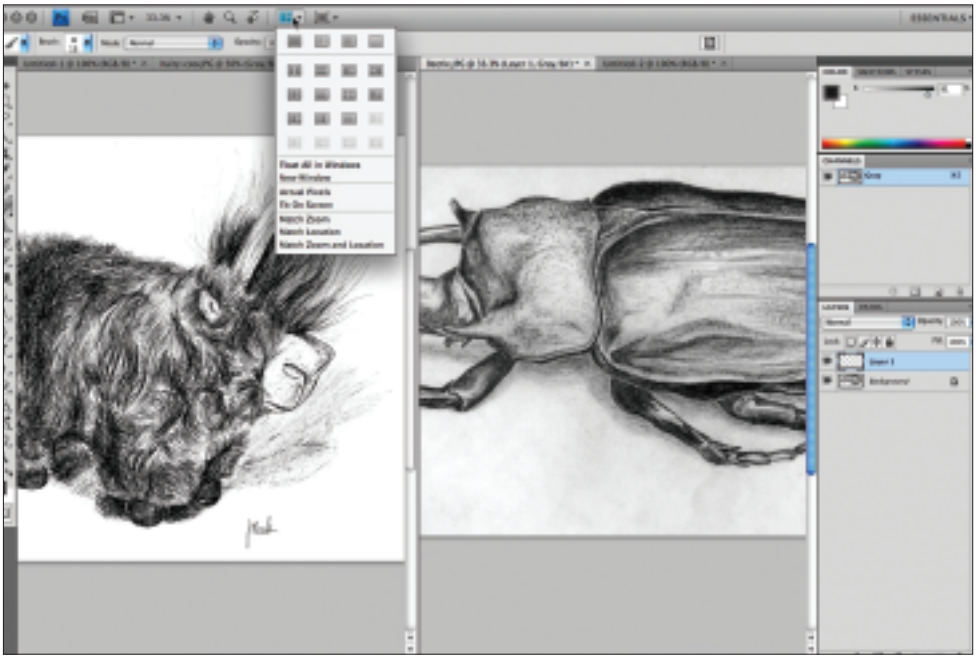
Microsoft has already said that the new Windows Seven will not have many of its current inbuilt software, such as Windows Movie Maker and Windows

■ Apple makes iTunes 8 content accessible to the blind ■ NVIDIA kicks 9000 series and rolls out G100 series

Live Mail. Microsoft is planning to give these as downloadable add-ons.

The plan is to make the experience better, and still offer people what they like. So with Windows Seven, you will get only the most useful software, instead of installing everything there is, whether you use it or not. This will also save on the hard drive space that the OS will use on a fresh install.

There are no reports of as to when the company plans to put up their beta test versions for testing purposes. If you are eager enough to get a look at Vista's successor, you can check out the official Microsoft blog for pictures and more news about Windows Seven.



PHOTOEDITORS REJOICE

Adobe Announces CS4

The Creative Suite from Adobe is a widely used set of design, editing and development tools for images, video, audio and Web pages. As a follow up to CS3, Adobe announced CS4 which will be available from mid-October, and is alread out for beta trials. CS4 will be Adobe's biggest release to date. The software took a a little less than 15 million man hours to develop.

There are four versions of CS4 available — Design Premium, which has 10 applications; Production and Web Premium, which each have eleven applications; and finally, Masters Collection, which has the full suite of 17 applications.

CS4 allows interportability of data between different applications in the same window. This functionality will be achievable through a tabbed interface. Adobe Flash functionality is embedded into all the applications.

Photoshop, which is the most widely used image editing software, will feature advanced 3D painting and compositing in its CS4 version, which allows users to edit, enhance and manipulate 3D images. Fluid canvas rotation is a new feature, along with a new and improved adjustment panel and colour correction interfaces. There is also a new masks panel and content-aware scaling, which recomposes an image as you scale it, preserving vital details. The Photoshop CS4 will be available in two versions, the CS4 for photographers and Web designers, and the CS4 extended for media professionals, scientific researchers, architects and engineers.

Premiere Pro CS4 will have SWF output, a speech search function that lets you search through the dialogues, a meta data editing workflow, blu-ray authoring, and batch processing in background. The new features in After Effects CS4 will include tracking the motion of elements — even when they are off screen, keyframing in 3D space, importing 3D layers from Photoshop, exporting layered projects and numerous interfaces and workflow tweaks.

The CS4 suite has a promising set of improvements, with an enhanced workflow and a simplified interface, and some stunning new features.

Each of the software in the suite will be sold separately. The Master's collection will be available as a licensed product and with support for Rs 1,14,661 from mid-October.

OWN THE OFFICE

Workers Made To Bring Own Computers

Miami-based Software Company, Citix Systems Inc is rolling out a new programme that will allow employees to get their own computers to work. The initiative is called BYOC (Bring Your Own Computer). The company plans to give their employees a stipend of $2,100 to get a laptop of their own choice, with whatever specs they think will be beneficial for their kind of work, and with a three year service plan.

The company is happy with the idea of having personal laptops, but has given clear instructions that the computer systems should be MAC or Windows-based only with licensed

STAT ATTACK

It's all in the numbers

Workers spend as much as **30 per cent** to **40 per cent** of time on the internet indulging in activities not related to Business

70% of the breaches in intellectual property theft are done by insiders

Over **90 per cent** of all OSes used is from the windows stable, with XP being the most popular at **73.9 per cent**

The most **searched** term in Google is "wikipedia"

Firefox is the most used browser - **43.3%** of the market. Opera used by only **2.1%** of users.

Most viewers watch only **25%** of all the television channels available to them

anti-virus software running on them.

The company's idea behind the whole thing is to move all the technology purchasing and maintenance responsibilities to the employees itself; moreover, people love this idea of having a single device for both personal and official work.

Not everything is good about the implementation of this programme though, as the company is still unsure about the safety of their confidential data on employees personal computers. Certain measures suggest that the company is opting for virtualisation of most of the programmes such as SAP and Microsoft Exchange for which the employees have to login remotely to work. This means that the data will remain safe, and will reside on company monitored and protected servers.

We'll have to wait and watch to learn how much the company is going to save with this initiative. Citrix officials say, "We spend $2,500 to 2,600 to buy and maintain a PC for each employee".

Cost benefits apart, this seems like a good HR ploy to adopt as well, because it encourages individuality, and reduces the chances of employees complaining about hardware to almost nothing.

NO STRINGS ATTACHED

A Memory For Music

California-based flash memory giant SanDisk has tied-up with major music companies such as EMI Music, Sony BMG, Warner Music Group and Universal Music Group for a new initiative called Slot Music, under which SanDisk plans to sell Micro SD memory cards preloaded with titles from these major studios.

The idea behind the whole thing is very simple and aims to provide an alternative to people for internet and optical discs based content distribution system.

The Slot Music cards will have preloaded content on-to them that can be easily used with any new age smart phone or portable media player.

The company looks at it as a fast, convenient and high quality alternative; plus like conventional CD's people would be able to easily copy music from these memory cards.

The company also wants to make sure that ther's no DRM software involved, unlike the music available on online stores.

With the cost of memory cards falling day-by-day, we can soon hope to see more companies offering this, and more people opting to purchase music in this form. Millions of phones are being shipped every year, and practically speaking, the use of memory cards is bound to increase exponentially, as even entry level phones today sport the ability to play back digital music stored in said cards. The jump in portable media player sales is also going to fuel this initiative.

As of now it's not quite clear as to what the associated costs are for the end user, but we're assuming that they will be higer than online music stored. Once more companies start competing for this segment, the prices should fall.

San Disk plans to roll out their Slot Music cards in the US first, and will retail them in regular brick and mortar retailers such as Walmart and Best Buy, as well as online retailers. Plans to roll out the Slot Music Cards in Europe are in progress, and will be announced soon.

Buzzword of the MONTH

Netbooks

The term Netbook is used to describe smaller-sized notebooks that are specifically designed for computing in ultra-mobile sizes. Their prime job is to take care of basic computing chores like browsing the Internet, checking e-mail and occasionally editing the odd document and spreadsheet.

Netbooks are not just smaller in size, but also miss out on expansion slots, and yes, the optical drive as well. However, with everything available as an external USB device, you can choose to make your Netbook as efficient as a laptop. Netbooks have a smaller displays – ranging from 7-inch to 10-inch screens. They also feature smaller keyboards and touchpads. Almost every PC manufacturer is releasing a model, and you will find three of them tested in this month's *Bazaar* section.

■ Amazon users download free movies due to Adobe's software flaw ■ Steam to start hosting user created mods on their site

Dirac and Schrodinger

What are Dirac and Schrodinger?

Dirac is a new video file format and Shrodinger the equivalent video codec. The codec version 1.0 was recently released. The source code for the codec can be downloaded from diracvideo.org for integration into video players.

Why the hype?

The file format should be very versatile, and capable of handling highly compressed web video, through HD quality, up to almost lossless broadcast quality.

Where do Dirac and Schrodinger stand?

In competition to the ever increasing number of video formats. However, it is the versatility mentioned above that is intended to be the key point. The codec has now been integrated into the latest version of the popular VLC player, and will no doubt be adopted by others soon.

Who is in charge?

The BBC research department developed the file format and the codec. The BBC has, however, refused to accept responsibility for the wave function collapse of any cast involved.

How does it work?

The algorithm is wavelet based, and works on Rate-Distortion Optimisation (RDO) prin-
ciples. This attempts to balance the inevitable trade-off between better compression and distortion in the decompressed images, and was originally developed on the basis of MPEG-2. Full documentation is available from the BBC.

DREAM FOR GOOD

Google's Wireless Hopes

According to recent reports it was confirmed that Internet search Giant Google has filed a patent with the US Patent office for its vision of Wireless network for mobile phones. Just like every other product from Google the very idea is quite revolutionary. According to Google's vision of an open wireless network, smart phones are not tied or locked to any particular network or service provider, and smart phones and wireless devices will be able to migrate to better and stronger networks as per their needs. They will also be able to choose a particular network or service provider, based on the pricing it is offering.

The idea is to make devices smart so that they can choose between networks based on their signal strength. So if you have better connectivity to Network A at office, the device will automatically latch on to it. At home, however, if you have equal strength for Network B and Network C, the phone will choose a network based on what you are doing. So if you're making calls, it might use Network B, which offers lower voice calling rates. However, if it's Web surfing that you're doing, and Network C is cheaper for data connections, the device will automatically switch to C, and save you some hard earned money. Your device might also identify a low cost WiMax or Wi-Fi provider in the area, and route all your Net traffic through one of those.

The idea for this comes from the fact that you have to pay penalties for breaking your contract with a mobile service provider, but you do no such thing when using your laptop to latch onto any available wireless service. Today, even in India, we can sit at famous coffee outlets, or restaurants, and log on using the wireless access provided to us; so why not do the same for your mobile phone? That's what Google wants to bring to us.

Though Google seems to have the right idea, it's doubtful that network service providers will ever allow this to happen.

It's not like this can happen overnight anyway, because even hardware manufacturers have to include this functionality in their devices, and this is easier said than done.

So although this initiative might be a long way off, we think it's a step in the right direction. As you wait for number portability to become a reality in India, you can add Google's Open Wireless plans to your list of services and technologies to pray for. Seriously, every night, before you sleep. Open Wireless. Remember that.

PUSHING CF LIMITS

World Record Compact Flash Cards

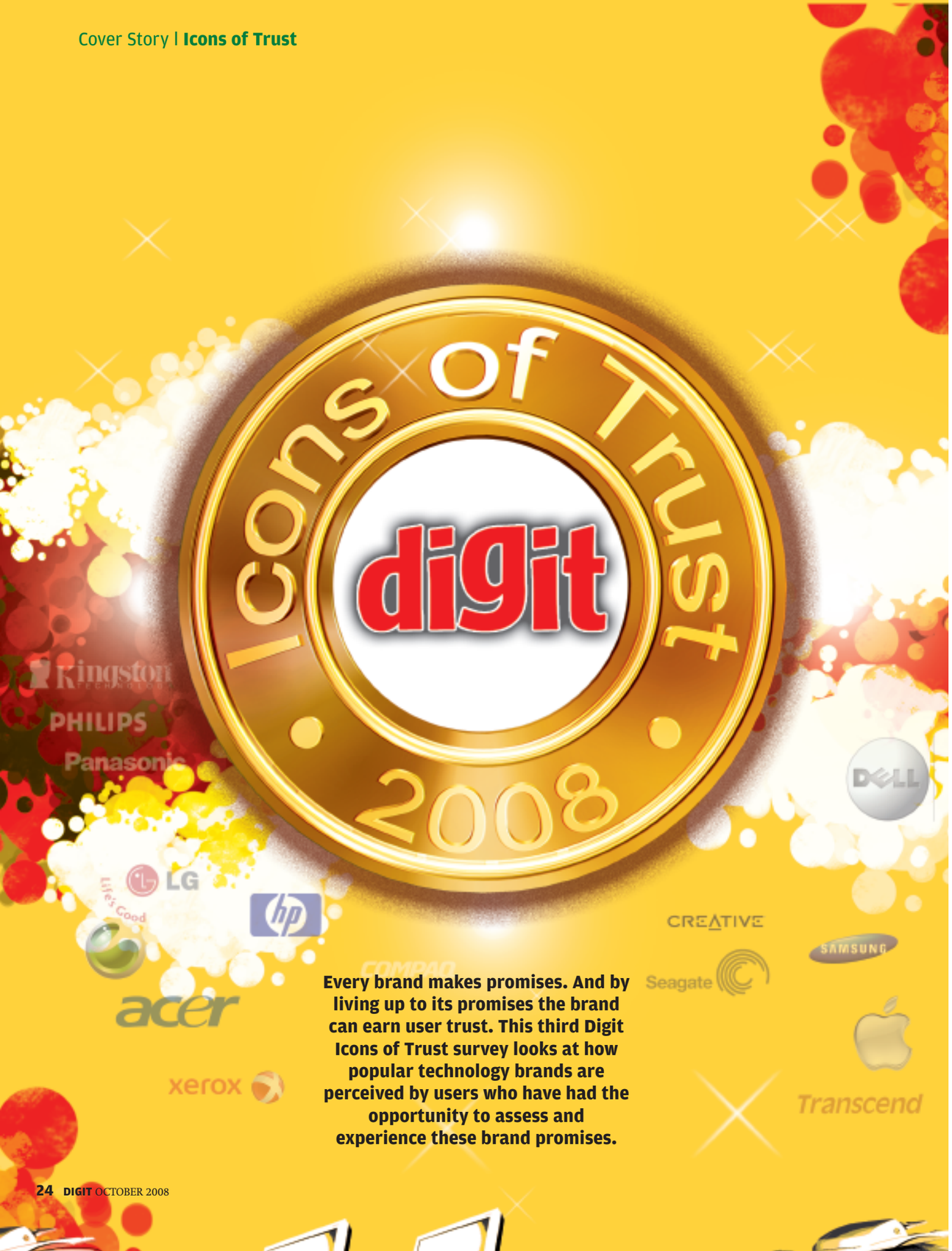
Photography enthusiasts around the world have reason to celebrate as Pretec flew past its own record for the highest capacity compact flash card ever made. The record stood at 48 GB, but the new ones have a storage capacities of 64 GB and 100 GB. These cards are used by enthusiast and professional cameras around the world.

Size is not the only record that Pretec has a tendency of breaking. They also break records in the data transfer speeds of the cards. The 64 GB and 100 GB cards transfer at speeds of 32 Mbps, whereas the lower capacity 32 GB and the 48 GB cards transfer data at the speeds of 50 Mbps. The 32 GB cards with the fast data transfer speeds cost more than the 64 GB cards with the slower data transfer speeds. The cards are housed in a metal casing that are resistant to impact and shock — making the cards ten times more resistant than ordinary cards.

The cards are aimed at cameras that handle high resolution images and large chunks of video data. A lot of videographers and photographers in the industry work with uncompressed data, which makes these cards ideal. Furthermore, the four of the 64 GB cards can be re-configured into an array to make a 256 GB SATA or IDE SSD, with another world record for the smallest IDE SSD to have such a storage capacity at 2.5 inches.

The 32 GB card is priced at $630, and the 64GB card is priced at $399. The 48 GB and 100 GB cards will be available at the end of the year. ■

■ Google releases its latest tool 'Moderator' ■ NASA faces setback as Hubble telescope conks out, stops streaming images to Earth

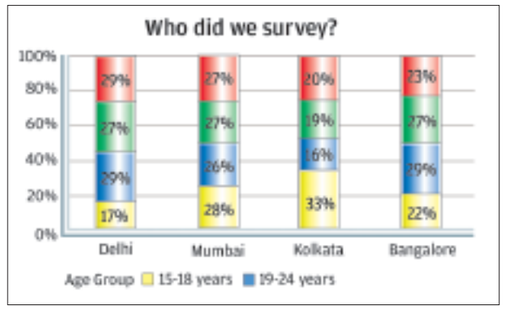


Every brand makes promises. And by living up to its promises the brand can earn user trust. This third Digit Icons of Trust survey looks at how popular technology brands are perceived by users who have had the opportunity to assess and experience these brand promises.

Team Digit

The marketplace for technology products is replete with hundreds of brands competing for buyer attention. Just what is it that makes you select one brand over another? Do you choose a brand because you believe it delivers better technical features, or do you go by its reputation for superb design? How satisfied are you with the brands you have bought? Would you consider repurchasing products of the same brand, or recommending it to others? To get answers to questions like these, and to find out what users thought about technology brands we commissioned a survey.

We asked one of India's leading market research agencies to contact technology products users across the nation, and find out what they thought about various brands. Structured interviews were conducted using a detailed questionnaire with selected respondents (males in the age group of 15 to 45 years in specified socio-economic groups) across Mumbai, Delhi, Bangalore and Kolkata. People whose opinions were sought were all identified as decision makers (or influencers) in the purchase of any of the following products: cellphones, desktop PCs, digital cameras, monitors, external storage devices, laptops, MP3 players, printers, and multi-function devices. All these interactions were conducted in early September 2008.



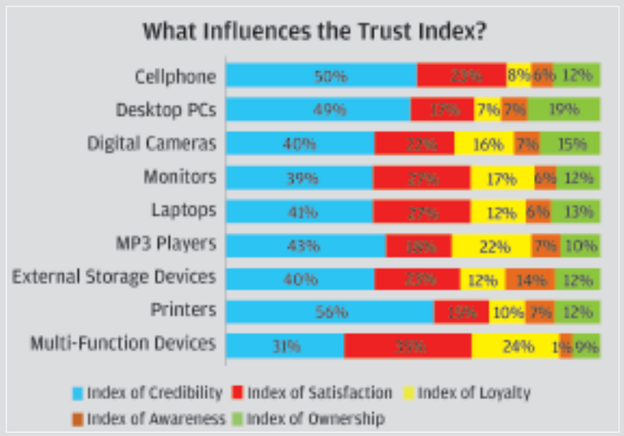
The Digit survey measured user attitudes and perceptions about brands, including brand awareness, loyalty, cost of ownership, satisfaction and credibility. The research agency analysed the collected data, using rigorous statistical techniques, to synthesise a composite "Index of Trust" for every product category. For all the nine product categories, brands were individually scored on the Index of Trust. These scores reflect the overall attitude and perception of users and customers towards that brand on various dimensions of the brand promise, based on actual ownership and experience.

The condensed results of Digit's Icons of Trust survey, which are presented over the next few pages, will not only enable users to confirm which brands they can rely on, but also allow product vendors to improve the brand experience for all their customers.

The Indices Of Trust

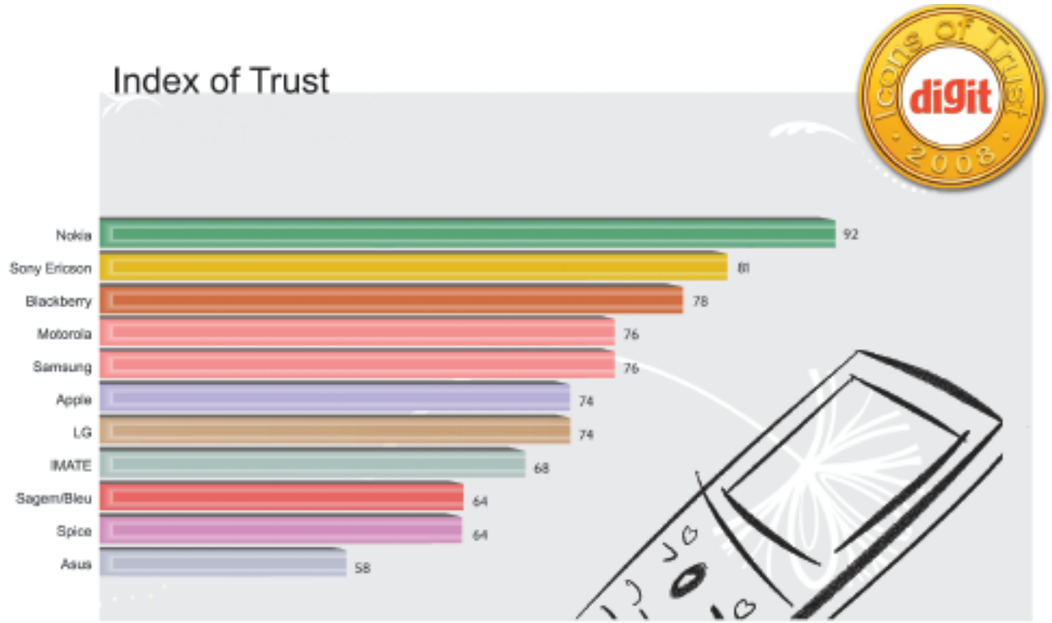
Since trust is an abstract concept, the definition can vary depending on who you ask. For this survey we defined "trust" as a composite of the following factors: awareness, loyalty, satisfaction, credibility, and cost of ownership.

- To measure brand awareness, we captured top-of-mind recall, un-prompted recall, and aided recall of brand names amongst respondents.
- Loyalty for a brand was ascertained by administering a series of questions that looked at respondents' willingness to talk positively about the brand to others, recommend the brand, and to repurchase products.
- We asked users about warranty periods, number of times the product broke down, the time and cost involved in getting the product repaired or serviced to determine the cost of ownership.
- To measure satisfaction and the quality of user experience with the brand we asked respondents to comment on attributes like product availability, pre- and post-sales support, and value for money.
- Brand credibility was measured by using a series of statements that asked users about issues such as product quality, durability, style and design, innovativeness, and features.



The mean score for every statement was calculated for the entire respondent base, and the various indices (viz., Credibility Index, Satisfaction Index, Loyalty Index, Ownership Index, and Awareness Index) were computed by multiplying the category coefficients with the mean scores.

For calculating the Index of Trust, we had to first determine impact of each factor on overall trust. To do this, we used multiple regression techniques. This enabled us determine the relative contribution of each factor to the Trust Index. Each of the indices was then multiplied by its respective coefficient (obtained from the regression model) to calculate the "Trust Index" score for every brand.



CELL PHONES

Nokia Gets A Ringing Endorsement

As a product category, cell phones have been around long enough for users to feel comfortable buying and using them. Plus, the fact that they are now sold at virtually every street corner, accompanied by high decibel in-your-face advertising, means that awareness of brands and models is high.

So, it is hardly a surprise that an overwhelming majority of the respondents have purchased a mobile for their personal use. In fact, only a few said that they purchased a phone for general household use — a reflection of the fact that prices of handsets and pre-paid services have become extremely affordable.

A large number of respondents (63 per cent) reported that they have been using or owning cell phones for more than a year (in fact, a quarter of them said that they have been using cell phones for over two years).

As one might expect for the brand owned by most of our respondents, Nokia heads all five categories in our survey.

Index of Trust

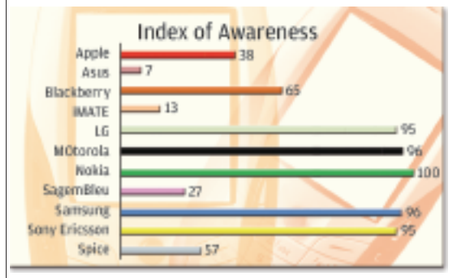
The index of trust for the mobile phones category is largely influenced by credibility (50 per ent), followed by satisfaction (23 per cent). Loyalty, awareness and cost of ownership are perceived to have lower influence on overall trust for this category. While Nokia has the highest Trust Index score (92), brands like Blackberry and Apple have also managed to secure respectable endorsements from users. This is especially commendable, considering the fact they are battling for both mindshare and wallet-share with formidable competition from the trio of Samsung, LG and Motorola.

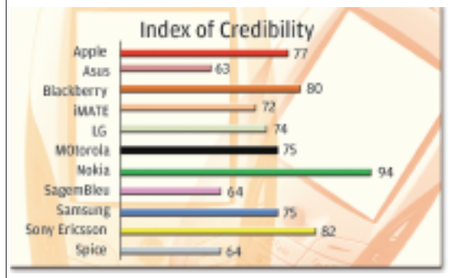
Brand Awareness

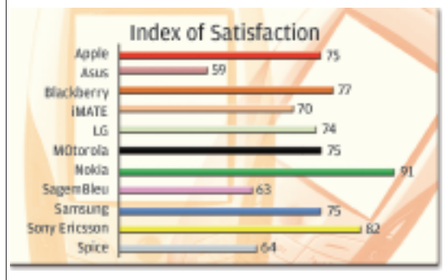
Among respondents, Nokia had the highest brand ownership (73 per cent), followed by Motorola and Sony-Ericsson (at 7 per cent each), and LG (at 6 per cent). Surprisingly, Samsung phone ownership among the respondent base was quite low (3 per cent). Top-of-mind awareness for Nokia was the highest (at 78 per cent) – but was very low for the other brands. However, overall awareness for all leading brands increased when respondents were aided.

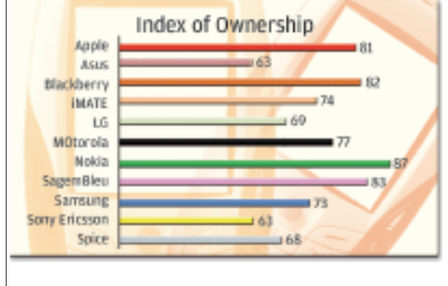
Brand Credibility

When it comes to credibility, Nokia leads the pack-with Sony-Ericsson just behind. Users largely felt that Nokia was trustworthy, and associated the brand with high quality, ease









of use, style and design, technology leadership, and responsiveness to user needs. Samsung, LG and Motorola were perceived to be about equal on many aspects of credibility, including quality, durability, ease of use, and features.

Newer brands like Apple and Blackberry appear to be gaining credibility amongst the respondent base, with Blackberry rated a little higher. This trend could be attributed to recent promotions for the two brands by cell-phone operators — and the launch of new products, particularly the much anticipated iPhone 3G. Brands like Spice, Asus and Sagem/Bleu registered low recognition when compared to other brands.

Brand Satisfaction

On the satisfaction front, Nokia was ranked the highest, followed by Sony-Ericsson. Both these brands were seen to be widely available, with wide range of models, and effective pre- and after-sales support, including query resolution. Many respondents indicated that Nokia phones represented good value for money. Motorola, Samsung and LG were almost evenly matched on the satisfaction front. Both Blackberry and Apple managed to pip some of the popular brands on some components of the satisfaction index — including overall satisfaction.

Brand Loyalty

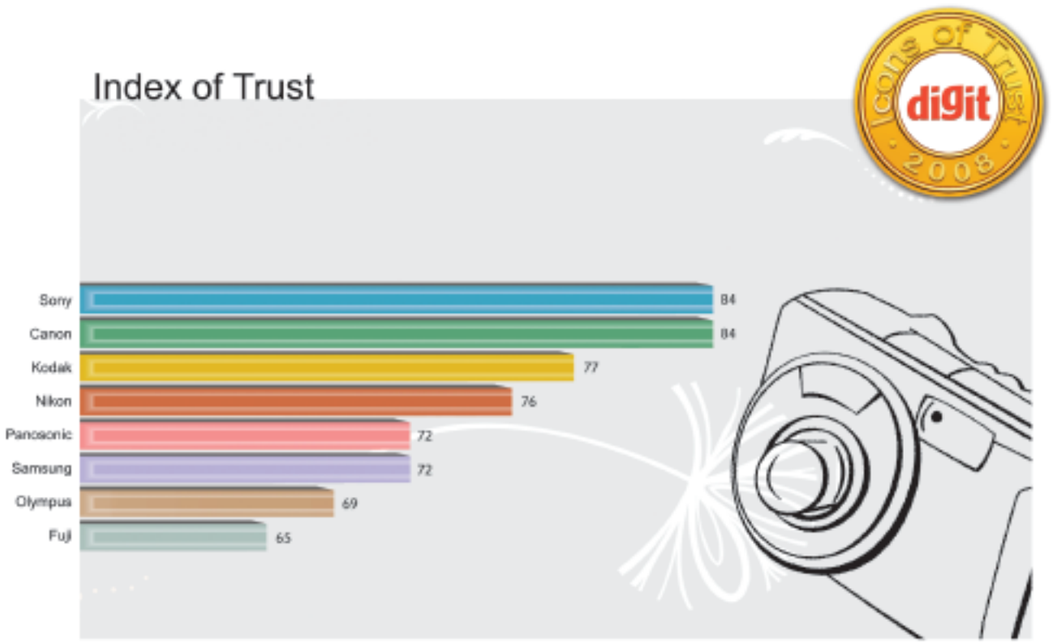
That brand satisfaction engenders loyalty is no surprise, and this was amply reflected in the response trends. Again, Nokia led the field, followed by Sony-Ericsson, with many respondents indicating that they would talk positively about both brands, recommend them to other buyers, and repurchase products. Blackberry and Apple did reasonably well on the loyalty front too, with many respondents indicating that they would talk positively about Blackberry to others. Once again, on loyalty, Motorola, Samsung and LG were rated about equally. Asus did not do too well.

Ownership Cost

Most respondents (85 per cent) said that they were the sole decision-makers when it came to buying a cell phone-implying perhaps, that personal preferences, brand awareness and prior experience have had a big influence on purchasing behavior.

An overwhelming number of respondents owned Nokia handsets, and many felt that on the pricing there was little difference between Nokia and Sony-Ericsson handsets. Buyers, on an average, spent about Rs. 8,000 on their cell phones-though the spends on Apple and Blackberry were much higher. ⊠

When it comes to credibility, Nokia leads the pack — with Sony-Ericsson just behind.



DIGITAL CAMERAS

Sony, Canon Shoot To The Top

One of the strongest growing digital markets, the field of cameras is clearly led by Sony and Canon

With resolutions going up and prices coming down, digital cameras have rapidly captured the hearts and minds of consumers. Today, you can find a model to suit every budget and skill level. New models are announced at regular intervals — with better and more extensive features.

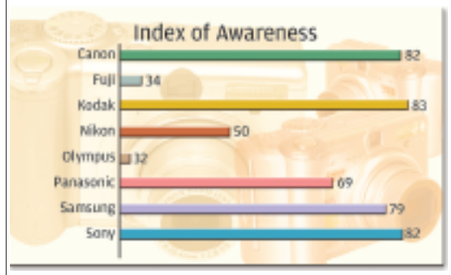
Given the ubiquity of digital cameras in our lives, it was no surprise to find that nearly 87 per cent of the respondents to the survey said that they possessed a digital camera for personal use. Very few respondents said that other members of the household used the camera. Nearly 60 per cent of the respondents said that they had been using the digital camera for less than a year — reflecting the greater affordability of these products, and the growing interest in photography.

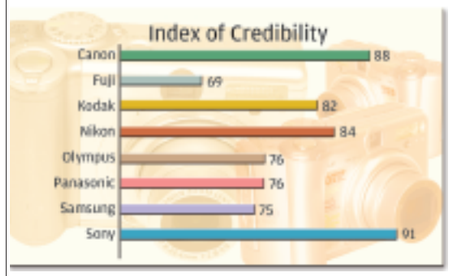
Index of Trust

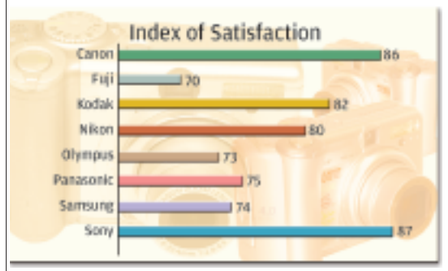
Trust in camera brands is influenced largely by credibility (40 per cent), followed by satisfaction (22 per cent), loyalty (16 per cent) and ownership (15 per cent). Awareness had a very small role to play in building trust in brands, for this category. Respondents rated Sony and Canon equally trustworthy, followed by Kodak and Nikon. Overall, all the brands score high to very high on the index of trust — indicating that users found them all to be good.

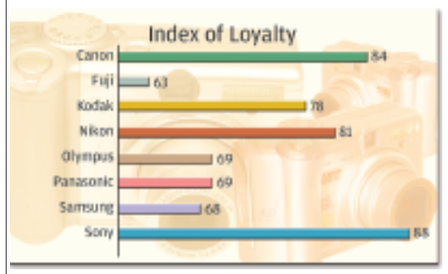
Awareness

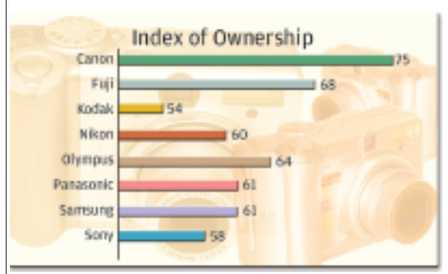
While Kodak had the highest top-of-mind awareness, followed by Sony and Canon, all three brands were about equal in overall awareness amongst the respondent group. Samsung was the only other brand to score high on the awareness front. Even though Kodak had the highest top-of-mind recall, it was not the brand that was purchased most often. Sony and Canon were the brands generally bought by the respondents. Despite the fact that Panasonic registered low awareness as a brand, a number of respondents actually owned Panasonic cameras.











Credibility

Sony and Canon enjoy a high degree of credibility amongst digital camera users. The cameras from these brands were rated high on quality, style and design, and ease of use. Sony cameras were also noted for their innovative features. Kodak and Nikon cameras were perceived by respondents to be highly durable, and were admired for their quality, style and ease of use. Ratings for Olympus, Samsung and Panasonic were quite close, and users did not find much to differentiate between them. Overall, all the brands were rated from good to very good on credibility factors.

Satisfaction

On the satisfaction front, Sony and Canon were equally adept at delighting users, though Sony was perceived to be very slightly lower in overall quality when compared to Canon. Again, Kodak and Nikon ran close, while Olympus, Panasonic and Samsung were clustered together in user opinion. But, when it comes to providing product information, Sony scored over all other brands, as well as in sales support. Availability of a range of models was also rated to be high for both Sony and Canon, with Canon rated slightly higher on the value-for-money front. Panasonic was rated high for quality, though the lack of information about the product was indicated as a shortcoming.

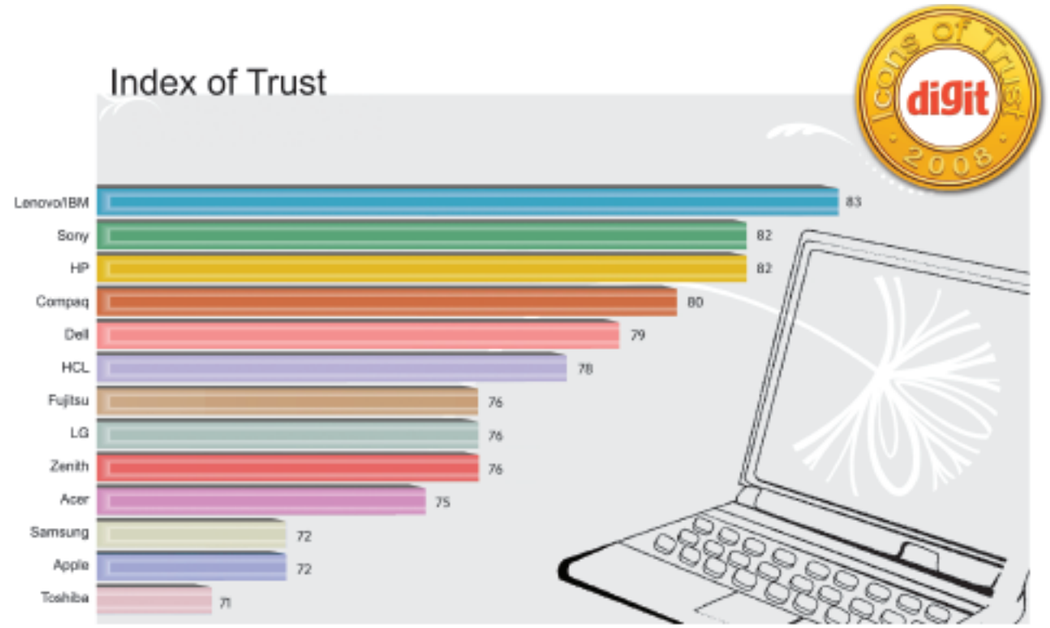
But, when it comes to providing product info, Sony scored over all other brands, as well as in sales support.

Loyalty

In addition to having satisfied customers, Sony also has loyal ones who will talk positively about the product, recommend it to others, and purchase another one. The other brands which elicited such positive feedback were Canon and Nikon, with users confirming that they would recommend it to others, and repurchase products. While Kodak lagged Nikon, it ranked ahead of the trio of Olympus, Panasonic and Samsung that were rated about the same on the Index of Loyalty.

Ownership

All respondents said that they were involved in decision-making when it came to digital cameras — with more than three-quarters of them indicating that they were solely responsible for purchase. Fuji and Nikon were reported as the most expensive brands, with users paying upwards of Rs. 17,000 for their purchases. Kodak was the least expensive brand, while Canon and Panasonic are moderately priced (about Rs 12,000). Sony was seen to be a little more expensive than Canon, and as a consequence scored lower on the Index of Ownership. Low price enabled Kodak to lead the Index of Ownership, closely followed by Canon. ⊠



LAPTOPS

Lenovo Pips Peers to Pole Position

With no clear-cut over-all winner, Sony, Lenovo and HP are the main leaders in our laptop category

From aspirational to practical, laptops have made the deft transition into the lives of users largely due to dramatic reductions in prices, better configurations, and increasingly mobile lifestyles. Today, you can see laptops being used not just by top-level corporate executives, but even sales persons and other junior staff. As a consequence, there is a discernable shift in marketing and promotion of laptops as well, with products being advertised in media channels with mass reach, like televisions and billboards — and being endorsed by celebrities.

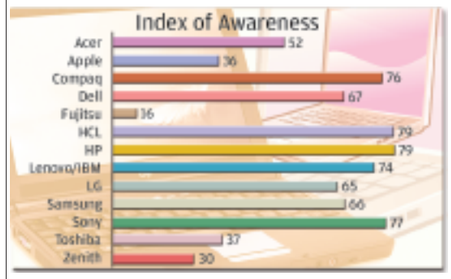
Though laptops are relatively an expensive purchase, nearly 15 per cent of the respondent base said that it used them. One-fourth of the users said that laptops were used for both personal and household use, and purchase decisions were often made in consultation with others due to the high investment implications. Nearly two-thirds of the respondents said that they had been using laptops for less than a year – which implies that that their machines could still be within the warranty period.

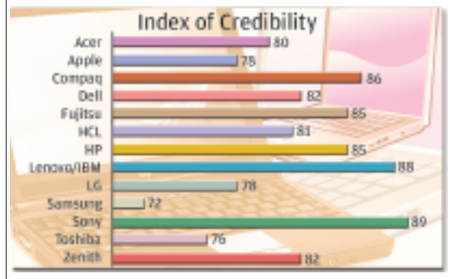
Index of Trust

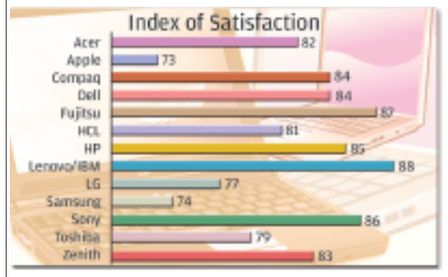
When it comes to laptops, credibility is the largest determinant of trust (at 41 per cent), followed by satisfaction (27 per cent), cost of ownership (13 per cent,) and loyalty (12 per cent). Awareness had a very small role to play in creating trust. Though Lenovo/IBM beat all other brands to bag the top spot on the Trust Index, this was a tightly contested race, with both Sony and HP hot on the heels of the front-runner. It was interesting to note that another HP brand, Compaq, was close behind the second-placed HP — and that Dell was perceived as good as HP/Compaq. All the laptop brands were rated highly by respondents.

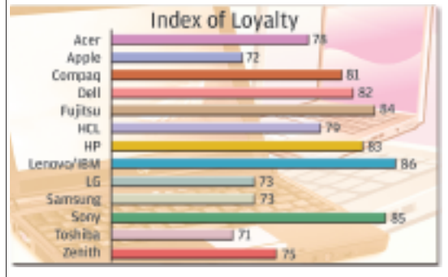
Awareness

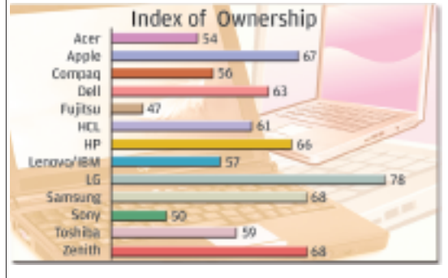
Despite the fact that Samsung and LG are popular brands, they did not figure on top of the consumer's mind. As in desktop PCs, HP had the highest top-of-mind awareness, followed by Compaq and Lenovo/IBM. Overall, HCL and HP had the highest brand awareness index, followed by Sony and Compaq. Although Dell,











Acer and Sony have low top-of-mind recall, the ownership and usage of these brands in our respondent sample was high.

Credibility

Sony had the highest score on the credibility index, followed by Lenovo/IBM, and Compaq. Both Fujitsu and HP scored equally high. Sony was rated high on credibility factors such as quality, style and design, and innovative features. Users rated Lenovo/IBM good on ease of use, and durability, while Compaq was rated for quality, style and design. Zenith was another brand that was rated high on durability, responsiveness to user needs, and ease of use.

Satisfaction

On the satisfaction index, Lenovo/IBM was rated the highest, followed by Fujitsu and Sony. Just behind were HP, Compaq, and Dell. Overall high product quality, good brand availability, wide range of models, good pre- and post-sales support, and value for money

HP had the highest rating from respondents on the "recommend to others" factor.

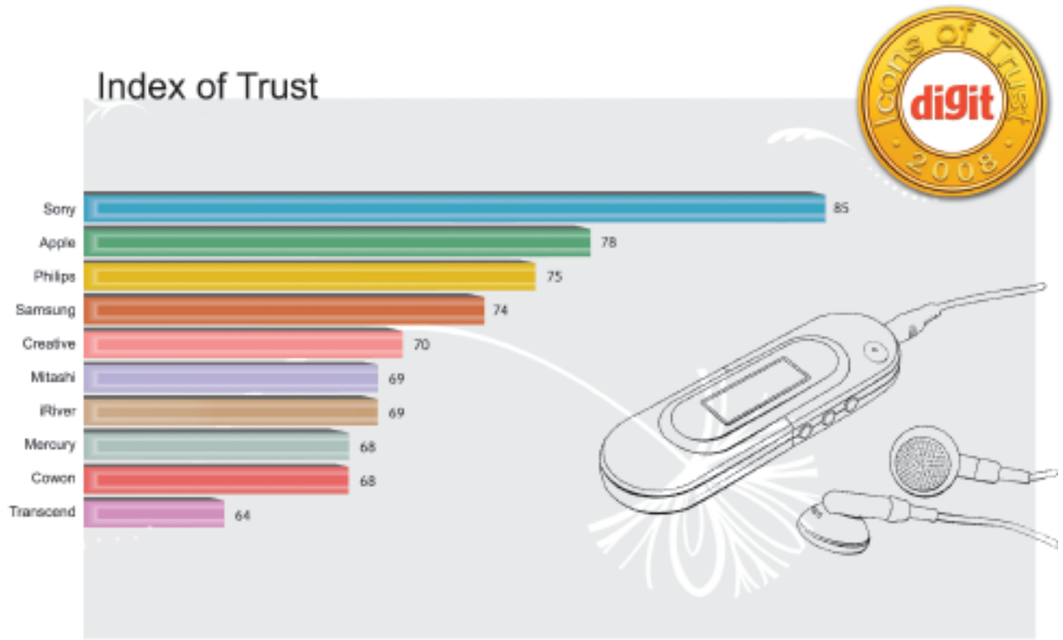
were rated as the key characteristics of the Lenovo/IBM brand. Sony also scored high on quality perception, with good ratings on availability and product support. Toshiba was found to have knowledgeable sales representatives and good information availability, while Zenith scored high on value for money amongst respondents.

Loyalty

Lenovo/IBM was ahead on the loyalty index, closely followed by Sony. Respondents indicated they would talk positively about the Lenovo/IBM brand, and would recommend it to others. Sony also scored on repurchase intentions, but brand recommendation was lower. HP had the highest rating from respondents on the “recommend to others” factor.

Ownership

Since many of the respondents were relatively new owners or users of laptops, they had not experienced problems or failures with their machines. So, they did not have the opportunity check out the service levels or repair of the machines. Of all the brands, LG was perceived as the outstanding performer on the index of ownership — putting it substantially ahead of Samsung, Zenith and Apple. ⊠



MP3 PLAYERS

Sweet Music for Sony

Even though creating nothing like the hype associated with Apple's products, Sony is the clear overall winner in the personal audio category

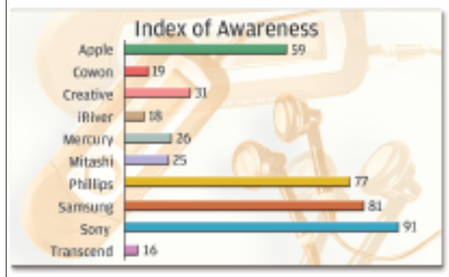
Digital audio players, or MP3 players, have helped revive the genre of personal music devices pioneered by Sony — with its now iconic Walkman. Users view MP3 players as personal use durables, and only 18 per cent of the respondents said that they have bought one for household use. About 80 per cent of the respondents indicated that they have been using a MP3 player for more than 6 months, with 40 per cent saying that they have been using these devices for over a year. Over three-quarters of the respondents said that they were the sole decision makers when it came to purchasing MP3 devices.

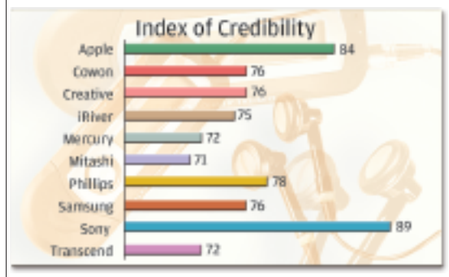
Index of Trust

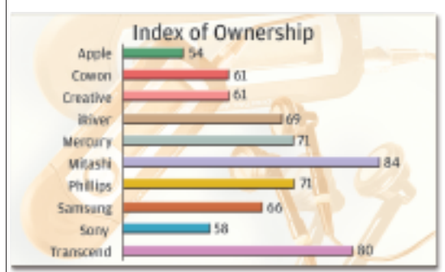
Trust in personal portable devices like MP3 players is largely driven by credibility (43 per cent), followed by loyalty (22 per cent) and satisfaction (18 per cent). Ownership and awareness played much smaller roles in influencing overall trust in this product category. Sony was the clear leader in MP3 players, streaking ahead of the crowd. At second spot was Apple (powered by its well-known range of iPods), trailed closely by Philips and Samsung. Smaller brands like Mitashi, iRiver and Cowon were also respectably placed, and closely clustered together on the Index of Trust. All brands in this category secured a rating of good to excellent from users.

Awareness

Sony had the highest awareness index of all brands, followed by Samsung and Phillips. In terms of top-of-mind recall, Sony, followed by Apple, had the highest scores. It was surprising to note that the while the overall awareness of Apple is low, it did have high top-of-mind recall — perhaps due to recent international launch of the iPhone 3G and other Apple products. Another big surprise in the survey findings was that Sony had lower top-of-mind recall amongst users when compared to other brands, despite being the most popular brand owned.







Credibility

Both Sony and Apple did well on the credibility index, followed by Phillips. Brands like Cowon, Creative and Samsung were rated equal, with iRiver just behind. Users asserted that Sony and Apple were very high on quality, and rated Sony products to be durable and easy to use. Overall, Sony was rated higher than all other brands on all aspects of credibility, including technology leadership, responsiveness to user needs, and innovation. Philips was rated as high on quality, as was Creative — but both were perceived to be not as easy to use as Apple and Sony.

Satisfaction

On the satisfaction front, Sony got high scores across all attributes, and recorded the highest satisfaction index, followed by Apple. Phillips and Samsung were ranked equal on the satisfaction index, but lagged Creative and iRiver. Users rated Sony highly for brand availability, quality of information, knowledge of sales staff and value for money. Apple was also perceived to be high on brand availability, but was ranked a little lower than Sony when it came to query resolution. Cowon, Creative and Samsung were rated almost equally on the index of satisfaction.

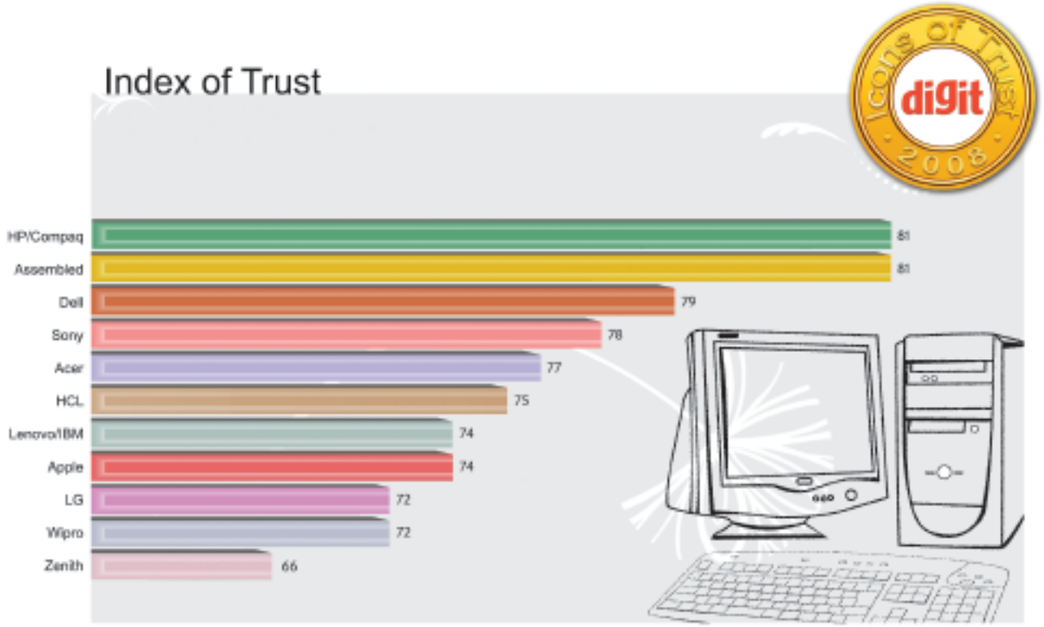
On the satisfaction front, Sony got high scores across all attributes, and recorded the highest satisfaction index, followed by Apple

Loyalty

On the loyalty front, Sony was out in the front, with Apple in hot pursuit, followed by Phillips. Sony appears to have a dedicated segment of users who are strongly attached to the brand, and would talk positively about it, recommend it to others, and repurchase it. While Apple users are inclined to talk positively about the brand and recommend it to others, their propensity to repurchase the brand was a slightly lower than Sony. Both Sony and Apple were rated much ahead of the other brands on all attributes of loyalty.

Ownership

On the ownership index stakes, Mitashi was the surprise leader, followed by Transcend. Bigger brands like Apple and Sony were relegated to the back — most likely due to higher prices and ownership costs. ⊠



DESKTOP PCs

Branded PCs Are Highly Trustworthy

Our survey of the personal computer market holds some surprises for the big name brands, although HP/Compaq still earns the greatest level of trust

Desktop PCs are no longer esoteric electronic products that are vended in specialty stores. Today, you find them advertised on television and in daily newspapers — and sold in consumer electronic stores, shopping malls, online, and even large stationery marts.

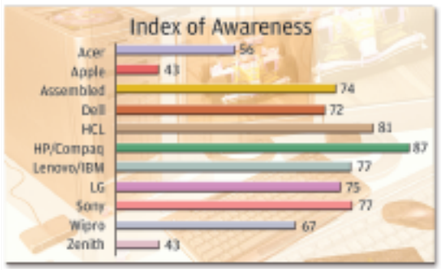
Nearly one-half of the respondents to the survey said that they owned a PC, but surprisingly 72 per cent of them indicated that the PCs were for individual use rather than for the general household. The "P" in "PC" really does stand for personal. More than 65 per cent of the respondents said that they have been using PCs for more than a year.

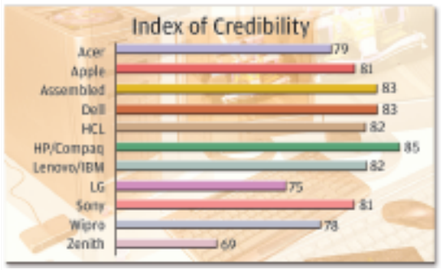
Index of Trust

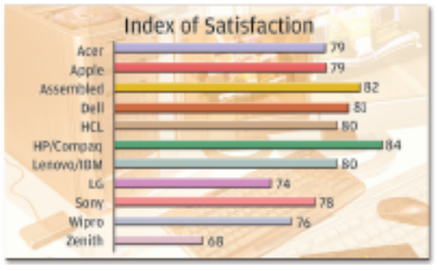
The survey found that the Index of Trust for desktop PCs is influenced to a great degree by credibility (49 per cent), followed by cost of ownership (19 per cent) and awareness (17 per cent). Satisfaction and loyalty (each at 7 per cent) had a lower impact on the overall trust in this category. Both HP/Compaq and assembled PCs were rated equally high by users on the Index of Trust, followed by Dell, Sony and Acer. Overall, amongst the top ten brands, there is a small variation in the degree of trust reposed in them by the respondents. This indicates that while the more technically savvy and advanced users are comfortable with assembled PCs and trust their choice, most other users feel that all branded PCs are quite trustworthy.

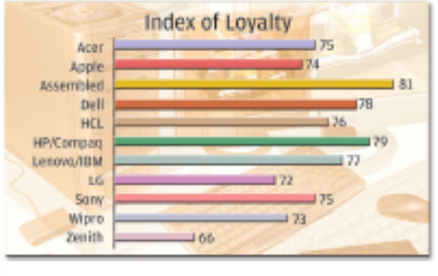
Brand Awareness

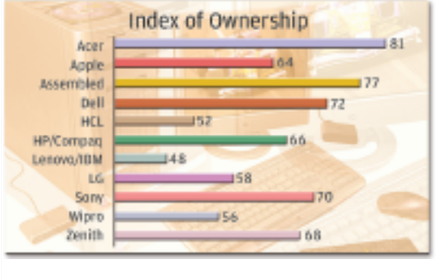
In general, respondents were aware of almost all popular brands of desktop PCs. HP/Compaq secured highest top-of-mind recall (27 per cent), followed by Dell, HCL and unbranded PCs. While unbranded PCs dominated in pattern of ownership, they were not the top-of-mind recall when it came to comparison with other established PC brands. In overall awareness, HP/Compaq led the field, followed by HCL. Both Sony and Lenovo were tied at third spot. While there were a few Samsung PC owners in our survey, the brand registered low overall awareness amongst the total surveyed population.











Brand Credibility

On the credibility front, HP/Compaq enjoyed the highest level of trust. The brand was closely associated with technology leadership, high quality, durability and ease of use. Dell, assembled PCs and Lenovo/IBM also enjoy a high level of credibility; while HCL, Apple and Sony were rated marginally lower. While Dell machines were viewed as technically good, assembled ones were perceived to be easy-to-use. Respondents also thought Lenovo/IBM machines had many innovative features. Brands like Acer, Wipro, Zenith and LG were ranked from good to average by respondents on various components of credibility.

Brand Satisfaction

When it comes to satisfaction, HP/Compaq scored the highest amongst our respondents. Availability of the brands was rated high, as was the information available about products, and the perceived value for money. Respondents rated assembled PCs on a par with Apple machines when it came to overall satisfaction, though on availability the assembled machines scored over Apple. Following close behind Dell was Lenovo/IBM which was ranked high on availability of information, general availability of products, and value for money. Wipro, Zenith and LG were ranked from moderate to good on the satisfaction front.

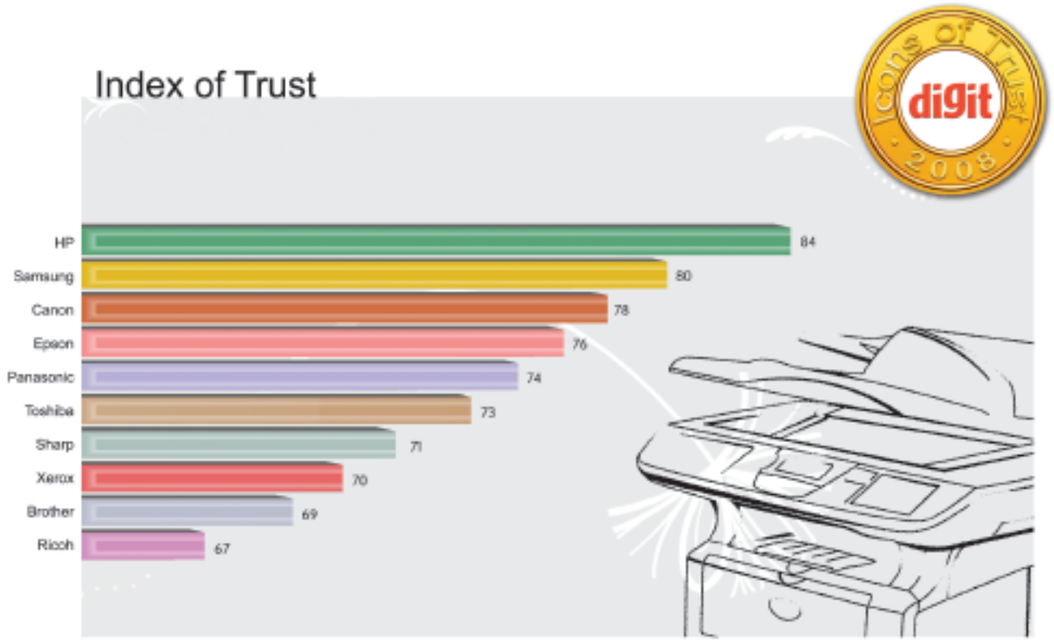
Brand Loyalty

Assembled PCs score the highest on all aspects of loyalty. Respondents strongly agreed that they would continue to use the product, would re-purchase a similar product-and even recommend a similar product to others. While HCL, Dell, Lenovo/IBM and HP/Compaq all enjoy equivalent levels of loyalty amongst respondents, none of the brands scored low on this index. This indicates that the user experience with these bands is uniformly high — and positive.

Ownership Cost

Many respondents (64 per cent) said that they were the sole decision makers when it came to specifying and purchasing PCs. Respondents who purchased assembled PCs paid on about Rs 21,000 for their machines, which was about the same amount paid by those who bought Dell machines. While HP/Compaq machines were a little more expensive, respondents seem to have paid the most for Lenovo/IBM, Zenith and Apple machines. However, these higher prices could also be because the respondents may have purchased higher configuration, or newer model machines. Service incidents and costs appeared to be low across all brands. This indicates that in real life, perhaps all brands of PCs were equally reliable in use. ☒

Assembled PCs score the highest on all aspects of loyalty



MULTI-FUNCTION DEVICES

HP Raises The Bar On Expectations

Although ranking right at the bottom for cost of ownership, HP is the clear winner in the multifunction device sector

When manufacturers cleverly combine the functionality of two, three or even four devices into a single box- and offer it at bargain prices, it is sure to be a hit with discerning shoppers. That's just the reason why multi-function devices (MFDs) appeal to many home users, and even small offices. They save space, offer decent performance — and are affordably priced.

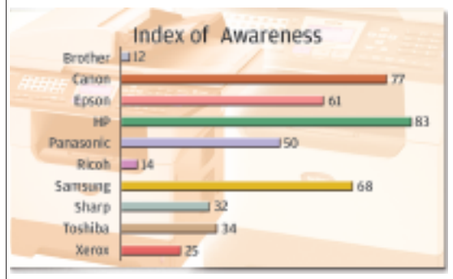
More than 80 per cent of the respondents in our survey have owned their MFDs for less than a year, and a majority have purchased the devices for their personal use. Nearly a quarter of the users were recent product owners — having bought them less than 6 months ago. A majority of the buyers were sole decision makers for their product purchase.

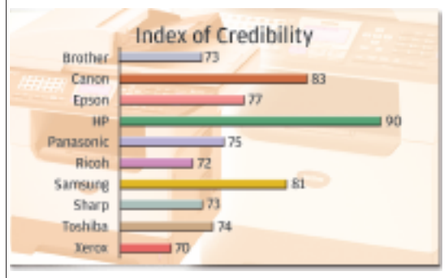
Index of Trust

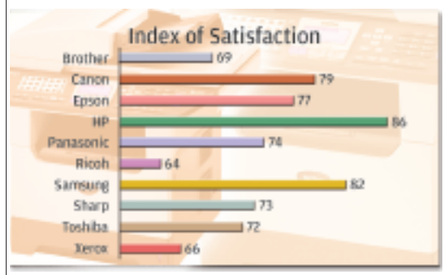
When it comes to MFD brands, the role of awareness in contributing to trust is miniscule, and even the importance of ownership is low. Users rated satisfaction (at 35 per cent) as the key factor in generating trust, followed by credibility (31 per cent). Loyalty was the other important determinant of trust. HP was the leader in the MFD category, followed by Samsung, Canon, Epson and Panasonic respectively. Brands like Sharp, Xerox and Brother were closely clustered together, while Ricoh was rated slightly lower. All brands in this category were rated by users as good to excellent.

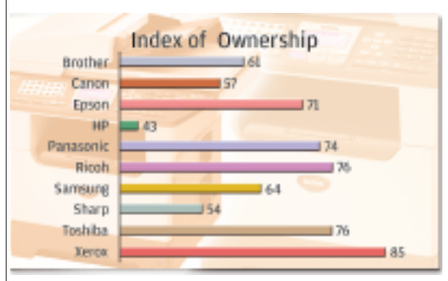
Awareness

HP had the highest index of awareness in this category, followed by Canon. Brands like Ricoh and Brother, and even Xerox, registered extremely low on the index of awareness. When it comes to top-of-mind recall, HP was the leader by far, followed by Canon. While Samsung and Epson were about equal on top-of-mind recall, on overall awareness Samsung shot ahead of Epson. Amongst owners of HP, top-of mind recall for the brand was a little low — but was still ahead of all other brands.









Credibility

HP had the highest credibility, followed by Canon and Samsung. Users rated the brand high on quality, durability, responsiveness to customer needs, and ease of use. While Sharp, Toshiba, Brother and Ricoh were rated about the same on the overall credibility index, users thought that Sharp could be trusted a little more. Users felt that Canon had better style and design when compared to other brands, while HP was perceived as the outright technology leader and implementer of innovative features.

Satisfaction

HP had the highest satisfaction index score, followed by Samsung and Canon. Users perceived that the HP brand was widely available, with good pre- and post-sales support, including query resolution and product availability. Most users also felt that HP products represented good value for money. Canon was also rated high on quality, but ranked a little lower than HP on factors like knowledge of sales representatives, and query resolution. However, users thought that Canon was also very good value for money. Among the other brands, Panasonic was rated for good after sales support, and Brother sales representatives were seen to be knowledgeable.

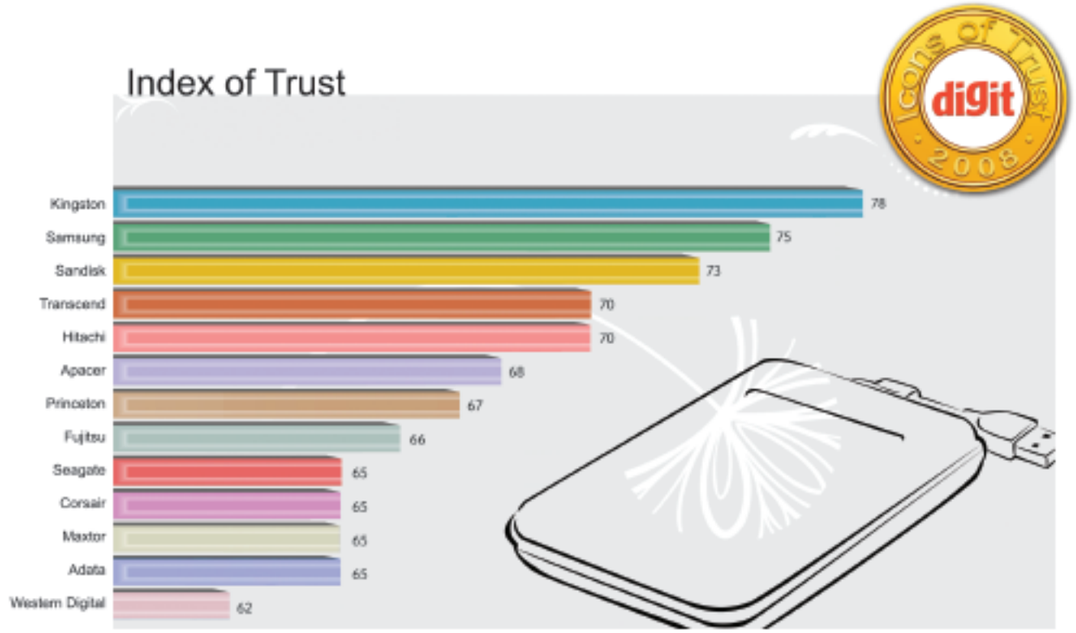
HP was perceived as the outright technology leader and implementer of innovative features

Loyalty

HP was the highest ranked brand on the loyalty index, followed by Samsung and Canon. Sharp, Toshiba and Xerox were rated about the same. HP users were also highly inclined to talk positively about the brand, recommend it to others, and repurchase products. Toshiba, Ricoh and Panasonic users were also positively inclined to talk about the respective brand to others, and to continue using them. Ricoh scored especially high on the repurchase factor.

Ownership

Xerox was the surprise in the ownership index, racing far ahead of the other brands, while HP was at the bottom. This could perhaps be attributed to the higher purchase cost of HP machines, when compared to other brands-and the cost of consumables. At second place were Ricoh and Toshiba, with Panasonic close behind. ⊠



EXTERNAL STORAGE DEVICES

Kingston is King of the Hill

Our survey of external storage devices returned a mixed bag of results. This is a young market here in India, but one that is bound to grow, with the ever increasing use of digital photography, music and video

The development of compact, cheap hard disks, and voluminous flash memory-based storage devices has created a new category of popular external storage products. Where users need large, cheap storage — albeit in a slightly bulky form — they opt for hard disk-based devices (often made by traditional disk drive vendors). When they need convenient and eminently portable devices, with limited storage capacity, they choose the ubiquitous "pen drives".

Despite the steep fall in prices, only about a one-fifth of the respondents to the survey said that they owned external storage devices. To some extent, this low need for storage devices could be attributed to increasing hard disk capacities on desktops and laptops, greater use of networking and the internet to transfer data, and use of re-writeable optical disks. About 80 per cent of the users indicated that they bought external storage products for personal use, as opposed to general household applications.

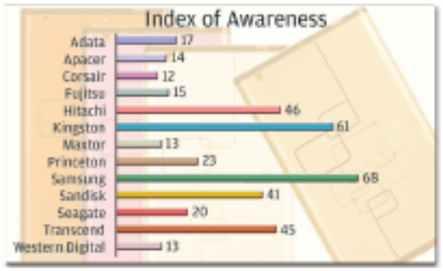
Index of Trust

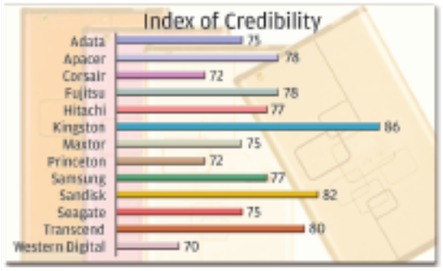
Brand credibility (at 40 per cent) followed by satisfaction (23 per cent) are the key determinants of trust in this category of products. This also one category in which awareness played a bigger role (14 per cent), with loyalty and ownership viewed as equally key (though at slightly lower levels).

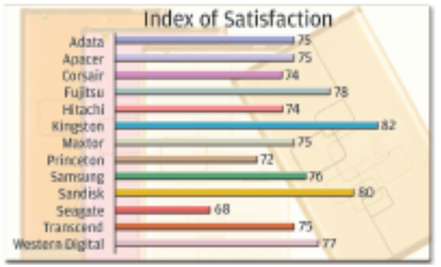
While Kingston took the top spot on the Index of Trust, Samsung and Sandisk were not far behind. Both Transcend and Hitachi were voted equally trustworthy brands, followed by Apacer and Princeton. The category was largely dominated at the top by manufacturers of USB pen drives, with traditional disk drive brands like Seagate, Maxtor and Western Digital garnering lower overall trust from buyers.

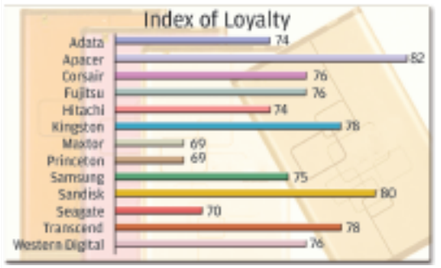
Awareness

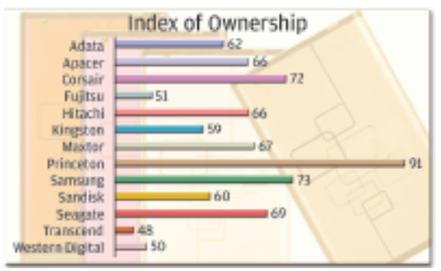
Samsung had the highest score on the Awareness Index, followed by Kingston. Most other brands registered very low on the awareness front. Top of mind recall was highest for Kingston, followed by Samsung, and Transcend. Unusually, Transcend device owners did not have high top-of-mind recall for the brand.











Credibility

In terms of credibility, Kingston was out in front, followed by Sandisk and Transcend. Kingston scored high on attributes like quality, innovativeness, style and design, and ease of use. Sandisk did well on quality and ease of use, while Transcend was rated as a technology leader. Disk manufacturers Samsung and Hitachi were rated high on quality and overall trust, though Hitachi was seen to be more innovative.

Satisfaction

Kingston, followed by Transcend, registered high scores on the satisfaction index, while disk manufacturer Western Digital was placed ahead of Seagate. Brand presence and product availability from Kingston was rated as high by users, and it was seen to offer very high value for money. Transcend also did well on overall quality rating and brand availability — though Sandisk was rated better on availability and product range. Amongst the hard disk brands, Samsung scored higher than Hitachi, though both brands were perceived to be high quality.

Loyalty

Apacer had the highest Loyalty Index score, followed by Sandisk. Kingston and Transcend were rated about equal on the Loyalty Index. Users indicated that they would talk positively about Apacer, and buy another product from the same brand. Sandisk users also said that their repurchase intentions were high, while Kingston users were highly likely to recommend the brand to others.

Ownership

About three-quarters of the respondents said that they were the sole decision makers when it came to purchase of external storage products, though two-thirds of the respondents had been using external storage devices for less than a year. Princeton was the surprise brand that won on the ownership index — beating all others by a hefty margin. Surprisingly, Transcend was rated low on the ownership index, as were the hard disk brands Western Digital and Fujitsu.

The price paid by respondents for their external storage products ranged from about Rs 4,000 for Kingston to Rs 1,500 for Transcend. This wide variation can be attributed to differences in storage capacity. External hard disks were in the range of Rs 2,000 to Rs 3,000. None of the respondents could comment on servicing or repair costs for products since they had not experienced the need for it. ⊠

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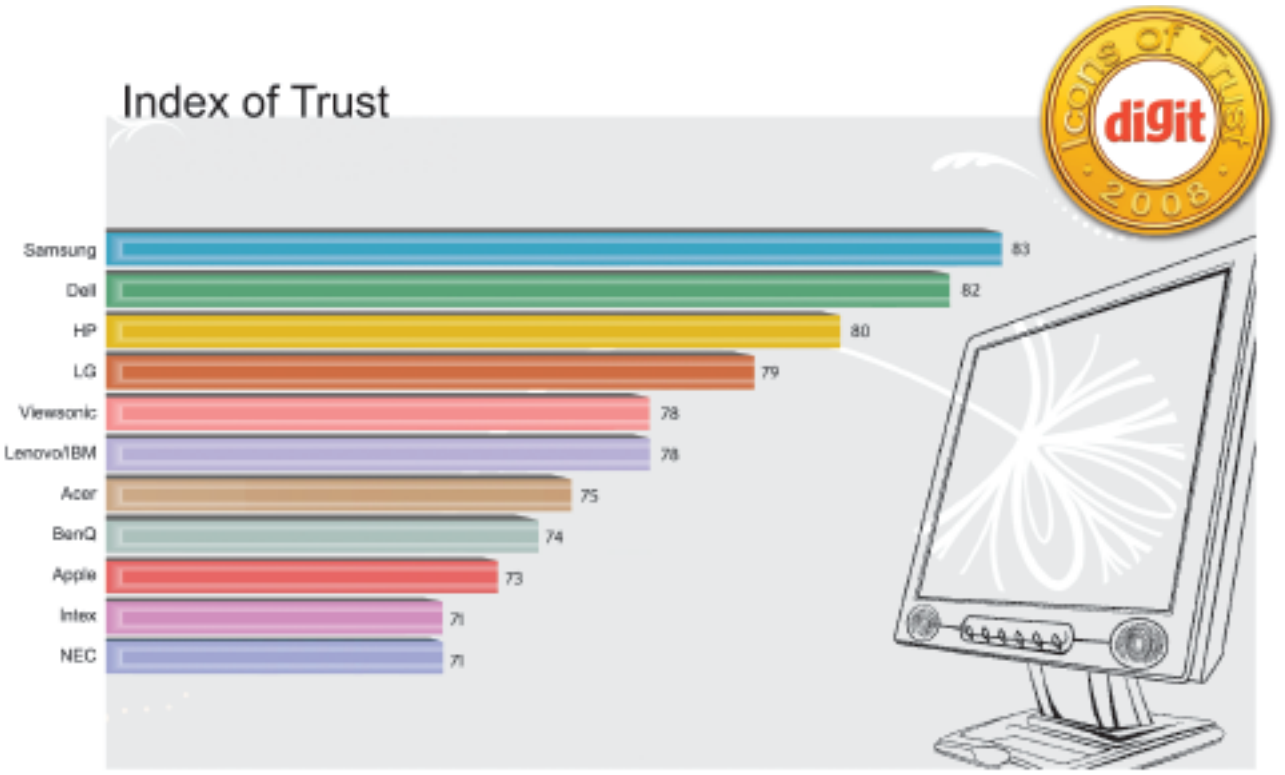


MONITORS

Samsung Makes A Splash

Although not winning in all areas, HP has done very well in our survey of monitors, with Dell, LG and Samsung close behind

They grow bigger each passing year, and have slimmed down considerably. And since they are literally always in your face, users exhibit definite preferences when it comes to selecting a monitor for their needs.

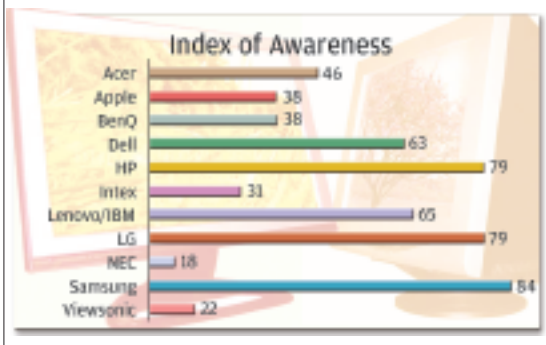
While a smaller number of respondents in the survey have purchased a monitor (as compared to desktops), more than two-thirds of those making a purchase said that the monitor was for personal use — rather than general household applications. This could indicate that many buyers were upgrading existing monitors for gaming, graphics or other visual applications. Over three-quarters of the total respondents indicated that they have had the display for more than six months.

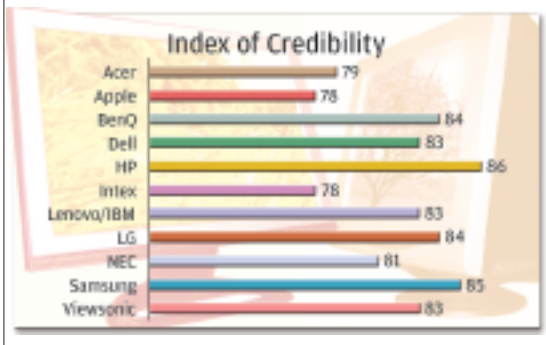
Index of Trust

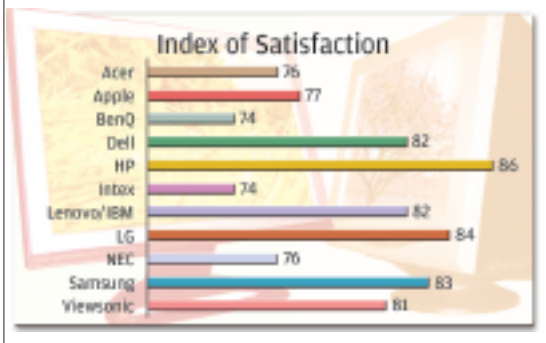
The Index of Trust for monitors is largely influenced by credibility (39 per cent) and satisfaction (27 per cent). Factors such as loyalty and ownership are seen to be relatively less important by respondents, and awareness was not considered very relevant in engendering trust. Samsung was rated as the most trustworthy brand for monitors, closely followed by Dell. Brands like HP, LG, Viewsonic, and Lenovo/IBM were all closely clustered in terms of scores — and there was little to set them apart from the leaders. This indicates that technological sophistication, product quality and product experience offered by all the leading monitor brands are very high.

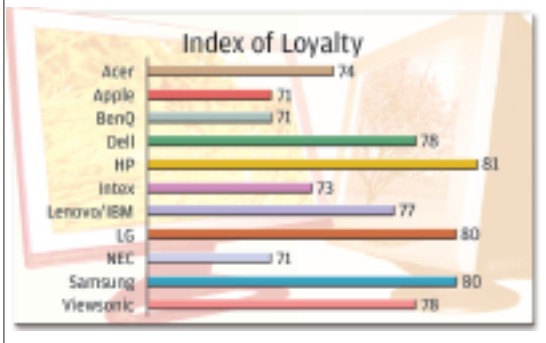
Awareness

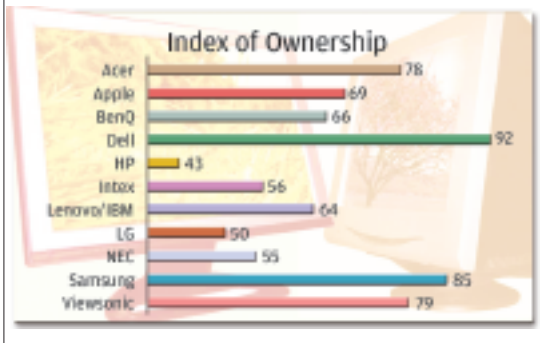
Samsung rated highest on overall awareness, followed by LG and HP. However, Samsung had low top-of-mind recall as compared to HP and LG. Other brands about which the respondents were highly aware include Dell and IBM. Despite the high level of ownership of Samsung monitors amongst the respondents, the top-of-mind awareness of Samsung was low. However, ownership definitely contributed to the high overall awareness about the brand. The other brand which had high











levels of ownership amongst respondents was LG, but it also suffered from low top-of-mind recall, unlike HP and Lenovo/IBM.

Credibility

Respondent reactions towards monitors seem to be highly influenced by the PC ownership patterns. This is because, while many branded PCs ship with bundled monitors, users with assembled PCs tend to specify and choose a particular brand. HP was rated as the most credible brand by our respondents, and was rated high on innovative features. But, most of the other brands were close behind HP-and there was little to distinguish between them. All monitor brands were rated good to excellent, including Viewsonic and NEC, with Viewsonic scoring high on ease-of-use.

Satisfaction

HP was rated to deliver highest index of satisfaction, followed by LG and Samsung. Brand availability for HP was perceived to be high, and it was considered to be very good value for money. Dell scored high on overall quality, but lost out on account of longer lead times for delivery and lower sales support (since it is largely sold online). LG did well on information availability and pre- and post-sales support, while after sales support from HP was deemed to be the best.

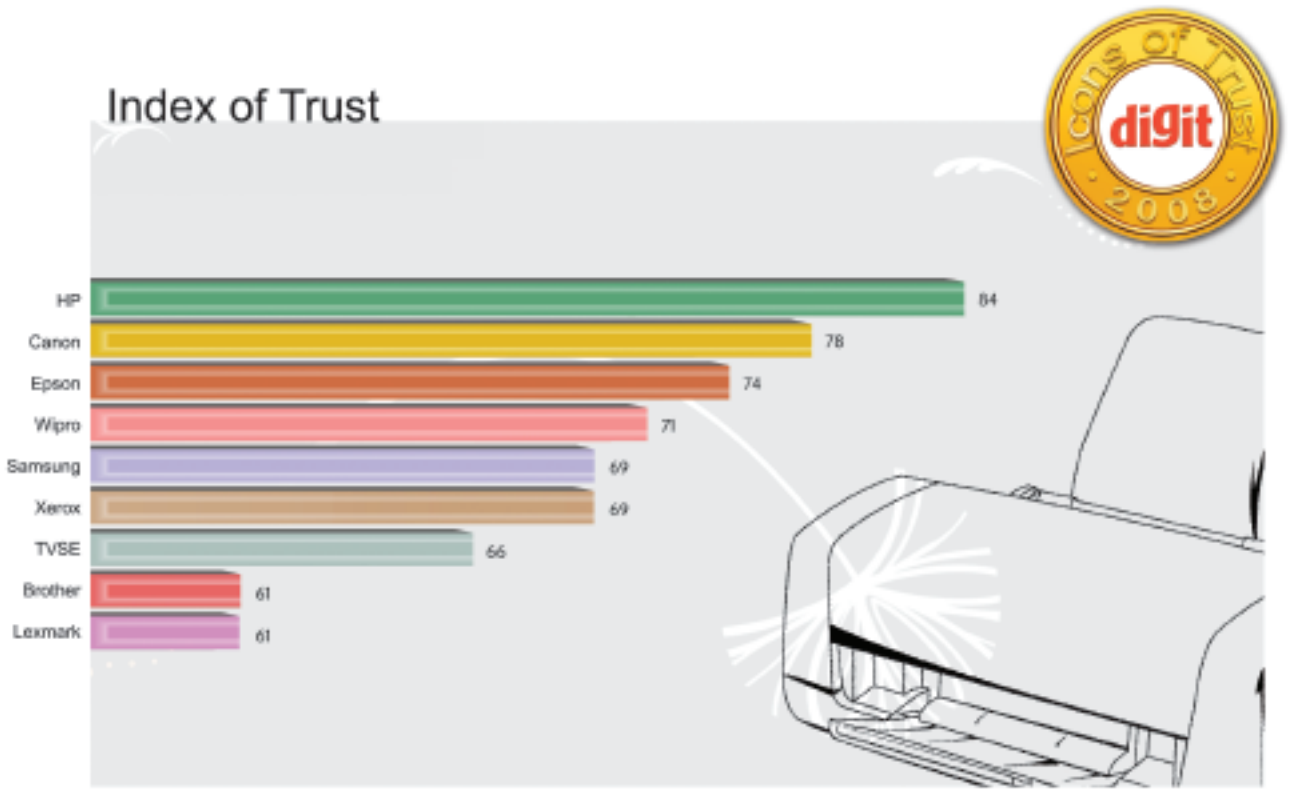
Loyalty

HP, LG and Samsung all score high on the Index of Loyalty, followed by Dell and Viewsonic. However, amongst owners of monitors, HP and Dell have the largest number of loyal customers — those with high propensity to repurchase the brand. This could be partly attributed to the high penetration of HP and Dell desktop computers amongst the respondent base. Both LG and Samsung have their own bands of adherents who are willing to talk positively about the respective brands, and recommend to others.

Ownership Cost

Nearly two-thirds of the respondents said that they were the sole decision makers in the purchase of a monitor, and all said that they were involved in monitor purchases. Respondents who bought a monitor paid an average price of about Rs. 6,800 for a HP or Dell monitor, while the Acer and LG ones were a little more expensive. People who bought Samsung monitors paid a lot more — perhaps because they bought larger displays, or more sophisticated models. Both Samsung and LG offer longer warranty periods, according to users, but most users have had no opportunity to get their monitors serviced. Dell was overwhelming rated as best on the Index of Ownership. ⊠

Dell scored high on overall quality, but lost out on account of longer lead times for delivery



PRINTERS

HP Makes A Fine Impression

In the printer sector, mirroring the results for multifunction devices, HP is again at the bottom in terms of cost , but overall winner

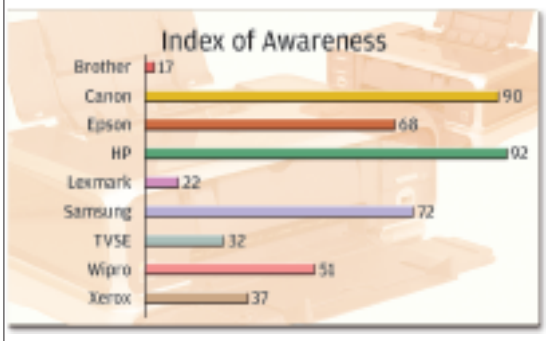
With low cost inkjets and even personal lasers making their way into homes and small offices, printers have become must-have peripherals for all computer users. Almost three quarters of the respondents said that they purchased printers for their own use, rather than for general household purposes. A majority of the respondents also said that they were sole decision makers. Over 50 per cent of the respondents have owned and used printers for more than a year.

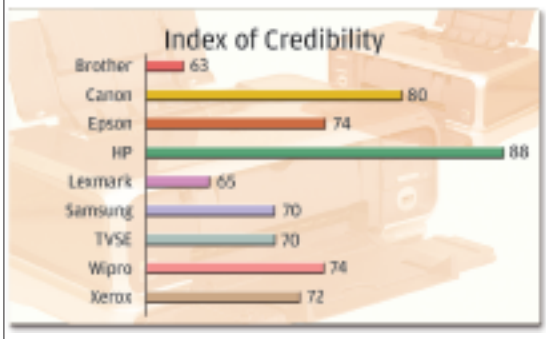
Index of Trust

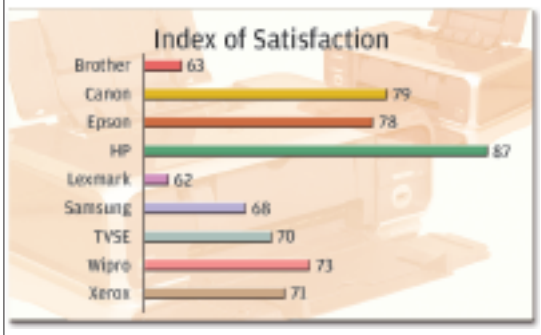
When it comes to printers, users believe that credibility (at 56 per cent) plays an overwhelming role in determining trust in brands. Both loyalty and awareness were accorded low importance, while satisfaction (15 per cent) and ownership (12 per cent) found a place in the trust stakes. In the printer category, HP was the leader followed by Canon and Epson. One surprise was Wipro, at fourth place, which garnered endorsements from a number of users. TVSE managed to outdo Lexmark and Brother. Overall, users rated brands in this category on a scale of fair to excellent on the trustworthiness scale.

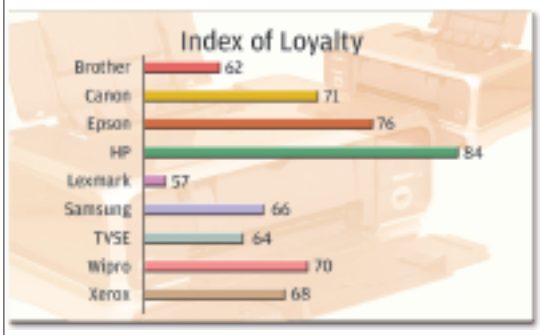
Awareness

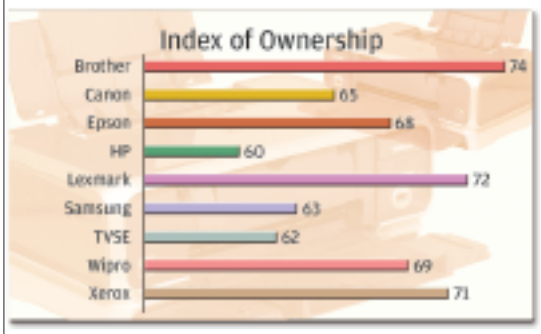
HP garnered the highest scores on the index of awareness, followed closely by Canon. Trailing by a considerable margin were the next two brands Epson and Samsung. Most other brands registered very low scores on the index of awareness. HP ranked highest on top of mind recall, followed by Canon. Even though Samsung has high overall awareness, it does not seem to be on top of consumers' minds when compared to Epson. There was a close relationship between top-of-mind awareness, and ownership of the brand. Even though











Epson and TVSE were not top-of-mind for many users, owners of these brands were well aware of the other brands in the market.

Credibility

On the credibility index, HP was ranked higher than all other brands. Samsung and TVSE were rated about equal, as were Wipro and Epson. HP was seen as the principal technology leader in the printer space, while Canon and Epson were viewed to as delivering levels of service that are comparable to HP. While customers seem to trust Wipro as a brand, they do not perceive it as providing innovative features, or high levels of usability. TVSE evoked a split response from users. While the brand was perceived to deliver high quality, durability and responsiveness to customer needs, it was also panned for its inability to deliver innovative features, ease of use, and good design.

Satisfaction

On the satisfaction front HP was out in front, with Canon and Epson scoring about the same on the satisfaction index. On most aspects of satisfaction, Epson and Canon are ranked equally — and the perceptions about the brands are similar to HP. Overall satisfaction with Xerox is high, though users seemed to be less aware about the product range and variety of models. Users also perceived that Xerox did not deliver good value for money. Samsung, Brother and Lexmark were all rated lower than the other brands in user satisfaction.

Loyalty

In terms of loyalty, Epson was ranked behind HP on all aspects, but the brand led Canon and Wipro. HP users appear to be very loyal to the brand, and are highly inclined to talk positively about it to others, continue using its products, and recommend it to others. Epson and Canon users also indicated that they would talk positively about the brands, but their repurchase intentions are lower than that for HP.

Ownership

On the index of ownership Brother did extremely well, and was followed by Lexmark and Xerox. In terms of ownership cost, HP was seen to be the most expensive, with users paying on an average Rs. 9,000 for a printer — while Epson was the most economical at about Rs. 5,000. Both Samsung and Epson were viewed as offering relatively long warranty periods, which would tend to instil additional confidence amongst users. Since many users have not owned their printers for a long time, they were unable to comment on service related aspects. ⊠

Canon and Epson were viewed to as delivering levels of service that are comparable to HP

54 The Very Best Of Droolmaal

64 Graphics Card Test

Tomorrow

TOP TEN Technologies TO LOOK OUT FOR

Madhusudan Mukerjee

From a few favourite songs on magnetic tape on a Walkman, to wireless, portable MP4 movies; from beepers to cell phones; from SLRs to camera phones — in just a couple of decades, science has taken us beyond the predictions of futurology and into the realms of Asimov and Arthur C Clarke. In such an intensely fluxed technological environment, we've become so used to witnessing Spidey-like jumps in technology during our lifetimes that even touch screens are beginning to seem old hat. We at *Digit* share your impatience and so we decided to satisfy our curiosity — and yours — by ferreting out and laying before you ten of the most remarkable technologies being worked on today, which are set to bring sci-fi to reality.

1. CUBIC CHIPS

Laying It On Thick

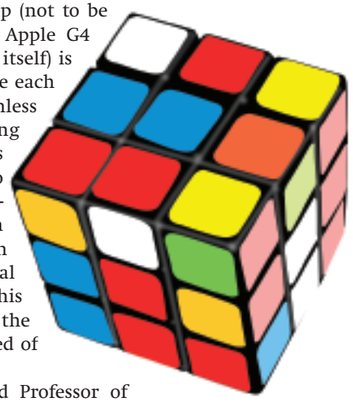
Stuck In The Moore

In 1965, Intel's Gordon Moore stated what has come to be known as Moore's Law — that the number of transistors on a chip will double about every two years (how many times have you heard that one before?). But as chips get smaller, engineers are already facing problems in trying to cram innumerable transistors into decreasing space.

The Rochester Chip

Enter the Rochester chip – a chip that's been designed vertically, bottom up, specifically to maximise the main functions of a chip by the use of several layers of processors. However this '3D' chip is unlike the 'stacking' idea – where present-day chips are merely stacked one on top of another. This one is built so that each layer interacts with each other layer as a part of a single circuit, while performing different functions. Chips for audio, for example, differ in requirements from chips that process digital photos or texts. The Rochester chip is designed simultaneously to deal with the different speeds and power requirements of these processes.

The design of this cubic chip (not to be confused with the Power Mac Apple G4 cube, which was a computer in itself) is purportedly the first to integrate each layer in such an optimally seamless and efficient manner. Piling several integrated circuits together made it necessary to first ensure an effective insulation between each chip and then drill thousands of perforations in the insular layer to allow vertical connectivity. The prototype of this 'cube' is already functioning at the University of Rochester at a speed of 1.4 gigahertz.



A chip off the old block

Eby Friedman, distinguished Professor of Electrical and Computer Engineering at Rochester University, New York, USA, is the Director of this project and he's had help in the form of engineering student Vasilis Pavlidis. The chip, which has been specially fabricated at MIT (Massachusetts Institute of Technology), is still in the prototype stage.

Dr Eby Friedman

And If It Comes Through...

The continuous shrinking of integrated circuits augments speed but connecting multiple chips horizontally means that more space is required. Since all the layers act like a single system, the Rochester chip functions like a folded-up circuit board. Imagine the motherboard of you computer shrunk to the size of a Rubik's cube. Besides, the architecture of the cube is such that it could increase the speed of your iPod or cell phone by up to ten times that of chips today. More height means less width, so finally perhaps, we'll have flatter CPUs, smaller printers, miniscule iPods etc. — and as a result, more space to use around the room. Skepticism has been voiced on whether the industry would take to it well, but we at *Digit* feel that the future belongs to chipper chips and not whopper circuit boards.

2. PROTEIN SHAKERS

Hard Disks Go Organic

Imitating Nature

If nature can use proteins to help our brains store memory, why can't we? If you take a good look at our CDs and DVDs, you'll realise that they are enhancements of the vinyl record – albeit on a microscopic scale. Perhaps then, our use of synthetic materials is due to end. Memory-based devices made out of biological materials have long since been considered to have the power to process information more quickly and allow more data to be stored than the present-day options available to us. Several experiments in the past have floundered but the challenge draws humankind onwards.

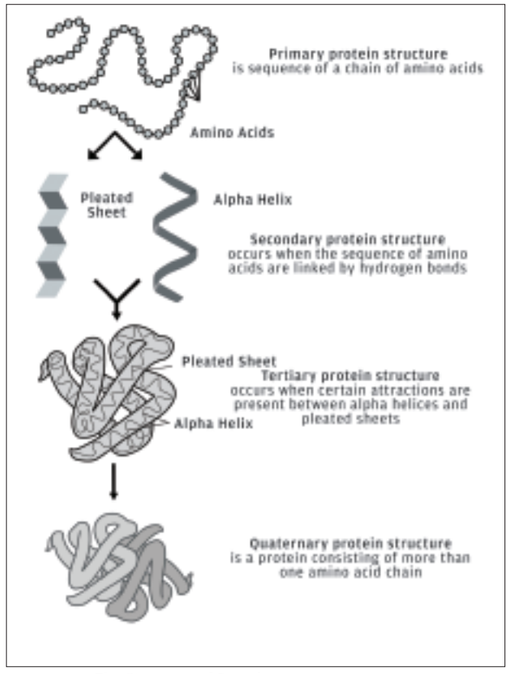
Amiable Aminos

Our traditional hard disks, CDs, etc. are either magnetic or optical data storage systems which are becoming, well, harder disks to put more data into. Rooms full of memory devices seem to be the only way of managing the mammoth databases the world is now dealing with. The most significant advancement in this area has been made by researchers in Japan who have managed to develop a new protein—based memory device.

Koji Nakayama, Tetsuro Majima and Takashi Tachikawa have succeeded in etching or 'recording' specific data on a glass slide, using a fluorescent protein. The combined use of light and chemicals effectively stored information that was later 'read' and then erased. Thus, recording, playback and deletion — the basic functions of memory storage instruments — were proved possible using biological materials. They define the material as 'a biological device that enables us to spatiotemporally photoregulate the recording, reading, and erasing of information on a solid surface using protein'.

And If It Comes Through...

The scientists involved in the project have themselves suggested that the technology could be used for biosensing and diagnostic



The Structure of Proteins

assays. But of importance to us is their third suggestion, that it be utilised for 'record-erasable soft material'. The possibilities, if this works, are limitless, and a reversal of sorts, where the bio-chip seamlessly entering our bodies to enhance human functionality seems possible in the not-so-distant future. Contemplating the consequences of bio-memory instruments, one immediately fears 'Terminator 3' and 'Matrix'-like dystopian scenarios, but never fear, the research is not even in the prototype stage and has a long way to go before it is proved to work as well as today's storage instruments. Several other simultaneous efforts towards the protein chip are ongoing and therefore it remains to be seen who will come up with the best product.

3. SENSOR GLOVES

Reckoned Skin

More Than Just Haptic

From the calculator watch to the HMDs (Helmet Mounted Displays), we have always been a little impatient and have now firmly begun to believe that a person's computer should be worn, much like eyeglasses or clothing are worn, and interact with the user based on the context of the situation. In fact, at a time when skin is being treated more and more like cloth, intelligent clothes are one sure-shot way to bring back to clothes their primal status of functional accessories. While laptops and palmtops are steps in this direction, serious advances indicate that the dream may not remain a dream much longer.

Fits Like A Glove

Most technological advancements and breakthroughs, regrettably, emerge from conflict, war and the needs of the military (ARPANET, aviation technology, etc.). The latest example is an intelligent glove. US soldiers in Iraq already use wearable computer systems but lack efficient input devices. Now, a company called RallyPoint, based in Cambridge, MA, has developed a sensor-embedded glove that allows the soldier to easily view and navigate using digital maps, activate radio communications, and send commands without needing to use his hands. This isn't so great when you consider that several groups have been working and bringing out sensor filled gloves in the past, using accelerometers, gyroscopes, and other high-tech sensors.

However, this one is a little different, because it is more practical, rugged and made for the military. It has been designed in such a way that a soldier can use it to grip an object and still continue to use its electronic capacities. The glove has four custom-built push-button sensors

Hand in glove

sewn into the fingers. Radio can be activated by the sensors on the tips of the middle and fourth fingers, each finger used to locate a different channel. On the lower portion of the index finger is a tiny sensor that can help change modes, from "map mode" to "mouse mode". Another sensor, on the little finger, can be used to zoom in (or out) of a map, while in 'Map Mode'. The same sensor in 'Mouse Mode' is a mouse-click button.

And If It Comes Through...

Although it probably really hasn't been envisaged yet, the glove-computer has immense possibilities for the future of gaming. We all know about the magic of the Apple Motion Sensor, PSP Sixaxis motion detection etc. But with the Glove-computer, the extent of immersion and interaction into the game could increase ten-fold. No more handheld pads or joystick surrogates. Everything you need would literally be in you hands. Now if only they could find a way to make it wireless...

4. ANTI-VIRUS CLUSTER

A Cloud Full Of Silver Linings

Cloud Computing

If you've heard of Web 2.0, no doubt you've heard of Cloud Computing — but we'll tell you anyway. Cloud computing is basically a concept that involves Web 2.0, SaaS and the latest trends in technology to provide seamless, better enriched services using the internet. No self-respecting computer today can get by without a good anti-virus software installed and trying to grapple with the number of trojans, malware, worms and hacker-go-lucky viruses that are trying to infilitrate into your sytem.

Remote Control

How nice it would be if the task of checking the files and documents that you open was done by some software deep in the infinite web, which monitors your PC remotely! Researchers at the University of Michigan developed a new cloud-based approach to antivirus which they call 'CloudAV' and which, they claim, can outdo any anti-virus package on the market.

Prof. Farnam Jahanian, professor of computer science and engineering in the Department of Electrical Engineering and

Computer Science, along with PhD student, Jon Oberheide and postdoctoral fellow Evan Cooke, evaluated 12 different antivirus software programs (including the popular McAfee, Avast and AVG) by pitting them against more than seven thousand malware samples. They found that, due to the increasingly innovative viruses and the growing complexity of anti-virus software itself, detection of malicious software was really low — about 35 per cent. Besides having several vulnerabilities in the software itself, most of them took about seven weeks on an average to equip themselves against new virus threats that are in circulation on the Web.

Another major drawback in today's antivirus packages is that you can't run more than one of them simultaneously in the same system. CloudAV is a single solution to all of these problems for the following reasons:

- It analyses potential threats to your system using several different antivirus programs at the same time, thereby significantly increasing the degree of protection for your system.
- Operates by installing a simple, lightweight software agent in your computer, mobile phone or laptop, which automatically detects a new document or program being opened and sends it to the anti-virus cloud (somewhere on the web) to be analysed.
- With CloudAV it's pouring antivirus agents. CloudAV uses 12 different detectors that run parallel to one another, but independently, to tell your computer whether it's okay to open a particular file.
- Caches the results so that detection becomes smoother in future.

And If It Comes Through...

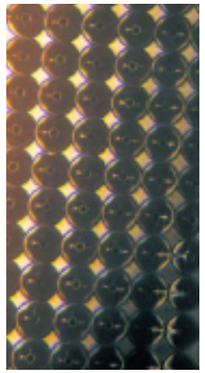
The latest irritant in India is frequent virus attacks on our cell phones. Typically, cell phones lack the space and power to accommodate bulky antivirus software. Leaving the job of detection and quarantine to an external agent — and not just one, but twelve — would be a boon for users of mobile computing devices. For the rest of us too — PC users — we'll stop cursing our favourite AV vendor for the viruses that weasel in and start praising CloudAV.

5. TELESCOPIC PIXELS

Mirror Writing

Screening For More

As alternatives to CRTs are becoming cheaper, more than half the globe has switched over to LCD monitors or TVs — not to mention the ubiquitous TFT screens in our cell—phones and PDAs. Naturally, we have also begun to perceive the manifest errors and glitches in using LCD technology. Not to rest on their laurels, scientists have already begun investigating possible



Pixel this!

new technologies to replace LCD screens. And this time, they are doing it with mirrors.

Whether it's LCD, Plasma or CRT screens, we're stuck with pixels. Pixels — short for 'Picture Elements' — are the tiny dots that make up the images on a screen. To cut a long story short, the quality and accuracy of the image is determined by the 'resolution' of the screen, so the greater the number of pixels, the sharper the image.

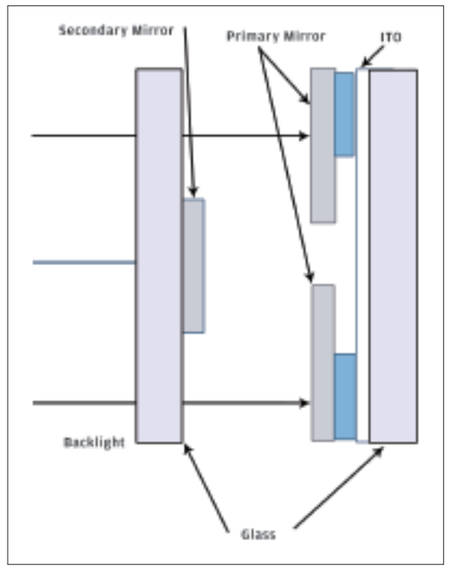
Even though LCD screens are all the rage, there are several drawbacks that noticeably hinder the achievement of a truly high-quality image:

- The pixels in an LCD screen do not really turn completely off.
- It's virtually impossible to view the image on a TFT/LCD screen in natural ambient light.
- When images move fast, the pixels take about half a second to switch between colours, and when these are very different, this leads to momentary blurs.
- Dead or stuck pixels which are damaged in such a way that they permanently stay in the or off state, seriously affect visual accuracy.
- Finally, by the time light passes through the three stages of an LCD screen (the polarising film, the liquid—crystal coat and the colour filters) almost 90 per cent of the light is lost, making the screen appear blacker and the displayed image dark.

Microsoft To The Rescue

Researchers at Microsoft have come up with a terrific new design for pixels (published online in Nature Photonics, 20th July, 2008) in which each individual pixel is made up of two opposing microscopic mirrors with one changing shape based on applied voltage, and reflecting light through a hole on the primary mirror and onto the display screen. Both mirrors are made of aluminium and the first one, with a hole in the center, is only a 100 micrometres wide and 100 nanometres thick!

Off-the-wall mirrors



When the pixels are 'off', both mirrors reflect the light back on to the source, so none emerges on the other side of the screen. However, when they're switched on, the disk bends towards

a transparent electrode (typically made of indium titanium oxide) due to a little application of voltage. The light therefore bounces towards the second mirror and emerges through the hole.

And If This Comes Through...

Michael Sinclair, senior researcher in the Hardware Devices group — under the direction of Turner Whitted at Microsoft — is convinced that once the design makes it past the prototype stage, it will replace conventional display units all over the world. Less powerful backlights would be necessary and this would bring down costs, while increasing the longevity of the battery on your cell phone or laptop. The telescopic pixels allow about 36 per cent of the light through, increasing brightness by three to six times as compared with the present-day LCD technology.

Just as happened with CRT monitors, people are going to sooner or later hope to get some more space to use on their shrinking office desks and the Telescopic Pixel technology could shrink the width of the screen to the thinness of a whiteboard. As the design is simple and the materials are cheaper, the fabrication as well as price should be substantially easier on the pocket. One possible drawback could be the mechanical nature of the parts — mechanical parts tend to wear out and break down — which may raise maintenance issues, but the positives far outweigh this single danger. So, though we're not holding our breath, we're definitely looking forward to the quick development and commercialisation of the Telescopic Pixel Screen.

6. SENSITIVE ARTIFICIAL LISTENERS

Sensitising Machines

More Like People

We're already quite familiar with our computers interacting through auditory means — voice commands, text-to-speech software, etc. — but most of us get a bit bugged by the monotony of the electronic voice speaking back to us. Science fiction writers have always dreamt of computers becoming emotional or talking like people (there was even this computer which fell in love in the 1984 Hollywood movie 'Electric Dreams'). The fiction may be inching towards fact with the Sensitive Artificial Listener system (SAL) being developed by an international team including Queen's University, Belfast.

Making Human Inputs More Acceptable To Machines

Humans do not only communicate through words. Non-verbal communication, in fact, is supposed to constitute more than 90 per cent of our oral interactions. Computers, however, only understand crystal clear commands and the ambiguity, fluidity and variant significations of body language or facial expressions has so far been beyond machines.

Using a unique blend of science, ethics, psychology and linguistics, scientists are attempting to overcome this obstacle too. SEMAINE (Sustained Emotionally colored Machine-human Interaction using Nonverbal Expression) is a project undertaken by an international group of technologists led by DFKI, the German centre for research on Artificial Intelligence and including Imperial College, London, the University of Paris, the

GRETA — an 'embodied conversational agent' at Queen's University

University of Twente in Holland, Queen's University, Belfast and the Technical University of Munich. The team, with a European Commission Grant of 2.75 million euros, aims to create a Sensitive Artificial Listener (SAL) system, which will perceive a human user's facial expression, gaze, and voice while interacting with him or her. Just as humans do, the system will alter it's own tone, behaviour and actions according to the non-verbal stimulus it receives (and actually perceives) from the user. For the first time in history, this project to create a machine-human interface system is using fields as diverse as psychology, linguistics and ethics at every step of its endeavour.

And If This Comes Through...

Professor Roddy Cowie, from the School of Psychology, at Queen's University gives a timeline of about 20 years. But given the scale and enthusiasm of the SEMAINE project, and given that several such projects are underway all over

the world, *Digit* hazards a guess that we'll be chatting up to and making jokes with our computers quite routinely within the next decade. And then, perhaps, they may just end up replacing dogs as man's best friend.

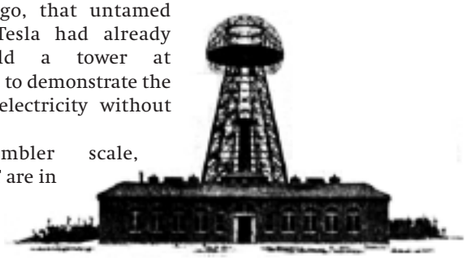
7. WIRELESS ELECTRICITY

Power's In The Air

Tired Of Being Wired

If phones, mice and keyboards could get wireless, why not everything else? In fact, about a hundred years ago, that untamed genius, Nikola Tesla had already begun to build a tower at Wardenclyffe, N.Y. to demonstrate the transmission of electricity without the use of wires.

On a humbler scale, researchers at MIT are in the process of repeating the experiment with their own ideas and less ostentatious techniques.



The Wardenclyffe Tower was never finished

WiTricity

Marin Soljacic, Assistant Professor of Physics at the MIT, has spent a considerable number of years trying to figure out how to transmit power without cables. Radio waves lose too much energy during their passage through the air and lasers are constrained by the necessity of line-of-sight. Soljacic decided to use Resonant Coupling, in which two objects vibrating at the same frequency can exchange energy without harming things around them. He used magnetic resonance and along with his colleagues Jon Hoannopoulos and Peter Fisher, succeeded in lighting up a 60 watt bulb two metres away. What they did was this: two resonant copper coils were tied to dangle from the ceiling, two meters away from each other. Both were tuned to the same frequency and one had a light bulb attached to it. When current was made to pass through one coil, it created a magnetic field and the other resonated, generating an electric current. And then there was light. The experiment succeeded in spite of a thin screen being placed between the two copper coils.

And If This Comes Through...

One of the most obvious results is that we won't have dozens of cables to trip over in our offices and rooms. Primarily, the aim of this research team is to achieve a cable-free environment wherein your laptops PDAs and mobile phones could charge themselves (with all the electricity floating around) and even, maybe, get rid of the batteries that are so much an essential part of our portable devices today. Magnetic fields interact very weakly with biological organisms and this little fact makes it infinitely safer for us. While this experiment happened about a year ago, the team is still hard at work trying to use other materials so as to increase the efficiency of the transfer of power from 50 per cent to 80 per cent. Once that happens, both, the industry as well as individuals will grab hold of it and never let go.

8. TABLE-SCREENS

Scribbling On The Desk

No More Dead Wood

There isn't a student alive who hasn't sometime scribbled his name (or a caricature of his prof.) on his school desk. How much more exciting it would have been if your desk was actually a Graphical User Interface! Experts at Durham University are aiming for just that with their 'Smart-Desk' initiative.

Interactive Surfaces

The Active Learning in Computing department at Durham University, UK is designing interactive multi-touch desks at their TEL (Technology-Enhanced Learning Research Group), hoping to replace the traditional desk with cell-phone-like touch-screens which can act like a multi-touch whiteboard, a keyboard, and mobile screen that several students can use at the same time. Dr Liz Burd and her team have linked up with private enterprises to design software that will enable all these surfaces to be networked and connected to a main smartboard. The computer becomes a part of the desk.

And If This Comes Through...

Instant visual displays of topics being discussed, on-screen interactive mathematics, group efforts in problem-solving and more involvement of students in the task at hand — the possible advantages of the smart desk to teachers and students seem infinite. Students who tend to isolate themselves or resist participation in class would be coerced to interact. Teamwork would be a natural consequence with multiple users on single screens. Each student could be presented a task or problem according to his or her individual capacities. More active and creative tasks would replace passive listening. The team aims to fill all schools in the UK with these desks within a decade and keeping in mind the pace of technological advance in India, we should see at least some of the schools in the country doing the same in the near future.

9. WRAP-AROUND COMPUTERS

Open New Folder

Why Should Screens Be Flat?

Flat screens are in. But what if we could have screens folded or curved around any surface that was convenient to reach? What if animated billboards could be folded round the pole of a street light? What if you could watch your favourite movie by stretching the screen over the back of a chair?

Bendable and flexible electronics are already all over the news. Trouble is, most of them cannot be tied up or wrapped around uneven surfaces or complicated shapes. Nanotechnology (what else?) has the answer.

Elastic Computing

Takao Someya, professor of engineering at the University of Tokyo, along with his team of researchers has added carbon nanotubes to a polymer with high elasticity to make a conductive material. They then used this to connect organic transistors in a stretchable electronic circuit. To induce conductivity in this material, Someya and his team combined several single-walled carbon nanotubes with an ionic liquid, which took the form of a black paste. This substance was then added to liquid polymer, which was dried after being poured into a cast. This material could be used to make an 'electronic skin' for robots. As a result, the nanotubes were evenly spread in the material and these worked to form a network that permitted electrical signals to pass through in a controlled manner. To make this material more stretchable, it was perforated into a net and then coated with a material with a silicone base.

In a paper published in 'Science' magazine, Someya reported that the material has the highest conductivity among soft materials in the world. Besides, the material is able to stretch up to about 134 percent of its original shape.

And If This Comes Through...

Mass production of nanotubes would, in turn, assist in the bulk production of these elastic conductors. The new material could be used to make displays, actuators or computers. With foldable keyboards already in the market for quite a while, a stretchable screen would make carrying around your laptop infinitely easier. It won't be long before you'll reach into your pocket for a handkerchief and pull out your PC. Look before you sneeze.

10. ULTRA–COMPRESSED MUSIC FILES

Micro-MP3

Just Forty Thousand Songs?

The Apple iPod (160 GB) can hold about forty thousand songs and, yes, people are buying it. As the capacity of MP3 players increase, strangely, our list of must-have favourite songs also expands exponentially. It doesn't matter how many songs you've got with you, the song you want is always elsewhere. So for those of you out there, who, have a million favourite tunes, never fear, Rochester's here. Again.

Zipped A Thousand Times

Researchers at the University of Rochester have succeeded in digitally reproducing a piece of music in a file that is almost 1,000 times smaller than a regular MP3 file. Mark Bocko, professor of electrical and computer engineering, and his team announced this achievement, at the International Conference on Acoustic Speech and Signal Processing in Las Vegas, held on April 1, 2008.

Even though the results are not perfect, they are almost so. The team took as a sample, a short musical piece, a 20-second solo on a clarinet and compressed it to less than a kilobyte. The file was then replayed by a combination of physics and the knowledge of how a clarinet works. They fed into the computer everything about clarinet playing — including the movement of the fingers, the pressure on the mouthpiece, etc. — to create a virtual clarinet based on real-world dimensions and parameters. They then made a virtual clarinet player for this virtual clarinet by feeding in a model that tells the computer how the human player interacts with the instrument including the fingerings, the force of breath, and the pressure of the player's lips to determine how they would affect the response of the virtual clarinet.

And If This Comes Through...

Not only does this imply the possibility of ultra-compressed music files but also the incredible prospect of recording the performer along with performance. Once a computer figures out the typical style of a player, his every breath and movement, it could play a tune much after the player's gone. According to Professor Bocko, improvement in quality is inevitable as the algorithms become more accurate and acoustic measurements are further perfected. The day won't be far when your cell phone will hold all the music ever produced in the whole wide world – and the movies too. ■

AKG K702

Audiophiles around the world rejoiced as AKG rolled out their K702 headphones which is a promising follow up to their widely acclaimed K701 headphones. Unlike the white colour of the K701 which did not last too long under studio conditions, the K702 ships with a stage blue finish, which is tougher and lasts longer. The sound quality is amped up with a patented dual layer varimotion diaphragm, and the earpads are moulded to fit everyone comfortably. The K702 will set you back by Rs 24,822, but you would have to shell out another 15 grand for a good soundcard and a headphone amplifier to put these cans to good use.

Sennheiser e904

The Sennheiser cordioid e904 microphone is specially designed to take up as little space as possible for use with a drum kit. It is designed for percussion instruments and has a very fast attack. The compactness of the microphone makes it an ideal choice for mounting onto a kit, and with Sennheiser, you can expect the best in quality. Invest in one for about Rs 12,355.

Wild Planet ATV-360

Wild Planet makes a lot of those toys we wish were around when we were kids. From pirate gear, spy technology, to dinosaur models that really hatch. On their line-up is this tank like spy car that can traverse over difficult terrains, turn 360 degrees for an instant view of the entire room, and a headset to receive audio and video from the vehicle. The remote controlled spy cam vehicle runs on 12 AA batteries – not included in the retail price of Rs 4,597.

Binary Kerala Trance KT102R1

This watch is so geeky, that you need to know binary just to tell the time. The watch is made up of high quality stainless steel, and there is a pink version available for the technophilic girls – or other's into pink. There are four LEDs on the top row (8, 4, 2 and 1), to tell the hours, and six on the bottom row to tell the minutes (32, 16, 8, 4, 2 and 1). The watch has a high quality leather strap, and has a button that displays the time for 5 seconds. The Binary Kerala watch costs Rs 8,545.

Blaupunkt Colour Camera CC138m

Blaupunkt, the company well known for audio systems for vehicles have come out with a series of rear-view cameras for cars. The Colour camera CC138m is available in wide angle, 90 degree, and adjustable variations. It is a 1.3 megapixel color camera that can be installed in different positions and angles around the car. The camera is very compact, weighs just 20 grams and displays video in the 16:9 format.

Bose Lifestyle 48

The Bose Lifestyle 48 system is a home theatre solution for the high end market. Apart from the media tower, which is a huge box that can accommodate 340 hours of music, the rest of the system is surprisingly sleek and small. The system ships with 4 jewel cube speakers, and a horizontal centre channel speaker. The ADAPTiQ audio calliberation system analyses the room and adjusts the sound accordingly, and the uMusic intelligent playback system automatically learns your song preferences and makes song selections. The system costs a meagre Rs 1,83,680.

Buffalo MiniStation Pro

The Buffalo MiniStation Pro Data Vault is a safe and secure solution for handling all your portable data needs. The External Hard disk automatically encrypts all the data stored in the drive. Of course, you have to take the trouble to remember a password to access your data. The data is secured with AES 128 bit encryption, and requires no software to be installed on the client systems. The drive ships with portable firefox and thunderbird preloaded. The drive is available in 320 GB and 160 GB versions, the 160 GB version costs Rs 6,829.

Samsung Instinct

This is another contender in the running to be the iPhone killer. It is just half an inch thick, but that's thicker than the iPhone. It is also taller than the iPhone, but much slimmer. All phones that have a predominant touch screen interface tend to look the same, but the instinct is eye-candy enough and a little more. The box is packed full of accessories and addons, has a 2 MP camera, and a battery life of close to 6 hours. On the down side, the stylus does not dock into the phone, and there is no Wi-Fi capability, but if you have Rs 25,168 lying around in your piggy bank, by all means, buy it.

Coby TF-DVD550 V-Zon

Coby has introduced a portable DVD player for kids with a bright orange and silver casing, and big bright buttons for ease of use. The player supports most CD and DVD formats, and can also handle JPEG images. The casing itself is pretty rugged, and a rubber lining absorbs some amount of rough use expected by children. The video shows up on a 3.5 color TFT screen, and the unit weights just 680 grams with the batteries in. This smart looking DVD player costs just Rs 6,829 which is great value for money.

Creative X-Fi Sound System i600

This high-end audio solution is not just another iPhone dock, it doubles as a set of high-quality gaming, notebook or PC mini hi-fi system as well. While the speakers are capable of churning out 35 Watt RMS per channel, the subwoofer can handle a mind blowing 130 Watt RMS. The X-Fi stands for extreme fidelity, which is an intelligent crystallizer that boosts the audio quality of compressed audio files in devices like the iPod and recovers some of the quality lost in the compression. The system costs Rs 27,506.

Pro Viewer 5.0 MP Digital Binocular Camera

The Digital Binocular Camera from GadgetUniverse, which specialises in the odd-ball gizmos, is a 3.2 MP camera that is interpolated to offer 5 MP 2560x1920 images. The camera is built into the binoculars, with a 1.5-inch TFT LCD screen on top to review the images. The camera also offers 640x480 video capturing, and is primarily marketed for use in sport arenas. The camera offers an 8x zoom, and is banned in some sport arenas. The Pro Viewer costs Rs 9,184.

Triolon Excalibur

The Triolon Excalibur from Acapella, a German manufacturer of high-end audio systems uses four large spherical horns for producing exceptional sounding audio. There are four fast bass units and a woofer. There is a very small amplifier, the horns do most of the work. The speakers can handle an extreme range of dynamics, and can be added to your room for a mere Rs 67,13,584.

Cray CX1

The CX1 is an attempt by Cray to personalise supercomputing. The CX1 is a supercomputer for enterprises powered by Intel Xeon Dual Core or Quad Core processors. The basic configuration is available for as little as Rs 11,54,148. You can put in upto sixteen processors on eight blades. The basic configuration uses two Xeon Dual-Core X5270 3.5GHz processors and four 2GB DDR2 800MHz RAM sticks. The entire configuration can be downgraded, but can also be upgraded to two Xeon Quad-Core E5472 3.0GHz processors and eight 4GB DDR2 800MHz RAM sticks. The OS is either Microsoft Windows HPC Server 2008 or Red Hat Linux. Maxing out all the specs, you get a price of Rs 23,85,900.

Dragonflyer III

Technophiles just have to love this remote-controlled toy that can be put to good use in the right hands. NASA has purchased some of these for research purposes, and the Dragonflyer was featured on Ripley's believe it or not. The four electric motors and rotor blades makes the dragonflyer very stable in flight. The light-carbon fibre body reduces the damages caused by crashes. The best feature is the high gain 2.4 GHz video receiver that can let you capture HD images and video while the copter is in flight. There are also glasses that let you see exactly what the copter is seeing while controlling it with the RC. This desirable thing can be flying around your neighbourhood for Rs 45,920.

EeeBox mini PC

With the EeeBox, Asus brings the Eee PC revolution to desktop computers. The desktop is compact and lightweight, and sits at an oblique angle on the tabletop, with an elegant metal ring for balancing itself. Packed inside is a 1.6 GHz Intel Atom N270 processor, a 1/2 GB DDR2 RAM, and a 80/160 GB SATA hard drive. The EeeBox ships with inbuilt blutooth, WiFi and Ethernet connectivity, along with a DVI port to connect to a TV. Available in Linux and Windows XP versions. The EeeBox is made to be affordable all over the world, and the 2GB RAM/160 GB HD is available for just Rs 13,776. Throw away that dump you call a computer in the garbage.

Emtec Movie Cube R100 500GB

The Emtec Movie Cube is a multimedia hard disk with in-build card reading, time-shift and recording capabilities. It can play back music and video through the Television, the laptop or a desktop. There is also an Ethernet connection and a facility to stream media remotely. The media cube can handle most video, audio and image formats, and is priced at Rs 13,592.

Audio Technica ATH-W5000

Say hello to the grand daddy of luxury headphones. The Audio-Technica ATH-W5000 uses striped ebony wood for the cans, which supposedly boosts the audio quality. On the inside is the softest and finest leather moulded to comfortably fit all kinds of ears. The cans use a neodymium magnet and high quality oxygen free copper voice coils. Even the stereo connector is gold plated for low conduction and noise reduction. The headphones just pushed the end in the high-end a little further with a price of Rs 77,050.

Klipsch RF-83 Home Theater System

The RF-83 is the flagship reference system of Klipsch audio. The system comprises of two RF-83 floor standers, two RF-62 surrounds, an RT-12d Subwoofer and an RC-64 Center. The bodies of all these speakers have a finish of wood and black, with the drivers painted gold, so you no doubt where all the goodness comes from. The entire system retails at Rs 2,95,184.

Canon EOS 5D Mark II

The EOS 5DM2 is a 21 mega-pixel Digital SLR camera that is a follow up to the EOS 5D which created a new market segment. The camera has a 36 x 24 mm image sensor, an ISO range that goes all the way upto 25600 which allows shooting at low light conditions, and an imporved 3 inch high-res LCD screen. This is one of the few D-SLR cameras with an HD video recording function. The camera can also record HD videos with sound at a resolution of 1920x108, can shoot continuously at 3.9 images per second and can take 78 high-res burst shots. The body alone costs Rs. 1,26,127.

Evesham MBox

The Evesham MBox is an audio server for home use. Each MBox ships with two mirrored RAID drives, which means that every track is backed up automatically by the system. The MBox lets you save, play or stream music over LAN or Wi-Fi connections around the house, allowing upto five independent streaming options at any point of time. The MBox is available in 80-500 GB versions. The 160 GB version costs Rs 51,139.

Altec Lansing XT2

The XT2 speakers are an improvement from the well received XT1 Laptop USB speakers. The speakers run on 4 WATTS RMS, and can be powered by the Laptop through the USB if a power port is not available. There is a power chord included to take the load off the laptop's battery. The sound quality is exceptional, and there are optional subwoofers for the added bass punch. The speakers are priced at Rs 5,694.

Limited Edition Ferrari Segway PT i2

For Rs 4,77,989 you can get yourself a limited edition Ferrari Segway. This product came about after the worker's at Ferrari's Maranello factories were moving around using the i2 personal transporter. What's so special about it? Well, if the 40 kilometres at 38/kmph run with each charge up of the battery is not enough, the red colour and the bright Scuderia Ferrari logo on the base should do the trick for Ferrari fans.

Wibrain B1L

The Korean company Wibrain has come out with the B1L UMPC, which has a divided qwerty keyboard with each half on either side of the 1024x600 4.8 inch touch screen. There are also direction keys which are useful for playing games. The Wibrain is bundled with the Ubuntu operating system, although the MS Office Suite is included. Buyers can also opt for Windows XP if it pleases them. Inside is a 1.2GHz VIA C7M ULV processor, a 60 GB hard drive and a 1 GB DDR2 RAM. The B1L costs Rs 40,093.

HyMini

The HyMini is another microsized green gadget to generate power from both wind energy and solar energy. The device comprises of a small turbine that stores wind energy in a battery, and then routes the power to a device. After twenty minutes of charging, the charger gives between 20 and 40 minutes of run time on devices like the iPod, a camera, an MP3 player or a PDA. In your pocket, with only Rs 3,409 going out.

HDMC Pocketable HDD

The Japanese company I-O Data has come out with a minuscule (2 x 2.3 x 0.7 inch) USB storage device that is completely waterproof upto 1 meter of water. The drive is meant for rugged use, as you can drop it from as high as a meter, or shove it in the freezer and the data will still be safe and secure. The drive ships for Rs 10,699 and comes with a capacity of 16 GB.

HTC Touch Diamond

This device is the HTC's attempt to slaughter the iPhone. With its brushed metal finish, 2.8 inch high resolution touchscreen, and a 3.2 megapixel camera, it is a worthy candidate for the coveted iPhone killer title. What used to be boring lines of text and numbers in a phone, like the contacts lists, the messages, the files are all animated with an interactive touchFlo 3D interface, which brings the phone to life. Surfing the web is also easy and fun. However, there is no slot for expanding the memory. This baby will set you back by Rs 28,654.

Creative Zen X-Fi

The Creative Zen X-Fi comes in 8/16/32 GB versions, with the latter two having optional Wi-Fi. The PMP comes with a photo viewer, an FM radio, an organiser and a voice recorder. The 2.5-inch TFT colour display looks striking, and the PMP has a set of speakers apart from the headphones. It supports most audio and video formats, and has an SD slot for expandable memory. The X-Fi stands for extreme fidelity, which restores some of the audio quality lost during the compression. The 32 GB Wi-Fi version costs Rs 9,505.

Olympus µ 1020 Limited Edition

The Olympus µ 1020 took digital camera designs to new heights, and then raised it further with 5000 limited edition models that feature three skins by the internationally renowned artist Matei Apostolescu. Apart from the above design, there is a blue-red and a zebra pattern also available. The beauty of this camera is not skin-deep however, with 10.1 MP, 7x zoom, 23 scene modes and dual-image stabilization housed in the box. There is also a BrightCapture enhancement for low-light conditions, and an in-camera panorama function. The special edition is priced at Rs 18,198 if you find one that is.

Rolleiflex MiniDigi AF 5.0

This is one of those gadgets that must be brought for their awesomeness and not their functionality. The Rolleiflex MiniDigi is a tiny replica of the legendary waist level Rolleiflex series of cameras that had photography enthusiasts wetting themselves half a century ago. This replica has a square MP count of 1536 x 1536 which is interpolated to 5 MPs. Do not expect even the meanest run of the mill features like a playback or a flash or scene modes, and yet walk into a room full of photographers with this thing and they cannot help but gawk. It's point and shoot and hope for the best lighting conditions all the way, but it is one of the most retro-cool things in existence. Get your hands on one for Rs 18,304.

Dynamode USB-HD-3.5SI

The Dynamode 3.5 SI is a highly utilitarian hard disk with a singular CopyNow! button back up function that stores a copy of your data to prevent loss or to synchronise data with a computer. The disk interfaces with the computer through either a USB port or a serial ATA connector. The casing is made up of cooling and long lasting aluminium, and the disk rotates at 7200 RPM giving 400GB of storage space. This is a steal at Rs 1,470.

Ideazon Merc Stealth Illuminated Gaming Keyboard

For a measly Rs 2,984, the Ideazon merc stealth illuminated gaming keyboard can be yours. The keyboard features three colours (red, blue, and for Mace Windu lovers, Purple), four brightness levels for the illumination (Subtle, Ambient, Intense and off) with every single key on the board being illuminated. The keyboard has a whole section for gaming use, with the movement keys tilted according to the natural positions of the fingers on the wrist, and a host of 34 customizable gaming keys for the hardcore gamer. There are also two USB ports for peripherals, and two gold plated audio docks.

Iomega eGo 1TB

Available in three discerning colours, Midnight Blue, Ruby Red and Jet Black, the Iomega eGo portable hard drive is priced at Rs 10,257. The secure EMC retrospect software for safekeeping of the data is available as a free download after the purchase has been made. A USB 2.0 cable and a power supply cord are included in the packaging. There is also a one year warranty with every device.

SwiMP3

Ever wanted to take along your mp3 player when you went swimming? You'd be crazy not to. It offers 356 MB of storage space, weighs only 57 grams and supports WMA and MP3 file formats. You don't need to wear it under the swim cap if you are using one; the SwiMP3 uses bone conduction of sound to let you hear your songs underwater. It latches onto the cheekbone and the sound is channelised through your skull into the ear canal. For Rs 6,177 you get to be the geekiest person in the pool.

MobiBlu Cube 3

The guys at MobiBlu rolled out what was at one time the world's smallest MP3 player in the form of a one inch square cube. That was the MobiBlu Cube. Behold the MobiBlu Cube 3, that packs in 2 GB of memory, a battery, controls for the player, a small screen for navigation, videos and photos, a recorder and an fm radio – in a cube that's less than a inch square. The battery lasts for 10 hours at each charge, and the player supports WMA and MP3 file formats upto 320 kbps. The cube costs Rs 4,459.

Altec Lansing iM7

The iM7 is a portable dock for the iPod or other MP3 players. The guys at Altec Lansing have designed unconventional tube shaped speakers, and allows users to adjust the bass and treble but without any displays. While the port for the iPod charges it when it is plugged in. There are ports for plugging in any MP3 player, a headphone jack (why o why?) an aux output, a S-video output and a composite video output. There is also a remote control and the device can either be powered by batteries or with a conventional wire. If you want to own this tube, be ready to shell out Rs 11,434.

Kenwood Excelon DNX8120

The DNX8120 is a dash system for your car from Kenwood which is basically an all-in-one interface for your mobile phone, pmp, media, and navigation needs. The device works as a blutooth headset, and you can send and receive calls, it has the industry's fastest transfer rates of multimedia files from your i-pod, is compatible with a host of other media players, and can store and playback a variety of audio and video files. If you are living in the United States or Canada, it offers a complete navigation system. The DNX8120 costs Rs 73,426.

Vertu Ascent Ti

With the Ascent Ti, Vertu has deviated from their bare-necessities models to include a 3 MP embedded camera with integrated flash, a joystick, and a larger than sapphire crystal display for the first time. The body is made up of industry grade titanium, you'd require diamond-cutting tools to scratch the display, the keys are stainless steel, the ear-pillow is made up of the ceramic used in space shuttles, and even the virtu logo on the ceramic pillow is made from the material used in industrial drill bits. The vertu fortress feature allows your data to be securely backed up on a secret server, and there is a worldwide concierge service for personal assistance on all social, lifestyle or technical matters 24x7- there is a special key at the side for this. For Rs 36,783 – you will get – a replica. The real thing costs Rs 3,04,749.

Sony Ericsson Xperia X1

The Xperia X1 is the first SE phone to feature a Windows Mobile OS. The Xperia is an arc slider phone with a four-way navigation via the touch screen, a keyboard, a 4 way key or the optical joystick. Packed inside is a Qualcomm's ARM 11 MSM7200A CPU running at 528 MHz and a 384 MB RAM. The device also has two cameras, the main one being a 3.2 MP camera at the back, and a front facing one for use during video conferencing. The phone is available in two colours, solid black and steel silver. The device is priced at Rs 45,760.

LCi-RTS100 Ceiling Speaker

The good guys at Polk Audio are offering a nifty set of wall mounted speakers that are the first in its category to earn the THX Ultra2 certification. The speakers ship with audiophile grade drivers, are easy to install and to conceal and feature Aerated Polypropylene Dynamic Balance Driver Cones for midrange frequencies and a Ring Radiator tweeter. The speakers are 14-inch in diameter and come with a 5 year warranty. This discreet add-on to your home theatre system will cost Rs 45,874.

Logitech G15 Keyboard

The G15 is a large gaming keyboard by Logitech which has more bells and whistles than the lighted keypad for late-night gaming. There is an LCD screen on the keyboard that displays available servers, useful system information and in-game statistics. There are six G keys that execute pre-programmed macros for fast access to complicated functions while in the game. These keys can be programmed on the fly, without interrupting the game play. Additionally, the keyboard is a USB hub and media controls. They G15 costs Rs 4,459.

Solio

Go green with the Solio universal hybrid solar charger. This device basically is made up of three blades that fans out and charges itself with solar energy, it gets fully charged up after 8 to 10 hours in the sun (the time is variable as it depends on the amount of sunlight). Once charged up, it can store the energy for upto a year, and can be used in turn to charge PMPs, cameras, PDAs, cell phones or game players. Also available in black and pink, this useful little device is available for Rs 4,576.

MOS Boombox

The Ministry of Sound has released a rather blobby piece of technology that plays CDs and the FM on the go. A small LCD screen displays the information about the song playing, and the navigation through the folders is made easy by the buttons for searching through folders in the CD. There is an equalizer, a bunch of play modes and upto 50 presets for the radio. For MOS lovers, this is a bargain at 8,197.

Matrox Axio LE Realtime

The Axio LE Realtime is the dream machine for editors, for work with Adobe Premiere and Aftereffects. The system also has WYSIWYG (What you see is what you get) editors for 3ds Max, Lightwave 3D, Combustion, and a host of others. The editing rig offers real-time editing of multi-format and multi-layered video with native support for the formats of Panasonic and Sony cameras. The machine also has boosted exporting, rendering and burning capabilities. This bleeding edge machine will set you back by Rs 1,78,173.

SE2 Labs Integrated Theater Console

Instead of a jumble of boxes scattered around your television hogging all the room, invest in a single Integrated Theatre Console (ITC) which crams in everything you could ever want from a home entertainment system into one compact media tower. What you want to put in depends on you, the X-Box 360, the wii, a touchscreen, an i-pod dock, a cooling or anti-noise vibration system, a plasma screen, speakers, a projector – basically, you name it and you got it. Prices start at Rs 4,53,027 and goes up from there – wherever you want to take it.

Moto Rokr em25

The Moto Rokr em25 is a sleek slider phone from the Rokr lineup. The music on the phone is accessible via a one-touch button and the 'airplane' or 'demo' mode allows for playback without interruption. The battery allows for ten hours of music listening, 490 minutes of talk time, and 330 hours of stand by time. There is a 1.3 MP camera with 4x digital zoom. There is also a built-in fm receiver, and the memory is expandable upto 2 GB.

Navman PiN

The Navman PiN is a GPS navigation system that provides street level 3D color maps, with voice guidance from your start point to your destination. The Navman's GPS antenna can pinpoint you accurately within 5 meters of your position. It offer's several useful navigation functions like the 'back-on-track' re-routing and the 'avoid-areas' operation. The Navman runs on an Intel 300 MHzXScale PXA255 processor with 32 MB RAM. This navigator costs Rs 20,069.

Olympus DS-40 Voice Recorder

Olympus has a reputation for not only their cameras, but for their excellent line of audio recorders as well. The DS-40 comes with a 512 MB ram, and five different recording qualities, each with a unique compromise of file size and quality. The stereo microphone on the top is detachable, the battery lasts for 36 hours, and voice commands are built in, so you can operate it with your voice alone. The device is pretty tiny and fits easily in the hand, and can be used as a USB recorder or a USB microphone. The DS-40 costs Rs 7,132.

pocket loox n100

The n100 is a portable GPS navigation system with multimedia capabilities. Inside is a Samsung 300 MHz processor, 64 MB ram and a 3GB SD card. There is a 2.8 inch QVGA touchscreen display, which is used to navigate through the device. The box contains one black and one white casing that can be put on according to individual preferences. There are also 2D and 3D map views, unfortunately this thing won't work anywhere in India as yet. We wait, but not patiently. The price is Rs 13,728.

Sennheiser CX400

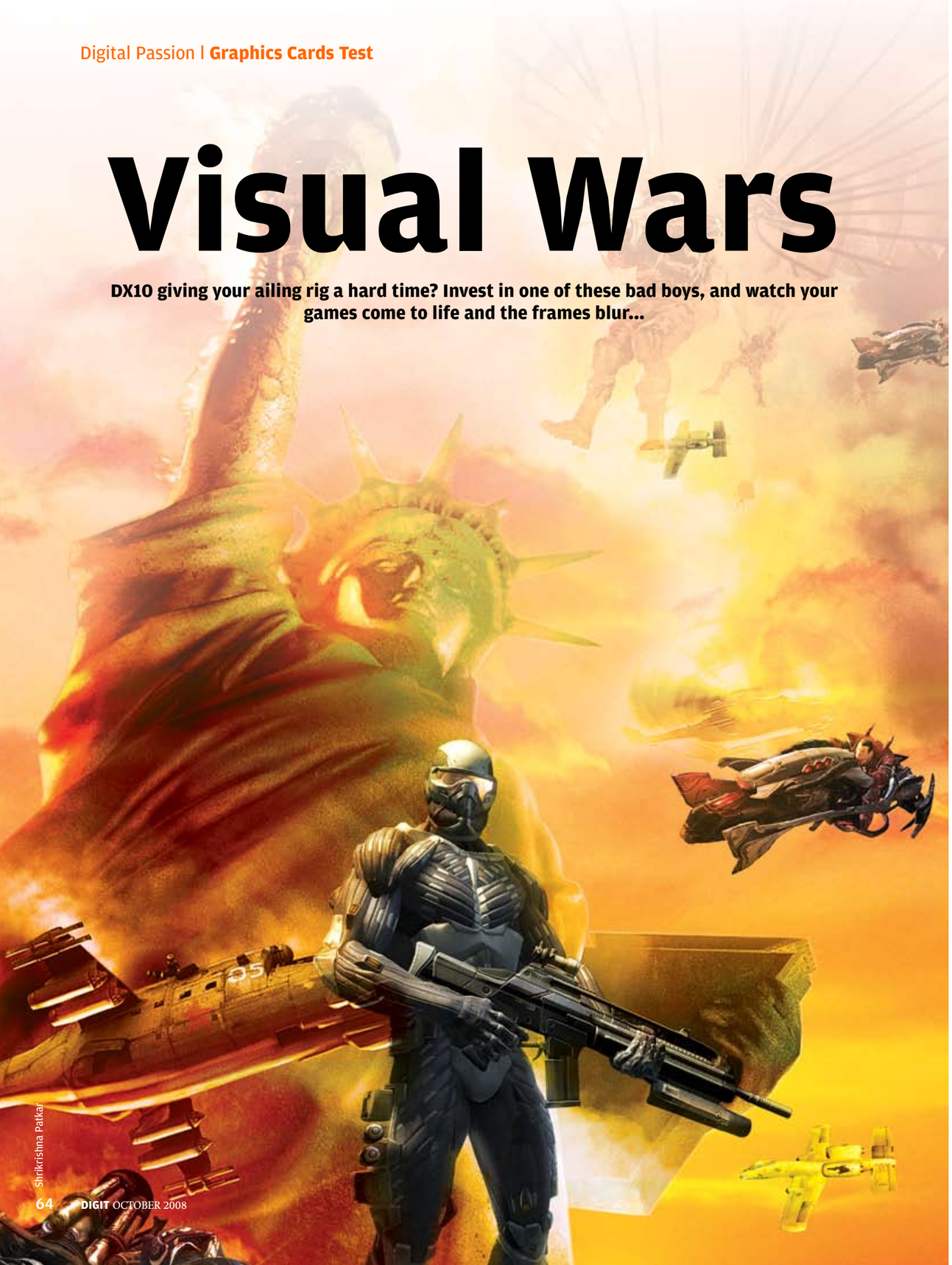
Sennheiser has amped up the audio quality of the CX300 headphones, particularly in the bass frequencies with the CX400 set of noise isolating ear-canal phones. The box ships with small, medium and large earpieces, so that it fits in every ear, and a one meter extension cable. The earphones are lightweight, and since they sit right in the canal, there is no need to turn up the volume on the device to full to hear the audio. The wires are sheathed in rubber tubing to minimize damage. This set of ear-phones is targeted at the mid-range market, and is priced at a reasonable Rs 3,377.

Qstik EVOQ Bluetooth headset

The EVOQ headset from Qstik comes bundled in with a bunch of features that would please those who yap away on the phone with one of these hanging from their ears. It cancels noise for both incoming and outgoing audio signals, cancels out the background noise, cancels echoes and automatically adjusts the volume to even out sudden noises. Despite doing all this hard work, it looks kinda cool too, and is priced at a reasonable Rs 5,491.

Visual Wars

DX10 giving your ailing rig a hard time? Invest in one of these bad boys, and watch your games come to life and the frames blur...



Shrikrishna Patkar

Michael Browne

Promises are meant to be broken

They lied. NVIDIA and ATI *lied* to us. We were promised environment friendly GPUs. They also promised us silicon-conserving smaller die sizes and lower power requirements. We thought they were doing an *Intel* on us — add more cores while reducing power consumption. But they didn't. And, as shocking as this may seem, we're rather glad they chose to lie. Our GPUs can be as environment *unfriendly* as they like, we're not complaining! Sorry, Mother Nature, but *Crysis* comes first. If your parents read this placate them with the fact that an air conditioner left on for an extra hour, consumes around the same amount of power that the most powerful GPU does in two weeks. Not to mention the average hydrocarbon belching, public transport vehicle. So we find nothing to complain about the power requirements of the new Radeon HD4870 X2 and the GTX 280. Except maybe, the cost of a GPU cooler and fan to prevent thermal meltdown. And the cost of a new, beefier power supply. And a new cabinet with better ventilation with maybe some 120mm fans. And a small hike in power bills. Wait! We weren't supposed to complain, because there isn't anything to grouse about. Or is there?

The fact is that DX10 is here, and whether you like it or not, Microsoft has doomed good old Windows XP to the annals of history next year by limiting support for it. So Vista is here to stay, and so is DX10, at least until DX10.1 or even DX11 make their way into our desktops. Vista has become better and faster, although it still has a fair bit of catching up to do with XP when it comes to device driver support and compatibility. For us, moving to Vista as a benchmarking standard was an easy choice, and it's been an enlightening experience. For one, we had none of the problems that people usually complain about — no crashes, no bugs, and the frame rates of all our games were on a par with the scores obtained while benchmarking the same configuration with Windows XP, meaning that the added operating system overhead was practically nil.

If you're a gamer, you should consider moving to Vista for good. Others would have already transitioned to this platform, but gamers tend to lag behind with the fear of Vista killing their GPUs. Well, it isn't Vista you should thank for that, it's a little setting in most games called *Ultra High*. This setting remains greyed out in Windows XP and cannot even be selected. But it is available when running Vista. What it does is enable DX10 effects. This is solely responsible for the large performance drop you experience when using Vista and enabling all the eye candy. And while on the subject of visual appeal Vista is more beautiful, noticeably so,

How We Tested

Test Configuration:
CPU – Intel Core 2 Extreme X6800 (2.93 GHz)
Motherboard – ASUS Rampage Extreme (Intel X48 Express Chipset)
RAM — 4 GB OCZ DDR3 1600 MHz
HDD — WD Raptor 80 GB (10,000 RPM, SATA)
OS — MS Vista Ultimate 64-bit
Monitor – Samsung SyncMaster 997DF

Below are the benchmarks we used, along with a brief description.

Crysis
The most feared game for its ability to kill even the most powerful cards. One of the best looking games ever built, with great shader quality and amazingly realistic environments and effects, as well as encredibly detailed characters and gameplay. Visually stunning.

Unreal Tournament 3
Using the next gen *Unreal Engine 3,* UT3 is a game not to be missed. Its faster than its predecessors, and visually splendid too.

S.T.A.L.K.E.R. Shadow of Chernobyl
The X-Ray engine by GSC gameworld - an open ended explorative experience, this game has incredible detail, expansive maps and an eerie kind of ambience, especially when roaming its environs at night. The bleak, scarred landscape is brought to life with some beautifully done shaders and texturing. A superb looking game.

Company of Heroes: Opposing Fronts
One of the best looking RTS games, brilliant detail, and very realistic enemy AI. An absolute gem of a game with eye candy to kill for.

World In Conflict
Perhaps the only RTS game that is the equivalent of COH in terms of visual appeal, this one has large scale, highly detailed battles.

F.E.A.R Perseus Mandate
Atmospheric, dark and gloomy and still unforgiving on older cards, F.E.A.R is still the best in the business when it comes to close quarters firefights and scaring your lights out with some incredible visual effects. Great shadows, realistic combat, and very immersive.

3D Mark Vantage
Future Marks new 3D benchmarking standard, very taxing on older cards. Showcases DX10 shaders very well.

and the eyewitnesses are *Crysis*, *Company Of Heroes* and *World In Conflict*.

There's another very important development worthy of mention. When thinking DX10, people usually think *costly*. Don't! The new generation of DX10 cards are much cheaper than you think. Although we've only looked at the high-end and mid-range cards this month, we're pleased to report that the new mid-range cards are actually the high-end parts of five months ago. Did you think NVIDIAs GeForce 9800GTX was the top-end successor to their older 8800GTX? You're right — it was. So what's it price, Rs 30,000? Wrong. This card is now priced at Rs 12,000, although it was priced at Rs 30,000 a scant four months back. Why the change? Competition. ATI has hit back hard, with its new Radeon HD4870 and HD4850, which have made quite a splash and have succeeded in winning back some much needed respect.

It seems parallelism is the in-thing, with NVIDIA upping its shader count to 240 units from 128 units, and ATI jumping to 800 units from a previous 320 units. GPUs are moving towards running more general purpose tasks like offloading physics and decoding from the CPU, thereby freeing up resources for other tasks. Nobody doubts the power of today's GPUs. With teraflop performance on a 55nm thick silicon wafer GPUs have come a long way from the checkerboard like multi-GPU graphics cards of yesteryear.

Before we get into the test we'd like to inform you that the entry level segment of GPUs will be covered in next month's issue. So watch out for it.

XFX GX-280-ZDD9

High-end Graphics Cards

For years the high-end graphics cards have held gaming and gamers in good stead. Nothing beats the experience of running a game at its highest quality settings, where you get all the eye candy unadulterated, and at blistering frame rates. NVIDIA and ATI have been slogging it out in this segment, although the former has been ruling the roost for the past two years. This was due to one GPU — the G80, better known as the 8800GTX, which spawned a host of other winners — the 8800GT, 8600GT and so on. Since November 2006, the 8800GTX has also dominated proceedings in all our graphics intensive tests, thanks to its monolithic architecture — an unheard of, (till then), 128 stream processors and a huge 384-bit wide memory bus.

The high-end segment in India is still niche. After all, who has Rs 30,000 or so to blow on a graphics card? A small and ever increasing number of gamers and the like are slowly adopting these high-end graphics cards into their PCs, but as a percentage such users are so insignificant that most vendors here prefer to play the numbers game. One of the most noteworthy changes is the near equalisation of US and Indian prices — the gap is still large, but it continues to close. This benefits the high-end cards the most and we're pleased to report even the costliest of cards now costing under Rs 30,000. Up to even a year back, a high-end offering would command a price of around Rs 40,000 — preposterous really, especially considering the average Indian probably earns half of that. Let's look at the high-end offerings one by one.

NVIDIAs GeForce GTX 280

The sledgehammer strikes

The guys in green don't kid around with their GPU architectures. Neither have they been sparing the horsepower when it comes to creating über powerful GPU cores. The GTX 280 has a decidedly Bugatti Veyron approach to its processing power, and just like the car it goes all out — a near 90 per cent in SPs over its predecessor, the 8800GTX, a 512-bit memory bus connected to a whopping 1 GB of GDDR3 RAM, clocked at just above 2.2 GHz. All this makes the GTX280 extremely capable and the brute force approach works well for NVIDIA — the GTX 280 is furiously fast, as our tests will show. In fact it's the fastest single GPU card on the planet.

High-end GPUs	NVIDIA GTX 280	NVIDIA GTX 260	NVIDIA 9800 GX2	ATI HD 4870 x2	ATI HD 4870	ATI HD 3870 x2
Stream Processors	240	192	128 x 2	800 x 2	800	320 x 2
Texture Addressing / Filtering	80 / 80	64 / 64	128 / 128	40	40	16 x 2
ROPs	32	28	32	16 x 2	16	16
Core Clock Speed (MHz)	602	576	600	750	750	775
Memory Bus Width (bits)	512	448	256 x 2	256 x 2	256	256 x 2
Memory Frequency (MHz)	2214	1998	2000	3600	3600	2250
Memory Type	GDDR3	GDDR3	GDDR3	GDDR5	GDDR5	GDDR4
Amount of memory (MB)	1024	896	512 x 2	2048	512	1024

Palit HD 4870 SONIC

Features

We received four cards based on the GTX 280 GPU — one each from ASUS, ZOTAC, XFX and POV. All these cards sport the default NVIDIA reference coolers with their own fancy, colourful stickers. Except for the POV GTX 280, the others were all factory overclocked to 670 MHz core speeds, 602 MHz being the default clock for this GPU. Shockingly, only ZOTAC bundled a game with their card — *GRID* is a reasonably new game. They also bundle an HDMI adapter, as does POV. ASUS and XFX, the two old players miss out on a trick here.

Performance

At similar clocks, as expected, the three GTX 280s from ASUS, XFX and ZOTAC perform quite similarly, and there's a very small advantage going to the XFX card for some reason; but to be honest this advantage is never more than 1.5 per cent in all the games. The POV GTX 280 cannot keep up with this overclocked trio, and understandably trails them a small margin. Of particular interest is *Crysis*, which is taxing at anything above 1600 x 1200 pixels with DX10 effects turned on. None of these cards could reach the magic 30 fps mark — shocking. If you want comfortable frames, you will have to lower your game resolution. *UT3* proves to be CPU limited with such powerful cards, and any of these are overkill for this game. *S.T.A.L.K.E.R.* proves no match for the 240 SPs working in tandem, and yields 100+ fps for all practical resolutions. *Company Of Heroes* is also very playable, and will give 100+ fps at any resolution. *World In Conflict* is another CPU limited game, and we recommend a quad core processor – our GTX 280s weren't able to crunch out any more than 35 fps. *F.E.A.R.* doesn't give the GTX 280 any issues, but this is an older game that scales quite well, and we were surprised seeing it slowing these cards to just above 100+ fps. For the record, XFXs GX-280-ZDD9 is the fastest GTX 280 card in the comparison.

NVIDIAs GeForce GTX 260 / GTX 260 216 core

Sledgehammer junior!

A notch lower is the GTX 260, which is a 192 SP part. It has 896 MB of GDDR3 RAM running at 2 GHz, and is fed by a 448-bit memory bus. Its core runs at a slightly lower 576 MHz (nearly identical as the old 8800GTX which ran at 575 MHz). With such on-paper specifications the GTX 260 is expected to be fast. A new addition to the GTX 260 family is the GTX 260 216 core edition. As the name suggests this part has 216 SPs instead of 192 SPs. Initially, we thought these were new 55nm parts, but they are based on the tried and tested 65nm fabrication process. Here's how NVIDIA gets 216 cores — a GTX 280 has its 240 SPs grouped into ten distinct clusters of 24 SPs each. This cluster is called a TPC or Texture/Processor Cluster. Disable two clusters and you get 192 SPs – a GTX 260. Disable one, and voila, you get 216 SPs. The best silicon yields birth GTX 280s, while the lower binned silicon produces GTX 260s. Incidentally the GTX 260 and the GTX 260 216 core are clocked identically.

Features

We managed to get a ZOTAC GTX 260^2 in our hands, which is basically based on the new 216 SP design. The other two GTX 260s were 192 SP based models, one each from XFX and ZOTAC. The ZOTAC card was their AMP! Edition, which signifies aggressive overclocks. This card was clocked at 650 MHz – a significant hike over 576 MHz. The XFX card ran at stock speeds. All cards were on reference NVIDIA coolers. XFXs GX-260N-ADF9 ships with *Assassins Creed* which is a popular game, while ZOTACs GTX 260 ships with *GRID*. The ZOTAC GTX 260^2 doesn't ship with any game as of now, but we're told this card is spanking new and the in all probability a game will be bundled with retail versions of this card.

Performance

In our opinion the GTX 260^2 closes the gap between the GTX 260 and the GTX 280, and this card responds to overclocking quite well. It can come quite close to a stock clocked GTX 280 in some of the tests with the core at around 650 MHz. We expected the extra 24 SPs on the ZOTAC GTX 260^2 to push it close to their GTX 260 AMP! Edition. This doesn't happen at stock speeds. It seems the GTX 260 architecture benefits a lot from core speed increments, and the ZOTAC GTX 260 AMP! Edition was ahead by some margin. XFX's offering, the GX-260N-ADF9 trailed by a good bit, mainly because it was set at stock speeds. Frames in *Crysis* dip dangerously southwards of the magic 30 fps mark, even at 1280 x 1024 — this game is a real GPU

hog — beware. In *UT3* we see the ZOTAC GTX 260^2 score equally at both resolutions, meaning that the 216 SPs are actually working wonders for NVIDIA, as the 192 SP versions of the GTX 260 both have a drop in fps at higher resolutions. Company of Heroes and S.T.A.L.K.E.R. are very playable — these cards will play most games at the highest available settings. Amongst the GTX 260s both the ZOTAC cards impress the most.

At identical prices of Rs 22,999 the ZOTAC GTX 260 AMP! Edition and the ZOTAC GTX 260^2 make very good buys for someone looking for a fast gaming solution that is likely to be future proof for around another year.

NVIDIA GeForce 9800 GX2

Fun x 2, ditto heat

The 9800GX 2 is a card that some of us feel should never have been born. Of course some of us feel the same way about the 9800GTX, which was wrongly touted as the new high-end part from NVIDIA, but that's history now. Instead NVIDIA should have launched the GTX 280, which is nearly as fast as the 9800 GX2 at times, and faster than it most of the time. Like the 7900 GX2, the 9800 GX2 is a double PCB card sheathed in a metal casing that also acts as a passive heatsink. Unfortunately the 9800 GX 2 is a very hot card, and the fact that both PCBs are less than an inch apart, ditto the 128 SPs that each of the two 9800 GTX cores sport. Sporting a whopping 256 SPs the 9800 GX2 is a powerful solution. It also gets 1 GB of RAM, 512 MB for each GPU. In terms of pricing the 9800 GX2 has experienced a 25 per cent drop in its original pricing. Despite this, it continues to be a slow seller for NVIDIA — the reason, it's a dual GPU solution that not everybody may want to use. The plus — you can enable SLI on this card without needing an SLI ready motherboard.

Features

We tested just three cards based on this chipset – two from ASUS, and a single card from XFX. While the other two were clocked at the NVIDIA-recommended 600 MHz the ASUS EN9800GX2 TOP was clocked at 670 MHz. This card ships in a huge box that includes a neat leather CD case and mousepad — something that ASUS ships with all its cards. Also bundled was a full version of *Company Of Heroes: Opposing Fronts*, which is a superb game. The plain jane ASUS EN9800GX2 also ships with the same game. We feel the choice of bundled game is as important as just giving a new game that nobody would want to play. All these cards sport the reference NVIDIA cooling assemblies (which we feel is woefully inadequate). Also integrated is an HDMI port, apart from the two regular DVI ports.

Performance

The 9800 GX2 is a very solid performer. Although it doesn't run away with all the accolades we'd like to point out the consistency of the results, which is something NVIDIA is to be commended for. This trio is the only one to consistently offer more than 30 fps on *Crysis*. *S.T.A.L.K.E.R.* still favours the more powerful GTX 280 at lower resolutions in particular. *Company Of Heroes* shows it is severe with multi GPU solutions and the 9800 GX2s get murdered by every other high-end card in this comparison — NVIDIA — fix your SLI drivers. All these cards are able to chew up *F.E.A.R.* and *World In Conflict* gives a consistent 35 fps — which doesn't say much other than our CPU being a bottleneck. The overclocked ASUS EN9800GX2 TOP is the only card to crack the 11,000 mark in 3D Mark Vantage — which proves its DX10 shading power. The 9800 GX2s are faster than the GTX 260s and ATI's HD 4870 cards and HD 3870 x2 cards. Only the Radeon HD 4870 x2s and the GTX 280s are faster. This being said, we feel that such dual GPU solutions are best avoided until application support is up to par.

We do not recommend investing in a 9800 GX2 based card now. There are two reasons for this. One, the GTX 280 is a much newer architecture, and is at par in terms with performance. Secondly this card generates a lot of heat, and the cooling needs special attention. Moreover multi GPU solutions don't always scale linearly in performance.

ATI Radeon HD 4870 x2

Born out of a indomitable obsession with being the fastest

Concieved out of two Radeon HD4870 GPU cores on a single PCB the HD 4870 x2 is a monster to be sure. It features 1600 SPs (800 from each 4870), and features an unheard of 2 GB of GDDR5 memory that operates at a whopping 3600 MHz. The phrase *gross overkill* comes to mind. AMD has gone all out with this one, and the 4870 x2 is supposed to do what the single GPU version couldn't — dethrone the mighty GTX 280, and restore ATI's place at the helm of the 3D performance realm – a position it hasn't properly regained after its now ancient 9800 Pro cards. This card looks very similar to the earlier Radeon HD3870 x2, but it's slightly lighter, and a hell-of-a-lot lot faster. The 4870 x2 is a very hot card, a little hotter than NVIDIAs 9800 GX2s and the power requirements of this card are astronomical — the card will consume close to 300 watts while on full load.

Features

The only 4870 x2 we got was from ATI itself. This card is also available from ATI vendors like GeCube, ASUS, Sapphire and VisionTek. Each of the two cores is clocked at a super fast 750 MHz, and the memory runs at a superlative 3,600 MHz. The card itself has no HDMI port, and ATI chose not to provide an adapter – but this was a review sample only. The card itself looks very long and sleek, and is built well. The heatsink extends to the rear side of the card. This aids dissipation in our opinion.

Performance

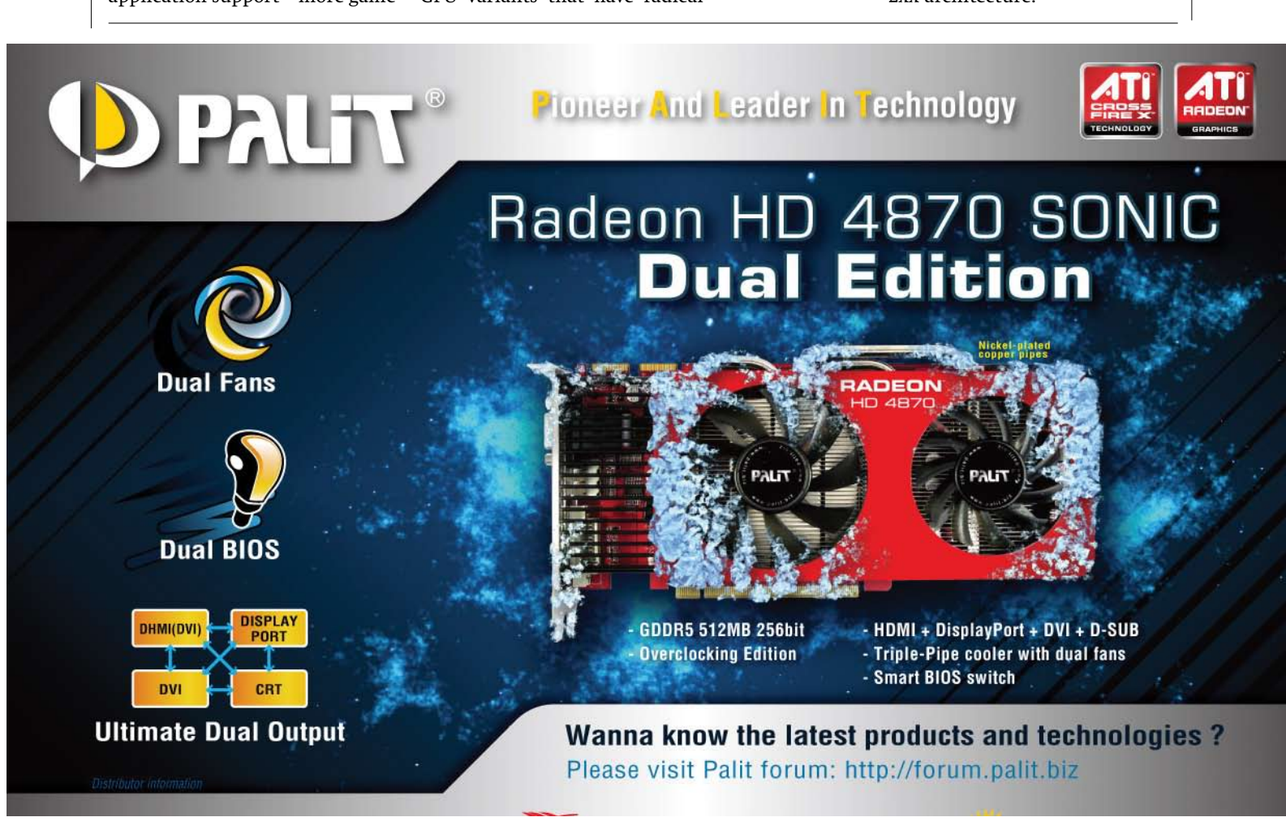
The 4870 x2 is very fast, but the usual issues with CrossFire support throughout applications resurfaces. It demolishes all the GTX 280s in *Crysis*, and manages an excellent 31 fps with all DX10 effects set to maximum. *S.T.A.L.K.E.R.* is another benchmark that is a runaway ATI victory with this card. *Company Of Heroes* doesn't scale with multi GPU solutions (as usual) and the 4870 x2 gets a blemish on its (until now) spotless scorecard. If it's any consolation it outpaces NVIDIAs dual GPU offerings by a wide margin, but cannot match the GTX 260 / 280 duo. *F.E.A.R.* also doesn't do much for CrossFire solutions and this card languishes behind even its single-GPU stable mates.

We feel the 4870 x2 has a lot of potential, but there are a couple of issues. The first is application support – more game developers need to add proper CrossFire support in their games. This card is a mixed bag. It's very fast at times, and abysmally slow at other times – ATI needs more consistency here. We'd also like to point out the heating issues – this is a hot card that will likely fry in our summers. If only ATI could get 1600 SPs on a single GPU core...

ATI Radeon HD 4870

The giant killer

ATI's new HD4870 could well be a poster child for a comeback advertisement. Let's face it — its GPU fortunes have been dwindling since AMD took it over. NVIDIA enjoyed winning products across the high-end and mid-range spectrums, as well as some great entry level offerings. Enter the core AMD labelled the RV770 — which has spawned two GPU variants that have radically changed what we expect to pay for a fast graphics card. The HD4870 is a high-end part that is priced as a mid-range offering. It consists of an 800 SP based GPU — which is a huge hike considering its 3870 had just 320 SPs. Although a direct comparison between ATI's 800 SPs and NVIDIAs 240 SPs is impossible due to differences between their SP architectures, the HD4870 is a step in the right direction for ATI. The best thing is it doesn't cost you much and here's why — it's built on a cost saving 55nm process, ATI also simplified the PCB by sticking to a 256-bit memory interface. What it did was to slap on shiny new GDDR5 memory, which itself is a very new, and as yet untested standard, which pioneers like Samsung and Qimonda are pushing. Therefore ATI can cut costs much more effectively than NVIDIA can with its GTX 2xx architecture.



Features

ASUS and Palit were the two ATI vendors who sent us their HD4870 offerings. Both were overclocked over the 750 MHz that ATI recommends as a stock speed. The Palit HD 4870 SONICs core is clocked at 775 MHz while the memory runs at the recommended speed i.e. 3,600 MHz. Palit uses a custom cooler — it features two heatpipes, and two fans — we feel this cooler is much more efficient than ATI's stock cooler, and looks good too. This card ran cooler than the ASUS EAH 4870 TOP, which was overclocked to a whopping 825 MHz. Palit's bundle was sparse with the usual power connectors and an S-Video cable. ASUS includes the usual goodies in the form of a leather mousepad and CD pouch, but no games. Both vendors include an HDMI adapter.

Performance

Shockingly both 4870s hold their own against the GTX 280s in *Crysis* — a very, very good result for ATI — since this game engine is very new, and is likely to be indicative of future performance for DX10 games. UT 3 proves to be CPU limited on these cards, although they cannot match the GTX 2xx family. Both these cards also perform well in Company Of Heroes, and manage to outperform even the HD4870 x2. However the GTX 280 and GTX 260 are still too tough a proposition to tackle. World In Conflict and *F.E.A.R* are easy for these cards although they are slower than NVIDIAs offerings in the high-end segment. But the most shocking factor for us was the price — these cards are nearly 50 per cent cheaper than the GTX 280s and close to 15 per cent cheaper than the GTX 260 cards. When you consider this the HD 4870 makes a very good buy for someone looking at a very fast card for under the Rs 20,000 mark. Palit's HD 4870 SONIC is just superbly priced at an MRP of Rs 17,900 — you might get it even cheaper in the market.

ATI Radeon HD 3870 x2

No V8 this

One of the biggest mistakes a competitor can make is to react to a competing product with something that is half baked. ATI needed something to counter the G80 and all its variants which not only ate into its sales but also established itself as the benchmark for DX10 graphics cards. The Radeon HD3870 was touted as an 8800 GTX killer, but even 320 SPs seemed unable to counter the solid across-the-board performance that NVIDIA was getting with its cards. The HD3870 x2 was born out of desperation and as any birthing under such circumstances it was a stop gap at best, a drastic failure at worst. This was however, ATI's first multi-GPU card since awhile, and it paved the way for the mighty HD 4870 x2. With 640 SPs the 3870 x2 seemed to be unbeatable on paper. It also sported GDDR4 memory, which was the second time ATI went with this largely discarded memory standard — the X1950XTX being the only other GDDR4 sporting graphics card around. NVIDIA hasn't touched GDDR4 thus far, and isn't likely to either. The HD3870 x2 had 1 GB of GDDR4 clocked at 2.0 GHz, and it was a CrossFire solution that didn't need a CrossFire motherboard — it worked just fine with a single PCIe slot.

Features

ASUS sent us a very fancy looking version of the 3870 x2 called the EAH 3870 x2. Basically, this card had four DVI ports instead of the normal two, and sported a very different looking cooler which is much lighter than the stock ATI cooler, and has two fans instead of one. The other card was from Sapphire. This card was based around a stock ATI cooling design. Both cards came clocked at 825 MHz for each core – this also ensures these cards stay toasty throughout our tests, and the Sapphire HD 3870 x2 also ran hot throughout the tests. In fact this card heated within five minutes of booting into Windows Vista. The ASUS card was cooler by an aggregate of 15 degrees, which suggests that ASUS' cooler is really a godsent for users. ASUS provided the usual accessories — a leather CD pouch and a mousepad, also bundled was an HDMI adapter, and Component and S-Video connectors. *Company Of Heroes* is a older game, but we'll give ASUS a plus for bundling one of our all time favourites. The Sapphire card didn't have any games, although an HDMI adapter and the usual S-Video cables were bundled.

Performance

In terms of fps the 3870 x2 isn't too hot. It does manage to outpace the newer HD 4870 cards but only in one game - *S.T.A.L.K.E.R.*, and this isn't too indicative of performance. The fact that a single GPU HD 4870 is able to thrash it by a good margin in all of the games including taxing ones like *Crysis*, *Company Of Heroes* and *World In Conflict*, not to mention 3D Mark Vantage, showcases the shortcomings of the Radeon 3870 architecture. It's equally incomparable to the GTX 2xx series, which simply massacre it. Stay away from both these cards — they are simply obsolete — there's no other word for it.

Mid Range GPUs	NVIDIA 9800 GTX+	NVIDIA 9800 GTX	NVIDIA 9800 GT	NVIDIA 8800 GT	ATI HD 4850	ATI 3870
Stream Processors	128	128	112	112	800	320
Texture Addressing / Filtering	64 / 64	64 / 64	56 / 56	56 / 56	40	16
ROPs	16	16	16	16	16	16
Core Clock Speed (MHz)	738	675	600	600	625	775
Memory Bus Width (bits)	256	256	256	256	256	256
Memory Frequency (MHz)	2200	2200	2000	1800	1986	2250
Memory Type	GDDR3	GDDR3	GDDR3	GDDR3	GDDR3	GDDR4
Amount of memory (MB)	512	512	512	512	512	512

The Grand Finale

All the GTX 280s are any gamers dream tool to wreak some serious fps (no pun!) damage. The XFX GX-280-ZDD9 was officially the fastest card around — based around the GTX 280 architecture this card is blazingly fast. It gets our coveted *Best Performance* award. But at Rs 45,000 it's not necessarily the best card around to buy. Our *Digit Best Value* offering was the superb Palit HD 4870 SONIC — with superb performance, a great cooler and a price tag of Rs 17,900 this card is your best bet for an under-Rs 20,000, high-end gaming setup. The fact that is close on the heels of the much costlier GTX 280 based cards is in itself a huge plus for it and this in itself is a compelling reason to buy one.

Mid-range Graphics Cards

The mid range has always been more exciting for most of us than the previous category for one reason. It's much better to see and use cards that you can actually afford than playing with costly stuff you know you can never buy. Most of our readers would also be more interested in this category. These cards are more general purpose; after all nobody would buy a Rs 30,000 plus costing, 240 SP, GTX 280-based card for an HTPC. But a mid-range card priced around the Rs 10,000 mark is a sweet deal — you can play all your games at medium resolutions with high levels of detail, plus these cards are very suitable for powerful HTPCs, not to mention they consume much less power and generate less heat.

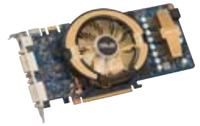
We were surprised to see the prices of the NVIDIA 9800GTX crash to the extent of bringing it falling headlong into this category — if this test were conducted in May these cards would be in the high-end category. The most interesting entrants in this category are the very new NVIDIA GeForce 9800GT cards, which are 65nm replacements of NVIDIAs best selling GeForce 8800GT cards. Equally appealing is the new ATI Radeon HD4850, which has come from nowhere and taken top position in terms of performance. The mouth watering prices of these cards have to be seen to be believed.

NVIDIA GeForce 9800 GTX / 9800 GT / 8800 GT

The new mid range

The 9800 GTX isn't a new GPU — it's been around for a few months. Touted as the replacement for the mighty 8800 GTX, this GPU wasn't close to the G80 in terms of architecture, as NVIDIA had applied a lot of cost cutting measures. It claimed the 384-bit memory bus on the 8800 GTX was doing nothing for

Mid-Range Graphics Cards

Brand Card Model Name	ASUS EN 9800 GTX TOP	MSI N9800GTX PLUS-T2D512-OC	SPARKLE GEFORCE 9800GTX+	XFX PV-T98W-YDQH	XFX PV-T98F-YDF8	Zotac 9800 GTX+ AMP EDITION	Zotac 9800 GTX AMP EDITION	ASUS EN 9800GT HYBRID POWER	EVGA e-GeForce 9800GT
									
GPU Name	GeForce 9800 GTX+	GeForce 9800 GTX+	GeForce 9800 GTX+	GeForce 9800 GTX+	GeForce 9800 GTX	GeForce 9800 GTX+	GeForce 9800 GTX	GeForce 9800 GT	GeForce 9800 GT
Price (Rupees)	13,650	13,520	12,500	15,500	14,500	11,555	10,555	10,175	9,600
Grand Totals (Out of 100)	71.46	71.52	70.31	68.07	70.08	72.63	76.00	56.37	59.84
Features (Out of 20)	8.00	8.00	8.00	8.00	12.00	11.00	12.00	8.00	8.00
Performance (Out of 80)	63.46	63.52	62.31	60.07	58.08	61.63	64.00	48.37	51.84
Features									
Core Speed	756 MHz	756 MHz	740 MHz	765 MHz	675 MHz	756 MHz	756 MHz	650 MHz	650 MHz
Memory Speed	2350 MHz	2300 MHz	2200 MHz	2200 MHz	2200 MHz	2300 MHz	2300 MHz	1900 MHz	1900 MHz
No Of Stream Processors	128	128	128	128	128	128	128	112	112
VRAM Type	GDDR3	GDDR3	GDDR3	GDDR3	GDDR3	GDDR3	GDDR3	GDDR3	GDDR3
Amount of VRAM (In Megabytes)	512	512	512	512	512	512	512	512	512
Memory Bus Width (In Bits)	256	256	256	256	256	256	256	256	256
GPU Fabrication Process	65nm	65nm	65nm	65nm	65nm	65nm	65nm	55nm	65nm
No of DVI Ports	2	2	2	2	2	2	2	2	2
Dual Monitor Support (Y/N)	✔	✔	✔	✔	✔	✔	✔	✔	✔
HDMI (Y/N)	✖	✖	✖	✖	✖	✖	✖	✖	✖
Accessory / Connector Bundle	4 to 6 pin power connect, DVI-VGA converter, S-Video cable, CD pouch + mousepad	4 to 6 pin power connect, HDMI converter, S-Video cable	4 to 6 pin power connect, DVI TO VGA converters, S-Video cable	4 to 6 pin power connect, DVI TO VGA converters, S-Video cable	4 to 6 pin power connect, S-Video cable, DVI to VGA converter	4 to 6 pin power connect, HDMI converter, S-Video cable	4 to 6 pin power connect, HDMI converter, S-Video cable	4 to 6 pin power connect, DVI-VGA converter, S-Video cable, CD pouch + mousepad	4 to 6 pin power connect, DVI TO VGA converters, S-Video cable
Game Bundle	NA	NA	NA	NA	Company Of Heroes	XIIth Century Death Or Glory	Lost	NA	NA
Performance									
Crysis									
1600 x 1200 (Max Detail, 4x AA)	19.66	20.28	20.5	20.18	18.78	20.34	19.93	15	16.4
1280 x 1024 (Max Detail, 4x AA)	32.46	27.98	27.92	27.54	25.71	27.89	32.83	21.19	22.55
Unreal Tournament 3 (Deimos)									
1280 x 1024 (8 xAF, 4x AA, Max Detail)	104	96	99	105	102	103	102	98	98
1600 x 1200 (8x AF, 4x AA, Max Detail)	93	96	95	93	89	93	93	77	81
S.T.A.L.K.E.R. Shadow of Chernobyl									
1280 x 1024 (4xAF, 4x AA, Max Detail)	151.54	155.96	150.7	146.84	139.5	149.73	151.27	117.8	125.43
1600 x 1200 (4x AF, 4x AA, Max Detail)	117.88	120.9	115.31	115.99	108.7	117.1	117.39	91.47	98.09
Company of Heroes: Opposing Fronts									
1680 x 1050 (4x AF, 4x AA, Max Detail)	122.2	124.3	112.5	124.9	112.5	112.6	123.8	94.8	103.5
World In Conflict									
1280 x 1024 (4x AF, 4x AA, Max Detail)	31	32	31	25	30	32	31	26	28
1600 x 1200 (4x AF, 4x AA, Max Detail)	26	28	27	26	25	25	27	21	22
F.E.A.R (Avg fps)									
1600 x 1200 (4x AA, 8x AF, Max Detail)	88	90	87	85	80	86	86	66	71
3D Mark Vantage (GPU Score)	6197	6543	6321	6045	5682	6166	6184	4731	5103

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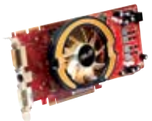
Mid-Range Graphics Cards

Brand Card Model Name	GIGABYTE GC-N98TZL-512H	GIGABYTE GC-N98TZL-1GH	PALIT 9800GT	ZOTAC 9800GT AMP! Edition	ASUS EN8800GT TOP	GE CUBE HD 4850	ASUS HD 4850 TOP	PALIT HD4850	ASUS EN 3870	Sapphire HD3870 512MB
										
GPU Name	GeForce 9800 GT	GeForce 9800 GT	GeForce 9800 GT	GeForce 9800 GT	GeForce 8800 GT	Radeon HD 4850	Radeon HD 4850	Radeon HD 4850	Radeon HD 3870	Radeon HD 3870
Price (Rupees)	13,900	15,500	8,250	9,990	14,490	10,900	14,400	9,950	9,825	7,900
Grand Totals (Out of 100)	58.44	57.75	58.27	69.27	68.64	68.14	72.62	68.94	52.41	50.31
Features (Out of 20)	8.00	8.00	8.00	13.00	13.00	10.00	10.00	10.00	10.00	8.00
Performance (Out of 80)	50.44	49.75	50.27	56.27	55.64	58.14	62.62	58.94	42.41	42.31
Features										
Core Speed	600 MHz	600 MHz	600 MHz	700 MHz	700 MHz	625 MHz	675 MHz	625 MHz	776 MHz	776 MHz
Memory Speed	1800 MHz	1800 MHz	1800 MHz	2000 MHz	2000 MHz	1986 MHz	2100 MHz	1986 MHz	2250 MHz	2250 MHz
No Of Stream Processors	112	112	112	112	112	800	800	800	320	320
VRAM Type	GDDR3	GDDR3	GDDR3	GDDR3	GDDR3	GDDR3	GDDR3	GDDR3	GDDR4	GDDR4
Amount of VRAM (In Megabytes)	512	1GB	1GB	512	512	512	512	512	512	512
Memory Bus Width (In Bits)	256	256	256	256	256	256	256	256	256	256
GPU Fabrication Process	65nm	65nm	65nm	65nm	80nm	55nm	55nm	55nm	55nm	55nm
No of DVI Ports	2	2	2	2	2	2	2	2	2	2
Dual Monitor Support (Y/N)	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
HDMI (Y/N)	✖	✖	✖	✔ (adapter)	✖	✔ (adapter)	✔ (adapter)	✔ (adapter)	✔ (adapter)	✖
Accessory / Connector Bundle	4 to 6 pin power connect, DVI TO VGA converters , HDMI converter, S-Video cable	4 to 6 pin power connect, DVI TO VGA converters, HDMI CONVERTER, S-Video cable	4 to 6 pin power connector, DVI TO VGA converter	HDMI adapter, Component cable, 6 pin to dual 4 pin splitter cable	4 to 6 pin power connect, DVI-VGA converter, S-Video cable, CD pouch + mousepad	4 to 6 pin power connector, DVI TO VGA converter	4 to 6 pin power connect, DVI-VGA converter, S-Video cable, CD pouch + mousepad	4 to 6 pin power connector, DVI TO VGA converter	4 to 6 pin power connect, DVI-VGA converter, S-Video cable, CD pouch + mousepad	S-Video to component adapter, 4 pin power adapter, DVI to D-Sub adapter
Game Bundle	NA	NA	NA	XIIth Century Death Or Glory	Company Of Heroes: Opposing Fronts	NA	NA	NA	NA	NA
Performance										
Crysis										
1600 x 1200 (Max Detail, 4x AA)	15.54	15.56	15.54	17.83	16.45	18.83	20.31	19.01	14.53	14.45
1280 x 1024 (Max Detail, 4x AA)	21.98	21.75	21.96	24.3	23.85	25.54	27.42	25.8	19.67	19.61
Unreal Tournament 3 (Deimos)										
1280 x 1024 (8 xAF, 4x AA, Max Detail)	91	97	93	97	99	91	89	83	84	81
1600 x 1200 (8x AF, 4x AA, Max Detail)	80	79	80	84	84	81	86	84	73	72
S.T.A.L.K.E.R. Shadow of Chernobyl										
1280 x 1024 (4xAF, 4x AA, Max Detail)	122.83	121.75	123.29	137.6	134.3	86	117.26	106.7	89	88.2
1600 x 1200 (4x AF, 4x AA, Max Detail)	94.48	93.95	96.04	107.52	111.2	86.9	93.89	87.94	70.76	71.03
Company of Heroes: Opposing Fronts										
1680 x 1050 (4x AF, 4x AA, Max Detail)	94.6	95.3	95	113.6	116.3	96.8	107.6	103	69	69.9
World In Conflict										
1280 x 1024 (4x AF, 4x AA, Max Detail)	27	27	28	30	31	32	33	31	21	21
1600 x 1200 (4x AF, 4x AA, Max Detail)	23	22	23	25	25	28	29	28	17	17
F.E.A.R (Avg fps)										
1600 x 1200 (4x AA, 8x AF, Max Detail)	71	68	68	79	80	90	97	91	60	61
3D Mark Vantage (GPU Score)	4989	4758	4743	5452	5724	6597	7200	6645	4245	4214

performance and dropped it in favour of a regular 256-bit memory bus. The 128 SPs were still present, but the new card was something of a sterilised stud with the ancient 8800 GTX still defeating it in most benchmarks. The big attraction was the price. While the 90nm G80 was still commanding a price of Rs 28,000 or so, the 9800 GTX debuted at a price of Rs 25,000, and has constantly fallen. Today, cards based on this chipset can be purchased for as low as Rs 11,000, making the 9800 GTX a perfect candidate for a good gaming setup for those with shallow pockets.

There are also some cards with a *plus* "+" as a suffix. NVIDIA chose this rather confusing name to designate the newer 55nm parts — after all it needed a scapegoat to test the functionality of the 55nm fab, before moving its costlier parts (like the GTX 2xx series) to this process — thus the 9800 GTX+ was born. Being a smaller fab, NVIDIA ramped up clock speeds keeping the same thermal envelopes – the 9800 GTX+ runs at a core speed of 738 MHz, while the 9800 GTX runs at a speed of 675 MHz.

The GeForce 9800 GT is a 55/65nm part, and features the same 112 SPs that the 8800 GT had. The sweetener to an already sugary pie is the price — this card's based on the GPU retail price tag of Rs 9,000 or thereabouts. It adds support for hybrid power saving. What this means is that the GPU can be shut down totally on a GeForce motherboard thereby saving power, and then the onboard graphics will take over. While gaming, you can switch to the GPU. Hybrid SLI is also possible — where the onboard GPU also contributes to the graphics card's processing power, although this obviously only works with combinations of NVIDIA cards and motherboards.

The 8800 GT is the old man in this collection of GPUs. It was a lower variant of the G80 core, featuring 112 SPs and a 256-bit bus. It is built around an older 80nm fabrication process.

Zotac 9800 GTX AMP! EDITION

Features

There were seven 9800 GTX cards in this comparison, out of which five were the plus versions i.e. 9800 GTX+. An oddity was that the *GPU-Z* — a utility which gives complete information about your graphics card specifications and features — showed the 9800 GTX+ cards as 65nm versions. We are not sure if there are two versions of these GPUs, but according to NVIDIA's own information the 9800 GTX+ is a 55nm part. Whether it's a 55nm only part is unclear. This aside, all the 9800 GTXs in our test had stock NVIDIA coolers, and most were heavily overclocked as well, the highest overclocked part being the XFX PV-T98W-YDQH which was clocked at 765 MHz on the core. All these brands provide a full connector bundle, except the XFX PV-T98F-YDF8 which missed out on component and S-Video connectors. Sad to say only XFX and ZOTAC bothered to provide any games — the ZOTAC 9800 GTX AMP! Edition came bundled with Lost, while the Plus version came with XIIth Century Death Or Glory. XFX provided Company Of Heroes, while also including a disk which contained the DX10 patch for the game — we found this really neat.

There were six 9800 GT based cards, out of which ASUS' offering was the only 55nm version according to GPU-Z. Gigabyte and Palit offered 1 GB versions, while the rest made do with 512 MB. ASUS' EN 9800 GT HYBRID POWER was factory overclocked to 650 MHz (600 MHz default), while ZOTACs GeForce 9800 GT AMP! Edition was overclocked to a superb 700 MHz, giving this card at least a theoretical advantage in terms of performance. ZOTAC's offering was titled *Limited Edition*. We're told the special orange coloured PCB used is a ten-layer one, as opposed to an eight-layer design used on other cards. This ensures that this card is more stable while overclocking and probably improves the life of the card as well, contributing to its build quality. When looking at the prices of the 9800 GT cards we realise that NVIDIA is serious about causing a stir in the mid-range segment by introducing products at entry level prices. The Palit 9800 GT is priced at *just* Rs 8,250 which, for a 1 GB card is pretty good value. EVGA's 9800 GT has perhaps one of the best looking stickers we've seen a 9800GT, and its card stands out, even though it sports a reference NVIDIA cooler. Priced at Rs 9,600 the EVGA e-GeForce 9800 GT is also very well priced. Gigabyte's 9800GTs are a little too expensive, even more so than some of the 9800 GTX cards. ZOTAC was the only brand among the 9800 GT vendors to bundle a game — XIIth Century Death Or Glory. The EN8800 GT TOP sports an

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High-End Graphics Cards

Brand Card Model Name	ASUS ENGTX280TOP	POV GFGTX280	XFX GX-280-ZDD9	ZOTAC GTX 280 AMP! Edition	XFX GX-260N-ADF9	ZOTAC GTX 260 AMP! Edition	ZOTAC GTX 260^2	ASUS EN9800GX2 TOP	ASUS EN9800GX2
GPU Name	GeForce GTX 280	GeForce GTX 280	GeForce GTX 280	GeForce GTX 280	GeForce GTX 260	GeForce GTX 260	GeForce GTX 260 216 Core	GeForce 9800 GX2	GeForce 9800 GX2
Price (Rupees)	34,725	31,000	45,000	34,999	27,500	22,999	22,999	33,600	30,800
Grand Totals (Out of 100)	69.91	70.64	71.90	74.64	63.79	70.64	64.85	75.44	71.89
Features (Out of 18)	6.3	8.1	6.3	10.8	9.9	11.7	8.1	10.8	10.8
Performance (Out of 82)	63.61	62.54	65.60	63.84	53.89	58.94	56.75	64.64	61.09
Features									
Core Speed	670 MHz	602 MHz	670 MHz	670 MHz	576 MHz	650 MHz	576 MHz	670 MHz	600 MHz
Memory Speed	2430 MHz	2214 MHz	2430 MHz	2430 MHz	1998 MHz	2100 MHz	1998 MHz	2260 MHz	2260 MHz
No Of Stream Processors	240	240	240	240	192	192	216	128 x 2	128 x 2
VRAM Type	GDDR3	GDDR3	GDDR3	GDDR3	GDDR3	GDDR3	GDDR3	GDDR3	GDDR3
Amount of VRAM (In Megabytes)	1024 MB	1024 MB	1024 MB	1024 MB	896 MB	896 MB	896 MB	1024 MB	1024 MB
Memory Bus Width (In Bits)	512 bit	512 bit	512 bit	512 bit	448 bit	448 bit	448 bit	256	256
GPU Fabrication Process	65nm	65nm	65nm	65nm	65nm	65nm	65nm	65nm	65nm
No of DVI Ports	2	2	2	2	2	2	2	2	2
Dual Monitor Support (Y/N)	✔	✔	✔	✔	✔	✔	✔	✔	✔
HDMI (Y/N)	✖	✔ (adapter)	✖	✔ (adapter)	✖	✔ (adapter)	✔	✔	✔
Accessory / Connector Bundle	4 to 6 pin power connect, HDMI converter, S-Video cable, Component Cable	4 to 6 pin power connect, HDMI converter, S-Video cable	4 to 6 pin power connect, HDMI converter, S-Video cable	4 to 6 pin power connect, HDMI converter, S-Video cable	4 to 6 pin power connect, HDMI converter, S-Video cable	4 to 6 pin power connect, HDMI converter, S-Video cable	4 to 6 pin power connect, HDMI converter, S-Video cable	4 to 6 pin power connect	4 to 6 pin power connect
Game Bundle	NA	NA	NA	GRID	Assassins Creed	GRID	NA	COH Opposing Fronts	COH Opposing Fronts
Performance									
Crysis									
1600 x 1200 (Max Detail, 4x AA)	24.6	25.4	25.3	24.5	20.97	23.6	22.16	33.5	30.1
1280 x 1024 (Max Detail, 4x AA)	34.5	32.92	36.1	33.2	28.1	30.94	29.74	41.38	39.33
Unreal Tournament 3 (Deimos)									
1920 x 1200 (8 xAF, 4x AA, Max Detail)	91	98	99	101	91	88	96	105	94
1600 x 1200 (8x AF, 4x AA, Max Detail)	99	100	92	101	96	97	96	95	95
S.T.A.L.K.E.R. Shadow of Chernobyl									
1920 x 1440 (4xAF, 4x AA, Max Detail)	133.2	123.2	133.5	133.2	101.2	111.5	105.3	133.67	127.65
1600 x 1200 (4x AF, 4x AA, Max Detail)	168.3	154.2	169.9	168	130.9	143.2	136.8	160.7	156.2
Company of Heroes: Opposing Fronts									
1920 x 1200 (4x AF, 4x AA, Max Detail)	149.2	137.3	153.2	147.1	118.3	131.7	125.9	59.2	58
World In Conflict									
1920 x 1200 (4x AF, 4x AA, Max Detail)	33	34	35	34	31	33	32	34	33
1600 x 1200 (4x AF, 4x AA, Max Detail)	34	34	35	35	32	35	34	35	34
F.E.A.R (Avg fps)									
1920 x 1440 (4x AA, 8x AF, Max Detail)	116	108	119	119	88	98	92	113	101
3D Mark Vantage (GPU Score)	10864	9825	10956	10708	7821	8640	8387	11095	10217

attractive Company Of Heroes sticker on the heatsink. This card is bundled with the same game with whichit is branded, and comes with a hefty factory core overclock of 100 MHz (the core runs at 700 MHz).

Performance

The GeForce 9800 GTXs are faster than both the 9800 GT and the 8800 GT GPUs, a fact which is obvious from the 12 extra SPs and higher core clocks. The ZOTAC 9800 GT AMP! Edition was very fast and neck and neck with ASUS' EN9800 GTX TOP, MSIs N9800 GTX PLUS-T2D512-OC, the latter led the 3D Mark Vantage score by a decent margin of around 300 points. Priced at Rs 10,555 the ZOTAC 9800 GTX AMP! Edition makes a superb buy for anyone looking at a fast, yet cheap card. Shockingly it's faster than its 9800 GTX+ based sibling. The other 9800 GTX cards seem slightly overpriced in comparison to this superb offering.

Among the 9800 GTs ZOTAC's 9800 GT AMP! Edition and EVGAs e-GeForce 9800 GT impressed most, although the former was slightly faster, owing to a higher overclock. ASUS' EN8800 GT also does a commendable job of showcasing speed, and beats both these newer cards — a great result for the company, although it's much costlier. The cheapest 9800 GT, the Palit 9800 GT couldn't hold its own, and we recommend ZOTAC's offering at just Rs 9,990,

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High-End Graphics Cards

Brand Card Model Name	XFX PV-T98UZHF9	ATI Radeon 4870 X2	ASUS EAH 4870 TOP	PALIT HD 4870 SONIC	ASUS EAH 3870X2	Sapphire HD3870 X2
GPU Name	GeForce 9800 GX2	Radeon HD4870 x2	Radeon HD 4870	Radeon HD 4870	Radeon HD3870 x2	Radeon HD3870 x2
Price (Rupees)	34,500	29,950	21,400	17,900	21,750	24,000
Grand Totals (Out of 100)	72.71	65.50	66.11	62.96	56.10	51.53
Features (Out of 18)	10.8	6.3	8.1	8.1	11.7	8.1
Performance (Out of 82)	61.91	59.20	58.01	54.86	44.40	43.43
Features						
Core Speed	600 MHz	750 MHz	815 MHz	775 MHz	825 MHz	825 MHz
Memory Speed	2000 MHz	3600 MHz	1850 MHz	4000 MHz	1800 MHz	1800 MHz
No Of Stream Processors	128 x 2	800 X2	800	800	320 x 2	320 x 2
VRAM Type	GDDR3	GDDR5	GDDR5	GDDR5	GDDR4	GDDR4
Amount of VRAM (In Megabytes)	1024 MB	2048MB	512MB	512MB	1024 MB	1024 MB
Memory Bus Width (In Bits)	256	256	256	256	256 bit	256 bit
GPU Fabrication Process	65nm	55nm	55nm	55nm	55nm	55nm
No of DVI Ports	2	2	2	2	4	2
Dual Monitor Support (Y/N)	✔	✔	✔	✔	✔	✔
HDMI (Y/N)	✔	✖	✔ (adapter)	✔ (adapter)	✔ (adapter)	✖
Accessory / Connector Bundle	4 to 6 pin power converter	✖	4 to 6 pin power connect, HDMI converter, S-Video cable	4 to 6 pin power connect, HDMI converter, S-Video cable	4 to 6 pin power connector, DVI TO VGA converter	4 to 6 pin power connector, DVI TO VGA converter
Game Bundle	Company Of Heroes	✖	✖	✖	Company Of Heroes	✖
Performance						
Crysis						
1600 x 1200 (Max Detail, 4x AA)	30.64	31.9	25.61	24.64	18.23	17.24
1280 x 1024 (Max Detail, 4x AA)	40.49	33.73	33.46	32.06	22.1	20.1
Unreal Tournament 3 (Deimos)						
1920 x 1200 (8 xAF, 4x AA, Max Detail)	95	81	90	86	75	77
1600 x 1200 (8x AF, 4x AA, Max Detail)	96	89	89	83	80	79
S.T.A.L.K.E.R. Shadow of Chernobyl						
1920 x 1440 (4xAF, 4x AA, Max Detail)	128.92	152.15	94.03	89.3	95.43	96.5
1600 x 1200 (4x AF, 4x AA, Max Detail)	156.48	171.4	117.12	116.58	129.3	129.24
Company of Heroes: Opposing Fronts						
1920 x 1200 (4x AF, 4x AA, Max Detail)	58	90.2	104.5	97.2	86.9	87.8
World In Conflict						
1920 x 1200 (4x AF, 4x AA, Max Detail)	34	25	29	28	24	25
1600 x 1200 (4x AF, 4x AA, Max Detail)	34	30	34	33	29	29
F.E.A.R (Avg fps)						
1920 x 1440 (4x AA, 8x AF, Max Detail)	102	84	96	73	86	87
3D Mark Vantage (GPU Score)	10227	10623	9082	8824	5456	5626

or the EVGA e-GeForce 9800 GT priced at Rs 9,600.

ATI Radeon HD 4850

The shockingly fast newcomer

ATI has a winner of a card on its hands with the HD 4850. Based on the same RV770 architecture as the HD 4870, this one makes do with GDDR3 RAM, and has the same 800 SPs, albeit at lower clock speeds. These are 55nm cards, so ATI decided to go with a single slot cooler. Big mistake! The HD 4850 generates a lot of heat, and we've seen core temperatures ride up to 90 degrees on load, with our air conditioning switched on. It seems there is a driver bug where the fan will not run at more than 30 per cent of its maximum speed, and this causes the card to heat up. There is a driver hack which solves this, but we're not impressed. A graphics card is supposed to be a complete solution, and as with any finished product, you go to market with such glitches ironed out,

or address the issues later in drivers. Keeping silent doesn't solve the issue, and refusing to acknowledge it is downright dumb. Just how many users will be geeky enough to install a patch for rectifying this issue is left to be seen. We feel ATI is being extremely lazy here.

Features

Two of the HD 4850s we received used a reference ATI cooler. The Palit HD 4850 had a custom cooler, consisting of an attractive heatsink with a large fan plonked in the middle. This card ran at least 18 degrees cooler throughout the testing, which proves how much additional cooling is needed for this card. Please note that designing inadequate or flawed cooling solutions isn't just an ATI issue, their green counterparts are guilty of the same too. The ASUS EAH 4850 TOP was overclocked to 675 MHz, while Palit and GeCube chose to run their cards at the default recommended clock, i.e. 645 MHz. Bear in mind that the Palit card should have a good overclock potential because of the custom cooler. None of these cards came bundled with any games — sad. All came with DVI to HDMI adapters — an HTPCs builders dream come true – if only they didn't get so hot...

Performance

The overclock from ASUS allows its card to sail ahead of the other HD4850s although the margin is only wide under S.T.A.L.K.E.R. and 3D Mark Vantage; mind you, Crysis does give an extra couple of fps at maximum settings. Even Company Of Heroes benefits from the higher clock speeds by a decent amount. We were interested to see how these cards performed in comparison to their HD4870 siblings, but with a core speed advantage of more than 125 MHz, and ultra speedy GDDR5, the HD4850 cannot match up to its costlier sibling.

When it comes to pricing, ASUS charges a lot for five per ent more performance — its card is a whopping 30 per cent costlier than the Palit HD4850 at Rs 14,400. At Rs 9,950, the Palit is the cheapest HD4850 card available.

ATI Radeon HD3870

When old isn't gold

Once a proud upstart hoping to dethrone the 8800 GTX, the HD 3870 now finds itself languishing at the bottom of an bottomless pit that we know as obsolesce. With a 775 MHz core, 512 MB of GDDR4 memory, and 320 SPs, the HD 3870 just didn't cut the mustard when it came to performance.

Features

Two vendors had 3870s to send us — ASUS and Sapphire. Both of these cards were stock clocked, and both came with identical bundles, except that ASUS gives away leather PC pouches and a mousepad with every graphics card. Unlike the 4850, no HDMI adapters are included. No game bundles either.

Performance

Needless to say, with identical specifications both these cards performed nearly identically. There's absolutely nothing to choose between them, except that that the Sapphire HD3870 512 MB is priced at Rs 7,900. Even this isn't enough to justify a purchase, since the Palit GeForce 9800GT at Rs 8,250 makes a much stronger case for itself.

The Grand Finale

One card caught our attention and continued to hold it throughout the mid-range category test. The ZOTAC 9800 GTX AMP! Edition was the best performer in this category. It's superb price of Rs 10,555 puts it in a price league with cards that offer a fraction of the performance. In fact, just a handful of cards were cheaper, and performed much lower than this one. A unanimous result — both our Best Buy and our Best Performer awards go to this card. That wasn't all — this card impressed us so much that we decided to award it with our Editor's Pick as well. So that's a hat trick for a solution that should really AMP!(lify) your gaming experience. ■

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Contact Sheet Graphics Cards

Brand	Company	Phone No	Website	Email
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ATI	AMD Far East Ltd	9820643424	amit.jaokar@amd.com	www.amd.com
EVGA	Tirupati Enterprises	09339207519	mail@tirupati.net	www.tirupati.net
GeCube	Tirupati Enterprises		mail@tirupati.net	www.tirupati.net
Gigabyte	Gigabyte Technology India Ltd	022-40633222	sales@gigabyte.in	www.gigbayte.com.tw; www.gigabyte.in
MSI	MSI	011-41758808/09	marketing@msi-in.com	www.msi-india.com
Palit	Tirupati Enterprises	9339207519	mail@tirupati.net	www.tirupati.net
Point Of View	Tirupati Enterprises		mail@tirupati.net	www.tirupati.net
Sapphire	Aditya Infotech	9311282911	Sanjay_gogia@adityagroup.com	adityagroup.com
Sparkle	Abacus Peripherals Pvt. Ltd.	022 - 40914600 / 40914613	megha@abacusperipherals.com	www.abacusperipherals.com
Zotac	ZOTAC International (MCO) Ltd.	011- 46665666	sales@zotac.com	www.zotac.com

COLOUR AND COMPUTERS

AN OVERVIEW

Terry Relph-Knight

Through cameras, scanners, screens and printers, what you see is not always what you get. Here we introduce the theory underlying colour management

Colour is something that most of us take for granted, but for manufacturers, lack of colour control can be a serious economic problem. Visible inconsistency in paints, inks and dyes costs money. For example, a car manufacturer couldn't sell cars if a particular paint colour varied from one car to the next. For product advertising, manufacturers need be able accurately to represent a product's colour in print, on the Internet, in film and on television. For this reason, as soon as it was possible for industries to produce a wide range of colour pigments, our perception of colour, and the measurement and control of colour, became the subject of a great deal of study.

At home and at work even computer users who aren't colour professionals are finding that they need to manipulate colour images. Intentional colour management provides the means both to control and reproduce colours as accurately as possible.

To apply colour management effectively you need to know the colour theory behind it. This article introduces some of the ideas of colour theory and shows how it is used in digital colour management.

A Brief History Of Colour

Humans have been using coloured pigments for thousands of years, although for much of this time only a limited range of colours were available. The use of oils blended with new pigments by Jan van Eyck, best known for his 1434 painting of "Giovanni Arnolfini and his wife", revolutionised painting. However it is only since the eighteenth century that a really wide range of low cost colour pigments have been available. The Industrial Revolution saw the invention of aniline dies from coal products in the 1800s and the first colour photograph was made in 1861.

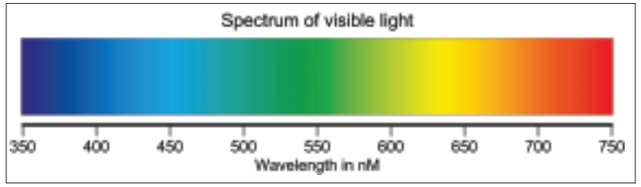
The earliest colour space, still in use, the CIE XYZ space, wasn't published until 1931 (colour spaces will be described later). Apple incorporated basic colour management into its operating system quite early on and was instrumental in establishing the International Color Consortium, or ICC (**www.color.org**) in 1993. Apple's early support of colour control helped to establish its products in the field of art and design, and area in which the company has had considerable success. Microsoft Windows did not provide any colour management facility until Windows 98, and colour management tools have only recently appeared in Linux.

One of the problems in understanding colour management is that there are numerous standards and methodologies, each a product of the time it was introduced and the particular colour problems it was intended to address. For example, instead of just one colour model or space there are several, which can be confusing to the colour management novice. Another problem is that colour and colour management is a complicated subject and a great deal of the available information is either misleading or just plain wrong.

Colour Does Not Exist

Strictly speaking colour is a product of the human visual system. All that can physically be measured are the wavelength and intensity of light and not its colour. Certain mixtures of wavelengths can only be referred to as purple or brown because of a general agreement that that is what we call the visual sensations they produce. Since colour is a subjective sensation, colours are not experienced in the same way by everyone. You might think this rather difficult to prove, since we cannot directly experience the thoughts and sensations of others, but about two per cent of females and eight per cent of males have some degree of colour blindness. The most common form of colour blindness is rather misleadingly referred to as red-green colour blindness.

A great deal of the effort in colour science has gone in to methods of relating physical measurement to the human perception of colour. Unfortunately this is where most of the confusion over colour control and management arises. For one thing our visual perception system is not linear, so colour systems based directly on linear measurements (like the CIE XYZ 1931) do not map well to our experience of colour. For example there is quite a large portion of the green area of the CIE XYZ space that is perceived by humans as being all the same colour.



Visible Spectrum

Comparing Senses – Hearing To Sight

There have been attempts to draw parallels between music and colour and to produce a system to organise colours, in the same way that musical theory provides structures such as scales and harmony for musical composition. However the human auditory and visual systems are rather different. The average human can hear a range of over 9 octaves and the common musical instrument with the widest range, the concert grand piano has a range of 8 octaves. Most human voices can cover 2 to 3 octaves. Each musical octave is a doubling of frequency. If you apply the same idea to the range of frequency of visible light you will see that there is a span of slightly less than one "octave". Visible wavelengths range from the short 380 nm (nanometre) for violet to 750 nm for the long wavelength red. Generally we speak of only seven pure colours in the visible spectrum – violet, indigo, blue, green, yellow orange and red. However there has been some success with ideas of colour harmony and various colour wheels are used by artists and designers to choose colours that go well together. Colours used for a particular design project are often organised in a palette. Colour palettes are commonly found in design software such as CorelDRAW.

Colour Vision

Unlike our hearing, which can sense and identify sounds of a single wavelength, our eyes have three sets of sensors, known as cone cells, each of which senses light over a range of frequencies. The maximum sensitivity of one of these sets of sensors peaks in the blue, one in the green and one in the red. Outside their peak the sensitivity of each group of sensors falls off smoothly and the green sensors overlap with the blue and the red. Colours that fall outside the peak sensitivity of any of the sensors are recognised because of the balance of sensations they produce between two sensors. For example yellow stimulates both the green and the red sensors. Part of the reason our colour vision works so apparently well with just three sensors is because of the fairly limited human visual range. Our eyes also have rod cells, which respond only to light intensity.

Colour displays and printers rely on the way our eyes work and create a wide range of colours by mixing only three colours together.

Emitted, Reflected – Additive, Subtractive

Humans experience colour in two ways: by emitted light directly entering the eye or, by light reflecting from the objects around us. Mostly we experience colour through reflection and this means that the appearance of colour depends on the the nature of the surface of the illuminated object and on the spectral content of the light that is illuminating it. For example a sheet of "white" paper appears red when red light is shone on it and green when illuminated with green light. A sheet of red paper illuminated with green light appears black. This means that when working with colour and colour management the nature of the light that was and/or will be used as the illuminant must be taken into account.

Primary And Secondary - RGB Or CMY / CMYK

All the colour imaging devices we use that emit light – computer monitors, televisions and projectors use a mixture of red, green and blue light to produce a wide range of perceived colours. These devices use what's called additive colour mixing. Red, green and blue are

referred to as primary colours because they relate directly to the three groups of sensors in our eyes. On the other hand, printers use cyan, magenta and yellow and so-called subtractive colour mixing. These three colours are referred to as secondary or complementary colours because cyan is white minus all the red frequencies, magenta is white minus all the green frequencies and yellow is white minus all the Blue frequencies. Or to put it another way, the three secondaries can be obtained by mixing pairs of primaries as follows; mixing blue and green light produces cyan, mixing red and blue gives you magenta and mixing red and green makes yellow.

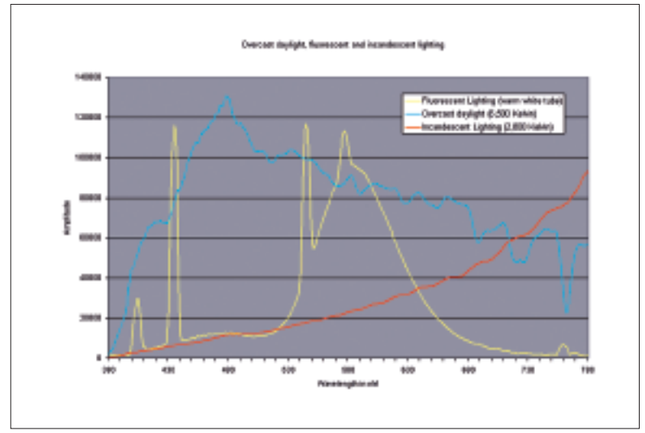
Why Are There Two Methods Of Producing Colour?

The reason that we use two methods of producing colour is this: for displays, the base state is black, so emitted light has to be added to that base state to produce colours; for printers the base state is the "white" of the paper and colours have to be selectively subtracted from that base state, leaving the required colour reflected from the page. This is why the paper used has such an effect on the final image quality and why using the more expensive, "whiter" papers results in a better image (unlike many paints, most printer inks are transparent to some degree). The expensive photo papers also have smoother surfaces and may have a gloss surface to reduce diffusion of the light striking the surface, resulting in greater image contrast. The variation in paper "white-ness" and the other variations in the nature of paper are the reason why printer drivers and colour managed applications have a choice in their output settings for paper type.

The pigments and dyes used for printing inks and the process of printing on paper aren't as successful as the three colour system used for displays. Printing cyan, magenta and yellow inks to get black usually results in a dark brown, so all ink colour printing uses an additional pigment – black - to form the CMYK system of colour printing (the letter K from the end of the word black is used to avoid confusion with blue). Photo printers extend the range of printable colours still further by adding more ink colours. Usually these are lighter versions of cyan, magenta and yellow.

White And Colour Temperature

In abstract, pure white might be regarded as emitted or reflected light that contains equal amplitudes of all the visible frequencies. Such pure white light never occurs in nature or in colour management. Our main source of illumination, sunlight, does not have a smooth or



Spectra from different light sources

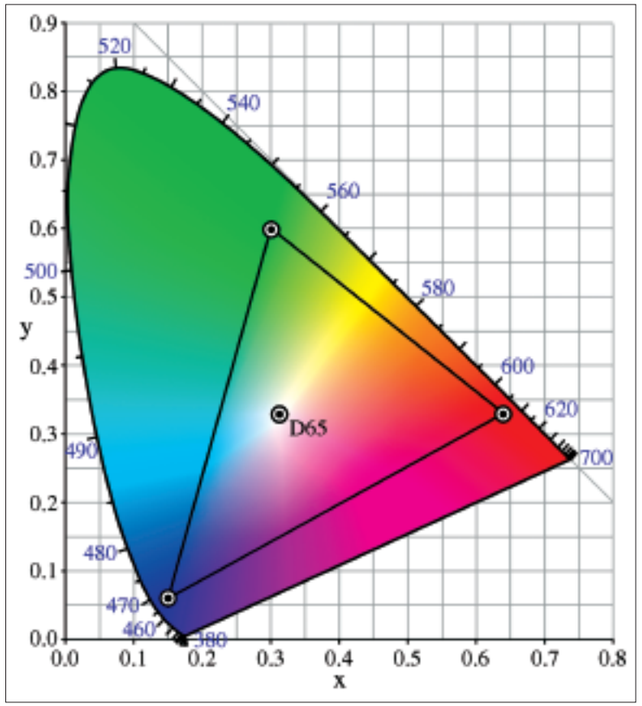
equal energy distribution and its frequency content varies depending on the time of day and on weather conditions. Artificial light is even less "pure"; for example, fluorescent light has a very uneven energy distribution with a number of large amplitude spikes at certain frequencies.

In practice white is always variable and relative and the human visual system is extremely good at adjusting, so that, under a wide range of lighting conditions, the areas of view that emit or reflect the widest range of frequencies with similar strength are usually seen as "white". Colour film cameras, lacking any built in compensation, don't do this and the best that can be done is to use film optimised for different lighting conditions such as "daylight" or "tungsten" film and/or to supplement these with coloured filters fitted to the lens. Perhaps one of the biggest advantages of digital cameras is that they have either, or both, auto and manual white balance. Even if the colour balance out of the camera does not look right it's easily tweaked with photo editing software, which frequently has an auto-colour or auto-white balance control.

The variations in what may be considered white mean that this has to be taken account of in colour management. Colour temperature is often used as a reference for white. It's based on the idea that a perfect black body radiates light according to its temperature. At zero Kelvin a black body radiates nothing, at 5,000 K it radiates yellow-white light rather like morning daylight, at 6,500 K it radiates blueish-white similar to overcast daylight at noon and at 9,300 K it radiates a hard blue-white light. D50 and D65 (for Daylight 5000 and 6500) are commonly used as lighting references. 9,300 K was frequently used as a default monitor setting because monitors were most efficient at this setting and produced high brightness.

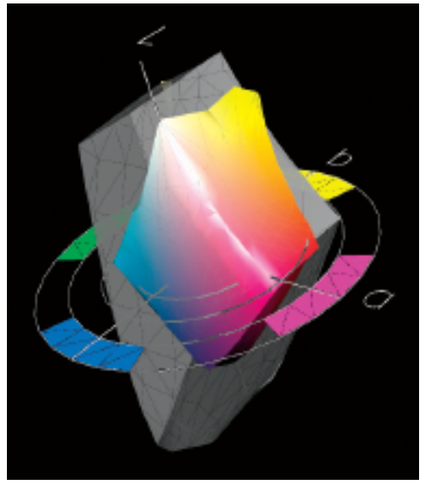
Representing Colour Using Colour Spaces

One of the most confusing things you may ever see in a text book on colour is the 2D representation of the 1931 CIE XYZ colour chart for RGB displays. It is rarely explained that this colour chart represents a plan view or projection from above the white point of a 3D volume and is shown this way purely for convenience, given the difficulty of representing 3D objects in print. All colour spaces are three dimensional volumes. The vertical axis of these spaces always represents luminance or brightness and runs from black at the bottom, through various shades of grey, to white at the top.



The most commonly used reference space today is the 1976 CIE L*a*b* (pronounced as elstar ehstar, beestar). Rather confusingly this is often referred to as Lab but there is an earlier space, the 1948 Hunter Lab space, to which that nomenclature more properly belongs. L*, standing for Luminance is the vertical axis and the orthogonal axes a* and b* are red-to-green and blue-to-yellow. L*a*b* is often used as a reference colour space for performing transformations from one colour space to another because, at present, it is the space that comes close to perceptual linearity. For example the popular Adobe applications such as Adobe Photoshop use a version of L*a*b* as their internal colour model.

The CIE XYZ 2D projection. The D65 whitepoint is marked and the triangle shows the extent of the sRGB gamut. Light wavelength is marked around the edge of the coloured area which represents the gamut of average human vision. The Z or luminance axis is at right angles to the paper



Here's a 3D plot of two superimposed gamuts in the L*a*b* colour space

Saturation, Hues, Tints And Shades

A special vocabulary is used for describing colour. Unfortunately these terms are often misunderstood or misused and in some cases are hard to define. They are saturation, hue, shade and tint.

The strongest, purest colour is said to be saturated. For displayed digital images fully saturated colours are represented by the largest numbers, or 255 for a 24-bit image (32-bit colour usually uses the extra 8 bits to represent other image attributes such as transparency). Very pure saturated colours are quite rare in nature because most naturally occurring colours are mixtures of more than a single wavelength. Artificially produced, single wavelength colours, are fully saturated.

Colour hue is the attribute that describes what appears to be the colours dominant wavelength. For example the hue for pink would be red.

For mixing opaque pigments, as in paint, tints are achieved by mixing a colour with white, while shades are achieved by mixing black with a colour. For example light pink is red mixed with white, while dark pink is black mixed with red. For colour produced by emitted light, such as from a display screen it is always a question of mixing the colour with white because the base state of all displays is black. For displays, the shade attribute of a colour can be regarded as brightness or luminance.

Colour Gamuts

Every colour device has a gamut, a range of colours it can capture or reproduce. This gamut can be represented as a device dependant colour space within the framework of any

of the reference colour spaces. The term gamut is used to refer to the relative volume of the colour space. It is often also used to refer to the area of the 2D projection of a colour space, since this is related to the volume and represents the range of saturated colours. The human visual system - for most people - has a large gamut. Frequently this is referred to as containing 65 million colours. The human visual system is not good at recognising absolute colours, but is much better at recognising the difference between discrete patches of similar shades. The figure of 65 million recognisable shades has been determined by experiment as the average colour discrimination for most people.

Colour Intent

Colour intents are one of the most difficult aspects of colour management to understand. Users of colour management systems are required to choose which intent to use. Intents are needed because none of the current elements in a colour capture, manipulation and reproduction chain can match the gamut of the human visual system. All capture devices, displays and printers have a smaller gamut. Colour printers usually have the smallest gamut, or device colour space, of all the colour devices we use. Some of the colours we can see cannot be captured, and some of the colours that a camera or scanner can capture, cannot be reproduced. This leaves us with the problem with what to do with the colours we have captured in an image but cannot reproduce in print and here is where the choice of intent comes in.

A colour intent describes how any colours that fall outside the gamut of a reproduction device, normally a printer, are rendered. There are four intents in common use; perceptual, relative colorimetric, absolute colorimetric and saturation.

Perceptual rendering compresses the source gamut so all the out-of-gamut colours fit inside the destination gamut. This can result in some distortion of the relationships between colours. With perceptual rendering none of the original colour information is lost and in theory the transformation could be reversed in order to restore the original image.

Relative colorimetric rendering maintains a near exact relationship between in-gamut colours but may clip colours that are out of gamut. Clipped colours are lost and cannot be recovered.

Perceptual or relative colorimetric intents are the best choices for photo realistic images.

The absolute colorimetric intent is similar to relative, in that it clips out-of-gamut colours and preserves those that are in gamut, but it treats the white point differently. With absolute the white point does not change, while with relative it may, if this is required to maintain the relationship between colours. This means that with a relative conversion the appearance of whites in an image may change, they may get slightly more red or blue, while with absolute they won't. Absolute rendering is used when it is important that the colours that are reproduced remain as accurate as possible.

Saturation rendering tries to preserve the saturation of colours while making no attempt to reproduce photo realistic images. It is a good choice for business graphics such as charts.

The Colour Management Workflow

A colour management system consists of a number of hardware devices, each with their own gamut or colour space, with an image in the form of digital data being passed from one device to another. As the data moves between each device it often needs to be translated from one colour space to another. To do this it is necessary to know the source and destination colour spaces used, the devices must be calibrated and a profile that describes the devices' colour gamut must be used.

A typical colour system chain consists of a camera or scanner passing data to a computer running a colour management application. Edited colour images from the colour management application are output to a web page, a local colour printer or sent to a commercial colour press. A calibrated and profiled colour display is used to view the colour images at various stages in the process.

A properly calibrated and profiled colour display is absolutely vital to establishing colour control because it is the user's window on the entire process. These must be calibrated and profiled using a hardware monitor calibrator such as the ColorVision Spyder 2. Older displays that have been in use for several years are often unsuitable because they can no longer generate the peak brightness that is required for accurate calibration. Although LCD monitors are now the usual display type many of them are unsuitable for serious colour work, either because they lack the necessary user controls for calibration, or are limited to only 18-bit colour rather than 24-bit.

Colour And Computers

The majority of computer users expect to be able to use a digital camera or a scanner to capture an external scene, to edit and manipulate those images and then to print or display them on-screen without any unexpected changes in colour balance. Most people would probably say that they would expect a reproduced image on screen or printed on paper to "look the same" as the original scene. It would be very bad for business if, when operated by

the average user, computers displayed or printed colour images where the colour balance was obviously wrong. In the early days of colour computing this is frequently exactly what did happen.

This problem has been solved by building automatic colour management into the operating system and into printer drivers. It works by using a colour space that has a relatively small gamut for reference and by assuming that, by default, everything in the colour work flow conforms to that colour space. The space used, sRGB (standard Red Green Blue) was originally adopted by Microsoft and HP for standardising colour on web pages and is based on the colour space of the typical computer monitor (at the time, this was CRT). Therefore most monitors conform reasonably well to sRGB without any calibration or profile. Many digital cameras, especially the consumer models, use sRGB as their default colour space, although it may be possible to select other colour spaces.

Instead of individual colour profiles measured from the actual devices being used, manufacturers' generic profiles are used. Generic profiles, which allow for a certain amount of manufacturing variation, are usually included with most colour devices, or are available from websites.

When it comes to printing, all printer manufacturers have a selection of presets included in their printer drivers designed for a range of papers, although these are of course always designed for use with the printer manufacturer's own brand of papers. These profiles are often supplemented by settings for things like "best quality photo" or "text and image" which are effectively simple ways of setting the colour intent.

Although automatic sRGB works reasonably well and is a lot cheaper than a fully colour managed system, intentional colour management allows more accurate control of colour and can provide better results.

The Colour Management Chain – Open Or Closed Loop

A colour management work flow can be regarded as a closed loop when the characteristics of the final reproduction device can be measured and fed back into the work flow. If the final colour output is to be a commercial printing press the ideal would be to obtain an individual device profile for the press, inks and paper used and to use that to create the output file. With such a profile it is possible to close the management loop. Commercial print press operators in general have always proved to be a huge stumbling block in this respect. It is normally extremely difficult to establish a meaningful dialogue with commercial printers on the subject of colour in general or on press profiling.

Most printers will supply hard copy colour proofs on request and for a fee. The problem with these is that usually they are not produced using the same press characteristics, inks and paper used for the final print run, so they are only useful for showing really gross errors.

What is possible is to establish to which standards a commercial printer says they calibrate their presses, and what type of paper they will use. This is likely to be one of the commercial standard profiles which are supplied with leading image editing software. Adobe Photoshop for example has profiles for SWOP (Standard Web Offset Press), Euroscale coated V2 and so on.

In Conclusion

In essence, colour management simply consist in choosing and applying the correct colour spaces and providing accurate device profiles at every step of the colour management work flow. In the past, poor software implementation, lack of accurate low cost hardware and software tools and poor support for colour management within the operating system, have made it hard for the average person to establish a colour management work flow that actually works.

Fortunately over the years the situation has improved and software and hardware colour management systems that leverage the latest advances in technology, such as high intensity LED's, instead of exotic gas lamps, are becoming available. It is now possible to set up a calibrated and profiled colour work flow on an ordinary desktop PC at reasonable cost. ⊠

Resources And References

http://www.microsoft.com/downloads/details.aspx?FamilyID=1e33dca0-7721-43ca-9174-7f8d429fbb9e&displaylang=en Microsoft Color Control Panel Applet for Windows XP

www.normankoren.com Photographer Norman Koren's website with information on editing digital photographs and on colour mangement.

www.poynton.com - Charles Poynton's essays on various colour related subjects.

http://en.wikipedia.org/wiki/Lab_color_space - Wikipedia article on L*a*b* colour space.

http://en.wikipedia.org/wiki/SRGB – Wikipedia page on the sRGB colour space.

www.color.org – The International Color Consortium site. Lots of information on colour management and particularly on ICC profiles.

http://www.brucelindbloom.com/index.html?WorkingSpaceInfo.html - 3D versions of various colour spaces which can be viewed and rotated on Bruce Lindloom' s website.

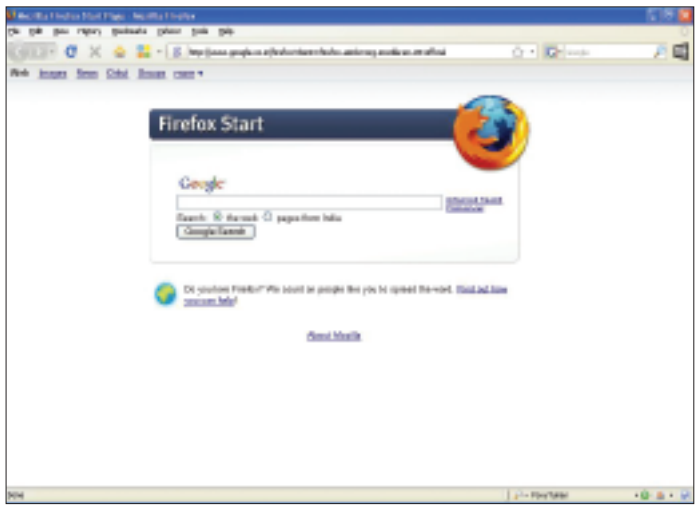
Real World Colour Management - 2nd Ed. By Bruce Fraser, Chris Murphy & Fred Bunting, published by Peachpit Press ISBN 0-321-26722-2

Firefox vs. IE8 vs. Opera vs. Chrome

THE WAR OF THE BROWSERS

Part II

Madhusudan Mukerjee



First there was the war of the browsers in the nineties, when Netscape and Internet Explorer battled it out for space in the virtual world. But if you thought that we'd seen the end of it, here's food for thought: this monsoon it's been raining browsers. Microsoft released its Beta 2 version of Internet Explorer 8 on August 27, the Mozilla foundation brought out its 3.1 Alpha 2 update on September 5 and Opera came out with its 9.5 Beta on September 10. The most exciting thing to come out of this downpour has been, of course, Google Chrome — the much awaited browser from the guys at Mountain View — released on September 2, leaving most of us pretty impressed.

Typically, every time a new browser enters the webwork, there's a frenzy of downloads (in just two days, Chrome was downloaded enough to become one of the top 5 browsers to be used in the world), a web full of superlative adjectives ('awesome' being the most common one) and instant comparisons with older ones. So, in all that thicket of opinion, we at *Digit* decided that it's about time someone gave you the facts. We zoomed in on the top four browsers (IE8, Firefox, Opera and Chrome) and found out the truth. If you want to find out too, don't stop reading.

Before we make our comparative analysis, allow us to take you through some of the key features of the four most popular browsers on the Web.

Firefox 3.0.1

The second most popular browser in the world and loved by open source fans, Mozilla's Firefox 3.0.3 is lightweight (7.8 MB), safe, rich in add-ons (5,000 and counting), full of active security features (anti-phishing, pop-up blocker, password manager, parental controls) and the industry's fastest response times. Both the browser and add-ons are completely free. Until now, Google has been ardently supporting Mozilla and helping to pit Firefox against the hegemony of Internet Explorer, but with the coming of Chrome, things may change. The features that can be rated as "awesome" are plenty, but to list a few...

Internet Explorer, Firefox, Opera — and now Chrome. We compare the top internet browsers

What's Awesome

Tabbed browsing: You don't need to open a dozen new windows to surf or search different sites simultaneously. Every new link you click on opens in a 'tab' in the same window. In fact, although Mozilla didn't start tabbed browsing, they did make it popular by incorporating it into Firefox in 2003, making it a must-have in every new browser that has come up since.

Auto Restore: If your computer crashes or hangs midway through a session, Firefox restores the

tabs automatically on being re-opened.

One-click Bookmarking: You don't need to do a `[Ctrl] + [D]` to bookmark a page. Simply click on the star in the location tab. If it turns golden, you've got a new favourite page.

Drag-and drop: You can select and pull text or hyperlinks from anywhere on a Web page and drop them straight into the search bar.

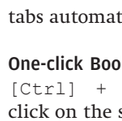
Intuitive Locator Bar: Firefox provides you with instant suggestions that drop down from the Locator bar above – which also doubles as a search bar.

Privacy: Firefox allows you to clear private data after browsing, deleting cookies, history and download details whenever you close the browser window. Particularly useful in Internet cafés.

What's Awful

Too many add-ons: (is that really a problem?) It's quite possible that you may get a little overwhelmed with the sheer range of add-ons available for Mozilla. If you go overboard, this may clutter up the interface somewhat.

Slow Startup: While installing Firefox is a piece of cake, the initial startup time is a lemon. Click on the icon and it could take about 14 seconds to open the first time and four to eight seconds to start up later.



Internet Explorer 8

With the impending competition, Microsoft launched the Internet Explorer 8 Beta 2 less than a week before Google Chrome. The Web site claims it is "Fast, Safe, Easy" and will "greatly enrich and improve your Web experience". IE8 already offers a lot of add-ons, some free, some not so free, and tabbed browsing (fully integrated since IE7). It's average startup time is better than all the other browsers around. There are a lot of parental controls that you can apply, providing greater protection to children from pernicious Web sites. Some of the really cool features are below.

What's Awesome

Accelerators: Internet Explorer 8 provides tools that easily allow access to multiple points of information such as translations, maps, definitions, etc. — all in a single window, to accelerate your access to information on the Web. You can choose from a whole list of services like About.com, Windows Live Search, CNet.com, Egisca Search, etc., to find the kind of information you need directly from the tab on the top right of the screen, next to the Locator bar.

Web Slices: The 'Suggested Sites' button is definitely a brainwave that takes Internet Explorer one step ahead of Firefox. Microsoft uses 'Web Slices' technology to automatically trace sites that may be related to the one you are viewing, unlike the drop-down suggestions from the Locator bar (which are dependent on your viewing history). Using Web Slices, you can keep up with frequently updated sites directly from the Favorites Bar. If a Web Slice is available on a page, a green Web Slices icon will appear in the upper-right hand corner of the browser. You can then easily subscribe and add them to the Favorites Bar or delete Web Slices that are no longer desired. Updates then appear directly whenever information becomes available and the Web Slice appears highlighted. Click on the Web Slice for a preview and on the preview to get to the site itself.

Compatibility View: Old Web sites for old browsers sometimes don't open in new browsers with new features. IE8 has the Compatibility View option to allow you to open sites that new browser technology may not open optimally. You can find it in the 'Tools' button on the top right of the toolbar above.

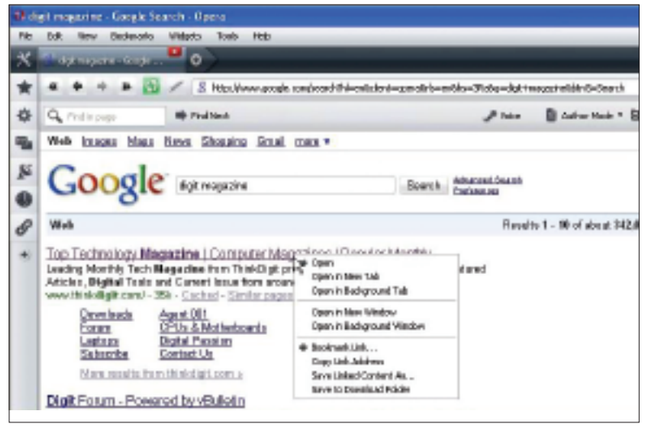
Grouped Tabs: Another marvel in IE8 Beta 2 is the use of colours to group tabs. If you've got two dozen tabs open at the same time, it sometimes becomes difficult to remember which tab was a hyperlink in which other tab. Whenever you open a link on a page in a new tab the current tab and the new one both take on the same colour to show that they are part of a single group. As you click on new tabs they also appear in the same colours. You can disable the colour feature if you find these too intrusive. The tabs can also be regrouped or ungrouped by dragging and dropping.

InPrivate Browsing: This is basically a feature that allows you to create a browsing session where cookies, history, passwords, form data and objects disappear once the browser is closed (akin to Firefox's 'Clear Private Data' provision).

What's Awful

Looks: Try as it might, Microsoft just can't seem to match up with the cool, smooth and soft-hued graphics of Safari, the easy-on-the-eyes shades of Opera or the clear contrasts of Mozilla Firefox.

Still under copyright: If you don't already have a Internet Explorer, the MSN Web site will reject your request for download as invalid. In an age when there are browsers jostling to get into your computers for free – and even Chrome is open-source – it seems a little outdated to be restrictive with a browser that is anyway quite popular.



Opera 9.60 Beta

It is surprising that the usage of Opera is lower than even Safari, when most critics and browser reviewers swear by it. It has a whole range of outstanding features such as quick find, thumbnail previews (which it calls 'Speed Dial'), skins and widgets. Tabbed browsing has an added feature (a unique one among browsers), allowing you to open a tab the way you like, either in the background or as a tab that takes over your screen.

You can cascade or tile web pages to view and there are voice commands and text-reading provisions packed in. All in all, Opera is a browser that has very little to make you want to complain.

What's Awesome

Speed Dial: Open a new tab in Opera and it shows you a thumbnail view of nine of your favourite Web sites, which you can customise. A single click on any one of them quickly gets you to the site and saves you the trouble of having to type the URL into the locator bar. This feature is available as an add-on to Firefox (Fast Dial) and is built into Chrome.

Widgets: Opera offers an incredible variety of widgets – little GUIs like 'Pandora's Radio', 'Opera.fm', 'Artist's Sketchbook', Opereach, etc. Just with a couple of clicks, you can access your favourite widget and simultaneously continue with the windows you're working on.

Faster Page Loading: The tabs open much faster than previous versions of Opera and outdo Firefox, and occasionally even Internet Explorer. Evidently, using Presto as the layout engine seems to have helped to score over Firefox (Gecko) and IE (Trident).

Customisable: Opera has a rich database of skins to make the browser look different. You can arrange toolbars, buttons and panels any way you please and, in short, make it your very own personal browser.

Mouse Gestures: Opera is designed so as to be sensitive to the movement of the mouse, so if you simply move the cursor over the tabs that are open, it instantly shows you a thumbnail preview of the site you have opened. This feature exists as the Cooliris Preview in Mozilla Firefox, but that's an add-on, while this is integrated into the browser itself.

Native BitTorrent support: BitTorrent is a peer to peer downloading protocol capable of really high performance, over a network of peers using the client. While using Opera, instead of depending on third party clients like BitComet, simply click on a torrent and Opera, which has the feature already integrated in it, will do the rest. However, the feature only supports the BitTorrent exchange protocol and is not intended to replace third-party clients.

What's Awful

Not Open Source: Seeing the immense benefits of community-developed software and browser's like Firefox, it's a pity that Opera isn't yet open source.

Erratic: Opera is sometimes really quick, but often lags behind in navigation time when compared to Firefox and Internet Explorer. Its average startup time is also at least two seconds behind Internet Explore and Chrome.

Google Chrome

So, maybe the logo looks like a Pokeball with the trademark Google colours, but that doesn't make the browser any less exciting. Using the WebKit rendering engine, Google's foray into browser land scores really high on our list. It is fast, easy to use, simple and also looks great. Powerful and effective, here's a browser that finally allows you to use almost the entire screen to view a Web site instead of searching for the site among the toolbars and sidebars of Flock, Opera, etc.

What's Awesome

Tabs on Top: Google has learnt fast and picked up from other browsers most of the features that a good browser should have. One of these is Tabbed Browsing and, like the rest of the engines we're covering, you can juggle the tabs around and regroup them by dragging and dropping. The cool thing about Chrome's tabs is that while you're shifting a tab from one position to another, you can actually see the thumbnail of the site you're moving being dragged along with the cursor of the mouse. A masterstroke is the moving of all tabs to the top of the screen, a move that has been universally praised by users and critics alike.

Speed: Every tab runs independently. So if one fails, the others aren't affected. This is a common complaint in other browsers because

then the entire browser closes down when even one tab crashes. Chrome fixes this by running tabs as separate processes. Its navigation time is by far the best and in an age of impatience, Chrome should become everybody's favourite quite soon.

Universal Bar: The Locator bar on top is not just that — it's a search bar, a history viewer and an address bar all rolled into one. So as you type, Chrome gives you suggestions from sites you have visited or simply searches (using Google, obviously) for the text you have typed in.

Task Manager: Right-click on the ribbon above and you'll see the 'Task Manager' in the menu that appears. Click on the Task Manager and Chrome will show you exactly how much memory each of your tabs are currently using, allowing you to close tabs that are hogging the CPU's memory.

Secure: Having each tab run independently lets Chrome detect malware and automatically pause the opening of a particular tab, while flashing a warning.

Download Manager: Google has shifted the Download Manager to the bottom of the screen. Other browsers have intrusive windows appearing to notify download status: IE, Opera and Firefox download warnings appear in the middle of the screen, but Chrome simply shifts it to the bottom, allowing the user to get on with other more important things.

Private Browsing: Chrome's 'Incognito window' facility allows you to open any webpage without leaving a trace – that is deleting all the cookies, history, etc. This makes the browsing experience safer.

What's Awful

Add-ons: Being a recent entrant, there are almost no add-ons for Google Chrome. However, since it's open source, you can expect many to start appearing soon.

Impersonal: You can't customise Chrome like you can Firefox or Opera — yet.

Controls: There's a lack of possible parental controls, and Chrome omits the settings to be able to block particular Web sites but allow others. Merely providing the browser with a "Block all Insecure Content" or "Block all cookies" options, does not make the browsing experience any safer for children.

Flash files: Typically, a Web site using Adobe's Flash plug-in gobbles up a lot of space on your CPU, greatly slowing down the Web experience. This is a common problem with Firefox (try opening ten sites with Flash content at the same time) and something similar happens with Chrome – though not to such an extent. Using the Task Manager in Chrome, however, is a step in the right direction, because then you could at least close the windows that are using up too much memory.

So Which One's The Best?

The pros and cons of each browser may not be good enough to help you reach a decision, so we decided to put it all together in a table (on the previous page). This simple and quick overview can help you to arrive at the right browser for you.

The Verdict

More than three quarters of the world uses Internet Explorer, and doesn't seem to be changing over in a hurry. If you're one of them, there's good news for you. The Microsoft team scores high on speed, ease, security, functionality and customisation. The use of colours to allow the end-user to identify the tabs that form a common group is one big leap forward and the Web Slices and Accelerators are the icing on the cake. So, in spite of it not being free for all, and not being a part of the GNU project, the fact remains that most apps in the world are still made for IE; and it therefore, rules the roost.

On the other hand, Chrome is great for its new features and super-fast browsing; Opera is terrific for its customisation options, speed and Opera Mobile has left the others far behind when it comes to cell phones; Firefox is also good, with 24×7 security volunteers, a new look, and thousands of add-ons. If we're absolutely forced to give you a rating, keeping security in mind as well, we'd say it's IE8 Beta 2 on top, Mozilla Firefox and Opera tied in second place and Chrome trailing — for now.

It all boils down to your personal preferences. Depending on whether you prefer a snazzy interface, an ultra-quick Web experience or a browser for social networking, you will have to choose for yourself. Regardless of which browser you choose, you're assured a faster, safer and more pleasurable browsing experience than ever before. Happy surfing. ☒

Browser comparison

Features	Firefox	Google Chrome	Internet Explorer	Opera
Tabbed Browsing	Yes	Yes	Yes	Yes
Integrated Search Engine	Yes	Yes	Yes	Yes
Smart Locator	Yes	Yes	Yes	Yes
Thumbnail Preview	No	Yes	Yes	Yes
Customization	Yes	No	Yes	Yes
RSS Feeds	Yes	Yes	Yes	Yes
Password Manager	Yes	Yes	Yes	Yes
Zoom	Yes	Yes	Yes	Yes
Open Source	Yes	Yes	No	No
Download Manager	Yes	Yes	No	Yes
Form Manager	Yes	No	Yes	Yes
Spell Check	Yes	Yes	No	Yes
Pop-up Blocker	Yes	Yes	Yes	Yes
Anti-Spyware/Phishing/Virus	Yes	Yes	Yes	Yes
Private Browsing	No	Yes	Yes	No
Online Support	Yes	Yes	Yes	Yes
Initial Startup Speed	Very Slow	Fast	Slow	Very Fast
Average Startup Speed	Slow	Fast	Very fast	Fast
Navigation Speed	Very fast	Fast	Slow	Fast
Free to Download	Yes	Yes	No (unless you already use licensed Windows)	Yes
Layout Engine	Gecko	WebKit	Trident	Presto
Runs on Linux (without Emulation)	Yes	No	No	Yes
No. of Languages it's available in	46	43	25 (IE 8 Beta 2)	31

Bazaar

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

ASUS R2E

Versatile But Not A Solid Performer

The ASUS R2E is a hand-held ultra mobile PC that is geared towards people on the move. An 800 MHz Intel processor powers the R2E. There is a gigabyte of RAM that powers Windows Vista Home Premium. Although it is supposed to be as portable as possible, the R2E is pretty thick but it weighs way less than most laptops at just 0.83 kg. With a brushed metal finish on the top, it looks pretty.

The touchscreen used is a 7-inch one, but it isn't all that great in terms of colours or even viewing angles. The touch functionality works fine with the stylus. The touch-function isn't very accurate if you use your fingers and is nowhere as good as, say, the iPod Touch. If the touchscreen doesn't suit you, the joystick on the right can be used instead. The mouse click buttons are on the left side of the device. All the buttons are rather large and clunky to use.

An 800 MHz processor is slow, but works perfectly fine for general desktop applications such as MS Office. Don't expect it to run high-definition video clips and run loads of applications without any stuttering. Vista by itself is a little sluggish on such a configuration. The 4200 RPM 100 GB hard drive is slow, but acceptable for most tasks.

There are many addons that you get along with the R2E. To compensate for the lack of a keyboard, an external USB keyboard is supplied. The foldable keyboard is still very difficult to use and nowhere as comfortable as even a laptop keyboard. The quality of the keyboard is decent, and when folded, is very portable. You also get a portable mouse.

An additional battery is supplied as well, which makes the R2E a little fatter but extends the battery-life. The speakers on the device are weak and don't sound all that great. Like on other laptops, connectivity features such as WiFi and Bluetooth are present. A 1.3 MP webcam and even a finger-print recogniser are built into it. An external DVD writer is supplied, as is a VGA patch-cable that allows the R2E to be hooked up to large screens.

One of the biggest issues with the R2E is the design. The body gets warm and because this is a device that is meant to be held in your hands most of the time, this can be very annoying. If things get out of control, the stand on the rear can be used to place it on a table.

The ASUS R2E could have run a version of Windows XP and been a lot more powerful. Still, Vista is well known for its handwriting and touch recognition features, which make it perfect for a product like this. Targeted at a niche audience, this product is for users who require a computing device that can do much more than a typical business phone, without being as bulky as a laptop. People who want GPS units that go far beyond the ones that sit on your car's dashboard will find the R2E very impressive as well.

Specifications:
Intel 800 MHz processor, 1 GB DDR2 533 MHz RAM, 100 GB 4200 rpm HDD, 7-inch touchscreen, Integrated 802.11b/g WLAN, 10/100 LAN, Bluetooth, GPS
Dimensions: 23.4 x 13.3 x 2.8 cm, Weight: 0.83 kg.

Contact: ASUS Technology Pvt. Ltd.
Phone: 18002090365
E-mail: media_india@asus.com
Web site: www.asus.in
Price: Rs 64,900

RATINGS	
Features	★★★★
Performance	★★★
Build quality	★★★★
Value for Money	★★★½
Overall	★★★½

LG P300

Slimness Personified

When it comes to slim laptops, the new P300 from LG surely is one of the 'top few'. Complete with a glossy top and brushed aluminium finish keyboard, palm-rest and touchpad, this is a product that wants to take on the much hyped Mac Book Air.

The P300 has a 13.3-inch LED backlit LCD display, with a maximum resolution of 1280 x 720. It also sports a 2.1 GHz Intel Core 2 Duo processor, 4 GB of RAM, 250 GB HDD and NVIDIA GeForce 8400m GS graphics to top it up.

The bright 13.3 in display reproduces vibrant and colourful images and is quite visible in brightly light areas. The keyboard is well spaced, and both the keyboard and touchpad are quite responsive.

This laptop is capable of handling jobs that range from basic Internet browsing, to mid-level computing. The 4 GB RAM really comes in handy when viewing HD videos; plus if you want a bigger screen, the onboard HDMI port will let you hook this laptop up to any HDMI compatible device.

Despite being a compact notebook, the P300 has a plethora of ports. The only thing that was missing from it was a FireWire port. In its place, LG decided to include the "S-Link" port. To be honest, we'd prefer to have the flexibility of a FireWire port, over a dedicated port for synchronising files.

Even though there are so many plusses to this neat laptop, we would have preferred to have an internal optical drive rather than an external one.

Finally, to sum it all up, the LG P300 comes as a compact notebook that surprises with its performance and features that are enough to take care of your daily computing, and all this as an ultraportable.

Specifications:
Intel Core 2 Duo Processor 2.1 GHz, 4 GB DDR2 Ram, 250 GB HDD, 13.3-inch LED backlit display, Bluetooth, Wi-Fi, External DVD burner.

Contact: LG Electronics India Pvt. Ltd.
Phone: 0120-2560900
E-mail: Salvi@lgindia.com
Web site: www.in.lge.com
Price: Rs 75,000

RATINGS	
Features	★★★★
Performance	★★★★
Build quality	★★★★½
Value for Money	★★★½
Overall	★★★★

Samsung YP-S2 2 GB

A Pebble With Earphones

The all new Samsung YP-S2 is a 2 GB MP3 player that is possibly one of the smallest we've seen. The design resembles ice.

The player has a few buttons on the underside that are used to control the player. There is no display to indicate track number or any other information. The only indication is through a flashing light on the top of the player.

Most of the confusion that new users will find will be due of the lack of a display. Modes are changed by holding down certain buttons, and the display light changes accordingly. Users will need to first look closely through the PDF manual to understand all of these controls.

The music quality through the supplied earplugs is alright, and there is nothing unexpected from it when played using other earphones. Even though this is such a tiny player, it can easily drive full-sized headphones just fine.

The biggest problem with the YP-S2QB is that it is extremely slow when it comes to transferring files. 500 MB of files took close to 10 minutes and 40 seconds which is atrocious.

The supplied CD contains the manual for the player and Samsung Media Studio 5. The software is a pretty good media player, syncs with the player and has a whole load of other features such as creating playlists, burning and ripping discs and downloading podcasts. The price for this 2 GB player is just Rs 2,750 which it makes it pretty affordadable, even though it doesn't have all the features of a typical compact PMP such as an FM tuner, for example. If you want more in terms of features, spend a couple of hundreds more and you will have many to choose from.

Specifications:
Memory Capacity: 2 GB, Formats Supported: MP3, WMA, OGG

Contact: Samsung India Electronics Pvt. Ltd.
Phone: 011-41511234
E-mail: jitender.c@samsung.com
Web site: www.samsung.com/in
Price: Rs 2,750

RATINGS	
Features	★★★
Performance	★★★★
Build quality	★★★½
Value for Money	★★★★
Overall	★★★½

Nokia N96

The Return Of The King?

Nokia's N95 8 GB was, perhaps, one of the most balanced Symbian-based smartphones we've ever had the pleasure of reviewing. Most people look at such high-end phones as a sum of their feature set. For us, a cellphone is a more personal device, and the operation, ergonomics, intuitiveness of menus and ease of use are equally important as the features — especially when one is shelling out over Rs 30,000.

The N82 was thought to be a replacement for the N95, but without the slick two way slider, and a smaller screen, it was never an N95 killer. Now Nokia faced a dilemma — how to improve upon near perfection? Simple — improve the few noticeable flaws. And thus was born the N96.

Livered in a slick satin black facia with metallic silver all round the sides. The rear is satin black, with fine grey lines between — very similar to the finishes on the Nokia N82 and N78. Some may like such finishes — we personally don't, and the N95 8 GB looked much more a serious phone than a rich boy's play-toy.

The screen remains the same (2.8 inches) although it's now become glossy, which gives the appearance of better contrast, but in reality this isn't so. The speaker grilles are now much better looking. The revamping of the menu buttons isn't successful however, and the four-way joypad is now much harder to use. The menu button isn't bevelled any more and its flush fit and closeness to the call accept button may lead to a few false key presses — very annoying. The volume and camera buttons on the side are now a lot harder to use, and feel tackier than the N95s keys. The number pad now has flat keys and their close spacing means using them is a pain — the N95 8 GB had bevelled keys — Nokia should have stuck with that.

The N96 is much slimmer than its predecessor. Oh joy right? Well, the downside is the battery, which has gone from a hefty 1200 mAh, to 950 mAh — something that's sure to displease most people especially considering it's such a feature-rich, high-end device.

Nokia also dropped the 332 MHz ARM 11 for a slower 265 MHz ARM 9 CPU and this is evident during general use — the phone is more sluggish. The inbuilt storage has seen a dramatic increase to 16 GB. Nokia finally did something right and added MicroSD expansion as well, which the N95 8 GB missed. An 8 GB card is bundled as well meaning you save a chunk of cash on the same. A slightly newer version of Symbian S 60 (V 9.3 in lieu of V 9.2) is used. The same 5 MP camera is also present, now with a slightly more powerful dual-LED flash — why no Xenon flash?

Connectivity remains excellent, ditto applications — the N96 is a truly connected, converged device. Signal quality is as good as the N95 8 GB, which was pretty excellent. Music quality is as good, but the N95 8 GB remains a little louder in terms of maximum volumes — no complaints though. Owing to the slower CPU, and maybe slower flash memory, the video folder takes a fair bit of time to refresh the previews of videos.

So the verdict — is the N96 worth it or not? Sure — it's arguably funkier looking, slightly sleeker, and has a high quality finish, in addition to having more storage. But to many these are superficial changes. Under the hood, it's not any better than the N95 8 GB, and is inferior in terms of processing speed and battery life. The button layout is also not as comfortable, a fact which becomes an annoyance — especially to anyone who has spent time with its predecessor.

Nokia has created a great phone — but they haven't exceeded the standards they set in 2007 with the N95 8 GB — a fact which irritates us as reviewers. As history proves succession isn't a guarantee of superiority. Check out both phones before you buy this — either way you cannot go wrong in terms of getting a superb phone.

Specifications

ARM 9 265 MHz CPU, 128 MB RAM, 16 GB storage, MicroSD expansion, 5 MP camera

Contact: Nokia India Pvt. Ltd.
E-mail: communications.india@nokia.com
Phone: 0124-4199000
Web site: www.nokia.com
Price: Rs 34,999

RATINGS	
Features	★★★★½
Performance	★★★½
Build Quality	★★★★
Value for Money	★★★
Overall	★★★★

Intex IT-10500W

Pretty Decent!

Intex's IT-10500W are a pair of floorstanders that look like some of the more well known brands seen in most electronics showrooms. These are floor standers, so there's no separate woofer unit.

The speakers perform fine through all of the tests. There is a little distortion when the volume is turned up beyond the 80 per cent mark. The hard drum beats come out really well, and the boomy bass is present as well. The crisp highs are not as prominent as in some of the high-end speakers. The tone in general isn't very neutral either. The sound is more inclined towards the higher mid-range frequencies.

These speakers are rated at 42 W RMS each, and should be enough for a decent sized living room. They're loud enough, and must be used while sitting at least a few feet away. The best use we can think of for them is to use them with a television set or as just speakers for a music system.

A big wireless microphone is bundled, and the speakers have a volume and an echo control for the microphone. Quality is average, but it is a nice feature to have for karaoke.

At Rs 5,450, it is good value for money. They might not have the best sound, but with the output power and the compactness that these speakers have, they could supplement the average TV's inbuilt speakers.

Specifications:

Frequency response: 50 Hz to 20 kHz, Bundled microphone
Dimensions: 15 x 30 x 66 cm.

Contact: Intex Technologies (India) Ltd
Phone: 011-41610224
E-mail: info@intextechnologies.com
Web site: www.intextechnologies.com
Price: Rs 5,450

RATINGS	
Features	★★★½
Performance	★★★½
Build quality	★★★½
Value for Money	★★★★
Overall	★★★½

LG KC550

Slide-n-shoot

The glossy black front with shiny metal accents looks good on the LG KC550 while the matte rubber finish at the back of it helps handling and adds on to the good looks. The glossy front is, however, a smudge magnet. The 2.4-inch colour display, with a QVGA resolution of 240 x 320 pixels, is bright, and quite vibrant.

The build quality of the KC550 is good, thanks to its partial metallic body.

The keys are brightly lit and well spaced out for comfortable operation. The overall built quality of the keys is good.

This phone is still a triband phone, and that's just sad. However, the signal reception of this phone is good, and you will not get disconnected every now and then in areas of lower signal strength.

The KC 550 sports a 5 Megapixel autofocus camera with a power LED flash and a self portrait mirror, It's capable of capturing images with a maximum resolution of 2592 x 1944 pixels. The camera uses Schneider-Kreuznach certified optics, and is protected by a sleek shutter with a stylish brown metallic accent.

On the video recording front, this camera is a star with the ability to record video at a resolution of 720 x 480 pixels at 30FPS. The phone has an inbuilt accelerometer, and can automatically change screen orientation based on the way you hold it.

The KC 550 has a 900 mAh battery which can take up to 3 days of moderate usage with just a single charge.

Finally, to sum it up, the KC 550 with its exceptional 5 MP camera and a low price turns out to be a good competitor. Before you go out and buy one, you should remember that it does not support GPS and isn't 3G ready. If these don't matter to you, the KC550, priced at Rs 15,990, is a good deal.

Specifications:

2.4-inch colour display, 5 MP autofocus camera, 1 GB memory card bundled, loudspeaker, FM, MP3 Player.

Contact: LG Electronics India Pvt. Ltd.
Phone: 0120-2560900
E-mail: viveksingh@lgindia.com
Web site: www.lgindia.com
Price: Rs 15,990

RATINGS	
Features	★★★½
Performance	★★★½
Build quality	★★★★
Value for Money	★★★
Overall	★★★½

Antec Three Hundred

Honey, I Shrunk The Nine Hundred

Antec is an equally well-known brand as Cooler Master and the rest. We have already tested one of their entry-level cases — the NSK4400. The Antec Three Hundred is a more robust and well-built case.

The body design is somewhat like the Antec Nine Hundred, but is a little simpler looking. There are two fans — one at the top and one at the rear. Both fans have throttle control switches to control their speed. Two more fans can be added to the front and one to the side of cabinet. The cabinet doesn't come with an inbuilt power supply, and when you do buy a power supply, you will find that it fits into the bottom of the case.

The doors on the case open outwards instead of sliding backwards first like on normal cabinets.

The cabinet is undoubtedly sturdier than the majority of entry-level cabinets. The case itself doesn't rattle too much, and the panels aren't the heaviest, but they're still very good.

However, this isn't as feature-laden, refined or as tough as some of the slightly costlier but well-known cabinets like the Cooler Master 690 for example. There are plenty of thumbscrews supplied along with the case itself although there are no locking mechanisms for the cards installed, or even for the drives.

Six hard drives can be installed inside this cabinet, and there is space for three optical drives. The cabinet has two USB ports, the audio connectors and the power and reset switches on the top of the cabinet.

At a price of Rs 3,600, this is something that people could consider, but without a power supply, we feel it's a little over-priced. You should be able to find competing products that are a tad more expensive, but with more features and better build quality.

Specifications:
Dimensions: 45.8 x 46.5 x 20.5 cm, Weight: 8.5 kg

Contact: Cyber Space Abacus Pvt Ltd
Phone: 044-24512288
E-mail: sales@antecindia.com
Web site: www.antecindia.com
Price: Rs 3,600

RATINGS	
Features	3.5
Performance	4
Build Quality	4
Value for Money	2
Overall	3.5

Belkin Laptop Cooling Pad

Fancy, But Works Well

The Belkin laptop cooler has a fresh and unique looking design that is made to be practical. It is built rather well and doesn't come with a metal body to absorb heat like the others we've seen from its competitors.

Even though it has a plastic body, it is still pretty well built. It is smooth, shaped well and has two strips of rubber-like grips at the top and bottom of the upper surface of the platform. This is to help your laptop stay in place. The bottom has a grip to stop it from sliding around on your table. In terms of size, it is good even for something as small as the new range of netbooks we've seen from some of the brands. We tried the 10-inch EeePC and it all fits together very well.

The fan, unfortunately, has no throttle control, so you're left with one single full-speed setting. The fan itself is quiet, but it vibrates a little. The lowest point on the laptop is at the same level as the fan itself. This simply means, that the fan is blocked by what ever surface you place it on. This causes the fan to slow down and make a little more noise. Fortunately, the stand at the rear of the laptop allows you to incline the laptop towards yourself. This also gives the fan some breathing space.

The other flap at the bottom opens up into a small compartment that can be used to store the small USB cable supplied with it. This is the same cable that will power the fan on the cooler.

We would have loved to see more out of this cooler especially USB ports and the throttle dial. At Rs 2,299, it is pretty expensive, but it's perfect for those who have good looking hardware and want a laptop cooler that looks good and works as well.

Contact: Belkin Asia Pacific Limited
Phone: 9810889785
E-mail: MadhuJ@belkin.com
Web site: www.belkin.in
Price: Rs 2,299

RATINGS	
Features	3.5
Performance	3.5
Build Quality	3.5
Value for Money	2
Overall	3.5

Microsoft Sidewinder X6

Keys, And More Keys

One might assume that there are only one or two big names that are making great gaming keyboards, and Microsoft doesn't want to be left behind. After reviving the Sidewinder brand, they've released the all new X6 keyboard.

The X6 is a really huge keyboard, and it has plenty of keys as well. The quality could be better, but the design is not shabby. The first things you notice other than the dials is the red backlight. The first dial is there to allow you to change the brightness of the lights, and the other is for the volume control.

The keyboard has a matte plastic finish, except for the areas around the keys. The keys themselves don't go deep into the keyboard, but aren't too shallow like a laptop keyboard either. One of the unique features is the detachable numerical pad which can be attached either on the right or left of the keyboard with the help of a magnetic strip on the side.

Using the keyboard is very confusing in the beginning, and it takes a while if you're upgrading from a standard keyboard. Once you do get used to it, however, it becomes a great stable keyboard to use. There are six macro keys on one side of the keyboard with a toggle to use three different settings for those keys. The numerical pad keys are also part of the macro keys.

There are a few other things missing in the X6. The right Windows key is missing and the size of some of the keys like the right [Shift] key are longer than usual. The drivers will let you customise it further.

Overall, this is a very good keyboard for gaming use. Although Rs 4,480 may seem like a lot of money for a keyboard, with the number of features it has, it's definitely worth it.

Besides, this is far from the most expensive keyboard around.

Specifications:
Detachable numpad, up to 30 programmable keys

Contact: Microsoft Hardware
Phone: 9886328580
E-mail: geethakb@microsoft.com
Web site: www.microsoft.com/india/edd/
Price: Rs 4,480

RATINGS	
Features	4.5
Performance	4
Build Quality	4
Value for Money	3
Overall	4

Samsung T190

A 19-inch Bordeaux?

The Samsung T910 seems to be influenced by the Bordeaux line. The design, especially the transparent bezel surrounding the screen, gave us this impression. The whole body is glossy, and there is a neat little touch-sensitive power button at the bottom. There is a strip of of red at the bottom and overall it is a very pretty screen to have.

As far as specifications go, there is no differentiator between this or any other 19-inch, and it has a maximum resolution of 1440 x 900.

The stand is sturdy, but offers no flexibility in terms of moving the screen about or rotating it. All the controls are mounted on the right side of the screen which makes it difficult to control the menus and features. The buttons are pretty clunky too. There are plenty of controls that allow you to alter the intensity of colours separately. Samsung has put in features such as MagicBright that allows brightness and contrast presets to be used.

With all the enhancements turned off, the usual sequences of tests were run on the screen. Colour rendition was average and banding was visible through the Displaymate test. Movies don't look extremely good either.

The screen comes with both VGA and DVI support, and there is a panel behind to hide the mess of cables.

All in all, this screen is for those to whom great aesthetics and design are more important than performance. Since this isn't close to the best, or worst, performer amongst the 19-inch screens we've seen, it isn't all that bad. Its pricing of Rs 13,000 is a lot though, even if it's Bordeaux-inspired, considering that you can get a much larger screen for around this price.

Specifications:
Maximum resolution: 1440 x 900, TN Panel, Response time: 2 ms, Inputs: DVI, DVI-Sub (analog)

Contact: Samsung India Electronics Pvt. Ltd
Phone: 011-41511234
E-mail: rengith.nair@samsung.com
Web site: www.samsung.com
Price: Rs 13,000

RATINGS	
Features	3
Performance	3.5
Build Quality	4
Value for Money	2.5
Overall	3

Belkin Wireless G Router

For Those Who Need The Space

Belkin's new router is rather compact and is excellent for cramped tables. The router can also be hung up on a wall if required. The design is pretty and the build quality isn't too bad either.

It comes with four ports for clients and one for an Internet connection — standard for a home router.

The user interface is boring, and way too bare for most people's liking. The design doesn't make it very easy to use either. It has all the features expected, including the ones for security. WEP, WPA and WPA2 are all supported, but the interface is painfully slow.

Routing, as expected, is possible too, and a unique feature is the list of application and games along with the list of ports used by them. This means you can just choose from a list and add to the port forwarding list. Filters can be set up to block access during specified hours or days. Support for DynDNS and DtDNS is also available, which allows the router to automatically update your WAN IP using free DNS services. This allows easy access to your computer or router from other locations. This feature is increasingly popular on routers these days though.

The Belkin Wireless G Router performs well with wired connections, but not so well wirelessly. A gigabyte of data took around two minutes four seconds to download across wires, but the same data took close to seven minutes thirty seconds over the air. Uploading files took a litle longer, but we didn't have any latency issues. The router does not support 802.11n, for those who might want it.

Updating of the firmware can be done using the web interface itself.

With everything considered, we can't highly recommend this product because of its price.

At Rs 2,699, it isn't overly expensive, but for a little more you can get much better products with the same (or more) features and a much better interface.

However, if space constraints are your biggest concern, and you want something really small to hang on the wall or keep on your table, the Belkin Wireless G Router might just be what you're looking for.

RATINGS	
Features	★★★★
Performance	★★★
Build quality	★★★½
Value for Money	★★★½
Overall	★★★½

Specifications:
Four 10/100 Base-T LAN ports, One WAN port, IEEEE 802.11b, 802.11g

Contact: Belkin Asia Pacific Limited
Phone: 9810889785
E-mail: MadhuJ@belkin.com
Web site: www.belkin.com
Price: Rs 2,699

Microsoft Arc

Light And Compact

The unusually designed object you see here is one of the latest pointing devices from Microsoft, and it's called the Arc. The Arc looks something like the Logitech MX Air, but is in fact just another mouse with a different design.

The Arc is a wireless mouse that comes with a tiny little Bluetooth dongle which also attches itself neatly to the back. The mouse can fold, very much like the foldable phones we see everyday. This both turns off the mouse and also is useful for carrying it around. With it folded, the Arc can easily fit into any shirt or pant pocket. It is also very good looking, with its dark colour and the transparent glossy finish.

There are no issues with using it despite the unusual shape. It has more or less the same comfort levels as any other mouse. Performance doesn't suffer either. There is no lag whatsoever. It makes a good desktop mouse, but the same can't be said as a gaming mouse. The mouse feet aren't very large, and don't seem to help the mouse slide around as easily as the other mice we've tested. The scroll wheel is OK, and apart form the standard three button setup, a fourth button is available on the left side that can be customised through the IntelliPoint drivers.

The mouse runs on two AA batteries, but is still pretty lightweight. The folding mechanism is sturdy and doesn't look like it will give way anytime soon. The mouse is symetrical, so left-handed users will have no cause for complaint. A small pouch is also supplied, to help you carry the mouse.

The price for the Arc is Rs 3,283, and laptop mice can be bought for well under this price tag. If you want something light and compact, with a stylish design, this is a good buy.

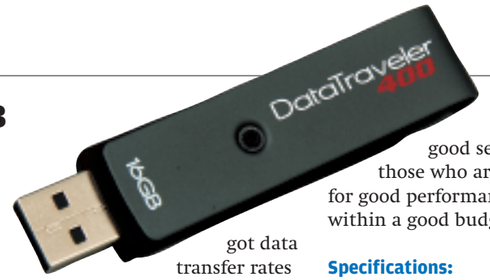
RATINGS	
Features	★★★½
Performance	★★★½
Build Quality	★★★½
Value for Money	★★★½
Overall	★★★½

Specifications:
30 feet range, foldable.

Contact: Microsoft Hardware
Phone: 9886328580
E-mail: geethakb@microsoft.com
Web site: www.microsoft.com/india/edd/
Price: Rs 3,283

Kingston DataTraveler 400 16GB

Loads Of Space For Cheap



With prices of flash drives dropping drastically, higher capacity drives are flooding the market at prices that are previously unheard of.

Kingston's new 16 GB drive is one of the largest, flash drives we tested this month.

In design, the DT400 is of the same size and format as most other flash drives. It comes with a swinging protection plate suspended on a hinge. This adds to the sturdiness of the drive and also gives it a nice look.

Password protection in the drive takes care of any security concerns, and performance is not an issue as well. It performs superbly in the sequential file tests. On an average, we got data transfer rates of between 25 and 30 MBps. Write speeds are slower as expected. HD Tach showed average write speeds of around 10 MBps, which is still quite impressive as compared to other drives of this capacity.

A software called Migosync comes bundled with the drive, and allows you to sychronize files. At Rs 3,999, this drive makes good sense for those who are looking for good performance within a good budget.

RATINGS	
Features	★★★½
Performance	★★★★
Build Quality	★★★½
Value for Money	★★★★
Overall	★★★½

Specifications:
Enhanced for Windows Readyboost, Password protection, File-syncing software included.

Contact: Kingston Technology
Phone: 022-26592961
E-mail: vishal_parekh@kingston.com
Web site: www.kingston.com/india
Price: Rs 3,999

A-DATA S701 Sport Series S701 2 GB

Sporty And Zippy

The A-DATA Sport series of products comes with unique designs and we got one of their 2 GB drives. The S701 sports a rough and modern design. The drive is very compact, has a rough texture with a metal border around it. The drive's socket doesn't have a metal border surround it, and this is a bit of a weak point.

It isn't an excellent performer from the scores we recorded. SiSoft Sandra recorded data read rates of around 19 MBps, and around 4.2 MBps write speeds. HD Tach scores didn't differ a lot either. Reading a GB of data took around 1 min 16 seconds. Writing a 1 GB file took around 3 minutes. HD Tach showed CPU utilisation of 6 per cent, which is a bit high.

At a price of Rs 550, you might find the actual prices to be a little lower, which is a good buy.

RATINGS	
Features	★★★½
Performance	★★★
Build Quality	★★★★
Value for Money	★★★★
Overall	★★★½

Specifications
Capacity: 2 GB, Windows ReadyBoost ready, Dimensions: 3.8 x 2.26 x 0.8 cm, Weight: 10 g

Contact: BAK Technology Co. Ltd
Phone: 080-41654050
E-mail: sales@baktech.com.tw
Web site: www.baktech.com.tw
Price: Rs 550

Apacer AH225 1GB

Good Looking, But Too Small

Apacer's AH225 1 GB drive is another one of your everyday flash drives. The design of the drive is clean. It has a magnetic cap that clings to the drive when closed. This allows you to attach the drive to a metal surface such as your computer case.

The Apacer drive performed a little slower than the higher capacity 2 GB drive in the read tests of both a single large file and multiple smaller files totalling to 1 GB. Data read speeds were around 13 to 14 MBps and write speeds showed 3.2 MBps. CPU utilisation was five per cent.

A software called Apacer Compression Explorer is available on their site for download which allows some amount of security and compression for the files put on the drive.

With flash drives getting this cheap, there is little reason to consider anything as small as 1 GB. The 1 GB drive is obviously overpriced at Rs 599, but Apacer's design is unique, and worth considering if you get higher capacity drives.

RATINGS	
Features	★★★½
Performance	★★★
Build Quality	★★★½
Value for Money	★★
Overall	★★★

Specifications
Capacity 1 GB, Dimensions: 5.49 x 2.6 x 1.0 cm, Weight: 13 g

Contact: Apacer Technologies Pvt. Ltd.
Phone: 080-41529061
E-mail: shiva_neelangi@apacer.com
Web site: www.apacer.com
Price: Rs 599

Microsoft Sidewinder X5 Mouse

A Cheaper Sidewinder Arrives

Microsoft's other introduction to the family of gaming peripherals is the Sidewinder X5 mouse. It is almost identical to the previous Sidewinder we've tested, except for a few minor changes. The Sidewinder X5 is a laser mouse with a 2000 dpi sensor.

The mouse is still huge, and the entire body has a matte plastic finish except the sides, which have an anti-bacterial finish. The two buttons on the side are available as well. Three lit-buttons on the top can be used to change the DPI on the fly. The DPI that you want to use for each of the three buttons can be set through the drivers.

The scroll has a clicky-feel to it and the buttons feel cheaper. The scroll movement is smooth though; the mechanism is robust and lets the scroll wheel stay very steady. The surface pads at the bottom of the mouse were changeable before, but are not now. The drivers allow a good amount of customisation.

The mouse performs flawlessly in games. There is no skipping whatsoever at any of the resolutions. The buttons on the side are suitably placed and are useful while playing.

Overall, this mouse is a big downgrade in terms of features. The performance is still great. Is it as good as the best gaming mice today? It is. For users who were never really impressed by weights and LED screens, but just wanted a pure gaming mouse, the X5 might be just perfect.

The price for the Microsoft Sidewinder X5 is Rs 2,867, which is only a little better than the earlier Sidewinder which was priced around Rs 3,000.

Specifications:
2000 DPI laser tracker, Refresh rate: 500 Hz, 5 programmable buttons.

RATINGS	
Features	★★★★
Performance	★★★★
Build Quality	★★★★
Value for Money	★★★
Overall	★★★½

Contact: Microsoft Hardware
Phone: 9886328580
E-mail: geethakb@microsoft.com
Web site: www.microsoft.com/india/edd/
Price: Rs 2,867

Altec Lansing VS2521

Underpowered And Overpriced

The Altec Lansing VS2521 is a 2.1 speaker set whose design looks a lot like the BXR1121 speakers from Altec Lansing. These aren't the prettiest speakers for sure, and the woofer looks like a small grey box.

The woofer has a down-firing driver and a lot of great things can't be said about its performance. The satellites are loud but the woofer isn't all that impressive. It isn't loud enough to complement the satellites, and distorts easily. The low range frequencies aren't generated properly either.

The satellites on the other hand are really great. The sound was crisp and detailed through all of the test tracks we ran on it. The poor bass means it isn't as great for movies or games. For music that doesn't depend a lot on bass, these speakers would be great. The highs aren't very sturdy either. When we played tracks with choir vocals, the high-end range easily distorts. Even though they are rated at 28 W RMS, they are still pretty loud.

One satellite speaker has controls for the treble, bass and the volume. There are connectors for mic-in and headphones.

The Altec Lansing VS2521 speakers are available for a MRP of Rs 3,199, which you may find a little expensive for the way it performs.

Specifications:
Satellites frequency range: 180 Hz to 20 kHz, woofer frequency range: 30 Hz to 180 Hz, Total power: 28 W RMS

Contact: Rashi Peripherals Pvt. Ltd
Phone: 022-67090828
E-mail: response@rptechindia.com
Web site: www.alteclansing.com
Price: Rs 3,199

RATINGS	
Features	★★★½
Performance	★★★½
Build Quality	★★★½
Value for Money	★★★½
Overall	★★★½

Viewsonic VP2650WB

Almost Affordable

Sleek LCD screens have taken the place of the huge ugly boxes that CRTs were. With smaller footprints and larger screen sizes, even screens as large as 24 and 26 inches are practical for everyday use.

The 26-inch Viewsonic VP2650WB runs at a resolution of 1920 x 1200 — the same used on 24-inch screens. The design of the screen is simple and nothing like some of the more stylish but smaller screens. There are no inbuilt speakers, no rounded bezels here. A fairly thin border surrounds the screen, but the back is rather bulky. The stand mechanism is useful and allows the screen to be lifted, rotate and even swivel. The stand is sturdy and doesn't let the screen shake a lot. The raising and lowering system is smooth, but gives a little more resistance than some of the similarly behaving stands we've seen.

The VP2650WB is a TN panel, which means the best of colours and viewing angles can't be expected. With the screen can be set up without any tweaking, the colours are too gaudy. With the screen calibrated, the colours and contrast improved significantly. The colours look natural and the clarity is perfect. This is a large screen, and if you sit too close to it, the edges start to look at little blurry. Viewing angles in general are pretty good for a TN panel, except when looked at from below. Contrast ratios are also decent.

Other than DVI and VGA, the screen can be used as a USB hub. There are four ports at the back of the screen. Using the screen is also simple. All the navigation is done through four buttons on the front of the screen.

A 26-inch LCD screen is really a joy to work with, but the price of Rs 30,999 could stop you from buying this one today. A 24-inch TN panel LCD screen is considerably cheaper, and also runs at the same resolution. Only those who want a larger screen would consider this. If you want your media running on a large desktop screen, then the VP2650WB is for you.

RATINGS	
Features	★★★½
Performance	★★★★
Build Quality	★★★½
Value for Money	★★★½
Overall	★★★½

Specifications:
Maximum supported resolution: 1920 x 1200, Power consumption: 110 W, Contrast Ratio: 1000:1
Dimensions: 59.5 x 46.8 x 38.8 cm, Weight: 14.4 kg.

Contact: Viewsonic Technologies India Pvt Ltd.
Phone: 022-2668 1921
E-mail: viewsonic@redington.co.in
Web site: http://in.viewsonic.com
Price: Rs 30,999

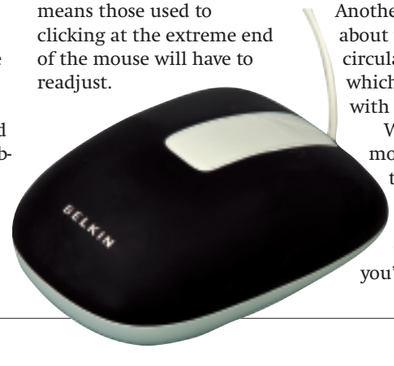
Belkin Washable Mouse

That's Right! Washable!

Belkin's other product we received this issue was also one of the most unique ones. This mouse is, as the name gives away, is very washable. In size, it's the size of most laptop mice and shaped a little differently.

The body has no crevices for water to seep into the mouse itself. The biggest problem with making a mouse waterproof has to be the scroll wheel region. It has been replaced with a touch sensitive pad. The pad works fairly well and is probably nicer for people who don't like the gritty feel of most mouse scroll wheels. The same touch sensitive strip allows you to do side scrolling as well. There is no middle click though. The sensor region also appears to be sealed off to prevent any water from getting inside.

The mouse buttons are hidden away under a membrane of rubber too. The buttons are placed towards the center of the mouse which means those used to clicking at the extreme end of the mouse will have to readjust.



The performance of the mouse in general is OK. This is a 1200 dpi mouse, but it somehow doesn't feel as smooth as some of the other mice. This isn't the best mouse for gaming, but it will do just fine for general desktop use.

The cable isn't as long as some other desktop mice, but then this is a mouse geared towards laptop users. Another great thing about the mouse is the circular strip under it, which lets it slide about with little resistance.

We washed the mouse with water to test its claim, and it worked perfectly later. One thing is for sure, if you're the type who eats at a computer, and want to wash your mouse and hands together later, there really isn't anything else available!

Specifications:
1200-dpi optical sensor, waterproof, touch-sensitive mouse scroll

Contact: Belkin Asia Pacific Limited
Phone: 9810889785
E-mail: MadhuJ@belkin.com
Web site: www.belkin.in
Price: Rs 2,099

RATINGS	
Features	★★★½
Performance	★★★
Build Quality	★★★½
Value for Money	★★★
Overall	★★★½

Acer Aspire One

Is This The One?

Acer is yet another laptop manufacturer fired up with the Netbook craze. Acer calls their version the Aspire One. Like the MSI Wind and the higher-end ASUS EeePC, this one too runs on the all new power saving Intel Atom processor — the 1.6 GHz N270.

The Aspire One we received had a 120 GB hard drive, a three cell battery and a 9-inch screen. In terms of size, it is the smallest of all the Netbooks we've seen, but not by a lot. The weight too is similar to the three cell versions of the other laptops.

In terms of looks, it surpases all the other netbooks. The body has a glossy finish and bits and pieces of contrasting colours are used on tips of the hinges.

Sporting a 1024 x 600 resolution, the One has a wider aspect ratio than the typical wide-screen desktop. The glossy finish on the screen means that a lot is reflected, but it also makes images look a little sharper.

The base slants into the front of the laptop, which makes it consume less space. The keyboard has no inclination whatsoever, and this makes resting the hands on the edge very difficult

One of the issues with the touchpad is the buttons for the mouse clicks. Both of them are situated vertically on either side of the touchpad which makes accessing it a little awkward. Fingers get crossed while trying to access the button on the other end while using one finger to slide around the touchpad. The touchpad is also considerably smaller than the ones found on the other netbooks. Acer had to do this to make the laptop as compact as possible.

Although there is a thick bezel surrounding the screen, there isn't any space spared around the keyboard. The keyboard feels alright, and the keys are sturdy. The keys do seem a little smaller than the 10-inch EeePC and MSI Wind. The Control key is on the extreme left of the keyboard unlike the MSI Wind where the Function key is the last key in that row.

Acer could have tried to squeeze the bezel around the screen a little more, but that would mean making the keyboard even more cramped and tiny than it already is.

One cannot help but feel that with such a large bezel, Acer might have put in a 10-inch screen instead; though this would raise costs. The speakers are weak, and sound extremely flat. The sound is a lot better once you connect headphones to it.

The laptop doesn't have enough vents on the sides to throw out hot air, which means it runs warm most of the time. Expansion is taken care of by the three USB ports and two separate SD card readers on the laptop.

The Aspire One comes with a soft inner lined carry pouch and a very small power adaptor, which doesn't get very hot.

RATINGS	
Features	3.5
Performance	3.5
Build quality	3.5
Value for Money	4
Overall	3.5

ASUS's eRecovery feature comes installed which ensures you don't lose any drivers or software.

The Acer Aspire One comes in many flavours and the Linux version is easily the cheapest of all the Netbooks. At Rs 20,999, the one we reviewied — the 9-inch one with a 3-cell battery and a 120 GB hard drive makes excellent sense. Overall, this is an impressively put together Netbook, and is well worth the price tag.

Specifications:
Intel Atom N270 1.6 GHz, 1 GB RAM, 120 GB HDD, 8.9-inch LCD (1024 x 600), 10/100 LAN, 802.11b/g WLAN, 3-cell battery, Dimensions: 24.9 x 17 x 29 cm

Contact: Acer India Pvt. Ltd.
Phone: 080-40708700
E-mail: rajesh_aiyar@acer.co.in
Web site: www.acer.co.in
Price: Rs 20,999

ASUS Eee PC 1000H

Not Just Another Netbook

The Eee PC 1000H impresses with its superior performance and its gorgeous looks altogether making it all the more perfect companion for the road warrior.

We've noticed a trend from ASUS with the Eee PC — they improve on the older versions of this mini laptop, but keep the older ones around.

The latest, and the largest of these netbooks is the Eee PC 1000H, which shares many of the same features of its predecessor the Eee PC 901 including a 1.6 GHz Intel Atom processor, a 1.3 megapixel webcam, 1GB of RAM and the same gorgeous drop dead looks. However, it has some differences like a larger 10-inch screen, more spacious keyboard, 160 GB hard disc drive and no more Linux — just plain old Windows XP; our favourite.

The Eee PC 1000H comes in different colours like Red, Green, Pearl White, Fine Ebony, and all have the same glossy lid that's a fingerprint magnet. It's a good thing ASUS includes a complimentary cleaning cloth, because it's bound to be used often.

We got the Fine Ebony version for review, the glossy black lid has the new Eee PC logo in cursive on top. Its improved silver hinges give it a fashionable look.

The display, unlike the older 7-inch Eee PC, is a bigger 10 inches, with a native resolution of 1024 x 600. The display is quite bright and vibrant. The matte display screen looks good at various viewing angles. In comparison to the Acer One, the Eee PC's display seemed crisp and vivid, and it's something movie fanatics would love. The display controller is an onboard Intel GMA x3100, so don't get your hopes up about playing games or doing 3D intensive work.

The Glossy black bezel comprises of an inbuilt 1.3 megapixel webcam that is good for video conferencing, and the onboard Digital array microphones. The onboard speakers are Dolby Sound Room Certified, and despite being positioned underneath the laptop, they reproduce clear (but not powerful) sound. They're still good enough to cover a small room.

The Eee PC 1000H gets a bigger and better keyboard than its ancestors, the keyboard is about 92 per cent of the original Eee, will pose no problems for speedy typists and is comfortable to use.

The touchpad, however, is a bit of disappointment. Unlike the keyboard, it isn't comfortable to use, and the two click buttons are very hard on the fingers. The touchpad does support multi-touch, and the iPeople amongst you are sure to love it.

The heart of this Netbook is an Intel Atom N270 processor, running at 1.6 GHz. This processor, as you probably know, is designed for low-end computing, but it will not disappoint those looking to mainly work online and on some office documents. Overall, the Eee PC 1000H can handle most basic computing tasks easily with some mid-range tasks to boot.

The Eee PC 1000H comes with 1GB of RAM, for the Windows version and 2 GB for the Linux version — which is strange, because most Windows users would prefer 2 GB of RAM. The disc drive is the biggest plus here — a whopping 160 GB. Although the drive is a slower 5400 rpm model, we were quite happy to not be running Windows Vista.

The Eee PC 1000H comes with a six cell battery. The battery lasted for 3hrs and 23 minutes under test conditions. The large battery and the power-saving Atom processor are to be thanked for the impressive battery life.

Despite the bigger screen and bigger battery, ASUS has tried to keep the weight as low as possible. At 1.45 kg, this Netbook shouldn't be hard to lug around.

Those looking for an extremely portable Netbook should definitely pay close attention to this latest model of the Eee PC. Now that the HDD is bigger, as is the screen, there's not much else once could ask for in a Netbook. However, you do have to consider the price, which is fast approaching the realm of full-fledged, entry level or mid-range notebooks. You may want to keep in mind that the Eee PC comes without an internal optical drive, as this might change your buying decisions.

Specifications
Intel Atom processor N270, 1GB Ram, 160 GB HDD, 10-inch display, Bluetooth, Wi-Fi, LAN, Windows XP.

Contact: ASUS Technology Pvt. Ltd.
Phone 18002090365
E-mail: media_india@asus.com,
Web site: www.asus.in
Price: Rs 26,490

RATINGS	
Features	4.5
Performance	4
Build Quality	4
Value for Money	4
Overall	4

MSI Wind U100

Wind Of Change

MSI has been quick to bring their Wind Netbook to India, and we received the 6-cell version. With Intel releasing their Atom processors, all the top laptop manufacturers have been focussing on making compact and cheap laptops for the masses. ASUS' 10-inch Eee PC 1000H is direct competition to the MSI Wind.

The MSI Wind has a 6-cell battery and a 10-inch screen, and pretty much the same configuration as the Eee PC 1000H. The body has a matte finish, and its curved edges give it a very compact look.

There are a few other differences between the MSI Wind and the ASUS EeePC: the keyboard, although similarly spaced, is positioned weirdly. The Function key sits on the extreme left bottom of the keyboard, where the [Ctrl] key should be. There are status indicators for most of the features that you control using the Function keys. The touchpad is a little small, and the two mouse clickers have been integrated into one large button.

An Intel Atom 1.6 GHz processor powers the MSI Wind along with 1 GB of RAM and an 80 GB Western Digital drive.

The build quality in general isn't as good as the ASUS Eee PC. The hinge, for example, doesn't feel as sturdy, which means with the Wind you have a screen that literally will flap in a strong wind. The keys feel a little cheaply put together as well.

There's really nothing to set the Wind apart from the Eee PC in terms of performance though, and this is because of the almost identical hardware in use. SiSoft recorded a hard drive index of 47 MBps, and our video encoding test took close to four and a half minutes.

Although the 802.11n standard is not the norm just yet, it seems significant enough to mention that the Eee PC supports it, while the Wind does not.

The screen quality is more or less what we've come to expect from Netbooks. It's important that you realise that although screens on Netbooks aren't as vibrant as those on regular sized laptops, it's the high 1024 x 600 resolutions on smaller screens that cause these screens to look very crisp and sharp.

The center of the laptop gets a little warm and the vents on the side of the MSI Wind are quite large. The Wind's 6-cell battery sticks out from the bottom of the notebook instead of the back. This adds to its compact profile.

The webcam quality is average. The audio quality isn't very impressive either but it is better than the Acer. The charger is a little bulkier than the one supplied with the EeePC as well.

Overall, the MSI Wind is a great laptop and it lies in between the Acer One and the ASUS EeePC 1000H in price. In terms of features, it lags behind the Eee PC 1000H, but the 6-cell version of the MSI Wind is priced at Rs 29,000. This makes it a little expensive as compared to the MSI Wind. As long as the EeePC 6-cell is priced around the same as the MSI Wind, the Eee PC remains the better option. If you can get the Wind for over Rs 1,500 cheaper, it's worth considering.

Specifications

Intel Atom N270 1.6 GHz, 1 GB DDR2 667 MHz RAM, 80 GB HDD, 10" 1024 x 600 LCD screen, 6-cell battery

Contact: MSI
Phone: 18002000004
E-mail: marketing@msi-in.com
Web site: www.msi-india.com
Price: Rs 29,000

RATINGS	
Features	★★★★☆
Performance	★★★★☆
Build Quality	★★★½☆
Value for Money	★★★☆☆
Overall	★★★½☆

Samsung SCX-4300

Print In Style

The SCX-4300 is the latest in the successful SCX series of multi-function devices from Samsung.

The SCX-4300 looks terrific in its black outfit and will definitely look good on any desk. The wider and deeper SCX-4300 now allows buttons and two lines, 16 character LCD display on the front console. The paper cassette has healthy 250 page capacity and the output tray can hold around 50 sheets.

What's even more impressive is the fact that the device is able to produce first print within 11 seconds. While most MF device print and scan well they don't do that good when copy function is used which requires both the scanner engine and print engine to work in a serial manner. The SCX-4300 is able to deliver first copy within 13 seconds, the best we have seen in the small device category.

In our document printout tests the SCX-4300 delivered exceptional quality, however with just 600x600 dpi resolution and half toning, graphics don't come out well. We tried printing line graphs, pie charts, bar graphs and they came out well, but similar results were not seen when photographs were printed. Print quality suffers a bit with the copy function.

The scanner unit on the SCX-4300 is moderately fast at scanning and takes around 20 seconds to complete a 150 dpi A4 colour photograph. The scanner output quality is moderate; nothing to write home about. Details are captured well with sharpness kept within check.

At Rs 8,300, the SCX-4300 is an excellent buy for the features on offer. If you want a sturdy, low volume laser MF device then SCX-4300 makes good sense and we recommend it.

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

Specifications

19 PPM, 600x600 dpi resolution, 1-99 copy, 600 x 2400 dpi scanner, scan to PC, 250 sheet cassette, 8 MB buffer, 10,000 monthly duty cycle, 21 kg.

Contact: Samsung India Electronics Pvt. Ltd.,
Phone: 011-41511235
E-mail: m.aditya@samsung.com
Web site: www.samsung.com.in
Price: Rs 8,300

Epson Stylus Photo 1390

Colourful Business

The Epson Stylus Photo 1390 is not exactly meant for home-based printing that is why we think the company has paid lesser importance to the looks and beautification of this mammoth printer.

To start with the Epson Stylus Photo 1390 gets its big size due to its ability to print A3 borderless prints. The printer utilises Epson's patented INKdividual 6 colour cartridge system. The Epson Stylus Photo 1390 offers print resolutions of up to maximum of 5,760 x 1,440 dpi, along with advanced Variable Sized Droplet Technology (VSDT), which allows the printer to utilise different size ink droplets as per the job requirement .

The Epson Stylus Photo 1390 comes bundled with Epson's very own photo printing utility. This utility allows the user to print with the optimum quality. The utility also allows you to do some minor corrections to the pictures too. The inclusion of Adobe RGB support for SLR class printing and RAW file support for this printer is an added advantage for photo enthusiasts.

Printing speed is good and speedy enough to finish your chores in time, the Epson Stylus Photo 1390 took 34.1 seconds to print a full A4 page text and images in colour, while an A4 photo print (best quality, borderless) took just 2 minutes and 25 seconds to complete.

Quality of prints was good but not the best, because even at best settings there was some loss in picture sharpness. The good thing is that in a borderless print we did not see any grains that are common in most colour photo inkjet printers.

So finally to sum it all up Epson Stylus Photo 1390 is a photo class printer that performs jobs at the best possible time and gives you a plethora of features and is surely to be on the top list of photo enthusiasts.

RATINGS	
Features	★★★★☆
Performance	★★★★☆
Build Quality	★★★★☆
Value for Money	★★★☆☆
Overall	★★★½☆

Specifications

Print resolutions of up to 5,760 x 1,440dpi, borderless printing support for A3 size.

Contact: Epson India Pvt Ltd
Phone: 080-30515023
E-mail: think@eid.epson.co.in
Web site: www.epson.co.in
Price: Rs 19,999

Samsung CLP 315

Low Cost Colour Laser

For those who don't have a colour Laser printer, and who are not very willing to spend big bucks on one, the Samsung CLP 315 is one of the best solutions. Giving decent all round performance and not hitting very hard on the pocket.

The Samsung CLP 315 standing at 9.6 by 15.3 by 12.3-inches is indeed the world's smallest colour Laser printer and with its small footprint and nice looks it is good enough to be put up along with a desktop computer, or near your office desk.

With support of up to a maximum of 2400 x 600 dpi print resolutions it can take care of your daily printing needs. No photo printing and editing applications come with this printer.

One good thing is that it ships with cartridges preinstalled into the printer so you'll have to face least hassles to set it up and get going. The Samsung CLP 315 comes with a starter 1000 page yield toner cartridge.

Speedier operation is also a plus point for the Samsung CLP 315, in our regular test it took 28 seconds to print an A4 page with text and graphics at max quality, while taking 54 seconds to print an A4 Photo print at max settings and if you have a lot of text to print then it will take just 10.5 seconds to print a full A4 text page.

Even though the cost is low and there is no loss in performance but then again we saw some issues with the colour contrast and darkness, most images were good on details but were dark at both best and normal print settings. Borderless printing is not available on this printer.

Finally it is one of the smallest yet fastest colour Laser printers, not at all bad for people who would like to have a colour Laser while being on a budget.

Contact: Samsung India Electronics Pvt. Ltd
Phone: 011-41511234
Web site: www.samsung.com/in
Price: Rs 11,999

Specifications
Print resolutions of up to maximum of 2400 x 600 dpi, 150 sheet paper cartridges, comes with a starter 1000 page toner cartridges.

RATINGS	
Features	★★★½
Performance	★★★½
Build Quality	★★★★
Value for Money	★★★★½
Overall	★★★★

Panasonic KX-MB772

Ultimate Office Multi-funtion Device

The feature-filled Panasonic KX-MB772 makes an excellent choice as a mid-range laser All-In-One. This newly launched device can print, copy, scan and Fax with the option of a handset which allows calling too.

The design is unmistakeable Panasonic — white body, clean design lines, large buttons and robust yet appealing industrial design.

The print unit is fast and can deliver a text printout in less than 11 seconds. Higher quality prints take a second longer. Graphic printouts take a while longer and are generally take 15-16 seconds. Graphs with lots of patterns, lines, gradation are done with in no more than 15 seconds-fast. When printing graphs with patterns and gradation, the transition from darker to lighter shade is smooth with no artefacts.

The KX-MB772 improves on the copying speed and can deliver a laser copy in just 13 seconds; 7 seconds less than KX-MB262CX. When used from copying graphics the unit takes slightly longer but the timings are within acceptable limits.

Laced with an automatic document feeder the scanner unit can zip through multiple pages at a speed of 15 PPM. The CIS scanning element makes this possible. The flat bed scanner can be used for scanning books, newspaper, visiting card etc. The bundled software makes it easy to manipulate the image.

The toner cartridge is rates to deliver 2000 pages whereas the drum can see 6000 pages in full lifetime. Priced reasonably at Rs. 15,999 the KX-MB772 makes a great device if you need a robust, Fax ready machine.

Contact: Laser Telesystems Pvt.Ltd.,
Phone: 022-6688 0707
E-mail: idc@lasertelesys.com
Web site: www.panasonic.co.in
Price: Rs 15,999

Specification
32MB buffer memory, USB 2.0, FSK/DTMF, 20 sheet ADF, 250 Sheet paper tray, 600 x 600 dpi, 1-99 copies, 600 x 1200 dpi scanner resolution, Power: 950W

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

Panasonic KX-MB262CX

Robust And Affordable All-in-one

The KX-MB262CX is the latest in the range of successful Laser multi-function devices from Panasonic. Like other Panasonic all-in-one (AIO) devices, the KX-MB262CX is based on the robust copier print engine; where the toner and drum are separate entities

The KX-MB262CX sports an industrial design but yet looks appealing. The all white body with large green button reminds us of Panasonic FAX machines. The operating console has a 2 line LCD display with the right buttons clustered for easy access.Overall the console looks clean, is easy to use and sports perfect ergonomics.

Once installed, the machine takes around 5-10 minutes to get going.

The print engine boasts of 18 PPM and during our tests it managed to deliver close to 16 pages, impressive. First print is dished out in just 10 seconds. While the print unit is fast at printing text it takes 3 seconds more to print complex graphics documents. The KX-MB262CX doesn't really excel at the copy; it took around 20 seconds to complete our test document.

Print quality is brilliant and graphics as well as text come out really good. The print engine is rated at 600 x 600 dpi and at this resolution the printouts show no visible artefacts. Printouts taken at 300 dpi show increased graininess in graphics but text still remains sharp and crisp.

The scanner output quality is reasonable good for mundane jobs such as copying and colour scanning. Overall the scanner unit does a decent job. At Rs 9,800 the Panasonic KX-MB262CX is priced slightly on the higher side as compared to similar spec products from HP and Samsung. However the KX-MB262CX has it's advantages too, the separate drum and Toner unit will save a lot of money in the longer run. As a high volume laser printing all-in-one, the Panasonic KX-MB262CX makes a good choice.

Specifications
18 PPM, 250 page paper tray, 600 x 600 Dpi resolution, 1-99 copies, 600 x 2400 Dpi scanner, 32 MB buffer, 900 W maximum power consumption.

Contact: Laser Telesystems Pvt Ltd
Phone: 022-6688 0707
E-mail: idc@lasertelesys.com
Web site: www.panasonic.co.in
Price: Rs 9,800

RATINGS	
Features	★★★½
Performance	★★★★
Build Quality	★★★★
Value for Money	★★★½
Overall	★★★½

BenQ Joybook S32-LE27

A Joy To Use

As the name suggests the BenQ Joybook Series 32 of notebooks aims to bring joy and fun to teenagers. To start with, the LE27 notebook comes with a glossy white finish with a silver coloured strip on the lid that holds a big BenQ logo.

The laptop packs a 250 nit, Ultra Vivid 13.3-inch display that delivers crisp and vivid visuals and better brightness and contract levels. The BenQ Joybook has an onboard 1.3 megapixel webcam called the QEye.

It has a full-sized keyboard that is good to work on. The keys are a bit hard, but will not tire your fingers. There are a few annoying things about this keyboard too, such as the backspace key being shorter, and the Function key is on the outside. The touchpad on the other hand is a Zero-Gap touchpad, which is very sensitive and very comfortable to work on.

The Joybook runs on an Intel Core 2 Duo processor running at 1.83 GHz with 1 GB of DDR2 RAM plus a 160 GB hard disc. The onboard stereo speakers are SRS Truesurround XT certified and are satisfactory.

In PC Mark 05, the BenQ Joybook was able to achieve 3742 PC Marks.

The graphics are handled by the onboard Intel GMA X3100 chipset. We tested it using the 3D Mark utility and the BenQ Joybook was able to score 547 3D Marks.

The Fujitsu hard drive was able to achieve a drive index of 40.74 MBps in SiSoft Sandra, with a Random Access time of 10 ms.

The BenQ Joybook has the looks of a teen laptop, but performs as well as any other business notebook. We just wish it had a dedicated graphics solution.

Specifications
Intel Core 2 Duo Processor 1.83 GHz, 1GB DDR2 Ram, 160 GB HDD, 13.3in, 250nits display, Bluetooth, Wi-Fi, DVD burner.

Contact: BenQ
Phone: 011-43531700
E-mail: sales.enquiry-in@benq.com
Web site: www.benq.co.in
Price: Rs 41,000

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

Agent 001

Camcorders

This festive season, many of you will be looking for a camcorder. Let Agent001 help you decide

If photographs store moments, then videos store memories. For everyone who has ever encountered a situation which he/she wishes to preserve, to treasure for years to come, or simply capture as an experience or a memory, I understand the frustration of clicking half a dozen photos only to realise that none of them have really captured the essence of the occasion or moment. Everyone who has experienced this will realise the importance of a digital camcorder. To most other people a camcorder is an alternative to a digital camera — after all, they both shoot videos, and they both capture photos as well, don't they?

I don't agree with this view. For me, convergence is something that isn't applicable to digital cameras and camcorders. Sure they do similar jobs, and can double for each other to some extent. They aren't substitutes for each other, and I figure will not be so for at least another five years. Cameras take beautiful photographs, digital camcorders are the video specialists — if you need to shoot videos, do not skimp on price and buy a digital camera. Similarly if you have a camcorder and you need to take photos, please buy a camera — your camcorder isn't really built to shoot images. The quality of such photos will be comparable to an über cheap camera.

Camcorders are a lot easier to shop for than they used to be, and after cell phones and digital cameras you will come across people flocking camcorder stalls in large electronics malls. Chain stores for digital electronics like Croma, Next and Reliance Digital are flooded with camcorders, so as a potential shopper for a camcorder there's no dearth of choice. Let's talk brands. The most commonly available and popular brand is Canon. This is largely because of the reputation Canon has with compact cameras — people naturally believe that Canon's camcorders are excellent too. While this isn't necessarily indicative of performance, you will find more Canon models around than any other. Samsung is another popular brand, and shares second position in terms of popularity with Sony. Panasonic is also available, and has some excellent offerings, but only larger malls will likely have these. JVC is an excellent brand, but not officially available in India. I did come across a handful of these camcorders but they are available in the grey market, without bills. So you will be buying models from these brands at your own risk. Moreover since official presence is absent, service or repairs will be an issue.

But before you go running after a particular brand or model there's some basic stuff you should know. For one, the zoom is an important consideration for a camcorder. Higher zoom models are costlier in general, although not necessarily better in terms of quality of output or features. So paying extra for an ultra zoom model when you do not need that long a zoom is pointless, since you could spend the money on a better model with a more appropriate zoom. The zoom on most camcorders varies from 8x to around 45x and absolutely do not shop on the basis that the higher zoom models are better. In fact if you are planning on doing a lot of indoors shooting for occasions such as weddings, birthday parties and such then a 12x zoom is more than enough for you. What you should look at for such usage is the low light performance of the camcorder you choose, since indoor shooting involves a lot of close-up shooting and incandescent lighting. On the other hand, if you holiday a lot and do a lot of outdoor shooting you will need a long zoom. Look at camcorders with an optical zoom of at least 32x or even 40x. I am referring to the optical zoom figure here and not digital zoom. For all camcorders ignore the digital zoom specification irrespective of how impressive it may appear to be, since this is not an indication of actual zoom but an interpolated zoom. A 20x optical zoom is better than a 3000x digital zoom. Remember that with such long zooms image stabilisation (IS) is very important, perhaps even more important for a camcorder than a digital camera because blur is more likely while capturing videos since your hand will not be stationary, and tripods are a rarity for camcorder wielders. OIS or Optical Image Stabilisation is the best kind of IS available since the lens actually has a ceramic roller system or a fluid immersed lens which reduces shake. EIS or Electronic Image Stabilisation utilises integrated circuitry to reduce or eliminate blur and while this is present on most camcorders, it isn't the best method of IS around. If you need a higher zoom, please look for an OIS model.

Another thing which is very important and worthy of your attention is the ergonomics of the device in terms of both button placements and menu intuitiveness. Once you use a camcorder and fiddle around with its settings you will realise how important the menu system is. Button placement is even more important because you will eventually get used to a crappy menu system but non-ergonomic button placement is something that will pain you for a long time to come. I've used camcorders that gave me a cramp in my thumb and palm due to a very cramped record button, and some camcorders have their menu buttons placed away from your hand which means you need to use your other hand to operate the menus, and one handed operation is impossible. What I'm saying is its important to actually use each camcorder you plan to buy for at least ten minutes to see if it really fits your hand and usage habits. Some of the so called *compact* camcorders are ergonomic nightmares as I discovered, and you should never give compactness preference over comfort, unless space is a premium.

A very important factor other than a camcorder's specification is what sort of recording medium it uses. Traditionally, camcorders used either Mini DV tapes or 1.4 GB DVD disks. The latter are usually preferred because the chances of media failure is minimal. These DVD disks are of a small size and the dual-layer versions store up to 2.5 GB. Re-writeable versions are also available. The two newer storage media available are HDD (hard disk drive) and flash storage. The latter has become popular after the tremendous drop in the prices of flash storage. It's not uncommon to see flash-based camcorders offering up to 16 GB of storage with additional SD or MicroSD expansion available. Remember that most camcorders do not allow you to store videos on the expansion card, which is exclusively used for still images.

In my opinion a hard drive camcorder makes the most sense. Sure — they're bulkier and heavier for obvious reasons, but with the popularity of 1.8-inch HDDs this is improving. The pros — quicker start-ups with fewer delays in recording, not to mention the huge space at your disposal. And a hard drive can be read from and written to virtually infinite times as compared to DV tapes and DVDs. HDDs are available in sizes ranging from 20 GB all the way to 160 GB.

I came across Canon's HG10 which has a 10x optical zoom and a 2.96 MP CMOS sensor. This camcorder is HDD based with 40 GB of storage and features an HDMI out. Canon advertises 1080p support but in reality you can record video in 1440 x 1080p which isn't true 1080p HD (1920 x 1080). This is nevertheless impressive for a camcorder. The best part is the functional OIS system. Build quality is good, and low light performance is very acceptable. At a price of Rs 76,000, the HG10 is costly, but then it offers a lot. If you want a cheaper HDD based camcorder Sony's DCR-SR45 is available for Rs 24,000. This model has a 30 GB HDD and a whopping 40x optical zoom. It doesn't offer HD resolutions and neither is quality as good as the HG10, but it's much cheaper. I found issues with the IS system which is electronic. Slightly better low light performance can be had from the DCR-SR65 which has a 25x zoom, and a larger 40 GB HDD. It also has a larger 1/6 inch sensor which is the main reason behind the increase in quality over its cheaper sibling. It's priced at Rs 29,000. The Panasonic SDR-H60 was an impressive camcorder. It's hybrid, meaning both HDD and memory card are available as storage media. It's got a 60 GB HDD and an amazing 50x optical zoom that works superbly. Panasonic's OIS is the best I've come across and even at the long end of the zoom I could get focussed recordings sans blur. The only demerit is that the performance of the camcorder in dim lighting isn't the best around, although it's not as bad as some of the other models, and I had to nitpick somewhat. It's priced at Rs 46,000, which seems a little expensive for a non-HD camcorder.

Samsung's VP-DX103i was an interesting model, quite lightweight and compact for a DVD model. With a 34x optical zoom and a 1/6 inch CCD sensor — this a good looking camcorder with decent features. It offers acceptable performance and for a price of Rs 15,000 is an absolute killer deal if you are entering the world of camcorders or are on a shoestring budget. In fact, given the quality, bundle and the performance I was shocked to find this camcorder available so cheap.

If I were shopping for one, I'd have gladly paid five thousand bucks more for this. Sony's DCR-DVD610 is available for Rs 19,500, it has a large zoom — 40x, but the 1/8 inch CCD sensor doesn't give as much quality under dimly conditions as the VP-DX103i which is clearly better priced. Canon's DC310 is a DVD camcorder with a 1/6 inch sensor that allows capture up to 0.6 megapixels. It has a very decent 37x zoom although the IS system is strictly mediocre. At a price of Rs 19,000 it fits right into the entry level category.

After looking around and playing around with these models I was able to decide what I would buy if I had the cash to burn on a camcorder. For me the Samsung VP-DX103i impressed me with its build quality and acceptable performance. The clincher of course is the sterling price, 15,000 bucks is just amazing for a camcorder. If I were to look at a high end camcorder the Canon HG10 would tempt me for its HD capabilities, but I'd rather go with the all round zoom and terrific OIS capabilities of the Panasonic SDR-H60 — it won't do HD and that's my sole gripe.

Agent 001

Gaming Consoles

Let The Button Mashing Commence...

Gaming consoles bring to mind irate parents, neglected studies, and of course, late nights and frantic button mashing. Perhaps because of this, Microsoft's and Sony's two consoles haven't quite been the proverbial hotcakes that they expected them to be. It's sad to see technology associated with such negatives. This also explains why so many people in India still think of gaming in the vein as the PC — and the console is perceived to be a strict *gamer only* toy. If you told someone that Sony's PlayStation 3 was also a Blu-Ray player they'd go "Oh? I thought it was used to play games". Or if I told your parents that MS's X360 can connect to the Internet they'd go "No way! You need a computer for that, and where's the keyboard?" The point I'm trying to make is that people ought to stop viewing a console as a gaming box only. It is that and more — and manufacturers the world over are looking to make consoles even more multi-purpose — so called Jacks of all trades.

Sure, consoles are 90 per cent about gaming. Of course a PC can do anything a console can, and then some. But a PC isn't really a console's competitor, although most gamers in India will feel so. We feel that a hardcore gamer will find space for both a PC and a console (or two) in his gaming room. After all, some of the best console game titles aren't available on PC at all and vice versa — *God Of War* comes to mind. Also a console gives a radically different experience to gaming than a PC can. Although PCs totally kick consoles in the backside when it comes to visual quality, the console has the advantage of having a much longer upgrade curve. Your eight month old GeForce 8800GT is already panting by now — but your five-year old PS2 still delivers the goods. After all, PCs are nearly infinitely upgradeable, while with consoles, game developers actually have to design a game with hardware constraints — since a consoles' hardware is more or less fixed. This forces developers to actually use their brains to design efficient games that look good, play well, and don't kill the hardware in the console. Because they know that the likes of Nintendo, Sony and Microsoft aren't going to design a replacement console for another three years at least.

Another significant plus for a console is its price — consoles are much cheaper than gaming PCs. For example an XBox 360 costs around Rs 17,000 for the base version, while a good gaming PC will cost upwards of Rs 40,000. The costliest version of the XBox 360 with 1080p support and a 120 GB HDD, the XBox 360 Elite costs Rs 30,000 in India, while a high-end gaming rig will cost upward of Rs 60,000, or more. Add to this the fact that your XBox 360 or PS3 will last for another 2 or 3 years at least, while your new PC may struggle to get past the first quarter of 2009, and you will see why consoles are actually a better deal than most people think. Of course, some people will argue that the cost of a large screen TV can be added to the price of a console. However, the large screen can also be used as a home cinema system when you aren't gaming.

Of course gaming consoles also include handhelds like Nintendo's GameBoy Advance and Sony's PlayStation Portable (PSP). Such portable game stations allow you to enjoy gaming on the move, and are good alternatives for gamers over PMPs and their ilk. The new PSP Slim even supports a TV-out attachment, so you can connect it to a large screen display for even more fun. The PSP Slim is available for an unbeatable price of Rs 7,500 and this often includes a memory card (Sony's proprietary MS Pro/Duo memory cards are used). Also, take into consideration the price of game UMDs (Universal Media Disks), as newer PSP titles can be priced as high as Rs 1,500. Even older titles are relatively costly, i.e. Rs 500, or so. I've come across PC titles that are cheaper. Some people will offer to hack your PSP, which involves an install of pirated firmware, thereby allowing you to install non-legal copies of games. Beware, this voids any warranty, is illegal, and you will need to keep upgrading your pirated firmware as well. The GameBoy is a little less common in our markets, owing to it's not being officially available in India. Look out for the Nintendo DS — the newest avatar of Nintendo's portable entertainment system. The PSP 3000 from Sony is also expected soon, and will offer a brighter screen with reduced glare, better colour gamut and the inclusion of a microphone. This will be 100 per cent compatible with UMDs of the older PSP (internally known as the PSP 2000). For me, something like a PSP doesn't mean I'd miss out on a full scale console. I feel ownership of these consoles shouldn't be exclusive, and for me, ownership of a PSP *and* an XBox 360 or PS3 is essential. But then, that's just me — the proverbial gadget freak.

The Nintendo Wii, (pronounced wee), is a novel concept. A gaming console that has controllers with inbuilt gyroscopes allows its users to control the game with gestures and motion movements. Playing tennis or cricket for example on the Wii is a lot of fun, since you can swing, smash or cover drive, just like the real thing! Even arcade fighters like kickboxing games are enjoyable, as are shooter-based games. Couch-potato-button-mashers beware — the Wii has potential as a workout machine as well. It has WiFi connectivity, and can also be used to connect to the Internet.

The most important thing for a console isn't how well it does HD, or what formats it supports. A Rs 15,000 HTPC can do all that a console can, and more! A console's appeal is mainly decided by game developer support or simply how many game titles are developed for use with it. And this is where Microsoft's XBox 360 and Sony's PS3 totally rock — they have maximum developer community support. Microsoft also has the distinct advantage of having all PC game developers eating out of the palm of its hands, courtesy Windows, which is synonymous with PC gaming. Most of these developers also develop for consoles, giving Microsoft something of a leverage in the console development sphere.

The XBox 360 is an older console than the PS3, and doesn't have the same processing grunt that the PS3 does, owing to its cell processor. Note that the GPU hardware is nearly the same generation — both the XBox 360 and PS3 have jurassic 90nm parts from ATI's X1800 series and NVIDIA's 7800GTX series of GPUs respectively. The PS3 has the important inclusion of a Blu-Ray drive while the X360 still features a (now defunct) HD-DVD drive. I'd say the PS3 is a more future-proof buy, although this is only my opinion.

In terms of application support today, there are twice as many X360 titles out there than PS3 titles, and some of the best console games I have played are on this platform. *Mass Effect*, *Gears Of War*, and many other PC titles that are also developed for the X360 are some of your best reasons to invest in the X360. Sony does have a few exclusive game designers, which is why their *God Of War* series and their *Metal Gear* series sell more PS3s than the temptation of a Blu-Ray player.

The X360 is available in a number of configurations that are priced equally variably. The Core system comprises of no HDD and two wired controllers. The Premium version, ships with the same controllers and a 20 GB HDD, out of which around 13 GB is available for media storage. These two versions are available for Rs 17,000 and Rs 22,000 respectively. The top-end version, called the X360 Elite, features one wired and two wireless connectors, 1080p support and a whopping 120 GB HDD. This one costs in the region of Rs 35,000. Sony's PS3 is available in two versions — a 20 GB and a 40 GB — the former costs around Rs 22,000 while the latter is priced at Rs 25,000. The PS3 ships with two wired controllers. There is a 60 GB version which isn't legally available here. This version also has inbuilt WiFi which the two earlier mentioned version miss out on.

As a gamer you will have to look closely at the games available for each console. For many buyers (me included) it was more a choice of game than hardware technology that determined which console I was looking at. As of today the XBox 360 is a more mature product and has a lot more variety in games available than the PS3. I feel the year 2009 will be the year of the PS3, and I've come across countless titles scheduled for a 2009 release which should make the PS3 a very attractive proposition indeed. Of course, some people may covet the console for its seamless Blu-Ray playback capabilities and if you are one of this fraternity, who wants to game and watch movies with equal fervour, then the PS3 is definitely worth a look at.

Since both these consoles support HD 1080p, I recommend a 32-inch flat screen panel for a display. Although you can use an LCD monitor or a CRT TV, large screen gaming just has to be experienced. For someone on a budget you may not be able to fit in an LCD or plasma display. If you plan on an LCD monitor make sure it has an HDMI port — Dell's new SP2208WFP is a good candidate for pairing with a console. This monitor should cost you around 15,000, which coupled with an X360 Premium will cost just under Rs 35,000 — a sweet deal. Microsoft is planning to update all XBox 360s with Blu-Ray optical drives — this may be something you want to wait for, as the current HD-DVD drives are useless for movies and such, since the format itself has become obsolete.

If you're looking to build a gaming PC on a budget of Rs 50,000 or so, and already have a two year old workhorse PC, it may be worthwhile to think out of the box (pun) and pick up one of these boxes instead. Use the change to buy an LCD monitor. May the button mashing commence!

Headphones

Get a head-full of personalised audio with one of these

In India, headphones have been something of a nascent product category. While it seems that cans have been around forever, the acceptance level has been very low. People either need cans, or don't. A home with a decent speaker system will rarely also need a headphone, unless someone wishes to listen to music without disturbing others, or a lot of chatting via the Internet takes place. If you give ten people a choice between speakers and headphones, nine would opt for the former. I've actually tried asking more than a hundred people, only two or three preferred headphones, and these were mainly gamers who lived with families and did not want to disturb them.

Most people need headphones for chatting with friends on the Internet. The next group are those who use portable multimedia players (PMPs), and 95 per cent of this bunch will make do with the headphones supplied with their PMPs. Some prefer to use headphones while gaming, if only to prevent others from being disturbed. A select few will actually prefer a headphone for the audio quality over a set of similarly priced speakers, and these are the self-proclaimed audiophiles.

So why opt for a headphone? Well, a good headphone will offer sound quality as good as any speaker system that costs nearly ten times as much. Just as any speaker unit needs an amplifier, certain audiophile grade headphones require headphone amplifiers to really drive their voice coils. I've come across audiophile grade headphones such as Sennheiser's HD650 and HD600, BeyerDynamics' DT880, AKG's K701 and Grado's RS 1 and RS2, and I am very impressed with their sonic abilities. Of course such headphones may not be available here. Sennheiser's HD650 is available at an official price of Rs 32,000 in India, while its retails for the equivalent of Rs 14,000 in the US. This is unfair, but until such time as our government does something about import duties on such items there's nothing that can be done. Such headphones need some sort of amplification — and a headphone amp is a necessity for them to deliver their very best. Such audiophile grade headphones are very revealing — from detail, to soundstage to instrument separation. In case your music isn't high quality you will be disappointed. Originally mastered CDs or high quality .FLAC files are the way to go with such headphones. You will also need a good quality CD player or a high quality soundcard and DAC combo, in case your source is a PC, to enjoy the most out of such headphones.

The fact is that headphones are as varied as any other product category, and it's safe to say that no two headphones are created alike. There are also a number of types of headphones, based on the technology they employ to produce sound, their size and fit on your head, and the sound quality they offer. As far as the technology goes, there are two types of headphones — Dynamic and Electrostatic. Dynamic are the most widely used and common; and they can be as cheap or as costly as you like.

The main technology here is of a stationary magnetic field and its interaction with the voice coil; this is attached to a moving, i.e. dynamic, diaphragm which is made of isobutyl rubber, polymer or cellulose-like material. The moving coil produces an alternating magnetic field which interacts with the static magnetic field, and this causes the diaphragm to move and therefore displace air, which creates sound. Electrostatic headphones consist of a thin charged diaphragm which is placed between two perforated metal electrodes. Depending on the polarity, the diaphragm moves towards one or the other plate creating sound.

We also classify headphones on the basis of their form factors. Circumaural headphones are the largest ones with large earcups that fit around your ears, encompassing them, and they usually have a headband for holding them together for a snug fit around your ears. Typical audiophile headphones are usually circumaural, although this isn't necessary. They are considered by some to be the most comfortable, although this varies with the design. Supraaural headphones have smaller earcups — these sit on your ears and are considered to be the most uncomfortable. Earbuds are the ones which ship with most PMPs. These are small enough to fit inside your ear. Canal earphones or earplugs are equally small, and they actually protrude inside your ear canal, and usually have a soft inner material (generally silicone). These offer much better noise isolation compared to regular earbuds.

Basically, earbuds and canal type earphones are for you if you desire a portable setup, i.e., a PMP player, or something that you can easily carry with you. Earbuds offer less dynamic range of sound and noise isolation in comparison to earplugs which offer better sound quality, although they are costlier as well. Earplugs are very suitable for those wanting to listen to music or watch movies while aboard noisy public transport. Unfortunately, good earplugs are as rare as a dodo egg in our markets. Creative is the only brand offering affordable in-ear type earplugs, and their EP630 is immensely popular thanks to its coupling very good sound quality with an affordable price of Rs 800 or thereabouts. Alternative brands include audiophile heavyweights like Sennheiser and Bose. The latter has just one offering called the Bose Intra Ear, and these are a very neutral sounding set of earplugs that are suitable for even serious music lovers — they're that good. The only minus is their price — Rs 4,800. Sennheiser's PXC 500 is also available, and offer similar performance to Creative's EP630s for a much steeper price of Rs 2,500. If you are looking for a companion for your iPod, Cowon D2 or any such PMP, I suggest Creative's EP630 — terrific value for money. You might argue that your PMP or cellphone shipped with earphones. Well, dump these if you're even remotely looking at a decent portable solution. The difference between these and even the entry level, (by audiophile standards), EP630 is very noticeable. I do not recommend earphones, given a choice between them and earplugs.

Active noise cancellation headsets are also available from Sennheiser and Bose. Basically, such headphones have an additional circuit present whose only function is to kill outside noise. Such headphones are useful when you are indoors and the ambient environment is noisy. Other headphones without this feature, but which isolate noise well are called passive noise cancellation phones. In my opinion however, active noise cancellation headsets aren't worth the price, and unless you're über rich I suggest you skip this category altogether. Bose's Quiet Comfort 3 is available for Rs 30,000, whereas the older Quiet Comfort 2 is available for Rs 25,000 — overpriced in my opinion, as they aren't as good as top-end cans should be. Sennheiser's PXC series is also available. The PXC450 is a good headphone although it needs a headphone amp to really shine. In fact, without an amp, the bass and mid-range is muddy and unrevealing, and the highs very harsh and unfocussed. For Rs 16,990, the PXC450 is a little better priced than the Bose offerings. This is way too much for such demanding cans (they need an amp remember?). For travel, or any sort of noisy environment, a set of EP630 earplugs will isolate noise nearly as well, and at a fraction of the price.

Supra-aural headphones are somewhat rarer. In fact, this design was made famous by Grado Labs, of Brooklyn, USA, and Grados aren't officially available in India, although there are some people who will be able to import them for you. Check out forums for such deals. There are some local manufacturers who model their headphones after such supra-aural designs, but beware — these are mostly horrible sounding. In fact, when dealing with sound, its best to go for trusted brands — I like to think of it as a one time investment, where you shell out big time once, but then have great sound at your beck and call for a long time to come.

If there's one category of headphones that available in droves, it's the circumaural variety. Most of the headphones available in our markets from the lowly Rs 250 ones to the ultra-high-end variety are circumaural. The reason is that such around-the-ear headphones in general do not cause as much discomfort as the other form factors. Brands like Philips, Creative and Sennheiser have some quality entry-level headsets which are priced around the Rs 1,200 mark and upwards. If you want *el cheapo* headphones then brands like iBall, Intex and Zebronics have a variety of models that should satisfy you. Sennheiser's HD210 and HD212 are decent entry level headphones priced at Rs 1,200 and Rs 1,400 respectively. Philips' SHP2000 is another stereo set available for Rs 1,600.

Now the big question — how much should you spend, and what exactly is suitable for you? The answer depends on what you expect from your headphones. If you're looking at something very basic for chatting — do not blow a lot of money. If you are looking for something decent for gaming, be prepared to shell out at least Rs 1,200 or thereabouts. There are also some surround-sound headsets available from the likes of Zalman. Their ZMRS6F are 5.1 surround-sound headphones, and are priced at Rs 2,800. These are ideal for gamers and home theatre buffs as they provide an earphone equivalent of a 5.1 surround system.

The fact is that most of the so called audiophile brands, i.e. Bose, Sennheiser and their ilk, are grossly overpriced in India. There are also brands such as AKG, Audio Technica and Grado which aren't officially available in India at all. There are some options available for those interested in high-end headphones, but don't wish to pay the premium.

As mentioned above, some people will import such items for you, for a small premium of course. These intrepid dealers also offer a warranty at their own risk, and for someone looking at saving anywhere between 40 to 200 per cent on the Indian price of the component, this is a good deal. The entry-level market is however chock-full of options, so, if you're on a shoestring budget, this is the right place to shop.

Agent 001

Large TVs

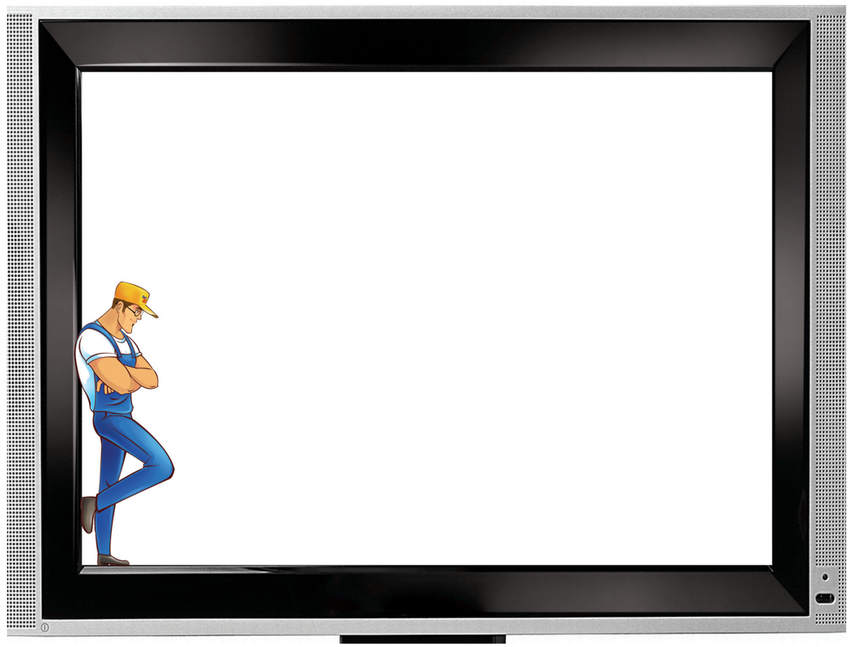
Cinema is obsolete. Bring the movies home, but buy one of these first

The visual revolution has brought about a thought revolution too. Larger screens were always available, but consumers passed up 29-inch CRTs for the *de facto* 21-inch CRT TVs. There was a need for a larger screen, but people have this habit of sticking with something tried and tested. A revolution in thought and willingness for greater expenditure needs a product revolution as well, and that's exactly what large screen, flat panel displays have caused — a revolution. In more ways than one.

Of course it wasn't their revolution originally. The whole visual realism and immersive entertainment revolution has been cooking for some time now. NVIDIA and ATI have done their part with respect to PC and console multimedia and gaming. Then the whole HD resolution happened around two years back in India. Till this day I still find many people chanting the phrase HD like a mantra without knowing what 720p means. Now 1080p and Blu-Ray are technologies that have actually arrived, and are not just sitting somewhere over the horizon. Whichever way you look at it, i.e. PC, console, television or home entertainment system, a regular CRT TV just doesn't cut the mustard for most users out there. Large screen plasma and LCD displays are here, and they are surprisingly affordable, a factor which has led to high rates of adoption. Falling manufacturing costs are a result of optimised manufacturing procedures as well as burgeoning demand. These binaries mean that flat screen panels are one of the sizzling categories of this decade.

Most people who have the means are looking to go flat. But ask them about what they want and they're clueless, other than a few isolated thoughts like "Oh, I want a large screen for a home entertainment system", or "I want to watch HD movies, and my CRT doesn't support HD". First, let me dispel some myths. HD is a largely abused term. It's a standard for video resolution, not a guarantee of quality. There are compatibility issues involved too. For example, if you have an HD-ready LCD TV but your DVD player doesn't support HD, you do not benefit at all. If your player also supports HD resolutions, but you are using this setup to watch DVD movies, there is no use — you aren't even experiencing half of what the hardware you've paid for is worth. Also the term "high definition" is very ambiguous — a TV supporting a resolution of 720 x 480 pixels is also a high definition TV, but it doesn't support 720p — which is a common resolution for most HD movies. So don't just go out there and ask for an HD-ready display, or at least read this before you do!

As a prospective flat screen consumer you will also have a dilemma of which panel technology to choose, i.e. LCD or plasma, and what screen size to pick. Then there are a host of other features like contrast ratios, brightness levels and resolutions to look at. There is also a sweet spot in terms of price for flat panels, and finding and exploiting this sweet spot is up to you. For example, the difference in price between a 32-inch and 42-inch LCD TV may be Rs 70,000, while the difference between a 26-inch and a 32-inch may be just Rs 6,000. Obviously, if you want a flat panel, in this case, a 32-inch makes the most sense. In general, LCD panels are available in smaller sizes from 22 inches all the way to 80 inches. Plasma panels on the other hand start from a screen size of 42 inches and go all the way



Agent 001

up to a colossal 110 inches, although the larger the panel, the costlier it is, and the really large panels can be astronomically priced. LCDs are generally good value for money up to the 32-inch size bracket, after which 37- and 42-inch categories become disproportionately costly. However, Plasmas are even more expensive, and if you want a 42-inch panel, a plasma TV would cost more than an LCD. But as the screen size goes up (above 42 inches) LCDs cost prices rise drastically. Therefore a 65-inch plasma TV will cost less than an LCD display of the same size.

There are some misnomers related to the two technologies. People believe that plasma displays have short life spans, and their visual quality degrades over time. While this was true some years ago, remember that plasma displays are still a developing technology and very new, so advancements are constantly being made. The plasmas of today have around the same lifespan as LCD panels which range broadly from 27,000 hours to 65,000 hours. This depends on the panel type and its rated life.

In terms of the quality between plasma and LCD, plasma displays tend to have a slightly better contrast ratio and much better colour. While an LCD's colour may be very bright and lively, and this is often mistaken for crispness, plasmas have more natural colours. Plasma displays on the whole are superior in comparison to LCD displays, although bear in mind that within both categories quality also differs, and this is dependent on the panel type used.

There is also the small issue of the relation between screen size and viewing distance. Each screen has a certain native resolution which is the total number of pixels that can be displayed. For example, the native resolution of 32- and 42-inch panels may be the same. What happens when viewing both from the same distance, slight pixelation will be visible on the larger screen, since there is a larger gap between adjacent pixels, the distance is called the pixel pitch (the same concept in CRTs is referred to as dot pitch).

When looking at the specification contrast ratio for each panel remember to look at the static contrast ratio, (SCR), and not the dynamic contrast ratio, (DCR); this figure is misleading, as it measures the maximum and minimum intensity possible over a short period of time, and not instantaneously. For example a DCR of 20000:1 is totally unrealistic — bear in mind that this figure is hardly possible — and a panel with such a contrast ratio would be prohibitively expensive. Even an SCR of 5000:1 is hardly likely. The best panels would have a true SCR in the region of 3,000:1. In fact, we cannot notice anything more than 1,500:1 in most circumstances. It is also possible to use tests like DisplayMate to judge the contrast ratio, brightness, and colour rendition of a panel before you purchase it, and being a small application (less than 1 MB in size) you can easily carry it on a CD or thumb drive. Of course, not all vendors will let you test the TVs on display, although I was able to do so at a particular mall. There's no harm in trying, is there? Please do not take manufacturers' quoted figures as gospel truth — most of them overstate such parameters.

I visited a number of showrooms that stock large screen displays, including malls and chain stores like Next, Croma and Reliance Digital. In general 32-inch LCDs are hot right now. Their price tends to be just about Rs 8,000 to Rs 12,000 more than 26-inch displays and people who want to watch HD and Blu-Ray content flock for a larger display. Anything below 26 inches is not hot at the moment — especially considering LCD monitors of the 22- and 24-inch size categories are readily available. 37-inch LCDs are available for at a broad price range of Rs 65,000 to Rs 85,000. The 42-inch size category is priced at Rs 95,000 and above. Some of the Samsung Bordeaux and LG Scarlet models are really exorbitantly priced. I came across a new Samsung 52-inch Bordeaux *A1* series LCD priced at a whopping Rs 2,20,000. Amongst the 32-inch models there is an interesting divide. Some LCD displays sport a native resolution of 1366 x 768 pixels, so they can display content up to 720p natively. Some 32-inch models, especially those from LG and Samsung, support 1920 x 1080 pixels natively — therefore 1080p is possible in all its native glory. Normally, native 1080p is a resolution reserved for only 42-inch (and above) TVs. Obviously a display with native 1080p support is costlier than a regular 720p display — and I found this difference within brands to be around Rs 20,000 on average. Samsung's Bordeaux and LG's Scarlet series are the hottest of the lot. They're both great lookers — the new Bordeaux has piano black finish with a wine red streak of red running around the bezel — and this colour isn't painted on to the finish; it's merged into the body material, and looks ultra sexy. The Scarlet series has a beautiful stand and body finish; these TVs are a real work of art. I was surprised at seeing very few Sony Bravia LCDs — according to most of the attendants LG and Samsung are more popular, and Sony's are perceived as being costlier, although in reality this isn't always so. Also available was Vu, a UK based brand that's being marketed in India by Zenith. Its 32-inch TV was well priced — Rs 40,000, which is around Rs 18,000 cheaper than Samsung's 32-inch Bordeaux and Rs 23,000 cheaper than LG's 32-inch Scarlet model, which are the costliest 32-inch TVs on display. Samsungs 26-inch Mosel LCD TV is available for Rs 31,000, and the 32-inch version is priced at Rs 41,000 — much better than the Bordeaux — but these panels have lower specifications, not to mention the finish and body shape are not as attractive.

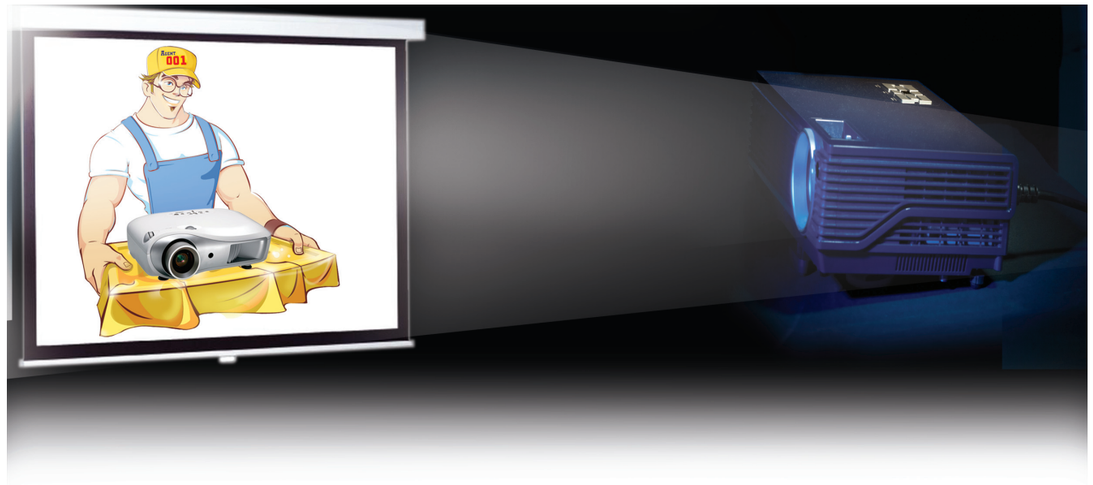
I came across a Hitachi 55-inch plasma panel belong to their 01 series. This was priced at Rs 95,000 and seemed to have very good contrast and the colours were absolutely superb. A very good buy, if you're shopping for a really large display. The stand was rather sleek although its simple looking and lacks the stylish contouring many look for. The bezel is slim and this makes up for the plain Jane stand.

For me, a 32-inch LCD panel makes the most sense. I'd go with a 1080p supporting panel. Do remember that most chain electronics stores like Croma, Reliance Digital and Next have monthly schemes going. You can actually purchase such a display on instalments, thus reducing the load of a large one time payment. 32 inches is also the magic figure if you plan on hooking up an XBox 360 or a PS3 to your display, anything larger means you should be sitting further away than most gamers do. If you have a really large living room, and want something bigger, I recommend a 42-inch LCD, or a 55-inch plasma. The prices of 52-inch LCD displays are too high to even think about them at the moment.

Agent 001

Projectors

110 inches of fun. Size does matter...buy one of these



With all the hype surrounding large flat screen panels most people tend to forget that besides LCD and plasma technologies there is another (often cheaper) way to get a huge display area. But projectors aren't common place. This is because until recently, projector manufacturers didn't want their products to become common place. Projectors enjoyed a steady demand, and those who wanted a projector, bought a projector. This was a niche category and vendors liked it that way. Prices were also suitably high. After all, there were no alternatives. Then came along the large LCDs and plasmas and although these aren't a direct threat to the projector, they did steal some of the limelight. We reviewed a couple of sub-Rs 50,000 projectors recently, and were quite pleased to report that display quality was pretty decent for the price.

Another reason for projectors remaining a niche market is their decidedly business-oriented origins. This is another factor which has changed considerably. These devices are becoming more home-oriented with support for HD resolutions and HDMI connectivity, amongst other goodies. A business projector rarely needed a close to perfect contrast ratio or colours, as their primary applications were presentations in PowerPoint and Excel, along with HTML Web pages. It's shocking and welcomingly so, then, that manufacturers have reduced prices while improving specifications and adding support for HD resolutions like 720p (1280 x 720 pixels). The menu systems of projectors are also becoming simpler, so that anyone, even your 75 year old grandmother, can use it with the least fuss.

When I mentioned that projectors do not directly compete with flat panels, I was talking about a price competition. Price for you should be subject to two factors — screen size and quality. A 32-inch LCD TV may cost you around Rs 45,000. A projector with the same visual quality may cost you Rs 75,000, with an extra Rs 15,000 for a good screen (yes, projectors need those!). But such a projector can give you a display size of close to 100 inches. A 100-inch plasma panel would cost you at least four times as much as the projector, while LCDs of this size are extremely rare. Therefore, projectors compete very favourably in terms of price, and offer an unmatchable cost per inch of display. Of course, 1080p projectors are rare, while for flat panels this is commonplace. Most HD resolution projectors support up to 720p natively, else XGA (1024 x 768) is a *de facto* resolution. From my experience the additional resolution hardly detracts from the overall experience of movie watching, for example. Although the difference between a native 1080p and 720p projector is quite noticeable (with 1080p content), you will not complain with the 720p projector unless both are working side by side. Even XGA projectors do HD resolutions well, although the black strips on the top and bottom of the screen will detract from the viewing experience. The fact is that projectors do non-native resolutions very well, better than most LCDs and plasmas out there. This is also of interest to gamers, who may be running their games at non-native resolutions. From personal experience, I can tell you that gaming on a projector is much prettier than gaming on a 1366 x 768 pixel LCD or plasma display. The main attraction of a projector remains its huge display size — a true cinematic experience where size really matters!

There are mainly four types of projector depending on the technology used. The first two types, CRT and LCOS, are prohibitively expensive, and quite frankly I've never come across either of these two types in the market. The other two types, i.e. LCD and DLP projectors, are fairly common. In general, DLPs are smaller and lighter than LCD projectors, although they do tend to heat up a bit more. I also feel that DLPs offer better contrast ratios, although some of the costlier LCD projectors are every bit as good. DLP projectors are, in general, better than their LCD counterparts. Entry level LCD projectors are priced at the Rs 35,000 mark or thereabouts whereas a cheap DLP projector will be at least Rs 45,000.

Business users will note that there is no distinct line between home and business projectors. A few differences may exist in the form of connectivity; obviously business users will need a wider array of display connects and wireless connectivity along with RS232 interface support, and even an RJ45 connect. However, the capabilities of the projector remain hardly unchanged. Obviously, the higher the resolution the better the projector for both business and home usage, but features such as native 720p support won't count for much for a corporate projector. HDMI and DVI connects are certainly useful for both segments of users.

When it comes to shopping for a projector you need to be a little discerning because you won't find them lying around in malls or electronics superstores. These are sold on demand, and very few vendors other than manufacturer retail outlets will even stock ready pieces. There are certain online stores which may ship a projector to your doorstep. The importance of knowing as much as possible about your projector is very important when you have to shop on specifications alone.

In my opinion, for home entertainment and such, the contrast ratio is of utmost importance. Look for the Static Contrast Ratio (SCR) value. This should be at least 1,500:1. This gives rich and vivid blacks and good intensity variation. The brightness level of the lamp is also important, particularly in case your room isn't totally dark; this is the case in most homes, where ambient light can spoil the overall experience. Look for a brightness level of at least 2,500 lumens. For an absolutely dark room a brightness of 2,000 lumens is enough.

The next thing to look at is the distance between the projector and your screen / wall or whatever medium the image is being projected on to. This determines whether you need a short throw lens, or a long throw one. Projector lenses are interchangeable. Short throw lenses are good at projecting larger images over short distances, but they loose intensity if the screen is too far away. Long throw lenses project smaller images on a close-by screen. This is why they are used when your room is longer. They can also maintain a higher intensity beam for a longer distance.

The choice of screen is your next decision. This is a neglected part of most setups, and some people actually choose to ignore the screen altogether and opt for projecting an image directly on their living room wall. While this may be okay for the odd movie or game, if you are any kind of cinema buff you will want to spend at least Rs 15,000 on a good screen, and many experts believe that 25 per cent of your budget for the projector should be allocated to the screen itself. Brands like Pioneer and Zoher and Co are Indian brands that have been in the market for awhile. They have some decent offerings around the Rs 20,000 mark. There are cheaper options available, and I've seen generic Chinese brands available for as low as Rs 4,000 — these are also good, although the quality of materials may not be as good and the (short) longevity of the screen may be a problem. However, at the price of a good branded screen you can actually buy four of these — food for thought. Some of the higher-end screens are motorised — meaning that rolling them up is no longer a headache, but you can expect to pay more for such screens — in the region of Rs 4,000 to 10,000 more.

If you happen to get a demo of a projector that you want to buy, check on the working of the remote control unit. Some units do not work from certain angles — very annoying.

Among the brands, NEC comes highly recommended by me. Most of its models are priced within the Rs 65,000 to Rs 1,20,000 range. If you can swallow this, there's a really sweet viewing experience in store for you that is rarely matched by similarly priced competing offerings. NEC's VT595 is a very decent entry to the world of projection viewing. At Rs 54,000 it's equally suitable to a boardroom and a living room. It includes both D-Sub and DVI connects — a plus for those intending to use it with a notebook for presentations, or an HTPC. It misses out on wireless and RJ45 connects. BenQ has a couple of decent entry-level projectors in the MP620c and the MP612c priced at Rs 44,000 and Rs 40,000 respectively. Movie buffs may want a little more visual quality and contrast, but these are some of the cheapest projectors with acceptable levels of quality around, and for the price I find the MP620c in particular quite good.

For me, one of the best deals ever is the Sharp XR-30X, which is a crisp XGA resolution supporting unit. We tested this piece earlier, and found it to be excellent in terms of contrast and colour rendition. The fact that it does equally well in both business and multimedia tests mean it's perfectly suited to both, although WiFi and RJ45 are missing. At a mere Rs 49,000 this projector puts many costlier ones to shame, proving that value and performance can coexist peacefully.

If you want HDMI connectivity in a superb multimedia projector, look at NEC's VT800. Perfect for those looking to spend near a lakh for something upmarket. It's got near perfect colour, clarity, brightness and contrast, and will really make HD and Blu-Ray content come to life. The LT380 (also from NEC) is a little better, but costlier, at Rs 1,24,000 and offers marginally better performance, and the price tag isn't worth the small performance premium. If you're a business user interested in presentations and graphs and the like, both these projectors are probably overkill — the Sharp XR-30X is a much better option. If you want something very close to the performance of the NEC VT800 at a much cheaper price tag, then look at the Sony VPL-EX5 (Rs 54,990). It's much cheaper, and performs nearly as well.

Agent 001

Home Theatre Systems

Great video needs life-like sound. Get surrounded, its fun

If I could get a ten buck note for the number of times readers have written to me asking for advice for a home entertainment system or the number of times I've been to a hardware shop and seen someone asking after the same I'd probably be able to buy a Lamborghini. My aspirations aside, home entertainment (HE hereon) remains a buzzword in this country — a word which is used a lot, but one which very few people really understand.

For example if I were to ask you what is a home entertainment system (HES hereon), what would your reply be? Some would say a DVD player while others would talk about a 5.1 speaker system. Some of you may mention a large screen display, while others would point towards Blu-Ray movies. Did anyone say popcorn? Well, congrats — everybody's right. An HES is a combination of all of the above. The components may change, some may be absent, but one thing that remains the same is the entertainment factor. For someone on a shoestring budget a simple 4.1 speaker setup, a 21-inch CRT TV and a DVD player may be heaven in your living room, while for another a 5.1, 800 W RMS speaker setup, Blu-Ray player and a 65-inch, 1080p plasma display may only just suffice — but the concept is rather simple; a cinema-like experience, all in the safety and comfort of your living room sofa.

Now many questions arise. Is a DVD player essential? What if I do not have surround sound? Is my PC an HES by itself? Or what if I have an HTPC hooked up to my 32-inch LCD TV? Once again I answer affirmative to all. In fact in my opinion a reasonably fast HTPC (Home Theatre Personal Computer) hooked up to a large screen and some punchy surround speakers will offer as good an HTPC feel as any Blu-Ray player. Then there may be those who may want to use their XBox 360s or PS3s as a video player. The options are endless and if you're shopping for a home entertainment system you have a lot to choose from and a lot of decisions to make. I'd like to get a little personal and go on the record for saying that for me my PC is the best home theatre system ever. The flexibility of playing any kind of video file formats is just too addictive for me to consider moving to a home theatre system. Even Blu-Ray and HD ready players are finicky about resolutions — for example only strict resolutions like 1280 x 720 pixels (720p) is supported by a player than advertises HD support. If you attempt to play a movie encoded at say 920 x 544 pixels it will not work. Even a 1440 x 720 resolution will not work.

Firstly, you need to decide whether you are going to build an HTPC and combine the same with a good set of speakers and a large screen or ditch the idea of a PC altogether and buy a discrete home theatre with all the paraphernalia needed. I've already suggested a killer HTPC a few months back so I will not waste time with specifications, but in case you wish to use your own PC for such a setup you will need a large monitor and some good speakers. For the monitor I recommend the biggest one you can afford, 22-inches is a good place to start. For PC speakers look at Logitech's Z5500 and Z5300 — these are available for Rs 16,000 and Rs 10,000 respectively and are very suited to movies because of their decent RMS rating and heavy bass. Creative and Altec Lansing do not have good 5.1 speakers, except for Creative's G550 Pro Gamer which are very difficult to find. Smaller local brands like Zebronics and Artis also have some decent offerings priced around the Rs 10,000 mark. Zebronics has a noteworthy model in the SW 10000R. This is an 85 watts (RMS) model that sounds absolutely superb for its price — a meagre Rs 4,500. Intex is yet another local brand worth looking at with a couple of decent options.

If you are shopping for a separate HES remember that any good setup is

a sum of good parts and your experience is as good as the weakest link. For example spending Rs 30,000 on terrific speakers is great but not if you are using a 21 inch CRT TV, which will mar the experience. Similarly a 50-inch plasma display is no good if you do not invest in a good Blu-Ray player. Watching simple VCDs or DVDs on such a screen would be a humongous waste. Let's start with the display itself. I recommend at least a 32-inch LCD display for a full family viewing experience, or, if you are single, then a 26-inch display would suffice as well. However the bigger the display, the bigger your cinematic kicks — so if you can afford a bigger screen go for it. Remember that once you reach the size of 50-inches, plasma screens make more sense than LCDs. This is because bigger plasmas are cheaper than bigger LCDs and their display quality is also generally superior to an LCD. Check the large screen TV article to get an idea of the prices of LCD and plasma displays.

For speakers you need to choose something that will go with the look of your room. You don't want too large, too powerful speakers if your hall / living room is tiny. This will ruin both the look of the room and the aural experience. Choose speakers based on your sound requirements and not just the most powerful ones around. Never look at the PMPO rating of speakers; as an indicator to their performance it's pretty useless. Instead look at the RMS (Root Mean Square) rating as this gives a more accurate idea of the sustainable decibel (dB) levels. A stereo setup i.e. a 2.0 or 2.1 set of speakers isn't a good idea for a system used solely for movies, although a really good stereo system will knock the socks of a poor 5.1 system. 4.1 systems are mostly pseudo surround systems. They do not have a front sound channel, and the bass channel is derived from the front two channels. Contrary to what people believe a 4.1 system never has more than four sound channels. A 5.1 system on the other hand, has six channels as the bass has a separate channel. There are 6.1 and even 7.1 systems available, but unless you have a really large hall these are rather useless. Also remember that most audio in movies is encoded with 6 channels of sound in mind, so the extra channels aren't doing much. Many times your HES will come with a DVD player and with surround speakers and possibly a decoder. This eliminates the worry about buying separate speakers but for those discerning people a good 5.1 system is worth the effort and the cash. Ideally look for a woofer that can belt out around 85 watts RMS. Then check the weight of the woofer by lifting it — the heavier, the better. Bass should be clear and hard hitting but not undefined and flabby, where one bass note intrudes into the next one. For the satellites look for an RMS rating of at least 20 watts, but this will change depending on the size of your room. These recommendations stand for a room that is around 300 square feet.

Speaker placement is also important. In case your subwoofer is overpowered you may need to place it facing away from you, and away from any walls which only increases the bass. To minimise bass induced vibrations you could place your sub on a soft surface like a carpet or rubber mat, note that this doesn't affect the quantity of bass output like many think it does. For the best surround experience the satellites should be placed at the listeners' ear level (and not on the floor or the ceiling) and the units should be turned so that the drivers face you.

I roamed around some of the large electronics malls and noticed that the most popular HES' were from Samsung, Sony and LG although not necessarily in that order. One of the really affordable and aesthetic systems I came across first was Samsungs HT-TX22. It was priced at Rs 14,599 and its main claim to fame is the USB connectivity which means you can hook up a thumb drive or external HDD for instant access to your movies and images. It supports DVD, DivX and WMA playback. MP3s are also supported. The front speakers have stands which add a little appeal to the looks. The total power of this system seems a little overrated at 600 watts, simply because it wasn't as earthshaking as I expected. The much better looking HT-TX250T was on display. It has the same RMS rating as the HT-TX22 but the satellites, woofer and even the DVD player are very attractively finished in piano black. This set is WiFi ready, but the WiFi device hasn't been provided. At a price of Rs 32,900 the HT-TX250T sounds much better than the HT-TX22, but not Rs 18,000 better. LGs HT 762TZ is a beautiful looking system. LG has nicknamed this one Champagne, presumably because the speakers with their stands resemble the shape of champagne flutes (glasses used to serve the beverage). Offering a whopping 700 W RMS — 200 watts for the subwoofer and the remaining 500 watts distributed evenly for the satellites. The overall look is very attractive as is the build quality, and the DVD player itself looks sleek. I fell in love with the shape of the satellites. Sound quality is good, and the bass should please all but the most demanding movie buff. The satellites are very powerful, and will probably drown out the bass with their liveliness. Up scaling to 1080p is supported and with USB and HDMI connectivity. Available for Rs 29,500 this should please most cinema buffs. The LG HT-902B is also available at Rs 24,500. This system is just as cool looking, with a larger subwoofer and a higher overall RMS rating of 1000 watts (225 watts for the subwoofer, 155 watts per satellite). The USB connect and HDMI remain unchanged but there's support for up to 1080i only. The HT-502TH was also on display for a price of Rs 17000. With 500 watts RMS, HDMI connectivity with up to 1080i up-scaling and an FM Tuner, this is a good buy for the entry level user. The satellites and the woofer are quite attractive looking — a plus. For me, the inclusion of HDMI connects and support for HDMI-CEC — a standard which allows control for all devices hooked up via HDMI with a single remote, is a huge plus over Samsung, who incorporates such features into their top-end offerings only.

Sony's DAV-DZ777 is available for Rs 24,990. 1080p is supported and an HDMI port is provided to enable HD viewing. The rear speakers are wireless –a huge plus for those with cramped living rooms, or people who don't want a mess of wires snaking around. A 1000 watt RMS rating doesn't detract from its appeal either.

For me the LG Champagne (HT 762TZ) was the model to beat as well as the model to buy. It was the most attractive model for me — the satellites are just too hot! I thought the overall build quality and the performance was well worth the price of Rs 29,500. If you're really on a shoestring Samsungs HT-TX22 at Rs 14,599 should please.

Agent 001

Hi-Fi Systems

Audiophile grade music? Reference listening? Read on...

For everybody who loves music and like to think of themselves as discerning audiences, entry level speakers just will not do. The simple fact is that making speakers is an art, a black art even, and mastering this art of aural nirvana isn't everybody's cup of tea. Remember that sound quality is a relative term — relative to the best your ears have heard before. Remember too, that quality doesn't come cheap. As you listen to better and costlier sound setups, audio systems you thought of as "great" will start to sound mediocre and then downright rubbish. For me, the fascination with sound quality came via my first interaction with a set of reference grade headphones. I started to hear notes and effects that weren't present in my music collection before. Or rather they were always there, but my music system couldn't reproduce them. I later added a proper headphone amplifier to these headphones and voila! The best part is that there is so much more to come.

Do remember that as good as your 5.1 setup is for movies, it's woefully inadequate for quality music playback. The kind of purist music quality I'm talking about can only be delivered by good old stereo. In music, more than ever, the quality you get is equivalent to the weakest link in your system. For example, a good set of speakers may be let down by a poor amplifier or a low quality DAC (Digital to Analogue Converter), or even a poor source. In fact the source, i.e. the music you play, is of utmost importance. Most of us convert to MP3 using 128 or 160 KBps which is a big no-no for a good amplifier and speaker set. This is because at such low bitrates a lot of noise is introduced into the recording and a good amp will also amplify this noise making cracks, hisses and pops very audible.

Sadly, I've found most music mastered in India to have woefully inadequate quality, and this becomes apparent on a top quality system. If you must use MP3s, encode at 320 KBps and keep CBR (Constant Bit Rate) enabled. Else only use .FLAC, which is a lossless format.

For your speakers, bass isn't everything. Buying a set of speakers on the basis of the "boom" they produce is the stupidest thing a music lover could do. The fact is, most of the boomy speakers are rubbish — bass is supposed to accompany the other frequencies with impact, not with over emphasis. This means the speaker system isn't reproducing the frequencies faithfully; rather it is focussing on a particular frequency more than others in the sound spectrum. Bass should be clean, impactful and defined. Just a dhum-dhum-dhum isn't bass, it's noise. The mid-range is the most important part of a speaker setup, and often most speakers do not produce mids well. Guitars, some piano notes and vocals belong to this frequency spectrum. For most speakers mids are either recessed, or coloured; both of which are undesirable situations. Speakers should be able to reproduce the mids without any sort of distortion and guitar plucks and strumming should sound as close to the real thing as possible. Vocals need to sound as close to the real thing — the timbre of voice, the tone, even the breath of the performer at the end of each note is audible on good speakers or headphones.

I suggest building a music system from scratch by choosing your own speakers and amplifier. And it's surprisingly cheap to do so — people think that amplifiers are costly. Sure they are, but the entry level sets are pretty good too. Even speakers aren't too costly these days and a combination of amplifier and speakers will sound much better than, and may be just Rs 2,000 or so more than, the HiFi systems you will find in malls. Of course, such setups also scale upwards in price, and it's possible to spend well upward of Rs 1,00,000 on a set of stereo speakers and amplifier. Of course, if you intend to spend more than Rs 50,000 on such a system, you'd better consider an upgrade of source as well.

Let's look at amplifiers first. Please do not look for FM Tuners inbuilt inside an amp. This is a cheap feature that many brands add on to attract you, but more often than not this addition comes at a serious drop in music quality. A decent brand both in terms of sound quality and pricing is Norge. Of special interest is their top-end offering the "Concerto Gold 1000" which is a stereo amplifier. The frequency range seems a little overrated at 10 Hz to 80 KHz, but for a price of Rs 11,000 it's a decent buy. It can supply a total of 250 watts (125 watts to each channel) which is excellent, and should have sufficient power for a very large room or small hall. Another amp, the Norge 4242 is available for just Rs 6,500. It can output average 42 watts per channel, (84 W total), and is adequately powered for a decent-sized living room. Sound quality is pretty good for the price, but purists will want to look elsewhere, as there are some minute detailing issues in the mid range and the bass isn't as tight as I like. Also available for Rs 18,000 is the Denon 1508 which is a 7.1 channel amplifier with discrete circuitry for a stereo setup. This will also suit those who are interested in both stereo and surround setups and it is one of the very few amplifiers which will not compromise performance either in music or movies. Sonodyne's SPA 202 is another amplifier capable of 120 W per channel at an impedance of 8 ohms. It also has balanced XLR sockets along with the standard RCA connects as inputs. At a hefty weight of 11.5 kg, this is an attractive looking off-white coloured amp. Priced at around the Rs 15,000 mark the SPA 202 is a good amplifier as an entrant to the high-end. Since this is a power amp, you will need to pair it to a preamp like Sonodyne's SP 203R available for Rs 9,000. The SiA 102R is an integrated amplifier from Sonodyne, the term "integrated" means you do not need a preamp unlike most power amps. Although it has lower specifications and a smaller power output of 80 watts, the inclusion of a remote control makes it a plus for those hooking it into a source that isn't remote controlled. It's priced at Rs 12,500. Frankly, if you are hooking your amp to a DVD player or tape deck, then a remote control shouldn't be given preference over quality or output since you can set your amp to a particular level of output and control the volume and playback from your players' remote unit. NADs C325BEE integrated amplifier is available for Rs 25,500. It delivers a true 50 W per channel and as I've heard the predecessor (C320BEE) I can tell you that this is perhaps the best deal in terms of bang for buck. Do not be fooled by the 100W rating — these bring down the house and are my recommendation for a good music experience. The older NAD C320BEE is available for Rs 22,000. A hot tip — some really good amps sell very cheaply in India just because they do not come bundled with a remote control unit. It seems our dealers and vendors overprice very mediocre amps just because the manufacturer thought it prudent to bundle a remote unit.

For the speakers there are more options in terms of brands — Jamo, Sonodyne and Wharfdale are the common ones although brands like Phase Technologies and Dynaaudio are also available although you will need to hunt around. You need to look at either floorstanders or bookshelves — the two form factors for speakers. Floorstanders are the tower-like speakers while bookshelves are ones that can sit on your table. Wharfdale's Diamond 9.0 and Diamond 9.1 are available for prices of Rs 9,000 and Rs 11,000 respectively. The former has a four-inch bass driver and a one-inch tweeter and can be used with an amp rated at between 15 and 75 watts. This set is the entry point of Wharfdale's range. The 9.1 is a little more powerful, requiring an amp rated at between 20 and 100 watts. It also has a larger five-inch bass driver and the same one-inch tweeter. This is a beautiful looking set of bookshelves, finished in rosewood coloured vinyl. These are marvellously revealing for the price and if you didn't see them, you would actually think you were listening to a much larger speaker system — volume levels are extremely loud, so show-offs will not be disappointed. Jamo's E700 are bookshelves available for Rs 18,500. These are bass shy — but their mids and highs are superb. Now for some floorstanders — Jamo's S408 are available for Rs 16,000. These are a superb deal for the price. Each speaker has a two 8-inch drivers and a single 1-inch tweeter. I personally find them to be a bit bass heavy but that may attract some. Towards the high-end, Jamo's D590 was on display — a beautiful looking set and the arch-shaped cabinet looks classy. With an 8-inch bass driver, 2-inch mid-range and a 1-inch tweeter the D590 sound really sweet — melodious, revealing and startlingly lively with the right amplification. Priced at Rs 62,000 for a pair, the D590 is a top-end listening experience for this price.

Sonodyne's Sonus 2605 V2 is priced at Rs 24,000 and each speaker has a pair of 6-inch bass units along with a huge 5.25-inch mid range driver and a 1-inch dome tweeter. Rated at 130 W these are very suitable for a good music system at a fair price.

If one has a huge budget of around Rs 50,000 to Rs 80,000, I'd recommend the Sonodyne Sonus 2605 V2 or the Jamo D590 as speakers, along with the NAD C325BEE as the amp. For those on a budget looking at floorstanders, Jamo's S408 are more affordable and the NAD C320BEE is a really sweet amp — Rs 40,000 for complete nirvana isn't too large a price to pay now is it? Alternatively you could try Norge's Concerto Gold 1000. Bookshelves may sense for those looking for a more personal experience and with less emphasis on bass. Wharfdale's Diamond 9.1 makes a sweet buy at Rs 11,000, pairing this with Norge's Concerto Gold 1000 will offer great bang.

Agent 001

GPS Devices

Lost? Find yourself...

GPS — a buzzword that has everyone hopping around in anticipation and some governments in fear. Global Positioning System (GPS) is a technology that allows you to get information about your exact position on Earth, in terms of latitude, longitude and altitude. GPS receivers access information about your position from satellite links. These receivers are available for purchase for civilians and have now become an important part of any travellers' arsenal. GPS is a tool that is invaluable people who are moving through unfamiliar territory.

For example, picture yourself driving interstate between two cities. There is always the odd chance of you taking a wrong turn, or a damaged signboard making your life difficult. Traditionally you would be totally at the mercy of the local folk, if you happen to find any while driving through rural India, in particular. In case you do not get any help, you would be largely stranded, since cellphone coverage would also be absent. With a GPS unit, however, you would be in a position actually to figure out where you are with an accuracy of five metres or so. Cellphones that have GPS inbuilt work similarly to GPS devices. These usually have some sort of interface inbuilt on a standard platform like Symbian, Windows Mobile or some patented firmware. When tracking is turned on, the GPS device will receive data from satellites and this data is used to triangulate an approximate position. Maps are inbuilt into such devices and by triangulating its coordinates you can actually figure out where exactly you are. GPS is mostly a free service and you need to pay no fee to use it. However, map providers may charge you a fee to download and use their maps, although some maps are available for free, or there may be a subscription scheme. For example, Nokia maps are free for use with Nokia GPS phones — but there is a restriction on maps of any five cities in India. Assuming you need the maps of two extra cities you will need to pay to download them.

You can either buy a small GPS dongle which connects via Bluetooth to your cellphone or PDA, or buy a full-fledged receiver which has a screen itself and requires no other device to connect. In case you have a Bluetooth GPS dongle and a cellphone you will need to download a third party GPS software to your phone, such as GPS Tuner or GPS Watch, among others. The GPS receivers will have their own software inbuilt. Some systems are available for installation in cars and although these are costly as of now, and the handheld devices are more common, many people with cars are showing interest in such systems.

So what else can you do with GPS other than navigation to ensure you stay on track? Well besides tracking your whereabouts GPS can also be used to track your car.

Installing a GPS unit in your car will give you details about where your car has been and how much distance was covered. You could also get a real-time update on the whereabouts of your car at the moment, but your car would also need a transmitting unit. With such a setup it's possible to get your car back from thieves — if you've just bought a shiny new BMW, you could consider this. Some GPS devices-cum-transmitters are also available in very compact sizes meaning you could use them to keep an eye on your kids. Adventurers also have an alternate use for this technology. If you go driving or trekking to a remote region you can use a GPS device to map the path you take. Any GPS device will record the route you use. This route can be downloaded and software is available which will allow you to make your own map of the region with your trail marked out. This can be used to help other people who wish to use the same route; your recorded path can be a sort of map for them. GPS has even become popular for businesses involved with any sort of transport operations. Real time vehicle tracking is an important tool. In fact, almost any industry benefiting from precise location-based information will greatly benefit from GPS.

For me, I'd never been a user of GPS till one of our test centre guys went to Taiwan and brought home a small receiver unit. It was fun to use and surprisingly accurate, as I found out later when I used it to travel by road to Goa, that being the first time I was making the trip. I was surprised to see the mapping of GPS in our country being accurate. In fact I could make a direct comparison between GPS Tuner which is a popular GPS mapping software and Nokia Maps (Nokia's GPS software) and am pleased to report that both of these were accurate enough to get me out of a tight spot — although GPS Tuner was much more accurate with more landmarks recorded.

For those who do not want to spend on a costly GPS unit you have the option of buying just the receiver unit, which is usually as large as a pen drive. Besides the GPS receiver you need GPS maps. Some people may be concerned about the number of channels that the receiver has since this is directly related to the accuracy of your position. Do not be. Even if your device has just 16 channels, remember that the number of GPS satellites orbiting the earth is not more 24, and the chances that more than a handful of them are overhead of you simultaneously is very slim. For your information, just two satellites will give you your position in 2D. Four satellite fixes are sufficient to get your GPS position in 3D, i.e. including altitude. The Holux M1000 is one such USB/Bluetooth based GPS receiver. It has 32 channels and uses the MTK GPS engine. This device doesn't have its own screen and you will need a notebook or PDA to use it. It's available for Rs 5,000. The Holux M-241 goes a little further. It has the same USB and Bluetooth connect, but includes a small screen and actually looks like a roll of camera film. Besides a receiver, it also has the facility to log data and can display information such as altitude, latitude and longitude and speed. It also has a photo based geo-tagging system by which you can connect places you've been with snapshots making it easier to archive and access later. It can store 1,30,000 locations. With 32 channels and a battery life rated at 12 hours, the M-241 is available for Rs 9,000. The ultra Holux GP Slim is also available. This one is really small, like a tiny USB drive and is available for Rs 6,200. Its specifications are nearly identical to the M-241. All these systems are very compact, and can be easily pocketed. Note that these devices do not have inbuilt maps, and you will need to buy these separately. Destinator's SatGuide is one of the paid-for software around with detailed maps for 30+ important cities. There are 24 categories of points of interest including hotels and ATMs. It also has some special features where it blacklists roads that are damaged, or dangerous as "roads to avoid". This software is available for Rs 4,300. MapmyIndia iNav is priced at Rs 4,550. This one is solely for cellphones or PDAs and you get an SD card pre-loaded with MapmyIndia maps. Voice assistance is also provided, as is route re-calculation in case you take a wrong turn. Although this may seem like a Nokia Maps clone you do not need a GPRS (data) connection to use it. In case your phone doesn't have GPS inbuilt you will need a Bluetooth GPS dongle. Navizon, 3D Tracking, and G-Map Track are some software available for cellphones. Navizon has Google Maps support.

If you are looking at a complete GPS solution in the form of a GPS handheld device with the software preloaded then you need to shell out a bit more — however, since the support is paid as well, the maps tend to be more accurate than the free ones. Paid software is also available with GPS device bundles. Mio Technologies' PND (personal navigation device, it has no other name!) works with SatGuide's software. With a 3.5-inch touchscreen and SiRF III receiver, the PND is based on Windows CE 5.0 and has 512 MB of flash storage and 64 MB of RAM. It supports USB charging and plays back MP3s as well. The kit costs Rs 15,500 and it is installable in your car using a vacuum cup — this allows it to sit on your dashboard. MapmyIndia Navigator 2.0 is priced at Rs 18,000. It has a 3.5 inch screen, and supports voice and graphical map guidance, along with tags for points of interest. It uses the SiRFStar III GPS chipset and is powered by a 400 MHz Samsung processor. SatGuide's P360 is available for Rs 19,000. Its WM 6.0 based, with 1 GB of ROM and 64 MB of RAM; the rest of the hardware is similar to the Navigator 2.0. This one is mainly to be used as a car GPS device and this fact is emphasised by the relatively poor battery life which is only around 4.5 hours. All SatGuide systems carry a lifetime free mapping system so you can download updated maps for free. Most others have support for up to a year. Delphi's NAV 200 is available for Rs 18,999. It's a well built device with a 3.5-inch screen with 32 MB of inbuilt memory. It comes with MMI Navigations' GPS map preinstalled. Voxtel's Carrera X350 is yet another PND I came across. Priced at Rs 14,999 this was one of the smartest looking devices owing to its slim dimensions. It's got a 3.5-inch screen. The sad thing is its abysmal battery life — only an hour or so, which means you had better not keep it very far from your car's charger.

For me, I'd rather use either my Imate KJam or my N95 8GB along with a Bluetooth dongle, since these give me greater flexibility, not to mention better battery life. I'd go with the M-241 for Rs 9,000 — mainly because of its great battery life, and try one of the examples of free GPS software in the beginning. If you must use paid-for software then the iNav MapmyIndia looks like the most attractive option available.

Q&A

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

All your computing niggles and nags are dealt with here!

Running Out Of Memory On Windows Vista

Q I have an Intel Pentium 4 2.93 GHz, 1 GB DDR2 RAM, 80 GB 7200 RPM HDD and an Intel 945 motherboard. I am using Vista Ultimate with SP1 installed and it is regularly updated. Whenever I

Whoops! Vista's hogging memory again

launch two or more applications I get low memory error. I have even turned of aero. But it has not even helped. Please tell how to reduce vista memory usage.

Rahul Choudhary

A The problem of memory shortage could be to do with the pagefile especially because you are running Vista on 1 GB of memory which is the bare minimum. Check the page file settings for your system by starting up the System properties. Click on the Advanced tab and click on Settings under Performance. Again, click on Advanced and click the Change button under the Virtual memory section. Here, set a size for the page file if there isn't one set already.

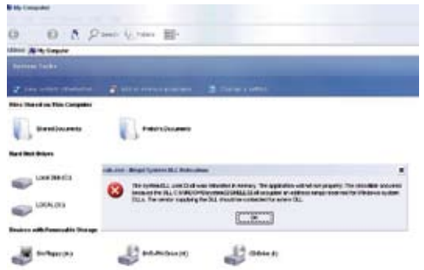
Get Help Now!

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!

Loads Of user32.dll And shell32.dll Errors

Q I have an AMD Athlon 64 processor with 1 GB of RAM and an 80 GB HDD with Windows XP SP2. I am facing a problem of user32.dll. When I was trying to install pc suite for my mobile, I got some errors relating to use32.dll. Also I can't access the calculator application in Windows. Everytime I try to open CALC from Start > Run, it gives me a similar error. Both the errors are same. I have got these errors before as well so I have reinstalled Windows but problem still remains. Also while reinstalling the windows, first time I got a blue screen. The next time it installed properly. Can you please advise me on this issue? Sometimes my pc suddenly restarts randomly.

Pratish



Nagging dll errors

A The user32.dll and shell32.dll errors suggest that those files have been tampered with. Your screenshots you've sent have some modifications done to the operating system. This could be some kind of desktop replacement or interface theme software to change to look of your operating system. Even after you reinstalled Windows, you might have reinstalled this software. Try uninstalling these software properly and see if the error stops. If it doesn't work, then the files have been corrupted and you might have to repair them by reinstalling Windows or by using the recovery mode while booting off the XP CD.

Poor Performance In Games... Should I Overclock?

Q **My PC configuration: Motherboard: Intel 945GC- M7 TE; Processor: Intel Celeron 1.80 GHz; RAM: 512 DDR2**

Recently, I bought a NVIDIA XFX GeForce 8400GS 512 MB graphics card. But I haven't got the desired performance from it. I cannot run games like *NFS: Most Wanted* and *NFS: Carbon* beyond the resolution of 800 x 600 with a few settings in medium. The games slow down. Even *F.E.A.R.* with resolution 640 x 480 with settings like anti-aliasing at 2x and medium shadow quality give around 40 fps. Please tell me what should I do to get good performance out of it? I have heard that over-clocking a graphics card boosts its performance. Should I over-clock my card? I have no idea how to do that. Please explain its procedure.

Parzan

A The 8400GS is an entry level graphics card and the processor you are using is also very outdated. Overclocking the card would only bring a marginal improvement. Besides, there's a bigger risk involved which means you could damage the card and the processor if you overclock it. A better processor would probably add an average 10 to 15 fps more to the performance but a completely new system is highly recommended if you wish to play all these games with all the details and resolution turned up.

Random Lockups

Q **I am using a Pentium IV computer which I assembled in 2004. Since then it was working fine. But since last week it is giving me headache.**

My PC configuration is 845 GVSR Intel motherboard with an Intel Pentium 4 Processor 2.4 GHz 256 MB DDR SDRAM DVD/CD-RW Combo Drive CD-Rom Drive 1.44 floppy Hard Disk - 40 GB PATA

Internet–DataOneBroadbandwith2Mbpsspeed Antivirus - Avast Home Edition updated every day. Since the last four years it was working fine. Now there are a few problems –

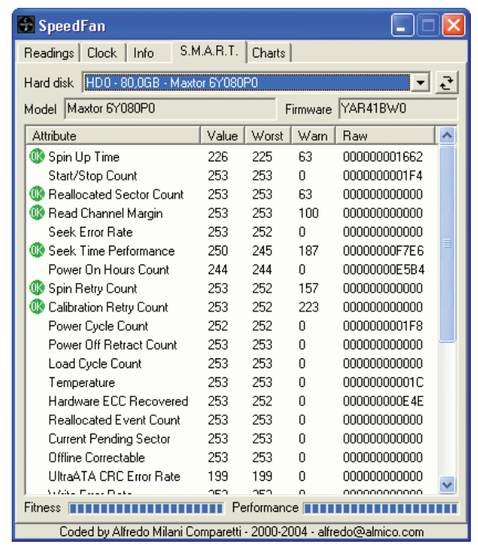
1. Sometimes, it hangs and then restarts automatically

2. Sometimes after hanging for a few seconds gives an error that the display driver has stopped working normally. To work properly, I must restart the computer.

3. Sometimes, it gives a boot disk error and a press any key to start error. Thanks

Avinash Kumar

A The instability you are facing could be because of a faulty hard drive. Your 40 GB hard drive has last a long time. Run some diagnostic tools to verify if the hard drive is indeed failing. Backup any important data onto other drives or discs. Try a software called Speedfan which has a hard drive health utility. You can



Speedfan also has a hard drive health checking feature

Installing XP Over Vista

Question of the Month

Q **I'm in the National Institute Of Technology, Karnataka. I am using a Sony Vaio laptop VGN-FZ410E. It has a 250 GB SATA hard disk and the RAM on it is 2 GB DDR2. I use Windows Vista Home Basic which came with the laptop. Now, I want to install Windows XP on it. Please guide me.**

Siva Kumar

A To install Windows XP, first you need an empty partition. If you don't have one, use Computer Management to resize the existing partition and make space for a new one. Under the Disk Management application, right click on the partition and click on Shrink Volume. Choose the space you want free after the shrinking process. Change the drive letter of your CD/DVD drive to avoid any confusion by right-clicking on the drive and then clicking Change drive Letter and Paths. Now right-click on the empty space created and click on New Simple Volume and create the partition with the right drive letter. Boot using the XP installation CD and install it. You will then no longer be able to boot into Windows Vista. Boot into XP and install a software called VistaBootPRO from www.vistabootpro.org which will allow you to make entries and changes to the boot record.

VistaBootPro can help in fixing records for booting into Vista

also download a bootable disc called Ultimate Boot CD and boot from it and run some more disk checking utilities.

PC Shuts Down While Playing Games

Q My PC configuration is as follows:
Core 2 Quad CPU Q6600 @ 2.40GHz
Intel P35 EC M/B
WD 500 GB HDD
Palit 1 GB 9600 GT Sonic Graphics Card
VIP 450 W Power Supply
Altec Lansing 2.1 Speakers
APC Backup 500

My problem is as follows. Whenever I play games like *Medal of Honour - Airborne* or *Crysis*, My system crashes i.e. my PC shutdown automatically. I don't understand what the problem is. My OS is Win XP- SP2 and Win Vista - Ultimate. Kindly reply me urgently as this is very important and if you reply me through email I will highly appreciate.

Apurva Desai

A Your PC could be shutting down either because your processor is overheating a lot or your power supply isn't sufficient enough which doesn't seem to be the case. You could try swapping out the current power supply with a slightly more powerful one. Be sure to update all the drivers for the motherboard and graphics card before you do.

Cannot Install Windows!

Q After I insert my Windows XP bootable CD and restart my computer, it first gives the message "Press any key to boot from CD". Then I press my enter key and then it gives a mesage "Setup is inspecting your hardware configuration". After that nothing happens, I left it for 3 to 4 hours but still nothing happened. I tried few more CDs and they work fine on my friends computers. What should I do?

This is my system information:
Processor- Intel Core 2 Duo
Motherboard- Intel D945GCL
Memory- 1 GB DDR2 RAM
Hard disk- Seagate 250 GB SATA

Neel Kamal

A If the same CD works on your friend's computer, then the CD is perfectly fine. It is either the drive you are using that is spoilt or it could also be faulty memory. Try a different CD drive first. If you use multiple RAM sticks, then try one RAM stick at a time to rule out problems with the RAM.

XP Doesn't Show More Than 3.25 GB RAM

Q I am a regular reader of the *Digit* magazine and I liked it a lot. It's full of stuff needed in daily routine. Keep the great work. The problem I am facing is that my system has 4GB RAM installed but the Windows XP (in system properties) shows only 3.25GB available. Why so? The BIOS shows up 4GB RAM but not XP.

Paramvir Bali

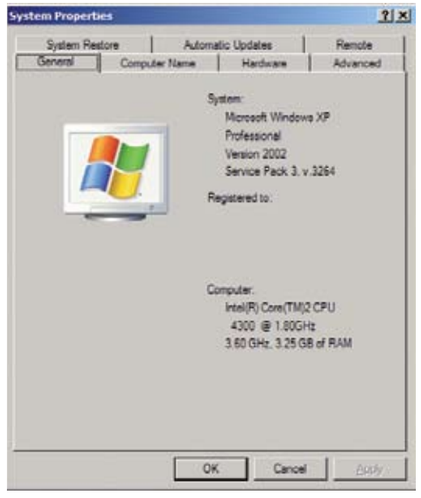
A This is a limitation faced by 32-bit operating systems. Install a 64-bit Windows XP or Vista and you will be able to use the entire 4 GB.

Can I Have 4 GB Of RAM?

Q I am a regular reader of Digit. My PC's configuration is as follows processor - AMD Athlon 64 3500+ 2.20GHz. I have a MSI motherboard with 2 GB of RAM. I want to upgrade my system's memory to 4 GB. Will it be possible with this processor and will it affect my system's stability or performance? Please help.

Biman Mukherjee

A If your motherboard supports it, yes you can put 4 GB of RAM. The performance



32-bit operating systems can only use around 3.25 GB of memory

boost that you get from the additional memory will be minimal unless you run applications such as Photoshop and work on projects that require that amount of memory.

Internet Connection Isn't Giving The Right Speed

Q My BSNL broadband connection is 256 Kbps (fixed). When I download something big like files of over 200 to 300 MB in size, the download starts at 12.5 to 17 Kbps and at times a maximum of 25 Kbps but nothing more than that.

I want to know that how could I speed up my download speed. I've already tried the limit reversible bandwidth scheme by using the QOS Packet Scheduler using gpedit.msc application in QOS packet scheduler. I enable it and decrease it zero per-cent, but it does not work. My friend has the same ISP and the same scheme with the same speed but when I downloaded 311.5 MB file from his computer it shows 167 kbps download speed. The 311.5 MB file downloaded within 25 min. Please suggest me how could I get the max speed. Can you give me some suggestions?

Souvik Mukherjee

A A 256 kbps on most ISPs will give you between 25 and 30 KB (kilobits) per second. If you are getting 12.5 to 17 KB/s, then that is more or less the equivalent of a 128 kbps (kilobits per second) connection. If your friend gets 167 KB/s, then that most definitely isn't a 256 Kbps connection but it might be a 2 Mbps connection.

www.speedtest.net is a great site to measure connection speeds

The connection speeds also depend on the state of your telephone line, the amount of load between you and the site you are downloading from. It could also be some kind of server end issue on BSNL's end. Contact them for your problem and ask them to rectify it. You can also check your connection by going to http://speedtest.dataone.in:83/bandwidthmeter/initialmeter.php or some international services such as www.speedtest.net. Ask your friend to do the same.

Stuttering sound

Q My PC configuration is:
Zenith PC, Pentium 4 2.93GHz,
MSI Intel 915GL + ICH6 chipset,
DDR 400 RAM 512 + 256 MB,
DVD Combo Optical drive,
Windows XP SP2.

My problem is that when I play any music file on either headphone or speaker, the sound stutters like a damaged speaker. I checked the same files with WMP11, iTunes and Winamp but the results are the same. I checked the headphone & speaker with another PC it works properly. So please guide me now what to do?

Mohsin Shaikh

A The problem is obviously not with your headphones and speakers so the only culprit is the sound card. Either the sound sockets on the back of the motherboard are damaged or there is some kind of a driver issue. Uninstall the existing drives and also uninstall the sound card by right clicking on the sound card in the Device manager. Reboot once and let it reinstall or if required, download and install the latest drivers from the Internet.

How Do I Use My GPS On My Phone?

Q I've been reading your magazine from its sixth month of inception. I reside in Chennai. Coming to the point, I have a brand new Asus P320 aka Galaxy Mini. I need to know whether we have GPS systems in India? If so, can I connect to the satellites and know my location without connecting to the net? Moreover I need to know clearly how to connect to the satellites with my mobile, if that is possible in India. Do I need anything other than my mobile and its bundled software?

John Selwyn Shimron

A GPS systems work everywhere and India is no exception. You can connect to satellites without any kind of payment or services to subscribe to. To make use of the data, you can use all kinds of applications. There are all kinds of applications for GPS receivers – some of which will guide you to your destination, some that will record your path for you to look at later and some that can do everything. GPS Tuner is commercial software that does a lot of things with the GPS receiver. You can also find free GPS software for Windows Mobile on sites such as www.freewarepocketpc.net and www.mobiletopsoft.com.

GPS Tuner – a commercial Windows Mobile application for users who want GPS functionality in their device

Other than the mobile software itself, you might need to purchase software that gives you maps of your region if you want to be able to use it for use on the road. There are ways of creating your own maps with some of the software.

Lots Of Problems!

Q I have a Pentium 4 2.6 GHz, 512 MB DDR RAM with Windows XP Pro and Service Pack 3 installed on it. Recently I have been facing a series of annoying problems.

1. Whenever I use SHIFT + 'some of the keys', for e.g., say I use SHIFT+ '2'; so instead of getting '@', I get ' " ' and vice versa. And if I use SHIFT+ '3', I get '£'. And there are lots of other key combinations with the same problems. I checked the keyboard on another PC and its working fine.

2. The Windows Security Center icon never

appears at startup. So I doubt if Firewall is protecting me whenever I access the net. Neither does it update itself even if automatic updates are turned on. I have set it to update everyday at 11 am as I use the net at that time.

3. I have a D-Link ADSL 2+ Router. Just recently I have known from a friend that my Broadband connection (256 kbps) is not giving me the required speed. It mostly stays at 25-30 kbps whereas I found at my friend's place that he gets a minimum speed of 80kbps. I checked my modem at my friend's home and it is working fine. The telephone exchange told me that my telephone line is okay.

4. I have Avast 4.8 (registered Home Edition) and Spybot Search and Destroy installed and update it regularly. They show no errors or viruses on scanning even at 'thorough scan'. But after I bought the Kaspersky antivirus, it has started showing a lot of errors. Why? Aren't free home editions reliable? My broadband provider says your net might be slow because I am using a free edition and so my computer is infected with virus.

I am not thinking of using dual antivirus as I don't think my pc could handle it.

A If you are sure the keyboard works fine on other PCs, then the problem lies with the connector on your PC. Try cleaning it and make sure it isn't damaged. It could be something much sillier that could be wrong. Click on Regional and Language Options in the Control Panel. Click on the Languages tab and then on Details. Make sure the keyboard layout is correct. Make sure Sticky keys and other accessibility options are turned off from the Control Panel as well.

Notifications from Security Center can be enabled through the Control Panel

If your Windows Security option isn't visible on the system tray, then you might have disabled in the past. Other anti-spyware, antivirus and firewalls can disable the Windows firewall during installation as well. To enable it again, go to the Security Center from the Control Panel. Click on Change the way Security Center alerts me. Here you can choose to have the system tray icon displayed. To verify if the update downloading is enabled, click on Automatic updates and Windows Firewall in the Control Panel.

Your 256 kbps connection should give you around 30 kilobytes per second. If your friend gets 80 kilobytes per second on his 256 kbps connection, then his connection isn't working properly by giving him a higher speed.

The efficiency of an antivirus application depends on its engine and how often virus updates are released online. There are way too many virus and worms on the Internet and many released every single day.

System Configuration For CAD And 3D Modeling

Q I'm an architecture student and an advance user of AutoCAD Architecture 2009, Revit Architecture 2009, 3ds Max 9, Photoshop CS3, Corel Draw and V-Ray for rendering. I use them for making technical drawings, Panels, rendering and walkthroughs. I want to upgrade my PC. I've figured out the following configuration:

Processor: Intel Core2 Duo E8500 3.16 GHz

Motherboard: Asus Formula Rampage OR Asus P5Q Pro

RAM: Transcend 2X2GB DDR2, 800 MHz

Graphics card: XFX GeForce 8800GTS, 512MB Alfa Dog OR ATI Radeon HD3870, 512MB

Power supply: Cooler Master 600W

Most probably I'll be using Windows Vista Home Premium SP1. Kindly suggest necessary changes in the configuration. What is the cost of a 4GB DDR3 RAM? Is it better? Also, suggest a free but powerful Antivirus. My Budget is Rs 45,000 approx.

Nitin Kashyap

A Your configuration needs a few corrections. Quad-core processors will suite your work better than a dual-core E8500. An entry level quad-core - the Intel Q6600 which is around Rs 9,000 would be a far better option for rendering purposes. More the cores the better it is for rendering. DDR3 is still a lot more expensive than DDR2 at the moment. 4 GB of DDR3 could be priced anywhere around Rs _____. The advantages of using DDR3 aren't visible right now so DDR2 is your best bet.

As far as your selection of graphics cards go, you should opt for the GeForce 8800GTS. Prices for graphics cards have plummeted, so can even consider cards like the ATI Radeon 4850 at around Rs. 11,000. GeForce 9800GTX cards are also available around the same price.

The two ASUS boards you have mentioned use two completely different chipsets. The Formula Rampage is one of the best X48 boards one can buy but it should be a bit more expensive than the P5Q-Pro. Look at your budget and choose accordingly because the P45 powered P5Q-Pro is also a very good board at its price bracket.

If you are going for a Cooler Master, make sure you go for one from the Real Power series. You can also look for power supplies from the other manufacturers such as the Corsair HX620. All the above components should easily fit in your Rs 45,000 budget.

Looking For A Digital Camera And A Digital Camcorder

Q I am planning to buy a digital camera and a handy cam. I will be using it for my tours/ family functions at the most. For the digital camera, based on digit/other reviews I have decided to buy Canon PowerShot A590 IS. Is A720IS worth the extra money for 6x zoom? I have also settled on canon because it has an optical viewfinder and will help in saving battery life. Are my assumptions correct? Are there any better cameras for around Rs 8000 to 10,000. Kindly advice.

For handy cam I have settled on Canon FS10/ FS11. Are they good? Among others I settled on them due to their storage. I feel that they will be more stable compared to hard disk based cams. Is this correct? My budget is around Rs 24,000 to 26,000. Please advice.

V. Rajaraman

A The A590 IS and A720 IS are both very good cameras for their prices. The A720 is worth the extra money you spend. Not only does it have a slightly more powerful zoom lens but it also is slightly superior in quality. Using the optical viewfinder might save a little bit of battery power but using it all the time is not always going to be possible.

The Canon FS 10 should be around your budget price range but keep in mind these are SD-based camcorders. They are quieter and the batteries should last longer than on hard drive and tape based ones.

Need A Configuration For Computer Graphics And Animation Creation

Q I want to buy a PC and my Budget is Rs 30,000 to 35,000. I am doing a course of animation and VFX. Please tell me the best configuration that I can get in this budget. Also mention the prices of the required hardware like CPU, motherboard, RAM, graphics card, LCD monitor and must tell about cabinet and the power supply. Tell me which O/S is better for animation and gaming - XP or Vista. Also tell about a good internal T.V. tuner card.

Sanchit Jindal

A For a budget of Rs 35,000, you should be able to get the following components with these approximate prices.

Processor: Intel Core 2 Duo E7200 (Around Rs 5,500)

Motherboard: Abit IP35-E or Biostar TP35D2-A7 (Around Rs 5,000)

Graphics card: GeForce 9600GT (Around Rs 6,500)

Memory: 2 GB DDR2 Value RAM (Around Rs 2,000)

Hard drive: Western Digital 640GB (WD6400AAKS)

LCD Screen: 19" Samsung (Around Rs 8,500)

Power supply: VIP 500W

Generic cabinet

Windows Vista and XP are both fine for gaming as well as computer graphics work. Vista is definitely prettier but also consumes a lot more memory. With the 2 GB of RAM you put on your system, Vista should run just alright.

Looking To Buy A Laptop

Q I am planning to purchase a laptop in November. I want a 256MB graphics card with DirectX 10 support, an AMD dual core processor, a 120 to 160 GB HDD, 2 GB of RAM along with features like a webcam, HDMI port, a LAN card, WiFi, Bluetooth and a Lightscribe DVD writer.

I have looked up on the Internet and have found products like the HP DV5z (which has not been launched in India yet), the Dell Studio and some others from Acer.

I've a budget of Rs 35000 to Rs 40000. I need to know if the Hp one that is shown as $700 to 900. Is this price going to be the same in the Indian market also and by what time this product is going to come in India. I need your assistance to buy a laptop for the value of money in my range of budget.

Bivash Krishna Bala

A Typically when products reach the Indian shore, prices go up by a bit but there are also times when they are cheaper here than in some other countries. In the case of the HP laptop you've been talking of, HP India would know best. Check up on HP India's site for any information or try and contact them from their site.

You should also know that features such as Bluetooth, WiFi, a webcam and a wired LAN card are common in almost all laptops today. A light scribe enabled DVD writer is a little more difficult to find. HDMI and DirectX 10 supported graphics cards with dedicated memory are some features usually found on costlier laptops.

Need A Mobile Phone With Good Sound And A Good Camera

Q Hi, I am going to buy a new mobile. It should have a good camera, good sound and memory at least of 2 GB. There is no need of features like 3G. I travel a lot so the phone should be built well too. Please suggest a mobile phone for me. My price range is between Rs 13,000 and Rs 15,000.

A Your two best options for that price are the Nokia N81 and the Sony Ericsson K810i. The SE K810i has a slightly higher resolution camera as compared to the N81. You might need to purchase memory cards for the phones.

Need to purchase a new sound card

Q Hi,

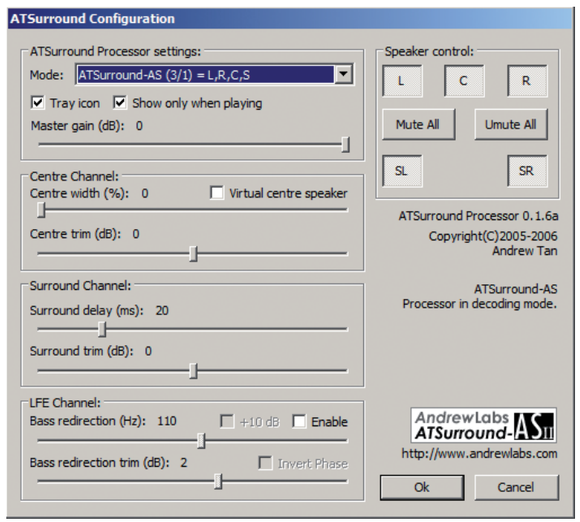
I'm using PC with following configuration. An Intel Pentium 4 2.0 GHz, Intel 82845g motherboard, 1.25 GB DDR RAM, 80GB Samsung HDD, LG DVD writer and a CMI 8738 5.1 channel sound card. All this runs on Windows XP SP2. I want to upgrade my sound card. Please suggest to me which card would be good for my PC. I have TRUWAVE TW-1600(5.1ch) speakers.

So please tell me will it make any audible different by changing the sound card? My Budget is Rs 1000 to Rs 2,000. Are there any 5.1 channel plug-ins for Winamp?

Hitesh Joshi

A There are decent sound cards available between the price range you've stated. Whether you will be able to make out the difference or improvement with the speakers you own is a different question all together. The CMI 8738 was a good sound card for its price even then. You can consider the Audigy Value.

All the music we listen to is in stereo so by default they are meant for 2 speakers only. There are plugins which can replicate the sound to other channels. One of the more well known plugins for Winamp is ATSurround Processor (www.andrewlabs.com). More can be found in the plugin section on Winamp's site - www.winamp.com/plugins.



ATSurround Processor is a surround-sound plugin for Winamp and foobar2000

Is my pen drive dead?

Q I have a 2 GB pen drive. A virus from the Internet infected it and now when I used the pen drive on my PC, it too got infected by the same virus. I formatted my computer to remove the virus from the particular drive. While formatting the PC, my pen drive was also connected to my PC. I also formatted my pen drive using FAT 32 to remove the virus it. After formatting it, my pen drive is not working anymore. If I try to format, it shows an error that Window cannot perform this operation.

If I want to send something in it says "Please insert a disk in the drive". It is neither showing the name of pen drive nor the capacity of it nor the partition type means either it is NTFS/ FAT type please.

Do I have to buy a new pan drive? The warranty for the pen drive has expired. Please reply me.

A First of all download Kaspersky Antivirus 2009 from http://www.kaspersky.com/antivirus_trial

Activate it as a trial version and update it from the internet. Run a full system scan on your computer. Connect your pen drive to your computer. Then right click on My Computer and click on Manage. A window will appear which is called Computer Management. Now click on Storage on the left hand side pane and then click on Disk Management.

Here you will be able to see your pen drive as a removal drive. Try formatting it by right clicking on it and clicking on format. Format it using FAT32 partition type. If you face any problem while doing it, means that your pen drive is no more working and there is no solution to it.

Aditya (TECH QNA Expert)

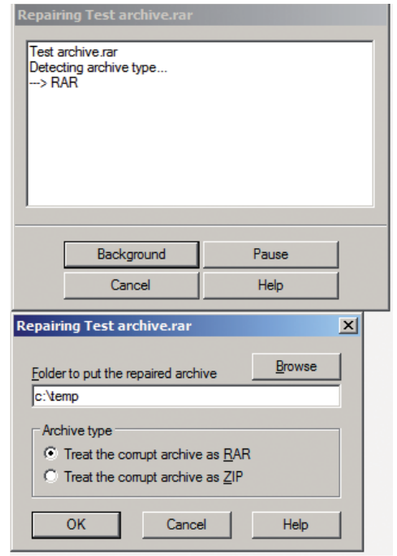
RAR Files Giving CRC Errors

Q I have the following PC configuration. An Intel C2D E7200, Intel original DG33FB motherboard, 4 GB RAM 667 MHz, Seagate Barracuda 400 GB SATA HDD, XFX Nvidia GeForce 9600GT video card and an LG 20x DVD writer. The problem is whenever I try to extract any huge RAR file I get CRC errors and extraction fails. But when the same file is extracted on other computer the extraction is successful without any errors. Please help me I am fed up of this.

CRC errors can occur due to many different types of problems. Some of these problems are:
1. Damage to file during the copying process.
2. Problems with the device that is accessing or opening the file.
3. Problems with the file itself.

A Try re-downloading the file or transfer it from some other source, other than the one you are using currently.Try using some other compression software other than WinRAR. There are many good ones available. WinRAR has a repair mode. Accessible through `[Ctrl] + [R]` or the link is there on the task menu of WinRAR. Try it.

Ramik Sadana (TECH QNA Expert)



WinRAR has a archive repairing feature for files that are corrupt

Hard Drive Issues

Q I purchased a new WD hard disk of 80 GB, at the time of partition the system shutdown due to overheating issues but after that there weren't any more error message. I installed the Windows XP SP3 but now I am facing a problem of sudden restarts which are almost at the same time interval but after three or four restarts the system becomes stable. Help me out.

A You must check your processor first and make sure that it does not overheat again. Also check your hard disk for any bad sectors through chkdsk / scandisk. Also if possible take the data backup, repartition it and then do a standard format for each partition.

Sanjeev Chharia (TECH QNA Expert)

My Documents Popup

Q When I open my computer, "My Documents" opens up automatically.

A If I understand you right – after your PC boots up your My Documents folder is opened on your desktop.

If that is correct, I think you should check your Startup folder in the `Start > All Programs` menu. Make sure a link to your My Documents folder is not listed in there.

If so just right click on it and select Delete. Also try this, check the Userinit and PersistBrowsers registry entries to make sure that they contain the correct values.

To check the Userinit and PersistBrowsers registry entries, follow these steps.
a. Click Start, click Run, type regedit in the Open box, and then click OK.
b. Locate and then click the following registry subkey: `HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Windows NT\CurrentVersion\Winlogon`
c. In the right pane, right-click Userinit, and then click Modify.
d. In the Edit String dialog box, type `C:\WINDOWS\system32\userinit.exe` under Value data, and then click OK.
e. Locate and then click the following registry subkey: `HCU\Software\Microsoft\Windows\CurrentVersion\Explorer\Advanced`
f. in the right pane, right-click `PersistBrowsers`, and then click Modify.
g. In the Edit DWORD Value dialog box, type 0 under Value data, and then click OK.
h. Quit Registry Editor, and restart the computer.

Jagdeep Virdi (TECH QNA Expert)

Thinkdigit's TECH Q&A EXPERTS

Removing Windows Vista From The Boot Selection Menu

Q I have Windows XP on my desktop PC. One day I installed Windows Vista on another partition. But after 30 days it stopped booting. So I formatted my Vista but every time I try to boot, it asks me for which OS I want to boot from that the OS selection menu. Now, I am working with only Windows XP. How can I erase the entry from the boot menu? I have been trying to edit the boot.ini file but there is no line of selecting option. Please help me.

Purnia

A Although you have erase Windows Vista from you hard drive and install a fresh Windows XP as a replacement, Vista boot loader will still remain on your system. This is quite annoying because you see it at every bootup.

There are two ways we can do to erase Windows Vista bootloader, the first one:
1. Boot to Windows XP. Put your Vista DVD to your DVD-Rom
2. Click on `Start > Run`, and type `x:\boot\bootsect.exe /nt52 All /force`
Note: "x" is your DVD-Rom drive name.

Or you can try the second steps:
1. Boot you PC using Windows XP SP2 CD.
2. Run the Recovery Console.
3. When the console is loaded, type "fixboot" (without quotes) and press Enter.
4. Then, type fixmbr and press Enter.
5. Reboot your PC to see the results.

Jagdeep Virdi (TECH QNA Expert)

Need Wireless Internet

Q How can I setup a wireless Internet connection? I'm now using BSNL Broadband connection with desktop PC, but I want to setup this connection with my Laptop. How can I set up Internet connection using mobile (using Blue Tooth and Data cable) with the laptop.

Koushik

A You just need a WiFi router, which costs around Rs 2,000. Connect the desktop using wires and laptop wirelessly and enjoy!

If your phone has WiFi, you can browse too. Bluetooth is possible too but is too slow and doesn't have a very wide range.

Gopi (TECH QNA Expert)

TIPS & TRICKS

SECRETS THAT KEEP YOU AHEAD IN THE RACE

TIPS

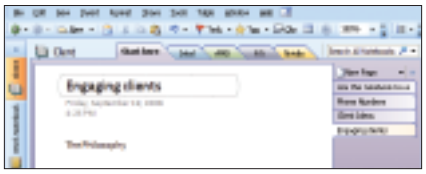
OneNote 2007 9
PowerPoint 10
Nero 8 12
IrfanView 14
Mac OSX 15

ONENOTE 2007

While there have been numerous note taking tools available nothing, comes close to OneNote 2007 in terms of features it offers. The intuitive interface helps in organising your thoughts in a clear and concise fashion.

The Interface

Similar to real life notebooks, OneNote lets you create multiple Notebooks with separate sections, and each section can have multiple pages. For e.g. If you have many clients, you may create a Notebook called Client



OneNote 2007 has an easy to understand interface

and add clients as separate section. Then each client section can have multiple pages containing client specific information. Notebooks are lined on the left hand side of the screen, Sections are lined on the top below the menu bar and the Pages are shown on the right hand side. The interface is simple to understand.

Screen Clippings

When taking down notes the ability to capture part of a web site or application saves lot of time and energy. OneNote lets you capture almost anything displayed on the screen using the screen clipping function. For example you can capture a section of the map showing your house and send it to a friend as a guide. It can also be used

A screen clipping of a Mumbai map taken from Google Maps

when planning a trip, researching on Internet, Online shopping etc.

Irrespective of the application open you can use `[Windows] + [S]` to activate the screen clipping mode. Select the area to be clipped and the captured image will be saved to the unfiled notes in OneNote.

Internet Research

OneNote is a useful tool for gathering information from the Internet for later use. It works great because, you can be sure you will not lose this information even if the Web site changes. You can send the entire page or some selected data to OneNote using the

The Thinkdigit web site directly captured to OneNote 2007

Send to OneNote button which appears on Internet Explorer. The gathered information will be pasted in the Unfiled Notes section. A hyperlink to the original source is also inserted at the bottom so that you can revisit the original site whenever you desire.

Text Recognition

OneNote has the ability to recognise text in pictures which are inserted as notes. For e.g. if you have taken a screen clipping of your online reservation ticket, it will be saved as an image. Now if you want to grab the text (seat Number, coach number etc) then simply right click on the image and select

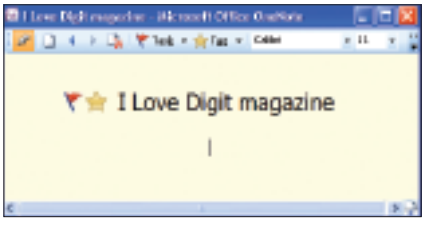
Text grabbed from a visiting card using text recognition

`'Copy Text from Picture'` and paste the text next to the picture.

This feature can be put to good use for grabbing data from a visiting card, provided you have taken an image of it from your phone. Simply add the image as a note in any page and grab the text using the method described above.

Side Notes

If you are addicted to using Sticky Notes then you will love the Side Note feature. Side Note is used when you are working on a different



application and want to quickly jot down some related information, for taking quick notes when on a phone or writing down your thoughts when reviewing some document.

There are two ways to quickly launch the Side Note window. Clicking on the OneNote icon in the system tray pops the Side Note window. Alternatively, pressing the combination of `[Windows] + [N]` has the same results.

Tables

Presenting data in tabular form has its own advantages and OneNote offers it too. Importantly, tables can be made using just the keyboard. Pressing TAB after any word creates a cell,

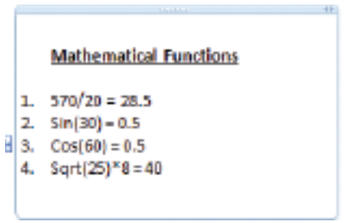
Cars	Model	Engine Capacity	Price
Ferrari	F450	4.5 Ltrs	$89000
Lamborghini	LP650	6 ltrs	$56000
Porsche	Carrera	5 Ltrs	$85000
Maruti	SX4	2 Ltrs	$7000

Use TAB and ENTER to create tables, it's that easy!

pressing `[Tab]` again creates another, this way you can create an entire row consisting of data. On pressing `[Enter]`, the cursor moves to the second line creating the second row of cells. To jump between cells `[Tab]` can be used. `[Ctrl] + [Enter] + [E] or [R]` can be used to insert a Row to the left or right of the cursor, `[Ctrl] + [Enter]` to insert a row below, and `[Alt] + [Enter]` to add one more line inside a cell.

Calculator

Need to do a basic arithmetic calculation when taking down notes? Well, OneNote can help you do that too. Let's say, if you want to calculate 570 divided by 20, then just write down `570/20=` and press `[Spacebar]`. The "=" sign is important, once you have written it simple press `[Spacebar]` and the answer will be calculated automatically. Even Complex mathematics such as `Sin(30)` and `Squareroot` functions can also be derived.



OneNote 2007 loves math, even Algebra!

Attaching Files To Notes

OneNote allows storing of documents and other files directly on a page. This comes handy when you want to organise all your project related material in one place. You can add files in two ways. First, click on Insert à

Drag and drop files to directly attach them to your OneNote page

Files, and in the browser box which opens, select the files to add. The less geeky way of doing it is by dragging the required document and dropping it on to the OneNote page.

Full Page View

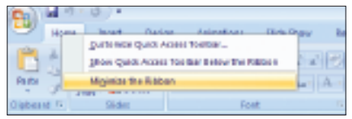
During brainstorming sessions, when you are taking down lots of notes expanding the view to full screen comes handy. In OneNote the Full Page View button placed next to Help menu is one way of doing it, or you can simply press `[F11]`.

POWERPOINT

Those in marketing can't live without it, your friends often spam you with an offspring containing a corny message, and most presentations depend on it. The beauty of PowerPoint is that it can be used for both personal and professional use, so if you have to present your ideas at a sales meet, your college, or want to irritate your friends with your philosophies on tree-hugging, keep reading...

Minimise The Ribbon

For those who want more Desktop area to work with, the ribbon might get in the way. This is especially true for those working on resolutions of 1024x768 or lower — Office 2007 seems to demand higher resolutions. In order to minimize the Ribbon, just right-click on any of the tab names and select `"Minimize the Ribbon"`. Now you will be able to see all the names of the tabs, but not all the buttons. When you need to do some formatting or changes, just click on the name of a tab and all the buttons will return in all their glory. A single click means that the ribbon will auto-hide, and a double-click will keep it there permanently.



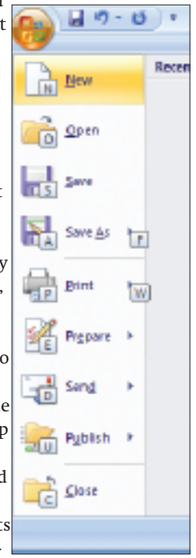
Hide the Ribbon to liberate screen space

Customise The Quick Access Bar

Next to the Office logo you can find the quick access toolbar. By default, this has a shortcut to Save, Undo and Redo, which is a little pointless, because we're all quite adept at using the respective keyboard shortcuts. However, each of us may have some task that we perform regularly, which have difficult to remember keyboard shortcuts, or complicated ones requiring key-combinations. In such cases, it would be useful to customize the quick access toolbar. Just right-click on the toolbar and select `"Customise Quick Access Toolbar"`. Now choose the shortcuts you want to display on the Quick Access toolbar, and click OK.

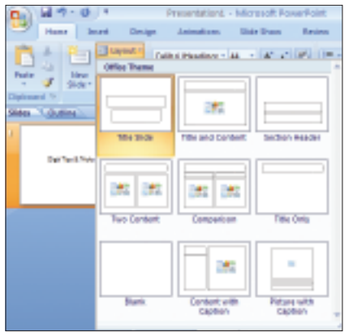
Easy Keyboard Shortcuts

For keyboard warriors, the most irritating thing about the new PowerPoint is the fact that a few shortcuts have changed. What most people don't realize is that Office 2007 has shortcuts for every single menu item, which previous versions did not, and they're easy to identify as well, thanks to the little letters that pop up when you press `[Alt]`. It is a good idea to learn the keyboard shortcuts if you spend a significant amount of time using any Office application, using [Alt] and the cues (called Key Tips) provided; it couldn't be simpler! Most of the older [Ctrl] + [Some key] shortcuts are left unchanged, so you really will not find yourself too frustrated!



New Slide Layouts

By default, a lot of us just tend to add new slides in PowerPoint, without bothering about the slide layout. We then proceed to change the layout and other options. Instead of just clicking on the New Slide icon, click on the text below it and select the layout of the slide even before you add it. This saves you immense amounts of time and energy. For professionals at work, who need to create presentations with hundreds of slides, this is a great boon.



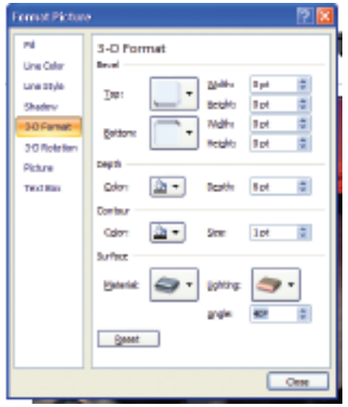
Choose the correct layout for impressive looking slides

Content Placeholders

When you add a new slide which has blank content placeholders, you will see that PowerPoint 2007 offers little icons in the middle that act as shortcuts to particular types of content. These icons symbolize adding table, chart, SmartArt graphic, picture, Clip Art, media files or plain text. While creating slides, it's likely that you know what it is you're looking to include in a particular place holder, so just click on the associated icon and you can browse through only those types of files on your computer. This will save you hours in the long run.

Adding Effects

When you add a picture or element into a slide, it could appear rather plain. To jazz it up a bit, take a look at the default picture styles available in PowerPoint 2007. One of these is guaranteed to attract your attention. Besides, if you find one that's close to what you want, but not quite it, you can always select it and play around with the 3D settings to modify the style to your liking. To do this, just go to `Format > Picture Effects > Presets > 3D Options` and then play around with all the different effects to get the ideal 3D layout for your picture.



3D effects can be added at a mouse-click; presets are available too

Do The Same For Text

As simple as the header above is, it's the truth. You can add all the same effects, if not more, to your text as you did for your pictures. Apart from the standard Word Art selections, you can also apply similar 3D effects to your text. If you insert the text in the same placeholder as the picture, you can apply 3D effects globally, to both the text and the picture at the same time. This works especially well when you want to add a caption to a picture that you have applied 3D effects to — you don't want your presentation looking lame with a cool 3D picture and a standard 2D caption, now do you?

Animations

To animate your slides, you have the Animations tab which puts everything in plain sight and within easy reach. From within the `Animations` tab, look for the `Custom Animations` button (`[Alt] + [A] + [C]`). This will open up a `Custom Animations` pane on the right, from where you can add animations to individual contents on your slide, instead of animating the entire slide itself. Once you have added your effects, you can just drag them about to reorder them, which makes storyboarding your slide very easy. Also remember to play your animation, using the little play button at the bottom of the `Custom Animations` pane, to check progress.

In this same pane, you can set various parameters for the animation, including the event (time delay or on click), directions and speed. Every effect in that pane also has a drop down arrow, which will reveal further options.

Formatting Images

Previous Office versions would let you do some changes to the images in your presentations but in a rather non-interactive manner. The new PowerPoint 2007 shows you live previews after every change is made.

Click on an image and click the `Format` tab that appears in the ribbon. You get a wide range of settings such as Picture Styles, Brightness, Contrast and Color parameters. Move your mouse over any of the styles and the preview will be shown on the image in the slide itself.

Disable Image Compression

By default, PowerPoint 2007 compresses images put into a presentation while saving. While this saves file size, it can result in a loss of quality – which you may not always want.

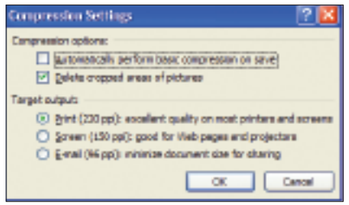


Image compression saves space, but if you have large hard drive you may turn it off.

To disable compression, go to the `Office button > Save As.` Go to `Tools > Compress Pictures`. Click on the `Options` button. Uncheck the

box against "Automatically perform basic compression on Save". You can also change the density (pixels per inch) of the images saved.

Keep in mind this option will be set only for the current presentation — which means you have to do this over again when you work on another presentation.

Resize Proportionately

When you want to resize items in a slide, instead of doing so individually, and ruining the aspect ratios, you can just select multiple objects by [Shift] + Clicking on them to select them and then resizing using your mouse to drag the corners. Remember to keep [Shift] pressed in order to make sure that individual aspect ratios are maintained. This works with both text and pictures. So just select and resize without worry!

Changing Resolutions On The Fly

Large presentations with high-resolution images can be a burden on slower machines. To avoid any embarrassment during presentations, PowerPoint has a useful feature that can switch resolutions of the presentations down to more manageable levels.

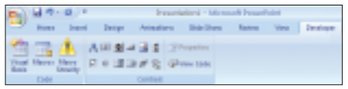
Click on the Slide Show tab on the ribbon. Under Monitors, click the Resolution dropdown and select a suitable resolution. The next time you run the slideshow, the resolution will be switched to the one specified by you.

Viewing Sizes

This tip applies throughout Office 2007, and relates to the Zoom feature. Most of us use [Ctrl] + mouse scroll down/up to zoom in or out. However, this does so in increments of 10 per cent. For obsessive compulsive people like those of us here at *Digit*, we often find our documents zooming to just inside the screen boundaries or just out of it. In such cases the perfect zoom might be something like 154 per cent. Using the Zoom slider on the bottom right of the Office application window, you can achieve these exact zoom levels.

The Developer Tab

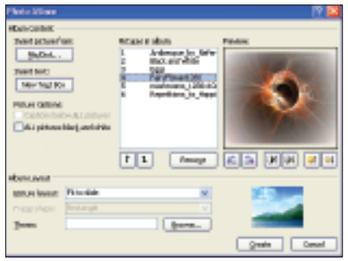
The Developer tab in PowerPoint is a hidden tab in the ribbon. It allows you to create and run or edit macros. To



enable it, click on the Office button and then PowerPoint Options button. Under the Popular section, check the box against Show Developer tab in the Ribbon. Click OK to save the changes. The Developer bar will appear in the ribbon on top and can be accessed by clicking on the tab.

Create Photo Albums With PowerPoint

Creating photo albums can be an onerous chore for some of us. PowerPoint 2007 has a feature that lets you create a photo slideshow within seconds. First click on the Insert tab in the ribbon. Click the Photo Album icon and choose New Photo Album. Click the File/Disk button to add images



Add images stored on your hard drive to create a Photo Album

to the album. Select the photos you want in the sideshow and click Insert. You can use the up and down arrows here to change the order of the photos. You can also alter the brightness, contrast and orientation of the images. When you are done, click the Create button and your Photo Album is ready. You can now continue adding notes to each slide.

Recording Narrations

PowerPoint lets you record a voiceover for slides – which can be useful if you're not making your presentation to a live audience.

To record a narration, first click the Slide Show tab in the ribbon. Click the Record Narration icon. Here you have the option to change the microphone volume, quality and where the file should be saved. Click OK once you're done with the changes. Click the Current Slide button if you want to record a voiceover starting from the current slide, or click the First Slide button if you want to start from the very beginning. The slideshow will then start and you can start speaking into the microphone. Click to switch to the next slide and continue speaking as necessary. When all the slides are done, you'll be asked whether you want to save the timings for each slide. Click Save.

Accurate Placement

Placing elements and then aligning them, or accurately placing them can be a little irritating. The easier way is to click the object and use the direction keys to move them into place. Holding down [Ctrl] while you do this gives you pixel-accurate movement — which means you can move them even more accurately. Don't forget to use gridlines to align objects better – under the View tab, check the box against Gridlines.

Page Setup For Presentations

Depending on the type of projector or screen you use or the impact you need to deliver with a presentation, it is wise to change the resolution of the presentation. For example, presentations at standard 4:3 resolutions will look awkward on widescreens.

To change the page setup, simply go to the View tab in the ribbon and then click on Slide Master. Click on the Page setup icon and you will be able to select from a range of presets, or you can enter your own custom size.

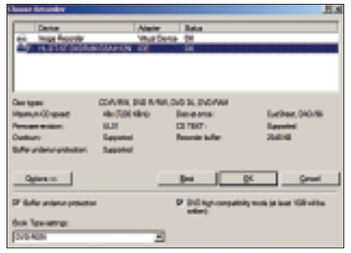
If you've chosen one of the ready-made design themes or even created one by yourself, you should be a little careful while changing the page setup – it can wreak havoc on the design.

NERO 8

Nero Burning ROM happens to be the most widely used application for burning CD/DVDs, and a copy comes bundled with all writers. But the new version is brimming with features which you should know about.

Better Compatibility

One of the issues with media and the way they are burned is that is that they're not always compatible on all DVD players. There are a few things that can be done to solve this: one of them is to set the high compatibility mode on for your drive. Click on the



High compatibility mode significantly reduces the number of coasters you make

Choose Recorder button to the right of the dropdown menu for selecting the drive. Select your drive and click on Options. Check the box against DVD High Compatibility Mode. This will make sure that at least gigabyte of data is written on the media even if you don't have that much data.

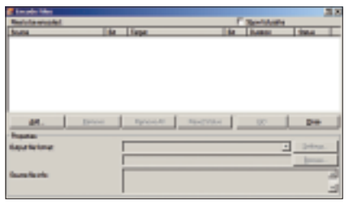
Another thing you can do is to use the Book Type settings – this is basically is to tell the drive that you have inserted a DVD-ROM (for example) not a DVD-RW or any other kind of DVD. This way, there are better chances of the drive reading your media. Use the dropdown menu for Book Type settings in the drive properties window and select DVD-ROM as it generally gives better compatibility.

Move The Cache Folder

Nero uses a location on the hard drive when it needs to cache files before burning them. If you are running short on space in your main partition you will want to change it to one with more free space. Go to File > Options > Cache and click on Browse to choose a new location.

Encode Audio Files

Nero Burning ROM comes with an in-built audio encoder: go to Extras > Encode Files, click on Add and select the files you want to encode. Using the dropdown menu for Output file format, select which format you



The Inbuilt encoder can rip audio CDs directly without additional steps

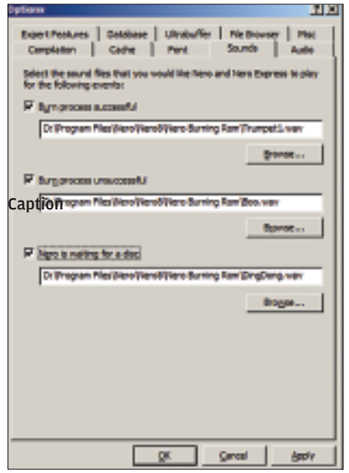
want to encode to and click on the Settings button to set parameters for the encoder. Finally, click on the Browse button to select where you want to store the encoded files once encoded. Click Go to start encoding!

Nero BurnRights

Nero BurnRights is an application that comes with Nero that allows you to define which users on your system can burn CDs and DVDs. Go to Start > All Programs > Nero 8 > Nero Toolkit > Nero BurnRights. Select the type of users that you want to give permission to, and click OK.

Sounds For Events

Nero has support for sounds but they are disabled by default. Go to File > Options > Sounds tab to set sounds for the events. The sounds



Caption

Sounds alerts are useful when burning CDs or DVDs in the background

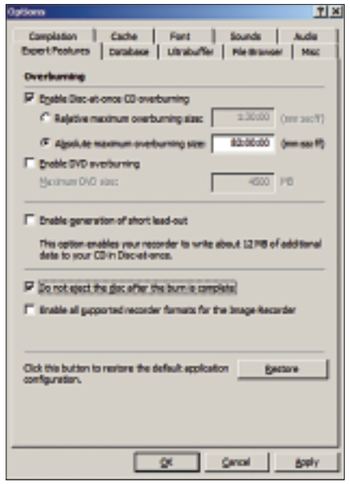
that come with Nero are in the default locations, but you can select the ones you want by clicking the Browse button.

Searching For Specific Formats

Trying to search for a few selected file types you need to burn can be a nightmare in an un-assorted folder. To look for a particular file using wild cards, right click on the folder in the left pane of the browser window. Click on Select pattern. Enter wildcards with semi-colons [;] as separators and click OK. For example, entering *Digit*;*.PDF as the pattern will select all files with Digit in it, and all PDFs as well.

Do Not Eject The CD/DVD

Every CD burned is immediately ejected from the drive by default. To keep the CD or DVD in the drive once it's done, go to File > Options > Expert Features. Check the box against Do not eject the disc after the burn is complete and click OK.



You can stop Nero from auto-ejecting the burnt media

Lean Mean Nero

We all miss the Nero Burning ROM from the past years when it was a compact little CD / DVD burning software and not a complete suite with modules we never use. It's reached a point where there are tiny hacked illegal releases of Nero Burning ROM made available on the Internet which take a fraction of the space of the entire suite. If you have the nasty habit of blindly clicking Next during the Nero 8 installation, you'll most probably have skipped the screen where you choose the Custom installation mode. Uninstall your current copy of Nero if you have it installed. Start the installation till you reach the window where you can choose between Typical and Custom installation. Select the Custom install option and click Next. You'll soon see a window with the list of all the Nero components selected. Click on each one of them and select This Feature Will Not Be

`Available`. Do the same for everything other than Nero Burning ROM and continue with the installation. At the end, you'll have completed your own clean compact Nero Burning ROM installation the way it used to be.

IRFANVIEW

When it comes to image manipulation, nothing beats IrfanView, This tiny and light freeware application uses negligible system resources, is fast and has a gazillion options to help you manipulate images. It can also do basic touchups to your images, apart from the regular resizing and Web compression that it is most popularly used for! Let's see what exactly is possible with this little wonder software. You can find the installer for IrfanView on every month's *Digit* CD under the `Digital Tools > Essentials` section.

Fullscreen Control

This one's easy, just press `[Enter]` after you open an image. You can use the right arrow key or the space bar to go to the next image in the directory, and the left arrow key to see the previous image. However, what is interesting is that if your images are rather dark, they will end up blending into the default black background that IrfanView uses. Instead

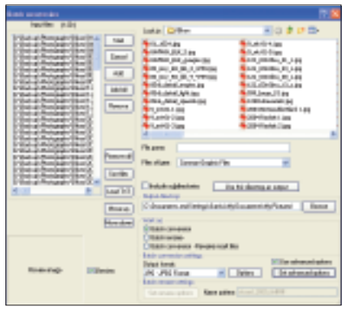
Controls related to Full screen viewing can be changed from here

of settling for this black background, you can choose another colour. Go to `Options > Properties` (or just press `[P]`) and then click on the "`Full Screen`" tab. Here you will see the option for Screen Color. Just click on the colour and select something from the palette that pops up.

Batch Conversion

What if you have 6000 images you want to resize? Some of these are portrait and some landscape, some are BMPs, some are TIFFs and some JPGs? If you sit down to resize/resample each image individually, it will take you forever. Instead, open the first image in the folder, then press `[B]`. Now you will see the "`Batch conversion`" dialog box pop up. Just select all the images from that folder and click on `Add` (or just click on "`Add all`'.

Now it's time to see the resize/resample options that will help



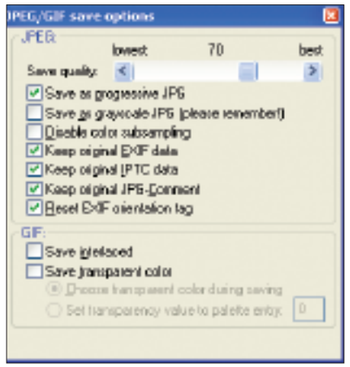
Add images, define criteria and hit Start, to batch convert

IrfanView automatically resize your images. Look for the "`Use advanced options`" checkbox and tick it. now click on the `Set advanced options` button. In order to resize proportionately, again, make sure the `Preserve aspect ratio` checkbox is ticked. Now click on the `Resize` checkbox and then select the option to either set longer or shorter side to whatever size you want. This is helpful because you might have portraits mixed with landscapes...

Also remember to look at the JPG options, to make sure that everything is fine. Next, you should look at the path in which IrfanView is saving the resized images. The best way we've found is to click on the "`Use this directory as output`" button, and then add some folder name to the Output directory path ("resized" or "smaller" is what we prefer to call the new folder). After all this, just click on `Start` and watch in amazement how IrfanView goes about mercilessly reducing image sizes!

Format Conversion

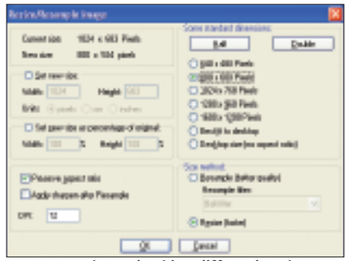
Very often we find ourselves stuck with BMP or TIFF images, which we may want to upload to the Web. Now these files are generally large, and for screen rendering (images on Web sites) no one needs anything higher in quality than JPEG. So instead of uploading a 1 MB image of your vacation, do everyone in your mailing list a favour and covert it to a more manageable JPEG. All you need to do is press [S] and the "`Save Picture As...`" dialog box pops up. Select the directory you want to save it to, the Save quality (compression level) — 70 per cent should be fine — and even save as a progressive JPG. You may have seen such pictures online, where the whole picture appears, blurry at first and then clears up, instead of slowly displaying a line at a time from the top down.



Convert image files to JPEG and reclaim your hard drive space

Resizing and Resampling

With all the 5 megapixel (or higher) digital cameras around the place, everyone seems to be taking really high resolution images of everything from vacation spots to family gatherings, and even their pets. Now if you're one of these shutter-bugs, and always click at the highest resolution



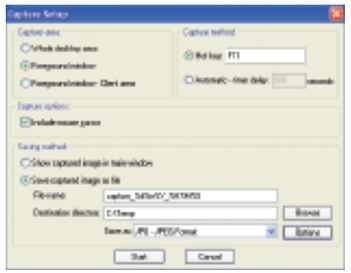
Images can be resized in a jiffy, using the preset options

setting for your camera, you probably have a lot of images stored that exceed 1 MB in size and have greater resolutions than 1600x1200. Considering that the standard Desktop has a resolution of just 1024x768 (0.8 mega pixel), and most sites are designed with this resolution in mind, uploading the complete 5 megapixel image to your photo gallery is rather pointless. Do the visitors to your site really have to see how many wrinkles your grandmother has on the tip of her nose?

The first thing you should do is resize your images, before you even think of uploading them. In IrfanView this is easy. Just press `[Ctrl] + [R]` to get to the "`Resize/Resample image`" dialog box. Here, you can change the image resolution, but make sure you tick the Preserve aspect ratio check box so that you do not distort the image. Choose a saner size, even 800x600 is more than enough for any Web page, and make sure you set the DPI (dots per inch) to 72 — displaying an image on screen (for the Web) needs nothing more than 72 DPI. Also remember to make sure that the option to `Resample` is selected instead of `Resize`, because Resampling the image will provide better quality. Once your satisfied with the right size, just press `[S]` to Save As... or `[Ctrl] + [S]` to overwrite the original.

Easy Screenshots

A lot of people out there need to take screenshots on a regular basis — to post content online, show an expert for help with troubleshooting, explain solutions (if they're the expert), for blog posts, etc. Most of us just press [Print Screen] and then paste into an image



Define the Hot key for screen capture and Irfanview is all set to take screenshots

editing program such as MS Paint or Adobe Photoshop. IrfanView, however, can make this task easy: just start IrfanView, press `[C]` and you should see the `Capture Setup` dialog box. Here you can choose a hot key for screen capture, where to save the captured file and even what format to save it in. No more hassles taking screenshots!

MAC OS X

Print Screen in Mac OS X

Unlike Windows, there is no print screen button on the Apple keyboard. Depending on what you want to capture, you can choose one of the following methods to simulate a print screen.

Capture the entire screen

Press `[Command] + [Shift] + [3]` and release.

Click any part of the screen with your mouse.

The screen capture is stored on your desktop in png format.

Capture an application

Open the application you want to capture on screen.

Press `[Command] + [Shift] + [4]` and release.

The cursor will change to a +.

Press the `[Spacebar]`

The cursor will change to a camera.

Use the mouse (camera) to select the application.

Check your desktop for the picture.

Capture a portion of the screen

Press `[Command] + [Shift] + [4]` and release.

The cursor will change to a +.

Drag your mouse (+) to select the area you want to capture .

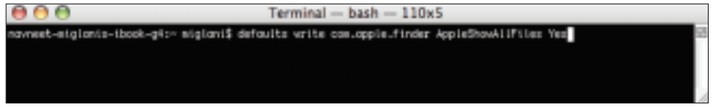
Check your desktop for the picture.

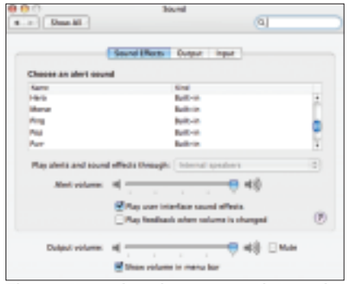
Tip: To copy the image on your clipboard instead of automatically saving it on the desktop, hold the `[Ctrl]` key along with `[Command] + [Shift] + [4]`.

Show Hidden Files in Mac OS X

Open the Terminal application. You can find it under Applications -> Utilities.

Type defaults write com.apple.finder AppleShowAllFiles Yes.





The event sound can be permenantly turned off from the System Preferences

Launch the Finder to see the hidden files. They are pre-fixed with a dot(.). Please be careful while changing anything in these files. The OS X uses them to manage the Mac.

Tip: To move to specific directory in the Terminal, type "`cd`" and drag the directory from the Finder to the terminal and hit enter. You can now access the files in this directory using the Terminal

Random Tips

1. To mute the feedback (blip sound) that the Mac makes when you turn up or turn down the volume using the volume keys.

Hold `[Shift]` when you turn up or turn down the volume. You can permanently turn it off by going to `System Preferences > Sound` and unchecking the "`Play feedback when volume is changed`" option.

2. While browsing the web using Safari, want to know the meaning of a word you just read?

If you select the word and hit `[Ctrl] + [Command] + [D]`, a pop up window will give you the dictionary description of that word. If you move your cursor to another word, the description for that word will show up, too.

3. You want to save a piece of information that you came across while browsing?

Select the piece of information and press `[Command] + [Shift] + [Y]`. Mac will create a new sticky note and save the information in it.

4. Switching Between Windows
Use [Command] + [Tab] to switch between different application windows that you have opened. You can use your mouse to click the exact application you want, or keep hitting the TAB till you sequentially get to the one you want. You can also use the arrow keys while you hold down the command button to move back and forth between the applications listed.

Use [Command] + [~] (tilde) to switch between the windows of the same application.
Use [Command] + [~] (tilde) to switch between the windows of the same application.

Dock Tips

1. Add an already open application to the dock
Press [Ctrl] + mouse click.
From the context menu, select "Keep in Dock" .
2. Add a closed application to the dock
Drag it from the Finder to the Dock.
From the context menu, select "Keep in Dock" .
3. Remove an application
Drag the item off the dock and it will disappear in the cloud of smoke
From the context menu, select "Keep in Dock" .
4. Resizing an application
Place the cursor over the vertical separator bar and right click the mouse.

5. While booting up the Mac
Hold [C] down to boot from a CD or DVD
Hold [D] down to boot the disk's first partition
Hold [N] down to boot from a network server
Hold [Shift] to boot into safe mode
Hold [Command] + [S] to boot into a single user mode
Hold Option to choose startup disk at boot time

Automate repetitive tasks by creating a work flow

6. Other Useful shortcuts.
Use [Command] + [Space] to open the Spotlight search bar.
Use [Command] + [Option] + [Del] (Delete) to empty trash.
Use [Command] + [Q] to quit an application.
Use [Command] + [Option] + [Ctrl] + [8] to invert the colors on your Mac.

Automator Basics

The Apple Automator application allows Mac OS users to automate the repetitive computer tasks by creating a workflow. A workflow is a series of actions that will be executed one after the other when executed. An action is the simplest unit of the Automator like Copy to Clipboard By combining actions from different applications in the drag and drop interface of the Automator, you can create your own applications and plug ins. Here is how it works.

1. Open Automator.app from the Applications folder.
2. You will see 4 panes: Library, Action and Help on the left; the workflow canvas on the right.
3. You can search for actions by typing in the edit box located on the top left corner of the application.
1. **Create a plug in for sending mail from the Finder**
   a. Press [Command] + [N] to create a new workflow.
   b. Select Finder in the Library list.
   c. Select Get Selected Finder items.
   d. Drag it to the workflow canvas on the right.
   e. Now select Mail application in the Library List.
   f. Select Get New Mail.
   g. Drag it to the right window, below the Get Selected Finder Items box.
   h. Select the Add Attachment to Front Message from the Action pane and drop it as the last action on the workflow.
   i. You have just completed your workflow.
   j. Click the Run button on the top left corner of the screen.
   k. The Mail app will pop up. Close it and go back to the Automator application
   l. Open File > Save as a Plug-in. Type a name for the Automator plug-in.
   m. Open the Finder window and click on a file that you would like to send as an email attachment.
   n. From the context menu([Ctrl] + click), select Automator and then choose the workflow you just created.
   o. If you have your mail account setup, you just need to type in the details of who you want to send the message to. You can now send attachments directly from your Finder window.

Tip: You can also save the Automator workflow as application using File > Save As. Choose "Application" in the File Format dropdown.

You can then double-click on the application to launch it later, instead of using it directly from the Finder.

If you want to save your workflow to edit later, you can choose to save it in the nascent workflow format. Under the File > Save as dialog box, choose workflow as the file format.

This is just an introduction to the Automator. There are a lot of other things that you can do with the Automator, like renaming a group of files, or creating an iTunes playlist automatically. Automator gives you direct access to Mac OS X frameworks like Core Image, Core Data, Core Audio and Core Video so you can work with groups of files together.

If you'd like us to cover anything special, please add your requests to the Forum on **www.Thinkdigit.com/forum**.

External Storage Devices

12 external hard drives tested, to help you choose what to carry with you on your travels

Rohit Chandwaskar, Jiten Gandhi

Sanket Naik

Digital entertainment is the subject of focus for most computer component manufacturers and the humble PC is slowly, but steadily, morphing into a true multimedia capable machine. With the release of new motherboard chipsets, capable of decoding Blu-Ray content on the fly, PCs' multimedia capabilities are bound to get a shot in the arm. This new breed of PCs will be capable of running high resolution movies, playing graphically intensive games, ripping hi-definition audio without breaking a sweat.

These new capabilities demand higher capacity and better performing storage sub-systems. Getting 500 GB or 1 TB of hard drives will no longer need an excuse but be a necessity. The good news being, storage space is getting cheaper. A year ago, a 1 TB drive would have easily set you back by around Rs 15,000 but today you can buy the same or newer generation hard drives for approximately Rs 9,000. If that's not convincing enough, a 640 GB drive retails for as little as Rs 4,000 and makes a terrific buy. Put two of them together and you have enough space to store as much hi-def content as you wish.

But digital data hardly sits idly on any hard drive; it's always shared and moving around from one PC to another. Internal drives may be cheap, but when it comes to using them for exchanging data they are cumbersome to use and not the ideal solution. By now, most of us have pen drives (Flash drives) which are often used to transfer data from one PC to another. But will these flash drives live up to the challenge when faced with hi-def content? Maybe not; they are slow, and expensive. A good external drive is the right solution as it offers the advantages of both internal hard drives and flash drives in one single package.

External hard drives are portable, reliable, are fast enough to transfer data and work out cheaper when you take into consideration the price per GB. Today, an 8 GB flash drive retails for around Rs 1,500 — in other words it works out to Rs 190 per GB. On the other hand, a 120 GB external hard drive is available for Rs 3,500, if you do the math, the cost of 1 GB works out to Rs 32 only.

LaCie Little Disk 320 GB

While many might argue about the difference between the form factors of flash drives and external hard drives, one look at the new generation of external hard drives will be enough to put your contention to rest.

External drives have evolved from the dirty DIY packages which were rampant in the early years to sleek, stylish and affordable devices. External hard drives are classified into two categories: portable and desktop. As the name suggests, portables are the ones you carry around and share data, whereas desktop drives are generally used for taking backups. In this test we have drives in both categories from prominent players in the market, some old and some new entrants. Western Digital, LaCie, Freecom and Verbatim are here. Seagate was in the process of getting their new line up of external drives and hence couldn't participate in this test, but we will definitely review their products once they're released.

How We Tested

Test Rig Configuration

Our test machine consisted of an Intel Core 2 Extreme X6800 processor running at 2133 MHz on a Gigabyte GA-965G-DS3 motherboard-based on the Intel 965G chipset, with 1 GB Kingston HyperX DDR2 533 MHz RAM and a Seagate Barracuda 750 GB SATA II drive. A fresh installation of Windows XP with SP2 was done and the latest versions of the hardware drivers were installed along with DirectX 9.0c. We used Intel's latest X25 SSD drive as the source and destination drive to test the real world Read / Write performance. All drives were hooked on an USB 2.0 port, except for FireWire drives which were hooked to a FireWire 400 port.

Test Procedure

The test suite consisted of synthetic benchmarks such as HD Tach 3.0.1.0 and Si Soft Sandra. Real world test consisted of file transfer test, between two drives and within two partition of the same drive. We also noted down important features such as dimension, weight (for portable drives), types of interface offered, bundled accessories, software bundled etc. These features were then given appropriate weighatge to get the final features score. In similar fashion we also gave weightages to performance figures and calculated the performance score. Price per GB is an important criterion for hard drives and it was also taken into consideration along with features and performance score to declare the final winner.

Benchmarks

HD Tach 3.0.1.0

The fresh hard drive to be tested was connected to the test machine and not formatted and allowed to remain raw (unpartitioned). HD Tach RW 3.0.1.0 was then run and used to evaluate the hard drive.

SiSoft Sandra

The File system benchmark gives valuable insight into the low level performance of the hard dive. These score generally tally well with the actual figures and hence are important.

Real World File Copy Test

We took 1 GB of assorted and sequential files to mimic real world conditions and transferred them across two drives and with two partitions of the same test drive. For each run we noted down the time taken to complete the file copy command.

Portable External Drives

Features

Design

Looks play and important role in attracting consumers, especially for mundane products such as external hard drives. Every manufacturer has done their bit to make them appealing, and have roped in known designers to create their products. LaCie, for example, has drives designed by the legendary Porsche Design studios. Western Digital (WD) was the first to style their drives, and their Passport series of drives is sleek, stylish and attractive. The new Passport Essential series offers drives in eleven colours, whereas their Elite and Studio have an anodized finish. Freecom's Tough Drive Pro was completely encased in a white protective covering; this looks good, but can't match the Passport drives. Verbatim's SmartDisk feels plasticy and the silver finish doesn't do anything to enhance the looks. LaCie's rectangular and boxy Little Disk, designed by Sam Hecht, is finished in translucent material, which looks good, but is a smudge magnet. In our opinion, the WD Passport drives standout from the crowd.

Western Digital Passport Studio 320 GB

Portability

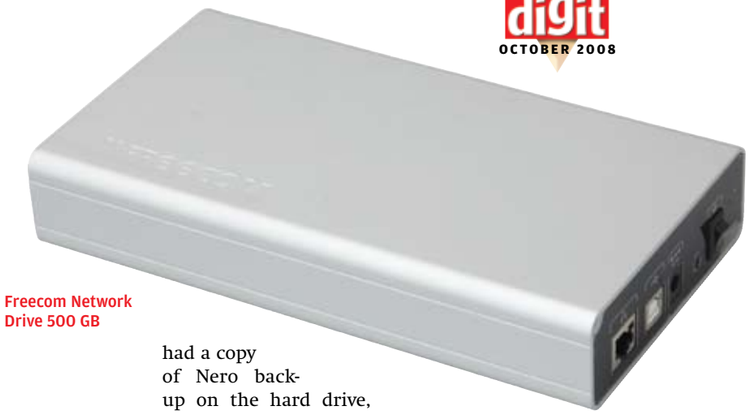
Here, portability refers to compact dimensions. The form factor determines whether the device will be carried along or will spend most of the time on the desktop. Western Digital's Passport drives come top here with their sleek dimensions. LaCie's Little Disk comes second with dimensions on a par with WD; it could have done better with rounded edges though. Freecom's Tough Drive Pro, though sleek, is elongated, and will have trouble fitting in a pocket. Verbatim drives have a curved dome and the drives taper from front to back. Despite their relatively bulky shape, Verbatim drives are the lightest. In fact, we felt they had just sent us the shell with no drive inside. Freecom's Tough Drive Pro with its shock resistant armour tipped the scales at 200 grams — relatively heavy, but well protected. LaCie's Little Disk and WD's Passport were nearly identical in weight — they feel right, not too heavy.

Interface

USB has been the choice of interface for all external storage devices, be it flash drives or external hard drives. And all drives tested here, except for a notable few, were equipped with full speed USB 2.0 and were backward compatible with USB 1.1. Freecom's Tough drive Pro was the only drive to come with FireWire 400 as the default port, but also had provision for USB 2.0. Western Digital's Passport Studio was another drive to come with both Firewire as well as USB 2.0. The very presence of FireWire makes these two drives Macintosh ready, and this is prominently displayed on their respective boxes. When testing, we found the FireWire devices performing better than USB 2.0, and with good reason. Though FireWire offers better performance, don't blindly opt for it unless you are using a Macintosh. Very few PCs have a FireWire port; only high-end motherboards feature them. FireWire has two standards: the older is called FireWire 400 and the newer is FireWire 800. Most drives have FireWire 400 and the ones which support FireWire 800 generally bundle an 800 to 400 adapter cable, as these two standards are not pin compatible. Sadly, none of the drives in this test came with the new eSATA interface.

Bundle

Portable drives are often bundled with software to help with setting up backup solutions or encrypting data to prevent misuse. Freecom offers NTI's Shadow as the backup tool, which is easy to configure and use. Western Digital has its proprietary tools called WD Sync and also bundles in Google Apps such as the toolbar, Picasa, Earth etc. Verbatim



Freecom Network Drive 500 GB

had a copy of Nero back-up on the hard drive, while LaCie throws in One-Click Backup and the LaCie Sync tool.

Drives such as the Western Digital Passport Studio and Freecom Tough Drive Pro come with both USB and FireWire cables, while other drives with a USB port come bundled with a USB cable. FireWire is the primary port on the Freecom drive, and it is integrated into a small pull out cable. Such an arrangement is good only if you have a laptop with FireWire. For FireWire ports at the back, an extension cable will be required, which isn't bundled. Except for LaCie, no other vendors bundled a carry case — and we think this is a must.

Capacity

While internal drives offer 1 TB capacity, portable external drives do not yet. Most portable external drives use the smaller 2.5-inch laptop drives, rather than the 3.5-inch internal hard drives. 500 GB is the highest capacity you can get in portable drives today. However, they haven't yet made it to Indian shores, as they are expensive. 320 GB is the main capacity every vendor is touting in India, while 80, 120 and 160 GB are common. Before you decide on the capacity, work out the price per GB and then make an appropriate purchase.

Observations

When testing these drives we came across some interesting observations — some good, others irritating, but they all matter. After plugging in the Verbatim drives, a small blue LED would light up, but during transfer it doesn't flicker to indicate activity. Verbatim drives were the only drives to have small slits near the sides which should help with better heat dissipation. Other drives have the hard drive sealed inside an outer shell with no air vents; their plastic bodies trap the heat — not advisable. In all three WD drives the LED indicators are placed alongside the interface ports; this is completely pointless, because you end up not seeing the indicators because the USB connectors mostly face away from you. In the case of LaCie, the blue activity indicator LED is hard to spot and the retractable USB cable is very short — good for a laptop, but it requires the bundled USB extension cable when used with PCs.

Contact Sheet External Storage Devices

Brand	Company	Tel No	Email	Website
Freecom	Rashi peripherals Pvt Ltd	022-67090909	response@rptechindia.com	www.rptechindia.com
LaCie	neoteric infomatique ltd.	022-40859600	sales@neoteric.co.in	www.neoteric.co.in
Verbatim	Verbatim India	NA	ramesh.tuli@verbatim.co.in	www.verbatim.com.au
Western Digital	Western Digital	9321029204	amarjeet.singh@wdc.com	www.wdc.com

Performance

Since drives were hooked on a USB port, the random access time was over 15 ms for most drives, and this affected their read/write performance in general. CPU utilisation figures were the most interesting and they showed the ill effects of the USB interface. All drives with USB, on an average, required 11 per cent of CPU time, as seen from HD Tach's CPU utilisation score. On the other hand, both the WD Studio and Freecom Tough Drive, connected to the FireWire ports, needed merely 1 to 2 per cent of CPU time. The average read / write scores were also higher in the two FireWire drives.

Conclusion

Taking features, performance and price per GB into consideration, Western Digital's Passport Studio emerges as the winner. Despite its high price per GB, the Studio makes up lost ground by offering better features and higher performance. LaCie's Little Disk 320 GB comes in second, priced sweetly at just Rs 6,000, it beats the rest of them because of its lower price per GB.

LaCie Rugged 500 GB

If we take the scores of synthetic benchmarks such as HD Tach and SiSoft Sandra then FireWire comes out as a better interface than USB. But if we look at the real world transfer tests, there seems to be a negligible difference in the timings. The reason being that newer generation hard drives are faster than the maximum interface speed. Both USB and FireWire are limited to approximately 400 Mbps which works out to 50 MBps (mega bytes). If we look at the SiSoft Sandra scores, all drives deliver between 35 and 38 MBps — not bad. In other words, there is a dire need for USB 3.0 to come in soon.

Among these hard drives, the Western Digital Studio is ahead of the rest, delivering better performance figures. Trailing behind by a whisker is the Freecom Tough Drive Pro. WD's Essential 320GB delivered good figures, taking it well ahead of the other USB drives.

Desktop Drives

Features

Design

Western Digital's My Book series of drives is designed to appeal. Carrying forward the same theme as the Passport series, the My Book Essential has a shiny plastic shell, whereas the My Book Studio sports an anodised exterior. LED indicator lights are put to good use to enhance the visual appeal. Freecom's Network drive sports an all-around aluminium enclosure and feels solidly put together. Verbatim's External drive looks plain-Jane in its black plastic enclosure. The LaCie Rugged was the smallest drive amongst these desktop

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External Hard Disks

Brand Model	Freecom Tough Drive Pro U&F160 GB	LaCie Little Disk 320 GB	Verbatim SmartDisk 120 GB	Verbatim SmartDisk 320 GB	Western Digital Passport Essential 320 GB	Western Digital Passport Elite 320 GB	Western Digital Passport Studio 320 GB	Verbatim External Hard drive 500GB	LaCie Rugged 500 GB	Western Digital My Book Essential 500GB	Western Digital My Book Studio 1 TB	Freecom Network Drive 500 GB
Features (40)	25.99	24.79	25.01	25.01	25.85	27.05	29.17	20.85	22.24	16.25	24.73	24.86
Performance (25)	17.37	12.96	13.34	13.80	14.76	14.73	17.69	14.02	18.39	15.17	17.19	16.14
Price Per GB (35)	10.46	17.38	11.20	14.90	10.98	10.08	9.48	12.52	12.52	26.25	19.17	20.58
Total (Out of 100)	53.83	55.14	49.55	53.72	51.58	51.86	56.34	47.39	53.15	57.68	61.09	61.57
Price	4985	6000	3500	7000	9500	10350	11000	13,000	13,000	6200	17,000	7910
Pros	Feels Tough, good pricing	Petite design, carry case provided	Feather weight	Feather weight	Compact & Appealing	Feels great to touch	Stylish, choice of Interface	Plain looks	Portable and Strong	Affordable	Interface Galore, good looks	Ethernet connectivity, good pricing
Cons	No Firewire extension cable given	USB cable too short	Relatively bulky	Relatively bulky	Pricey	Pricey	Pricey	Expensive, minimal features	Looks might not appeal to everyone	Only USB interface	Expensive	Requires tad more desk space
Features												
Formatted Capacity (GB)	160 GB	320 GB	120 GB	320 GB	320 GB	320 GB	320 GB	500 GB	500 GB	500 GB	1000 GB	500 GB
Actual Capacity (GB)	149 GB	298 GB	112 GB	298 GB	298 GB	298 GB	298 GB	465 GB	465 GB	465 GB	931 GB	465 GB
Rotational Speed (RPM)	5400	5400	5400	5400	5400	5400	5400	7200	7200	7200	7200	7200
Dimensions (W x D x H) (mm)	155 x 82 x 19 mm	81 x 129 x 18 mm	85 x 136 x 16	85 x 136 x 16	80 x 126 x 15	80 x 126 x 15	81 x 126 x 15	21 x 11.5 x 3.7	90 x 25 x 145	166 x 133 x 54	166 x 137 x 54	21 x 11.5 x 3.7
Weight (grams)	200	195	147	147	185	185	186	1170	250	1150	1170	1150
USB / eSATA / Ethernet	Yes / No / No	Yes / No / No	Yes / No / No	Yes / No / No	Yes / No / No	Yes / No / No	Yes / No / No	Yes / Yes / No	Yes / No / No	Yes / No / No	Yes / Yes / No	Yes / No / Yes
FireWire 400 / 800	Yes / No	No / No	No / No	No / No	No / No	No / No	Yes / No	No / No	Yes / Yes	No / No	No / Yes (2)	No / No
Cables and Accessories Provided	USB cable	USB Cable, Carry Case	USB Cable	USB Cable	USB cable	USB Cable	USB & Firewire Cable	USB, eSATA, Power Adapter	USB, FireWire 400, 800 and Power cable	USB Cable	USB, eSATA, FireWire	USB, Ethernet
Bundled Software	Backup and Encrpytion	Backup and Encryption	Backup	Backup	Backup and Encryption	Backup and Encryption	Backup, Encryption and Online	Backup	Backup and Encryption	Backup & Encryption	Backup, Encrpytion and Online	Backup
Ruggedness (So10)	7.5	7	6	6	7	7.5	7.5	7.5	7	7	7.5	7.5
Performance												
HD Tach												
Random Access (ms)	18.1	18	17.3	18.5	17.2	17.4	16.6	14.7	18.1	13.3	15.2	14.2
CPU Utilisation (%)	0	11	8	7	11	11	2	6	1	4	2	8
Average Read (MB/s)	36.6	33.1	31.7	31.8	34.7	34.4	38.5	34.9	39.1	34.9	38.7	33.7
Average Write (MB/s)	24.9	27	27.2	27.2	26.4	26.3	29.3	26.4	30.1	26.8	29.2	26.8
SiSoft Sandra 2007 Engineer's Edition												
Drive Index (MB/sec)	33	26	27	27	29	29	35	29	35	30	36	29
Sequential Read (MB/sec)	39	30	30	30	33	33	40	33	40	33	40	32
Random Read (MB/sec)	29	24	23	24	25	26	31	26	30	27	32	27
Sequential Write (MB/sec)	27	22	26	26	26	26	31	26	32	26	32	25
Random Write (MB/sec)	26	17	24	26	22	22	27	22	32	25	32	25
Access Time (ms)	9	8	9	7	10	9	7	8	8	7	6	6
File Copy Test												
1 GB Assorted Files Write (sec)	49	53	48.5	48.6	53	53.6	47	53	43	50	45	49
1 GB Assorted Files Read (sec)	39.4	35	36.03	41	38	39	33	40	35	39	37	40
1 GB Assorted Internal Copy (sec)	1 min 13	2 min 55	2 min 50	2 min 42	1 min 29	1 min 28	1 min 12	1 min 83	1 min 6	1 min 14	1 min 9	1 min 13
1 GB Sequential File Write (sec)	43	44	43	43	43.6	43.63	29	43	37	42	38.5	43
1 GB Sequential File Read (sec)	33	35	35.3	35	33.7	34	38	33	31	34	31	36
1 GB Sequential File Copy (sec)	1 min 9	2 min 49	2 min 53	2 min 43	1 min 18	1 min 18	1 min 11	1 min 17	1 min 2	1 min 14	1 min 8	1 min 17
Price Per GB (Rs)(Price/Actual Capacity)	33.46	20.13	31.25	23.49	31.88	34.73	36.91	27.96	27.96	13.33	18.26	17.01

drives and its orange-silver combination doesn't give it a pleasing look.

Portability

Although there is no compulsion for desktop drives to be compact, they shouldn't be overly bulky. Thankfully, none sported dimensions which discouraged them from being carried along as portable drives. Most of these drives tipped the scales at well over 1 kg — they are heavy to carry around. LaCie's Rugged, with its aluminium alloy enclosure, was the lightest drive at just 250 grams.

Interface

For desktop drives, the type of interface matters; USB is de-facto, but exotic interfaces such as eSATA, Ethernet and FireWire are must haves. Drives with Ethernet should be preferred if you want to hook them directly to your network. eSATA comes in at second but requires a compatible PC. FireWire is great when you have a Macintosh. Verbatim came with just a USB port, LaCie managed to cramp in USB, FireWire 400 and 800 ports but missed out on eSATA. The Western Digital My Book Essential comes with the omnipresent USB, but WD was smart enough to lace its Studio drive with USB, two FireWire 800 and an eSATA port. Freecom's network drive, as the name suggests, came with an Ethernet and USB port.

Bundle

Almost all drives in this category were bundled with the right cables as per the interface provided. All drives need external power and a power adapter comes bundled with all of them. Since desktop drives will be used for backup, all drives were bundled with backup applications. NTI shadow, Nero backup, One-click backup, etc., were bundled with Freecom, Verbatim and LaCie drives respectively. Western Digital has the WD Sync tool bundled and the Studio version of My Book comes with MioNet; online personal network for remote access of drives.

Western Digital My Book Studio 1 TB

Performance

The LaCie Rugged drive was hooked up using the FireWire 800 port and it blasted the rest of the drives into oblivion, delivering terrific performance figures. CPU utilisation was kept in check and it never went over 1 per cent — simply superb; all other drives were in the 4 to 8 per cent range. Western Digital's Studio 1 TB comes in at second place, again thanks to the use of a FireWire bus. The Freecom Network drive was tested using the USB interface and hence it comes at third spot. When we put it on a network, the performance figures were simply terrific. In terms of sheer performance, LaCie reigned.

Conclusion

With features, performance and price per GB put together Freecom's Network Drive comes top. Ethernet connectivity, good performance and low price per GB gives the Freecom Network drive an edge over Western Digital's My Book Studio. But, if you need loads of space (one TB), choice of interface, relatively low price per GB then the WD My Book Studio should be high on your list. LaCie's Rugged 500 GB makes a good buy if you want 500 GB in a portable form factor. ■

sanket.naik@thinkdigit.com

PROTECT YOUR DATA

Anand Naik

Rapid storage growth across the enterprise, both inside and outside the datacenter and new business requirements, are straining traditional data protection approaches. New disk-based backup technologies can be an effective tool for next generation data protection.

Coping With A Sea Of Data

Enterprise backup policies haven't evolved all that much in recent years. Backup data is still, for the most part, written to magnetic tape each night, duplicated and then sent off-site to meet disaster recovery needs. Of course, disk already plays a role in enterprise data protection–either by providing a temporary stage for data, before it goes to tape, or by supporting snapshots related data protection–but most data still goes to tape.

As more companies move to 24x7 business cycles, and as the amount of data to protect grows rapidly, the notion of a long period of "downtime" for applications and corporate systems appears almost quaint. New disk-based backup technologies can help companies address the backup challenges that come with rapid storage growth and increased recovery expectations, but companies should also expect to use a combination of disk-based technologies.

Front-end storage growth, regulatory compliance, and increasing data retention times have created a need for backup innovation to maintain the highest levels of data protection. Enterprises assessing their data protection infrastructure would do well to begin by asking the following questions:

How much money is spent to protect different types of data and whether or not the most important data has the highest level of protection?

How quickly can you recover different applications as well as data in the event of human error, system failure, or disaster?

Is data at your remote offices protected consistently?

Do you frequently test data recovery as well as your state of disaster recovery readiness?

Can you quickly retrieve data such as files or e-mail from online and offline sources in audit situations or recovery emergencies?

Can you effectively demonstrate and report on protected data across business units, locations and applications?

While few organisations can answer all of these questions affirmatively, too many negative or ambiguous responses present a strong argument for revising your data protection infrastructure and policies and considering data deduplication technology.

Data deduplication technology is being deployed in both the remote office and in the datacenter to help companies centralise their backup data, reduce storage costs, and improve disaster recovery efficiency

Flexibility From The Remote Office To The Datacenter

Data deduplication technology is being deployed in both the remote office and in the datacenter to help companies centralise their backup data, reduce storage costs, and improve both local and disaster recovery efficiency. Data deduplication eliminates redundant backup data at a block level across multiple backup sets and locations making file names, attributes, and physical locations irrelevant.

It can function at the start of the backup process, before data ever leaves the server, to reduce the network bandwidth required, or it can be deployed behind a backup application, as a disk-based storage target. Both approaches can offer storage efficiencies that range from 10-50 times and even greater bandwidth savings.

Where and how to deploy data deduplication technology will depend on the user's environment and recovery needs. With client-side dedu-

plication (or front-end), you place a client (i.e., small amount of software) on a server in place of a traditional backup agent. This client eliminates duplicate backup data before sending it across the network. This bandwidth efficient approach is ideal for systems in remote offices, virtual environments (e.g., VMware ESX servers), or smaller offices with limited bandwidth. And unlike a traditional backup approach where backups streams flood the network, limiting the scheduling of backup jobs, client-side deduplication enables you to run many jobs simultaneously because a given backup job needs anywhere from 10-500 times less bandwidth.

Companies can leverage client-side deduplication for bandwidth constrained backup systems such as those found in remote offices and virtual environments to increase the reliability of recovery, to centralise backup data, and reduce storage costs.

Storage-based deduplication is gaining popularity in the datacenter as a way to help manage storage growth, recover data from disk, and expand disk-based disaster recovery to lower tiers of data. Unlike client-side deduplication, storage-based deduplication normally does not require any changes to your backup software. It can be deployed as a hardware storage appliance or as software solution that uses your own combination of servers and storage. Both approaches reduce the size of a backup after it has streamed across a network and through a backup server. Most customers have fewer concerns about backup bandwidth in the datacenter.

The storage efficiencies are the same as with client-side deduplication and typically reduce aggregate storage required for a backup (over a given retention time) by 10-20 times, when compared to tape. For data with short retention periods (e.g., one to four weeks), using deduplication can be especially appealing because it can improve the reliability of recovery and help companies control tape related costs in the face of growing data volumes.

With deduplication the traditional concept of a full backup, or a full copy, disappears. Instead every new backup (or copy) relies on the previous copy to ensure that only the unique blocks are stored. Of course, a full backup can be recovered at any time — even if you haven't written a typical full backup to disk or tape. Hardware redundancy (e.g., RAID 5) protects most systems, but customers need to remember that backups of their "dedupe storage system", and not just replicate a copy, to add an important layer of protection.

How Can You Get Started With Deduplication?

Should client-side deduplication or storage-based deduplication replace all your current backup methods and media? Most likely not, because most environments require different degrees of protection and not all types of data are good candidates for deduplication. In other words, recovery point objectives (RPOs) and recovery time objectives (RTOs) should be matched to data protection methods. More recovery points might be better served by snapshots or continuous data protection (CDP). Faster recovery might be better served with snapshot methods or a SAN based backup to high-speed disk. And recovery requirements for data often change as the data ages. Finally, not all data types dedupe well, in particular compressed file formats used for music, photos, medicine, or research. For example, if a dedupe storage system cannot recover large amounts of data (or millions of small files) quickly, a user might instead choose to store backup data on high speed disk for the first week and then move this data to a dedupe storage target for the remainder of the retention time. The underlying principle when considering dedupe technology — evaluate the benefit and limitations of each approach alongside your RTO and RPO objectives.

Customers should deploy data deduplication based on specific needs within their environment

Customers should deploy data deduplication based on specific needs within their environment. Controlling backup storage costs is an obvious imperative for many companies, but eliminating distributed tape-based backups may also present a cost-saving opportunity. Here are a few points to remember as you consider where to use this technology.

Assess where you can use this technology (e.g., client-side and/or storage-based) across all offices, datacenters, and systems – including virtual environments.

Evaluate how deduplication technology fits within your existing data protection environment (backup applications, storage, and servers).

Examine the trade-offs between storage appliances and software-based solutions for dedupe storage.

Determine whether you will need to export data out of your deduplication storage system to tape.

Remember to factor in the protection of your dedupe storage system (from data corruption) as part of your overall architecture.

Conclusion

According to some experts, data deduplication can reduce total backup storage usage by factors of 10:1 or more (depending on the nature of the data) when compared to traditional backup methods to tape. The bandwidth reductions delivered by client-side data deduplication technology are even more significant. When deployed as part of the overall backup strategy and used alongside other backup methods and media, there is no doubt that deduplication can bring both operational and economic benefits to companies. ■

The author is Director, Systems Engineering, Symantec India

Open Source will become more mainstream

Gerry Messer, President, Asia Pacific and Japan, Red Hat

Has there been a change in the positioning of Red Hat in the market space post your acquisition of JBoss?

Initially, Red Hat focused on the Linux space but today we have a much broader value proposition in terms of our offerings to the enterprises. Virtualization, clustering and data management are some of the areas where we have made inroads.

The overall IT space has three layers that include hardware followed by the various business applications on top and finally the middle layer with various operating systems, database and the middleware.

The new and important market for us is in the solution stack which is the middleware space post our JBoss acquisition. It is in this layer that we see ourselves offering solutions to build IT infrastructure and drive business for companies.

What differentiates the JBoss enterprise SOA platform with other solutions available in the market?

JBoss Enterprise SOA Platform is an open source SOA product offering designed to help enterprises develop business solutions more rapidly and to improve productivity within and across enterprises.

The platform offers enterprises the opportunity to integrate applications and services, as well as streamline business processes in a simple, open and cost-effective way as compared to expensive and monolithic proprietary SOA platforms. This next-generation SOA Platform coupled with the JBoss subscription can help add significant business and IT value to enterprise SOA integration projects.

Enterprises have already started using this platform for their new applications and we have also come across enterprises that used other middleware solutions migrating to this platform.

We have a clear strategy for this platform as to where it is today and where it would be in the next six to nine months. We are sure of making more improvements in this platform and maximise flexibility in a wide array of deployment scenarios from small-scale integration projects to enterprise-wide SOA integration.

What are the other features offered by this platform?

The platform also includes scalable clustering, Java Enterprise Edition technologies and a highly customisable base to meet ever-changing enterprise needs. The platform combines SOA, enterprise application integration (EAI), business process and rule management (BPM) and event-driven architecture (EDA) technologies to integrate services and applications and automate business processes for improved business productivity.

How do you see the growth of open source in the region?

The adoption rate in the region is strong and accelerating. Enterprises realise that using open source solutions, especially at the middle layer with open standards and access, helps to drive down costs of the IT infrastructure.

Open source will become more mainstream and this would mean that there would be a strong competition between the vendors. The major adopters of open source have been in the verticals of BFSI, telecom, government, education and healthcare. Nine out ten global banks listed on the Wall Street are using Red Hat Linux to run their mission critical platforms.

Open source has stayed and proven itself. Enterprises no more discuss the issue whether open source is safe and secure and whether the software would perform. Gartner predicted that by 2011, 80 per cent of commercial software would be based on open source.

Comparing the open source adoption in India with other countries in APAC, we see that the government and the enterprise segments are looking at open source simultaneously. In other APAC countries it is either the government that has been the initial adopters of open source and then followed by enterprises or vice versa. ■

Power Savings

Jim Simon

A combination of data-duplication and a multi-tiered storage architecture can be a key enabler of a future to green computing

Power, cooling, and space requirements are some of the key challenges faced by IT managers today. The Environmental Protection Agency has predicted that datacenter power usage will double over the next five years. IT analysts believe that by the end of the decade the world's datacenters will have run out of power. Environmental protection issues are gaining much more visibility in the enterprise today with an increasing number of datacenter managers losing sleep over the matter. This has brought the focus on green computing in the datacenters.

While datacenters remain an essential part of most businesses, there will come a time very soon when growth may need to be limited because of power costs and the growing awareness at governmental, corporate, and society on the environmental impact of excess energy consumption. The growing restrictions on power, cooling, and use of datacenter footprint can be seen as coming into conflict with another major IT trend namely a steady increase in the percentage of disk in the data protection mix. Using disk as part of a backup strategy is growing rapidly as IT departments take advantage of the faster backup and restore performance that disk delivers. In turn, disk provides higher service levels to their customers and reduces the use of removable media. But disk storage is fast becoming one of the primary power and cooling culprits in the datacenter, and when disk is used for backup, the requirements can increase dramatically.

The solution is not to stop using disks for data protection, but to take advantage of various storage technologies by combining different kinds of media for an optimal balance of performance and cost and energy consumption. A combination of data-duplication and a multi-tiered storage architecture can be a key enabler of a future to green computing.

Data De-duplication Makes Sense

Data de-duplication reduces the amount of disk required to protect a given amount of primary data by 90 per cent or more by detecting and eliminating redundant blocks within files and, in some products, between different files and file types. It allows users to exploit the performance characteristics of disk for backup without incurring the costs of conventional disk systems — costs which include both capital expenses and the operating expenses that include power and cooling.

Disaster-recovery protection also benefits from data de-duplication. Using the same technology that identifies duplicate segments inside datasets, data de-duplication systems also reduce the bandwidth needed to transmit backup sets over a network. With data de-duplication, once systems are synchronised, whole backup sets can be replicated while only changed blocks are actually moved. If a new backup is only 5 per cent different from a previous one at a block level, then we can reduce the bandwidth needed for transmission by up to 95 per cent. Replication allows multiple copies of backup data to be maintained on disk in different sites using WAN links. Its use can simplify backup and reduce costs by decreasing an IT department's need to buy, manage, and move tapes.

A Green Tomorrow

The optimal approach to data protection and retention is to match the various business requirements with the right storage technology. IT managers should consider the business requirements for data access and retention, and balance those against the requirements for power, space, and cooling. A multi-tier storage architecture that includes a mix of disk, data de-duplication, and tape technologies could be the ideal solution to drive cost optimisation and enhance energy efficiency.

Datasets with high access requirements may need to use conventional disk systems without data de-duplication. However, they are only practical for a subset of data where the recovery time objective overrides other considerations such as long-term retention and total cost. Datasets with normal access requirements can use disk with data de-duplication technology both as first site for backup data and for medium term retention. Data de-duplication technology reduces space, power, and cooling requirements enough to make it practical to use disk as a retention medium for weeks or months without breaking the operational budget. However, as data needs to be retained for multiple quarters and years and the demand for fast recovery diminishes, the most effective retention medium for most users is tape. Tape cartridges in a tape library consume power at lower rates than any disk system, and tape cartridges stored in a vault consume the least of all, as well as providing the lowest aggregated storage cost per GB.

A multi-tiered storage architecture with the appropriate mix of disk, tape, and enabling technologies like data de-duplication could be the appropriate solution to address key concerns around datacenter power, cooling, and space requirements. A multi-tiered storage architecture would help attain operational efficiencies while reducing power consumption and enable green computing. ■

The author is Director of Marketing, APAC, Quantum

Cyber War Heroes

Darrell Rodenbaugh

This is the last line of security defense for the typical Small and Medium Enterprise: The IT Manager. He is often a lone warrior fighting the good fight. She does more than security — she owns the information systems infrastructure across the entire operation. And they are our heroes, leading the cyber-war fight in protecting the information assets of today's small and medium enterprise.

They are asked to deliver new systems, applications, and networks to positively impact their company's bottom line — while being the protectors of the company's most valued possession, it's information assets. They have no choice but to minimise the time and money they spend on security management so they can invest in applications that impact the business — that is until they get hacked, hurt by some malware, or have sensitive data stolen. Depending on the industry, the large enterprise will often have as many as a dozen or more dedicated security specialists, meanwhile, 87 per cent of SMEs have no one on staff wholly dedicated to security, and spend less than an hour per week proactively managing security.

And so our heroes are those that have figured out the balance between protecting their company's information assets from a cyber-world full of threats, and minimising the time and resource investment so they can focus their efforts on their core business mission.

Increasing Attacks

Our heroes include the likes of Steve Jordan, an IT analyst at Integrated Systems Improvement Service (ISIS) who has a lot more on his plate than only security — he has a network to run and critical applications to support, and so he picks security solutions that allow him to

"spend less time on managing PC security and more time on other tasks."

Peter Herschel, Director of IT at Gemino Healthcare Finance is a lone cyber-hero at a small healthcare services provider. His organisation is hit each day with the challenges of malicious viruses, phishing scams, spyware, and other threats and so says "I need to keep security risk management simple." And like our typical cyber-warrior, he'll admit "I have too many other things to do to be an IT security administrator."

But this is a risky balance to maintain. Each night our last line of defence goes home knowing that they could have spent more time securing their information infrastructure — and thankful that the "big one" didn't hit. They know they are lucky that they weren't attacked because they know the risk. The small and medium enterprise is exposed to the same threats as their large, resource rich enterprise counterparts, and yet their defenses are a fraction of those of the enterprise.

These threats come in several "vectors", each dangerous in its own way and include the end-point (systems, laptops, and servers), e-mail, Web, and data.

At the end-point (systems, laptops and servers), our own world renowned McAfee AVERT (Anti-Virus Emergency Response Team) Labs report that they've have seen more new strains of malware in the past two years than they saw in all of the previous ten — and it's only getting worse. We've identified more new exposures in Q1 of this year than in all of 2007.

Anyone who uses e-mail knows how spam can affect productivity. The popular literature generally estimates between 90-95 per cent of the world's e-mail is spam — for every legitimate e-mail sent, there are between 10-20 pieces of spam. But it is worse than just a productivity drain. Some 25-30 per cent of that spam carries with it some sort of threat — a bot, malware, a link to a malicious site. The implications are huge: If a company receives 3000 legitimate emails today, that means it also received between 30-60K pieces of spam and between 8K and 18K of those contained real and malicious threats.

Data theft and leakage represent the newest and potentially most damaging threat to the small and medium enterprise. 81 per cent of companies surveyed reported the loss of one or more laptops containing sensitive information within the past 12 months. The news is filled with notorious data losses — exposed credit card information, personal ID and social security numbers, and other sensitive data. These reported events are just the tip of the iceberg, and don't include many unreported casualties of lost of company customer records, confidential new designs, or other company secrets.

Malicious web sites represent the fastest growing threat to a mid-sized business. According to a recent article, nine out of ten websites have some level of exposure to phishing attacks, the cyber equivalent of 'company identity theft'

Malicious web sites represent the fastest growing threat to a mid-sized business. According to a recent article, nine out of ten websites have some level of exposure to phishing attacks, the cyber equivalent of 'company identity theft'. According to a Gartner Group study from August 2007, nearly 37 per cent of the mid-size companies surveyed had a corporate ID spoofed for phishing purposes. Separately, Forrester Research found that 21 per cent of mid-sized businesses suffered an attack last year, and one in five of these took an entire week to become operational again. And their own websites are often not safe.

New Challenges

While not a threat vector, the burden of regulatory compliance represents a new challenge for the SME, and a demand for precious security-related time and resource. A Forrester study released in February of 2008 indicated of SMEs that had to conform to HIPAA regulations, only 51 per cent really believed they were fully compliant. Only a third in the EU were compliant with the EU Data Protection Directive, and only 32 per cent fully compliant with the Payment Card Industry or PCI Security Standard.

So what do our Cyber Heroes do to confront this challenge? They turn to solutions that are smart, simple and secure. They invest in smart security solutions that have intelligence built in, so that they don't need that same expertise from staff. Since they use these solutions only rarely during the week, they need simple, intuitive functionality that is easy to install, manage and maintain. Done right, the security system should create less work for the lone IT manager, while creating a stronger security environment.

Our Cyber Heroes will never have the security resources of a large enterprise, so they must be smarter in the way they approach security. They must rely on security partners whose products deliver smart, simple and secure information system environments, so they can focus on delivering applications that make a difference. Few of our Cyber Heroes can illustrate this point as well as Scott Gould with the Gynecologic Oncology Group, a cancer research centre, that has a small IT team that needs to stay focused on its core mission, and so chooses solutions that are built to be easy to use and manage so that "we're able to spend much more time doing what we're here to do: stay focused on clinical trials trying to find a cure for cancer."

We think that's the right priority, too. ■

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PEOPLE CONUNDRUM

India's explosive growth is being driven by its burgeoning SMB sector, which is experiencing revenue increases and double digit growth. This sector constitutes 95 per cent of the industrial units and contributes 40 per cent to the total industrial output of the country and 35 per cent to direct exports. According to the latest statistics, there are about 3.6 million SSI units in India and these employ approximately 19.3 million people, which is second highest next only to agriculture. The success of SMB is very critical not only for the growth of the Indian economy but for unleashing innovation and creativity.

One of the biggest challenges for the SMB sector is the access to talent. There is risk money flowing into this sector, but talent is not matching the capital flow

One of the biggest challenges for the SMB sector is the access towards talent. There is risk money flowing into this sector, but talent is not matching the capital flow. It is interesting to note that in spite of various positive factors like growing economy and growing salaries, people still shy away from working in this sector.

The SMB sector needs the best talent. A large number of SMBs are ready to pay high competitive salaries which may have a higher portion of variable pay. In addition, the sector also provides a lot of room to innovate, people are better empowered due to lack of bureaucracy, there exists opportunity to work directly with leaders, and an individual can directly make an impact to the company's growth. All these are the drivers for higher commitment for any individual to give greater performance.

But our obsession with brands has thrown up problems for the SMB sector. There is acceptance in the society only if you work for known brand companies; career growth is about title and company brand but not about learning and experiencing; and career path is moving from an SMB to a larger or branded organisation and not vice versa.

Such behavior is also fueled by talent spotters be it head hunters or HR managers — if you have worked in a branded organisation then you are "good" and a person from an unknown company is really unknown; criteria of success or failure is of the organisation's success and not the learning; there is no appreciation of the challenges in a smaller organisation.

Also people have lot of myths and misgiving about working in SMBs. You may not get five star accommodation when you travel, but it is also not roughing out in lodges... there are budget hotels and budget airways. There are functional offices and technology savvy companies. There are professional people to work with who have had much deeper experience of life and understanding the nuances of business and are in spaces which are either unexplored or are niche.

The SMB sector also needs to make talent a high priority and needs to innovate and get access to the best practice of attracting, managing and retaining talent. Leadership at SMB has much bigger role to play in the attraction of talent. People join or work for the purpose, for the leadership, for the idea, and not for the organisation. They need to have a clear and simple message which connects people with the purpose and mission of the organisation. They need to hire for character and not competence. You can teach skills and competence but cannot change the character of a person. You need to hire a person for his hunger, passion and openness to learning and change.

Leaders have to spend more time with their people, build a relationship, solve the talent's day to day problem and act more as a role model. Today a large number or organisations in the SMB sector have become a training ground for the large and mighty — the good talent continues to go with the general trend — join the big boys. SMBs should not see this as a losing battle and should innovate in order to retain talent.

Let us also see how one can manage the downsides or the fear of closure of an SMB. The higher portion of your variable pay can be seen as an investment in a risky market which can pay a much higher return and reduce your exposure to high risk investments, you can ensure you take higher responsibilities, do not go for a fancy title which you are stuck with for all your life and cannot come down and focus on learning and experiencing.

Careers in the SMB sector are not at all a risk from any perspective. It is a learning lab and is relevant in any organisation of any size. These companies create their own niche and a well-run SMB will have its place under the sun even if the biggest of the biggest companies grow. The skills and competencies one develops in working in SMBs can not go wasted and will be leveraged at all times of life. ■

Threat Defence

Mahesh Gupta

The year 2007 was characterised by unprecedented innovation and adaptability in the realm of security threats, as criminals once again demonstrated their ability to continually evolve attack strategies to keep ahead of even the most advanced human and technical defences.

Rogue developers create such threats by using worms, viruses, or application-embedded attacks. Botnets can be used to seed an attack, for example, rogue developers can use worms or application-embedded attacks, that is an attack that is hidden within application traffic such as Web traffic or peer-to-peer shared files, to deposit "Trojans". This combination of attack techniques — a virus or worm used to deposit a Trojan, for example — is relatively new and is known as a blended attack. A blended attack can also occur in phases: an initial attack of a virus with a Trojan that might open up an unsecured port on a computer, disable an access control list (ACL), or disarm antivirus software, with the goal of a more devastating attack to follow soon after.

As the network is becoming more vulnerable to attack because of the evolving perimeter, the threats themselves are changing

The evolving perimeter

Changes in network architectures and evolving threats create new security challenges. Also the concept of the network perimeter is changing. In the past, users could only access the network through a few ingress or egress points — usually where the Internet connected to the enterprise network. Enterprises stacked security at the Internet perimeter using firewalls and intrusion detection systems. However today, many more means of gaining entry to the network exist. With the perimeter having been extended and distributed, security too needs to be applied at each of these new ingress and egress points to avoid damaging threats, thus complicating security architectures.

Take for example Virtual Private Networks (VPNs). These allow enterprise users remote access to the corporate network and are much more widely used than just a few years ago. While previously enterprises might have insisted that VPN software run on a specific enterprise-configured computer, today users run VPNs from their own PCs or even from kiosks at copy centres or other businesses. This phenomenon allows many more entryways to the enterprise network and presents a significant challenge to IT departments. Is the computer equipped with virus protection? Are visitors/employees bringing their non-corporate assets into corporate network?

Or for that matter, let's look at wireless — Wireless LANs (WLANs) pose additional security challenges. Users operating on an unsecured wireless network at a local coffee house may be unaware that a rogue PC, also using the same wireless subnet, is depositing a virus on the PC. When that PC is later docked into the corporate network, the virus/Trojan could gain entry to the network.

Security - the reverse Moore's Law

At the same time, as the network is becoming more vulnerable to attack because of the evolving perimeter, the threats themselves are changing. In addition to Trojans and botnets, newer, even more dangerous threats lurk. Two of the most troublesome are flash threats and self-mutating worms. Flash threats are so named because of the speed with which viruses or worms can spread. In 1999, a virus dubbed "Melissa," one of the earliest and most widespread viruses at the time, took 16 hours to spread globally, according to Network Associates Inc. In January 2003, the Slammer virus managed to infect more than 90 per cent of the vulnerable hosts worldwide within 10 minutes using a well-known vulnerability in Microsoft's SQL Server. New viruses in the coming months and years are expected to spread even faster. Therefore whatever defences organisations create, they must be able to identify the threat and respond much more quickly than ever before.

The other looming threat is the self-mutating worm. Today's worms are relatively unintelligent. They are programmed to follow a specific set of instructions, such as to infiltrate one machine through a specific port and once on the machine compromise it in some way, for example, causing a buffer overflow and planting a Trojan. If anything interferes with these planned instructions, the worm lacks the ability to adjust and dies. Now, however, rogue developers are adding intelligence and logic to worms so that if they can't complete a specific task worms can mutate and pursue other lines of attack.

Experts call this security dilemma – The Moore's Law in reverse. Whereas Moore's Law postulates that processor performance will double every 18 months while costs will decline dramatically, security is moving in the opposite direction — networks are becoming less secure while the cost to defend them is increasing. This prognosis is supported by Mi2g, a research firm in the UK that specialises in computer security. Mi2g reports that the economic damage from malevolent network security attacks reached somewhere between $157 billion and $192 billion worldwide in 2004.

New Threats = Increase in operational complexity and manageability?

The current security defense paradigm is to deploy more and more of the existing security technologies throughout every segment of the network. This includes firewalls and ACLs to block access and perform application inspection, intrusion protection system (IPS) technology to provide very granular traffic inspection and identify known threats, encryption software to counter eavesdropping, anomaly detection to detect worms or DoS attacks, and antivirus software to battle viruses.

Many of today's security technologies were developed to perform their specific function with little context of the overall network threat environment. Operating alone, however, these technologies are less effective in stopping the newer attacks, as well as the changing ways in which user's access networks, because of the "security gaps" that exist between each technique's capabilities. With the increased complexity of threats, such as the blended threats that use a combination of techniques to disrupt networks, security technologies must operate in a coordinated fashion to stop attacks and better control network activity and applications.

Unfortunately, over the years, many companies have addressed nagging security concerns by constantly adding devices and software to address each particular problem. This has led to separate antivirus protection, firewalls, VPNs, and intrusion prevention. While this addresses the short-term needs, it creates an entirely new and bigger problem: managing multiple systems that operate independently of one another. As more advanced threats emerge, there is a need for network security to become more holistic; security technologies must act in coordination to detect and defend against more sophisticated threats. There is a growing need for devices that can assemble the puzzle pieces and lock down the gaps that exist in conventional network security systems.

Adaptive security for a changing world

Transforming chaos into clear and manageable security policy is essential, which is why future network security systems need to focus on convergence and consolidation. For robust information security for an enterprise, a proactive architectural and system approach is critical. The idea is to accurately identify and stop attacks as early and as far from the destination host as possible, while simultaneously simplifying the security architectures required to do this.

Instead of a security product for each security need in isolation, an end-to-end security solution approach or system enables these combined functions to operate as a coordinated defence (instead of silos) that stops a broader range of attacks and greatly reduces the number of diverse multi-vendor devices that must be deployed, thereby simplifying security design and management.

Historically, firewalls have generally been considered fairly simple devices, but they are effective at what they do: either block a packet or let it through based on Layer three and Layer four information and session state. They can provide some level of application inspection but do not perform the detailed inspection of some other technologies. An IPS device can pick up where a traditional firewall leaves off by peering more deeply into a packet's contents to see whether the data within conforms to company policy. Host IPS, host firewall on servers and desktops/laptops, day zero protection and intelligent behavioral based protection from application vulnerability and related flaws (within or inserted by virus, worms or Trojans) provided great level of confidence on what is happening within an organisation on a normal day and when there is a attack situation, which segment and what has gone wrong and gives flexibility and control to stop such situations by having linkages of such devices with monitoring, log-analysis and event co-relation system.

Adaptive threat defense is the need now where an end-point security system can dynamically generate an attack signature and push it to the other end-points and to the perimeter IPS devices to stop it from propagating to rest of the infrastructure. Similarly security operations teams have challenges to fine-tune false positives, they struggle by logging into various devices to understand which logs are resulting into what logs; the need of the hour is that security operations team should be able to easily see the logs and link the same to configurations which are resulting into these logs.

This type of systems approach transforms security from operating as separate siloed technologies in a reactive mode — with limited and static detection methods — to functioning as a coordinated, proactive threat defense system that adapts to the threat environment.

These systems provide numerous benefits: improved detection, greater event classification accuracy, lower operating costs, streamlined administration, and services extensibility that integrate the most advanced security technologies as they are developed. Most importantly, these converged systems will not compromise the quality of security in any given category, but instead combine the strength of each in complementary ways to deliver a tighter, coordinated defence. ■

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MODS AND ENDS

Madhusudan Mukerjee

What's a game without a good mod? That new weapon, that great landscape, the crazy new characters and the more exciting levels — they all make your favourite games so much more exciting. If you're a gamer and are wondering which of the newest and most exciting mods and map-packs are up for grabs, quit wondering, and let us assist you. Here's where you'll find the lowdown on 20 of the most popular additions to the mod-world, guaranteed to amplify the thrills of your gaming life.

Half-Life Operation Nova

Operation Nova is a single-player episode for *Half-Life 1* developed by Ben Greenwood. It features a storyline that runs alongside events in the original game, with voice-acting from experienced voice actors. Just released on September 14 2008, *Half-Life Operation Nova* is basically a single-player episode for *Half-Life 1*, which occurs during the events already featured in the original *Half-Life 1*. As a player, you are a character called John Skinner. The military mistake you for Freeman because you wear a suit similar to his.

The artillery stays the same

The aim here is to destroy the surface-to-air missile launcher, which has been brought in to destroy a delivery rocket being launched by Freeman. The episode gets a realistic touch with professional voice actors lending their voices to the characters in the game, while not losing all the great graphics of the original.

Operation Nova makes Half-Life more full

Zero Hour Battlefields: Map Pack #1

The Zero Hour Battlefields: Map Pack #1 is a single player map released on June 26th 2008, developed for the famous Command and Conquer Generals *Zero Hour*. This is a map pack with 10 maps, nine single player ones and one multiplayer. The nine single player ones are titled Area 82, Beach Head and Hill, Dangerous Cargo, Feudal Warlords, North Korea, Parking Lot, Russian Front, Sniper's Haven and Tigris River. The Multiplayer map is titled Dangerous Cargo.

Command and Conquer

Earth's Special Forces

Here's another *Half-Life* mod brought out by the ESF Developers (who else?) on August 29 and based on the hit animation series *Dragonball Z*. You can now turn into your favourite anime character, fly around, shoot up stuff and generally immerse yourself in the Dragonball world.

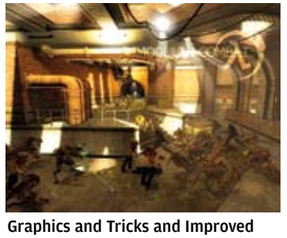
Set the Dragonballs Rolling

This one is supposed to be tough, so don't be surprised if you flounder around for a few games. It's got three game modes: (1) Deathmatch, (2) Team Deathmatch, and (3) Capture the Dragonballs. Every character is given special characteristics and a different set of powers to take the level of challenge and curiosity to the max.

The angry Majin Buu

Modular Combat

This one's an FPS multiplayer mod for *Half-Life 2* that is still high in popularity, although it's been three months since its release. There's a lot in it to ensure it stays one of the favourites. First of all, you can get along without *Episode II*. Secondly, there are votable game modes, snazzier graphics and 'Particle Effects'. Besides, you can now use the Jetpack to fly high, the Freeze Bomb to cool your enemies and a 'MIRV Grenade' to blow them up.


Graphics and Tricks and Improved

The monsters are, well, positively monstrous in this one.

Developed by Mod Fidelity — a group supported by Counter-Strike.com, Modular Combat was made for the PC platform. You can find everything you want to know about the project on their wiki page at **http://www.modularcombatwiki.com/index.php/Main_Page**

Watch out for these ghastly creatures

First Strike

This one is a Total Conversion Mod for Battlefield 2142 of the Star Wars game. The basic purpose is to take the player into an almost real environment that is more typically Star Wars than even the original one.

You could fight for the Rebel Alliance or become a warrior of the Galactic Empire and have dozens of different battles in the most stunning locales, using all your typical Star Wars weaponry and more.

Straight from the Movies

An online multiplayer, First Person Shooter game for up to 64 people, First Strike has been created by the First Strike Development Team (official page: Fsmod.com) and is one of those total conversion mods that outshine the original in many respects.

Star Wars Starships are now yours

Pirates, Vikings and Knights II

The PVK II is a next generation total conversion of the *Half-Life 2* source engine and is one of the more popular multiplayer, first-person-shooter games that definitely ranks among the top twenty mods to have been released last year (the PVKII Beta 2.2 Full came out a few days ago). The PVK II has a great melee combat system, which

This Viking's in for trouble

means that while a participant can join any one of the warring groups, he or she will fight as an individual.

There are basically three teams competing against one another for points, kills and complete domination, and no marks for guessing which these are. Not only have the developers (of the same name as the game) created a general set of strengths and weaknesses that characterise each team, but they've even allowed every individual member to possess special abilities which may greatly assist in making your team win. One really unique feature of the game is the addition of 'Healers' in each team; Healers basically come forward to heal a dying warrior, giving the players a chance to join their battling compatriots in spite of being injured or almost killed. The game also comes in several different game modes (Team Deathmatch, Booty, Booty Tag, Slay the Dragon, etc.) which give the player a refreshing change from playing in the same environment all the time.

The Pirate Captain

CTDP F1 2005

This one is an rFactor mod that was released in August 2005 and developed by the Cars & Tracks Development Project, an independent modding group for Formula One racing mods. The graphics are more polished and the high resolution textures leave a lot of racing gamers gaping with awe.

Like real sparks flying

The mod adds six different kinds of tyres and ten different engine programmes. New music, realistic sounds of motors and breaks and an updated 'Heads-up' display contribute to the optimal Formula One experience in your rFactor game.

A bird's eye view

Tower Defense

A *Command & Conquer: Tiberium Wars* mod, this one was released in February 2008 for PCs by the 'Thundermods'. The Thundermods modding group is a team of modders currently working on several projects for *Command and Conquer 3: Tiberium Wars*.

A Storm of Scuds

Anyone who remembers Blizzard's bonus level addition to *Warcraft III* is going to love this. Players can now upgrade their towers by four times, even making Tier 2 and Tier 3 towers. Besides, you can re-orient the towers simply with the click and drag action of your mouse.

Stealth Mode

Zombie Panic: Source

Another *Half-Life 2* mod, *Zombie Panic* is basically a game constructed on the typical horror-movie outbreak of zombies. You can either be a zombie or a human and basically fight each other off to live until the end of the day. The uncanny aspect of the game is figuring out who's on your side and who's not, because the human who was your ally a minute ago joins the ranks of the living dead as soon as he is slain.

The game usually begins with just one zombie, depending on the number of players, and humans can run a lot faster than zombies. But these advantages are short-lived because as you start piling up the ammo and weapons, you'll become a lot slower and the zombies will get to you much easier. Typically, the zombies fast begin to outnumber the humans and their 'zombie-vision' gives them an edge over the few survivors that remain. The situation becomes pretty desperate for the last survivors who have no choice to hide as long as they can, and for them,

Dead Man Walking

the fear becomes so palpable that they'll probably be wishing that it was all just a Hollywood movie.

Project Timeless

It's 2047 A.D. and a global military organization (The United Defense Forces) is trying desperately to fight and subdue an army of cyborgs (called the 'Hammer of Retribution').

Heads-up Display

This is Project Timeless, a 3D, multiplayer, *Half-Life* mod developed by RafaelK, an individual developer in Germany. The game is packed with several exciting features like stealth movement, breathtaking weapons, map-designing options and an integrated MP3 Player.

Fire away!

Star Wars Battlefront Conversion Pack

The original *Battlefront II* was great, but this one doubles its content. This is a Conversion Pack which adds 25 maps (including the Battlefront I ones which, for some reason, were left out of *Battlefront II*), five brand new game modes, a new era (with 30 new heroes) and a whole lot of expanded unit content.

Heroes

You could play — either as the Old Republic or as the Sith Empire — on the stock maps of the original game or the new Conversion Pack maps. Even the original eras have all been tweaked.

The Revenge of the Sith

Strands Of Destiny: Deception

REDFlame Interactive, a Game Studio founded in January 2008, has developed this cool mod for The Witcher which is basically a role-playing game for the PC based on the book series by the Polish author Andrzej Sapkowski. Strands of Destiny: Deception includes a new area (Town of Carreas), new story that allows 4-5 hours of gameplay, new artwork-including new loading screens, cutscenes, etc. — a new feature (knife throwing) and complete voice overs.

Check out the new Artwork

This mod was released in August this year. You can check out the details on the official website of the developers: **http://www.witcher-mod.com/**.

Deception guarantees hours of fun

Star Trek: Sacrifice Of Angels 2

Developed by a single individual, the *Star Trek: Sacrifice of Angles 2* is supposed to be a homage to the original *Sacrifice of Angels* mod for Homeworld.

Fleet Formation

The factions that you play from are the Federation, Klingons, Romulan, Dominion, Cardassian and Breen. These are the six primary warring groups seen in the Dominion War. Besides, it's actually possible now to fight battles using hundreds of SoA2 of starships.

The Star Trek Enterprise

Battle Grounds 2

Here's another *Half-Life 2* multiplayer mod and it's actually a sequel to another mod, which was titled — you guessed it — *Battle Grounds 1*. It's been developed for the PC by an individual who would like to be better known as Black Panther (which is, incidentally, a great name for a mod!) and released in October last year. Based on the American Revolution, there are basically two battling factions: the Royal British Army and the Colonial United States Continental Army.

The New Redcoat Officers

There are plenty of new features, much bigger landscapes and battlefields. The old-time weapons like muskets and bayonets are still there but this time you can sharpen the bayonets and even board ships.

Hawkeye reloaded

FCAM

'FCAM' basically stands for 'FarCry Addon Mod' — which is precisely what it is — an add-on mod for *Far Cry*, the first-person shooter computer game developed by Crytek Studios from Germany and published by Ubisoft for Windows. If you remember the game, you'll also remember that it was based in a mysterious archipelago in 'Micronesia', where an ex-Special Forces officer named Jack Carver is trying to rescue a female journalist. Besides, it had all the rest of the typical masala such as deformed creatures, genetic engineering threats and a mad scientist named Krieger.

Fire Under Water

The landscapes are mind-boggling

Released about a month ago, this mod has a lot of extra features such as enhanced textures and graphics, 64-bit-like graphics, more models, addition of more than 20 CTF (Capture the Flag) maps, VBot Scripts and some more weapons with the single-shot mode, such as the P90 (mounted reflex sights), AG36 (a single shot grenade launcher) and the OICW (Objective Individual Combat Weapon).

Dreamball

Dreamball is a *Half-Life 2* mod which is basically a Puzzle Compilation, realistic, single-player game developed for PCs and only just released. It has only one map because, as its developers say, it is still 'Alpha Stage'; but you can make your own maps, which is good. Since it's been created using the Orangebox engine, you'll have to install the Source SDK Base — Orangebox installed from the tools tab in the Steam User Interface. The present version also has preset camera angles, but this will change in the final release.

Marble fun

Obstacles to bump and grind

There's a lot of fun to be had in the Dreamball mod because there are drastically different puzzles with lots of stages to be completed. The mod uses a unique physics system that helps the marble navigate past different obstacles. You can even change the marble into other sorts of marbles which have their own individual characteristics.

Snowreal

Snowreal is an Unreal Tournament 3 mod for PS3, released on May 24 this year. It's got two game modes (racing and trick competition), 14 different midair tricks and a mini-map that will tell you where the other players are, the position of the checkpoints and, if you're racing, then the exact position of the

Vin Diesel style

next checkpoint.

You can choose from several different characters and five different board skins. There's a remote camera which lets you watch yourself play and you can even use it to make movies of your own spins, and other tricks. There are three large maps for downhill boarding and trick jumping. Besides, there are many Bots roaming on the snowboard and onscreen nametags to help you out.

Mid-air manouvers

Quake2DS

This is a Dual Screen mod for Quake 2 but you'll need a supported slot-2 flash card with a minimum RAM of 16 MB to fit it into your standard DS. The mod has several advantages built into it. You could, for example, load and play every single level in the single-player mode and can even run this if you only possess the demo of the original. They've even provided an on-screen keyboard which can be used along with the console while the game is running.

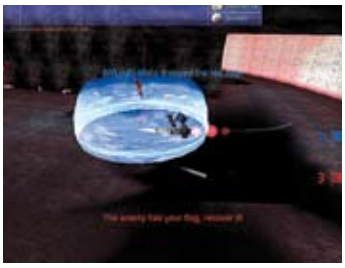
The mod supports animated model skins and particles but not sprites. With the ARM7 sound effects system and dynamic lighting, this mod's going to make you feel like a god.

Strangelove 2

Fed up of shooting and murdering people in the dark and dreary places ? Here's another one to add to the list. This community-developed modification is basically a mutator for Unreal Tournament with a minor modification: the Redeemer is replaced by a weapon which you can ride and which does not lose any of the Redeemer's functionality.

Get your flag back

Actual sound clips from the Dr. Strangelove movie spice up the game, not to mention the high standard of graphics that you're so used to in Unreal Tournament.


Explosive fun

GTA: Ghostbusters

You never thought it possible but yes, Grand Theft Auto meets Ghostbusters in this incredible mod for GTA: San Andreas.

Released in September 2008, this single player, action adventure mod has Ghostbuster jackets, new ingame art design and a lot of other features planned such as Ecto 1, Proton packs, Ghostbusters suits and missions based on the Ghostbuster storyline. The full Beta 1.0 version is already up for grabs and all set to give you several hours of fun gaming.

Who you gonna call

Based on the Ghostbusters movie franchise, this mod is an attempt to bring the Ghostbusters experience to GTA: San Andreas. This mod has great potential and can be brought to life with other modders help.

Ghostbuster autos

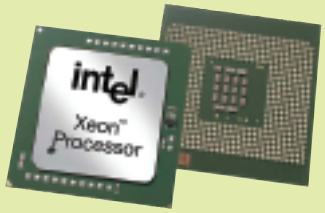
Still hungry for more? Seek, and ye shall find. All of your favourite games are in the process of being 'modded' and searching with the magic keyword 'mod', oodles of gaming packages will emerge. When it comes to mods and map packs the web is teeming with them and we'd love to add many more. Till the next time, we hope these will suffice.

Check your TQ

Codenames, Premonitions, And More...

1 What was the codename for the first Xeon processor by Intel?

a) Glenwood
b) Balboa
c) Drake
d) Potomac



2 Where was UNIX developed?

a) IBM
b) AT&T
c) Hewlett-Packard
d) Sun Microsystems

3 What was the first Web browser to use a GUI?

a) Camino
b) MidasWWW
c) Mosaic
d) Netscape Navigator

4 Which of these is not used to enhance the output of a graphics card?

a) Texture Mapping
b) Fresnel Effect
c) Anti-aliasing
d) Isotropic filtering

5 What are the theoretical Von Neumann Machines?

a) Quantum computers
b) Self replicating machines
c) Computers smaller than atoms
d) Computers with no limits on parallel processing

6 Which of these technologies were never used to store data?

a) Carbon tube memory
b) Delay line memory
c) Cathode ray tube memory
d) Magnetic drum memory

7 Which science fiction author visualised the Internet in 1946?

a) Poul Anderson
b) Murray Leinster
c) Stanis?aw Lem
d) William Gibson

8 Which of these technologies hope to exploit the spin of electrons to compute?

a) Quantum computers
b) Optical computers
c) Qubit technology
d) Magnetoelectronics

9 Till what year was domain registration free?

a) 1991
b) 1993
c) 1995
d) Never

10 Another codename question: Windows XP service pack 2?

a) Whistler
b) Jumper
c) Ringer
d) Trainyard

Got an interesting question? Send it in with the answer to TQ@thinkdigit.com Mark "TQ" in the subject area

Did You Know?

The first voice recognition software was developed in India in 1971, it was called Hearsay.

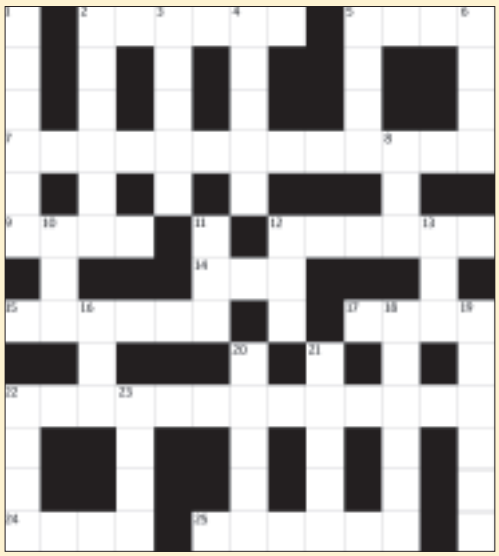
Answers

1. c
2. b
3. c
4. d
5. b
6. a
7. b
8. d
9. c
10. a

Crossword

ACROSS
2. 2.3.5 inch data storage medium(6)
5. Repeated sequence of instructions in computer programming(4)
7. Creator of the World Wide Web(3,7,3)
9.----ware-freely distributed software(4)
12. Box on the computer screen that allows the user to communicate with the computer(6)
14. Open source build tool from the Apache Software Foundation(3)
15. Optical disc format designed to display high definition video(3,3)
17.----name- sequence of symbols and names that identifies a file(4)
22. Projects successive frames from a movie reel to create moving pictures(4,9)
24. Enhanced Data GSM Environment)(abbr)(4)
25. Command is often used to abort execution or data entry(6)

DOWN
1. Search engine- a gateway to the Internet(6)
2. The organization of information for display, storage, or printing(6)
3. Social networking site sponsored by Google(5)
4.Command given to a computer to get an output on paper(5)
5.Camera part that concentrates light and focuses the image(4)
6. A document displayed on the Web(4)
8.Short for Label(3)
10. Interface Definition Language(abbr)(3)
11. Drive---- - site in a PC where a hard or floppy disk drive can be installed(3)
12. Desktop Publishing(abbr)(3)
13.---box- folder where you store e-mail before it is sent(3)
16. Uniform Resource Locator(abbr)(3)
18. Objects currently displayed on your computer screen(6)
19. Obstacle logging-on(6)
20.----- software-spreadsheet application of the IBM PC(5)
21. Fourth Greek alphabet is also an expression-based languge(5)
22.----wall-cyber barrier(4)
23. An operational state of a computer in which certain functions can be performed(4)



Crossword by **Nitaa Jaggi**

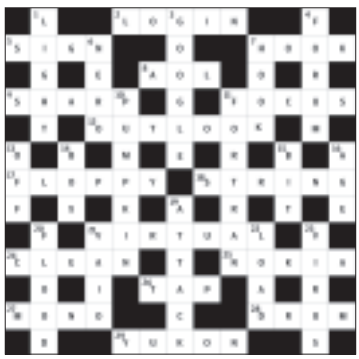
Last month's Winner
A. Archana

Win!

Send in your entries to **TQ@thinkdigit.com** on or by the **20th of this month.** One lucky participant will win

Hacking For Dummies
By Kevin Beaver, CISSP
Published by
WILEY-INDIA

September's Solution



Rocketman
Yves Rossy became the first man to cross the English Channel using a single jet powered wing. Rossy is a Swiss who worked as an airplane pilot. He crossed the channel from Calais to Dover. He is nicknamed the Fusionman

Stop That Noise!
Usually earphones are designed to cancel external noise. These semicircular earphones called the iSound are designed by Seohyun Baek and are designed so that external noise is actually *let in*! This allows for relatively safe riding or navigation

EA MAKES MORE FRIENDS

Spore Ships With DRM And Trouble

EA has managed to earn a fair deal of hatred from gamers all over the world for trying to take over every game studio all over the globe. The latest bit of hatred comes from their latest and highly anticipated game title — *Spore*. *Spore* is a game all about freedom and evolution, but the installation of *Spore* forcibly adds a DRM system on to gamers' computers. It appears EA might need to learn a few lessons on freedom themselves.

EA is also being attacked by a lawsuit. Consumers are fuming over the DRM software not uninstalling when you remove the game, and also setting a limit on the number of installs allowed with a single copy of the game. Initially a limit of three installs was allowed, but that was later pushed to five.

To make matters worse, the DRM has been easily disabled by crackers and distributed over the Internet, thus allowing users who illegally download the game to have a DRM-free installation, while paid users suffer. A look at the Amazon's customer feedback page for *Spore* shows only a fraction of the users rating the game above one on five — all this after a seven year long development period. Despite all the controversy surrounding the game, the launch went off smoothly and has been gaining popularity very fast. EA's other big title *Crysis Warhead* just came out and there have been fears of the game being sold with DRM built into it. It appears the single player game has the DRM, but the multiplayer component which comes on a separate disc doesn't.

EA isn't out only to trouble gamers — it's also been causing a fair deal of trouble to residents of North London. Motorists found a long queue of traffic lined up leading to a petrol station. The reason is EA's latest publicity stunt for their upcoming title — *Mercenaries 2*. EA was providing 20 pounds of free petrol to motorists and a total of some 20,000 pounds worth of fuel was purchased. The game *Mercenaries 2* is set in Venezuela and fuel is used as a currency.

NOW AVAILABLE

Duke Nukem Just Got More Affordable!

That's right! Just when all the game makers were dropping prices to make it more appealing to users and especially for Indian users, 3D Realms has taken, what many feel is a mysterious step. *Duke Nukem 3D*, a game that came out in 1996 was given a price drop just a few days back to $10. It's a shock as pretty much all of humanity might have downloaded and played the game for "free" already.

The game is also available to XBox Live users for the same price. Those who already played the game back in the 90's are still waiting for the next installation of *Duke Nukem: Forever* which has been in development and promotional phase since 1997. Vaporware anyone?

Whatever Happened To...
Commodore?

Commodore international was a company started in America by a Polish national, Jack Tramiel after surviving the largest Nazi concentration camp. From the mid-fifties to the mid-seventies, the company manufactured and sold programmable scientific calculators and early PCs like the Commodore PET and the 8-bit Commodore VIC-20. These machines were revolutionary in their time, but too costly for everyday computing and home use.

In 1982, the company released the Commodore 64. The C64 did to computers what the Model T ford did to automobiles. Beating the rivals Atari 400/800 and the Apple II, the C64 went on to sell 30 million units, making it the most sold computer model in history. The C64 was responsible for bringing about the cultural revolution that put a computer in every home and computation power in everyone's hands. For many people all over the world, the C64 was the first computer. The older readers may recall playing Boulderdash, Turrican or Pit Stop on one of these machines.

The Commodore 128 did not make as much as an impression as its predecessor, and from there on, the company went into decline. A slight revival was witnessed with the company buying out Amiga, but in the early nineties, apple and IBM caught on. In 1994, the company declared bankruptcy, they were surviving so far on marginal sales of games.

In 2007 however, the company came back into action, selling high end gaming rigs, with customizable outer casings from Amsterdam.

FACEBOOK BANS WEIRD NAMES

Also Blocks Bugmenot.com!

In this age of heightning security risks in every form, in everything we do online, Facebook has decided to come down on users with awkward names. Facebook has gone on a spree to ban users who do not use their usual names. Facebook can apparently do this without any issues unless you show them your identification proof. Facebook has been even more paranoid now and has been banning users for posting too much, too often and having too many contacts on their contact list. Some noted writers and artists have fallen prey to this practice and they aren't pleased. Hiroda Yoda an author from Japan, Rowena Gay from New Zealand and a designer by the name of Beta Yee were some of the people to get banned. Facebook says that it wants people to give authentic information about themselves online.

Facebook also started blocking any content related to Bugmenot.com — a site dedicated to giving users anonymous user IDs and passwords. A day after they blocked it, annoyed readers on Facebook struck back and Facebook quickly unblocked the content soon after.

Facebook was also said to block content to do with Wadja.com, another social networking site.

Thompson Can't Practise Law Anymore

Jack Thompson has a history and has created an image for himself for speaking out and protesting against violent and obscene games. His attacks against Take-Two and Rockstar Entertainment for their games such as *Bully* and *Grand Theft Auto* have earned him the reputation. Recently, Jack Thompson was disbarred by a Florida court after he was found guilty of 27 of the 31 charges against him in the cases related to the game *Bully*. The offenses he was found guilty for were acts such as making false accusations without any proof. A fine of around $43,500 (20 Lakh) was also levied on him. He has now been given a month to clear all ongoing cases.

Jack Thompson hasn't fully given up protesting this barring order, it is still a huge blow for him, and a victory for game developers. Thompson is now likely to need a lawyer to fight the disbarment order. Although he won't be able to practice law anymore, don't expect to

People Who Changed Computing
Bram Cohen

Bram Cohen is the brains behind the widely used BitTorrent protocol, as well as the torrent client by the same name. He is a

Bram Cohen

computer programmer, and a math enthusiast with hobbies like origami and juggling.

Bram Cohen was born in 1975 and grew up in New York. He learnt the BASIC programming language when he was just five. Cohen went on to join the Buffalo university, but dropped out to participate in the dot com boom. He worked through a series of dot com companies, ending up at MojoNation, which was a service that distributed encrypted files from several machines. Cohen had the idea of using this system for file sharing. Cohen designed the BitTorrent protocol that allowed simultaneous downloads from many sharers at once, thus substantially increasing the speed at which data got distributed. The protocol was presented in 2002 at CodeCon.

The concept spread like wildfire, and soon several independent clients showed up to use the protocol.

Bluff
YOUR WAY THROUGH

Blogging

Feed: Syndication of the content from a blog in formats like RSS or Atom. This allows for subscription from feed readers. The data coming from a feed is also called a stream or a channel.

Autocasting: The conversion of text-based blogs via feeds into audio files. Used by the blind or those who listen to podcasts.

Blurker: Someone who reads other's blogs, without commenting or maintaining a blog of their own.

Blogebrity: Someone who became famous because of their blogs. Example: Om Malik

Permalink: The link for any single post is called a permalink. Used so that readers and crossbloggers can link back to the source.

Blogroll: A list of blogs in the sidebar, which is the frequently visited blogs or favorite blogs of the blogger.

Blogstorm: A surge in blogging activity about a particular subject or object in the news. Example, The Atom Smasher.

Reciprocal link: Two bloggers putting links to each other's blogs on their sidebars.

Blogosphere: the blogging universe is referred to as the Blogosphere or Blogistan by bloggers.

Post: Any single blog entry is called a post.

Usage: A lot of **blurkers** listen to **autocasts** while travelling. Most **feeds** have a **permalink** on individual **posts.** There is an ongoing **blogstorm** on the US elections in the **blogosphere**, a lot of these blogs have **reciprocal links** to other political blogs on their **blogrolls.**

Wild Wild Web

Marry A Millionaire

There is a catch though – they just might be ugly. But they have loads of money to compensate for that. If you are the kind of person who wants to marry someone rich, and don't care how they look, there is a site waiting for you – just head over to www.marry-an-ugly-millionaire-online-dating-agency.com and check out the profiles there. There is a men seeking women section, and a women seeking men section.

Protect Yourself From Psychic Vampirism!

Are you scared of people who cant drain your energies by psychotronically (if you know what that means, kill yourself) gaining access to your brains? Are you afraid of thought-control invasions into your cranium? Do you have friends or enemies who might want to attack you by any psychic means? Protect your psyche with a cheap and easily manufactured aluminium foil (psychic energy) deflector beanie! Just head over to **http://zapatopi.net/afdb/** for detailed instructions, and why exactly you need one.

Stay Clean

There are some people who give due importance to things that are used by everyone and overlooked. Head over to **http://nobodys-perfect.com,** and you will have reached the virtual toilet paper museum.

There are contemporary and vintage collections listed. The latter has rolls from the 1880s, with hilarious labels like 'extra absorbent', 'facial quality' and 'soft as old linen'.

The contemporary collections is a much more extensive list and features gems like 'military issue', 'grocer's pride' and 'western family petal soft'.

There is also an art gallery with – what else but art dedicated to toilet paper. Why are you still reading?

see the last of Thompson just yet. He is most likely to continue his fight against violent game and other media just not in the court.

EXPERIMENTS ON HUMANS

Malware Popups Don't Worry Users

A test of was designed by the folks over at Psychology department at the North Carolina University as part of a study to try and understand human patterns while using the Internet. Popups were displayed on a screen to the users which contained errors to do with memory problems. Three of the four popups were clearly malware popups and the fourth looked very similar to the authentic Windows error. The popups were based on browsers so moving the pointer over the buttons in the window would turn the mouse pointer into a hand. There were even popups with a clear browser window and yet more or less half of the users clicked on the malware popup buttons any way. With the practicals test over with, the students said they were least bothered with the popups and their main priority was to complete the tasks by getting the dialog windows to close.

IT'S ALL OK IN 2008

Metallica Is Fine With Album Getting Leaked

Days before the latest Metallica album — *Death Magnetic* could be

released; the album got sold in shops in Paris which soon found its way as MP3s onto the Internet. The album was seen on torrent sites much before the official launch. Lars Ulrich — the drummer of the band — shocked people by saying that he was OK with the album getting leaked. He said that the year was 2008 and it's normal to have things like this these days. Metallica was known for having sued Napster — the most well known music sharing P2P in the year 2000. Lars was then heard saying that sharing of music wasn't their idea nor was participating with Napster. Finally n 2001, the court ordered Napster to stop trading of copyrighted material on the service. Napster soon stopped serviced and in September 2001, paid $26 million as part of a settlement for all previous trading that took place on their service. Napster currently sells legal music over the Internet as well as an unlimited listening scheme for a fixed rate of $12.95. Napster was bought over by Best Buy a electronics retail chain in mid-September for $121 million. Tracks from Metallica's latest album are officially available on their site for listening purposes and also on iTunes.

Import And Export

DIGIT DIARY

We welcome a colourful character this month. Edward joined the team as Editor In Chief bringing in a strict new regime of proper English pronunciation and writing by turning off all auto-correct features in our word processors — and appealing us to use better punctuation.

Bringing out a special issue has made the past month very hectic. Like us, the brand new beverage machines have been hard at work pumping out large quantities of coffee and tea at never seen before speeds which were consumed by the crew at equally amazing speeds. Although everyone here is deprived of rest, we have *Quake 3* to help us regenerate. Our new recruits — Aditya and Rahul were brave enough to challenge the might of veterans like Rossi and were rewarded with a great deal of misery and humiliation (with the gauntlet that is). Rahul had more to complain about — mainly the lack of laundry services and food here in Mumbai.

Ravi, Sajeev and Vijay were in a crunch because they had to layout the magazine in less than five days. Michael "makes conversation" and works in a 2:1 ratio.

We also have a bit of heartbreaking news as well — Sanket is packing his bags and leaving us after a very long journey with *Digit* that started back in 2002. We know we'll miss him and we wish him all the best for the future in all future endeavours.

SOMEBODY NEEDS A HUG

Yet Another Google Founder Appears

Sergey Brin and Larry Page are famous well known people best known for creating Google. Now amongst all the media hype surround Google's latest innovations and ideas such as the Google Android powered phone and their new browser, there's been some more activity. An individual by the name of Hubert Chang claims he too was a founder of Google and was responsible for the design of Adsense.

Hubert apparently gave up on Google to work on his Ph.D at the New York University. Earlier in 2007, Hubert created a video and uploaded it on Youtube giving a complete explanation of how Larry and Sergey met him and how Google and its projects were formed. He goes ahead to explain the reasons why he chose not to have his name mentioned in the reports submitted by Sergey and Larry on the work they did.

This sudden announcement has caused an uproar amongst Google fans, and the biggest criticism Hubert has received on the Internet is asking him why he waited so long before going public.⊠

think digit Blog WATCH

Featured here are snippets from some of the best bloggers who have registered at the Blog Watch section on thinkdigit.com.

If you wish to be featured too, head to **www.thinkdigit.com/blogger.php** and sign-up.

Techfat
http://tinyurl.com/4a4cxb
http://techfat.blogspot.com/2008/09/how-to-format-usb-drive-in-ntfs.html

How to format USB drive in NTFS

I recently bought a pen drive (Transcend JetFlash 1 Gb). This USB device is nice. But what I wished that it should come in NTFS file system. But it wasn't. The dealers said they were unable to do this for me. I managed to format it in NTFS.

So here is the trick.

Open Windows XP/Vista/2000 in the Administrator Account (98/95 not applicable).

First plug in the USB flash drive. Go to `MY COMPUTER > X:` (x is the removable drive letter). Now right-click on it and select Properties. Now select Hardware from the tabbed menu there. Click on Policies and Select "`Optimize For Performance`" (the default is "`Optimize For Quick Removal`"). Apply and click OK. Close this window.

Now you can format that USB flash drive in NTFS.

Anant Khaitan
http://tinyurl.com/4ytmju
http://brightedges.blogspot.com/2008/09/dc-and-linux.html

DC++ and Linux

Particularly in colleges where media sharing is very popular among students (like in ours) DC++ can be used to inter-connect different hostels and enable fast file-sharing. DC++ is a free and open-source, peer-to-peer file-sharing client that can be used to connect to the Direct Connect network. It has private messaging features or one can globally chat in a Hub Room. It also indexes files, so you just search for a file with specified characteristics. Many more handy features more you try to explore more you know. But alas! this program is not for Linux and designed specially for Windows. But should we worry... naah! We have LinuxDC++, whose interface is rewritten in GTK+ toolkit but the core code is that of DC++ and it works/behave exactly in the same manner.

(Visit the blog to read more...)

Inbox

Feedback: September 2008 Issue

Camera Demands

Can you please publish some models of Sony Digicams like you did for other brands in your last issue, which was really very good and knowledgeable. I found Sony to be missing from the digicams tested. I am looking to buy a digital camera next month, but also want to consider the Sony brand before making my decision. I am not a regular reader of your magazine, but now after reading the last issue I am planning to subscribe to it very soon.

I will really appreciate if you can publish some more models in your next issue. You have been of great help. Keep up the good work!

Chandan

We get a lot of demands for hardware that we miss in our tests. The problem with comparison tests is that it takes a huge amount of work to get all the competing brands to send in their products on time, all together. While we do get all the brands to represent themselves in our tests, most of the time, sometimes it's just not possible for various reasons. For example, sometimes a manufacturer is on the verge of launching a whole new range of products, and they hesitate to allow their older models to be compared to newer models from their competitors. At other times, companies have a huge event to organise, and people are too busy, or demo and review products are all being used. We do always try and make up for the hardware we miss out on in our Bazaar section. Keep an eye on this section to find reviews of the products you want to read reviews of.

Team Digit

Legal Or Not?

I've been reading Digit for 3 years. I'm a 12th pass from the science stream with computers as my 5th subject, and I found your mag really helpful. Once my teacher was not giving me marks for my answer to a question, until I showed him your magazine, and then he was forced to give me the marks. From that day, even my teacher has started reading *Digit*.

Actually my intension to mail you is that I'm using Nokia 2626 and I can do things with it that my uncle can't do with his n73. I download software from various sites and I found a free site — GetJAR.com.

I just want to know whether this site is legal, or am I indulging in piracy? Can you suggest some sites for free games and apps for the Symbian40v1 platform?

Please help me guys, I love your magazine.

Anurag Khushwanshi
Patna

That's a really nice anecdote about your teacher. Thanks for sharing it with us, and letting us know how we're busting myths around India.

GetJar.com is legal software downloads, and if sometimes people upload pirated content, it must be removed pretty quickly, because we've never seen any. You are already looking for software on one of the world's most popular mobile content sites, however if you're willing to pay for good software, you can try **www.softwaremarket.nokia.com**.

Team Digit

Numero Uno

Congrats for becoming the number 1 again! I can assure you that you guys are doing a real good job. There is one small problem that I've been facing lately with *Digit* and that is CRC errors. I bought this month's Digit from a newspaper stand and found that I can't access few files on the DVD because of CRC errors. This is the third time in the last 6 months that I have faced such a problem.

You can understand how irritated a gamer will become when he can't access the latest *Call Of Duty* trailer!

Ayush Gupta

Ahh! The internal debate we were having has come to the fore. While we're all extremely proud of the latest IRS survey results, the debate was whether to display it prominently or not. We've been India's "Number 1 Technology Magazine" for nearly a decade now actually, but we made the folly of not officially informing you about it before. Some of us were worried about readers thinking that we have only just taken the top spot, or that we have reclaimed the position, as you thought. The facts are that we never lost the position to begin with.

Our sincerest apologies for the corrupt DVDs. When such a tragic event takes place, you should write to **help@thinkdigit.com**, and we will replace the corrupt DVD immediately. It would help if you, and the few other readers who get non-functional DVDs, could include details like your address, phone number and place of purchase in your complaint e-mail, so that we can trace where regular errors occur. We have found that sometimes a particular transporter, courier or vendor manhandles our packages, and this results in regular errors with the sensitive DVDs. Only when we get such data, can we can take the appropriate action, and try to prevent it from occuring in the future.

Team Digit

More Game Reviews Please

I am an Electronics and Communication diploma student and a great fan of your magazine. One drawback I find is your game reviews section. And please don't point me towards SKOAR!

One more thing, in a strange way, I love you people at *Digit*, and would like to be one of you guys if I get a chance one day.

Aravind Suresh

So what's stopping you? Send in your CV, and let's get started with your application. For all those of you who would like to become a part of Team Digit, send your CV to editor@thinkdigit.com. Seriously, stop reading and send that e-mail, we have a few vacancies, and they're filling fast.
As for the game reviews, point noted. You're going to hate the fact that the current issue has no game reviews, but hopefully we can make you happy in the months to come.

Team Digit

Quiz Wiz

Thank You! (infinite loops). Only with the help of you guys I could win the TCS IT Wiz and got a laptop and an MP3 player! I don't know how to pay you back. My only wish would be to join you after my graduation. Thanks again, a lot!

P.S. I have read the monthly quizzes of all the previous editions and found some errors! I know it is human to err, and I forgive you, but be careful in the the future!

Aurojyoti Das

Congratulations. The only thanks we want is that you keep reading and sending us feedback. We especially want to you point out any errors that you find, because we all learn from our mistakes. We'll try and improve our quiz standards to test a Quiz Wiz like yourself.

Xxxxx

Paper Quality

This is the first time that I am writing to you. I want to inform you that while reading and comparing your magazine with all the others, I found that yours is the best magazine. However, you're still not completely meeting our expectations. Paper quality is the first problem as compared to the other magazines. Your December 07, February 08, and April 08 issues were your best.

I wasn't able to buy the current issue because of all the troubles in our Jammu and Kashmir (Kathua) region, which you have probably heard about in the news. I would really appreciate it if you could make the PDF version available to me, as I buy your magazine from a stall that's quite far from where I stay. Apart from this, everything else about Digit is fantastic, and it is Number 1 in my friend circle. Once again thanks for such a mag.

Sourabh Ansari

As a special case, we will try and send you the PDF via email as soon as it is made. If you had bought last month's issue, and if you are reading this, you will see that we have taken active steps to better the contents as well as paper quality, and this is a trend we will continue.

We also want our readers to understand that magazines with much smaller circulations than ours can afford to print on more expensive paper, because they can manage the costs. You may have noticed that newpapers, which have a much higher circulation than us, print on news print, because they would go bankrupt if they tried to print on the paper we use. At the end of the day, however, it's the content that matters, and not the paper it's printed on. It's our content that took us to the Number 1 spot, and it's the same quality content that will keep us here. It's thanks to candid feedback by readers like yourself that we are able to consistantly improve and keep our content fresh and interesting.

Team Digit

Trial Garbage

I am a very old subscriber of Digit magazine, observing different changes in the magazine. The software that you are providing in your CD/DVD needs to be changed. Because of the easy access to broadband, almost everyone is familiar with the trial versions of thousands of software. You are requested to provide only the free or licensed version and genuine, quality software for your subscriber and curtail the garbage "trial" software in your CD/DVD. I think this will add value to Digit.

Debkumar Mitra

One man's garbage is another's sustenance! The majority of India (our readers included), has no access to broadband. What you call garbage, they absolutely love. We get thousands of letters telling us that they loved the DVD contents. We know we cannot please all of you, all of the time, but we can hope to please all of you *most* of the time. If you notice, we give preference to Freeware, and just because a software is a "Trial" doesn't make it garbage. We encourage you to try the software we provide – you never know when you might find a "trial" version that you just *have* to own, even if it means paying for it.

Team Digit

Suggestions Galore

LETTER OF THE MONTH

Hi Guys! This is my first message appreciating your work. I am glad that you are the No.1 tech magazine in India, and why not? You have earned the right. You have given your readers all the pleasure of reading the magazine. *Digit* is far ahead of all the other technology magazines. I know you are putting a lot of effort, but still you are there to solve our computer problems in the best way. Although you are doing all of this, you also have time to give those fine articles of yours. Agent 001 is God, and he reviews everything well. Your *Fast Track* is also brilliant, and I have learnt a lot from it. Your game reviews are good, and the design is the best in your class. However, I have a few suggestions that I think would help you improve:

1. You should add a box for System Requirements for all game reviews.
2. Make the articles longer. They're superb, but too short.
3. I can't understand why you always give latest news at the end of each page in a line.
4. You can add more budget products in your reviews.
5. Make the magazine reach the stands on time.
6. You should give more full version software. But your CD / DVD interface is the best.
7. Review more mobile phones.
8. Add more Drool-Maal products.
9. Revisit Fast Track to the Internet, Jargon-buster, Upgrade your PC, Photoshop, etc.

Keep up the good work and always remain our Tech Navigator. God bless you all for your work.

Elam Parithi
Coimbatore

1. We'll start doing this more regularly.
2. See this issue.
3. It's called the "ticker", and it's for news that does not need more than a line to be told.
4. We will do so ASAP.
5. Sir, Yes Sir!
6. We will be re-designing the CD and DVD contents to make them more appealing to everyone. Send us feedback about this month's issue, and let us know if we're on the right path.
7. & 8. This month's issue should make you happy.
9. We're looking at re-visiting some Fast Track topics, wait and watch.

Team Digit

DIGIT OCTOBER 2008 182

Tabloid TECH

People And Events That Grabbed The Headlines—For Better Or For Worse

Bloggers Trouble Steven Tyler

Celebrity blogs are seem to be the rage, with new ones from unheard of celebrities popping up now and then. Jumping into the flurry, capitalising on the someone else's fame, are the fake celebrity bloggers.

Fan's seem to have taken Aerosmith's "write me" literally, and wrote up a blog irking lead singer Steven Tyler. These unknown impostor/s pretended to be Steven Tyler and his girlfriend on two different blogs, posting very personal information, including personal feelings about the death of Tyler's mother — among other imaginary intimate details.

Tyler got mad and tried to get even by suing the anonymous bloggers by filing a case against them in Los Angeles on September 24. Tyler is suing the bloggers for disclosure of private facts, writing fabricated statements, and identity theft. The blog was hosted by Google's Blogger.com. This is not the first time such an incident has happened though, a similar set of events, probably by the same people occurred in 2007, and Google brought down the blogs after Tyler complained to them.

Britney Irritated By Leaked Single

After creating a stir at the MTV Music Awards, by picking up three awards, Britney Spears is in the news again after an insider recorded rehearsals of the single *Womanizer* and uploaded the video on YouTube. Within no time, fans downloaded the clip, it showed up on several sites, transcribed the lyrics, and a radio station even aired a part of it.

The single is a part of her come back album, *Circus* and Britney Spears is pretty miffed about the leak. A bunch of sites have showed up capitalising on the flurry, including BritneySpearsCircusLeak.com, which made false claims about other songs being leaked too. The recording studios are also irritated by the leak, and are on a manhunt to catch the insider responsible for the breach. The security in the studios have been beefed up to protect the rest of the album.

Because of Spears getting some good press covering about her appearance in the MTV Video Music Awards, the record label bosses have decided to prepone the release of the album, and industry insiders are saying that Spears is working hard on it.

Zack Snyder Jumps From Movies To Games

Zack Snyder, who directed films like *300* and the *Dawn Of The Dead*, has agreed to the proposal by Electronic Arts Corporation to be the creative leader for their three upcoming gaming titles. Zack, who has been featured on the covers of British Communication Arts magazine as the "Country's most talented commercial directors", is himself a big fan of games created by EA and is probably quite happy now to be a part of one. Zack will be the part of the same team in which master movie maker Steven Spielberg is presently working with the video game giant. As we wait for the games to be made, we might also get to see movies being made on the same storylines as both EA and Snyder have agreed to keep the doors open for game content to be used for the making of films. We have seen some great work by this young director and will continue to see the same with his upcoming movie *Watchmen* (Expected next year), which is based on Alan Moore's Graphic novel, and others such as *Guardians of GaHoole* and *The Last Photograph,* which are expected by 2010.

We don't know how good the games he's working on are, or what they will look like, but one thing we can be sure of is that with real life directors coming in, we expect some top notch direction in video games from now on.